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Foreign- Versus Domestic-Owned firms in the Predicament 'Cui bono?'

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Abstract

Background: This article examines the productivity of domestic firms in the case of the foreign ownership. **Objectives:** Foreign direct investments affect the competitive competences of domestic firms; thus, the objective is to see the way foreign ownership drives the growth of domestic firms. **Methods/Approach:** The study uses standard models to analyse productivity; they are applied to data sets of Macedonia, a Southeast European economy, and it is concluded that foreign ownership has a major role in domestic firms' restructuring processes increasing their productivity. **Results:** Surely, the results support the principal notion that the augmented presence of foreign firms is to influence the restructuring and business activity of domestic companies positively. **Conclusions:** Our analysis verifies that foreign ownership has influenced the overall economy and particularly domestic-owned firms with the constant increase in employment and especially direct export.

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Introduction

There is well-developed literature analyzing many aspects of foreign direct investments. As far as the interest related to the performance of domestic in comparison to foreign owned firms is concerned, there are five major issues. First, governments assign generous resources in investment promotion in order to lure foreign capital. Present day research is conclusive on the importance of foreign direct investment for economic progress, especially on productivity and technology transfer to host economies (Keller, 2000; Keller and Yeaple, 2009). The basic arguments behind this claim are rooted in the systematic superior performance of foreign investments compared to domestic owned firms. When it comes to particularities related to the presence of foreign owned companies, it should be said, that the literature also identifies negative spillovers (Chung, Mitchell, and Yeung, 2003; Gorodnichenko, Svejnar and Terrell, 2014). Second, increased mergers and acquisitions affect the share

of foreign capital in the total population of firms in a host economy. Hence, this has led to an intensification of the multinational character of well-established companies, which creates globalized ownership structure and makes it hard to pinpoint the domestic character of a firm or a branch (La Porta, Lopez-De-Silanes and Shleifer, 1999). Third, comparisons that analyze international competitiveness are interested in the origin of the ownership for these two groups of firms, in order to explain the difference in the growth of economies and industries. Fourth, such movements in ownership increase the interest in organizational hierarchies or corporate governance systems. Finally, comparisons between groups of firms raise numerous important methodological issues. The incentives for foreign direct investment in Macedonia differ to other European countries, as all of them impose different strategies on the international capital market, trying to induce productivity spillovers (Bellak, Leibrecht, and Damijan, 2009; Apostolov, 2014; Damijan, Kostevc and Rojec, 2015; Apostolov, 2016).

The research question is tied to the likelihood that foreign ownership has a significant role in domestic firms' restructuring processes increasing their productivity. In this regard, this study has the following structure. In the next section, we give the theoretical background; the third section is used for explanation of data sources and estimation strategy. After that, in the fourth section, we present the results, linking empirical evidence to theoretical predictions. At the end of the paper, there are distinctive conclusions related to the research.

Methodology

Foreign direct investments are one of the main ways to transfer capital, skills, technology, and knowledge internationally, becoming a major pillar of economic development for the host country and its domestic enterprises (Caves, 2007; Markusen and Venables, 1999; Javorcik, 2004; Gorodnichenko, Svejnar and Terrell, 2014). Most of the economic literature is interested in analysing productivity effects mainly through linkages and dissemination of innovations to domestic firms (Barrios, Görg and Strobl, 2005; Ayyagari and Kosová, 2010). The usual positive effects include boosted export performance (Greenaway, Sousa, and Wakelin, 2004), improved labour mobility (Fosfuri, Motta and Rønde, 2001), demonstration effects (Barry, Görg and Strobl, 2003) and overall restructuring of the economy (Caves, 1974; Kokko, Tansini and Zejan, 1996; Damijan, Kostevc and Rojec, 2015). Nevertheless, there are negative spillovers on economic development from foreign direct investments (Aitken and Harrison, 1999; Kathuria, 2000; Barrios, Görg and Strobl, 2005). The main culprits of such a negative outcome are usually the crowding-out effect (Caves, 2007) or entry-deterrence (Dixit, 1980). Another important issue related to spillovers from foreign owned to domestic owned firms is whether negative or positive effects will happen to be horizontal (intra-) or vertical (inter-) (Javorcik and Spatareanu, 2008; Girma et al., 2015).

Foreign owned vs. domestic owned firms

The effects of inward foreign direct investment on host country can be categorized into two broad categories. First, the direct effect of foreign ownership that formulates the conduct and productivity of foreign owned affiliates. Second, is the indirect effect or spillovers, more precisely, the measurable effect from the presence of foreign firms on the productivity of domestic firms (Guadalupe, Kuzmina and Thomas, 2012).

Productivity Gaps

The two specific issues related do the firm's productivity are market structure and firm conduct. Market structure is related to the existence of entry-barriers and firm size;

while firm conduct is much more tied to strategic behavior, pricing policies and creation of entry-barriers (Acocella, 1992; Markusen and Venables, 1999). In order to understand ownership and productivity gaps between domestic and foreign firms, we need to observe if the productivity is higher due to being foreign or due to having a specific advantage (Caves, 2007; Ferragina and Mazzotta, 2013).

Foreign domicile

The ownership of the firm matters because corporate governance systems differ across nations, which undoubtedly has an effect on the way the firm performs. In the case where corporate governance is largely national, there could be differences in monitoring and achieving efficiency (Buckley, 1985). Expectations of the shareholders (dispersion vs. concentration) and management goals (growth vs. profitability) could differ, and it might be difficult to conclude which system is superior in terms of firm performance without specific empirical study (Luo, 2005; Cumming et al., 2017).

Specific advantage

The specific-advantage hypothesis tries to explain the existence and investment expansion of firms abroad (Dunning, 1973; Markusen, 1995; Caves, 2007). At the centre of this theory is that foreign direct investments allocate firm-specific advantages internally across borders, where competitors are denied entry into the market structure by a superior asset (ex. innovative product) and such asset is transferable within the firm internationally. Indeed, in order to keep competitive advantage, foreign companies, tend to be concentrated in knowledge-intensive sectors and high-productivity industries (Markusen and Venables, 1999). When we analyse foreign direct investments, it is crucial to state that companies that enter a foreign market are in a disadvantage compared to established domestic firms. On the other hand, having a specific asset as advantage compensates for that disadvantage (Koutsoyiannis, 1982). In such case, it is evident that productivity gaps will occur due to the introduction of competitors with firm-specific advantage. Thus, imitation by competitors is very difficult, and diffusion is therefore slow.

In this regard, it is clear that strong international corporations have the incentive to shift investments elsewhere and manoeuvre their firm-specific advantage (Acocella, 1992). This is reliant because of the fact that foreign direct investments introduce power and strategic behaviour when dealing with capital expansion. The power elements of foreign entry might include forceful entry to the market structure, such as, overinvestment as a mechanism to deter competition (Davies and Lyons, 1991); or pressuring market prices downwards through takeovers and acquisitions of domestic firms thus creating entry-barriers (Harris, 2002). Productivity gaps can be more prominent in sectors of the economy with few firms dominating, especially in cases of identical products (Abd-el-Rahman, 1991). Indeed, the evidence shows that the presence on numerous markets combined with firm-specific advantages adds to the superior productivity of the foreign entrant (Acocella, 1992; Temouri, Driffield and Añón Higón, 2008). Current literature identifies several types of advantages: 1) foreign owned companies can be more profitable due to economies of scale/scope, as well as, access to regional markets (Globerman, Ries and Vertinsky, 1994); 2) such companies have managerial knowledge to manage complexity (Buckley, Devinney and Louviere, 2007); 3) significant gains of specialization, horizontal and vertical firm integration lead to spillovers (Egger et al., 2001; Hertenstein, Sutherland and Anderson, 2017); 4) the capacities of established foreign direct investments are greater in dealing with various situations (Caves, 2007); 5) foreign direct investments are preferred by governments thus regulations are adjusted to their needs and less restrictive (Javorcik

and Spatareanu, 2008; Wang et al., 2012); 6) being in technology and knowledge-intensive industries, foreign direct investments additionally benefit from further expansion and lower costs (Ha and Giroud, 2015); 6) local knowledge is much more accessible for companies that have presence in different locations increasing their ability to operate in difficult environment (Chen, Chen and Ku, 2004; Danakol et al., 2017).

FDI & Entrepreneurship

Most of the empirical research confirms that spillover effects from foreign ownership presence are generally positive (Javorcik, 2004; Blanchard and Mathieu, 2016). However, some papers indicate that negative effect could also be found (Aitken and Harrison, 1999). In the fallowing paragraphs, we explain both effects.

Positive Effects

The strongest argument that the positive campus has is the diffusion of knowledge and technology from foreign owned to domestic firms. Usually, it is assumed that foreign entrants have superior technology and managerial performance compared to domestic incumbents (Caves, 2007). As discussed before, firm-specific ownership advantages are the foundation of competiveness and supremacy over potential domestic competitors (Dunning and Lundan, 2008). Process, product, and service developments are aided by amplified investment in innovative activities (Guadalupe, Kuzmina and Thomas, 2012), which adds to having a firm-specific advantage. In relation to having superior position is the possibility to utilize domestic resources and capacities for a reduced price (low labor cost, an abundance of natural resources in the host economy, etc.), increasing the incentive to enter the market (Rugman, 1981). The transfer of technology and diffusion of ideas from foreign entrant to domestic owned firm is likely to occur through interaction within and across industries (Javorcik, 2004; Haskel, Pereira and Slaughter, 2007; Apostolov, 2017).

The paths of knowledge diffusion that we find when talking about positive effects (specifically, horizontal, i.e. within an industry) are contagion-imitation effects or demonstration effects (Kokko, 1992; Barry, Görg and Strobl, 2003). Hence, collaboration with foreign companies that function at higher technology levels can lead to imitation and will eventually assist domestic firms in achieving higher productivity. On the other hand, when domestic firms adopt similar organizational practices or new product and processes, as seen in a foreign firm, they are benefitting the demonstration effect.

Skills, technology, and know-how can also be disseminated through labor mobility (Fosfuri, Motta, and Rønde, 2001). In fact, this is one of the main mechanisms of knowledge transfer from foreign to domestic owned firms. Different types of training techniques that employees usually undergo in order to get acquainted with firm-specific assets are found crucial for the development of host economy, especially in the cases when they take jobs in a domestic firm or start their own company, thus, transferring knowledge to the domestic sector.

Another important issue that has been confirmed empirically is the export increase. In general, foreign direct investments boost exports of the host economy. Moreover, foreign companies can transfer their knowledge and prepare domestic firms for export through inclusion in their supply chains (Greenaway, Sousa, and Wakelin, 2004). Accordingly, export decisions of existing domestic firms can also be affected by foreign presence (Aitken, Hanson and Harrison, 1997; Kneller and Pisu, 2007). It may further stimulate firm creation when export opportunities are identified by local entrepreneurs, for example, by exploiting trade channels and reputation that have

already been established by foreign enterprises. The evidence shows that such spillovers most often happen within an industry (intra-industry) or as it is known in the literature - horizontal effects of foreign direct investments.

Nonetheless, we have to address also vertical effects or inter-industry spillovers when we analyse the importance of foreign direct investments in the development of domestic firms and the economy overall. Thus, the main mechanism for spillover effects in vertically related industries is backward and forward linkages (Rodríguez-Clare, 1996; Javorcik and Spatareanu, 2008; Javorcik, 2015). Through their supply chain management systems, foreign firms advance supplier / customer linkages with domestic firms, whereby direct transfer knowledge (Javorcik and Li, 2014; Görg and Seric, 2016). As it happens, foreign companies fix higher service and product benchmarks pushing local firms to acquire technical assistance in order to meet organizational and managerial standards. Indeed, this leads to increase productivity in domestic firms buying from or selling to foreign entrant (Javorcik, 2004).

Further, integrating the domestic firms in the larger and more advanced supply chain allows them to achieve economies of scale (ex. the demand for intermediate goods increases, encouraging small and medium sized firms to enter supply market) (Markusen and Venables, 1999). Spillovers can be spawned through the movement of labor between vertically related industries using their skills acquired in a foreign firm for the purposes of a local one or creating spin-offs on their own. Nevertheless, this is all dependent on the level of integration of domestic firms into supply chains of foreign direct investments (Caves, 2007; Görg and Seric, 2016). Generally, foreign firms source internationally limiting the variety of the inputs produced in a local economy.

Negative Effects

Even though there are evident positive effects generated by the presence of foreign capital, there can also be negative externalities usually related to distortion of competition or crowding-out effect. Thus, less efficient domestic owned companies may be driven out of the market due to increased competitive pressure imposed on the market by the foreign entrant (Djankov and Hoekman, 2000). Such competitive pressures can lead to lower prices, which reduce operating margins for domestic firms forcing them to forfeit the game; nonetheless, at the same time, foreign direct investments endow increased local employment and income. Furthermore, taken under consideration the technological gap between domestic and foreign firms, the negative effect could prove to be more severe than expected. Hence, in such case, monopolistic market power leads to dominating the host economy industry, which will manifest in decreased productivity of domestic owned firms, forcing them to cut production (Aitken and Harrison, 1999). Most prominent negative spillovers can be found in the intra-industry context, since firms compete directly as suppliers to upstream foreign-owned entrants, resulting in suppression of domestic suppliers and internationalization of sourcing.

Another likely source of negative spillovers is linked to factor markets. Most often foreign firms try to develop global sourcing of their production needs, thus choose to displace their bases in most productive host economy sectors, which alters supply-demand balances (the most éclatant example is noted in the distortion of domestic labor markets). However, international companies use market power, also, to improve working conditions, as well as to increase wages (Görg and Hanley, 2017). Henceforth, domestic owned firms are in a disadvantage and cannot follow factor prices hikes, so talented labor takes posts in foreign firms due to better conditions and pay (cowing-out effect). This has a severe negative impact on the development of domestic owned firms.

The relation between foreign direct investments and entrepreneurship could be quite ambiguous. Further, when analyzed negative effects in terms of foreign capital presence on domestic markets, it is valid to say that foreign firms operating with asset-specific advantage can restrict domestic firms / increase barrier to entry into the labor market simply by increasing wages (De Backer and Sleuwaegen, 2003). Indeed, research has confirmed that job seekers are willing to get employed for increased monetary reward as opposed to risk free salaried job (Hall and Woodward, 2010). On the other hand, foreign firms are engaging local assets to more efficient use inducing competition on the factor markets, which pushes domestic forms to invest faster in development of their operations, thus generating a positive outcome in general. Nevertheless, the adverse effects of the crowding-out can be found within industries (Dixit, 1980) or across industries (Fudenberg and Tirole, 1984). Finally, the effect of foreign presence on domestic entrepreneurship depends on increased market power on domestic factor markets.

Foreign Direct Investments, Spillovers and Domestic Entrepreneurship

The impact of foreign direct investments on domestic entrepreneurship is generally analyzed through rates of entry of new firms and economic welfare. Entrepreneurial activity is very important for the growth of host economy, and it usually contributes via job creation (Schumpeter, 1934; Markusen and Venables, 1999; Baumol and Strom, 2007; Acs and Audretsch, 2010; Koellinger and Roy Thurik, 2011). The level of competition, as well as innovation and technological progress, are closely tied to rates of entrepreneurship (Baumol, 1990). Foreign entry is considered a vital transmission channel to diffuse technology, managerial skills, and human capital (Acs, Desai and Hessels, 2008). International companies have operational standards that are transferred to workers and managers, which is exploited when they move to create a new firm on their own (Fosfuri, Motta and Rønde, 2001). Domestic supply increases and advances as foreign companies build their own supply chain in the host economy, acquiring higher quality or asset specific products furnished by existing or new domestic firms (Javorcik and Li, 2014).

Yet, even though there could be positive spillovers from foreign direct investments tied directly to domestic entrepreneurship, the most important negative effect of foreign presence is the crowd-out effect of domestic entrepreneurs, mainly due to the superior market position of the foreign firm on domestic marketplace. Certainly, the most obvious example is observed in the labor market where the tradeoff between self-employment (new domestic firm) and employment (foreign firm) is in favor of the latter. Increased wages and improved working conditions influence job seekers to be employed as opposed to taking a rick with their own entrepreneurship business. Consequently, in such way, foreign firms redirect finance, skilled labor, and managerial talents away from domestic firms, and such shift of domestic factor endowments raises the costs of entry for newly created firms. Exercise of 'imported' market power results in multiplication of entry barriers. This spillover mechanism has been less researched in the literature compared to effects on productivity or innovation. Therefore, the most common evidence and theoretical models of spillovers are found in the occupational choice literature. According to Grossman (1984), the impact of foreign direct investments on domestic entrepreneurship could be dual:

First, foreign direct investments influence the distribution of individuals who would want to be entrepreneurs, thus lowering the number of domestic entrepreneurs. The main claim of this theoretical model is that higher wages equal to lower number of entrepreneurs. Actually, the ratio of 'skilled' to 'unskilled wage,' i.e., the responses of

relative wages to FDI inflows depends on the technology gap, where high rates mean no convergence and crowd-out effect (Das, 2002). As far as the results of empirical studies are concerned, the conclusions on this matter are fragmented, depending on the case in question (De Backer and Sleuwaegen, 2003).

Second, in contrast, there are studies that confirm the positive effect of foreign direct investments on domestic entrepreneurship. One of the most prominent research analyzes the Irish manufacturing sector, confirming overall positive spillovers (Görg and Strobl, 2002). Research also confirms the U-shaped relationship between foreign and domestic owned firms (Barrios, Görg and Strobl, 2005), exploring the two contravening forces that shape the relationship between these two entities with opposing ownership.

Methodology

Data Sources

The Enterprise Surveys implemented in European countries are also known as Business Environment and Enterprise Performance Surveys (BEEPS) and are jointly conducted by the World Bank and the European Bank for Reconstruction and Development (EBRD). A survey is a firm-level survey of a representative sample of an economy's private sector, in our case for Macedonia, a Southeast European economy. The surveys cover a broad range of business environment topics, including access to finance, corruption, infrastructure, crime, competition, and performance measures.
There are two distinct survey instruments i.e. questionnaires: Manufacturing Module [ISIC Rev.3.1: 15-37], Services Module [ISIC Rev.3.1: 45, 50, 51, 52, 55, 60-64, 72]. Private contractors conduct the Enterprise Surveys on behalf of the World Bank. Surveys are usually carried out in cooperation with business organizations and government agencies promoting job creation and economic growth, but confidentiality is never compromised. The Enterprise Survey is answered by business owners and top managers (1200-1800 interviews in larger economies, 360 interviews in medium-sized economies, and 150 interviews in smaller economies).

Most importantly, the Enterprise Surveys are designed to provide solid data sets. Such data is one of the best ways to pinpoint how and which of the changes in the business environment affect firm-level productivity over time (Enterprise Surveys - World Bank Microdata Library)..

Model and Econometrics

In this study, we use three models: 1) OLS, 2) Tobit and 3) Fractional Logit GLM. The Ordinary Least Squares (OLS) linear regression is one of the most basic and most commonly used prediction techniques, with applications in many fields due to the fact that its implementation is efficient and it produces solutions that are easily interpretable. On the other hand, a Tobit model is widely present in the FDI literature to analyse the effects on domestic companies, and this is because the maximum likelihood estimator is consistent, as opposed to ordinary least squares regression (Amemiya, 1973). In order to be certain in our results, we reinforce the Tobin model with the introduction of Fractional Logit GLM.

The first model, the ordinary least-squares (OLS) regression, is a regression model where we have estimated the fallowing equation (Freedman, 2009; Freedman et al., 2010):

$$\gamma i = \beta_o + \beta_1 x_{1i} + ... + \beta_p x_{pi} + \varepsilon_i \quad , \quad i = 1,...n \tag{1}$$

The Tobit model (or censored normal regression model) is employed to calculate approximately the unknown parameters, which is a censored normal regression model. The structural equation in the Tobit model is (Wang et al., 2012; Wooldridge, 2015):

$$\gamma_i^* = X_i\beta + \varepsilon_i \quad (2)$$

where $\varepsilon_i \sim N(0, \delta^2)$. γ^* is a latent variable that is observed for values greater than τ and censored otherwise. The observed y is defined by the following measurement equation:

$$\gamma_i = \begin{cases} \gamma^* \; if \; \gamma^* > \tau \\ \tau_\gamma \; if \; \gamma^* \leq \tau \end{cases} \quad (3)$$

In the typical Tobit model, we assume that $\tau = 0$, i.e. the data are censored at 0. Thus, we have

$$\gamma_i = \begin{cases} \gamma^* \; if \; \gamma^* > 0 \\ 0 \; if \; \gamma^* \leq 0 \end{cases} \quad (4)$$

The expected value of the latent variable γ^*:

$$E[\gamma^*] = X_i\,\beta \quad (5)$$

The expected value of $\gamma|\gamma > 0$:

$$E[\gamma|\gamma > 0] = X_i\,\beta + \sigma\lambda(\alpha) \quad (6)$$

The expected value of γ:

$$E[\gamma] = \Phi\frac{X_i\beta}{\delta} + [X_i\,\beta + \sigma\lambda(\alpha) \quad (7)$$

The third model is Fractional Logit GLM, which is a flexible generalization of ordinary linear regression that allows for response variables that have error distribution models other than a normal distribution. The structural form of the model describes the patterns of interactions and associations. The model parameter provides measures of strength of associations and is appropriate for types of data which exhibit intrinsic heteroskedasticity where there is a rationale for modeling the heteroskedasticity (McCullagh and Nelder, 1989).

A generalized linear model is made up of a linear predictor:

$$n_i = \beta_0 + \beta_1 x_{1_i} + ... + \beta_p x_{p_i} \quad (8)$$

and two functions:

- a link function that describes how the mean, $E(Y_i) = \mu_i$ depends on the linear predictor

$$g(\mu_i) = n_i \quad (9)$$

- a variance function that describes how the variance, $\text{var}(Y_i)$ depends on the mean

$$\text{var}(Y_i) = \phi V(\mu) \tag{10}$$

where the dispersion parameter ϕ is constant.

However, some researchers (e.g., Papke and Wooldridge) have argued that the Tobit model, a censored regression technique, is not applicable where values beyond the censoring point are infeasible. Papke and Wooldridge suggest that a GLM with a binomial distribution and a logit link function, which they term the '*fractional logit*' model, may be appropriate even in the case where the observed variable is continuous (Papke and Wooldridge, 1996). To model the ratio y as a function of covariates x, we may write (Baum, 2008):

$$g\{E(y) = x\beta, y \sim F \tag{11}$$

where g is the link function, and F is the distributional family. In our case, this becomes

$$\text{logit}\{E(y) = x\beta, y \sim \text{Bernoulli} \tag{12}$$

Applied to our research, the model takes the following shape:

$$pfo_{i,t} = \beta_o + \beta_1 ftw_{i,t} + \beta_2 cu_{i,t} + \beta_3 rasg_{i,t} + \beta_4 aeg_{i,t} + \beta_5 alpg_{i,t} + \beta_6 ptsexd_{\text{i,t}} + \beta_7 ptsexi_{\text{i,t}} + \varepsilon_{i,t} \tag{13}$$

where, the ***latent variable***, $pfo_{i,t}$ is the proportion of private foreign ownership in a firm (%). As far as the ***independent variables*** are concerned we have taken the number of permanent full-time workers $ftw_{i,t}$, capacity utilization (%) $cu_{i,t}$, real annual sales growth (%) $rasg_{i,t}$, annual employment growth (%) $aeg_{i,t}$, annual labor productivity growth (%) $alpg_{i,t}$, proportion of total sales that are exported directly (%) $ptsexd_{\text{i,t}}$, and, proportion of total sales that are exported indirectly (%) $ptsexi_{\text{i,t}}$. In this equation, we also have β as a *p*-dimensional ***parameter vector*** and ε the ***error term*** or ***noise***.

There are two main studies on measuring the productivity of domestic firms in relation to foreign ownership, that we find crucial in this study, i.e. first, Guadalupe (Guadalupe, Kuzmina and Thomas, 2012) and second, Girma (Girma et al., 2015). The first study is important in terms of measuring foreign ownership, productivity, sales that are exported; and the second study was useful in reengineering our model in order to measure domestic firms' productivity in relation to their capacity to absorb spillovers from foreign ownership altered structure by the influx.

Testing for endogeneity

Heckman selection model

Primary among the econometric concerns in estimating the effects of foreign ownership on productivity is the issue of endogeneity. Productivity and structural characteristics of firms play an important role and are influenced by ownership structure, most notably shift towards foreign ownership. Most causes of endogeneity

are an uncontrolled confounder causing both independent and dependent variables of a model; and a loop of causality between the independent and dependent variables of a model (Wooldridge, 2015).

Heckman (1979) proposes to use estimated values of the omitted variables (which, when omitted from the model give rise to the specification error) as regressors in the basic model (Table 2). Heckman estimates all the parameters in the model:

$$y = xb + u_1 \,;\; x = \{\log pfo, ftw, cu, rasg, aeg, alpg, ptsexd, ptsexi\},\; b = \{b_1, ..., b_7\} \quad (14)$$

(regression equation: y is depvar, x is varlist)

$$\text{y observed if } Zg + u_2 > 0 \;;\; Z = \{\log pfo = alpg, ptsexd\} \quad (15)$$

(selection equation: Z is varlist_s) N.B. In the syntax for heckman, depvar and varlist are the dependent variable and regressors for the underlying regression model (y = xb), and varlist_s are the variables (Z) thought to determine whether depvar is selected or observed (selected or not selected). By default, heckman assumes that missing values of depvar imply that the dependent variable is unobserved (not selected).

$$\text{where: } u_1 \sim \mathrm{N}(0, \text{sigma});\; u_2 \sim \mathrm{N}(0,1);\; \mathrm{corr}(u_1, u_2) = rho \quad (16)$$

The issue of sample selection may also impact our estimate of the effect of foreign ownership (Haskel, Pereira, and Slaughter, 2007). Hence, if foreign ownership does in fact impact firm productivity, then it would also affect its survival chances, thus in industries with the high foreign presence, we may, therefore, observe higher productivity as opposed to industries with a lower foreign presence.

Robustness check

In order further to test for endogeneity, we provide a further robustness check of the results. As noted above, key variables may cause simultaneity issues to bias the estimates, and we tackle the issue by employing robust regression in order to instrument for the offending variables. The estimates in Table 2 indicate a very similar pattern as the one found in the benchmark estimates.

Estimation Results

This research provides a framework on the impact of foreign ownership on the productivity of domestic firms. The framework approach enables estimation results related to firm productivity reinforcing conclusions that foreign ownership has a major role in domestic firms' restructuring processes, increasing their productivity.

Results on productivity

The three models used in this study (OLS, Tobit, and Fractional Logit (GLM)) provide rather similar results, overall (Table 1). There are minor differences in some of the variables or the significance level that are later confirmed by robustness checks. In this regard, the baseline for our model has been chosen the proportion of private foreign ownership in a firm (percentage of the firm owned by foreign individuals, companies or organizations), as provided by the surveys. The results point to positive inclination in the number of permanent full-time workers (significance levels are high, i.e. $p<0.01$) across the basic three models. This means that foreign ownership has an impact on the economy with an increase of employment, specifically the full-time workers who represent the best earning contracts. Also, we can see a similar result in the strong positive inclination of annual employment growth (the change in fulltime employment

reported in the current fiscal year from a previous period) (Figure 1-d). Such developments are well confirmed in established literature that deals with effect from foreign direct investments (Egger et al., 2001; Javorcik, 2015; Görg and Seric, 2016).

Table 1
OLS, Tobit and Fractional Logit (GLM) on productivity

OLS	(1)
VARIABLES	pfo
ftw	0.0315***
	(0.0108)
cu	-0.142
	(0.0966)
rasg	-1.291**
	(0.457)
aeg	1.145***
	(0.375)
alpg	0.816*
	(0.462)
ptsexd	0.209***
	(0.0381)
ptsexi	-0.0479
	(0.101)
Constant	13.95**
	(6.614)
R-squared	0.804

TOBIT	(1)	(2)
VARIABLES	model	sigma
ftw	0.0313***	
	(0.00977)	
cu	-0.143	
	(0.0877)	
rasg	-1.299***	
	(0.415)	
aeg	1.150***	
	(0.341)	
alpg	0.824*	
	(0.420)	
ptsexd	0.211***	
	(0.0346)	
ptsexi	-0.0432	
	(0.0915)	
Constant	13.89**	2.008***
	(6.010)	(0.280)

GLM	(1)
VARIABLES	pfop
ftw	0.00385***
	(0.00122)
cu	-0.0227
	(0.0147)
rasg	-0.198***
	(0.0524)
aeg	0.221***
	(0.0389)
alpg	0.0880
	(0.0671)
ptsexd	0.0378***
	(0.00614)
ptsexi	-0.0269
	(0.0235)
Constant	-1.884*
	(1.138)

Source: Authors' work
Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

When it comes to capacity utilization based on comparison of the current output with the maximum output possible using the current inputs by firms, it can be said that there is no evidence to claim for certain a negative outcome. However, this palpable that in transition countries there are unused capacities that do not give the full effect or generate the maximum outputs, generally due to technology transfer snags (Abraham, Konings and Slootmaekers, 2010; Gorodnichenko, Svejnar, and Terrell, 2014).

The variable explaining real annual sales growth is significant and negative across the board. The basic explanation is that domestic companies have been lagging compared to their foreign counterparts in terms of annual sales and need more time to break the market in terms of competitively. Indeed, competitive characteristics are to be gained over a longer period using knowledge transferred from more competitive foreign affiliates or cooperation agreements with foreign capital (development of interlinked supply chains) (Blalock and Gertler, 2008; Ferragina and Mazzotta, 2013).

Annual labour productivity growth has positive significance in two models (OLS and Tobit (p<0.1)), which is a move forward. Increased productivity of the working force is always a good sign, especially in economies that are subdued to enterprise restructuring by external factors, e.g. rapid change of ownership structure (Harris, 2002; Haskel, Pereira and Slaughter, 2007; Estrin and Uvalic, 2014; Girma et al., 2015).

Exports have always been important for the development of an economy and in this research, we analyse two indicators that explain the relation of exports to the output. The first is total sales that are exported directly, with strong positive and significant upshot (Table 1, 2, and Figure 1-f). It is common that inflow of foreign direct

investments, or in this case incursion of foreign ownership contribute to an increase in direct exports (Aitken, Hanson and Harrison, 1997; Greenaway, Sousa and Wakelin, 2004; Girma, Görg and Pisu, 2008; Abraham, Konings and Slootmaekers, 2010; Kneller and Pisu, 2007; Görg and Hanley, 2017). The second variable used to study the impact of foreign ownership on exports is total sales that are exported indirectly which does not show significance, and in case of economies that do not have long tradition of robust capital movements in the form of investments, there is tame lag between the foreign entry and absorptive capacity of domestic companies (Kinoshita, 2001; Girma, 2005; Ferragina and Mazzotta, 2013).

Heckman selection model and robustness check

Heckman uses nonrandom selected samples to estimate behavioral relationships as a specification error, which is a two-stage estimation method to correct the bias. The correction uses a control which a normality assumption, and provides a test for sample selection bias and formula for bias corrected model. The results in this article (Table 2) are in line with the three previous models used. Thus, there are significant and positive outcomes for average employment growth and is total sales that are exported directly, which are a result of the shift towards foreign ownership.

As far as the robustness check is concerned, the aim of robust methods is to ensure high stability of statistical inference under the deviations from the assumed distribution model. Further, also as in the previous tests, here the results confirm the general tendency of enterprise restructuring towards enhancing the productivity of domestic firms. Indeed, positive outcomes are characteristic for full time workers, average employment growth, and total sales that are exported directly. Overall, our research suggests that estimating productivity described in this paper is rewarding as it sheds much needed light on the various mechanisms through which the proportion of foreign firms affects potential outcomes of domestic firms.

Table 2

Heckman selection model & Robustness check

HECKMAN	(1)	(2)	(3)	(4)
VARIABLES	logpfo	select	athrho	lnsigma
ftw	0.00348			
	(0.00274)			
cu	-0.0209			
	(0.0246)			
rasg	-0.197*			
	(0.116)			
aeg	0.276***			
	(0.0957)			
alpg	0.0690	0.00523		
	(0.118)	(0.0550)		
ptsexd	0.0439***	-0.00359		
	(0.00968)	(0.0200)		
ptsexi	-0.0285			
	(0.0256)			
Constant	1.972	0.745*	-15.34	-0.576***
	(1.683)	(0.400)	(429.4)	(0.138)

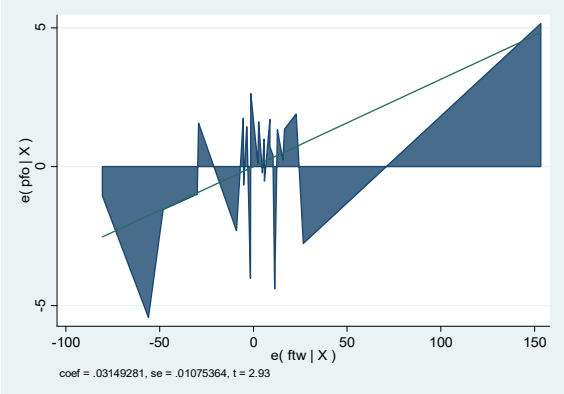
ROBUST	(1)
VARIABLES	pfo
ftw	0.0222
	(0.0198)
cu	-0.191***
	(0.0468)
rasg	-1.120***
	(0.215)
aeg	1.117***
	(0.198)
alpg	0.400*
	(0.218)
ptsexd	0.231***
	(0.0232)
ptsexi	-0.109**
	(0.0473)
Constant	18.06***
	(3.132)
R-squared	0.834

Standard errors in parentheses
***** p<0.01, ** p<0.05, * p<0.1**

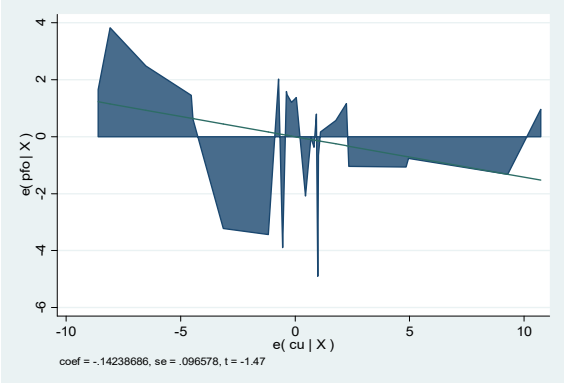
Source: Authors' work

Figure 1

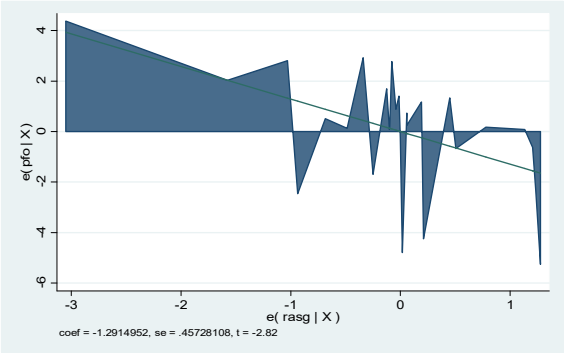
(a) FTW added-variable plot



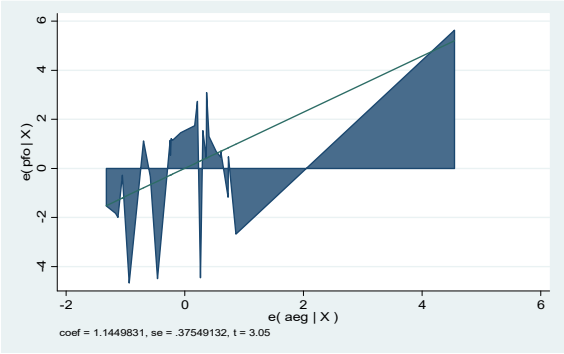
(b) CU added-variable plot



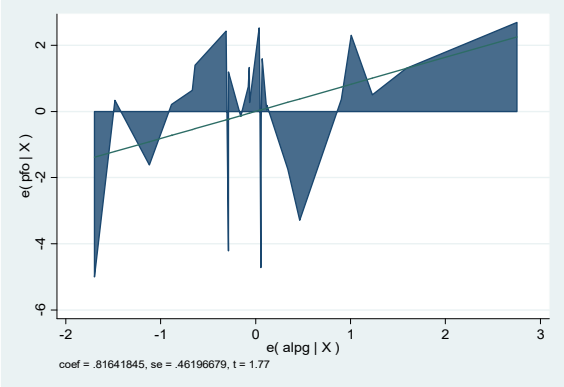
(c) RASG added-variable plot



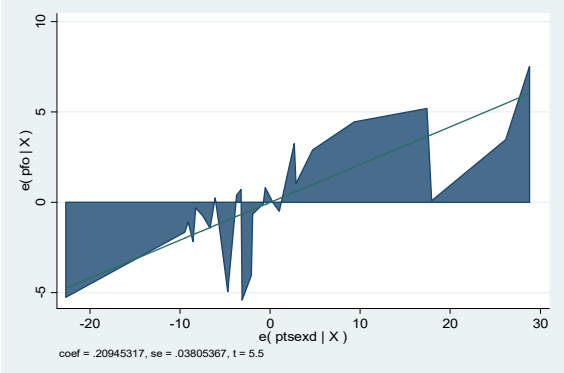
(d) AEG added-variable plot



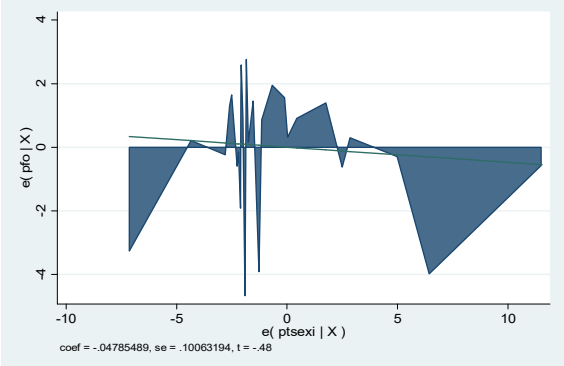
(e) ALPG added-variable plot



(f) PTSExD added-variable plot



(g) PTSExI added-variable plot



Source: Authors' work

Discussion and conclusions

Summary

The results are consistent with the presence of productivity increase due to increased foreign ownership function. Our analysis verifies that foreign ownership has influenced the overall economy and particularly domestic owned firms with the constant increase in employment and especially direct export. Finally, as was the case with the earlier firm-level studies of developing countries, these two sectors are the main driver for further expansion of the economic activity that over time, boost business activity and spillover effects.

Policy implications

Our results have important policy implications. Transition economies have constant lack of capital. Foreign direct investments offer good opportunity to build already destroyed the capital base of the economy and introduce new technology that eventually reinforces the competitive characteristics of the firms. First, it is important to show that domestic firms have benefited from an influx of foreign capital because for a long time there has been a low inflow of investments and weak performance of domestic firms. Hence, our research gives hints of the first evidence that foreign owned firms have the potential to impact positively on the host economy. Second, there are mechanisms that can be used to better tune governmental policies either through direct support or by providing incentives for sector-specific multinational companies. Third, through a change of ownership structure and especially positive spillovers, foreign ownership affects the productivity of domestic firms, as well as, levels of entrepreneurship through barriers to entry, creation of new firms and levels of income. Furthermore, this research has the potential to become a milestone in further projects related to the examination of such phenomena elsewhere.

Limitations and future research directions

Indeed, more research is needed to understand the effect of foreign presence on host countries fully. Undeniably, it would be useful to confirm the findings of this paper using different methodology and similar data sets specifically focused on individual firms that are suppliers to foreign companies, rather than relying on aggregate business indicators. Moreover, it would be interesting to learn more about the host country and investor characteristics that determine the extent of spillovers, operating through different channels. Consequently, modified methodologies and new approaches that researchers introduce will eventually uncover many other specificities while scrutinizing the effects form foreign presence on domestic firms.

References

1. Abd-el-Rahman, K. (1991), "Firms' competitive and national comparative advantages as joint determinants of trade composition", Review of World Economics, Vol. 127, No. 1, pp. 83-97.
2. Abraham, F., Konings, J., Slootmaekers, V. (2010), "FDI spillovers in the Chinese manufacturing sector", Economics of Transition, Vol. 18, No. 1, pp. 143-182.
3. Acocella, N. (1992), "The Multinational Firm and the Theory of Industrial Organization", in Del Monte, A. (Ed.), Recent Developments in the Theory of Industrial Organization, Palgrave Macmillan UK, London, pp. 232-251.
4. Acs, Z. J., Audretsch, D. B. (2010), Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction, Springer New York.
5. Acs, Z. J., Desai, S., Hessels, J. (2008), "Entrepreneurship, economic development and institutions", Small Business Economics, Vol. 31, No. 3, pp. 219-234.

6. Aitken, B., Hanson, G. H., Harrison, A. E. (1997), "Spillovers, foreign investment, and export behavior", Journal of International Economics, Vol. 43, No. 1-2, pp. 103-132.
7. Aitken, B., Harrison, A. (1999), "Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela", American Economic Review, Vol. 89, No. 3, pp. 605-618.
8. Amemiya, T. (1973), "Regression Analysis when the Dependent Variable Is Truncated Normal", Econometrica, Vol. 41, No. 6, pp. 997-1016.
9. Apostolov, M. (2014), "Governance and enterprise restructuring: the case of Macedonia", International Journal of Emerging Markets, Vol. 9, No. 1, pp. 147-156.
10. Apostolov, M. (2016), "The Role of Foreign Direct Investments in Southeastern Europe", Revue d"études comparatives Est-Ouest, Vol. 47, No. 3, pp. 45-82.
11. Apostolov, M. (2017), "FDI Uppers and Downers: A Macedonian Case Study", New Global Studies, Vol. 11, No. 1, pp. 29-44.
12. Ayyagari, M., Kosová, R. (2010), "Does FDI Facilitate Domestic Entry? Evidence from the Czech Republic", Review of International Economics, Vol. 18, No. 1, pp. 14-29.
13. Barrios, S., Görg, H., Strobl, E. (2005), "Foreign direct investment, competition and industrial development in the host country", European Economic Review, Vol. 49, No. 7, pp. 1761-1784.
14. Barry, F., Görg, H., Strobl, E. (2003), "Foreign direct investment, agglomerations, and demonstration effects: An empirical investigation", Review of World Economics, Vol. 139, No. 4, pp. 583-600.
15. Baum, C. F. (2008), "Stata tip 63: Modeling proportions", Stata Journal, Vol. 8, No. 2, pp. 299-303.
16. Baumol, W. J. (1990), "Entrepreneurship: Productive, Unproductive, and Destructive", Journal of Political Economy, Vol. 98, No. 5, Part 1, pp. 893-921.
17. Baumol, W. J., Strom, R. J. (2007), "Entrepreneurship and economic growth", Strategic Entrepreneurship Journal, Vol. 1, No. 3-4, pp. 233-237.
18. Bellak, C., Leibrecht, M., Damijan, J. P. (2009), "Infrastructure Endowment and Corporate Income Taxes as Determinants of Foreign Direct Investment in Central and Eastern European Countries", World Economy, Vol. 32, No. 2, pp. 267-290.
19. Blalock, G., Gertler, P. J. (2008), "Welfare gains from Foreign Direct Investment through technology transfer to local suppliers", Journal of International Economics, Vol. 74, No. 2, pp. 402-421.
20. Blanchard, P., Mathieu, C. (2016), "Multinationals and domestic firms in France: who gains from knowledge spillovers?", Review of Agricultural, Food and Environmental Studies, Vol. 97, No. 2, pp. 109-125.
21. Buckley, P. J. (1985), "A Critical View of Theories of the Multinational Enterprise", in Buckley, P. J., Casson, M. (Eds.), The Economic Theory of the Multinational Enterprise, Palgrave Macmillan UK, London, pp. 1-19.
22. Buckley, P. J., Devinney, T. M., Louviere, J. J. (2007), "Do managers behave the way theory suggests? A choice-theoretic examination of foreign direct investment location decision-making", Journal of International Business Studies, Vol. 38, No. 7, pp. 1069-1094.
23. Caves, R. E. (1974), "Multinational Firms, Competition, and Productivity in Host-Country Markets", Economica, Vol. 41, No. 162, pp. 176-193.
24. Caves, R. E. (2007), Multinational Enterprise and Economic Analysis, Third Ed., Cambridge University Press, Cambridge. Available from: Cambridge Core.
25. Chen, T.-J., Chen, H., Ku, Y.-H. (2004), "Foreign direct investment and local linkages", Journal of International Business Studies, Vol. 35, No. 4, pp. 320-333.
26. Chung, W., Mitchell, W., Yeung, B. (2003), "Foreign direct investment and host country productivity: the American automotive component industry in the 1980s", Journal of International Business Studies, Vol. 34, No. 2, pp. 199-218.
27. Cumming, D., Filatotchev, I., Knill, A., Reeb, D. M., Senbet, L. (2017), "Law, finance, and the international mobility of corporate governance", Journal of International Business Studies, Vol. 48, No. 2, pp. 123-147.
28. Damijan, J., Kostevc, Č., Rojec, M. (2015), "Growing Lemons or Cherries? Pre and Post-acquisition Performance of Foreign-Acquired Firms in New EU Member States", The World Economy, Vol. 38, No. 4, pp. 751-772.

29. Danakol, S. H., Estrin, S., Reynolds, P., Weitzel, U. (2017), "Foreign direct investment via M&A and domestic entrepreneurship: blessing or curse?", Small Business Economics, Vol. 48, No. 3, pp. 599-612.
30. Das, S. P. (2002), "Foreign direct investment and the relative wage in a developing economy", Journal of Development Economics, Vol. 67, No. 1, pp. 55-77.
31. Davies, S. W., Lyons, B. R. (1991), "Characterising Relative Performance: The Productivity Advantage of Foreign Owned Firms in the UK", Oxford Economic Papers, Vol. 43, No. 4, pp. 584-595.
32. De Backer, K., Sleuwaegen, L. (2003), "Does Foreign Direct Investment Crowd Out Domestic Entrepreneurship?", Review of Industrial Organization, Vol. 22, No. 1, pp. 67-84.
33. Dixit, A. (1980), "The Role of Investment in Entry-Deterrence", The Economic Journal, Vol. 90, No. 357, pp. 95-106.
34. Djankov, S., Hoekman, B. (2000), "Foreign Investment and Productivity Growth in Czech Enterprises", The World Bank Economic Review, Vol. 14, No. 1, pp. 49-64.
35. Dunning, J. H. (1973), "The Determinants of International Production", Oxford Economic Papers, Vol. 25, No. 3, pp. 289-336.
36. Dunning, J. H., Lundan, S. M. (2008), Multinational Enterprises and the Global Economy, Edward Elgar.
37. Egger, P., Pfaffermayr, M., Wolfmayr-Schnitzer, Y., Wirtschaftsforschung, Ö. (2001), The International Fragmentation of the Value Added Chain: The Effects of Outsourcing to Eastern Europe on Productivity, Employment, and Wages in Austrian Manufacturing, WIFO.
38. Estrin, S., Uvalic, M. (2014), "FDI into transition economies: are the Balkans different?", Economics of Transition, Vol. 22, No. 2, pp. 281-312.
39. Ferragina, A. M., Mazzotta, F. (2013), "FDI spillovers on firm survival in Italy: absorptive capacity matters!", The Journal of Technology Transfer, Vol. 39, No. 6, pp. 859-897.
40. Fosfuri, A., Motta, M., Rønde, T. (2001), "Foreign direct investment and spillovers through workers' mobility", Journal of International Economics, Vol. 53, No. 1, pp. 205-222.
41. Freedman, D. (2009), Statistical Models: Theory and Practice, Cambridge University Press.
42. Freedman, D. A., Collier, D., Sekhon, J. S., Stark, P. B. (2010), Statistical Models and Causal Inference: A Dialogue with the Social Sciences, Cambridge University Press.
43. Fudenberg, D., Tirole, J. (1984), "The Fat-Cat Effect, the Puppy-Dog Ploy, and the Lean and Hungry Look", The American Economic Review, Vol. 74, No. 2, pp. 361-366.
44. Girma, S. (2005), "Absorptive Capacity and Productivity Spillovers from FDI: A Threshold Regression Analysis", Oxford Bulletin of Economics and Statistics, Vol. 67, No. 3, pp. 281-306.
45. Girma, S., Gong, Y., Görg, H., Lancheros, S. (2015), "Estimating direct and indirect effects of foreign direct investment on firm productivity in the presence of interactions between firms", Journal of International Economics, Vol. 95, No. 1, pp. 157-169.
46. Girma, S., Görg, H., Pisu, M. (2008), "Exportation, effets d'entraînement, et effets externes de productivité en provenance de l'investissement direct de l'étranger'" (Exporting, linkages and productivity spillovers from foreign direct investment), Canadian Journal of Economics/Revue canadienne d'économique, Vol. 41, No. 1, pp. 320-340.
47. Globerman, S., Ries, J. C., Vertinsky, I. (1994), "The Economic Performance of Foreign Affiliates in Canada", The Canadian Journal of Economics / Revue canadienne d"Economique, Vol. 27, No. 1, pp. 143-156.
48. Görg, H., Hanley, A. (2017), "Firms' global engagement and management practices", Economics Letters, Vol. 155, No. Supplement C, pp. 80-83.
49. Görg, H., Seric, A. (2016), "Linkages with Multinationals and Domestic Firm Performance: The Role of Assistance for Local Firms", The European Journal of Development Research, Vol. 28, No. 4, pp. 605-624.
50. Görg, H., Strobl, E. (2002), "Multinational companies and indigenous development: An empirical analysis", European Economic Review, Vol. 46, No. 7, pp. 1305-1322.
51. Gorodnichenko, Y., Svejnar, J., Terrell, K. (2014), "When does FDI have positive spillovers? Evidence from 17 transition market economies", Journal of Comparative Economics, Vol. 42, No. 4, pp. 954-969.
52. Greenaway, D., Sousa, N., Wakelin, K. (2004), "Do domestic firms learn to export from multinationals?", European Journal of Political Economy, Vol. 20, No. 4, pp. 1027-1043.

53. Grossman, G. M. (1984), "International Trade, Foreign Investment, and the Formation of the Entrepreneurial Class", The American Economic Review, Vol. 74, No. 4, pp. 605-614.
54. Guadalupe, M., Kuzmina, O., Thomas, C. (2012), "Innovation and Foreign Ownership", American Economic Review, Vol. 102, No. 7, pp. 3594-3627.
55. Ha, Y. J., Giroud, A. (2015), "Competence-creating subsidiaries and FDI technology spillovers", International Business Review, Vol. 24, No. 4, pp. 605-614.
56. Hall, R. E., Woodward, S. E. (2010), "The Burden of the Nondiversifiable Risk of Entrepreneurship", American Economic Review, Vol. 100, No. 3, pp. 1163-1194.
57. Harris, R. (2002), "Foreign Ownership and Productivity in the United Kingdom—Some Issues When Using the ARD Establishment Level Data", Scottish Journal of Political Economy, Vol. 49, No. 3, pp. 318-335.
58. Haskel, J. E., Pereira, S. C., Slaughter, M. J. (2007), "Does Inward Foreign Direct Investment Boost the Productivity of Domestic Firms?", Review of Economics and Statistics, Vol. 89, No. 3, pp. 482-496.
59. Heckman, J. J. (1979), "Sample Selection Bias as a Specification Error", Econometrica, Vol. 47, No. 1, pp. 153-161.
60. Hertenstein, P., Sutherland, D., Anderson, J. (2017), "Internationalization within networks: Exploring the relationship between inward and outward FDI in China's auto components industry", Asia Pacific Journal of Management, Vol. 34, No. 1, pp. 69-96.
61. Javorcik, B. S. (2004), "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages", The American Economic Review, Vol. 94, No. 3, pp. 605-627.
62. Javorcik, B. S. (2015), "Does FDI Bring Good Jobs to Host Countries?", World Bank Research Observer, Vol. 30, No. 1, pp. 74-94.
63. Javorcik, B. S., Li, Y. (2014), "Global Retail Chains and the Supplying Industries: Evidence from Romania", CESifo Economic Studies, Vol. 60, No. 1, pp. 107-134.
64. Javorcik, B. S., Spatareanu, M. (2008), "To share or not to share: Does local participation matter for spillovers from foreign direct investment?", Journal of Development Economics, Vol. 85, No. 1-2, pp. 194-217.
65. Kathuria, V. (2000), "Productivity spillovers from technology transfer to Indian manufacturing firms", Journal of International Development, Vol. 12, No. 3, pp. 343-369.
66. Keller, W. (2000), "Do Trade Patterns and Technology Flows Affect Productivity Growth?", The World Bank Economic Review, Vol. 14, No. 1, pp. 17-47.
67. Keller, W., Yeaple, S. R. (2009), "Multinational Enterprises, International Trade, and Productivity Growth: Firm-Level Evidence from the United States", Review of Economics and Statistics, Vol. 91, No. 4, pp. 821-831.
68. Kinoshita, Y. (2001), R&D and Technology Spillovers Through FDI: Innovation and Absorptive Capacity, Centre for Economic Policy Research.
69. Kneller, R., Pisu, M. (2007), "Industrial Linkages and Export Spillovers from FDI", World Economy, Vol. 30, No. 1, pp. 105-134.
70. Koellinger, P. D., Roy Thurik, A. (2011), "Entrepreneurship and the Business Cycle", Review of Economics and Statistics, Vol. 94, No. 4, pp. 1143-1156.
71. Kokko, A. (1992), Foreign Direct Investment, Host Country Characteristics, and Spillovers, Stockholm School of Economics, Economic Research Institute.
72. Kokko, A., Tansini, R., Zejan, M. C. (1996), "Local technological capability and productivity spillovers from FDI in the Uruguayan manufacturing sector", The Journal of Development Studies, Vol. 32, No. 4, pp. 602-611.
73. Koutsoyiannis, A. (1982), Non-price Decisions: The Firm in a Modern Context, Macmillan.
74. La Porta, R., Lopez-De-Silanes, F., Shleifer, A. (1999), "Corporate Ownership Around the World", The Journal of Finance, Vol. 54, No. 2, pp. 471-517.
75. Luo, Y. (2005), "Corporate governance and accountability in multinational enterprises: Concepts and agenda", Journal of International Management, Vol. 11, No. 1, pp. 1-18.
76. Markusen, J. R. (1995), "The Boundaries of Multinational Enterprises and the Theory of International Trade", The Journal of Economic Perspectives, Vol. 9, No. 2, pp. 169-189.
77. Markusen, J. R., Venables, A. J. (1999), "Foreign direct investment as a catalyst for industrial development", European Economic Review, Vol. 43, No. 2, pp. 335-356.

78. McCullagh, P., Nelder, J. A. (1989), Generalized Linear Models, Second Edition, Taylor & Francis.
79. Papke, L. E., Wooldridge, J. M. (1996), "Econometric methods for fractional response variables with an application to 401(k) plan participation rates", Journal of Applied Econometrics, Vol. 11, No. 6, pp. 619-632.
80. Rodríguez-Clare, A. (1996), "Multinationals, Linkages, and Economic Development", The American Economic Review, Vol. 86, No. 4, pp. 852-873.
81. Rugman, A. M. (1981), Inside the Multinationals: The Economics of Internal Markets, Columbia University Press.
82. Schumpeter, J. A. (1934), The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest, and the Business Cycle, Transaction Books, Piscataway, New Jersey.
83. Temouri, Y., Driffield, N. L., Añón Higón, D. (2008), "Analysis of Productivity Differences among Foreign and Domestic Firms: Evidence from Germany", Review of World Economics, Vol. 144, No. 1, pp. 32-54.
84. Wang, C., Hong, J., Kafouros, M., Wright, M. (2012), "Exploring the role of government involvement in outward FDI from emerging economies", Journal of International Business Studies, Vol. 43, No. 7, pp. 655-676.
85. Wooldridge, J. (2015), Introductory econometrics: a modern approach, Cengage Learning, Boston.

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APPENDICES

Appendix 1

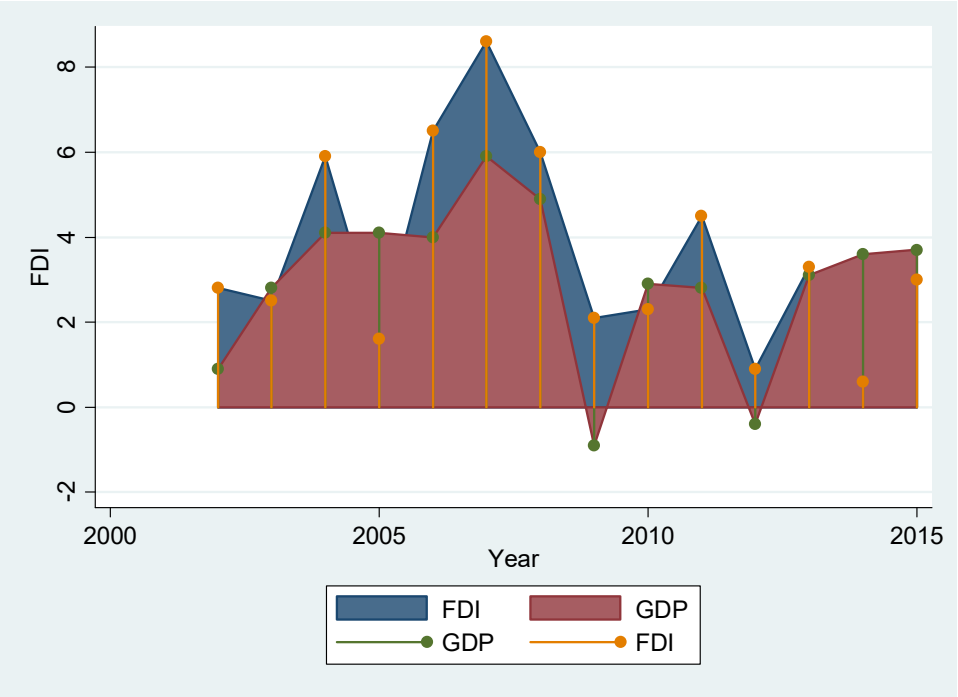
Summary Statistics on the productivity model

Productivity				
Variable	Mean	Std.Dev.	Min	Max
pfo	12.20862	17.71655	0	84.9
ftw	75.85862	103.3542	6.7	542.1
cu	76.45882	5.419416	63.2	89.8
rasg	10.65556	4.379657	2	20.9
aeg	9.563889	2.202227	5	14.3
alpg	1.974286	4.055305	-5.7	12.3
ptsexd	16.27931	14.31342	0.1	62.3
ptsexi	6.394828	5.319426	0.1	20.9

Source: Authors' work

Appendix 2

Gross Domestic Product versus Foreign Direct Investments



Source: Authors' work