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ESTIMATING THE IMPACT OF THE COUNTRY'S FINANCIAL STABILITY ON FOREIGN DIRECT INVESTMENT INFLOWS
ОЦІНЮВАННЯ ВПЛИВУ ФІНАНСОВОЇ СТІЙКОСТІ КРАЇНИ НА ОБСЯГ ЗАЛУЧЕНИХ ІНВЕСТИЦІЙ

Мakhanets L.L. / Маханець Л.Л.*s.e.s., as.prof. / к.е.н., доц.*

ORCID ID: 0000-0001-8671-0596

Yuriy Fedkovych Chernivtsi National University,

Chernivtsi, Kotsyubynsky, 2, 58012

Чернівецький національний університет

імені Юрія Федьковича, Чернівці, Коцюбинського, 2, 58012

Abstract. *It is shown that the Ukrainian government has repeatedly stated its intention to significantly increase foreign investment flows in the domestic economy. Now, in a time of war, raising additional funds is a matter of the state's survival. Today, when there is war in Ukraine, the outflow of foreign direct investment in the first quarter of 2022 amounted to \$470 million. But, in the second quarter of the same year, foreign direct foreign investment increased to \$260 million. The dynamics of foreign direct investment in Ukraine is analyzed. It is shown that attracting investment is necessary to achieve financial sustainability. It is shown that there is a significant direct dependence (correlation) between foreign direct investment, external debt and GDP. The model of dependence of direct foreign inflows on the integrated index of financial sustainability and other macroeconomic indicators was constructed. This model allows to predict the direct foreign inflows on the basis of the forecasted growth of GDP and external debt. It is proposed that it is necessary to create a program of investment development of the country on the basis of a comprehensive analysis of the financial sustainability of the economy.*

Keywords: *foreign direct investment, financial stability, investment climate, model of the dependence of foreign direct investment on the foreign debt, GDP and the integral index of financial stability.*

Introduction.

Deepening economic crisis is one of the threats to the security of the public finance sector of the country at the present stage. Reduction in the financial condition of enterprises and banks leads to higher risks of tax shortfalls, increased state budget deficit and growth of external and internal debts of the country. All this, in particular, requires monitoring of indicators of sustainability of the financial system of the country, as well as modeling the impact of these indicators on the welfare of the country.

The foreign direct investment (FDI) flows can be singled out among the indicators of the country's welfare, because for effective functioning of the enterprise and the country's economy as a whole it is important to increase the investors' activity in the country. It is investments that form one of the components, which determine the specific position of the country in the world market.

At the present time the Ukrainian economy is in a difficult situation, which maintains the tendency to worsen. The investment situation in Ukraine is unstable and characterized by the lack of sufficient investment.

Attraction of foreign investments allows the recipient country to obtain a number of benefits, the main of which are improvement of the balance of payments; transfer of



the latest technology and know-how; integrated use of resources; development of export potential and reduction of dependence on imports; achievement of socio-economic effect (increase in employment, development of social infrastructure, etc.).

The main text.

Over the past few years, the peak of foreign investment in Ukraine was in 2007 and 2011, when investments in the economy were more than 6 billion dollars. In the last four years FDI flows in Ukraine has not approached this mark [1].

The foreign direct investment flows decreased in 2014, when the political situation in the country was extremely unstable. Then the Ukrainian economy received only 2.5 billion dollars – 55% less than in 2013. However, in the next year the Ukrainian economy began to be trusted and the investment flows amounted to 3.8 billion dollars – twice as much as the year before. The inflow of foreign investment increased slightly in 2016, but in 2017 there was a serious drop. In 2018-2019 the foreign direct investment flows in the Ukrainian economy has decreased significantly [1]. In addition, a third of the increase in investment was the exchange rate difference [2]. In 2020, for the first time, Ukraine faced a net outflow of direct investment – minus \$868 million. This is due to the COVID-19 pandemic, which has become a crisis for all economies. Today, when there is war in Ukraine, the outflow of foreign direct investment in the first quarter of 2022 amounted to \$470 million. But, in the second quarter of the same year, foreign direct foreign investment increased to \$260 million [5].

The dynamics of foreign direct investment is presented in Figure 1.

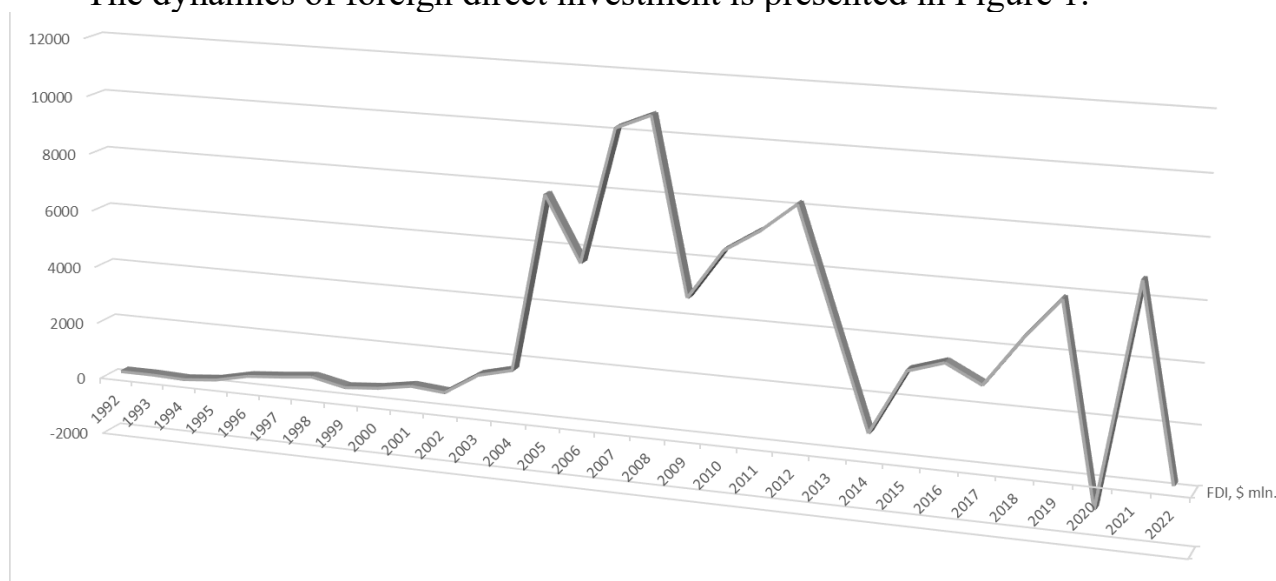


Figure 1 - Foreign direct investment dynamics in the economy of Ukraine

Source: Author's creation based on [3, 4]

The Ukrainian government has repeatedly stated its intention to significantly increase foreign investment flows in the domestic economy. Now, in a time of war, raising additional funds is a matter of the state's survival.

In the face of constant rocket attacks on the domestic energy infrastructure and the resulting electricity supply restrictions, the government has not yet named specific investment projects that could be implemented in our country in 2023. The foreign investment attraction platform Advantage Ukraine, which was presented by President



Volodymyr Zelenskyy at the opening of trading on the New York Stock Exchange in September, may provide clarity on this issue.

The platform contains a special program of investment projects and opportunities in ten sectors of the economy. The sectors include the defense industry, metallurgy and metalworking, agriculture, energy, pharmaceuticals, natural resources, logistics and infrastructure, industrial production, furniture and woodworking, and innovative technologies. The total potential of these projects is over \$400 billion [6].

However, according to a survey of interested investors in Ukraine by Dragon Capital [7], political instability is not the main obstacle. Corruption and lack of trust in the judicial system are no less important in attracting investment. Unpredictable exchange rates and an unstable financial system are also important.

That's why it is necessary to know how to assess the impact of country's financial sustainability on foreign direct investments in Ukraine. For this analysis, we will construct an econometric model of the dependence foreign direct investment on the integrated indicator of financial stability, calculated in [8], and other macroeconomic indicators.

To construct the model, we use the following statistical data (Table 1).

Table 1 - Data for the model

<i>Year</i>	<i>Foreign direct investment, \$ million</i>	<i>Gross external debt, \$ million</i>	<i>GDP, \$ million</i>	<i>Integral indicator of financial sustainability*</i>
1992	200	550,692	73942,2353	0,65
1993	200	3855,491	65648,5599	0,62
1994	159	5636,654	52549,5552	0,73
1995	267	8429,952	48213,8682	0,71
1996	521	9538,675	44558,0778	0,72
1997	623	11133,854	50150,3998	0,71
1998	743	13068,986	41883,2415	0,69
1999	496	15747,796	31580,6391	0,61
2000	595	13909,675	31261,5274	0,66
2001	792	22203,221	38009,3446	0,49
2002	693	23480,138	42392,896	0,66
2003	1424	25860,632	50132,9533	0,72
2004	1715	32104,403	64883,0607	0,77
2005	7808	35095,346	86142,0181	0,89
2006	5604	54264,718	107753,069	0,72
2007	10193	80748,37	142719,01	0,71
2008	10700	99354,541	179992,406	0,62
2009	4769	105064,101	117227,77	0,56
2010	6451	124297,079	136013,156	0,57
2011	7207	135464,77	163159,672	0,53
2012	8175	132069,382	175781,379	0,47
2013	4509	147656,446	183310,146	0,39
2014	847	131206,395	133503,411	0,3



Year	Foreign direct investment, \$ million	Gross external debt, \$ million	GDP, \$ million	Integral indicator of financial sustainability*
2015	3050	122825,244	90615,0233	0,36
2016	3441	117983,248	93270,4794	0,24
2017	2827	116578	112154	0,44
2018	4455	114710	130832	0,47
2019	5860	121739	153781	0,53
2020	-868	125690	155582	0,5
2021	6687	129711	200090	0,58
2022**	190	102915,091	139262,64	0,5

Source: [3, 4, 5, 9,10]

* Author's development

** The author's forecast

Constructed model of the dependence foreign direct investment (*FDI*) on the foreign debt (*D*), GDP (*Y*) and the integral index of financial stability (*FS*) is

$$FDI = -10035,6 + 0,03Y + 0,04D + 13729,9FS. \tag{1}$$

Coefficient of multiple determination is $\bar{R}^2 = 0,5976$. So, 59.76% of the variation of foreign direct investment is determined by the variation of foreign debt, GDP and the integral index of financial stability, and 40.24% by the influence of unknown factors. The model was built by using the STATISTICA 12 software. The indicators of the model validity are shown in Figure 2.

Statistic	Summary Statistics:
	Value
Multiple R	0,77307906
Multiple R?	0,597651233
Adjusted R?	0,552945814
F(3,27)	13,3686531
p	0,0000154710724
Std.Err. of Estimate	2207,7825

Figure 2 – Indicators of model validity

Source: Calculated by the author on data [3, 4]

The correlation coefficient shows that there is a close direct relationship between foreign direct investment, foreign debt and GDP (Figure 3).

Variable	Correlations (Болг_22)			
	Debt	GDP	FS	FDI
Debt	1,000000	0,879882	-0,716948	0,531865
GDP	0,879882	1,000000	-0,433854	0,679837
FS	-0,716948	-0,433854	1,000000	-0,005613
FDI	0,531865	0,679837	-0,005613	1,000000

Figure 3 – Correlation indexes between the model indicators

Source: calculated by the author on data [3, 4]



The null hypothesis $H_0: \bar{R}^2 = 0$ in this case does not count because $F^* = 13,37 > F_{0,05;3;27} = 2,96$, so, the coefficient of determination is significant.

The coefficients of the model are also significant. So, the model can be used for further analysis.

On this basis, it can be argued that an increase in GDP by \$1 million will generate an increase in foreign direct investment by an average of \$0.03 million. And foreign direct investment will increase by \$13729 million when level of financial stability increases for a 1-point. This dependence is shown in Figure 4.

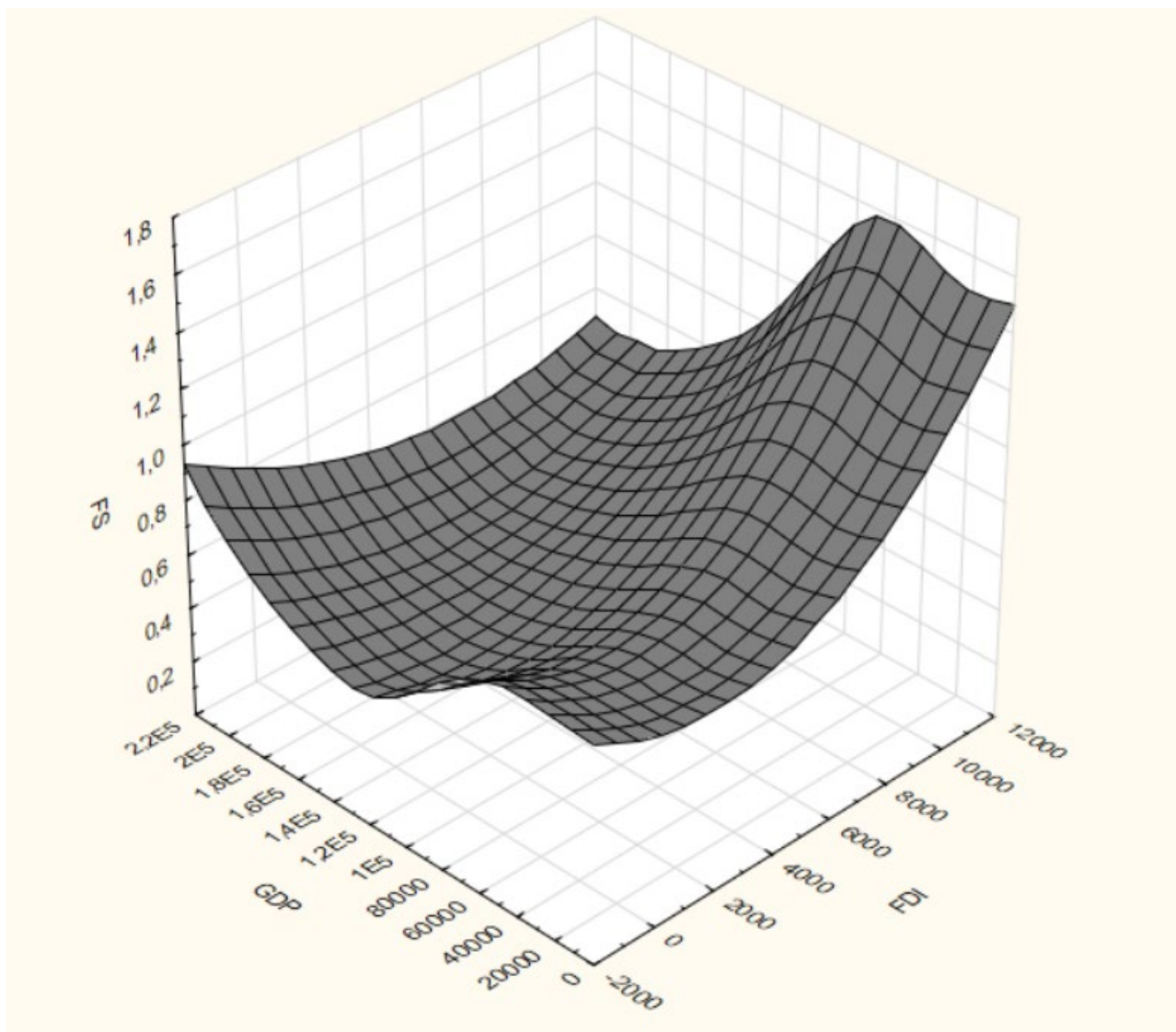


Figure 4 – Dependence of foreign direct investment on the integral index of financial stability and GDP

Source: Author's calculations based on [3, 4]

According to this model, based on the government's forecasts of GDP and external debt, there is calculated forecast foreign direct investment – \$5782,7 million. The forecast was built by using the STATISTICA 12 software and is shown in Figure 5.



Variable	Predicting Values for (Bonr_22) variable: FDI		
	b-Weight	Value	b-Weight * Value
Debt	0,04	162380,2	6105,5
GDP	0,03	153188,9	3934,4
FS	13729,93	0,4	5778,4
Intercept			-10035,6
Predicted			5782,7
-95,0%CL			3726,8
+95,0%CL			7838,5

Figure 5 – Forecasting foreign direct investment inflow

Source: Author's calculations based on the data [3, 4]

Based on the results of the research, we can conclude that in order to form a favorable investment climate it is necessary to create a program of investment development of the country on the basis of a comprehensive analysis of the financial sustainability of the economy. Improvement of investment climate will provide favorable conditions for investors and stable development of the country.

Conclusions. The investment processes in Ukraine's economy were analyzed. It is shown that the foreign direct investment flows can be singled out among the indicators of the country's welfare, because for effective functioning of the enterprise and the country's economy as a whole it is important to increase the investors' activity in the country. The Ukrainian government has repeatedly stated its intention to significantly increase foreign investment flows in the domestic economy. Now, in a time of war, raising additional funds is a matter of the state's survival. In the face of constant rocket attacks on the domestic energy infrastructure and the resulting electricity supply restrictions, the government has not yet named specific investment projects that could be implemented in our country in 2023. The foreign investment attraction platform Advantage Ukraine, which was presented by President Volodymyr Zelenskyy at the opening of trading on the New York Stock Exchange in September, may provide clarity on this issue.

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Анотація. Показано, що український уряд неодноразово заявляв про наміри суттєво збільшити потоки іноземних інвестицій у вітчизняну економіку. Зараз, в умовах війни, залучення додаткових коштів є питанням виживання держави. Сьогодні, коли в Україні йде війна, відтік прямих іноземних інвестицій у першому кварталі 2022 року склав 470 мільйонів доларів. Але вже у другому кварталі того ж року прямі іноземні інвестиції зросли до \$260 млн. Проаналізовано динаміку прямих іноземних інвестицій в Україну. Показано, що залучення інвестицій необхідне для досягнення фінансової стійкості. Показано, що існує значна пряма залежність (кореляція) між прямими іноземними інвестиціями, зовнішнім боргом та ВВП. Побудовано модель залежності прямих іноземних інвестицій від інтегрального індексу фінансової стійкості та інших макроекономічних показників. Ця модель дозволяє прогнозувати прямі іноземні інвестиції на основі прогнозованого зростання ВВП та зовнішнього боргу. Запропоновано створити програму інвестиційного розвитку країни на основі комплексного аналізу фінансової стійкості економіки.

Ключові слова: прямі іноземні інвестиції, фінансова стійкість, інвестиційний клімат, модель залежності прямих іноземних інвестицій від зовнішнього боргу, ВВП та інтегрального індексу фінансової стійкості.

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