

## DEPENDENCE OF THE UKRAINIAN ECONOMY ON THE FOREIGN CAPITAL

**Introduction.** World experience shows that economies in transition are not able to overcome the economic crisis without attracting and making effective use of foreign capital. Accumulating the capital, providing access to modern technology and management, foreign investment has not only resulted in national investment markets, but also make other economic factors more dynamic in the development of markets of goods and services. In addition, foreign capital contributes to the macroeconomic stabilization measures.

The relevance of the topic chosen is that foreign capital plays a major role in the development of any state regardless of the economic potential of the country as well as foreign direct investment promotes economic growth in the recipient country intensifying the competition. Foreign capital has contributed to the development of Ukraine's economy as foreign capital is a source of capital investment in production, development and implementation of advanced management and marketing techniques. Ukraine deserves special attention as a country in transition which was able to increase FDI inflows by 35 % in 2010 after declining 56 % in 2009 year [1]. In terms of economic potential, as shown in expert estimates, Ukraine is among the top five countries in Europe, and in case of the efficiency of the use of foreign capital Ukraine is among the top two hundred countries.

**Analysis of recent research and publications.** Empirical evidence on the dependence between FDI and the economic growth is still inconclusive. Recent studies have examined some factors that could influence this relationship but have not extensively addressed the role of the characteristics of foreign direct investment (FDI) and how strong the dependence of the economy on the foreign capital is.

The latter issue has fuelled passionate debates amongst economists, policymakers, and in civil society. According to *Eswar S. Prasad*, it has gained importance in recent years because of the curious, even seemingly perverse, pattern of global imbalances, whereby capital seems to be flowing "uphill" from poorer to richer countries. But it has economic relevance beyond the current conjuncture because it goes to the heart of the process of development and the role that foreign capital plays in it. It also has enduring policy relevance as developing countries try to decide whether to open themselves up more to the process of financial globalization, and as they attempt to figure out in what form, and to what degree, they should do so [2, p. 2].

The importance of the presence of foreign capital in the economy of host countries was proved on the "flying geese" or "catching up" paradigm which was developed in the late 1930s by the Japanese scientist K.Akamatsu. As a generalized theory of economic development it explains how the foreign capital permits for developing countries to catch up and even overtake the advanced countries, but a recipient country should remain open to direct investment from foreign companies. One economy, like the first goose in a V-shaped formation, can lead other economies toward industrialization, passing older technologies down to the followers as its own incomes rise and it moves into newer technologies [3, p.12].

Developing the research of foreign capital influence on a host country credit should be given to the studies of foreign authors (B.Sharma, D.Willem, R. Barrell, M.Todaro, S.Smith and others) on the assessment the investments effectiveness in market conditions. Significant contribution to economic theory also made by Ukrainian scientists: Dyachuk V.D., Grishayeva J.G., Lazebnyk L.V., Anshyn V.M., Blank I.A. and others. The major part of their researches is dedicated to the relation between foreign capital and economic growth.

**The purpose of the article** is to analyze foreign direct investments in the national economy, to estimate the level of Ukrainian economy's dependence on the foreign capital, to found out the factors of influence on FDI inflow to Ukraine.

**The main material.** The history of investing processes in the world gave to the seven main types of the foreign capital. The most popular of these types nowadays is foreign direct investment (FDI), as FDI have a great number of advantages for both investors and recipients.

Foreign direct investment has a lot of definitions. According to Todaro and Smith (2006) FDI is the investment by corporations like transnational and multinational in foreign countries having their head office in a developed country [6]. Another definition for FDI according to Wang (2005) FDI is the management and control of a company, or an enterprise or a facility with interest lasting for a long term in a foreign country [4]. According to Kumya and Wakasugi (1991) FDI is the process of acquiring and investing in a new or existing industry or business and expanding and managing it in a foreign country [5, p.48]. Foreign direct investment is the direct investment through governments or government agencies, or through enterprises either private or public ones [4].

Table 1

**The elasticity of structural transformations  
in the economy of Ukraine**

Economic activity	Elasticity coefficient $\frac{\Delta GDP_i}{\Delta FDI_i}$
Agriculture, hunting and forestry	0.976
Mining	1.004
Manufacturing	0.891
Production and distribution of electricity, gas and water	0.772
Construction	0.825
Trade; repair of motor vehicles, household appliances and personal and household goods, hotels and restaurants	1.085
Transport and communications	1.065
Education	1.691
Health care and social service	1.497
Financing activities	0.587
Real estate, renting and business activities	1.051

Note: The table designed by the author based on the State Statistics Committee data [8].

To estimate the Ukrainian dependence on the foreign capital the picture of foreign capital operation in Ukraine should be drawn. Let us begin from identifying the level of investment attractiveness of Ukraine.

The index of investment attractiveness (IAI) of Ukraine in January-September 2013 declined by 0.95 points – to the level of 2.56 on a scale, falling to a level of performance of the IIIrd quarter of 2009. Falling trajectory of investment attractiveness index of Ukraine is from 3.39 in the second quarter 2013 to 2.56 in the third quarter. In the first quarter of 2014 the index of investment attractiveness of Ukraine increased to 2.72 points out of five. This is the highest rate since 2011, Tomas Fiala, the president of the European Business Association (EBA), said. According to the EBA research the estimate investment attractiveness of Ukraine has increased since the lowest in the history of the study of the index in IV'2013, when it fell to 1.81. This is an alarm, which indicates the lack of investor's confidence in the economy and the market. Causes of decline can be divided into external (global market instability) and internal factors. The condition of the U.S. and European markets cannot but impact on the economy of Ukraine. The internal causes comprise corruption, increased pressure on business and the inadequate reforms [6].

Investigating the impact of FDI on the economy is also important to analyze the geographic structure of investment and spheres of the national economy in which these investments are made. The largest share in the FDI structure is taken by Cyprus (31.7%). This is explained by the fact that under the guise of FDI the previously taken capital returns to Ukraine, but now is legalized. Cyprus is followed by Germany (12%), the Netherlands (9%), Russia (7%), Austria (6%), United Kingdom (5%) [1].

Further analysis of the structural transformation in the field of foreign direct investment and GDP by economic activity in Ukraine shows that the largest share of foreign investment was attracted to the following economic activities:

- manufacturing industry (27.93 % of total fdi in 2013);
- financial activities (33.68 % of total fdi in 2013);
- real estate, renting and business activities (10.63 % of total fdi in 2013).

The structure of economic activities represented in Table 1 is associated with a high rate of return on funds invested and with a significant return on investment.

To estimate the level of the Ukrainian economy dependence on foreign capital it is appropriate to use elasticity *analysis*.

Let us take a calculation of the elasticity with respect to GDP dynamics in terms of the dynamics of foreign investment in certain sectors (table 1).

Calculation shows that the current practice of priority investment is of greater importance not only for the recipient country (Ukraine), but for the donor investing country. Examining the value of the coefficient of elasticity of changes in gross domestic product for the change in the volume of foreign direct investment, it is easy to come to the conclusion that with the same size of investment the funds in education and health make the largest contribution to GDP. Development of human capital and FDI reinforce each other through complementary effects: increased qualification of the workforce (training, new skills and special education for workers of transnational corporations and enterprises with foreign capital) - the direct effect; social stability and improving the nation's health - indirect effect [8]. Relatively high coefficient of elasticity belongs to the mining (1.004), transport and communication activities (1,065), trade and tourism (1,085).

To determine the degree of communication FDI and GDP there was used a popular method of economic phenomena, correlation and regression analysis (table 3).

The formula chosen to calculate a correlation coefficient is [4]:

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}} \quad (1)$$

In our case FDI was chosen as the one of two variables (x) (million USD) to calculate the correlation coefficient to evaluate the relation between the second variable GDP (y) (billion UAH). It goes without saying that FDI does have influence on Ukrainian economy,

buy now we will have the numbers (the correlation coefficient) to prove this fact. We have made the following calculations of the correlation coefficient (table 2).

Table 2

**Calculation of the correlation ratio**

Years	FDI (x)	GDP (y)	x*y	x <sup>2</sup>	y <sup>2</sup>
2002	4555.3	225.81	1028632.3	20750758.09	50990.16
2003	5471.8	267.344	1462852.9	29940595.24	71472.81
2004	6794.4	345.113	2344835.8	46163871.36	119103
2005	9047	441.452	3993816.2	81848209	194879.9
2006	16890	544.153	9190744.2	285272100	296102.5
2007	21607.3	720.731	15573051	466875413.3	519453.2
2008	29542.7	948.056	28008134	872771123.3	898810.2
2009	35616.4	913.345	32530061	1268527949	834199.1
2010	40053	1082.569	43360136	1604242809	1171956
2011	44806	1316.6	58991580	2007577636	1733436
2012	50333.9	1408.889	70914878	2533501489	1984968
2013	55296.8	1454.931	80453029	3057736090	2116824
Sum	320014.6	9668.993	347851749	12275208044	9992194
Average	26667.88	805.7494			

After substituting in the formula 1 we have got the correlation coefficient:

$$\text{The correlation coefficient} = 0,99$$

The calculations let us reach the following conclusions:

– because the correlation coefficient  $r_{xy} = 0,99$ , applying the *Chaddock scale* of the determination coefficient, FDI and GDP are very strongly interrelated and are directly related (because  $r_{xy} > 0$ );

– coefficient of determination  $R^2 = 0,199$ , and it means that the variation in GDP depends on changes in the volume of investment by 19.9%.

There is strong dependence between Ukrainian economic growth (GDP) and FDI. It means that the more FDI will be attracted to Ukraine, the more resources for economic growth Ukraine will have. So, it

would be useful to find out what are the main factors which have influence on the FDI amount in Ukraine.

Let us use the correlation and regression analysis to estimate the dependence of FDI inflow on the several factors. FDI (million dollars) were selected as the result factor. The factor variables are such indicators:

X1 - GDP, billion UAH.

X2 - the average wage, UAH.

X3 - the amount of public debt, billion UAH.

X4 - level of the tax burden, %;

X5 - profitability of domestic enterprises %;

X6 - average interest rate on deposits, %;

X7 - the official rate of UAH to the USD, for \$ 100;

X8 – inflation, %.

The data for correlation and regression analysis of the impact of factor variables on direct investments is shown in the table 3 [8, 9].

Table 3

**Summary data for correlation and regression analysis of the impact factor values  
X1, X2, X3, X4, X5, X6, X7, X8 on FDI**

Years	Y	X1	X2	X3	X4	X5	X6	X7	X8
2002	4555.3	225.81	311	63.2923	18	4.8	11.2	537.21	6.1
2003	5471.8	267.344	376	64.4687	20.1	3.7	7.8	532.66	-0.6
2004	6794.4	345.113	462	66.1332	20.32	2.6	7.1	533.27	8.2
2005	9047	441.452	590	67.6823	18.3	6.4	7.8	531.92	12.3
2006	16890	544.153	806	63.1446	22.21	7	8	512.47	10.3
2007	21607.3	720.731	1041	66.1137	23.11	6.6	6.8	505	11.6
2008	29542.7	948.056	1351	71.2943	22.62	6.8	7.2	505	16.6
2009	35616.4	913.345	1806	130.6896	23.92	3.9	8.3	526.72	22.3
2010	40053	1082.569	1906	301.4284	22.78	3.3	11.8	779.12	12.3
2011	44806	1316.6	2239	434.32	21.42	4	9.4	793.56	9.1
2012	50333.9	1408.889	2633	473.1216	25.5	5.9	7.3	796.76	4.6
2013	55296.8	1454.931	3337	516.405	24.6	5	11.3	799.1	-0.2

According to the eight-factor regression analysis the economic and mathematical model was constructed:

$$Y = -29408.57 + 26.15X_1 + 1.88X_2 + 21.2X_3 + 1243.75X_4 - 229.88X_5 + 990.22X_6 - 13.45X_7 + 195.25X_8$$

This equation shows that the greatest impact on FDI inflow to Ukraine results from such factors as:

1. The level of tax burden. If this factor changes by 1%, the volume of direct investments will change to 1243.75 million;

2. Profitability of domestic enterprises. An increase of this factor by 1% will cause the increase of direct investment to 733.99 million;

3. Average interest rate on deposits. If this factor changes by 1%, the volume of direct investments will change to 990.22 million.

4. Inflation rate. An increase of this factor by 1% leads to the increase of direct investment to 195.25 million.

The input data are transformed to the correlation matrix calculated on the basis of table 2.4, which is used to measure the strength of the relationship between selected variables and the factorial scoring index (Table 4).

Let us transform the numerical values of the correlation coefficient obtained in the correlation matrix (table 4), into their text semantic equivalents (table 5).

Table 4

Correlation matrix

	Y	X1	X2	X3	X4	X5	X6	X7	X8
Y	1								
X1	-0.99173	1							
X2	0.984085	0.971122	1						
X3	0.88831	0.888197	0.919931	1					
X4	0.826347	0.8029	0.796882	0.596927	1				
X5	0.010071	0.060651	-0.01347	-0.15235	0.145779	1			
X6	0.315873	0.253296	0.353908	0.44016	-0.05108	-0.35612	1		
X7	0.81588	0.816116	0.83115	0.965242	0.482772	-0.25918	0.539638	1	
X8	0.01422	0.009548	-0.1009	-0.36328	0.094452	0.145001	-0.23322	-0.3714	1

Table 5

Transformed correlation matrix

	Y	X1	X2	X3	X4	X5	X6	X7	X8
Y	1								
X1	Very strong	1							
X2	Very strong	Very strong	1						
X3	Strong	Strong	Very strong	1					
X4	Strong	Strong	Strong	Appreciable	1				
X5	No connection	No connection	No connection	Weak	Weak	1			
X6	Moderate	Weak	Moderate	Moderate	No connection	Moderate	1		
X7	Strong	Strong	Strong	Very strong	Moderate	Weak	Appreciable	1	
X8	No connection	No connection	Weak	Moderate	No connection	Weak	Weak	Moderate	1

Calculation of the correlation matrix leads to the conclusion that there is a significant relation between Y and X factors, except the X5 (profitability of domestic enterprises) and X8 (inflation rate).

**Conclusion.** Thus, the calculations carried out give a clear picture of the Ukrainian economy's dependence on the foreign capital. The Ukrainian economic growth very strongly depends on the FDI in-

flows. This fact was proved with the help of two methods: Elasticity Analysis and Correlation and Regression Analysis. Calculation of elasticity shows that the current practice of priority investment is of greater importance not only for the recipient country (Ukraine), but for the donor investing country as well. Examining the value of the coefficient of elasticity of changes in gross domestic product for the change in the

volume of foreign direct investment, it is easy to come to the conclusion that with the same size of investment the funds in education and health make the largest contribution to GDP.

The result of regression analysis of the relation between the direct investment in Ukraine and the selected factors shows that it is necessary to create and maintain a favorable tax climate and increase the profitability of domestic enterprises to ensure a stable increase in investments as the main indicator of investment attractiveness of the country. The clear proof of such suggestions are the results of the regression analysis summarised above, according to which the level of the tax burden, the level of profitability of the enterprises have greatest impact on the volume of direct investments. In this subsection we use multifactorial correlation analysis unlike the previous subsection where there were only two variables (FDI and GDP). We have found out the main factors on influence on FDI inflow to Ukraine they are the profitability of domestic enterprises, the tax burden.

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#### **Меденцева М. М. Залежність української економіки від іноземного капіталу**

У статті розглянуто функціонування іноземного капіталу в Україні. Дана оцінка інвестиційної привабливості України. Проведено аналіз еластичності і кореляційно-регресійний аналіз для визначення ступеня залежності української економіки від іноземного капіталу. Проведено багатофакторний кореляційний аналіз для визначення факторів впливу на обсяги прямих іноземних інвестицій в Україну.

*Ключові слова:* іноземний капітал, прямі іноземні інвестиції (ПІІ), інвестиційна привабливість, еластичність, кореляційно-регресійний аналіз.

#### **Меденцева М. М. Зависимость украинской экономики от иностранного капитала**

В статье рассмотрено функционирование иностранного капитала в Украине. Дана оценка инвестиционной привлекательности Украины. Проведен анализ эластичности и корреляционно-регрессионный анализ для определения степени зависимости украинской экономики от иностранного капитала. Проведен многофакторный корреляционный анализ для определения факторов влияния на объемы прямых иностранных инвестиций в Украину.

*Ключевые слова:* иностранный капитал, прямые иностранные инвестиции (ПИИ), инвестиционная привлекательность, эластичность, корреляционно-регрессионный анализ.

#### **Medentseva M. M. Dependence of the Ukrainian Economy on Foreign Capital**

The article gives a clear picture of the foreign capital operation in Ukraine. The investment attractiveness of Ukraine was defined. The analysis of elasticity and correlation and regression analysis were carried out to determine the level of Ukrainian economy's dependence on the foreign capital. The multivariate correlation analysis was carried out to find out the factors of influence on foreign direct investment inflow in Ukraine.

*Keywords:* foreign capital, foreign direct investment (FDI), investment attraction, elasticity, correlation and regression analysis.

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