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EXCHANGE RATE INFLUENCEON FOREIGN DIRECT INVESTMENT: EMPIRICAL EVIDENCE FROM CIS COUNTRIES

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Abstract

While there have been huge exploration on the effecting factors of FDI for created and non-industrial nations, almost no has been completed on this issue for developing nations, particularly CIS – "Commonwealth of Independent States nations". The current research analyzes the elements of Foreign Direct Investment (FDI) in the Commonwealth of the Independent States somewhere in the range between 1995 and 2018. Distinguishably, this research is dedicated to describing the relationship between FDI and exchange. Earlier experimental and empirical commitments are examined cautiously to discover expected determinants which are exchange rate, GDP, GDP per capita, inflation rate, and trade openness. Regression analysis and Granger causality experiments are utilized to examine the bond between variables. Test results show there is no significant influence of exchange rate on the FDI of CIS countries.

Keywords

CIS, FDI, exchange rate.

The importance of Foreign direct investment

In recent decades, foreign direct investment (FDI) has turned out to be one of the driving forces of economic development. Foreign investment leads to economic growth for both advanced and emerging countries. However, the advantages of foreign investment for growing countries are greater than for developed countries. To build a strong economic foundation, governments do not have enough capacity to support the economy. To support economic development, foreign investment has a significant influence on the economic growth of third- world countries by bridging the gap between domestic savings and investment. That is why every country is striving for growth of direct.

Studies show that foreign direct investment increases competition in the market and expands access to world markets for exported goods. Indeed, a significant increase in global investment began in the mid-1980s. While foreign direct investment totaled $ 60 million in 1985, the trend was $ 1.3 trillion in 2018,

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with some exceptions (UNCTAD, 2018).

Various factors affect FDI. However, important factors can perform the functions in selecting fixed-oriented foreign investment, organized, local guidelines for trade, exchange rates, transaction costs, monetary management, labor costs, economic risks, accessibility to the market, and factor-funds of the adopted countries. Foreign investment is both the exchange rate and volatility of it among vital factors. While an investor is taking any decision to put money on some projects the depreciation and appreciation of the host country's exchange rate and the frequent exchange rate fluctuations affect. When depreciation of currency occurs in the host country that lowers the cost of production, known as gross wages. The devaluation of the national currency undermines the overall cost of capital and the associated foreign investment management. "Foreign investors may have capital associated with their current wealth after depreciation. Usually, appreciation of the local currency leads to an expansion of the real activity of global companies, known as the nation's commonwealth channel. The more a firm plans to increase its wealth in the host country, the more opportunities it will have to use the investment (Froot and Stein, 1991; Barrel and Pain, 1996; Harris and Ravensraft, 1991; Swenson, 1994)" [1].

As noted above, the conversion rate level is an important strong factor for multinational firms. Accordingly, this review depends on the level of the conversion standard and the impact of foreign direct investment inflows into the CIS countries. This study examined the presence of a connection between the real exchange rate in the CIS countries and the inflow of foreign investment. Section II contains experimental investigations determined by the replacement scale and FDI. Section III describes the factors and explores the experimental findings of the model, and Section IV makes important definitions.

LITERATURE REVIEW

Determining factors of Foreign direct investment

Peter Nunnenkamp (2002) approaches defining determinants differently. He classifies variables as nontraditional and traditional determines. As traditional factors author includes the below- mentioned variables: population of host countries; "GDP per capita in host countries; GDP growth of host countries; administrative bottlenecks; entry restrictions; risk factors". As far as research is concerned non-traditional factors are mostly directed to efficiency creation and they are as follow: "Complementary factors of production, i.e., local inputs required for an internationally competitive production in developing host countries; [2]

Kenneth A. Froot and Jeremy C. Stein, "Exchange Rates and Foreign Direct

Investment: An Imperfect Capital Markets Approach" The Quarterly Journal of Economics, Volume 106, Issue 4, November 1991, Pages 1191–1217 average years of schooling;

cost factors, relating to taxes, employment conditions, labor market regulations, and the leverage of trade unions;

restrictions of foreign trade, which may impede an internationally competitive production in developing host countries" The author addressed 28 developing countries around the world as a research area. Correlation test results show that among non-traditional determinants schooling years have an important impact on FDI inflow. On the other hand, complementary factors of production are defined as not correlating with FDI.

Aong traditional determinants, market size indicates a significant correlation with FDI. However, results show income level has no noticeable relationship.

To conclude analyzing this paper, the larger economy, the larger amount of investment is attracted. Other than those complementary factors of production and trade openness is shown to have a strong relationship with FDI among other non-traditional determinants.

Aneta, Micheala, and Zuzana (2018) made research to identify determinants of FDI in the Visegrad group. Researchers selected determinants on the base of previous empirical papers to compare results. The following determinants were selected and tested in the paper: trade openness, market size, economic stability, labor cost, labor quality, taxation, and innovation.

According to the correlation test result between variables, innovation output, inflation rate, and the unemployment rate have a positive correlation. On the other hand, market size, traded openness, labor cost, education, research and development, and tax have a negative effect on FDI.

In the next step of the investigation, researchers used the OLS estimation model. Results show that trade openness and labor wage in the country have a significant effect on FDI. However, the rate of unemployed people in the country does not have a noticeable effect on this research. Empirical results give information that a one-unit trade openness increase leads 52% fall in FDI while the rise of labor cost to 10% results in 28 % growth in FDI and if labor quality grows to 1 %, FDI inflow rises to 2%. Other than that innovation expenditures have also a strong relationship with FDI. Based on the research results when expenditures on innovation increase to 1%, FDI inflow decreases to 82%.

Based on research results investors who are likely to capital put their capital into V4 countries seek more qualified workers for higher wages. However,

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innovation, tax rate, and trade openness have been assumed as negatively impacted determinants in this research.

Marcelo and Mario (2002) tested several selected determinants through a panel data model and Granger causality test on the base of 38 developing countries and transition economies from 1975 to 2000.

To select variables authors selected several types of research and identified determinants that have a strong relationship with FDI. The following determinants were selected to test correlation with FDI: GDP, growth of GDP every five years, average

level of schooling, rate of trade openness, inflation rate, the risk rate, energy consumption per capita, and Dow Jones index.

As we mentioned above effecting determinants vary by country. For example, if we select several determinants and apply them to European countries, we can be a witness to different results than we see results from the Middle East. Y.D. Shetinina's (2018) investigation of FDI inflow to Syria shows that the inflow of foreign direct investment mainly depends on the integral economic environment: general political, economic and institutional, and legal conditions prevailing in the host country. These factors make up the investment climate in which the investment process takes place, and we cannot separate these elements from each other, they constitute a single whole. The absence of one or any other component will affect investment decisions and be the reason for getting into the risk zone, that a foreign direct investor will face.

A thesis which was offered by V.O. Shuklina (2016) contributed to the investigation of FDI in CIS countries. The paper author carried out a factor analysis of the determinants of foreign direct investment in the CIS and Eastern Europe in the period from 1995 to 2015. The main focus of this work is on representing the possible determinants of FDI with a whole range of characteristics, including indicators of the quality of the institution for protecting property rights, country risk, quality of resources, the openness of the economy, and return on investment. In general, the following conclusions can be drawn:

- Recently, the most significant explanatory variable of the FDI to the CIS and Eastern Europe countries is the flow of funds generated by the country's economy;
- The integration of Eastern European countries has changed the nature of decision-making regarding investments in these countries;

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• For the countries of the European Union, the decision on investments is made differently in comparison with the CIS countries;

• The relative importance of the volume of the country's international reserves at the level of FDI in the CIS and Eastern Europe and until 2007 may indicate that investors perceive IFAs as a guarantee of investments made in the country.

Empirical evidence of the relationship between exchange rate and FDI

In the modern literature, three areas of research on FDI can be distinguished. These are models that study FDI at the micro and macro levels, as well as modern mixed (eclectic) models that combine different approaches to the study of the issue. The first category includes models that look at FDI at the macro level. The earliest FDI model - classical - explains economic cooperation between developed and developing countries. According to the theory, developed countries are interested in investing in developing countries to improve their welfare. If the interest rate in developing countries is higher than the productivity of capital in developed countries, then both parties benefit. According to G. MacDougall (1960), the direction of FDI flows is determined by the difference in interest rates in countries.

The next FDI model related to the macroblock is the FDI model based on the effect of exchange rates. The model was proposed by R. Aliber (1970) and considers the relationship between FDI flows and changes in the exchange rate. The model is based on the resilience of different currencies and the differences in elasticity between the FDI host country and the source country. The author suggested that weaker currencies (compared to the stronger currency of the investing country) facilitate the attraction of FDI, as they create an opportunity to take advantage of the difference in the market capitalization rate. However, the model does not explain FDI flows in countries with controlled exchange rates. Within the framework of this model, a dynamic model of exchange rate expectations was proposed. The author of the model (Cushman, 1985) shows that the expected devaluation of the currency in the host country can be positively or negatively correlated with the flow of FDI.

Empirical studies of the effect of the rate of exchange on FDI have started with different units of study — individual firm selection, examples of FDI areas, and the example of cross-country FDI. Theory about the relationship between interest rates for FDI and trade arose in the 1970s and 1980s (e.g. Kohlhagen 1977; Cushman 1985). Cushman (1985) shows that exchange rate risks can impact direct investment between the US and Canada, France, Germany, Japan, and the UK, while Cushman (1988) finds a very similar relationship between foreign exchange

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risk and US domestic FDI. In two articles, Cushman develops a mean difference framework in which the value of the appreciation is the positive effect of expected profit and the negative ability to change a profit.

Thus, different types of investments react differently to changes in the exchange rate. The depreciation of the exchange rate can slow down the inflow of horizontal FDI into the country, but it promotes the inflow of vertical FDI (Aizenman, Marion, 2004). However, Froot and Stein (1991). reject the empirical significance of the exchange rate parity condition, suggesting that capital markets are imperfect and that investors do not have complete information about their investment projects abroad

Blonigen (1997) and Fruit and Stein (1991) make critical commitments on the impact of the exchange rate on FDI. Fruit and Stein used an imperfect way of fighting the capital market, arguing that exchange rates affect wealth and affect FDI. Due to suspicions of imperfect business sectors with capital, external sources of obtaining are more expensive than internal costs of the company for capital. Therefore, to positively influence inward FDI (IFDI), a depreciation of the national currency is required, since this, as a result, increases the abundance of outsiders, allowing them to make higher offers in terms of resources.

RESEARCH METHODOLOGIES

Sample and data

We have provided a literature survey in Chapter II that entitles us to examine the linkage between exchange rates and FDI. As abovementioned, empirical studies showed mixed results about the relationship between two variables. Therefore, we would like to shed more light on this issue. Our goal in this research is to provide a more complex view while examining the broadest possible set of different economies, given the availability of data.

We leaned on the database provided by the World Development Indicators (WDI) (a database developed by the World Bank) and Fxtop to reach our goal by this research. We selected the sample of nine countries of the Commonwealth of Independent States (CIS) regional intergovernmental association namely Moldova, Armenia, Kyrgyzstan, Azerbaijan, Tajikistan, Russia, Belarus, Kazakhstan, and Uzbekistan. We used annual data of FDI, GDP, GDP per capita, exchange rate, inflation, and trade openness for the period from 1995 to 2018. Although the Soviet Union collapsed in 1991 and 15 independent countries appeared, most of these

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countries were still

using the Russian ruble until 1995. Only Tajikistan issued its currency in 2000, which replaced the Tajikistan ruble. The economic situation in these nine countries presents different images. For example, Russia is accounted for being one of the biggest economies in the world. On the other hand, the Kyrgyz Republic and Tajikistan economies indicate one of the poorest trends. After Russia, the economy of Kazakhstan is the second biggest economy in the "union". Moreover, Uzbekistan, Azerbaijan, and Belarus are seen as slowly developing countries on the list. Although these countries have been members of the Soviet Union, the economic specialization was divided differently. To define the improving factors of FDI inflow to Post-Soviet countries, we will examine different effecting factors on it.

Definition of variables

In this research, we have selected six variables to check the correlation between the exchange rate and FDI. In our study, as we are learning the effect of the exchange rate on FDI, the exchange rate represents the independent variable. The result of whether FDI inflow changes as exchange rate volatiles or not is the dependent variable. The rest four macroeconomic variables of FDI are counted as independent variables: real GDP; GDP per capita; inflation; openness.

Real GDP represents the real market size of the very country and GDP per capita indicates the purchasing power of domestic customers. Both determinants are expected to influence FDI positively. The consequence of inflation is at priory indefinite since higher inflation could be considered as a representation of higher uncertainty and could influence FDI both positively (uncertainty premium) and negatively (lower macroeconomic permanency). The degree of openness of the host nations is expected to positively connect to FDI since open markets attract foreign

entrepreneurs to do business in the area and represent the degree of "economic freedom" that a country has to receive foreign investment.

Research model

Regression analysis. Regression analysis. Data analysis has been made using MS Excel and Eviews. Regression analysis was used to define the relationship between the exchange rate and the level of FDI inflow into the countries indicated above. Multiple Regression has been done to test the significance of the relationship between variables. The following is the main multiple regression model which this study will use for analysis:

$$FDI_t = \beta 0 + \beta 1 ER_t + \beta 2 GDP_t + \beta 3 GDPpct + \beta 4\ INF_t + \beta 5 TO_t + c \quad (1)$$

, where $\beta 0$ is the intercept and βi (i=1,2,3,4,5,6,7) indicates the coefficient for

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each of the independent variables. [3]FDI is a log form of foreign direct investment to CIS countries. ER shows the exchange rate where GDP and GDPpc are the log form of gross domestic product and a log form of gross domestic product per capita. And c means error terms in the equation. Moreover, INF is the inflation rate while TO represents the trade openness of CIS countries.

Granger causality test

Granger (1969) to evaluate the direction of the relationship created the granger causality test. If a determinant Xt is granger-causing Yt, then the variations in Xt are preceding changes in the Yt relationship. Thus, if Xt is comprised of regression of Yt on its own and other variables lag, it helps to increase the estimating of Yt. This is specifically what the Granger Causality test regulates whether one variable is useful in estimating another or not. [4]

Given the equations

$$Y_t = \alpha + \sum_{i=1}^{k} \phi_i Y_{t-1} + \sum_{i=1}^{k} \Upsilon_i X_{t-1} + \mu$$

$$X_t = \alpha + \sum_{i=1}^{k} \beta_i Y_{t-1} + \sum_{i=1}^{k} P_i X_{t-1} + \mu 2t$$

The tested null hypotheses are:

"H0: $Y_i = 0$, $i = 1, 2, 3, \ldots. k$; the significance of this hypothesis means that X_t doesn't granger cause Y_t.

H0: $\beta_i = 0$, $i = 1, 2, 3, \ldots. k$; the significance of this hypothesis means that Y_t doesn't granger cause X_t.

Two variables are independent of each other if none of the hypotheses is rejected. It means neither Xt causes Yt *nor* Yt causes Xt. If mere one hypothesis is rejected it means that there is one-way causality whereas if both hypotheses are rejected, it shows a bidirectional relationship". [5]

RESULTS AND DISCUSSIONS

1. The regression analysis has been done to evaluate the relationship between FDI and other variables.

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Variable	Coefficient	Std. Error	t-Statistic	Prob.

[4] https://en.wikipedia.org/wiki/Granger_causality

[5]Xiaojun Song, Abderrahim Taamouti. 2018. "A better understanding of Granger causality analysis: A big dataenvironment"

	C	2.040335	.732737	2.784538	.0058
	EXR	.083164	.053926	.542181	.1245
	GDP	.018166	.077425	3.15031	.0000
	CPI	0.002153	.000928	2.319574	.0213
	FO	.004871	.002377	.049566	.0416
	R-squared	.514892	Mean dependent var		.818476
	Adjusted R-squared	.505696	S.D. dependent var		.168141
	S.E. of regression	.821282	Akaike info criterion		.466976
	Sum squared resid	42.3205	Schwarz criterion		.545108
	Log likelihood	261.4334	Hannan-Quinn		.498542
	F-statistic	5.98866	Durbin-Watson stat		.266947
	Prob(F-statistic)	.000000			

Table 4. Regression analysis

the regression model, in the instance of how the regression model can fit the dataset. The table indicates FDI has a strong relationship with given variables. In our analysis, R-squared shows which given date can be explained. The R-squared indicator says in our test variance of FDI in years can be explained by the other variables.

The following segment shows F statistics, mean squares, the sum of squares, the levels of freedom, and by and large importance of the regression model. In our analysis, we have five predicting variables and an intercept. Therefore, the regression degrees of freedom are five. The mean square is calculated by regression SS/regression df. In our example, the meansquare is equal to 30,1.

The last section of the Regression model gives information about the overall

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significance of our test. FDI can be altered by the effect of manipulating factors according to the below equation: FDIt = -1.96 + 0.06+ 0.75 +0.56+ (-0.002) + 0.004+ c

In regression with an independent variable, the coefficient tells to you how much the dependent variable is required to increase or decrease when that free factor increases by one. In regression with numerous autonomous factors, the coefficient discloses to you how much the reliant variable is required to rise when that free factor increments by one. Hence, in our equation, a 0.06 increase in exchange rate results in 1 positive effect on FDI. Moreover, trade openness and inflation rate also, have a sensible effect, while GDP and GDP per capita effects slightly foreign direct investment.

Standard error indicators consist of small numbers which are better since it shows that the perceptions are nearer to the fitted line.

The influence of the Probability value differs by each variable. Firstly, the relationship between FDI and Exchange rate can be evaluated to be slightly

significant. The significance of GDP, inflation rate, and trade openness is noticeably strong

Durbin-Watson statistics explain here that given datahave autocorrelation.

Granger causality test has been done to evaluate the relationship between FDI and exchange rate as well as other variables

Null Hypothesis:	Obs	F-Statistic	Prob.
EXR does not Granger Cause FDI	176	0.11203	0.8941
FDI does not Granger Cause EXR		0.62305	0.5375
GDPPC does not Granger Cause FDI	176	10.1880	7.E-05
FDI does not Granger Cause GDPPC		2.68169	0.0713
CPI does not Granger Cause FDI	176	1.83296	0.1631
FDI does not Granger Cause CPI		0.26730	0.7658
TO does not Granger Cause FDI	176	2.04334	0.1327
FDI does not Granger Cause TO		2.28888	0.1045
GDPPC does not Granger Cause EXR	176	2.52923	0.0827
EXR does not Granger Cause GDPPC		2.10085	0.1255
CPI does not Granger Cause EXR	176	0.05393	0.9475
EXR does not Granger Cause CPI		4.40237	0.0137
TO does not Granger Cause EXR	176	4.30185	0.0150

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EXR does not Granger Cause TO		4.40014	0.0137
CPI does not Granger Cause GDPPC	176	0.15061	0.8603
GDPPC does not Granger Cause CPI		0.16093	0.8515
TO does not Granger Cause GDPPC	176	5.90661	0.0033
GDPPC does not Granger Cause TO		2.64438	0.0740
TO does not Granger Cause CPI	176	0.49414	0.6110
CPI does not Granger Cause TO		1.77592	0.1724

Table 5. Granger causality test

We may conclude after the Granger causality test the first hypothesis that EXR does not Granger Cause FDI supports the result. Precisely, the Exchange rate does not affect foreign direct investment. However, we can

notice the rejection of the hypothesis on GDP, GDP

er capita, and TO. Scope of the economy and GDP distribution among people of the sample nations have a noticeable influence on foreign investors' decisions on making investments. As we have seen a correlation

between FDI and market size in other research in the

literature part is approved by almost all researchers, which means the bigger economy, the bigger amount of FDI. In fact, GDP shows economic size which is proof for investors to be paid off. However, CIS country's economic size is not as big as European or East Asian countries.

Between independent variables, there are some significant relationships. For example, trade openness affects GDP per capita while FDI inflow is affected by GDP per capita. Therefore, we can assume that trade openness is also one of the most significant effects of our test.

Other than that, we can see that most of the post- Soviet countries' economies are based on a more protected type of economy from the goods of other countries. We could be a witness from our results of the Granger causality test which says openness of trade for investors is also, considered to have a significant impact on foreign direct investment inflow.

CONCLUSION

In this thesis, we give refreshed proof of the role of exchange rates in deciding FDI. In the example of nine Commonwealth of Independent States which accepted FDI from different countries from 1995 – to 2018 we analyzed how significantly related exchange rate and foreign direct investment. Moreover, while testing the

relationship between exchange rate and FDI, we test the linkage of GDP, GDP per capita, CPI, and Trade openness with FDI. In our thesis, we utilized and collected data from nine Post Soviet countries at different economic levels which distinguishes our analysis from many of the researches and studies presented in the literature review.

In the line with Amuedo-Dorantes and Pozo (2001) our granger causality results also, could not find a strong

relationship between exchange rate and foreign direct investment. CIS consists of developing nations that are in critical need of foreign investment to invigorate their economy, look for innovation, current administrative aptitudes, and generation of employment for a consistently expanding populace. Foreign capital allocation in such manner can assume an unequivocal job not exclusively to oversee troublesome financial conditions yet it likewise advances race in the economies leads productivity promoting the excellence of private enterprise; development. Our purpose was to define whether it influences FDI or not and suggest alternative options to take action in exchange rate robustness or improve the other economic indicators abovementioned (GDP, GDP per capita, CPI, and TO). Moreover, strong proof emerging from our study indicates GDP, GDP per capita and Trade openness in CIS is a granger caused by FDI, which presents given nine countries in the example progress on economic improvement will rely generally upon the nation's presentation in appealing to foreign direct investment.

REFERENCES

1. As our research area includes countries with different economic conditions, robustness may be lower than in countries with similar economic development. This research can be expended testing every country separately and, strong results would be accepted.

Furthermore, the thesis may be broadened by adding many other variables which may affect FDI. For example, the corruption rate, business attractiveness of the country