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## ТЕОРІЯ ОПТИМАЛЬНИХ ВАЛЮТНИХ ЗОН: ОГЛЯД ЕМПІРИЧНИХ ДОСЛІДЖЕНЬ

*У час глобалізації проблема ефективної інтеграції стає дедалі популярнішою, з'являються нові дискусійні питання в теорії оптимальних валютних зон (ОВЗ). Нові тенденції в економічному середовищі породжують необхідність нових досліджень наслідків валютної інтеграції, останнім часом у цій галузі з'явилося багато емпіричних робіт. У статті наведено огляд основних емпіричних досліджень з теорії оптимальних валютних зон, більшість з яких пропонують волатильність обмінного курсу як індексу ОВЗ та використовують такі інструменти, як регресійні моделі, крос-секційний та кореляційний аналіз. Дослідження основних емпіричних здобутків теорії ОВЗ дозволяє порівняти та оцінити переваги та недоліки різних методів дослідження, а також забезпечує практичну аргументацію основних положень теорії.*

**Ключові слова:** економічна та валютна інтеграція, оптимальна валютна зона (ОВЗ), критерії ОВЗ, емпіричні дослідження, Україна.

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## DYNAMICS OF PROPENSITY TO PERSONAL FINANCIAL SAVINGS IN THE POST-CRISIS PERIOD: CASE OF BELARUS AND UKRAINE

*The article investigates trends in the saving activity of the population of Belarus and Ukraine in the context of the economic crisis and post-crisis period. The empirical analysis of the statistical data was held; features of formation of population saving rates in Belarus and Ukraine in the presence of structural breaks were revealed. The main prerequisites for enhancing saving activity of the population were underlined.*

**Keywords:** savings, marginal propensity to save of population, financial assets, deposits, currency.

**Problem description.** Achievement of high rates of economic growth depends largely on increasing investment activity of economic entities. Solution of such a task is related not only by the activity of foreign investors, but also by attracting additional sources of investment, in an advantageous manner of internal reserves of the country, and by increasing the efficiency of the so-called market of

savings, which unites a totality of institutions responsible for the accumulation, transformation and distribution of savings in the economy. Nowadays personal savings in the form of financial assets can be considered as one of potential source of investment in the real sector. The stimulation and further efficient use of organized savings require a detailed and in-depth analysis of the dynamics and the mul-

tilevel structure of socio-economic indicators, which characterize the various types of household savings. Particularly interesting is research of reactions (response) of the system of socio-economic indicators to internal and external shocks, the role of which can serve not only changes in the economic policy of the government and central banks, but also the financial and economic crises.

**Analysis of the scientific researches.** The founder of the economic theory of savings, which laid the foundation study of financial behavior, is J. M. Keynes. A significant contribution to the theory was made by works of F. Modigliani, M. Friedman, A. Marshall. Many modern Belarusian and Ukrainian scientists focus their studies on general theoretical principles of savings process. However, the impact of macroeconomic mechanisms of the formation conditions and incentives qualitative changes in the savings behavior of the population is still not investigated.

**The purpose** of research is to compare tendencies in saving activity of the population in selected countries on the background of systems of measures and actions differing for relevant central banks in the context of the economic crisis and post-crisis period. Theoretical base of research was the Keynes's theory of savings and the methodology of system of national accounts (SNA), the use of which allows identifying trends in savings and assessing their investment potential.

The present study analyzes the dynamics of household savings in Belarus and Ukraine. As information base the statistics of National Statistical Committee of the Republic of Belarus [3], the data of the National Bank of Republic of Belarus [1], published in the statistical bulletins, and statistical data from reports of the National Bank of Ukraine [2] were used.

**The main results if the research.** The conducted research allowed to conclude about sufficiently

high savings activity of the Belarusian population during investigated period. The share of all savings in households income ranged between 7–10 % has remained relatively stable, with the exception of 2006 and 2011 (table 1).

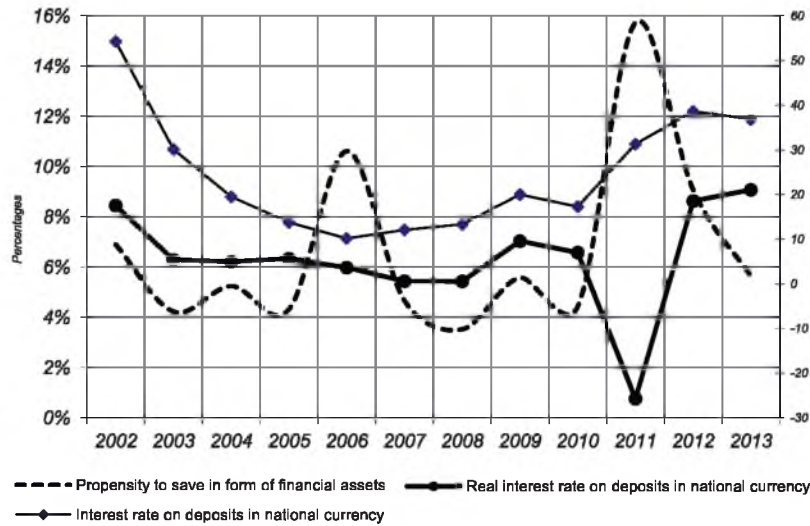
In 2006 there was an increased demand from the population for foreign currency. Primarily, this was connected with instability of the monetary system and inflation expectations of population, caused by the increase in prices in the republic supplied oil and gas due to the cancellation of preferences for Russian energy supplies, as well as the attendant rumors about the denomination and the depreciation of the national currency against the dollar. By demonstrating a downward trend in 2007–2009, since 2010 the value of the propensity to save again began to increase, reaching its maximum in 2011, amounting 13,15 %. Growth of the total propensity to save in 2011 mainly was formed due to the growth of private propensity to save in the form of financial assets, i.e. deposits (table 1). This is caused by the measures of the National Bank of Belarus, aimed at stabilizing the banking system, reducing the dollarization of the economy and increasing the attractiveness of deposits: within a year the refinancing rate was increased from 12 to 45 percentage points, which led in turn to increase in interest rates on deposits and increased demand for them, despite high inflation (graph 1). It should be noted that the population still responds to a greater extent on the values of nominal interest rates, without taking into account the inflation rate, that's explains the behavior of the considered indicators in 2011 on graph 1.

The values of private propensity to save of population are characterized by large-amplitude oscillations. The exceptions are savings in form of securities and bullions, the share of which in total savings is small and is less than one percent. So, analysis of the propensity to save in the disorganized form (in particular, foreign currency) confirms devaluation

Table 1. Belarus and Ukraine: propensity to save of Population, 2004–2013

Indicators	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Belarus</b>										
Marginal Propensity to save of population	7,90	8,68	10,22	7,85	7,18	7,44	8,24	13,15	9,66	7,79
<i>Including</i>										
financial assets	5,28	4,37	4,95	4,72	3,59	5,60	4,43	15,73	9,07	5,63
foreign currency (cash)	1,92	3,41	9,61	2,70	2,79	1,84	3,11	-3,25	-0,13	1,93
<b>Ukraine</b>										
Marginal Propensity to save of population	12,31	15,86	15,43	18,36	14,63	8,76	11,4	9,44	8,93	8,29*
<i>Including</i>										
financial assets	7,47	13,97	11,63	15,17	10,79	0,28	7,36	3,44	4,82	7,16*
foreign currency (cash)	4,85	1,89	3,8	3,19	3,85	8,48	4,03	5,99	4,12	1,13*

\*During the period January–November 2013



**Graph 1.** Dynamics in the savings rate in the form of financial assets and interest rates of the deposit market for natural persons, Belarus

Source: Author’s calculations according to the data of National Bank of the Republic of Belarus [1].

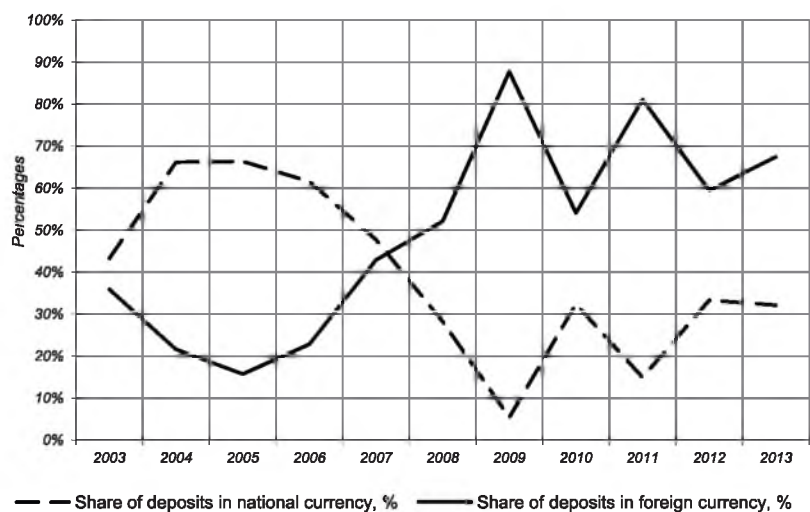
and inflation expectations of the population, which increased in 2006, and then subsequent falling demand for foreign currency in 2007–2008. Other periods, which are characterized by structural changes in the propensity to save in foreign currency, will be considered further.

It should be noted that the decrease in demand for foreign cash in 2009 was caused by the implementation of currency devaluation of 20 % by National Bank. A negative value of propensity to save in foreign currency in 2011 is associated with a currency crisis, which was characterized by a lack of foreign currency on a background of excessive demand at her: official devaluation in 2011 amounted up to 180 %.

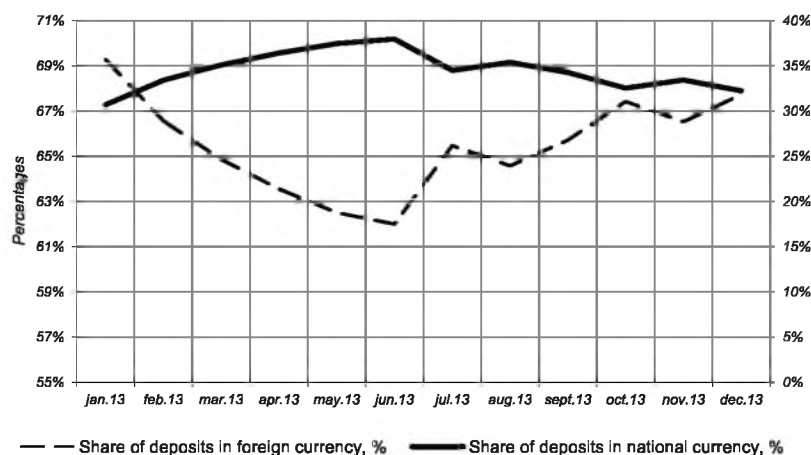
Analysis of the aggregate propensity to save in an organized form (financial assets) indicates the stabilization of the banking system of Belarus with-

in 1–2 years after the marked crisis periods. However, the private propensity to save in the form of various form of deposits (other and transferable, in national and foreign currency) indicate the emergence of the problem of dollarization of Broad Money in 2008–2009 and declining trust to organized savings in the national currency. If during the period from 2003 to 2006 the main form of organized savings were other (urgent) deposits in national currency, since 2007 the population prefer deposits in foreign currency (graph 2).

The graphs also shows regularity, which consists in the fact that, since 2005 propensity to save deposits in national currency is inversely related to the propensity to save in form of foreign currency deposits. Such dependence allows one to allocate periods of stability and strengthen confidence in the national currency, or, conversely, increased demand



**Graph 2.** The shares of the deposits of natural persons in national and foreign currency in savings of population, Belarus  
Source: Author’s calculations according to the data of National Bank of the Republic of Belarus [1].



**Graph 3.** The shares of the deposits in national and foreign currency in total personal deposits, Belarus  
Source: Author's calculations according to the data of National Bank of the Republic of Belarus [1].

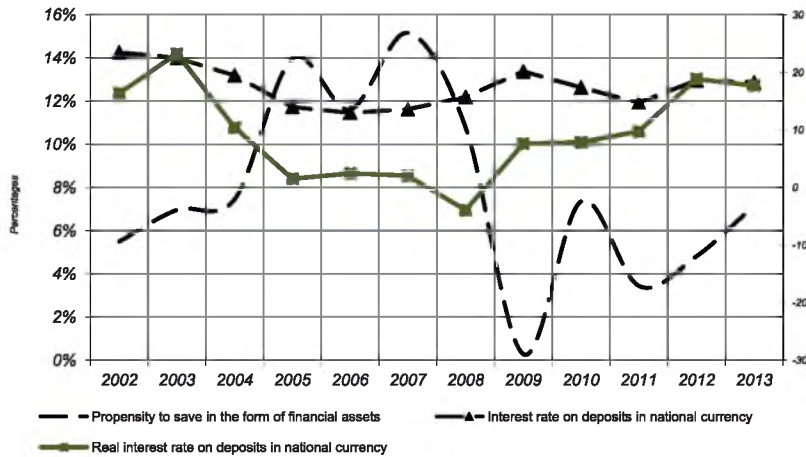
for foreign currency, which in turn allows timely to adjust the exchange rate and monetary policy. Increased of inflation and devaluation expectations of population against the backdrop of the global financial crisis resulted in a substantial increase in the dollarization of the national economy, which in turn caused sharp decline in real demand for the national currency. Thereof, in the IV quarter of 2008 there was an increase of dollarization of deposits of individuals. Devaluation January 2, 2009 led to increased negative effects for domestic monetary environment. So, after the devaluation the currency component of broad money supply rose from 3.3 % to 4.3 % by year end. During 2009 the level of dollarization of deposits persisted, despite a significant increase in interest rates on instruments denominated in national currency and already been implemented devaluation expectations. National Bank took several measures for de-dollarization and expanded the list of instruments used for this purpose. So, from August 2009 prohibited the provision of foreign currency loans individuals that automatically reduced rate of dollarization of bank assets. Then bank restricted the possibilities of using foreign currency in transactions between residents. Main directions of the monetary policy of the Republic of Belarus in 2010 envisaged changes in the monetary policy regime, improving flexibility of exchange rate while preserving the regime of targeting of exchange rate as the basis. Taken measures have not helped to avoid currency crisis of 2011 and the positive effect of introducing a new currency regime was only achieved by 2012.

The information on the graph 2 allows to make retrospective analysis of crises in 2009 and 2011, and also noting the growing pressure on the exchange rate in 2013. This fact becomes more evident when analyzing the Graph of shares of deposits in national and foreign currency in total personal deposits, using sep-

arate major and minor axes for indicators to better visibility (graph 3). In 2013 there was a growth positive net balance of buying-selling by individuals of foreign currency cash (table 1). However, the methodology of the National Bank does not allow to estimate what part of this net balance has acted directly as savings and was not spent on consumption. On the other hand, this parameter serves a good indicator of the processes in the monetary sphere and the economy as a whole, including as signal of pressure on the exchange rate. One of the main reasons is a developed negative balance of foreign trade in goods and services in Belarus for 2013. The excess of imports over exports is estimated by the National Bank in the amount of \$1 billion 723.8 million.

Analysis of the general and private propensities of personal saving rates of Ukraine allows to reveal several periods of stable tendency to increasing or to decreasing studied parameters (graph 4). The statistical analysis shows that in the period from 2000 to 2004 savings activity of the population has steadily grown. The main forms of savings were the bank deposits. During the period from 2003 to 2004 rate of growth of deposits has accelerated, reaching its peak in 2005. In 2005 for the first time in the history of the Ukrainian the volume of personal deposits exceeded one billion hryvnia. In the second stage, for the period from 2005 to early 2008, is characterized by strong growth in consumption by population, including through cheap credit from foreign banks; and by continuous growth property prices and actively purchase real estate as an alternative preservation and augmentation of population money resources. Existing trends of saving activity led to a decrease in demand for such form of savings as deposits.

Amid the global financial crisis in 2008–2009 which later outgrew to economic crisis, increased demand for the foreign currency that occurred in connection with panic mood of the population, expecta-

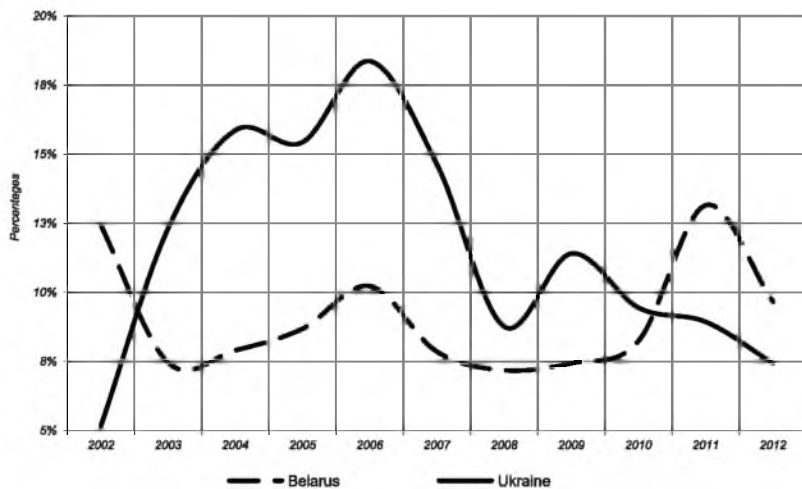


**Graph 4.** Dynamics in the savings rate in the form of financial assets and interest rates of the deposit market for individuals, Ukraine

Source: Author's calculations according to the data of National Bank of Ukraine [2].

tions of default and destabilization. As a rule, the propensity to save cash in the foreign currency (i.e. demand for foreign currency) increases sharply in periods when the population fears devaluation of savings in national currency (devaluation, denomination, hyperinflation, default). In such cases also there is a risk of “bank run” (run on the bank, massive outflow of deposits from banks), that can grow into a “panic of depositors” and lead to a default of the entire financial system. Under the conditions of the Ukrainian economy the National Bank has decided on a temporary ban on early repayment of deposits, which only aggravated the situation and led to a massive outflow of money from deposits, despite the increase in nominal and real interest rates on deposits. If the in September 2005 population kept on the deposits 207 billion hryvnia, then in May 2009, in the worst month for the banking system of Ukraine according to experts estimate – 195 billion hryvnia.

But, the sharp rise in loans amid falling household incomes is forcing the last to phase out consumption “beyond their means”. On the background of inflationary expectations and negative phenomena in regards rates of pay, households reduced consumption and gradually returned to a strategy of savings. Further gradual decline the propensity to save from the middle of 2010 associated with economic and political instability, higher inflation expectations from population and negative experiences of savings in the form bank deposits (repeated freezing deposits – 2004 and 2008; absence of state action to protect the rights private depositors). In the past two years obviously formed the tendencies to increase savings in the form of bank deposits and at the same time the norm of savings in foreign currency reduced. Unfortunately, the lack of actual annual data on personal income and private savings rates in the cash currency and securities does not allow estimating annual rate of savings for 2013.



**Graph 5.** Dynamics savings rate, Belarus and Ukraine

Source: Author's calculations according to the data of National Bank of the Republic of Belarus and National Bank of Ukraine [1; 2].

**Conclusions.** The empirical analysis of the statistical data allowed revealing some features of formation of population saving rates in Belarus and Ukraine in the presence of structural breaks. On the whole response of personal saving rates to internal and external shocks is similar in both countries (graph 5).

It is obvious that for both countries, the common factor influencing the activity of the households' savings is the level of income. Household savings depend on the level of their nominal incomes and through the Consumer Price Index – on the level of consumption. However, in Belarus the significant contribution to the population's savings activity brings the interest rate policy of the National Bank, as well as measures to protect the population's deposits in the banking system. This leads to the fact that the propensity to save in the form of financial assets in Belarus reacts with lowers volatility to external shocks, in contrast to Ukraine. Under the conditions of Ukraine even maintaining positive real interest rates on deposits in national currency does weakly stimulate an increase the corresponding propensity to save. Positive changes in this direction

started to form in 2011, but too early to conclude about established tendencies. It should be noted that the savings strategies of Belarus population to respond to external shocks with a large lag. Actual for Belarus is the impact on the norm of household savings rate of growth of currency devaluation. As already mentioned, the direct consequence of the devaluation is the increase in household savings in the unorganized form, i.e. currency in cash. Indeed, statistics show that the demand for foreign currency increases when the domestic currency depreciates, i.e. devaluation rate increases.

Thus, to preserve the positive tendencies in the growth of organized savings in conditions of Belarus it is first necessary to ensure the maintenance of a stable exchange rate of the national currency, taking into account the corridor of fluctuations of the value of multi-currency basket and the preservation of positive real interest rates on financial assets. Whereas in Ukraine, fundamental are real income growth and the development of measures to enhance the confidence of the banking system by the population.

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## ДИНАМІКА СХИЛЬНОСТІ ДО ОСОБИСТИХ ФІНАНСОВИХ ЗАОЩАДЖЕНЬ У ПОСТКРИЗОВИЙ ПЕРІОД: ПРИКЛАДИ БІЛОРУСІ ТА УКРАЇНИ

*Статтю присвячено дослідженню тенденцій в ощадній активності населення Білорусі та України в умовах економічної кризи і посткризового періоду Емпіричний аналіз статистичних даних дозволив виявити особливості формування норм заощадження населення цих країн в умовах наявності структурних зрушень. Було визначено основні передумови ощадної активності населення.*

**Ключові слова:** заощадження, гранична схильність населення до заощаджень, фінансові активи, депозити, валюта.

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