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Impact of FDI on Trade and Technology Transfer in Belarus: Empirical Evidence and Policy Implications

Irina Kolesnikova, Irina Tochitskaya

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IPM Research Center
50Б Zaharova Street, 220088, Minsk, Belarus
Tel: +375 (17) 2 100 105
Fax: +375 (17) 2 100 105
E-Mail: research@research.by
http://www.research.by

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German Economic Team
c/o Berlin Economics
Schillerstr. 59
D-10627 Berlin
Tel: +49 30 / 20 61 34 64 0
Fax: +49 30 / 20 61 34 64 9
E-Mail: info@get-belarus.com
http://www.get-belarus.com

Impact of FDI on Trade and Technology Transfer in Belarus: Empirical Evidence and Policy Implications

Summary

Belarus officially welcomes foreign direct investment (FDI) and has undertaken several measures to attract them to the country. The policy has been taken on the ground that the incoming FDI brings about transfer of technology and managerial know-how, which will spill over to domestic firms, enhance their competitiveness and integration with the global economy. Using firm-level data on 2,000 domestic companies for the period 1998–2006, we investigate the impact of FDI on firms' exports and estimate whether foreign direct investment enhance productivity growth. We find that companies with foreign direct investments are less labor intensive and more capital intensive, and consequently more technologically sophisticated than domestic firms. However, we failed to reveal any evidence of positive spillovers of foreign investment to domestic firms. Despite the fact that firms with FDI on average export more than domestics ones, higher share of export is not associated with higher productivity of foreign firms, probably because exported foreign firms are concentrated in sectors producing rather unsophisticated goods. Consequently we suppose that current Belarusian policy toward FDI is unlikely to be optimal and needs improvement in investment climate, and elaboration of specific policy aimed at encouraging FDI that a) transfer expertise and technology; b) generate technological spillover and therefore improve the productivity of domestic firms; c) create an export platform.

Authors

Irina Kolesnikova   kolesnikovai@tut.by
Irina Tochitskaya   tochitskaya@research.by

Contents

1. Introduction

Belarus officially welcomes foreign direct investment (FDI) and has undertaken several measures to attract them to the country by creation of favorable conditions, e.g. adoption of the legislation, such as Investment Code, National Investment Promotion Programme for 2002–2010 and Annual Investment Programmes; building-up of six free economic zones and high tech park. In addition the National Investment Agency was renovated in 2006 for the purpose of promotion of FDI, reduction of bureaucratic formalities and streamlining them to one office according to the principle of one-stop-shop. The policy has been taken on the ground that the incoming FDI brings about transfer of technology and managerial know-how, which will spill over to domestic firms, enhance their competitiveness and integration with the global economy.

Despite the efforts Belarus still is lagging behind the most transition countries in the region in attracting foreign investment. Inward FDI stock amounted to USD 4.5 bn, which was 3.3 and 3.7 times less than Lithuania and Estonia respectively, and 1.2 times lower than Georgia. However, Government expects resumed privatisation programme that implies the privatization of 510 state-owned enterprises in 2008–2010 to provide additional impetus to FDI in Belarus. In this regard the important issue is related to the problem of attracting "proper" investors that produce a number of favorable economic effects on the Belarusian economy, in particular, taking into account the high level of trade openness (exports was over 67% of GDP in 2008), moves production into higher value-added sectors, increase national competitiveness, and facilitates exports.

Therefore, it is time to pay attention on the effects of FDI on domestic firms. The empirical analysis on the issue in Belarus is lacking, as existing studies focused entirely on determinants of FDI. Using firm-level data on 2,000 domestic companies this paper aims to fill in the gap estimating whether foreign direct investment supports the shift towards product innovation and investigating the export performance of enterprise with FDI. From the perspective of economic policy making it helps to shed a light on the problem of optimality of current Belarusian policy toward FDI. The paper is structured as follows: Section 2 investigates recent trends in FDI. Section 3 examines empirically the contribution of FDI to product innovation and exports. Final section draws the main conclusions and policy recommendations.

2. Recent trends in FDI in Belarus

Rapid growth of foreign direct investment has been recently observed in Belarus. Since 2005 the value of net FDI into Belarusian economy increased almost sixfold and reached USD 1.8 bn in 2007 (see Table 1). Over the last three years, FDI as a share of GDP grew from 7% to 10.0%, and as a ratio of gross investment – from 3.8% to 12.9%. FDI inflow continued to rise in 2008 as the country concluded additional banking sector and commercial deals, the government projected that it would reach USD 2.5 bn. The efforts has been making to improve the investment climate and encourage inflow of foreign capital, e.g. the acquisition and sale of land was eased, the tax burden was reduced and there is intention of its further cut down, the government set the target to appear among top 30 countries with the best condition of doing business, golden share was cancelled, the privatization programme was resumed, and it was announced that 519 state-owned enterprises would be sold in 2008–2010, of which 176 in 2008, 219 – in 2009, 130 – in 2010. It should be mentioned, however, that privatization target for 2008 was not met and the level of FDI in the next two years is uncertain as financial crisis combined with economic slowdown could adversely affect the capacity and willingness of foreign firms and banks to invest abroad.

Table 1: FDI inflow, USD m

	2005	2006	2007	2008 (January-September)
FDI flow	305	354	1772	2016.8
as a percentage of gross fixed capital formation	3.8	3.2	12.9	--
FDI stock	2382.8	2734.3	4508.2	6568.3
as percentage of GDP	7.0	7.4	10.0	15.0

Source: World Investment Report 2008, National Bank of Belarus, own calculations.

It should be mentioned that sharp growth of the share of FDI in gross investment and GDP didn't have a significant impact on macroeconomic indicators and socio-economic development due to factors that contributed to increase of the inflow. Most of the net inward FDI was associated with equity capital that amounted 80.4% in 2007 (77.4% in January-September 2008), reinvest earning constituted 10.5% (12.6% in January-September 2008), and intra-company loans was 9.1% (10% in January-September 2008). As it is reported in table 2 equity capital inflow, in particular, was responsible for the sharp increase in FDI in 2007 (505% yoy). Yet, the inflow of foreign direct investments to equity capital in 2007 did not seem to have been affected by more attractive investment climate or introduction of new promotional measures as it was mainly linked to two deals, i.e. the selling of the government share at the statutory fund of mobile operator Velcom, and obtaining the first tranche of money (USD 625 m) from largest Russian TNC – Gasprom, who has been acquiring 50% of Beltrasgas, gas pipeline network company, according to this deal money should come in equal shares over 2007–2010. And what is more, in 2008 the FDI to the equity capital was explained by second tranche from Gasprom and sale of state-owned mobile operator "Best" to Turkish investors. It raises a concern that current investment regime in Belarus is not likely to have a significant impact on FDI inflow.

Table 2: FDI flow by type of investment, USD m

	2004	2005	2006	2007	2008 (January-September)
FDI	169.7	305	354	1772.2	2016.8
Equity capital	125.9	281.1	304.9	1425.5	1561.2
of which to banking sector	12.4	2.2	7.1	86.7	288.3
Reinvest earning	23.9	32.5	58.4	185.2	253.2
Intra-company loans	19.9	-8.7	-9.3	161.5	202.4

Note. FDI flows with a negative sign indicate an instance of reverse investment or disinvestment.
Source: National Bank of Belarus.

It should be mentioned that FDI performance in Belarus is significantly below potential. Despite the increment of foreign direct investments, Belarus has been lagging behind most countries in the region in attracting FDI, and the level of foreign direct investment per capita is still far below most of other transition economies. According to UNCTAD FDI Performance Index, which measures the foreign direct investments received by country relative to the size of its economy, Belarus rank was the lowest in the region in 2006 (Table 2). The rank was changed in 2007 but still was inferior and two times lower than for FDI Potential Index, while for instance Ukraine, Moldova and Latvia performed even better their potential.

Table 3: Country rankings by Inward FDI Performance Index,
Inward FDI Potential Index

	FDI performance index		FDI potential index	
	2006	2007	2005	2006
Belarus	125	95	50	48
Czech Republic	34	41	39	39
Latvia	33	31	43	42
Lithuania	52	53	40	38
Moldova	27	19	83	79
Poland	51	60	44	43
Russia	82	81	23	20
Ukraine	37	35	48	44

Source: World Investment Report, UNCTAD.

The UNCTAD Transnationalization Index that is calculated as average of the four shares, i.e. FDI inflows as a percentage of gross fixed capital formation for the past three years, FDI inward stocks as a percentage of GDP, value added of foreign affiliates as a percentage of GDP, and employment of foreign affiliates as a percentage of total employment, sheds a light on host-country production activity associated with FDI. This index shows that Belarus was the one of the least transnationalized of the transition economies. The value of index was 3 for Belarus that was four times less than for Russia, almost 6 times less than for Moldova and 7.5 times less than for Ukraine.

There are three broad sectors of FDI inflow: infrastructure, i.e. gas pipeline network, and communication; manufacturing; services. Infrastructure was the main recipient of FDI in 2007 and January-September 2008. Most significant was the growth of the share of banking sector in FDI that rose from 2% in 2006 (6% in 2007) to 14.3% in January-September 2008.

Over the nine months of 2008 the CIS accounted for 50.2% of the net FDI inflow, contributing USD 1,012 mln (44.5% or USD 787 mln in 2007). Russia (43.9% or $777.9 mln in 2007) is the main investment partner of Belarus in the region. Non-CIS states accounted for 49.8% of the total FDI, contributing USD 1004.7 mln (55.5 % or USD 981.9 mln in 2007). The largest non-CIS investors are Switzerland, Cyprus and Germany.

There is some evidence of economic impact of FDI on exports due to the fact that firms tend to export greater share of their output than local counterparts, e.g. in China exports of foreign affiliates have risen significantly and comprised almost half of total exports. The share of Belarusian enterprises with foreign investments in total exports increased from 18.8% to 19.8% over 2004–2007 (Table 4).

Table 4: Economic performance of enterprises with foreign investments

	2004	2005	2006	2007
Number of enterprises as of end of year, entities	3457	3545	3818	4218
joint	1841	1903	2091	2327
foreign	1616	1642	1727	1897
Exports of goods, USD m.	2582	3334	4789	4809
joint	1656	1707	2136	2183
foreign	926	1627	2653	2626
Imports of goods, USD m.	3705	4879	7381	8682
joint	1926	2037	2810	3173
foreign	1779	2842	4571	5509
Sales of goods and services at the domestic market, USD m.	2403	3001	7294	9062
joint	1033	1146	1421	1767
foreign	1370	1855	5873	7295

Source: National Statistical Committee.

Thus, at first glance, FDI positively contributes to increasing exports. However, business activity of the enterprises with foreign investments became more internal market-oriented, as the ratio of the sales of goods and services at the domestic market to exports grow from 0.93 in 2004 to 1.9 in 2007. In addition, FDI led to rise in imports of enterprises with foreign investments (2.3 times in 2004–2007), the share of which in total imports increased from 22.6% in 2004 to 30.3% in 2007. Moreover the exports/imports ratio of these enterprises fell from 0.69 to 0.55 over 2004–2007, in other words, only 55.4% of imports was paid for by exports in 2007.

In the next section we examine whether FDI facilitate export and lead to productivity spillovers from foreign to domestic firms, review the role of FDI in development of indigenous capabilities and identify a contribution to technology transfer

3. Impact of FDI on Technology Transfer in Belarus

Attracting foreign direct investment (FDI) has become an important element of economic and industrial development strategies for many transition countries. There are several reasons why many policy makers believe that FDI is beneficial to their country. A first reason is the need for strategic restructuring in firms, because the most of them in the beginning of the transition were characterised by obsolete machinery and outdated technology. Foreign firms have the technological know-how and finance necessary to carry out such restructuring. Besides, foreign participation in domestic firms can impose efficient corporate governance in privatized firms. Thus, direct effect of FDI on firms' productivity can only be made if the investor has an advantage over local firms in technology or managerial techniques. As a result, firms with FDI should usually be more productive than domestic. This prediction is supported by plenty empirical studies conducted both for developing and developed countries.[1] A second reason why foreign

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[1] See Lipsey (2004) for overview.

investors are invited to transition countries is based on the belief that they generate positive spillovers to the domestic firms through a transfer of know-how and technology. These spillovers can take place first of all through accelerated diffusion of new technology (demonstration effect and transfer of technologies to domestic suppliers) and through labor turnover between foreign-owned and domestic firms.[2]

However, the positive externalities generated by FDI will vanish if the increased competition from foreign firms brings about shrinkage of the production of the domestic firms, which leads to their lower productivity or exit (so-called 'market stealing effects'). In this case a negative competition effect may dominate a positive technological spillover effect. That is why increasing number of research studies that examine FDI spillover effects produces mixed results. For example, among the 42 studies on horizontal productivity spillovers of FDI in developed, developing, and transition economies summarized in Gorg and Greenaway (2004), only 20 studies report unambiguously positive and significant results. Furthermore, for transition economies, only one out of the 8 studies discussed obtains positive and significant FDI spillover effects, using cross–section data.

This paper attempts to evaluate both direct and indirect effects of FDI on firms in Belarus using two data sets. The first one is based on the reported company accounts of more than 2,000 incorporated firms in the manufacturing sector and are obtained from the National Statistical Committee of the Republic of Belarus. Only the so-called "closed" enterprises (mostly in defense industry) are excluded from this data set. The data cover the years of 1998–2006. This data set confidentiality has to be preserved. The data contains detailed information on employment, sales, fixed asserts, export and new product. In study we use two-digit NACE industrial classification (from 15 to 37). Each enterprise has an ownership code, but more detailed data on ownership structure were retrieved from the State Register of Economic Entities. It allows for distinguishing explicitly between private domestic investors and foreign investors. Foreign firms are defined as firms where a positive fraction of the shares is owned by a foreign investor. In addition, the data on the regional location of enterprises are available in the database. These data have been thoroughly treated to eliminate inconsistencies and improve missing longitudinal linkages because of change of firm identifier from one year to the next (for example, related to reorganizations and changes of legal form). To deflate output we use PPP indices specific for every enterprise, computed using data on output in comparable and actual prices for every year. Capital deflators were obtained by calculation revaluation coefficients for every enterprise. The data are unbalanced panel data.

We follow Konings (2000) and Yudaeva (2005) and estimate a log-linear production function at the firm level to test whether foreign firms perform better than domestic ones. Our results presented in Annex (Table 1) show that companies with foreign direct investments are 1.3 times more productive than domestic firms.[3] Besides, firms with FDI are less labor intensive and more capital intensive. Labor intensity in firms with FDI is about 20 percentage points lower and capital intensity is almost 10 percentage points higher than those of domestic firms. This may occur due to 1) inadequate capital evaluation, 2) obsoleteness of the capital stock. But in any case it means higher technology sophistication of foreign firms.

To measure spillover (indirect) effects of firms with FDI on domestic ones we constructed two indicators of density of firms with FDI: 1) the share of labor employed in firms with FDI in total labor employed in a given year and 2-digit NACE sector; 2) the share of output accounted for by foreign firms in total output at the sector level in a given year. Both measurers are weighted by foreign share in capital. These measures of foreign presence are standard in literature. They allow us to study horizontal spillovers, i.e. those to enterprises within the same industry. Since we use two-digit industries to define sectors, these measures also capture some vertical spillovers, i.e. those to enterprises in upstream industries. The results of estimations of FDI density by industries are presented in Annex (Table 2).

On average, density of firms with FDI is 4 percent for labor and 6 percent for output. It is interesting to note, that the same measures, calculated for Russia and Ukraine are about 1.5 higher despite the exclusion firms with FDI from CIS countries. There is strong correlation[4] be-

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[2] See, for example, Aitken and Harrison (1999).
[3] In panel regression with firm fixed effects efficiency premium is extremely high and positive.
[4] The coefficients are about .80 or higher.

tween two measures of FDI DENSITY in Belarus. In this paper we report results of regressions only for FDI DENSITY, calculated for labor shares as results of regressions with alternative measure (shares of output) are similar.

Box 1: Methodology

1. We begin by estimating a Cobb-Douglas production function, including a dummy variable for firms with foreign participation and allowing the factor shares to vary between domestic and foreign firms.

$$\ln Y_{it} = \alpha_i + \alpha_1 \ln L_{it} + \alpha_2 \ln L_{it} * FDI_i + \alpha_3 \ln K_{it} + \alpha_4 \ln K_{it} * FDI_i + \alpha_5 FDI_i + \varepsilon_{it} \qquad (1)$$

where subscript i stands for firm i, subscript t for year t, Y_{it} is the annual gross value of output in constant 1998 price (deflated with PPP indices – specific for every enterprise); K_{it} is the gross value of fixed capital stock in constant 1998 prices (deflated with revaluation coefficients, computed for every enterprise); L_{it} are average annual number of employees; FDI_i is the dummy variable for foreign enterprises; $a_1 – a_5$ are estimated parameters and ε_{it} is the error term.

This simple specification allows us to compare productivities and factor intensities of domestic firms and those with foreign capital.

2. FDI density for output is calculated according following formula:

$$FDI\_Density = \frac{\sum_{jt}(Y_i * FS_i)}{\sum_{jt} Y_i} \qquad (2)$$

where Y is output of firm i in year t, FS is the share of foreign ownership of firm i in year t that ranges from 0.1 to 1. *FDI_density* measures the weighted output of firms with foreign capital relative to the total output in a given sector (*j*) at year (*t*), so *it* calculated separately for each sector–year. The measure of FDI density for labor is calculated by analogy.

3. To capture spillovers to domestic firm from foreign participation we proceed using the following specification

$$\ln Y_{it} = \alpha_i + \alpha_1 \ln L_{it} + \alpha_2 \ln K_{it} + \alpha_3 FS_i + \alpha_4 FDI\_Density_{jt} + \alpha_5 FS_i * FDI\_Density_{jt} + \varepsilon_{it} \quad (3)$$

$$\ln Y_{it} = \alpha_i + \alpha_1 \ln L_{it} + \alpha_2 \ln K_{it} + \alpha_3 FS_i + \alpha_4 FDI\_Density_{jt} + \alpha_5 FS_i * FDI\_Density_{jt} + \alpha_6 ES_i + \alpha_7 ES_i * FS_i + \varepsilon_{it} \quad (4)$$

where *FDI* is the share of foreign ownership in capital of firm *i* (from 0.1 to 1); ES_i is the share of export in sale of firm *i*.

We run regression using the General Methods of Moments technique (GMM) with Instrumental Variables as developed by Arellano-Bover (1995)/Blundell-Bond (1998) for estimating dynamic panel data (System GMM). This technique allows us to control for potential endogeneity of explanatory variables (factor inputs, foreign ownership and spillovers). This method estimates a system of equations in levels and first differences using as instruments, respectively, lagged first differences and lagged levels of endogenous variables. The results are presented in Annex (Table 3).

To test whether there exist spillovers from FDI to local firms we run regression using specifications 3 and 4 from box "Methodology", which allow us to reveal influence of foreign firms' entry on productivity of local firms.

The results of System GMM panel estimation show, that the effect of foreign ownership is statistically insignificant, albeit positive.[5] It means, that share of foreign ownership in capital is not associated with higher total factor productivity (TFP) and TFP growth on average. This may occur due to two reasons: 1) foreign capital tends to flow to sectors where domestic firms are more productive, 2) a lot of companies with foreign share in capital are owned by Russians, but technological level and managerial quality in Russia and Belarus are roughly equal. The last reason is probably also responsible for insignificant spillover effects of foreign firms on performance of domestic ones in all specifications. Besides, insignificant spillover effects could be explained by low FDI density in majority of industries. It is possible that the effects of FDI on domestic firms change as FDI accumulate. As more foreign capital flows in, foreign firms may become more inclined to introduce more advanced technologies. This may happen for a number of reasons. Foreign firms may become more familiar with local conditions, and, therefore,

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[5] These results suggest that endogeneity may have been important in driving some of the results in the fixed effects regression. The Sargan test and the second order serial correlation test in column (3) all indicate that the model is correctly specified.

more confident in bringing in more advanced technologies. Competition among foreign firms themselves may create additional incentives to use the most recent technologies. They may also become more familiar with local producers and trust them with production of more sophisticated components[6].

Besides, as stated in economic literature spillovers depend on the absorptive (learning) capacity of local firms, with small gaps encouraging spillovers and large gaps inhibiting them. Moreover, studies suggest increasing importance of additional factors within the host country to support TFP- and growth-enhancing ability of FDI. These factors include financial development, legislation, property rights, human capital availability, etc. and lies behind the countries absorptive capacity for foreign investment.

The interaction effect between foreign firms and spillovers is no statistically significant in all specifications, which means that foreign firms do not benefit from other foreign firms in their sector because of lack of competition effect.

One more finding of our estimations is that export-oriented foreign firms do not perform better.[7] Moreover, the more foreign firms export the less they are productive in compare with foreign firms, operating on domestic market.[8] This unexpected finding could be explained by the fact that exported foreign firms are concentrated in sectors producing rather unsophisticated goods.

4. Conclusions and policy implications

This paper studied the effects of FDI on performance of industrial enterprises in Belarus.

Plenty empirical studies confirm that firms with FDI are usually more productive than domestic ones. However, direct effect of FDI on firms' productivity can only be made if the investor has an advantage over local firms in technology or managerial techniques.

We find that companies with foreign direct investments have higher technology sophistication. They are 1.3 times more productive, less labor intensive and more capital intensive than domestic firms, thus, for example İabor intensity in firms with FDI is about 20 percentage points lower and capital intensity is almost 10 percentage points higher than those of domestic firms. Yet, it worth a mention that higher productivity of foreign firms mainly derives from the fact that they are concentrated in most productive sector of the Belarusian economy (petroleum products, publishing, tobacco products).

However, we find no evidence of positive spillovers of foreign investment to domestic firms, probably because a lot of companies with foreign share in capital are owned by Russians, but technological level and managerial quality in Russia and Belarus are roughly equal.

The lack of spillover effects could be explained by low FDI density in majority of industries. It is possible that the effects of FDI on domestic firms change as FDI accumulate. Besides, spillovers depend on the learning capacity of local firms, technological capabilities at the country level, human capital availability, financial development and institutional quality (legislation, property rights, etc.), which create countries absorptive capacity for foreign investment.

The fact that foreign firms do not interact and benefit from each other testify to absence of competition among them that hampers not only firms' but also economy-wide productivity growth.

In addition, FDI failed to create new export platform in Belarus, as exported foreign firms are concentrated in sectors producing rather unsophisticated goods. Moreover, they do not perform better than domestic enterprises, and the more foreign firms export the less they are productive in compare with foreign firms, operating on domestic market.

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[6] In any case, this finding (the absence of productivity spillovers from foreign ownership) is in agreement with most of the recent empirical literature on FDI spillovers.
[7] The coefficients are insignificant.
[8] The coefficients on interaction effect between foreign firms and share of export is negative in both specifications, however, the second order serial correlation test suggests that the GMM model is not correctly specified in terms of the dynamics.

Consequently we suppose that current Belarusian policy toward FDI is unlikely to be optimal and needs improvement in investment climate. First and foremost Belarus should steps up efforts to attract foreign direct investments and accumulate their stock sufficient enough to create positive effect on economy and generate competition effect. Second, there is a need in elaboration of specific policy aimed at encouraging FDI that a) transfer expertise and technology; b) generate technological spillover and therefore improve the productivity of domestic firms; c) create an export platform. Third, to attract FDI to more sophisticated sectors and to enhance absorptive capacity of domestic firms, quality of market institutions and legislative environment should be improved in Belarus significantly.

References

Aitken, B., and Harrison, A. (1999). Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela, *American Economic Review*, 89, 3, 605–618.

Blundell, R., Bond, S., (1999). GMM Estimation with Persistent Panel Data: an Application to Production Functions. The Institute for Fiscal Studies. *Working Paper series* no. w 99/4.

Gorg, H., and Greenaway, D. (2004), Much Ado about nothing? Do Domestic Firms Really Benefit from Foreign Direct Investment? *The World Bank Research Observer*,19 (2), 171–197.

Konings, J. (2001). The Effect Of Direct Foreign Investment on Domestic Firms, *Economics of Transition*, 9(3), 619–633.

Lipsey, R. (2004). Home- and Host-Country Effects of Foreign Direct Investment. In: Baldwin R., and Winters, A. (Eds.). *Challenges to Globalization*, Chicago: University of Chicago Press.

Lipsey, R. and Sjoholm, F. (2005). The Impact of Inward FDI on Host Countries: Why Such Different Answers. In: Moran, T., Graham, E., and Blomstrom, M. (Eds.) *Does Foreign Direct Investment Promote Development*. Institute for International Economics.

Yudaeva, K. and Tytell, I. (2005). The Role of FDI in Eastern Europe and New Independent States: New Channels for the Spillover Effect. *Mimeo*.

Annex

Table 1: Direct Effect of FDI: Static Specification

Dependent variable: Log Output	Panel estimation with firm fixed effects[1]
Log Employment	0.992*** (0.0933)
Log Employment* FDI	-0.196** (0.071)
Log Capital	0.312** (0.026)
Log Capital* FDI	0.096* (0.038)
FDI	1.311*** (0.456)
Number of observation	17612
R^2	0.768

Notes. Clustered standard error in brackets.
[1] Year dummies are included, *significant at 10%, **significant at 5%, ***significant at 1%.
Source: own calculations.

Table 2: FDI Density by Industries

Industrial Sector	NACE 1.1	FDI Density (labor)	FDI Density (output)
Foods and beverages	15	0.03	0.03
Tobacco products	16	0.09	0.16
Textiles	17	0.02	0.03
Apparel	18	0.05	0.09
Leather	19	0.11	0.19
Wood and wood products	20	0.06	0.07
Paper	21	0.01	0.01
Publishing	22	0.13	0.20
Coke, Petroleum Products	23	0.13	0.17
Chemicals	24	0.01	0.02
Rubber and plastics	25	0.05	0.11
Other non-metals	26	0.02	0.02
Basic metals	27	0.03	0.03
Metal products	28	0.03	0.10
Machinery	29	0.01	0.01
Office equipment	30	0.08	0.22
Electrical equipment	31	0.00	0.01
TV and Radio Sets, and equipment	32	0.00	0.00
Precision instruments	33	0.07	0.18
Motor vehicles	34	0.01	0.02
Other transport equipment	35	0.01	0.00
Furniture	36	0.05	0.09
Recycling	37	0.01	0.00
Total	--	0.04	0.06

Source: own calculation.

Table 3: FDI spillover effect

Dependent variable: Log Output	Panel estimation with firm fixed effects[1]		System GMM estimation[2]	
		With export share		With export share
Lagged Log Output			1.310*** (.317)	.768* (.317)
Log Employment	0.857 *** (0.054)	0.887*** (0.061)	1.419** (.637)	-.324 ** (.139)
Log Capital	0.314*** (0.019)	0.222*** (0.015)	1.062** (.427)	.967 (.591)
Foreign share	0.729 *** (0.185)	0.680 *** (0.244)	6.526 (4.434)	2.681 (7.991)
FDI Density	0.499 (0.446)	0.078 (0.779)	2.743 (2.945)	6.865 (9.826)
FDI Density x For share	-2.014 (1.727)	-0.405 (2.068)	-19.626 (36.583)	-20.571 (116.588)
Exp share		0.112 (0.075)		5.163 (6.012)
Exp share x For share		-0.455* (0.194)		-.0100 (3.987)
R2 within	0.725	0.709		
Arellano-Bond test for AR(2)			Pr > z = 0.299	Pr > z = 0.005
Sargan test			Prob > chi2 = 0.148	Prob > chi2 = 0.345
Number of observations	17612	16369	14756	13120

Notes. Clustered standard error in brackets. [1] Year, sector and region dummies are included, [2] Year dummies are included, * significant at 10%, ** significant at 5%, *** significant at 1%.
Source: own calculation.