

## Foreign Direct Investment in Emerging Markets: Evidence from Russia since the 2000s

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**Key words:** Foreign direct investment, economic growth, transition economies, Endogeneity, JEL classification: F21: International investment, Long-term capital movements, F43: Economic growth of open economies

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**Abstract:** This study aims to analyze the role of FDI inflow in the Russian economy and determine the degree of impact on the economic growth rate. The empirical research captures 2000-2019 years specifying by quarterly time-series. Although, in general, it is considered that the FDI can transmit technology and development to the host country, this paper shows that in the case of Russia, the role of FDI inflow into the country has an endogenous component, which does not exert a substantial impact on the economic growth.

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## INTRODUCTION

A significant increase in foreign investment globally since the late 50s brought about the globalization of capital movement. In recent decades, intensive investment inflow has played a substantial role in any economy. Studying the nature of Foreign Direct Investment (FDI) stays on international economics's focus point. The Russian economy also is not too far from reality. The large size of the Russian market has always been attractive to investors. Especially its domestic market capacity, geographical advantages and skilled labor force played the most valuable role.

After the collapse of the Soviet Union, the Russian Federation (RF) has faced devastating damages in each field of its economy. However, since the early 2000s, the government has been able to catch stability. This trend was directly associated with the structural transformation of the Russian industrial production, which led to the

formulation of vertically integrated and horizontally diversified companies with distinct market strategies as a part of transnationalisation. In this period, the main goal of economic expansion was not to seize the most attractive assets, somewhat control the whole sector. In these circumstances, FDI has long been a crucial instrument in transforming the centrally planned economies into vibrant market systems.

Evidence of FDI in Russia is an exclusive case determined by the complex relationships between Russia's economy and the international movement of capital, where the ties of relations developed over twenty years ago at the beginning of the transition period. Before analyzing the Russian economy's capitalization by the foreign investors, it is necessary to characterize the Russian Federation's entire economy and emphasize the challenging post-Soviet transition period through which the economy passed. For this purpose, the Russian government tries to convince foreign investors that there

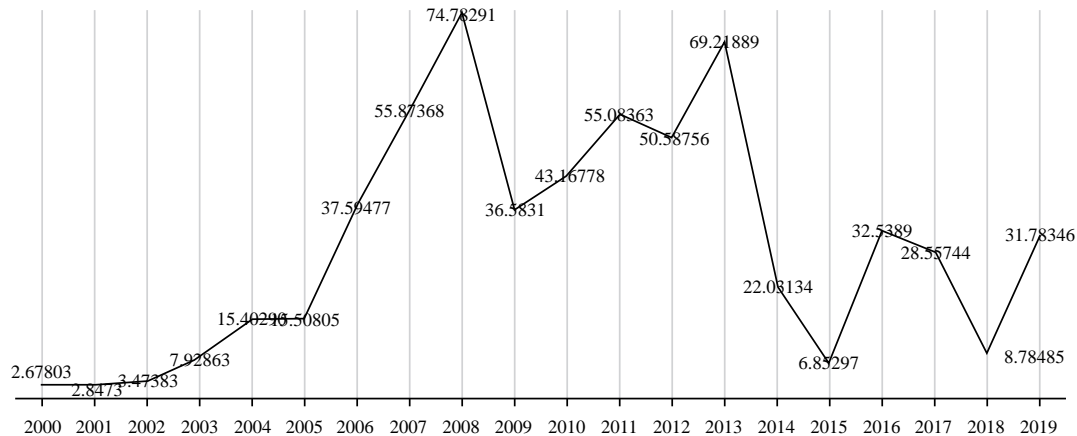


Fig. 1: FDI net inflows in Russia in bln. \$ (2000-2019), Source: The World Bank

has already been established as a favorable and safe environment for different investment activities in the country.

Today sustainable economic development of any country is impossible without active participation in global economic relations. In this respect, FDI influences the host country's economy through capital flows, as it provides the capital usually missing in the host country. Along with the intervention of international trade and by getting the investment offers, on the one hand, the role of capital flows is becoming increasingly important and on the other hand, countries undertake effective leverages of further cooperation.

The role of FDI can be influential and it can change the hosting country's economic situation. However, for developing countries and countries with economies in transition, FDI is considered ambiguous and its expected effect is not always positive for the accepted country. The studies underline that for some countries, especially with transition economies, FDI cannot give positive results. The gradual replacement of domestic producers from the market with foreign ones risks being more significant negative rather than positive on the inflow of new technologies. Although FDI allows attracting financial resources missing in the national economy, contributes to technological developments and creates different market institutes increasing labor productivity, FDI can also have a devastating impact on the local economy, pulling them to the poor competitive economy with the high barriers in prices (Fig. 1).

Experience shows that in the absence of legal restrictions and worthy competition policy, FDI becomes a powerful tool for monopolization of industries through the intervention of foreign capital, since it leads to the withdrawal of income from the host country that adversely affects the competitiveness of the industry and country as a whole. If FDI results in positive “spillovers”

to the local economy through linkages with local suppliers, competition, imitation and training, it also results in negative “spillovers” by forcing domestic enterprises to close down. Mostly it can happen due to the lack of financing for upgrading their technology. For instance, foreign companies may buy a local competing or interfering company and shut it down to gain a monopoly in the sector. Furthermore, the inflow of FDI might affect a decline of job positions, lead to the increase of imports and a weak policy of management by a government, which can cause the growth of wages in a country, which the domestic companies usually are not able to follow.

**The following sections of this study are structured as follows:** Section 2 provides a literature review; section 3 and 4 describes the data sources, descriptive statistics and empirical methodology. Section 5 and 6 discuss the main empirical results and comparison between OLS and IV results. In section 7, we conclude the paper.

## MATERIALS AND METHODS

In modern economics, the study of FDI is mainly based on two basic approaches: the first is an indigenous approach (known as the “why” and “how” approach), which refers to the characteristics of the company. The second one is an exogenous approach (known as the “where” approach), which refers to the characteristics of a country. Hymer<sup>[1]</sup> discusses these approaches in detail. Dunning<sup>[2]</sup> synthesizes that both approaches’ studying outcomes were reasonable and reliable to explain the nature of FDI. Also, Dunning<sup>[2]</sup> introduces the “eclectic paradigm theory,” which includes three factors (ownership, location, internalization) as equivalently significant conditions to lead investors to implement FDI.

The linkage between FDI and economic development has been extensively studied in theoretical and empirical

research. Despite many studies, there is no consensus among researchers regarding the sign, magnitude and significance of the impact of FDI on economic growth. Nevertheless, the linkage between the two is likely to be country and region-specific. For instance, Choe<sup>[3]</sup>, Balasubramanyam<sup>[4]</sup> and Karbasi-Mohamadi-Ghofrani suggest the positive relationship between FDI and economic growth. In contrast, Alfaro<sup>[5]</sup> disproves other's findings and argues that the impact of FDI inflows on economic growth differs depending on the investment sector. For instance, Ahrend surveyed the accessibility of Russian regions for FDI inflows. He found out that there are four factors in Russia: the previous investments made by other entrepreneurs, a large market size, the endowment of raw materials as production factors and the existence of a partner company, which explains the FDI allocation in Russian regions.

Buccellato and Santangelob<sup>[6]</sup> analyses the impact of regional characteristics of regional FDI allocations in Russia and highlights the features of neighboring regions as one of the key indicators for the allocation. On the root of features lies the effective market potential and agglomeration effect of the neighboring markets, which shows the credibility of the neighbors. Another similar approach was used by Bradshaw<sup>[7]</sup> who distinguishes five regional characteristics that may attract foreign investment.

Based on the standing literature, the market size is an essential determinant of FDI inflow. Moosa<sup>[8]</sup> and Hara - Razafimahefa study this topic profoundly and conclude that the market size of the growing economies appears to be more attractive for FDI inflows. This perspective indicates that the dynamics of GDP growth play one of the key functions to reflect the market capacity.

Furthermore, bilateral FDI-the Bayesian statistical techniques, applied by Blonigen, was also considered an effective way to estimate a set of variables affecting the FDI activities in the GDP of counterpart countries. The results show that the gravity model (GDP measurements) is significant to understanding the investment movements and the correlation between cooperating countries. The main lesson from the studying FDI-GDP nexus is that foreign investors seek large markets to support their operations and benefit from economies of scale. In these circumstances, the real GDP can be used as a proxy for market size, a primary determinant for FDI inflow. Ledyeva-Linden also proved such an inference, who used the same gravity model. It applied to the usual variables such as the market sizes of the recipient region and source country. It concluded that the larger the region,

the larger the volume of investment it will stretch. Amina Lahreche-Revil<sup>[9]</sup> studied the question using the same model and emphasized the positive correlation between FDI and GDP measures.

Thus, depending on its datasets and models, each research paper highlights different aspects of the interrelation concerning FDI inflow. One of the options to classify the impact of FDI on economic growth could be arranged by performing hypothesis tests. Summing up the previous empirical studies, we conclude that the most important determinants in explaining FDI allocation in Russian regions are market size, infrastructures, natural resources and various indicators of socio-economic development and the quality of institutions<sup>2</sup>.

**Data framework:** We collected data from several different sources. The primary sources were the Russian Federal State Statistics Service (FSSS), Central Bank of Russia (CBR) and The World Bank. Moreover, the empirical analysis was also referred to the database of The United Nations Conference on Trade and Development (UNCTAD), The Worldwide Governance Indicators (WGI) and the database of the Organization for Economic Cooperation and Development (OECD).

This study aims to study the interaction of FDI inflow on economic growth in the Russian economy. To create the model, we referred to Alfaro<sup>[5]</sup> and Carkovic-Levine empirical estimation method, who used an alternative approach to explain the relationship between FDI and economic growth. The collected FDI data set is intended to cover the period from 2000 to 2019, based on quarterly intervals.

In the model, the main variables are FDI inflow and GDP per capita. The model also includes a dataset of six variables indicated as control variables. The control variables matrix embraces financial depth, government debt, tax revenue and market capitalization. In our model, the financial depth represents the M2 amount of liquid liability as a ratio to the GDP. Government debt and tax revenue variables are also included as a ratio of respective variables to the GDP. The last attribute-market capitalization, measures the total market value of listed shares within the stock market development in a GDP ratio. This parameter's main feature is that it is less arbitrary than any other measure of stock market development.<sup>3</sup> All these four variables are included in a log form.

Furthermore, the control variable also includes inflation rate and regulatory quality indicators. The inflation rate is denoted by the quarterly percentage

<sup>1</sup>Mohan, P. -Watson, P. K. (2010) *CARICOM Cross-Border Equity Flows*. Sir Arthur Lewis Institute of Social and Economic Studies University of the West Indies

<sup>2</sup>Buccellato, T. -Santangelo, F. (2009) *FDI distribution in the Russian federation: do spatial effects matter?* Centre for the Study of Economic and Social Change in Europe

<sup>3</sup>Anokye, M. Adam-George T. (October 2008) *Foreign Direct Investment (FDI) and Stock market Development: Ghana Evidence*. Munich Personal RePEc Archive

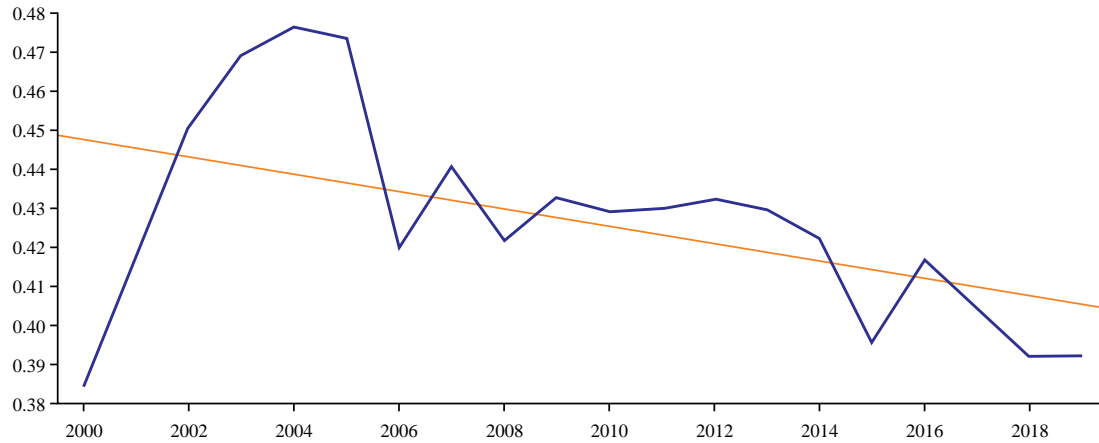


Fig. 2: A plot of regulatory quality indicator (2000-2019)

Table 1: Descriptive summary statistics of variables

	GDPG	FDI	Inflation	Oil. Exp	Fin. Depth	Market Cap.	Reg. quality	Gov. Debt	Tax. Rev.
Mean	13.8786	9.8982	2.3420	11.3892	14.0716	12.7779	-0.8536	11.9519	12.4795
Standard error	0.1550	0.2400	0.1695	0.1448	0.2368	0.2475	0.0137	0.0790	0.1729
Median	14.1016	10.3154	2.6210	11.5272	14.5719	13.2456	-0.8538	11.8558	12.8850
Standard deviation	0.6930	1.0734	0.7580	0.6477	1.0592	1.1070	0.0615	0.3531	0.7733
Sample variance	0.4803	1.1521	0.5746	0.4195	1.1219	1.2255	0.0038	0.1247	0.5980
Kurtosis	-0.4208	-0.7389	-0.0836	-0.2547	-0.3106	0.0753	-0.3642	-1.1691	-0.7019
Skewness	-0.9372	-0.7022	-0.6383	-0.9217	-1.0306	-1.1309	0.2529	0.2687	-0.9042
Range	2.1778	3.3295	2.9513	1.9845	3.2999	3.7607	0.2153	1.1533	2.3286
Minimum	12.4673	7.8928	0.6783	10.1262	11.8189	10.3543	-0.9568	11.4466	10.9144
Maximum	14.6451	11.2224	3.6296	12.1107	15.1188	14.1150	-0.7414	12.5999	13.2430

Table 2: Correlation matrix

	GDPG	FDI	Inflation	Oil. Exp.	Fin. Depth	Market Cap.	Reg. Quality	Gov. Debt	Tax. Rev.
GDPG	1.0000								
FDI	0.2632	1.0000							
Inflation	-0.4793	-0.2063	1.0000						
Oil.Exp.	0.2799	0.8374	-0.2995	1.0000					
Fin.Depth	0.6640	0.5903	-0.5444	0.6794	1.0000				
MarketCap.	0.4021	0.6828	-0.3190	0.6594	0.6792	1.0000			
Reg.Quality	-0.2738	-0.0979	0.0970	-0.1359	-0.3858	-0.1693	1.0000		
Gov.Debt	-0.7476	0.0949	-0.3917	0.4994	0.7676	0.1002	-0.4069	1.0000	
Tax.Rev.	0.5532	0.5675	-0.6061	0.6972	0.6814	0.6945	-0.3720	0.5131	1.0000

change of prices and indicates a proxy for economic stability. The latter one, regulatory quality, is reported by WGI as an aggregate governance indicator over the period 2000-2019. <sup>4</sup>For our model, we include this indicator since it reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. <sup>5</sup>The range of estimate of governance performance fluctuates from -2.5 (weak) to 2.5 (strong). However, in the model, this parameter is added converted into measurement between 0-1 (0-weak, 1-strong) (Fig. 2).

Following the model specification by Alfaro<sup>[5]</sup>, our model is augmented with control variables and accounts

for the sectoral variations. The idea is based on the study of the model by including an additional fit set of variables, which will help identify the model's effectiveness in terms of economic growth and describe the nature of the regressions.

All variables, excluding inflation rate and regulatory quality, are included in log-transformed and coefficients are interpreted as elasticity in these tables. Table 1 summarizes the descriptive statistics of variables, while Table 2 presents the correlation matrix between all independent variables. The correlation matrix shows that the FDI variable, excluding inflation rate and regulatory quality, is positively correlated with all variables.

<sup>4</sup>Worldwide Governance Indicators (WGI). Source: <https://info.worldbank.org/governance/wgi/>

<sup>5</sup>Huseyin, O. (2014) *The Origin of Bias in Sovereign Credit Ratings: Reconciling Agency Views with Institutional Quality*. The Journal of Developing Areas 48 (4): 161

**Research methodology:** The model is almost the same model used by Carkovic-Levine and Alfaro *et al.* The following empirical analysis aims to determine whether the total FDI has exerted a distinguishing impact on economic growth in Russia in 2000-2019 years. Initially, as a benchmark for time-series, it is necessary to estimate the impact of FDI on economic growth. Therefore, we run the following regression:

$$\text{Growth}_t = \alpha_0 + \alpha_1 \text{GDPC}_t + \alpha_2 \text{FDI}_{t-1} + \alpha_3 \text{Controls}_t + \varepsilon_t \quad (1)$$

where,  $t$  is a period and represented quarterly.

Growth-is a dependent variable, equals the rate of real per capita GDP growth. GDPC-stands for the real GDP per capita at the beginning of the period and counts in ten thousand dollars. FDI-stood for a log of the total FDI inflow ratio to GDP and lagged one period. Controls represent a matrix of conditioning information, encompassing inflation rate, regulatory quality, financial depth, tax revenue, government debt and market capitalization.

## RESULTS

In Table 3, we obtained the OLS estimates for each control variable combined with total FDI inflow and initial GDP per capita. In the model, Inflation and Regulatory quality were added as a log of (1+average inflation per period) and a log of (1+regulatory quality per

period). The rest control variables in the model are respective variables given as a share of GDP over the period. Furthermore, we take the logarithm of each variable because the time series are heteroskedastic. The occurrence of the large local variance of the series depends on the level of the series. In this way, we can also minimize the scale of the variables but keep their effect simultaneously.

In Table 3, we can see the main regression results with all control variables included separately. In each regression, variables in a conditioning set show that the FDI inflow has a positive and statistically significant effect on economic growth per capita. Unlike the FDI inflow variable, the other core variable, initial GDP per capita, exhibits an opposite effect on the GDP per capita growth rate and excluding the regression (4) where the control variable is financial depth, in all the rest regressions, it obtains negative and statistically significant values.

Variables from the conditional set demonstrate both positive and negative effects. For instance, control variables inflation rate and regulatory quality in the regressions 1 and 3 demonstrate a negative and statistically significant effect on GDP growth per capita. On the other hand, variables market capitalization, financial depth and tax revenue in the regressions 2, 4 and 6 demonstrate a positive and statistically significant effect on GDP growth per capita. The exclusion is the behavior of the government debt

Table 3: OLS estimation result

Variable	1	2	3	4	5	6	7
<b>Constant</b>							
Coefficient	-0.0093**	0.0655***	0.1030	1.5110*	-0.0203	0.2633**	-0.0507**
S.E.	0.017	0.210	0.168	0.035	0.121	0.043	0.315
<b>GDPC</b>							
Coefficient	-0.0128**	-0.0389*	-0.0251**	0.0093	-0.0214*	-0.0219**	-0.0482*
S.E.	0.052	0.019	0.023	0.038	0.052	0.032	0.047
<b>Inflation</b>							
Coefficient	-0.1063***						-0.0832**
S.E.	0.016						0.109
<b>Market Cap.</b>							
Coefficient		0.1645*					0.0088
S.E.		0.077					0.079
<b>Reg quality</b>							
Coefficient			-0.0351**				-0.1279**
S.E.			0.391				0.396
<b>Fin depth</b>							
Coefficient				0.0277*			0.0204*
S.E.				0.041			0.099
<b>Gov Debt</b>							
Coefficient					0.0199		0.0732
S.E.					0.049		0.231
<b>Tax Rev.</b>							
Coefficient						0.0845*	0.0874**
S.E.						0.051	0.287
<b>FDI</b>							
Coefficient	0.0441*	0.0309**	0.1311*	0.0097**	0.0645*	0.0128*	0.0223*
S.E.	0.058	1.132	0.876	0.751	0.052	0.066	1.122
<b>Observation</b>	80	80	80	80	80	80	80
<b>Adj. R<sup>2</sup></b>	0.435	0.459	0.506	0.458	0.449	0.490	0.473

All the regressions include a constant term and are estimated by ordinary least square corrected for heteroscedasticity. \*\*\*, \*\* and \* denote significance level at 1, 5 and 10%, respectively, Estimation heteroscedasticity-robust based on White method

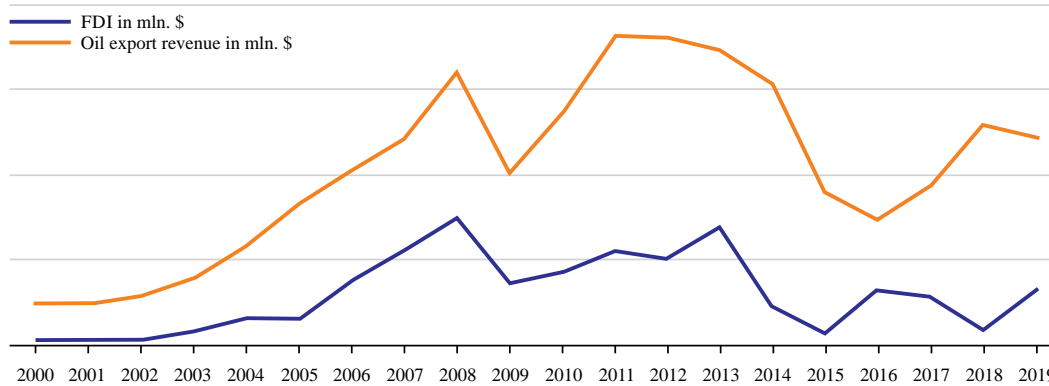


Fig. 3: Year by year correlation between oil export revenue vs FDI inflow

Table 4: Summary of hausman specification test

Instrumental variable	$\hat{\epsilon}$	Standard error	Adj. R <sup>2</sup>	F test
Oil Export Revenue	0.4071	2.021**	0.486	74.01 (0.0000)

variable. Unlike the rest of the control variables, it does not significantly affect the GDP per capita growth.

The last regression 7 indicates that the FDI inflow with the interaction of all control variables behaves positively and its value is statistically significant to the effect on the GDP growth per capita. Moreover, mentioning that R-squared is fluctuating between 40% and 50%, we can claim that, according to the given OLS regressions 1-7, the model 1 can explain the maximum half of the changes of the GDP growth per capita.

**Endogeneity: comparing OLS and IV:** Russia is one of the developing economies with high growth potential. However, its economy mainly depends on the export of raw materials, especially the income from exporting oil and oil products. These products form the most considerable portion of the budget. The fluctuation of oil prices in the stock market concerns the total revenue from oil exports, indirectly affecting the economic growth rate. As far as we know, the essential part of FDI inflow into the Russian economy is offshore original and is done by local oligarchies through off shore to evade taxes, which gives us a reason to claim that FDI inflow depends on the oil export revenue. Knowing this fact, the OLS regressions presented in Table 3 may be subject to the endogeneity problem, making it doubtful to rely only on the regression results. This correlation between FDI inflow and oil export revenue is demonstrated in Fig. 3.

The critique of OLS estimates in Table 3 is that the estimated effect of the FDI inflow variable is biased when it is endogenous to the set empirical model. Moving forward from this criticism, we carry out the Hausman specification test and apply the following simultaneous equations:

$$\text{Growth}_t = \alpha_0 + \alpha_{i-1} X_{t-1} + \alpha_i \text{FDI}_t + \epsilon \quad (2)$$

$$\text{FDI}_t = b_0 + b_1 \text{Growth}_t + b_2 Z + \epsilon \quad (3)$$

where, vector X represents the rest variables from the (2) model and Z is an instrument. Education 2 and 3 together form the simultaneous equation system. Growth and FDI appear on both sides of representative equations and are independent. Thus, these equations let us examine how changes in Growth lead to changes in FDI and vice versa. This test aims to regress FDI inflow on the vector X and the instrument Z to determine the error term ( $\hat{\epsilon}$ ) as a significant coefficient, which will let us consider that the FDI inflow is endogenous. Following this, we conducted the Hausman specification test for oil export revenue and got the below result for the second stage regression for ( $\hat{\epsilon}$ ).

The test results let us conclude that the FDI inflow has to be treated as an endogenous variable where the oil export revenue can be used as an instrumental variable since the estimated residuals of the variable carry a significant coefficient at an acceptable level of 5%. Based on this result, we can consider that the FDI inflow is endogenous to the estimated model and the results in Table 3 should be interpreted with caution.

After getting the results in Table 4, we can apply the IV method to estimate the unbiased association between FDI inflow and oil export revenue. The comparison results are presented in Table 5. In this table, the second row contains the IV estimation and using oil export revenue instrument as a Z variable produce a significant coefficient of ( $\hat{\epsilon}$ ) in the second stage regression. The comparison results show that oil export revenue as an IV indicates slightly below but still positive effect on per capita GDP growth rate.

Table 5: OLS vs IV compared

Variable	Constant	GDP	Inflation	Market Cap.	Reg quality	Fin Depth	Gov Debt	Tax Rev.	FDI <sub>OLS</sub>	Oil Exp. <sub>IV</sub>	Adj. R <sup>2</sup> <sub>OLS</sub>	Adj. R <sup>2</sup> <sub>IV</sub>	$\hat{\epsilon}$	Observ.
OLS	-0.0507** (0.315)	-0.0482* (0.047)	0.0832** (0.109)	-0.0088 (0.079)	-0.1279** (0.396)	0.0204* (0.099)	0.0732 (0.231)	0.0874** (0.287)	0.0223* (1.122)		0.473			80
IV	-0.0513** (0.262)	-0.0476* (0.034)	0.0854* (0.138)	-0.0095 (0.185)	0.1253** (0.378)	0.0197* (0.068)	0.071 (0.156)	0.0881* (0.489)		0.0214* (3.341)		0.441	0.407	80

## CONCLUSION

This study was studied the impact of FDI inflow on the GDP growth rate in Russia during the period 2000-2019. Starting from the 2000s, the amount of FDI inflow into the country has been changed dramatically. Nevertheless, its effect on economic growth is doubtful. To be favorable for the hosting economy, FDI inflow has to encourage technology transfer and induce overall economic growth. Despite in many countries, FDI positively impacts economic growth, in the Russia case, it was not observed.

We applied the OLS method and found out that the FDI inflow has a statistically significant positive effect on the economic growth rate. However, due to the endogenous feature of the variable, the model demonstrated that the results were not robust to determine the impact on the economic growth rate. The objection is that the positive association between FDI inflow and growth rate is biased, making the core findings from OLS regression inconsistent in the estimated empirical model. To avoid endogeneity, we introduced an instrument for the FDI inflow variable in the form of oil export revenue. The Hausman specification test proved that the doubts regarding OLS estimation are correct.

The implication of this study gives a motivation to investigate in-depth the origin of the FDI inflow. As far as we know that the essential part of FDI inflows into the Russian economy are offshore original and assumes that local oligarchies do the majority through off shore to evade taxes. The turnover, which can also be named a laundry of the money, through the off shore and its high correlation with FDI inflows, allows us to suspect a liberal distribution of oil export revenues domestically. So, knowing this fact, we can claim that there is a relationship between these two and FDI inflow depends on the oil export. However, it is already a topic for another research and indeed, more works need to be done to study the role of offshore investment in the Russian economy.

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