

Foreign Direct Investments Impact on Economic Growth in Developing Countries

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Abstract - In today's world, globalization and the integration of economic ties are taking place intensively, and capital mobility is increasing. However, international practice shows that foreign investment can have both positive and negative effects on the country's economy. In this paper, the author examines the effects of foreign direct investment in the economy of the Russian Federation on the basis of testing two hypotheses on the basis of statistical analysis and macroeconomic modeling. The first is related to the assessment of the economic impact on the donor country based on the modified difference model of the multiplier-accelerator. The second hypothesis is based on a test of the impact of foreign investment on the host economy, based on the elasticity of external and domestic investment flows. The study identifies several target groups for analysis: regions that are active donors of investments and regions in which foreign investment flows are low. The comparison of the effects of foreign investment in these target groups allowed the author to give a more accurate description of the hypotheses about the nature of the consequences of foreign investment in the regions of the Russian Federation.

Keywords - foreign direct investments, impact of foreign direct investments, global effects in world economy.

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1. Introduction

At the present stage of development of international economic relations, foreign direct investments are becoming increasingly important for national economies as a special way of country development by raising the level of technological component, formation of new jobs, and increasing of wealth status altogether. For a good long time, the approach existed based only on the positive effects of foreign direct investments, however, there is also a diametrically opposite point of view suggesting simultaneous presence of positive and negative effects, or absence of any favorable impact for a recipient country. It is what the main question covered in the framework of this paper is built upon: "What impact may foreign direct investments have on the recipient country, and on which factors does it depend?" For answering this question, it is necessary to consider various theories characterizing the impact of this instrument.

2. Literature Review: Systematization of the Scientific Views on Impact of Foreign Direct Investments on the Host Economy

Despite the fact that foreign investments issues are not particularly new for economics, they have been closely looked at by science since the early 1970s to the present time. This is primarily due to inconsistency of the judgements presented in the scientific literature on FDI effects. Some scholars consider the FDI effects on the economic development to be beneficial, while others argue that the FDI are hindering it.

One of the basic theories around which the direct investments concept develops is R. Vernon's "international production of goods cycle theory". Vernon argues that FDI implementation assumes a special importance for firms producing innovative product only at the certain stages of life cycle: at maturity and slump stages. Nevertheless, Vernon's concept gained acceptance in economics as international trade theory rather than general theory

of the FDI, since it explains only one of the reasons for investing. [16].

Among all the concepts relating to direct investments, Flying Geese Paradigm by K. Akamatsu is of special interest, who believed that FDI give the possibility for developing countries and economies in transition to reach the level of developed economies with less time, therefore, the state encounters the task of the highest possible relaxation of restrictions for foreign investors. That is, the positive effect is directly proportional to government policy in the field of investment regulation [14].

The theory of oligopolistic behaviour by S. Hymer suggests that the investor is a monopolist at its target market aimed at establishing and maintaining of control over it. In other words, direct investments are made to contain competition and protect own interests. The main reason for investing is to establish depressant conditions for competitive affiliates. S. Hymer refers to potential possibility for restraint of domestic producers, which is opposed to the interests of the FDI recipient country [7].

R. Caves considers direct impact of FDI on the recipient country in the form of tax payments, establishment of new industries, formation of additional jobs. The effect of FDI, in his opinion, is expressed in increasing of the competition at the sales market and promotion of more technological production among the domestic organizations [2,3].

As part of the UNCTAD conference held in 2001, the emphasis when analyzing the direct investment process was on the reduction of profits of domestic producers being direct competitors of transnational corporations.

Haddad and Harrison [5], who were researching data on Moroccan plants within the period from 1985 to 1989, revealed a negative correlation between the growth in productivity of all factors of production and presence of foreign companies in the same sector. At the same time, Aitken and Harrison [1] when studying the performance of the Venezuelan plants in the period from 1976 to 1989 along with the foreign companies, found that the enterprise with 50% foreign capital participation has a higher level of performance than the domestic one, but is characterized by lower rate of growth of this indicator (by 13% on the average).

Particular attention is now being paid to consideration of the "effect of spill over" of technologies from TNCs to domestic producers. From this point of view, the paper is interesting [9], where the author, as a result of regression analysis, revealed that existing strong differences in performance and technology level may lead to squeezing out of national companies due to the positive effect of scale. A. Kokko also assumes that in addition to production of sector technologies,

marketing technologies can possess the "effect of spill over" too [19].

The theory of "peripheral capitalism" developed by the Executive Secretary of the Economic Commission for Latin America, R. Prebisch, presumes that negative consequences would exceed positive ones following direct investments in developing countries. This is primarily due to exploitation by the "core", which consists in draining "periphery" of the substantial part of revenues. In other words, excess of outflows over inflows will always prevent attempts to bridge the gap between the developed and the developing countries [15].

The econometric approach, on which analysis of the FDI effects on the recipient country is based in most cases, has a serious shortcoming in the form of absence of consistency of the obtained results: as a rule, authors study not a complex, but a separate effect, without linking it to others, where different sampling and time range patterns make it possible to compare isolated results obtained by different authors as incomparable. For example, A. Lemi [10], based on econometric analysis of the production functions, reasoned that there is a high probability of lost productivity of the domestic companies under the influence of direct foreign investments from the USA and Japan. Whereas, Heng T.M. [6], using the same approach and similar set of data, reached a totally opposite conclusion when analyzing industry in Singapore. Based on the foregoing, it follows that the analysis of the FDI impact must be based on the features of the recipient country's operation in terms of economic, political, institutional and social components [4].

Summarizing the aforesaid, it is necessary to identify the structure of positive and negative effects for FDIs recipient country.

Positive impact may consist in the following aspects: increasing number of jobs and, as a result, decreasing level of unemployment; infrastructure development; technological exchange and growth of the number of highly skilled labour; raising wages in a certain sector of economy; development of related industries; increase of tax revenues for the treasury of the state [13].

Negative impact of the FDI may result in: monopolization of domestic market; negative balance of payments; deterioration of the environment; loss of economic and political independence; crowding-out of domestic producers; changing structure of the economy, as a whole.

3. Hypothesis of the Study

This study paper covers FDI effects on the economy of the Russian Federation by verifying two hypotheses. The first one relates to estimation of the

economic impact on the donor country based on the modified difference model of multiplier-accelerator. The second hypothesis is based on verification of the impact of foreign investments on host economy on the basis of investment external and internal flows elasticity coefficient.

4. Methodology

The following general scientific methods were used during research: content analysis method designed for analysis of the semantic content of text arrays on the subject of research, as well as inductive and deductive analysis instruments, which made it possible to combine separate conclusions on this problem and formulate author's vision of issue. Special methods were also used: absolute and relative statistical indicators, dynamics indicators, factorial analysis [17,18].

The information basis for this study consisted of published official statements, reports and statistical bases of such international organizations as UNCTAD, the World Bank Group; databases of the Federal State Statistics Service.

5. Study of Impact of FDI on the Russian Economy

5.1. Assessment of effects associated with the level of competition between domestic and foreign investments at Russian domestic market

The hypothesis set forth when solving this problem may be formulated as follows:

H0: The flow of FDI into the host economy contributes to more active involvement of national investments in the production process. "Positive effect of involvement" takes place.

H1: The flow of FDI into the host economy contributes to growing competition between domestic and foreign investments; the foreign investment displaces the domestic ones. "Negative effect of involvement" takes place.

Hypothesis verification and quantification of these effects consists in determination and interpretation of coefficients of absolute (t E) and relative (t G) elasticity of national (domestic) investments by those for-eign detailed in papers [8].

Calculation of absolute and relative elasticity is carried out by form. 1,2:

$$E_t = \Delta L^A_t / \Delta L^B_t, \quad (1)$$

$$G_t = (\Delta L^A_t / L^A_t) / (\Delta L^B_t / L^B_t), \quad (2)$$

where ΔL^A_t means a change in the share of annual national investments in the GDP of the FDI recipient country;

ΔL^B_t means a change in share of annual foreign investment in the GDP of the FDI recipient country.

It was hypothesized as part of this paper that presence of the specific effects depends on the FDI life cycle stage in the territory of the recipient country. In this regard, authors identify the main stages and criteria for their identification [11].

For example, investor admission stage is characterized by unpronounced trend of growth of the system in whole with pronounced multi-directional dynamics in individual points (regions) of system growth. This is due to the fact that at this stage there is a selection of "pilot" regions for investment [12].

At the stage of active placement, the nature of dynamics of the elements approaches the general trends of changes of the system and has pronounced a character of active growth accompanied by upward trend. This is due to the spread of momentum from the growth points to the remaining elements of the system.

The operational phase differs from the stage of active allocation with fading trend of the FDI growth in the whole across the system, as well as with lower volatility of the FDI dynamics in regions than at the admission stage. At this stage, the FDI growth is usually due to reinvested earnings in the regions which stated investor's expectations.

Taking in consideration the above, for avoidance of distorting averaging effect and in order to obtain more reliable results, we calculate the above indicators for two periods characterized by different trends in the dynamics of foreign direct investment flows: from 2004 to 2008 and from 2009 to 2016. It can be seen in Fig. 1. that the first period from 2004 to 2008 differs with a significant increase in foreign direct investments (rate of growth for 4 years constituted 396.3%), foreign direct investment flows have a pronounced upward trend in this period.

The second period from 2009 to 2016 is characterized by unsustainable FDI dynamics (the range is 350.3% against the minimum value in 2015).

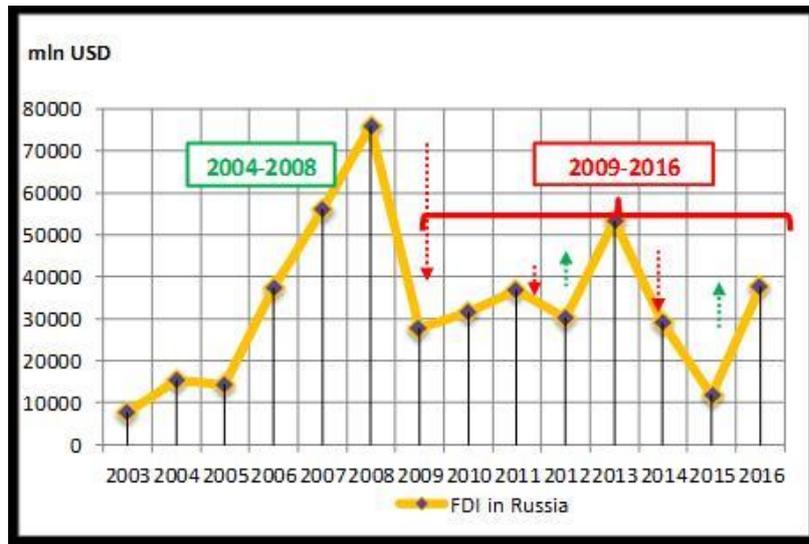


Fig. 1. RF FDI balance dynamics from 2003 to 2016.

Source: compiled by authors of the paper based on UNCTAD statistical data Access mode: <http://unctadstat.unctad.org/EN/Index.html>.

2004-2008: In the period from 2004 to 2008, absolute elasticity (E_t) made 130.75 (5.23 / 0.04), and relative elasticity (G_t) made 13.04 ((5.23 / 16.03) / (0.04 / 1.59)). Since the obtained values of absolute and relative elasticity are above zero, it follows that foreign and domestic investment multiplier effect is realized in the Russian economy from 2004 to 2008. In other words, the FDI render stimulating effect on foreign investments contributing to their more active involvement in the production process. This situation may be described as the most comfortable for the recipient country, as economically effective balance between foreign and national impact on the Russian economy is realized.

The data used to calculate absolute and relative elasticity coefficients make it possible to determine another important indicator — the amount of investments (placement of funds) mt that would contribute to the economic growth of the host economy. It is calculated by the following formula 3:

$$mt = (1 - L^A) / L^B. \quad (3)$$

The value of this indicator acts as a kind of break-even point of FDI, which determines the maximum allowable from the point of their maximum efficiency relative volume. While this volume for the recipient country is below this critical level, a sufficiently high return on FDI may be expected. If this critical value is exceeded, the growth of FDI volume will be economically inefficient. In 2004, the break-even point

was 52.8 ((1-0.1603) / 0.0159), and in 2008 — 48.3 ((1-0.2126) / 0.0163). This suggests that maximum efficiency can be achieved with increasing of investments by 52.8 and 48.3 times, respectively. 2009 - 2016: Absolute elasticity of national investments against foreign investments within the period from 2009 to 2016 was -0.3 (-2.95 / 9.76) and relative elasticity — (-0.02) ((-2.95 / 20.53) / (9.76 / 1.3)). The obtained results indicate that there was a "crowding-out effect" within the second study period, which means that situation is realized where national and foreign investments compete with each other. As $\Delta L^A_{2009-2016} < 0$ (-2.95), and $\Delta L^B_{2009-2016} > 0$ (9.76), the process of "pushing out" of domestic investments by foreign investment takes place in the economy. It may be concluded that from 2009 to 2016 the FDI renders generally depressive effect on the investment activity in the Russian Federation, and, therefore, their increase is highly undesirable.

As of 2009, the break-even point was 61.1 ((1-0.2053) / 0.0130), and as of 2016 — 7.45 ((1-0.158) / 0.1106). Exceeding of this indicator in 2009 against 2016 indicates the decrease in return on foreign direct investments in the Russian Federation in relation to the previous time slots due to "crowding-out" of national investments. This trend resulted from simultaneous decrease in the share of national investment and significant increase in the share of foreign investments to the GDP of the recipient country.

5.2. Assessment of the FDI impact on the Russian economy based on modified multiplier-accelerator differential model

$$n_t = J_t^B / J_t \quad (9)$$

As a result, 4 hypotheses are verified:

This model assumes the use of investments multiplier (m_t) and accelerator (V_t) concepts incorporated in integrated Harrod-Domar's economic growth model [8].

The key indicator of this model is a differential range of incremental return on the national (β^A) and foreign investments (β^B), which represents quantity of a new product created by the investment unit:

$$-\infty < \beta^B - \beta^A < \infty, \quad (4)$$

$$\beta^B = \Delta Y_t^B / J_t^B; \quad (5)$$

$$\beta^A = \Delta Y_t^A / J_t^A, \quad (6)$$

$$J_t = J_t^B + J_t^A, \quad (7)$$

where ΔY_t^A and ΔY_t^B mean the quantity of new product (GDP growth) created in national and foreign sectors of economy of the recipient country;

J_t , J_t^A and J_t^B are, respectively, general, national and foreign investments in the recipient country.

The further logic of verification of the hypotheses regarding the FDI impact on the host economy based on system analysis of the following additional indicators of the model:

- rate of growth of a new product (GDP) (λt)

$$\lambda t = \Delta Y_t / Y_t. \quad (8)$$

- shares of foreign investments of the sector in total volume of investments in economy of the recipient country (n_t).

H0: national economy is in recession, which can be overcome also by attracting direct foreign investments ($\lambda t < 0$; $n_t = 0$; $\beta^A < 0$).

H1: the sector with foreign capital is less efficient than the sector with national capital due to the fact that the incremental return on foreign investments is less than on national investments. ($\lambda t > 0$; $n_t \neq 0$; $\beta^A > \beta^B > 0$).

H2: national and "foreign" sectors of economy of the recipient country have the same efficiency ($\lambda t > 0$; $n_t \neq 0$; $\beta^A = \beta^B > 0$).

H3: incremental return on foreign investments is higher than that of the national ones ($\lambda t > 0$; $n_t \neq 0$; $\beta^B > \beta^A > 0$).

In this model, multiplier-accelerator is a rate of growth in production caused by the change of share of investments in "foreign" sector of the recipient country W_t :

$$W_t = [(\beta^B - \beta^A) \times S_t \times \Delta n_t] / (1 + \lambda t), \quad (10)$$

$$\text{where } \Delta n_t = \Delta J_t^B / J_t$$

At $W_t > 0$, the current trend contributes to increasing rates of economic growth (at $\lambda t > 0$) or softens the crisis trends (at $\lambda t < 0$). Accordingly, at $W_t < 0$, it slows economic growth (at $\lambda t > 0$) or aggravates industrial recession (at $\lambda t < 0$).

General calculations across Russia for the period from 1999 to 2015 in terms of selected investment cycles are given in Table 1.

Table 1. Results of Harrod-Domar's Model Coefficients Calculations

Model parameters	1999-2003	2004-2008	2009-2015
β^A	7.68	7.04	3.42
β^B	21.66	54.15	11.50
$J(t)$	736 999	2 394 338	8 435 589
$Y(t)$	4 149 289	10 742 423	32 072 552
$n(t)$	0.09	0.09	0.06
$S(t)$	0.18	0.22	0.26
$B(t)$	8.95	11.13	3.90
$\lambda(t)$	1.59	2.48	1.03
$W(t)$	0.84	-0.05	-0.01

As can be seen from the calculation results, incremental return on foreign investments has always been higher than on the national ones by several times, but by 2015 it decreased and approached the return on national investments. Foreign investments contributed to the economic growth of Russia as a whole only within the period from 1999 to 2003 (penetration stage). However, given the strong degree of differentiation in distribution of foreign investments into RF regions, it seems controversial to recognize the findings as unconditional, since in this case we may face the "curse" of the average, that is, with the case when the trend for the largest donor region distorts the general conclusion. Therefore, further calculations were made for the main recipient regions (where foreign investment flows share was more than 5%). Consequently, several groups with different trends were identified:

- regions where slowdown in economic growth both in the periods from 2004 to 2008 and from 2009 to 2015 was observed — Moscow region, Sakhalin region, Tyumen region

- regions where acceleration of economic growth throughout the period under study was observed — St. Petersburg, Leningrad region, Chelyabinsk, Sverdlovsk regions, and other regions with low share of investments income in the total volume across Russia (it should be noted that in these regions, the ratio of national and foreign investments at the level of 9: 1 in favour of national investments is preserved).

- regions where there is a positive trend accompanied by slowing and then acceleration of the economic growth — Krasnoyarsk territory, Lipetsk region.

- negative trend is observed only in one region — Moscow city. It is the region that determines the trend across Russia due to considerable proportion in total volume of foreign investments.

6. Conclusion

Based on the results of the study conducted, we came to conclusion that main reasons for emergence of such opposing judgments on the effects of direct foreign investments on economy of the recipient country are:

1. Differences in selection of basic theories for evaluation of effects.

2. Differences in original data (for example, due to different data quality or differences in the sample composition, as different sets of countries).

3. Differences in the nature of the FDI trends analyzed.

The results obtained on the basis of data across the Russian Federation showed that the FDI effects depend on a life cycle stage.

As part of the stage of active involvement of foreign investors, the FDI render stimulating effect on national foreign investments contributing to their more active involvement in the production process, but at the stage of placement of the second one there is an effect of "crowding-out" of national investments by foreign ones, which means that the scenario where national and foreign investments compete with each other realizes.

Throughout the analyzed period, the incremental capital productivity of foreign investments has always been higher than national ones by several times, which testifies to the improved management processes in these companies and the potential for stimulating economic growth in the Russian Federation. However, the calculations performed in the Russian Federation as a whole showed that foreign investment contributed to economic growth in Russia as a whole only in the period from 1999 to 2003. The revealed contradiction is explained by the existing differentiation of flows and the different influence of foreign direct investment on the economic growth of various regions of the Russian Federation. The general trend is due to the trend of just one region - Moscow due to the weighty share in the total volume of foreign investments (on average about 40% during the analyzed period), while in other regions the positive effect of foreign direct investment on economic growth, differing only in varying degrees of intensity. In this situation, in our opinion, the model of targeted regional state policy of stimulating foreign investments becomes more effective, which will allow maximum use of the positive effect in specific regions of the Russian Federation taking into account the stage of the life cycle of foreign investments within the given territory and neutralize the negative effects observed in other regions.

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