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THE IMPACT OF FOREIGN DIRECT INVESTMENT ON INDUSTRIAL ECONOMIC GROWTH IN BELARUS

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This paper analyses the impact of foreign direct investment (FDI) on economic performance using the Belarusian industrial aggregated panel data over the 2002-2009 period. The paper didn't reveal any general influence of FDI on the economic performance. However, a very diverse FDI impact at the industrial level was found. The obtained results showed that the foreign capital distribution across sectors of the economy determines the FDI impact on economic performance. The results revealed both positive impact of FDI (the construction industry, IT, real estate, machinery, food and fuel industry) and negative (black metallurgy, construction materials, forestry, communications, culture).

Keywords: Foreign Direct Investment, cross-industrial differences, Belarus

JEL Codes: F21, F23, C33

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INTRODUCTION

Foreign Direct Investment (FDI) attraction is perceived by most developing countries and countries in transition as an important development mechanism and key growth source. That's why one of the goals of these developing countries and countries in transition is the FDI attraction in to the country. Such policy is based on the expectation that FDI will positively affect the economy, bring new technologies, open new markets, and improve management and administration.

The situation is quite different in Belarus. FDI isn't attracted in large volumes and the main reason of attraction is mostly the current account deficit financing. The question of production efficiency, technological and managerial upgrade is outcompeted. However, such a policy of foreign capital attraction has its certain theoretical grounds.

Even though FDI plays a huge role in the modern role, there might be negative consequences of foreign capital attraction as well. One of the possible negative outcomes is connected with the ability of foreign investors to make use of the international labor cost differential. Since foreign firms can afford to pay higher salaries, they will try to attract the most qualified labor force. Therefore, the workers, which are not so qualified, will have to work in the domestic enterprises at a lower wages. Hence, if there won't be any spillover from foreign firms to domestic, that will lead to a 'wage gap' and wage inequality in the country. Second, enterprises financed by the foreign investors may try to grab the main part of the market so that the domestic firms will have to produce less goods of a lower quality. Such actions negatively influence the competitiveness of the market, thus FDI might not have a positive spillover effect on the economy of the host country (Lipsey and Sjoholm 2004).

The openness of the economy and involvement into various international integration processes are in the list of priorities in the Belarusian external economic policy. However, the achievement of these goals is impossible without the restructuring of the economy, production process modernization and the competitive growth, which requires the concentration of substantial intellectual, financial, natural and material resources. Unfortunately in Belarus like in other post Soviet Union countries the level of domestic savings and investments is rather low and insufficient for the stable economic growth. Therefore, the attraction of the foreign direct investments into Belarusian economy is one of the burning issues nowadays.

According to the prime-minister of Belarus, the overall Belarusian need in investments nowadays is about USD 35 bln.[1]. The total amount of attracted investments by the end of 2009

[1] http://naviny.by/rubrics/economic/2004/11/07/ic_news_113_247937/print/

was approximately equal to USD 9.3 bln., main part of which came from Russia (65 %)[2]. As for the other countries, which invest to the Belarusian economy, these are Austria (10 %), Cyprus (6 %), the United Kingdom (5 %) and Switzerland (4 %). The most attractive industries are transport and manufacturing industries[3]. As for the investments in to the fixed assets, the amount of inflows from all the sources was equal to BLR 43.1 trln. (USD 15.4 bln) by the end of 2009. And the foreign capital amounted to just USD 219.8 bln. or 1.4%. That is the real volume indicator of foreign investments that came through the private commercial schemes.

The Belarusian Government in order to increase the foreign investments' inflow took some measures in 2007-2008 aimed at the economy liberalization and country's investment attractiveness increase including the simplification of enterprises' registration and liquidation, the "golden share" abolishment, tariffs' reduction or elimination on certain types of investment goods, tax burden reduction[4]. Besides there was an attempt of the Belarusian privatization program restart including selling plans of 510 state-owned enterprises. Nowadays the main directions of the further economy liberalization are the reduction of number of activities, which require licensing, from 53 to 38, narrowing of state price regulation sphere and possible abolition of "Beltelecom" the national telecom operator's monopoly.

Even though there is an obvious need in FDI for Belarus, it is not clear enough, whether FDI has only a positive effect on all sectors of the Belarusian economy. The way FDI influences the host economy or each firm in particular depends on the peculiarities of the enterprises, the sectors which FDI goes to, and the linkages between the sector and the whole economy. The World Investment Report 2001 (UNCTAD, 2001) states that the strength of the linkages between foreign domestic enterprises depends on which industry and sector they belong to. . Since FDI attraction might be costly for the economy or for the particular sector, it is necessary to evaluate the gains of FDI. Hence, the purpose of this research is to investigate the impact of FDI on different industries of the Belarusian economy and to find out whether there is a positive relation between FDI and the firms' performance in each industry. The contribution of that research is that that is one of a few papers emphasizing the industrial differences of the FDI's impact on economic growth. Besides, regarding the case of Belarus, just some relevant researches were done examining the impact of FDI on the Belarusian economy, one of a few was a work by Tochitskaya and Kolesnikova (2008).

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[2] http://mfa.gov.by/ru/economic/investment/

[3] http://www.belta.by/ru/news/infographica?i_id=163

[4] http://www.belta.by/ru/news/infographica?i_id=57

This work is organized as follows. In section 2 the previous works will be examined, in section 3 the methodology is given, section 4 will provide the data; section 5 presents empirical results of this investigation. Finally, in section 6 the conclusion will follow.

LITERATURE

Economic theory of growth and productivity is based on the neoclassical production function. Solow (1957) showed the importance of technological progress on economic growth with the help of the growth accounting approach. His contribution to the growth theory is that Solow decomposed GDP growth into growth related to various inputs. The scheme of this decomposition is given below.

The aggregate production function:

$$Q = A(t) * F(K, L) \quad (1)$$

where Q – aggregate GDP output, L – labor input, K- capital input and A – production efficiency.

After differentiating this equation with respect to time and making some computations we get

$$\frac{\dot{Q}}{Q} = \frac{\dot{A}}{A} + \alpha \frac{\dot{L}}{L} + \beta \frac{\dot{K}}{K} \quad (2)$$

Therefore, $\frac{\dot{A}}{A}$ is the part of growth in GDP, which can't be explained by the increase in labor and capital. According to Solow it is explained by the technological progress.

Based on the Solow's work Findlay (1978) derived a model which demonstrates that FDI positively influence the performance of the host country. The author showed that the inflow of the foreign investments increases the rate of technical progress and claimed that the main reason for the positive effect of FDI deals with FDI being a channel for new technologies and methods into the country. In contrast to Solow's framework, where technology is an exogenous variable, Blomstrom and Kokko (2003) based their work on the model of endogenous growth. The authors analysed the incentives for FDI and claimed that the most important issues in FDI attraction is not the emphasis of the foreign enterprises' role, but its spillover effect through technologies and skills. However, according to these authors, foreign investment attraction must go parallel with the stimulation of the educational process and domestic investments in the country, because only in this case the enterprises would have the reasons to invest into the new technologies, methods and knowledge.

There is a large number of empirical works devoted to the analysis of the overall effect of FDI on economic growth of a country on the macro and micro level. Among those who

investigated that question were Aitken and Harrison (1994) who analyzed the performance of 4000 Venezuelan firms in 1975-1989 and found that joint ventures performed better than domestic firms. Additional evidence showed that an increase of FDI positively influences the productivity growth. However, the obtained results also showed that the productivity of domestic firms decreased due to the rise of joint-ventures productivity; thus, reveal a negative effect of FDI on the industry's performance. The same topic was addressed by Bitzer and Gorg (2005). The authors tried to find out whether there's a positive or negative influence of the inward FDI on the productivity of the industry or country, in extension they looked at the effect of the outward FDI on the country's performance. The authors used the annual data for 17 countries with 10 manufacturing industries. The results showed that the inward FDI positively influence the economy's productivity. Additionally, the evidence showed that small countries benefit from inward FDI is more than for large. Another work, which made contribution on the question of FDI influence on the economic growth, was made by Borensztein and Lee (1998). The authors based their work on the cross-country panel data collected for the 69 industrial and developing countries for the time periods 1970-1979 and 1980-1989. While examining the connection between the investments and economy's performance the obtained results showed that the way FDI impact on the economy's performance depends on the level of human capital in the country. Besides it appeared that FDI augment the level of the total investments in the country through the domestic investment attraction into the economy. Later on Alexynska (2003) examined the similar effects for the countries in transition. The author checked how FDI influence on the economy growth for the 18 transition countries. The results showed the significant positive relation between the level of FDI and the host economy performance. In addition the results evidenced that the direction of FDI influence on the economy depends on the level of human capital within the country.

As for the influence of FDI on the Belarusian economy, we should mention paper by Tochitskaya and Kolesnikova (2008), where the authors were analyzing the impact of FDI on the economy's productivity and export platform creation. The research showed that even though the enterprises with the foreign assets are more technologically developed and productive, they have no influence on the Belarusian companies. That's why there is no productivity growth of the economy.

According to the World Investment Report 2001 (UNCTAD), theoretically, the influence of FDI is different depending on the sector of the economy where it is directed. The effect of FDI varies because sectors have their own features and link to other sectors in different ways. There are main three sectors of the economy: primary, secondary (manufactory) and tertiary (services). The primary sector basically means production of raw materials and foods. Agriculture, quarrying, mining, forestry, fishing are included into that sector. Usually the production process in

that sector is very hard to divide into parts and it requires a lot of efforts and capital. Investments into that sector basically take form of huge amounts of capital, and foreign investors often rather consider them as intercompany loans or money export due to the restrictions on the ownership by the foreigners. Hence, the linkages to the host economy are weak. Additionally, as such large inflows go into the primary sector, there is a possibility of the so-called Dutch Disease. The investments into the primary sector can cause rise in wages in that sector and therefore attract labor from other sectors of the economy. That might lead to the deindustrialization and as a result, other sectors and secondary sector in particular will become less competitive. Therefore, FDI into the primary sector don't contribute a lot to the development of the host country economy and the effect of such investment flows on economic growth can be negative.

The secondary or manufacturing sector deals with the transforming raw materials into finished goods. Activities associated with the secondary sector include metallurgy, automobile production, chemical and engineering industries, brewing, and construction. Unlike the primary sector, there is a more vivid impact of FDI on the manufacturing sector as well as the linkages. The secondary sector usually uses various goods from other sectors as its inputs. Besides foreign investors are trying to put their money into different enterprises of the host country in order to get profits from it instead of exporting. While following these goals, investors may bring new technologies, methods of administration, create new work places and train the employees and as a result increase the competitiveness of the sector in general. Hence, the impact of FDI in the manufacturing sector has usually a positive effect on the economy.

The tertiary sector is basically services industry. Transportation, banking, telecommunications, managing, information services, healthcare is the part of the tertiary economic sector. Foreign investors can increase the efficiency of that sector by bringing new knowledge, technologies, making the overall level of services more corresponding to the world standards through the quality improvement and cost lowering. However, as is the industries in services sector are often rather capital intensive (telecommunications, banking) and hence less competitive in comparison to manufacturing, there is a possibility that the domestic firms will be crowded out by foreigners. That's why in order to get the positive impact of FDI on the service sector, there is a great need of appropriate legislative and regulatory system and the initial situation in the service sector of the host country plays an important role as well.

The question of FDI's impact on different sectors of the economy first appeared in the middle of the 20th century. One of the first, who tried to answer the question whether the influence of FDI is the same throughout all sectors of economy, was Hirschman (1958). He investigated that not all of the sectors can deal in the same way with the foreign investment inflows and technologies in particular and stated that especially in mining and agriculture, the impact is not significant.

Among those who already looked at the sectoral differences of the foreign investments' influence we can mention Alfaro (2003). The author while answering that question came up with the results that the strength and direction of FDI impact are different depending on the sector they go to. The evidence showed negative relation between growth and FDI in the primary sector and a positive in the manufacturing sector. As for the services sector, the effect was ambiguous. Similar results were obtained by Vu and Noy (2008). As for the research, done by Aykut and Sayek (2007), the impact of FDI on the primary and manufacturing sector were analogous, as foк the services sector, the negative influence of FDI on it was found.

The same question was raised by Khaliq and Noy (2007), who investigated the impact of FDI on the Indonesian economy using the data for 12 different sectors. The obtained results showed the overall positive influence of FDI inflow on the growth of economy. However, while looking at each sector in particular negative effect of FDI on the growth in the quarrying and mining sectors was gotten. Unfortunately, as the data didn't contained information about the inflow of FDI into manufacturing sector, the authors weren't able to test for the impact of FDI on the secondary (manufacturing) sector. Mathiyazhogan (2005) associated growth decline in the food-proceeding and industrial machinery in India with FDI inflow, while impact on transportation and metallurgy were positive.

So, we see that the results obtained in the previous studies are rather diverse and don't provide clear answer concerning the FDI influence on the performance by sectors. Due to the fact that the foreign capital attraction is the one of the top priority goals of the Belarusian external policy, that's necessary to evaluate the attraction to which industries will be the most effective and appropriate. The available data allows us to answer that question. Moreover, the question of FDI impact on the Belarusian economy isn't examined enough, and this work is aimed to fill that gap up.

METHODOLOGY

In order to evaluate the impact of FDI on the performance of different industry of the economy we are dealing with the framework similar to one, which was used by Khaliq and Noy (2007), Vu and Noy (2007.

First, the regular Cobb-Douglas production function is taken

$$Y = A\Phi(K, L, \Omega) \qquad (3)$$

where Y, K, L and A – production volume, capital, labor resources and productive efficiency, and Ω is a vector of auxiliary variables.

In order to evaluate the impact of FDI on the economy's performance, the capital (K) is divided into domestic (C) and foreign (F). Thus, the equation (1) takes the form as follows:

$$Y_{it} = AL_{it}^{\alpha} C_{it}^{\beta} F_{it}^{\gamma} \quad (4)$$

After the function transformation into the log form, we get the following:

$$\ln Y_{it} = \ln A + \alpha \ln L_{it} + \beta \ln C_{it} + \gamma \ln F_{it} + \varepsilon_{it} \quad (5)$$

Y_{it} – output of industry i at time t;

K_{it}, L_{it}, F_{it} – labor, domestic and foreign capital inputs oa industry i at time t;

A_{it} – production efficiency of industry i at time t;

ε_{it} - normally distributed disturbance.

The methodology described above will be used for the analysis of the impact of FDI on industrial economic growth in Belarus.

In this paper we use fixed and random effect panel estimators. As Griliches and Mairesse (1997) point out, using the simple OLS method when dealing with the production function creates a problem. Specifically, not all the factors that may influence the outcome are observable. That happens because the inputs are not under the researchers' control, but are chosen by the producers in order to get the most profit. "So the disturbance of the production function u is transmitted to the decision equation and x becomes a function of u". Hence, the results will be biased and the possible approaches to avoid it are first differences, random and fixed effects, as it is affirmed that these factors decisions are pretty much the same and don't change through observed time. However, due to a small time dimension first differences method may lead to the problem of serial correlation, which in turn, causes another bias. Therefore, we use random and fixed effect estimations. Greene (2000) showed that fixed effect method explores the relationship between the influencing factors and the result within any one object (country, company). Each object has its own individual characteristics that may affect the main influencing factors. For example, the country's political system may have some effect on trade or GDP, or the company's method of management can affect its share price. Using the fixed effect method we assume that something within the object can affect or distort the main influencing factors or the outcome, that's why we have to take this into account. That's the main logical explanation of the assumption about the correlation between the influencing factors and the vector of individual error terms. The fixed effect method removes the effect of such stationary characteristics from the influencing factors and allows determining the net impact of the main influencing factors on the dependant resulting variable. Another important assumption of the fixed effect method is that those stationary characteristics are unique for some particular group and can't correlate with other individual characteristics. There are no similar groups, that's why the vector of individual error terms and the constant, that absorbs the individual characteristics, shouldn't correlate with the others. In case the vectors of errors are correlated, the fixed effect method may distort the results and it's necessary to use random-effect method. The main idea of the random effect

method is that, unlike the fixed effect method, the groups' variation is assumed random and uncorrelated with the independent variables included in the model. In other words, the key difference between the fixed and random effects is the correlation of immeasurable individual effects with the influencing factors in the model.

Both of the above methods have their pluses and minuses and the difference between them is rather ambiguous, that's why the choice of method is often determined by the own beliefs of the authors. In our case the choice of the correct method is determined by the Breusch Pagan Lagrangian Multiplier and Hausman tests.

An important issue is the problem of omitted variable bias, which is quite possible in any estimation procedure. However, the fixed and random effect methods helped eliminating that question. Besides the model suffered from heterogeneity and autocorrelation problems, so that was checked for and corrected using Generalized Least Squares technique (GLS).

Additionally, an endogeneity problem was faced here due to the reason that FDI flows may affect the firm's performance, while the raising productivity, on the other hand, may stimulate FDI inflows. The most appropriate instruments, which are used in the literature in order to get rid of that problem and influence just the amount of FDI are lagged values of FDI inflows and profit margin of the firm. Unfortunately, according to the available data set the only possible instrument, used in this study, was the lagged value of the FDI. However, while testing for endogeneity with this instrument after running the Davidson and MacKinnon test lagged value of FDI appeared to be a strong instrument. Hence, it helped to get rid of occurred problem.

DATA DESCRIPTION

This study is using the panel aggregated industrial data collected and provided by the National Statistics Committee of Belarus. The data covers the period over 2000-2009 and includes the information about volume of production of industries, labor and capital resources, material resources as well as the amount of foreign investments attracted. The data consists of 21 industries, and the manufacturing industry is divided into 9 sub industries. Industries with the missing information were removed from the dataset. All the data was deflated using the industries price indices.

Belarus demonstrated the economic growth during the last decade, which was about 10.5% per year on average and just in 2009 the GDP growth was equal to only 0.2% as a result of the global financial crisis of 2007-2010 (Figure 1). It should be noted that economic growth was accompanied by certain changes in the economic production structure. The importance of agriculture and transport has declined since 2000. So, if in the beginning of the 21st century their shares amounted to 11.6 % and 9.5 % of GDP, it was just 7.8 % and 6.8 % respectively at the

end of 2009. Share of the construction sector increased from 6.4% to 10.7% during the period from 2000 to 2009. As for the secondary sector, its role has slightly declined from 26.5% to 25.3% (Figure 2). While analyzing the impact of manufacturing sector's industries, that's important to mention the reducing role of main manufacturing productions such as machinery, light industry and food industry. If in 2000 their share was equal to 8.4%, 20.5% and 17.2% in the total manufacturing output, at the end of 2009 they amounted to only 3.3%, 17.9% and 14.9% respectively. The fuel industry has shown an increase from 16.2% to 20.1%. We should also note the increased role of other types of industrial production, including printing, milling, medical, glass and other types of production. Their share in the total manufacturing output increased from 6.6% to 16.9%, which might be explained by the financial crisis impact that forced to shift the focus from the most affected industries and to pay attention to other promising areas of activity for the purpose of risks diversification and losses minimization (Figure 3). However, the possibility of the data contamination leading to the biased results and distorted picture should be also taken into account.

There was an increase in amounts of FDI attracted to the country during the period 2002-2009. So if the annual inflow was equal to $300 million in 2002, that number amounted to $1.8 billion in 2009. That's worth mentioning that the 2009 results were worse than the 2008 indicators and the volume of FDI in it was equal to approximately $2.3 billion, that's partly explained by the fact that the global financial crisis changed the plans of potential investors. The total cumulative volume of FDI attracted to Belarus increased from $300 million to $8.5 billion, over the period 2002-2009 (Figure 4). However, if you compare the amount of foreign capital attracted by Belarus with the situation in other countries in transition the results leave much to be desired.

The total volume of accumulated FDI remained almost unchanged and minimum for the region and was approximately 11% of GDP during the period 2002-2008 (Figure 5). The Belarusian results of foreign capital attraction were even worse than in Russia and Ukraine, the countries with the similar entry conditions. Estonia and Hungary are keeping being the leaders in terms of FDI growth rates. Such results were achieved due to the favorable investment climate creation and regulatory framework that encourages the foreign capital inflow (Shimanovich, 2010).

As for the most attractive Belarusian industries for the investors, it should be noted that the share oa the secondary sector has remained almost unchanged and was equal to around 15-17% during the whole period (Figure 6). The most attractive manufacturing industries for investors are food processing, forestry and wood-processing, as well as machinery, which accumulated approximately 50% of the total FDI volume that came into the industrial sector (Figure 7). The picture in other economic industries is very diverse and varies from year to year.

Especially it concerns trade and catering, communications, and general commercial activities. One of the reasons of such fluctuations is the legislation's uncertainty and unclarity that doesn't allow the normal functioning of foreign investors in the domestic market as well as the existing investment regime and climate.

RESULTS

The evaluation of FDI's influence on different industries of the economy began with the estimation of the overall impact on the economy without industrial division. The evaluation was made using OLS, fixed and random effect methods. Later on the F-test, Hausman and Breusch-Pagan test were conducted in order to determine the optimal model specification, which showed that the random effect method allows obtaining the most optimal results, assuming that there is no correlation between the error terms vector and independent variables included into the regression. However, the heteroscedasticity and serial correlation tests showed they existence of these problems that's why the results were adjusted by the GLS method. The results of all four methods are presented in Table 1.

[Table 1.]

As it can be seen from the table, the results of all methods have the mostly same direction and relatively similar magnitude. The coefficients of the most interested to us variable (the influence of FDI) for all methods are statistically significant and similar in its direction.

Testing for the existence of endogeneity problem with the help of Hausman and Wu tests revealed that indeed the current value of FDI is an endogenous factor, that's why its' use in the model leads to the biased results. As it was mentioned above, potential instrument helping to avoid that problem is the lagged value of FDI. The analysis showed the lagged value of FDI as a strong instrument, that's why it was used instead of current value of FDI in further estimations of the model.

Later on the time effects were included into the model in order to control for the different fluctuations which presented in the Belarusian economy during 2002-2009 (Table 2). The main variables influencing on the productivity of the economy keep having a positive impact. As for the time effect the different methods showed opposite results. The fixed and random effect methods revealed negative influence on the gross output, on the other hand the GLS method showed a positive impact. The results obtained using GLS method are more confident as they describe the general trend of the Belarusian economy development. According to the Belarusian National Statistics Committee the country demonstrated an economic growth during the 2000-2008 period with a decline in 2009 that was confirmed by the obtained results. The FDI's impact on the economic performance is still positive but no long significant, meaning that

the productivity of the economy is explained more likely by different temporal phenomena than by the foreign capital inflow into the country.
[Table 2.]

We proceeded next by adding the industrial fixed effects into the original model specification (Table 3). These industrial effects are responsible for the growth differences of various industries. The picture remained almost unchanged regarding the FDI's impact on the economic performance, meaning that the direction of foreign capital inflow is still positive but insignificant. As for the industrial effects, it appeared that the industries indeed affect the economic performance differently. The strongest positive influence is causing by manufacturing industry, construction, transport and communications as well as general commercial activities. On the other hand the impact of logistics, housing and public utilities is below average.

[Table 3.]

Inclusion of both time and industrial effects into the model (Table 4) provides a similar result to the obtained above. All the major influencing factors are positive and statistically significant. The FDI's impact remains positive and insignificant suggesting that the Belarusian economy efficiency is affected by the initial performance of industries together with different temporal phenomena more than by the foreign capital inflow into the country. And the initial positive and significant impact of FDI on economic performance presented in the Table 1 is more likely due to the fact that the main share of investments was attracted to the industries, which showed higher growth in the favorable period of time.

[Table 4.]

At last the results including all the independent variables, fixed time and industrial effects as well as the FDI-industrial dummy interaction terms are presented in Table 5. We wanted to see here whether the FDI have different impact on economic performance in different industries. The negative and significant relationship was found in such industries as procurement and culture. Thus, the foreign capital directed into these industries worsens the overall economic performance. The situation is opposite in construction and logistics industries meaning that the FDI attracted into these industries have a positive impact on the productivity growth of the economy. As for the manufacturing sector, the influence of FDI is positive but insignificant. However, the picture changed greatly after we took industries into consideration separately (Table 6). .

[Table 5.]

As the Table 6 shows, the way FDI affect the manufacturing industries is very diverse. The fuel industry, machinery and food industry benefit from the foreign capital attraction into them. The situation in ferrous metallurgy and construction materials production is opposite even though the reasons of the negative effect are different. The general negative effect of the foreign capital directed to the construction materials production industry is most likely caused by the poor quality of these investments, the Chinese equipment supplied to Belarusian cement plants in particular. The problems in the ferrous metallurgy are caused mostly by the global financial crisis leading to a sharp drop in steel products demand, which in turn caused the steel, steel wire and ferrous metals production and prices decline.

That should be noted that the separate inclusion of manufacturing industries into the equation increases the impact of FDI on other industries. As it was mentioned above, the specific feature of the manufacturing sector is the presence of extensive linkages with other sectors of the economy, that's why their neglect will lead to the distorted results (World Investment Report, UNSTAD 2001). The picture shows that the real estate and IT industry start to benefit from the foreign capital inflow into them, while the telecommunications and nonproductive services start bearing losses. Such a change in the coefficients is quite understandable as the inclusion of the new variables into the equation makes the results more reliable. The reasons of the negative impact of FDI on the telecommunication industry might be the following. There was an initial incorrect investment valuation. The companies had to write part of their intangible assets off due to the global financial crisis (devaluation, low income level, drop in effective demand). Moreover, the companies had to pay for the political preferences, the priority receipt of various licenses and tax allowance. There is market saturation and the SIM cards penetration has exceeded the population size, in addition high CAPEX and most likely the ineffective work of marketing and advertising services. All of these have explained the negative impact of FDI attracted to the telecommunication industry on the economic performance. Positive influence of FDI on IT, machinery and food industry can be explained by the fact that these are export-oriented industries forcing its' producers and investors to spend some part of the assets on renovation in order to remain competitive. As for the no effect in financial, light and transport industries that is basically due to the fact that they are mostly oriented on the not 100% saturated local market. Thus, profits realization is possible even without huge foreign capital inflows and productiveness growth. Besides, the light industry is characterized by the excessive labor force involved, worn-out equipment and therefore low competitiveness. In addition industry's development is restrained by the quotas established for the Belarusian textile products by EU. As for the agriculture and chemical industry, these are industries with a dominant state role, that's why the foreign capital directed to them isn't able to compete with the state-owned enterprises, which are subsidized from the budget or by the banks' preferential credits.

What should be noted is that the coefficient near the labor input changed the sign and became negative and significant. That result is quite reasonable and realistic as nowadays the Belarusian economy especially in the manufacturing sector is observing the excessive employment at a 20-25% rate. Obviously that doesn't allow the economy to develop efficiently[5]. Therefore the final coefficient of the labor input influence is more reliable and relevant than described above.

[Table 6.]

CONCLUSIONS

This paper investigates the influence of FDI on industrial performance of Belarusian economy. The Belarusian panel aggregated industrial level data for 2000-2009 was used to investigate that question. The previous works mostly found positive impact of FDI on the economic growth of the country. As for the influence on different sectors and industries the results were very ambiguous. This study didn't reveal any general FDI effect on the economic performance. However, the direction of the FDI impact indeed varied at the industrial level.

Among the interesting results is the negative impact of FDI attracted to the forestry on the economic performance and the absence of any effect in the agricultural industry. This result to supports the statement the FDI directed to the primary sector and to the extractive industries don't stimulate the economic growth of the country. The positive impact of FDI directed to the construction industry, machinery, food and fuel industries, supported the assertion that the foreign capital attracted by the secondary sector of the economy usually has a positive impact on the economic performance (Aykut et al., 2007; Vu et al., 2008).

Another important result is the negative impact of labor on the Belarusian economic performance that is explained by the existence of excessive employment especially in the industrial sector.

The results presented in this paper imply that Belarus should more consistently and accurately consider whether the attraction of foreign capital into all industries will be beneficial for the economic growth or the attraction to only certain types of activity will be more efficient for the country. The further study of this question should lead to the formulation of profits maximizing policy through the more accurate FDI attraction to the various industries of the economy and conditions arrangement for the beneficial usage of foreign capital in those industries, which aren't able to gain profit from it under the current institutional system.

[5] http://naviny.by/rubrics/economic/2010/04/22/ic_articles_113_167529/

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ATTACHMENT

Table 1.

	OLS	FE	RE	GLS
Labor	0.292***	0.136	0.232***	0.340***
	(0.0348)	(0.108)	(0.0876)	(0.0366)
Domestic Capital	0.403***	0.0957	0.0906	0.229***
	(0.0452)	(0.0851)	(0.0724)	(0.0334)
Materials	0.00334	0.380***	0.315***	0.134***
	(0.0347)	(0.0847)	(0.0547)	(0.0252)
FDI	0.0897***	0.0447***	0.0468***	0.0163**
	(0.0191)	(0.0138)	(0.0128)	(0.00787)
Constant	-1.371***	1.590	0.816	-0.262
	(0.474)	(1.226)	(0.929)	(0.460)
Obseravations	205	205	205	205
R-square	0.769	0.497		

Table 2.

	FE	RE	GLS
Labor	0.114	0.262***	0.368***
	(0.0976)	(0.0914)	(0.0279)
Domestic Capital	0.0359	0.111**	0.259***
	(0.0594)	(0.0544)	(0.0348)
Materials	0.148***	0.170***	0.131***
	(0.0486)	(0.0456)	(0.0233)
FDI	0.00299	0.00993	0.0158
	(0.0108)	(0.0110)	(0.0100)
Time effect	Yes	Yes	Yes
Constant	3.807***	1.588	-0.947**
	(1.078)	(0.987)	(0.396)
Obseravations	178	178	177
R-squared	0.775		

Table 3.

	FE	RE	GLS
Labor	0.169	0.0832	0.0292
	(0.164)	(0.0986)	(0.0470)
Domestic Capital	0.0848	0.178**	0.456***
	(0.0961)	(0.0816)	(0.0434)
Materials	0.363***	0.348***	0.391***
	(0.0967)	(0.0792)	(0.0331)
FDI	0.0305**	0.0291*	0.00988
	(0.0152)	(0.0160)	(0.00777)
Industrial effect	Yes	Yes	Yes
Constant	1.581	1.377	-0.243
	(1.798)	(1.094)	(0.487)
Obseravations	178	178	177
R-squared	0.460		

Table 4.

	FE	RE	GLS
Labor	0.114	0.123	0.133***
	(0.0976)	(0.0867)	(0.0505)
Domestic Capital	0.0359	0.0967*	0.374***
	(0.0594)	(0.0577)	(0.0451)
Materials	0.148***	0.184***	0.294***
	(0.0486)	(0.0480)	(0.0336)
FDI	0.00299	0.00767	0.0064
	(0.0108)	(0.0116)	(0.00882)
Time effect	Yes	Yes	Yes
Industrial effect	Yes	Yes	Yes
Constant	3.807***	3.060***	-0.118
	(1.078)	(0.954)	(0.530)
Obseravations	178	178	177
R-squared	0.775		

Table 5.

	FE	RE	GLS
Labor	0.114	0.123	0.133***
Domestic capital	0.0359	0.0967*	0.374***
Materials	0.148***	0.184***	0.294***
FDI_manufacturing industries	0.0961	0.113	0.184
FDI_agriculture	-0.0197	-0.0130	-0.00501
FDI_forestry	-0.0590***	-0.0656***	-0.0914
FDI_transport	-0.0285	-0.0282	-0.0303
FDI_telecommunications	-0.0353**	-0.0327**	-0.0238
FDI_construction	0.196***	0.206***	0.297***
FDI_trade	0.0106	0.00922	-0.0326
FDI_logistics	0.0217	0.0555	0.186***
FDI_procurement	-0.352***	-0.363***	-0.590***
FDI_IT	0.0469**	0.0321	0.0586
FDI_real estate	0.0420	0.00494	-0.0614
FDI_general commercial activities	0.0351	0.0248	0.0220
FDI_geology	0		
FDI_other production	0		0
FDI_housing and public utilities	0.0376*	0.0335	0.00689
FDI_nonproductive services	-0.195**	-0.208***	-0.190
FDI_public health	-0.0303	-0.0336	-0.0612
FDI_education	-0.0390*	-0.0419*	-0.0385
FDI_culture	-0.0373*	-0.0388**	-0.0441**
FDI_science	-0.0387	-0.0495	-0.0404
FDI_finance	0.0385	0.0334	0
Time effect	Yes	Yes	Yes
Industrial effect	Yes	Yes	Yes
Constant	4.741***	2.837***	-0.475
Observations	205	205	205
R-square	0.852		

Table 6.

	FE	RE	GLS
Labor	-0.111	-0.0955	-0.0798*
Domestic capital	0.163***	0.192***	0.0954***
Materials	0.137***	0.162***	0.163***
FDI_agriculture	-0.0168	-0.0160	-0.0264
FDI_forestry	-0.0647***	-0.0691***	-0.0528**
FDI_transport	-0.0248	-0.0314	-0.0208
FDI_telecommunication	-0.0345*	-0.0338**	-0.0330*
FDI_construction	0.214***	0.212***	0.184***
FDI_trade	0.0111	0.00956	0.00830
FDI_logistics	0.0143	0.0298	0.00683
FDI_procurement	-0.376***	-0.372***	-0.296**
FDI_IT	0.0570***	0.0518**	0.0432***
FDI_real estate	0.0470	0.0299	0.0563***
FDI_general commercial activities	0.0431*	0.0324	0.0414
FDI_housing and public utilities	0.0403**	0.0389**	0.0325
FDI_nonproductive services	-0.194**	-0.213***	-0.157*
FDI_public health	-0.0233	-0.0349	-0.0181
FDI_education	-0.0371	-0.0404	-0.0318
FDI_culture	-0.0303	-0.0384**	-0.0323**
FDI_science	-0.0338	-0.0377	-0.0257
FDI_finance	0.0329	0.0343	0
FDI_energy	-0.0336	0.0478	0.0371
FDI_fuel	-0.000183	0.0861***	0.0772***
FDI_ferrous metallurgy	0.00691	-0.0837**	-0.110***
FDI_chemical	0.134***	0.0192	0.0114
FDI_machinery	0.112**	0.0981***	0.0946***
FDI_timber	0.226*	0.00159	-0.0163
FDI_construction materials	0.0701***	-0.0137	-0.0321**
FDI_light	-0.0402**	0.00942	-0.00512
FDI_food	0.0183	0.0720***	0.0614***
Time effect	Yes	Yes	Yes
Industrial effect	Yes	Yes	Yes
Constant	4.855***	4.173***	4.893***
Observation	205	205	205
R-square	0.870		

Figure 1. GDP Growth

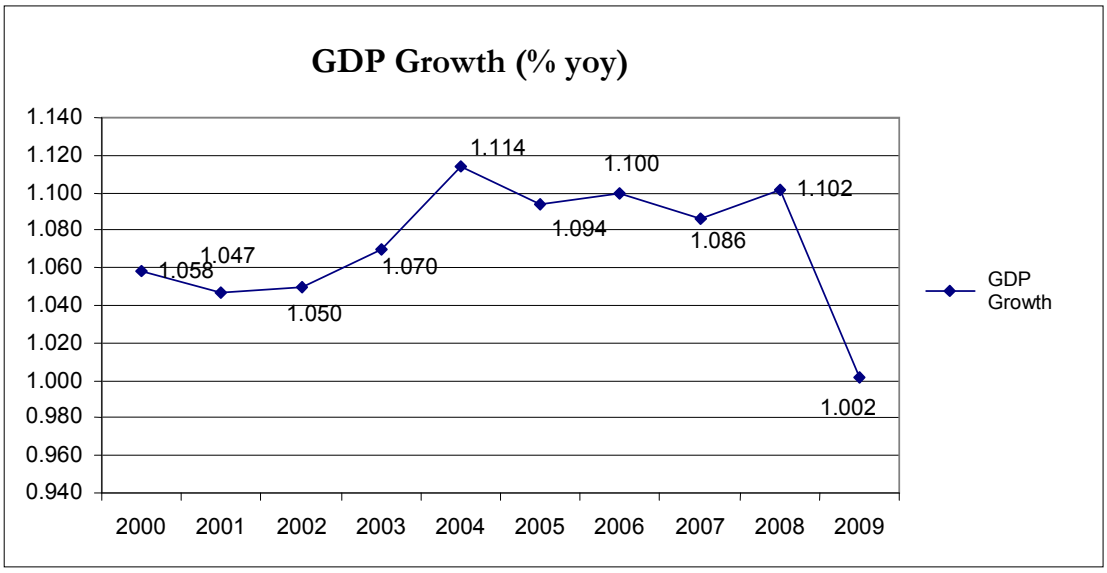


Figure 2. Structure of GDP

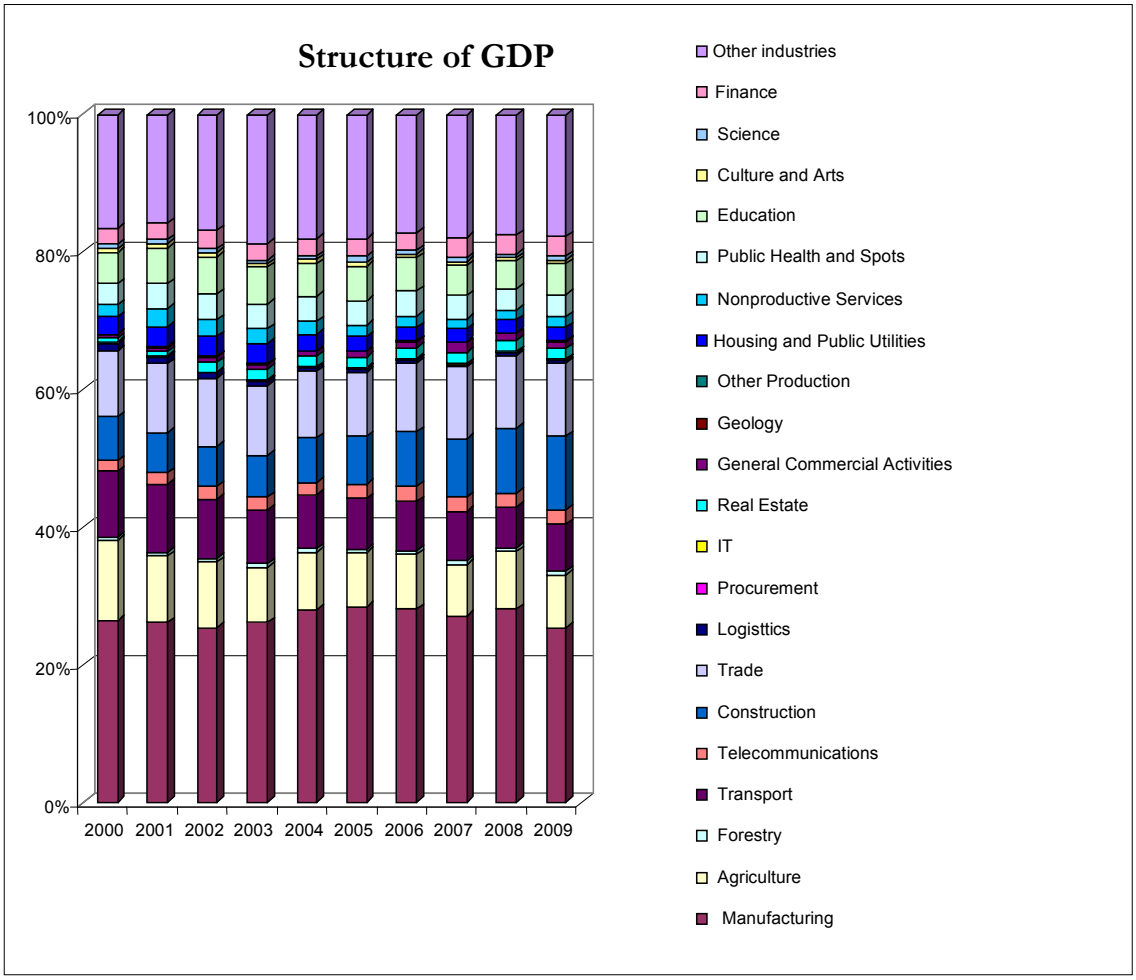


Figure 3. Structure of manufacturing sector

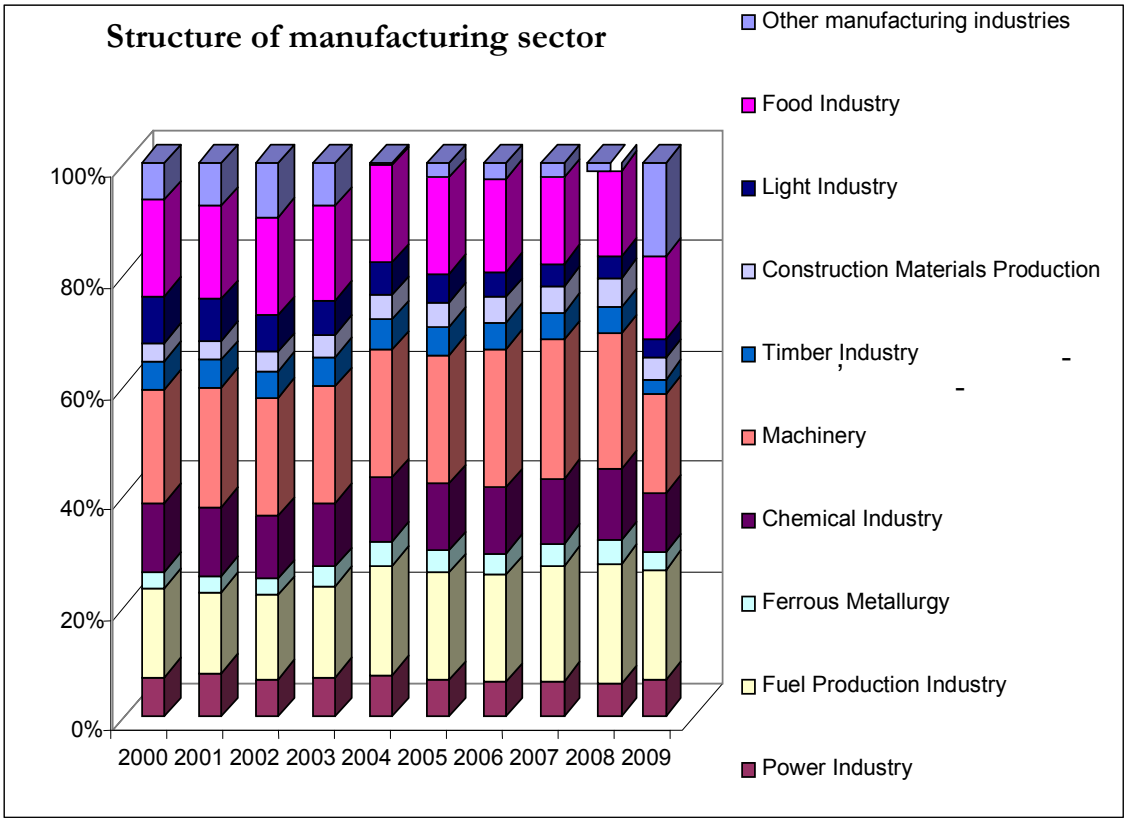


Figure 4. FDI Inflow to Belarus

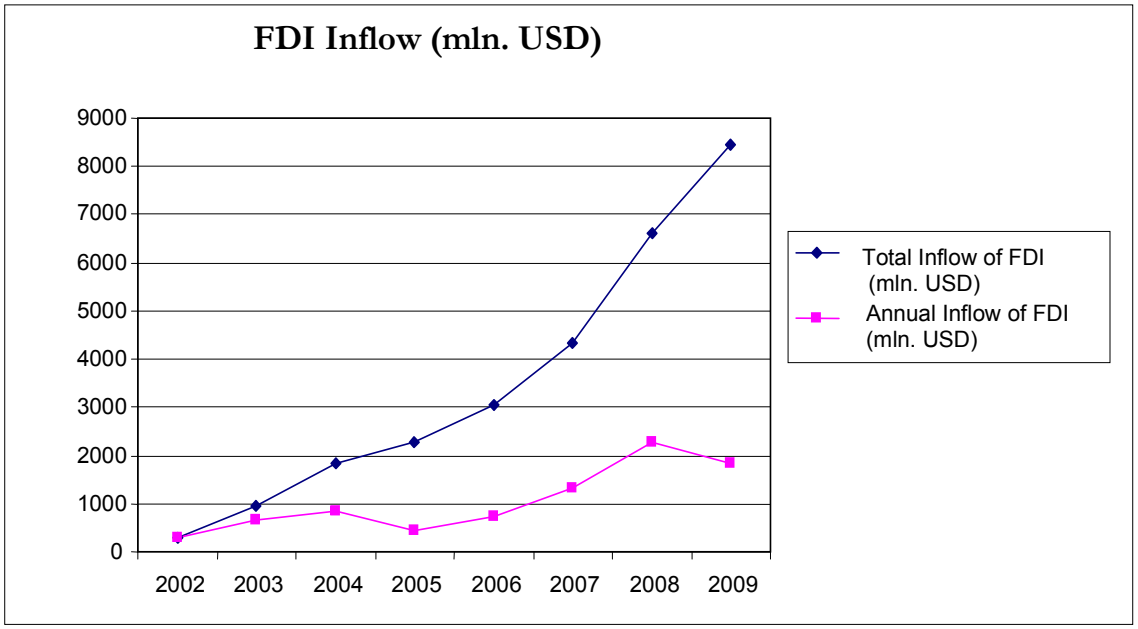
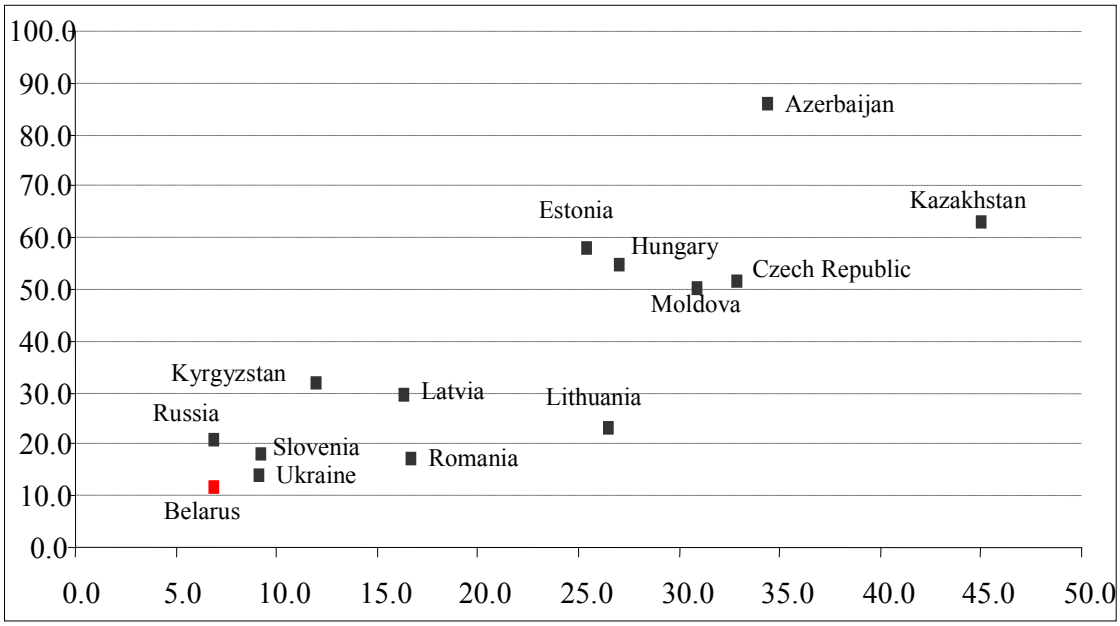


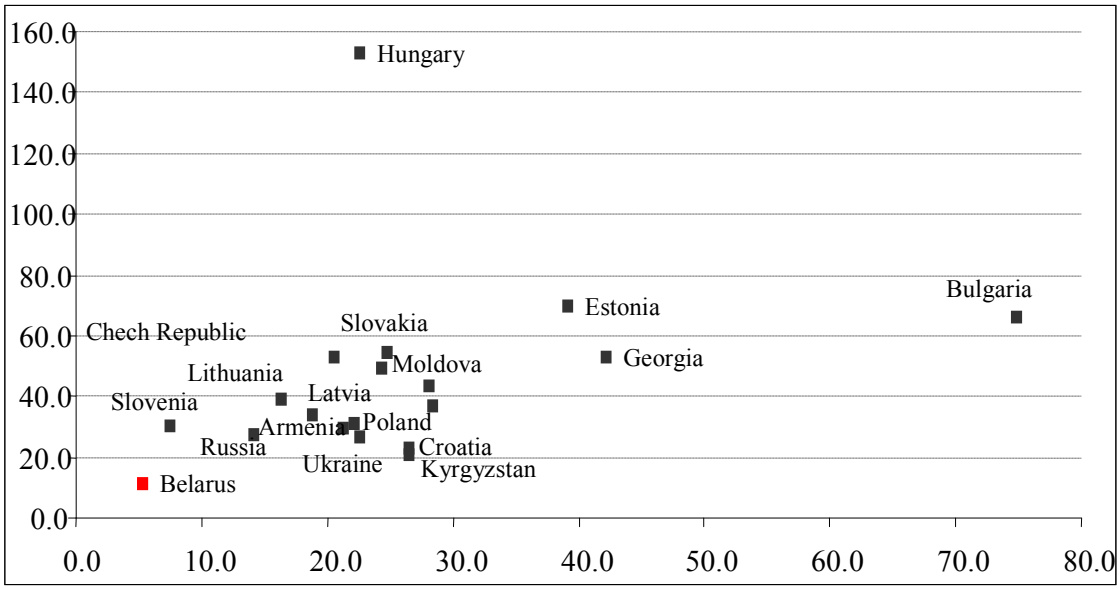
Figure 5. Volume and growth rates of FDI inflow to CEE and CIS countries

(a) 2002



Note. OY – accumulated FDI, % of GDP in 2002, *OX* – average share of FDI in foreign investments in 1997–2002, %

(b) 2008



Note. OY – accumulated FDI, % of GDP in 2008. (Bulgaria, Georgia, Lithuania, Russia, Slovakia, Slovenia, Ukraine – 2007), *OX* – average share of FDI in foreign investments in 2003–2008(2007), %.
Source: Unctad, IMF (IFS and WEO).

Figure 6. FDI's Share in Industries of Economy

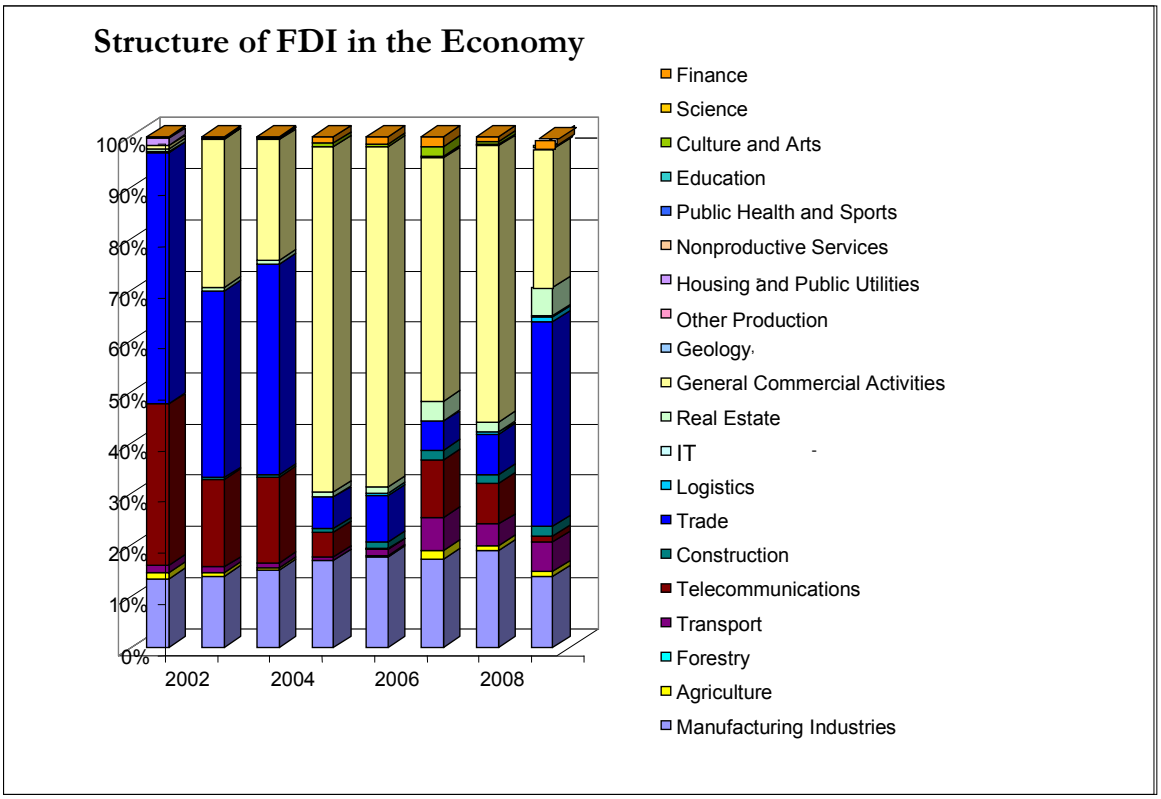


Figure 7. FDI's Share in Industries of the Manufacturing Sector