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# Foreign direct investment as a pull factor of the economic growth in Ukraine in the period 2003-2016

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**ABSTRACT**

**Objective:** The aim of this paper is to present the results of investigation of the interlink between FDI and the economic growth in Ukraine in the period 2003-2016.

**Research Design & Methods:** Methods applied in the study are analysis and synthesis of the literature on the subject as well as quantitative tools: descriptive statistics and linear regression. The GDP per capita and FDI inflow are taken into account in years 2003-2016.

**Findings:** Many researchers relate the impact of FDI on the economic growth as the positive one. Basing on the literature review, the regression model was used to identify the behaviour of the interlink in the example of one developing country and the economic growth was expressed by the indicator GDP per capita. This paper highlights and proves the positive impact of FDI on the economic growth in Ukraine in the analysed period with the use of regression model. Moreover, the political instability has a negative impact on both FDI inflows and the economic growth.

**Contribution & Value Added:** The originality of this research is in introducing and highlighting the importance of involving the FDI in Ukraine in order to reach speeder economic growth.

| | |
|---|---|
| **Article type:** | research paper |
| **Keywords:** | FDI; economic growth; Ukraine; neo-classical growth theory; factors of production; regression model approach |
| **JEL codes:** | C21, F21, O41 |

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## INTRODUCTION

Initially, many studies have been conducted to investigate the topic of FDI, which in its turn became one of the most analysed areas in recent years. Researches provided their examinations from different perspectives, among them from the perspective of home and host countries, from the perspective of its nature as well as the risks that it brings for both sides of this process. However, one of the most considerable aspects of FDI is its impact

on the economic growth of the host country. Above all, the majority of studies have proved the strong interlink between FDI and the economic growth with the use of various research methods and sample sizes. Regarding to this, the goal of this paper is to present the own analysis of the correlation between FDI and the economic growth in the case of Ukraine considering it as a host country.

What is more, FDI in this research is evaluated as a pull factor, in other words as "an aspect, which makes something as an attractive option" (Oxford Dictionary, 1930). On the one hand, it brings increases in the possible outcome for the host country, and on the other hand, makes it a better player on the international area.

Commonly, the trade occurs because countries need to exchange with the factors of production, sell what is in abundance, and buy what is in lack. However, the FDI refers to a special representor of the country that has already enough power to invest. Involving the FDI in the country, Ukraine can reach the development quicker. Besides this, the development refers to the socioeconomic development of the country.

According to the above-mentioned arguments, the research field was identified with the statement how the FDI affects economic growth particularly in Ukraine. The quantitative research method is used to apply the model into various testing procedures, while the descriptive statistics analysis is used for the results interpretation. The analysed period is the years from 2003 till 2016, which includes the financial crisis occurred in 2007-2008 as well as the political instability in Ukraine caused by the conflict in the Eastern part started in 2014.

The paper is divided into two sections. The first section contains a comprehensive description of the applied methodology, the theory and the literature review in this field, whereas the second section presents own findings after the application of the secondary data to the quantitative model.

## MATERIAL AND METHODS

### Quantitative research methodology

Mainly, researchers that have examined this interlink referred to the regression analysis approach in various panels from 2 up to 111 counties (Almfraji & Almsafir, 2014). These investigations covered the huge range of samples and basically the results were compared between behaviours of many countries.

In this research, the quantitative method is used – a simple linear regression model with 2 determinants representing FDI and the economic growth based on the secondary data analysis regarding the fact that investigation is done in case of only one country. The FDI value is treated as an explanatory variable in the study. The economic growth expressed by the GDP per capita index is explained. Moreover, the samples and results are aimed to be interpreted with the use of descriptive statistics analysis.

### Research period and Descriptive Statistics analysis

#### Research period

The period for the research has been chosen after analysing the FDI inflows graph for years starting from the Ukrainian independence (1991) till the present time. The most interesting behaviour was noticed before the crisis that occurred in 2007-2008.

Due to this, the decision was to start with the year 2003, when there was a significant and rapid growth in the FDI inflow, and continue with all further years till now as this paper is aimed to observed how political instability in the country has affected both FDI and the economic growth. The year 2017 has been excluded from this research due to lack of the data availability.

**Descriptive Statistics analysis**

Interpretation of the results will be done with the use of descriptive statistics. The boxplot with whiskers will show the distribution of the values between the number of observations. The length of the upper and lower whiskers expresses the number of observations that belongs to a particular value, either lower or higher than the average.

The histogram plot will present the distribution of the values of one sample. If the distribution is normal, the bars in the plot are symmetrical. Otherwise, in case of asymmetry, there could be observed values that are located mostly in the right part of the plot or in the left one. Such asymmetry is called right-skewed or left-skewed respectively.

The regression model formula is as follows:

$$Y = a + bx \quad (1)$$

where:

$Y$ - explained variable;
$x$ - explanatory variable;
$b$ - regression coefficient;
$a$ - constant coefficient.

Basing on the obtained data, the following regression quotation is developed: *GDP per capita*=1794,097+0,169*FDI inflow.

This quotation reflects the trend of FDI inflows influence on the economic growth expressed by GDP per capita in Ukraine. This quotation might be also applied to make forecasts of the economic growth trend basing on the estimated FDI inflow values.

The model was tested on the basis of determination coefficient (R-squared). The calculations in the research were made with the application of GRETL Software.

## LITERATURE REVIEW AND THEORY DEVELOPMENT

Many researches were done for centuries in order to investigate the economic growth issue and factors that have their direct influence on it. In this article, the research will refer to the neo-classical theory of economic growth, which was discovered by Trevor Swan in 1956 and later on developed by Robert Solow. So-called Solow-Swan neo-classical growth model states that there are three driving forces of the economic growth: capital, labor and technology. It suggests that the income (output) is expressed in the Capital (K)/Labor (L) ratio in order to reach the equilibrium, and to gain the economic growth the technology should advance the productivity of labor or capital (Swan,1956). According to this, it might be assumed that in the stage of equilibrium with the increase in the capital, the K/L ratio will increase as well, which impacts the economic growth from the positive side.

In addition, the assumption might be made with the respect to implication of absolute convergence: poor countries with lower starting values of the K/L ratio might have higher per capita growth rates than rich ones with higher initial values of K/L ratio (Barro & Sala-

i-Martin, 1995). This may allow poor countries or regions to catch up faster with rich ones and reach the development speedier.

Assuming that factor of production-capital or technology- is in lack in the country, the way to gain it is through involving the FDI. Due to this, in this research there is examined the impact of FDI inflow on the economic growth of the developing country.

Examinations of the interlink between the economic growth and FDI inflow have concluded that impact of the FDI inflow on the host country's economy is "through capital and technological transfer" (Cambazoglu & Simay Karaalp, 2014). Cambazoglu and Simay Karaalp (2014) proved in the case of developing country that decreased poverty, economic growth, wage and employment growth, technological advancement as well as strong balance of payments are all positive effects of the FDI inflow. Moreover, the same strong interlink between those two determinants was also highlighted in the case of developing countries with high corruption level (Freckleton, Wright, & Craigwell, 2012). The finding showed the direct impact of FDI on the economic growth expressed by GDP per capita when the corruption is controlled.

Besides, the trade regime of the host country was named as an important factor for the investor's decision-making (Freckleton, Wright & Craigwell, 2012). However, there can be examined also a negative impact on the economic growth in case when "the quality of political environment shall be paid attention to" (Almfraji & Almsafir, 2014). Namely, this influencing factor has a negative impact that creates a technical gap and dependency on foreign investments in the host country. What is more, in the case of Africa all the above-mentioned factors of decision-making were taken into attention while investors stayed away from investing to Africa, despite the fact that the rates of return on investment there are among the highest in the world (Powell, 2008). The Author stated that investment takes place in an environment, which is shaped by policies, government legislations, attitudes and institutions. Due to such unfavorable environment in Africa, huge part of the continent's wealth is hidden offshore and even rich Africans do not invest there.

Findings in the case of Saudi Arabia as an emerging economy proved that in order to gain the sustainable development the host country needs to adopt suitable investment policies to benefit from FDI (Albassam, 2015). Basically, this evidence shows that it is not enough to attract foreign investors, but also to figure out the suspicious consequences from such involvement.

Another research of FDI impact on the economic growth of the developing country, in the case of India, asserts that India's restriction of FDI inflows to the country was one of the four leading forces that reduced India's growth rate for the three decades between 1950-1980 (Bhagwati & Panagariya, 2013). In addition, the second force in that list was improper trade policy, which has been mentioned by researchers in this field repeatedly.

Recent examinations of the FDI impact on the economic growth in Ukraine has showed also positive results, especially on the increase of specific region's growth rate (Melnyk, Kubatko, & Pysarenko, 2014). Thus, findings in the given research conclude that with the increase in indicators of institutional policies, infrastructure and bank reforms the host country develops much faster. In addition, more researches were conducted to figure out the measures of FDI influence in Ukrainian economy. Specifically, it should be supported by "stable and well-tailored FDI regimes, that promote national well-being" (Kramar,

Panukhnyk and Marynenko, 2015). Concerning this, the power of law should be used as the only way to achieve the above-mentioned goal.

Ayittey developed the criteria of the "enabling environment" in a country for foreign investment. This environment refers to such that enables people to productive effort (Powell, 2013). Among those criteria, there are:

- Security of persons and property;
- System of incentives;
- Rule of law;
- Basic functioning infrastructure;
- Stability: economic, political, and social;
- Basic freedoms: intellectual, political, and economic.

Generally, these forces that influence the investment environment summarize the findings of all previously highlighted research reviews.

Due to the above-mentioned facts, during the investigation these hypotheses are aimed to be proved:

**H1:** FDI affects the economic growth in Ukraine positively in years 2003-2016.

**H2:** Political instability influences FDI and the economic growth in the same direction in analysed period.

## FINDINGS

In regard to the all above-mentioned findings and research methods used, the application of GDP per capita as an indicator of the economic growth is used in this article as well.

**Table 1. List of indicators used in the analysis**

| Determinants of the regression model | Indicator | Source (the code of dataset) |
|---|---|---|
| FDI inflow | FDI inflow | World Bank (BX.KLT.DINV.CD.WD) |
| Economic growth | GDP per capita | World Bank (NY.GDP.PCAP.CD) |

Source: own elaboration based on Swan (1956).

Testing period – 2003-2016 (14 years, this period was investigated during the research and the results are submitted in this article). This period includes rapid growth of FDI inflow in Ukraine in 2003-2006, period of financial crisis in 2006-2007, post-crisis stage and recovery in 2009-2013, political instability in Ukraine started in 2013 till the present time.

From the Figure 1 it is visible how significantly FDI changes over the investigated period. The crisis occurred in 2007-2008 caused a huge drop of capital inflow from 10,700 mln US Dollars in 2008 to 4,796 mln US Dollars in 2009, which is more than 50% of the 2008 year's value. After that the situation has stabilized over three years till 2013. However, the political instability and the conflict occurred in 2013-2014 show the same influence on the FDI's behaviour. The value of FDI in 2012 was equal to 8,175 mln US Dollars and dropped till 847 mln US Dollars in 2014. Regarding to this, in 2014

there was observed the lowest value of the FDI inflow in Ukraine over the testing period. After that time, the situation has change for an increasing direction. Indeed, in two years till 2016 the FDI inflow does not represent the same speedy tendency in the recovery as it was experienced after the financial crisis.

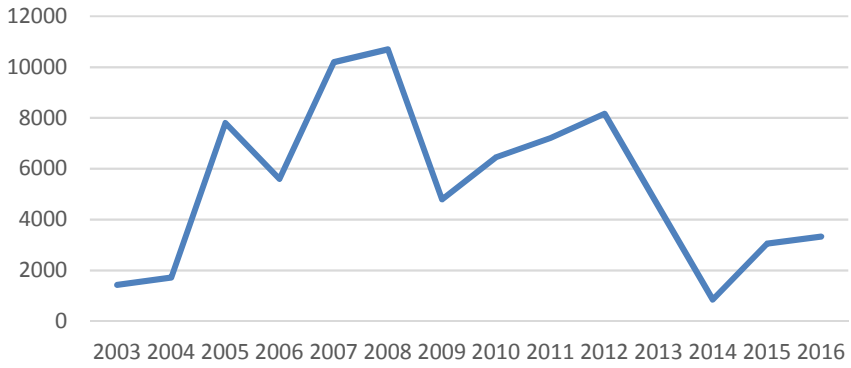


**Figure 1. FDI inflow in Ukraine, 2003-2016 (mln US Dollars)**
Source: World Bank data (BX.KLT.DINV.CD.WD), accessed on 16.11.2017.

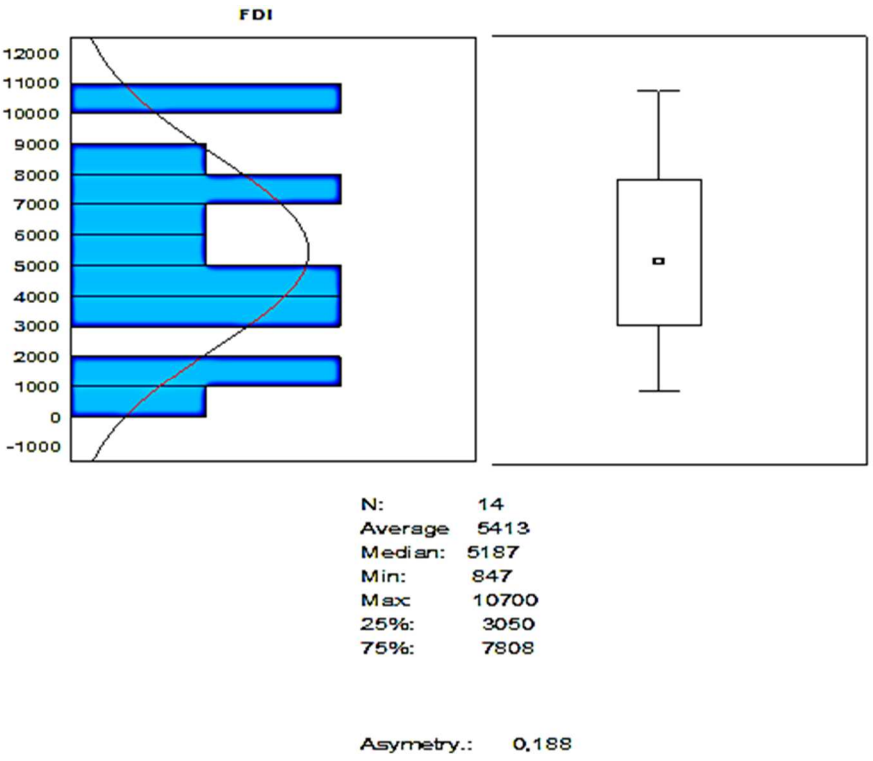


**Figure 2. Histogram plot and boxplot of FDI inflow in Ukraine in years 2003-2016**
Source: own elaboration.

In Figure 2, in the histogram plot it might be observed that the distribution of FDI inflow is asymmetric. This is stated for the simple reason that the length of each column beginning from the middle should decrease step by step respectively on both sides at the same time-right and left. However, in this figure the length of column does not show the symmetrical behaviour. Moreover, this histogram plot contains some outliers with value from 0 to 2000 and from 10000 to 11000. Those outliers are separated from the main group of observations that fit each other by gaps in values from 2000 to 3000 and from 9000 to 10000.

On the right of Figure 2 there is a boxplot of FDI inflow. The range of whiskers equals 9853. However, taking into account that the upper whisker is longer than the lower one, it might be stated that it has the right-skewed asymmetry. In other words, bigger amount of observations has lower value than the average. Whereas among 14 observations the average is 5413 and the median value is 5187.

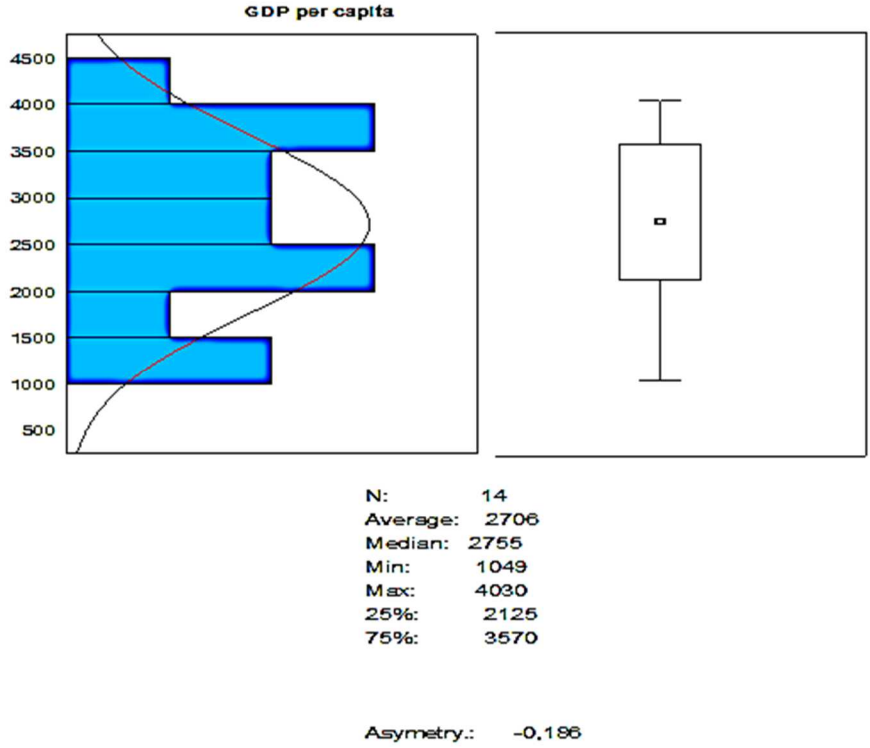


**Figure 3. Histogram plot and boxplot of GDP per capita in Ukraine in years 2003-2016**
Source: own elaboration.

In Figure 3, the histogram plot shows the asymmetrical distribution, which is proved by the different length of columns with the increase in values. However, in comparison to the FDI inflow histogram plot, histogram plot of GDP per capita does not have any outliers and gaps in values. The GDP per capita boxplot range is 2981. This boxplot clearly shows that the lower whisker is longer than the upper one, which means that bigger amount of observations has higher value than average. this case, the left-skewed

asymmetry is observed. The average in values is 2706 and the median value is almost the same – 2755. In comparison to the FDI inflow boxplot, the average in GDP per capita has the lower value than the median, which means that the increase in distribution of this determinant does not have a large scale.

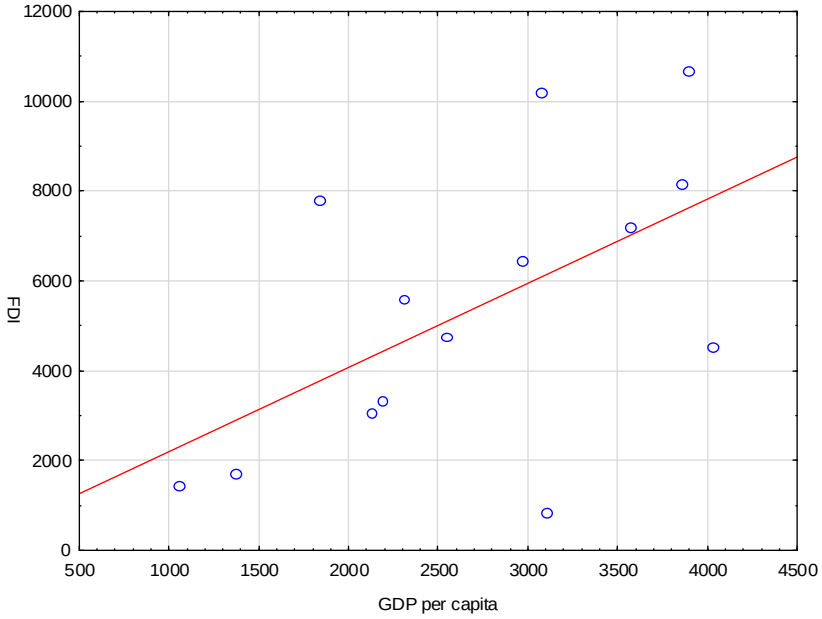


**Figure 4. Distribution of FDI and GDP per capita in Ukraine in 2003-2016**
Source: own elaboration.

**Table 2. Regression results**

| Variable | Coefficient | Std.Error | t-Statistic | p-value |
|---|---|---|---|---|
| **Constant** | 1794,097 | 444,6124 | 4,035193 | 0,001654 |
| **FDI** | 0,169 | 0,0716 | 2,354463 | 0,036416 |
| **R2 = 0.56727788; Adjusted R2 = 0.36038268** | | | | |

Source: own elaboration.

On the basis of regression model, the interlink between FDI and GDP per capita was confirmed by the results expressed in Figure 4 and Table 2. Under those findings, the probability value (p-value) is 0,03, which means that the association between the variables is statistically significant. The observations in most cases distribute normally, along the line, but there are 5 outliers that need a deeper investigation. Whereas the coefficients are positive, it means that as the variable FDI increases, the mean of the response (in this case GDP per capita) increases as well. The FDI coefficient is 0,169, which means that with 1 unit increase in FDI, GDP per capita increases by 0,169 units. As $R^2$ is the measure of how well the model fits the data, in this case we have the determination coefficient $R^2$ = 56.73%, which states that the model is moderately well-suited to real values. More than 50 % of the total variability in growth can be explained by changes in

the FDI inflow. However, this is at the same time the first limitation of this research. Due to such result of $R^2$, for further investigation should be used the larger sample in order to estimate the strength of the relationship between FDI and GDP per capita.

Consequently, the developed model has proved the H1 and the findings suggests that FDI inflows affect the economic growth in Ukraine positively.

## CONCLUSIONS

Basing on the investigations done, the interlink between FDI and the economic growth has a positive tendency. Referring to it as to the factor of production (Swan, 1956) involved from abroad, in Ukraine it is a direct cause to accelerate the economic growth. Findings from Figure 1 identify the lowest value of FDI inflow in Ukraine in the year 2014, even lower than during financial crisis in 2007-2008. This is exactly the time when there was the significant rise of political instability, which continues till now. Furthermore, if the value of FDI in 2014 is inserted into the regression quotation, the result of its impact on the economic growth is expected to be the lowest among all other values in the described period. As a result, political instability affected both FDI inflow and economic growth through its correlation. So, the H1 is proved as well as H2 is proved by observations from the regression model. However, there are some limitations of the study. First of all, the number of observations was 14, which might be assumed as low. Due to this, the applied model did not show the general behaviour of FDI inflows in Ukraine.

In order to prove the stronger correlation between those two determinants the bigger number of observations should be tested. For instance, the period from the year 1991 till 2016, where there would be 26 observations, which is almost two times bigger than the present one. The following limitation is in factors that affect the economic growth. As known, the FDI is not the only factor that affects the economic growth. Owing to this, more factors should be investigated in the same time with FDI in order to analyse the causes and behaviour of GDP per capita and the actual impact of FDI among them.

Under those circumstances, the future research might be needed. Basing on the investigated model and findings, the suggested research should concern the FDI and other factors that enhance the economic growth in Ukraine using the larger samples of determinants.

Generally, the aim of the research paper was achieved and the hypotheses were proved though the examinations. The positive correlation between FDI the economic growth is experienced in years 2003-2016 through quantitative research methods as well as the negative impact of the political instability on both FDI and the economic growth.

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