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ТРАНСКОРДОННИЙ РУХ КАПІТАЛУ В УКРАЇНІ В УМОВАХ РЕЖИМУ ГНУЧКОГО КУРСУОТВОРЕННЯ

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Анотація. Автори розглядають можливості регулювання відтоку капіталу в умовах лібералізації національних ринків капіталу, що не знизить інвестиційну привабливість країни, і є одним із основних завдань для забезпечення економічного зростання країн, що розвиваються. Розглянуто міжнародний досвід та позицію Міжнародного валютного фонду щодо впливу встановлення режиму вільного курсоутворення на керуваність експорту та імпорту капіталу. Проаналізовано вплив регуляторної політики уряду України на обсяги вивезення капіталу та економіко-політичні особливості переходу до режиму гнучкого курсоутворення. Проведено оцінку впливу гнучкого курсоутворення на транскордонну мобільність руху капіталу (відповідно і можливостей його регулювання) з використанням регресійного аналізу на основі шоквартальних даних за 2014-2018 рр. (за період спостереження валютної нестійкості). Автори дійшли висновку, що режим вільного курсоутворення стимулює відтік капіталу на фоні нестабільного макроекономічного становища України. Цей режим на фоні високих макроекономічних ризиків, неефективної економічної політики, панічних настроїв та військово-політичних загроз призводить до втрат капіталу на користь економічно розвинених країн. Водночас, уточнено, що за цих умов єдиним виходом у системі валютного регулювання стала відмова від фіксованого курсу національної валюти, що посприяло збереженню золотовалютних резервів країни, зниженню навантаження на державний бюджет, забезпеченню стабільності фінансового середовища. Автори прийшли до висновків про доцільність розробки механізму, який за умов гнучкого курсоутворення дозволить активізувати залучення іноземного капіталу в Україну на основі виявлених залежностей.

Ключові слова: капіталообіг, валютний курс, режим гнучкого курсоутворення, фінансова лібералізація, інфляція, облікова ставка, монетарна політика, економіка країн, що розвиваються.

CROSS-BORDER CAPITAL FLOWS UNDER THE FLEXIBLE EXCHANGE RATE SYSTEM: CASE OF UKRAINE

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Abstract. The authors study the possibility of capital outflows regulation in conditions of financial liberalization, which will not decrease country's investment attractiveness. It is one of the main tasks for providing economic growth of developing countries. The international experience and International Monetary Fund position in the impact of the flexible exchange rate system providing on controllable capital export / import are considered. The Ukraine's government policy influence on the amount of capital export and the economic and political peculiarities of transition to a flexible exchange rate system are analyzed. Estimates of the influence of flexible exchange rate system on the cross-border capital flows (and its regulation) was conducted using regression analysis based on quarterly data for 2014-2018 (the period when exchange rate volatility was observed). The authors concluded that the flexible exchange rate system stimulates the capital outflows when macroeconomic situation in Ukraine remains unstable. This system, against high macroeconomic risks, ineffective economic policy, panic and military-political threats, leads to capital losses in favor of developed economies. However, clarified that under these conditions the only way monetary policy was the abandonment of fixed exchange rate, which helped preserve foreign reserves, reduce the burden on the state budget and provide the financial stability. The authors conclude that it is expedient to develop a mechanism, which, under the conditions of flexible exchange rate system, will increase the FDI attractiveness.

Keywords: Capital Flows, Exchange Rate, Flexible Exchange Rate System, Inflation, Interest Rate, Financial Liberalization, Monetary Policy, Emerging Market Economies.

Statement of the problem in general and its relationship with important scientific and practical tasks. Increased international integration makes the need for predictability and efficiency of economic interaction between countries, becomes meaningful value in times of economic instability. To ensure national economic stability and increase economic security of some countries they have to develop there financial policy, considering the effect of not only internal economic conditions, but also external factors that are uncontrolled to it. The defined above characteristics of international economic relations are reflected in the cross-border capital flows. Reducing constraints accelerates cross-border capital flows, at the same time creating structural problems in the developed economies and causing short-term imbalances in developing countries. Under these conditions, there is a need for government control of capital flows in developed and developing countries.

Developed countries are trying to provide the diversification of sources of capital inflows and an acceptable rate of re-

turn, while developing countries are trying to maximize foreign capital attraction, ensuring their financial independence. Clashes of interest to intensify cross-border capital flows and simultaneously ensure financial independence in terms of increased international capital mobility causes a practical interest in the control of cross-border capital flows by identifying factors that influence it. Finding opportunities to control capital outflows in liberalization process of national capital markets, that will not reduce investment attractiveness, is one of the main tasks for stimulating economic growth in developing countries.

Analysis of the latest developments and publications in which the problem solution is being searched with the emphasis of the unsolved parts of the general problem to which the article is dedicated.

A large number of scientific materials and articles are devoted to the questions about control of the international capital flows and the role of national capital markets liberalization in it.

Between the latest articles in the subject of research, can be highlighted such ones: N. E. Magud and E. R. Vesperoni documented the behavior of macro and credit variables during episodes of capital inflows reversals in economies with different degrees of exchange rate flexibility [1]. I. Tarafas found that floating exchange rates have allowed large and persistent current account imbalances, made it more difficult for monetary policy to achieve domestic policy objectives [2]. P. Bacchetta and E. Van Wincoop by developing a simple two key benchmark monetary model studied the implications of the exchange rate regime for trade and capital flows [3]. S. Davis and A. Zlate measured the effect of monetary tightening in key advanced economies on net capital flows and exchange rates around the world [4]. E. Farhi and I. Werning found that capital controls are desirable even when the exchange rate is flexible [5].

E. Farhi and I. Werning; S. Schmitt-Grohe and M. Uribe proved that with fixed a exchange rate, there is a case for interfering with the free movement of international capital flows by imposing capital controls in order to regain monetary autonomy [6; 7]. and K. Forbes, M. Fratzscher and S. Roland explore success of capital controls and macroprudential measures related to international exposures in achieving their objectives by using a propensity-score matching methodology [8].

M. Slatvinskyi and L. Chvertko have been studying the dependence between the level of national security and capital inflows on the basis of which certain directions of the state investment policy [9].

However, analysis of the above articles demonstrated that researchers have studied a flexible exchange rate impact on the cross-border capital flows only in general while specific practical recommendations for some groups of countries are not defined. In these articles, we could not find comprehensive answers about the effectiveness and necessity of control of cross-border capital flows in the conditions of ongoing national capital markets liberalization and the dominance of external economic factors.

Formulation of objectives and statement of the work mission. Objective of the study is determined by the justified need to find opportunities to control capital outflows in liberalization process of national capital markets that will not reduce investment attractiveness of developing countries, and the lack of comprehensive answers about the effectiveness and necessity of control of cross-border capital flows, while, in particular, flexible exchange rate system influence on it.

The aim of the article is to identify opportunities to control cross-border capital flows in developing countries under the flexible exchange rate system in case of Ukraine.

We expect to achieve by a project: the study of the effect of the flexible exchange rate system on capital exports and imports in case of Ukraine, practical recommendations on the feasibility of control capital outflows in Ukraine.

Presentation of the basic research material with full justification of scientific results, the formulation of recommendations.

The formation of a mechanism for control capital flows for any open economy is closely linked to the flexible exchange rate system of national currency. Based on the previously studied preconditions [8; 10], the flexible exchange rate system improves control capital exports and imports. We will consider the control of capital flows and the impact on it of the flexible exchange rate system to test the validity of this assumption, on the example of the Ukraine's economy, which has recently moved to the flexible exchange rate system.

In Ukraine, the control mode over the movement of capital was used for a long time; weakening mode of it was announced on February 2019 with the preservation of the possibilities for control mode restoration [11].

However, severe restrictions on the capital exports, albeit with some controversy because they do not lead to a significant fall in the risks of Ukraine's trade balance, caused, for example, in late 2008 a temporary capital flight

(Figure 1).

Ukraine's net international investment position at the end of 2018 [12] indicates that Ukraine maintains the status of «net debtor» and increases exported foreign direct investments since 2000, almost 11 times – from \$ 3.9 to \$ 44.6 billion against the backdrop of the increase in imported foreign direct investments for the same period from \$ 0.17 to \$ 8.2 billion. Thus, Ukraine is a contributor of capital, what can be explained with active export of commodities and the concentration of the proceeds from export abroad. This proves negative conditions for attracting foreign direct investments in terms of weak macroeconomic dynamics.

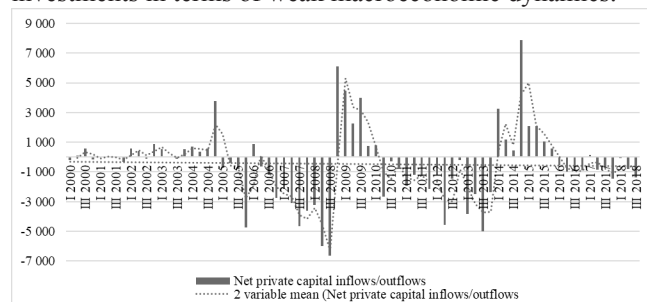


Figure 1 – Net private capital inflows/outflows in Ukraine (2000 – third quarter 2018), million US dollars (according to data [12])

Currency exchange rate policy in Ukraine over the period under review went from rigid fixation of the exchange rate that lasted until 2014 (Figure. 2) to establishment a flexible exchange rate [13]. A precondition for this was a sharp depreciation of the hryvnia why there are several good reasons. We analyzed a number of key economic aspects that can influence the hryvnia exchange rate, including macroeconomic dynamics in Ukraine, the amount of export, the qualifications of the government and the leaders of the National Bank of Ukraine, the Russian Federation aggression in 2014, which created the downward trend of the hryvnia exchange rate. On the hryvnia exchange rate affects everything that leads to higher prices: higher taxes; ineffective economic policy; excessive emission of money; natural disasters, corruption. The emotional component is significant also because the panic in the currency market could destabilize the financial system and weak economy. In addition, foreign debt repayments influence the hryvnia exchange rate: demand is growing on the domestic currency market, and the hryvnia exchange rate falls, as in 2014-2015. In view of the above reasons is a good decision taken by the National Bank of Ukraine in 2016 to move to a flexible exchange rate system, allowed to stabilize the currency market and to stabilize and accumulate the country's foreign reserves.

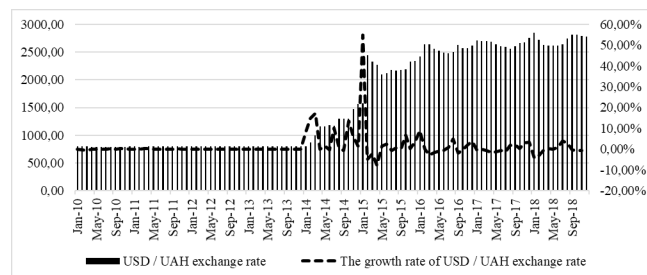


Figure 2 – The official exchange rate USD / UAH and its growth rate (%), monthly data for 2010-2018 (according to data [12])

The transition to a flexible exchange rate system, caused not so much by economic conditions as the effect of external threats to the national security since 2014, accompanied by the failure of the National Bank of Ukraine to provide the stability of the hryvnia exchange rate, influenced on the totality of economic processes, including the cross-border

capital flows.

Flexible exchange rate system have caused the national currency volatility, which, in the face of the investment outflows, forms the need to seek opportunities for control of cross-border capital flows.

The assessment of the effect of a flexible exchange rate system on cross-border capital flows (and the possibility of its control) was conducted using regression analysis based on quarterly data for 2014-2018 (for the period of national currency volatility).

As an independent variable is used the net private capital inflows/outflows in million US dollars. As explanatory variables among the set of potential variables are used the inflation indices in Ukraine and the USA. As a calculated variable is used the difference between the National Bank of Ukraine interest rate and the US Federal Reserve interest rate, which reflects the ratio of return and risk in both countries.

Selecting interest rates justified the easiest way to compare the ratios of return and risk of the national economy and the economy of the country whose currency is used in most foreign payments.

These interest rates are quantitatively related to government bond yields (and, accordingly, the risk of the country), and, on the other hand, they reflect the dynamics of the influence of internal and external economic factors. Bringing the two rows of data in one aggregate number by comparing them allows simultaneously using these two explanatory variables without the multicollinearity in the regression model.

The resulting absolute values of the aggregate series are converted into relative values to exclude autoregression since the levels of real interest rates in both countries are due to their previous values.

Thus, as the explanatory variable, the relative values of the difference between the real interest rates in Ukraine and the United States are used.

This variable indicates the profit / risk ratio in both countries, one of which currency is used in most foreign trade settlements in another country.

We use dummy variable in regression model, which allows us take into account the absence / presence of flexible exchange rate system. A dummy variable takes the value 0 in the absence of a flexible exchange rate system and 1 otherwise. For using dummy variable in the regression model, it is necessary to determine which periods belong to the flexible exchange rate system and which are not. The period from 2014 to the present is characterized by fluctuations hryvnia against the US dollar (Figure 2), while this year the exchange rate was actually fixed, which allows us to take into account only data from 2014.

According to the data of National Bank of Ukraine, the flexible exchange rate system has been established from the third quarter of 2016, whereas the fluctuations of the exchange rate could be observed starting in 2014 during the fixed exchange rate system. Thus, for the 2014-2016 period, a dummy variable in regression model takes the value 0, while for the subsequent period 1.

The explanatory variables between them and the independent variable there was no direct correlation (the determination coefficient was less than 0.5) are discarded from the regression model. In addition, in order to avoid multicollinearity of the regression model, the coefficient of correlation among the array of selected data was calculated, which resulted in the final selection of meaningful explanatory variables (Table 1).

* According to data [12; 14]

The visual analysis of the independent and explanatory variables indicates a weak nonlinear relationship, and the next choice of the trend equation confirms that the greatest correlation coefficient between the studied series (taking into account the principle of choosing a simpler model) is achieved when constructing a polynomial of the 2nd degree (Figure 3).

Table 1 – Regression model data*

Period	Inflation in Ukraine, units	Inflation in the US, units	The difference between the interest rates of Ukraine and the USA,%	Free exchange rate indicator	Net private capital inflows/outflows, million US dollars
I2014	1,030188	1,013861	6,25	0	3 258
II2014	1,082977	1,008724	9,25	0	1 182
III2014	1,041381	0,998699	12,25	0	464
IV2014	1,07476	0,986438	13,75	0	7 865
I2015	1,202892	1,005577	29,75	0	2 103
II2015	1,16974	1,010635	29,75	0	2 070
III2015	1,004668	0,997102	21,75	0	1 069
IV2015	1,013787	0,994109	21,5	0	585
I2016	1,015014	1,006812	21,5	0	-558
II2016	1,033963	1,012048	16	0	-965
III2016	1,013931	1,001697	14,5	1	-951
IV2016	1,055923	0,999898	13,25	1	-912
I2017	1,03949	1,009725	13	1	133
II2017	1,038471	1,004806	11,25	1	-860
III2017	1,021018	1,00761	11,25	1	-727
IV2017	1,031319	0,9988	13	1	-1 445
I2018	1,0354	1,012247	15,25	1	-69
II2018	1,008	1,00983	15	1	-809
III2018	1,011867	1,001901	15,75	1	-1 392

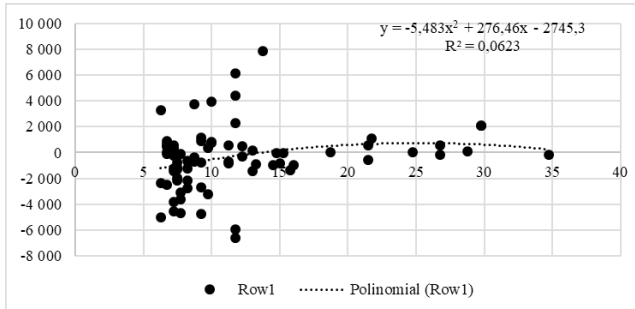


Figure 3. Regression model visual analysis and trend data equation, quarterly data for 2010-2018 (developed by authors)

Non-linear relationship between the studied series data can be expressed in the form of quasi-linear function. In this case, the linear regression equation becomes:

$$y = \beta_0 + \beta_1 \times x_1 + \beta_2 \times x_2 + \beta_3 \times x_3 + \beta_4 \times x_4 + \varepsilon, \quad (1)$$

where x_1, x_2 – explanatory variables (inflation indices in Ukraine and the USA, respectively);

x_3 – a calculated variable (difference between the National Bank of Ukraine and US Federal Reserve interest rates);

x_4 – a dummy variable (presence / absence of flexible exchange rate system);

β_0 – a free parameter;

$\beta_1, \beta_2, \beta_3, \beta_4$ – regression parameters;

ε – a random error.

Results of regression analysis, the significance of which individually confirmed a linear relationship between the independent and explanatory variables are given in Table 2.

Table 1 – Regression analysis results*

Variable	R-Square	Criterion F	Significance F	t Stat	Significance of the regression parameters
Regression equation	$y = 99564,08 + 21551,02x_1 - 117735,2x_2 - 149,36x_3 - 2135,6x_4$				
x_1	0,6045	5,3491	0,0079	2,422618	Significant
x_2				-2,1985	Significant
x_3				-2,00288	Significant
x_4				-2,64216	Significant

* Developed by authors

Based on the calculations, the following conclusions can be made:

– the hypothesis about stated relationship between net private capital import / export and flexible exchange rate system are confirmed with a 95% confidence level;

– the changes in the inflation rate in Ukraine and the USA, and the difference between National Bank of Ukraine and US Federal Reserve interest rates explains 60.45% of changes in the net private capital inflows/outflows;

– the inflation rate in Ukraine promotes the increase in net private capital imports, while other important variables promotes the increase in net private capital exports, that is, a flexible exchange rate system and current macroeconomic conditions promotes the increase in net private capital

exports.

The conclusions from this study and the prospects for further development of this area.

The results of the study found flexible exchange rate system stimulates cross-bordered capital outflows when macroeconomic situation in Ukraine remains unstable. Flexible exchange rate system, against high macroeconomic risks, ineffective economic policy, panic and military-political threats (which in 2014 effects the downward trend of the hryvnia exchange rate) leads to capital losses in favor of developed countries. Under these conditions, the only way monetary policy was the abandonment of fixed exchange rate, which helped preserve foreign reserves, reduce the burden on the state budget and provide the financial stability.

The basis for further research in this area is to develop a mechanism, under a flexible exchange rate system, will increase the attraction of foreign capital to Ukraine based on the revealed relationships.

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