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ARE THERE POSITIVE OR NEGATIVE SPILLOVERS FROM FOREIGN-OWNED TO DOMESTIC FIRMS?

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It is a conventional wisdom that FDI has a substantial impact on the economy of the host country. However, whether this impact is positive depends on the specific environment of each particular country. If in some countries the presence of FDI stimulates domestic production, in others FDI-firms may crowd out domestic enterprises. The former effect occurs because Joint Ventures possess advanced technologies which can be imitated, and the latter is due to increase in competition. The task of this paper is to examine if there are any spillovers from FDI-firms to the domestic firms in Russia. Cross-section and panel data approaches are used in order to analyze this problem. The main finding is that there is positive influence of FDI-firms on the domestically owned establishments, that is Russian enterprises benefit from the presence of FDI.

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Прямые иностранные инвестиции, приходящие в некоторую страну, оказывают существенное влияние на ее экономику. Однако характер этого воздействия сильно зависит от специфических особенностей, характерных для каждой отдельно взятой страны. Если в некоторых случаях, описанных в экономической литературе по данной тематике, присутствие прямых иностранных инвестиций стимулирует отечественное производство, то в других случаях совместные предприятия вытесняют отечественные фирмы с рынка. Первый эффект может возникать оттого, что совместные предприятия обладают современными технологиями, которые могут быть сымитированы отечественными предприятиями. Второй эффект может иметь место по причине увеличивающейся конкуренции. Основная цель данной работы - исследовать положительное или отрицательное воздействие оказывает присутствие прямых иностранных инвестиций на производство отечественных фирм в России. Проведенный эмпирический анализ показывает, что существует положительный эффект от присутствия прямых иностранных инвестиций на производительность российских предприятий.

ISBN

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1. Introduction

With the beginning of the economic transition, Russian economy has become more open to Foreign Direct Investment (FDI), and flows of FDI have somehow influenced the economy of the country. A reasonable thing to ask is whether the existence of FDI-firms in the industry or region affects the output of the domestic firms in the same industry or region. (Here and later FDI-firms mean enterprises with more than 10% of foreign ownership.)

Policymakers try to attract foreign investors to their countries because they believe that FDI generates positive externalities or spillovers to the domestic firms through a transfer of know-how and technology. The following channels for such externalities are possible:

1) Domestic firms may benefit from new products and production processes introduced by foreign firms via accelerated diffusion of new technology. This could occur because of labor turnover or through imitation.
2) The foreign entry disturbs an existing market equilibrium and gives domestic firms an incentive to protect their market share and profit.

Both of these changes may cause various type of spillovers that lead to productivity increases in local firms. Spillovers from FDI-firms can take place in the foreign affiliate's own industry as well as among the affiliate's suppliers or customers in other industries. Recent studies of spillovers from FDI-firms suggest that spillover effects may be significant, but they are not guaranteed. These effects depend on host country and host industry characteristics as well as the policy environment in which the multinationals operate.

Unfortunately, spillovers are not always positive. For example, in the case of imperfect competition the market share of the domestic firm can be reduced by

FDI. This can even lead to the exit of the domestic firm from the market. Another aspect shown by Kokko (1994) and Borensztein, De Gregorio and Lee (1998) is that positive FDI spillovers can only be generated if the technology gap between foreign firms and domestic ones is not too large and if there exists a minimum threshold of human capital in the host country.

The results of empirical studies for FDI impacts in different countries are substantially different. For example, positive influence is found in Australia (Caves (1974)), Canada (Globerman (1979)), Mexico (Blomstrom and Persson (1983)), Indonesia (Blomstrom and Sjoholm (1999)). Negative spillovers are found in Venesuela (Aitken and Harrison (1999)), Romania and Poland (Konings (1999)).

This paper considers the case of Russia as a large country with many regions and industries, with its specific economic and political environment hardly comparable with other countries. Our task is to investigate if there are any spillovers from FDI-firms to the domestic ones on the industry level or on the regional level in Russia. If some spillovers exist an additional task is to determine their sign.

The paper is organized as follows: section 2 presents the literature review, section 3 describes the Data Base used and produces the model, section 4 provides the results and section 5 concludes.

2. Literature review

A lot of studies concerning the impact of FDI on productivity of domestic firms have been made. Some studies estimate direct productivity spillovers for developing countries, the others do it for developed ones. Former generally produce more ambiguous results than the latter. In particular, a number

of studies for developing countries show that a foreign presence leads to higher productivity of domestic enterprises, while some studies find no significant spillovers or sometimes even negative spillovers.

For the countries in transition one of the reasons why FDI is so attractive is the need for deep restructuring in firms. Wallner (1998) showed theoretically that if transition economy is characterized by soft budget constraints, FDI might be useful in achieving this goal. The presence of foreign investors gives policymakers some incentives to reduce subsidies to firms and eventually causes firms' restructuring.

Another important reason why foreign investors are invited to the home countries is due to the fact that FDI can generate positive spillovers to the domestic firms through a transfer of know-how and technology. However, such spillovers can be not only positive but also negative. For example, in the case of imperfect competition on the product market FDI can cause a substantial reduction of the market share of the domestic firm and eventually can lead to exit of the domestic firm from the market. Kokko (1994) and Borensztein, De Gregorio and Lee (1998) showed that positive FDI spillovers are only generated if the technology gap between foreign firms and domestic ones is not too large and if there exists a minimum threshold of human capital in the host country. Empirically positive spillovers are found in Australia (Caves (1974)), Canada (Globerman (1979)), Mexico (Blomstrom and Persson (1983)) and Indonesia (Blomstrom, Sjoholm (1999)). No spillovers are found in Morocco (Haddad and Hendersson (1993)). Negative spillovers are found in Venesuela (Aitken, Harrison (1999)), Romania and Poland (Konings (1999)).

Many results concerning spillovers from FDI suggest that spillover effects are not automatic. They are affected by various economic and technological

factors. The economic literature indicates an existence of some factors that determine an ability of domestic firms to benefit from FDI. Findlay (1978) constructs a dynamic model, which explains how technology transfers through FDI from developed to developing countries. Findlay and Gerchenkron (1952) formulate their catching-up hypothesis of a positive connection between the distance to the world's technological frontier and the rate of economic growth. According to this hypothesis, the wider the technology gap between a developed and a developing country is, the larger the potential for technological imitation will be. This potential will accelerate economic growth. However, as it was mentioned, the large technology gap may also constitute an obstacle to spillovers. Technologies developed in the highly developed countries may be more difficult to apply for conditions in developing countries, which could prevent technology spillovers.

Wang and Blomstrom (1992) construct a model of strategic interaction between FDI-firms and the domestic enterprises which not only uses Findlay's assumption of a positive relationship between the technology gap and spillovers, but also stresses the importance of competition. If the FDI-enterprises face strong competition from domestic firms, they have to bring in more advanced technology from the parent country in order to remain their market shares. The conclusion is that the tougher the competition is, the larger the potential spillovers will be.

Aitken and Harrison (1999) study situation in Venezuela. The finding is that the productivity of domestically owned plant declines when foreign investment increases. This suggests a negative spillovers from foreign to domestic enterprises, which is interpreted as a market-stealing effect.

It was also studied if there are regional spillovers in Venezuela. This time the authors conclude that there is no empirical support for the hypothesis that technology is transferred locally from joint ventures to domestically owned firms.

The paper by Blomstrom and Sjoholm (1999) studies effects of the presence of FDI in Indonesia. The authors received positive and statistically significant coefficient measuring industry spillovers. This suggests that domestic establishments benefit from the presence of foreign establishments in the same industry. It was also found that spillovers were restricted to non-exported local firms, probably because export-oriented firms already face competitive pressure from the world market. This suggests that technology spillovers are mainly a result of increased competition. Sjoholm (1997) examines the effect on productivity of FDI by using detailed micro data from Indonesian manufacturing sector. The results suggest that FDI benefits locally owned establishments. The effect differs among groups of industries. Spillovers from FDI are found in sectors with a high degree of competition. The result shows that the degree of competition affects the choice of technology transferred to multinationals' affiliates and, hence, the potential for spillovers.

Konings (1999) uses firm level panel data to investigate empirically the effects of FDI on domestic firms in Bulgaria, Romania, Hungary and Poland during the 90s. He found that in all countries the effect of technological spillovers at the sector level is negative. However, it was found to be statistically significant only in Romania and Poland. In the case of transition economies this 'business stealing' effect might be rationalized by the fact that domestic firms have been mostly privatized by insiders who often block restructuring and hence do not respond to competitive pressure from foreign firms.

The advantage of panel data approach is that it allows to control for potential endogeneity bias, which arises because foreign investors are usually attracted to better firms and sectors. Comparing the magnitude of the negative regional spillovers across the four countries, the author finds that these spillovers are especially important in the less advanced transition countries of Bulgaria and Romania. This may be explained by the presence of soft-budget constraints: when they are present local firms do not have an incentive to improve their efficiency.

3. Data and Model:

Data used are panel data from the following Russian databases: Registry of Joint Ventures, RERLD, (database on Russian establishments) and Regional database. Registry of Russian Joint Ventures contains statistical information about economic activities of approximately 28000 Russian JVs in 1992-1997. Among them nearly 8000 are production enterprises. The information is reported by firms. RELRD database contains data on economic performance of about 45000 Russian production enterprises in 1992-1997. This information is also provided by firms. Regional database contains extent information about 79 administrative regions of Russian Federation concerning population, education, economic activity etc.

Description of the sample used in regressions:

1) Panel-data set contains observations for years 1993-1997 (year 1992 was excluded because many observations for this year are not available).

2) In regressions only enterprises with permanent employment from 5 to 1000 people are used. Large firms are excluded from the consideration to avoid bias in the estimation since in Registry of Joint Ventures the majority of

firms are small establishments while in RERLD the number of large plants is considerable (summary statistics are presented in Appendix).

3) 4-digit industries are considered in the regressions (the fifth digit in the five-digit industry code is unavailable for most observations in the database). Descriptive statistics of the data set are presented in Appendix. Following Brown and Earl (2000), we estimate the trans-log production function. This production function allows to take into account economies of scale that can take place at the firm level. It also reflects the production process of the Russian firms quite well. The basic specification of the trans-log production function

is:

$$lout_i = b_0 + b_1 * lemp_i + b_2 * lcap_i + b_3 * (lemp_i)^2 + b_4 * (lcap_i)^2 + b_5 * lemp_i * lcap_i + b_6 * fdi_i + b_7 * spill_j + e_i$$

There are additional regressors to be included in regression :

1) *export dummy and export dummy*spill*

2) spillR

*3) education, education*spill*

4) economic reform progress index ,

*economic reform progress index*spill*

where subscript i is used for firm i , subscript j is used for industry j,

lout denotes logarithm of total output in rubles,

lemp is a logarithm of employment (total number of permanent employees)

lcap is a logarithm of a proxy for capital (the beginning of year value of fixed assets used in industrial production),

fdi is a dummy variable taking the value 1 for establishments with foreign ownership and 0 otherwise,

spill measures the sector level spillovers that arises from foreign investment in a given industry and is constructed as the share in total output of the output in this industry (at 4-digit sector level) accounted for by the foreign firms.

spillR measures spillovers that arise from foreign investment on the industry and the region levels and is constructed as the share in total output of the output in industry in the particular region accounted for by foreign firms.

export dummy is a dummy variable with value 1 if the export-share of the output in 4-digit industry is greater than 30% and 0 otherwise.

economic reform progress index is an index, constructed as a sum of regional characteristics with signs, depending on what effect on reforms the increase in a corresponding variable has. The following characteristics are used: growth in the number of enterprises, share of private enterprises in trade, proportion of goods and services with regulated prices, degree of regulation of food prices, number of small businesses per capita, share of private, federal and regional investment in total.

education is a variable measuring the level of education in region (demeaned percentage of population in the region with at least secondary education).

e is an error term.

4. Results

In this section the results for cross-section and panel data estimations are presented. As it was indicated in the previous studies (for example, Aitken and Harrison (1999)) the results for these estimations may differ each other significantly: panel–data approach allows to take into account firm specific effects while cross-section approach does not. This difference is due to self-

selection bias. In order to determine the direction of this bias both types of estimations are needed.

The section is organized as follows. Part 1 produces cross-section results, while part 2 presents and discusses the results of panel-data approach.

4.1 Cross-section estimation

This part provides regressions for year 1996. We choose this year for cross-section estimation because this year's variable which is a good proxy for capital has the smallest number of missing values at least for the joint ventures. However, estimations for other years (1993-1995, 1997) were also done and results for them and the results for the year 1996 are very similar, which means that the results for year 1996 are quite representative.

The trans-log production function

$$lout_i = b_0 + b_1 * lemp_i + b_2 * lcap_i + b_3 * (lemp_i)^2 + b_4 * (lcap_i)^2 + b_5 * lemp_i * lcap_i + e_i$$

was estimated. These specification allows to take into account economies of scale that can take place at firms. The results of the estimation are presented in table 1 column 'regression 1'.

The next step is to add dummy variable *fdi* that controls for foreign ownership and equals 1 for the firms with the share of foreign capital more than 10 % (Detailed analysis of the productivity of FDI-firms versus domestic enterprises can be found in the paper of Melentieva (2000)). Moreover, we also add variable *spill* which is responsible for the reaction of firm's output on the increasing share of FDI-firms' output in a given industry. The results of estimation of the model in this specification are shown in table 1 column 'regression 2'. The coefficient with respect to *spill* is negative and significant.

The negative sign of this coefficient indicates that domestic enterprises become worse off when the share of foreign presence in industry increases.

This analysis does not take into consideration the fact that enterprises belong to different industries which differ significantly in Russia. To control to some extent for industry specific effects we include into regression 2-digit industry dummies. In table 2 the results for regressions with industry dummies are presented.

If we look at the coefficient with respect to *spill* in column 'regression 4', we can see that the foreign presence in 4-digit industry negatively affects the output in that industry. The negative coefficient at *spill* in all cross-section regressions may be explained by so called market-stealing effect, which means that high competition among domestic and foreign affiliates leads to decrease in output of domestic enterprises. However, there is another explanation of the negative spillover effect. We can obtain the negative coefficient with respect to *spill* because of self-selection bias. FDI in Russia may go to the less productive industries (for example, to conquer less developed markets in order to avoid high competition with the local firms) and the coefficient at *spill* can carry this effect. To avoid self-selection bias it is necessary to use panel data approach which is described below.

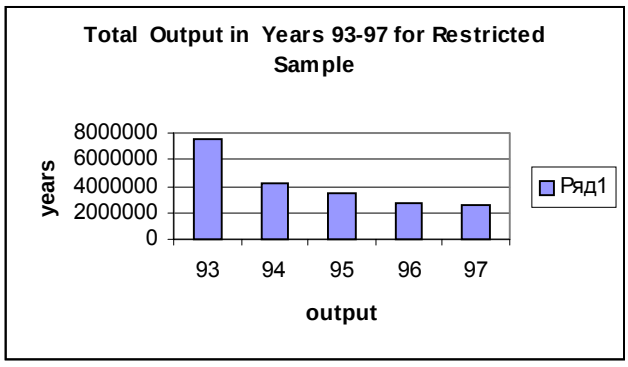
4.2 Panel data approach

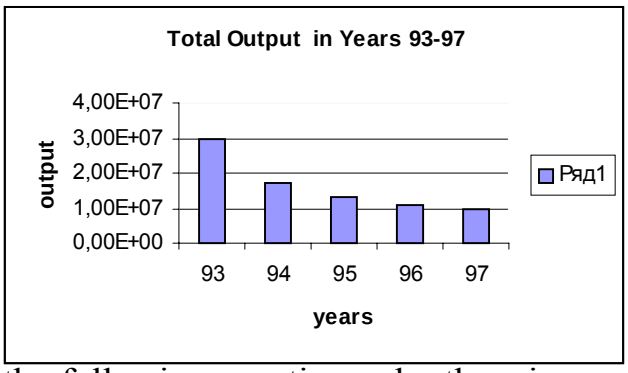
4.2.1 Spillovers on industry level

Panel used in regressions discussed in this section contains observations for years from 1993 to 1997. The capital is assumed to be constant over time (since this variable has a lot of missing values for all years except 96).

The results of fixed effect estimations are shown in tables 3-7. Table 3 presents the results of regressions without taking into account year specific effects. In table 4 column 'regression 6' we give the results with year dummies included . This allows to control for year specific effects. As can be seen the difference in the coefficients at *spill* is considerable. In the former case (without year dummies) it is significant, large in absolute value and negative in sign. In the latter case (with year dummies) it is significant and positive. This result is not very surprising because as can be seen from figure 1 there was decrease in total productivity in the country and coefficient at *spill* may capture this effect in absence of year dummies. Undoubtedly, the preferable specification is one with year dummies.

Figure 1.





Now let us try to find an answer to the following question: why the signs of coefficient with respect to *spill* differ in cross-section and panel estimations? As it was mentioned earlier, one of the possible explanations is as follows. FDI goes to initially less productive industries and, hence, cross-section regressions do not allow to control for firm's or 4-digit industry's endogeneity. The coefficient at *spill* may capture this effect, which means that we deal with self- selection bias in cross-section estimation. However, when the panel approach is used the firm- specific effects are taken into account

and the bias in estimation of the coefficient with respect to *spill* disappears. In panel version this coefficient is slightly positive and significant that means that there is a little positive influence on the productivity of domestic enterprises from FDI-firms in Russia on the industry level. Thus, Russian firms benefit from the presence of FDI in industry.

4.2.2 Spillovers in export-oriented industries

An interesting question is whether the export-oriented domestic enterprises benefit more / less from the presence of FDI in industry. To analyze this we include into regressions *export dummy* (which is dropped in fixed-effect regression), cross-term of *export dummy* and *spill*. *Export dummy* is equal to one if the export-share of the output in 4-digit industry is greater than 30%. The results of the estimation are presented in table 4 column 'regression 7'.

As it can be seen from the table the coefficient at cross-term is negative and smaller in absolute value than one at *spill*. This means that spillovers from the presence of FDI in 4-digit industry are less for export-oriented domestic firms to compare with not export-oriented enterprises. The intuition for this result may be as follows. When not export-oriented firms are considered, it is natural to suggest that wholly domestically owned enterprises are weaker in comparison with FDI-firms and there is a room for improvement for them. So, by imitating and attracting labor from FDI-firms local firms get access to new technology and thus become more effective which leads to increase in their output . On the other hand, export-oriented enterprises are more competitive and effective from the very beginning and the increasing competitive pressure leads to smaller increase in productivity.

4.2.3 Additional local spillovers

There are some reasons to expect that any benefits to the domestic firms from foreign investment would be received primarily by the firms located nearby and then diffuse to the other firms. Firstly, if a skilled worker leaves a joint venture to work at the domestic firm, he is likely to choose the plant at the same region . Secondly, if the new products or technology are introduced by the multinational the domestic firms located closely to it have an advantage over more distant firms in imitating. So, benefits are likely to be received primarily by local firms. Then they spread to more distant ones. It is possible to separate these two effects by taking into account the regional aspect.

To test whether there is an additional advantage in receiving spillovers from FDI by the neiboring domestic firms a new variable *spillR* is included in the regressions. *SpillR* measures the technological spillovers that arise from the foreign investment on the both sectoral and regional levels. It is proxied by the share of output accounted for the foreign firms in the total output. The results of estimation are introduced in table 5. The coefficient at *spillR* is slightly positive and significant at the 5% confidence level. That is there exist additional positive spillovers from local foreign direct investment.

4.2.4 Influence of education level in region on spillover effect

As it was already mentioned, one of possible channels for technology transfer is labor turnover from foreign-owned enterprises to the domestic ones. It is natural to suggest that in the region with more skilled labor the spillover-effect will be stronger. So, it would be interesting to test whether the region with more educated population has a larger size of spillovers. To

look at the effect of education we include in regression variable *education* and its cross-term with *spill*. The results of estimations are introduced in table 6. Variable *education* is constant over time and drops in a fixed effect regression. The coefficient at cross-term is positive and significant. That is the positive effect of education on spillovers is observed. It can be noticed that coefficient at *spill* becomes larger. This happens because variable *education* may take negative values by construction (it is a demeaned percentage of people having at least secondary education). Spillover effect in region with more educated population increases significantly.

4.2.5 How economic reforms influence spillovers

Another aspect of interest is the interaction of spillover-effect and economic reforms in regions. To test whether positive spillovers are larger for larger values of *economic reform progress index* this index and its cross-term with *spill* have to be included in regressions. The results are presented in table 7. The coefficient at *economic reform progress index* is negative and significant, although it is not too large in absolute value. It is rather strange finding and it is difficult to find plausible explanation for it. We can try to explain such phenomenon by the following argument. Although regions with economic reforms in the long-run should positively influence the productivity of local firms, in the short-run there may be a small decrease in productivity. It is rather hard for the Russian firms to adjust to shifting environment. The coefficient at the cross-term of the index with *spill* is negative but insignificant for both specifications. That is there is no influence of economic reforms on the spillover effect.

5. Conclusion:

This paper studies whether foreign direct investment is beneficial for Russia. It analyzes if there are any technological spillovers from foreign direct investment to the domestic enterprises. The finding is that increases in foreign ownership positively affect the productivity of domestically owned firms in the same industry when panel data approach is used. In the case of cross section estimation the result is opposite: negative spillovers are observed. The possible explanation for this is that in the case of Russia FDI goes to the initially less productive industries. Another result is that the positive spillover effect is larger for non-exporting industries because they are more competitive in comparison with other domestic enterprises. It was also analyzed whether there are additional positive spillovers from local foreign direct investment. The finding is that the domestic firms located nearby establishment with foreign equity can receive more benefits from foreign direct investment. Domestic firms located in regions with more educated population are also better off because the spillover effect in such regions is stronger. However, the progress of economic reforms does not influence spillovers obtained by domestic enterprises.

Table 1: Cross-section estimation.

Trans-log production function.

Dependant variable- log(output).

Variables	Regression 1	Regression 2
lemp	1.12***(13.56)	1.27***(15.75)
lcap	0.06**(2.05)	0.1*** (3.41)
(lcap)^2	0.03***(11.59)	0.02***(9.3)
(lemp)^2	-0.01(-1.18)	-0.28***(-2.62)
lcap*lemp	-0.02 **(-2.2)	-.01 (-1.6)
Fdi	-	1.13***(27.17)
Spill	-	-0.30**(-2.34)
Const	-2.28***(-14.71)	-2.849*** (-18.64)
Adj. R-sq.	0.54	0.56
No. Obs.	14798	14798

t- statistics is presented in brackets,

***-significant at 1% level,

**-significant at 5% level

Table 2: Cross-section estimations with 2-digit industry dummies.

Trans-log production function.

Dependant variable- log(output).

Variables	Regression 3	Regression 4
lemp	1.1***(14.26)	1.3***(17.33)
lcap	0.07***(2.71)	0.11***(4.35)
(lcap)^2	0.03***(11.97)	0.02***(9.8)
(lemp)^2	0.004 (0.40)	-0.01(-1.45)
lcap*lemp	-0.03 **(-4.07)	-0.03 **(-3.63)
fdi	-	1.2***(31.0)
spill	-	-0.75***(-6.32)
const	-2.01***(-14.05)	-2.59***(-18.46)
Adj. R-sq.	0.61	0.63
No. Obs.	14798	14798

t- statistics is presented in brackets,

***-significant at 1% level,

**-significant at 5% level

Table 3: Fixed-effects regression, group variable- okpo.

Trans-log production function.

Dependant variable- out.

Variables	Regression 5
lemp	0.41***(7.73)
lcap	Dropped
(lcap)^2	Dropped
(lemp)^2	0.11***(16.21)
lcap*lemp	0.025***(3.92)
spill	-4.07***(-41.91)
const	-1.47**(0.16)
R-sq. Overall	0.50
No. Groups	15547
No. Obs.	65635

t- statistics are presented in brackets,

***-significant at 1% level,

**-significant at 5% level

Table 4: Fixed-effects regression, group variable- okpo.

Trans-log production function.

Dependant variable- out, year dummies included.

Variables	Regression 6	Regression 7
lemp	0.88***(18.95)	0.87***(18.93)
lcap	Dropped	Dropped
(lcap)^2	Dropped	Dropped
(lemp)^2	0.003(0.5)	0.003(0.6)
lcap*lemp	0.034***(6.03)	0.034***(6.03)
spill	0.25***(2.67)	0.31***(3.17)
spill*export dummy	-	-.095***(-2.17)
const	-1.85***(-13.27)	-0.73***(-5.18)
R-sq. Overall	0.55	0.55
No. Groups	15547	15547
No. Obs.	65635	65635

t- statistics are presented in brackets, ***-significant at 1% level

Table 5: Testing for additional regional spillover effect.

Fixed-effects regression, group variable- okpo.

dependant variable- out , year dummies included.

Variables	Regression 8 (trans-log)
Lemp	0.87***(18.86)
Lcap	Dropped
(lcap)^2	Dropped
(lemp)^2	0.003(0.53)
lcap*lemp	0.034***(6.07)
Spill	0.22***(2.34)
SpillR	0.13**(0.03)
Const	-1.85***(-13.23)
R-sq. Overall	0.55
No. Groups	15547
No. Obs.	65635

t- statistics are presented in brackets,

***-significant at 1% level,

**-significant at 5% level

Table 6: Testing whether education in regions matters for spillovers.

Fixed-effects regression, group variable- okpo.

dependant variable- out , year dummies included.

Variables	Regression 9 (trans-log)
lemp	0.87***(18.85)
lcap	Dropped
(lcap)^2	Dropped
(lemp)^2	0.002(0.41)
lcap*lemp	0.04***(6.42)
spill	0.33***(2.45)
education	Dropped
education *spill	0.005***(3.44)
const	-0.76***(-5.45)
R-sq. Overall	0.56
No. Groups	15524
No. Obs.	65513

t- statistics are presented in brackets,

***-significant at 1% level,

**-significant at 5% level,

*-significant at 10% level

Table 7: Testing whether economic reforms matter for spillovers.

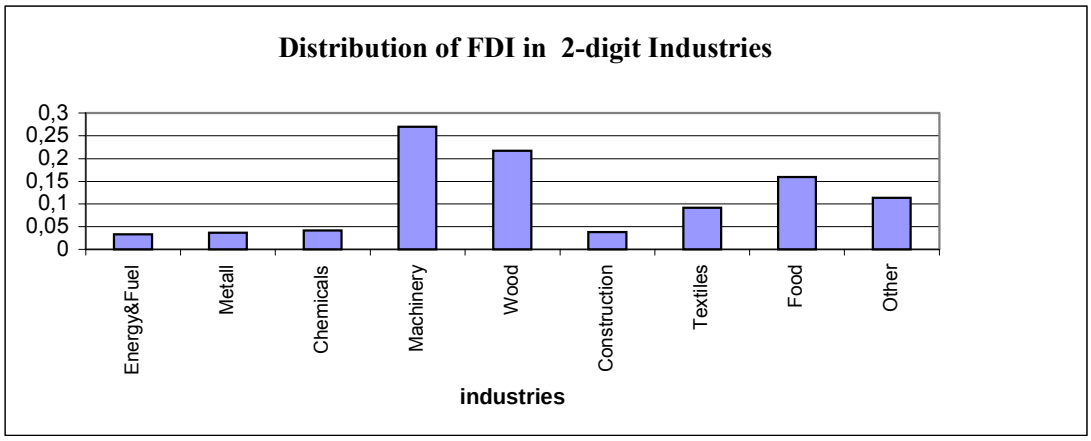
Fixed-effects regression, group variable- okpo.

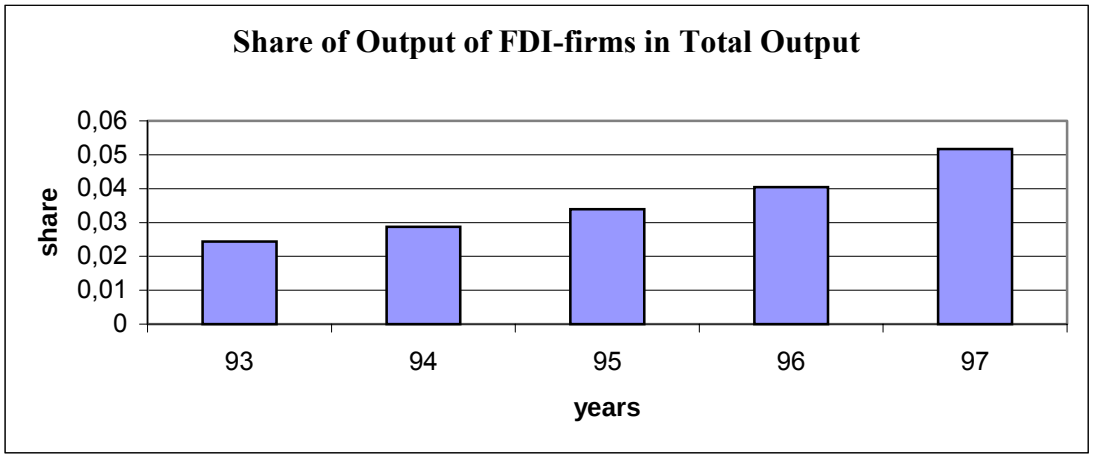
dependant variable- out , year dummies included.

Variables	Regression 10 (trans-log)
lemp	0.87***(18.91)
lcap	Dropped
(lcap)^2	Dropped
(lemp)^2	0.003(0.53)
lcap*lemp	0.04***(6.44)
spill	0.23***(2.45)
Economic reform progress index	-.01***(-3.3)
EcRef *spill	-0.03 (-1.03)
const	-1.89***(-13.52)
R-sq. Overall	0.55
No. Groups	15525
No. Obs.	65536

(t- statistics are presented in brackets, ***-significant at 1% level)

Appendix:





Descriptive characteristics of the data:

Total sample for years 1993-1997 contains 148391 observations with non-missing employment

Among them: 15709 related to FDI-firms

<u>With employment restrictions:</u>

Total sample for years 1993-1997 contains 128964 observations

Among them: 10970 related to FDI-firms (in 3904 cases for FDI-firms and 629 cases for domestically owned firms employment is less then 5 people)

Average statistics for the sample without employment restrictions for years 1993-1997. (Output is deflated.)

	FDI-firms	Domestic firms
Average employment 93	**125.73**	**694.29**
Average output 93	**438.23**	**1139.83**
Average employment 94	**92.04**	**572.74**
Average output 94	**228.13**	**626.76**
Average employment 95	**85.86**	**488.44**
Average output 95	**195.33**	**463.14**
Average employment 96	**83.85**	**510.89**
Average output 96	**197.98**	**426.48**
Average employment 97	**91.51**	**476.87**
Average output 97	**256.67**	**426.09**

Average statistics for the restricted sample for years 1993-1997.

	FDI-firms	Domestic firms
Average employment 93	**84.08**	**243.83**
Average output 93	**390.56**	**320.86**
Average employment 94	**73.80**	**220.75**
Average output 94	**218.64**	**189.54**
Average employment 95	**73.58**	**201.88**
Average output 95	**181.82**	**124.15**
Average employment 96	**74.73**	**208.71**
Average output 96	**189.16**	**111.14**
Average employment 97	**82.84**	**199.81**
Average output 97	**254.46**	**108.92**

Output accounted for by FDI-firms in 2-digit industries in 1993-1997. Unrestricted sample.

	11	12	13	14	15	16	17	18	19
93	0,028	0,0128	0,033	0,0146	0,0747	0,0129	0,0267	0,032	0,0125
94	0,034	0,0137	0,032	0,0148	0,071	0,0146	0,0385	0,0429	0,021
95	0,034	0,016	0,0357	0,016	0,0845	0,025	0,0323	0,07	0,029
96	0,0397	0,0129	0,0351	0,017	0,104	0,0216	0,0317	0,1004	0,058
97	0,0465	0,0146	0,0376	0,022	0,114	0,0344	0,0416	0,164	0,049

Output accounted for by FDI-firms in 2-digit industries in 1993-1997. Restricted sample.

	11	12	13	14	15	16	17	18	19
93	0,167	0,059	0,189	0,042	0,101	0,01	0,035	0,0336	0,015
94	0,104	0,085	0,111	0,042	0,1	0,13	0,048	0,035	0,025
95	0,2651	0,092	0,164	0,062	0,11	0,028	0,044	0,066	0,034
96	0,259	0,083	0,168	0,073	0,14	0,021	0,043	0,103	0,069
97	0,281	0,14	0,188	0,105	0,169	0,043	0,06	0,171	0,061

Employment accounted for by FDI-firms in 2-digit industries in 1993-1997. Unrestricted sample.

	11	12	13	14	15	16	17	18	19
93	0,007	0,018	0,024	0,012	0,036	0,011	0,024	0,019	0,018
94	0,008	0,019	0,026	0,012	0,043	0,011	0,025	0,22	0,02
95	0,013	0,026	0,028	0,015	0,052	0,013	0,024	0,029	0,023
96	0,014	0,025	0,028	0,016	0,053	0,014	0,026	0,034	0,029
97	0,015	0,025	0,028	0,016	0,05	0,015	0,028	0,042	0,03

Employment accounted for by FDI-firms in 2-digit industries in 1993-1997. Restricted sample.

	11	12	13	14	15	16	17	18	19
93	0,0215	0,0598	0,0797	0,0235	0,0405	0,008	0,0247	0,0211	0,0231
94	0,0267	0,0566	0,065	0,0239	0,0476	0,009	0,023	0,0243	0,0262
95	0,0396	0,049	0,07	0,0285	0,0611	0,011	0,0294	0,0325	0,0346
96	0,0465	0,056	0,07	0,0316	0,0589	0,012	0,0281	0,0381	0,0347
97	0,0546	0,066	0,08	0,031	0,0519	0,016	0,0299	0,0437	0,0373

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