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## MAIN DETERMINANT FACTORS OF MONEY SUPPLY TO THE ECONOMY

Achieving high rates of economic growth implies the need for operational forecasting money demand of various sectors of the economy. Traditionally, one of the potential sources of investment in the real sector is considered to be the household's savings in deposits. In this sense, an current issue for the Republic of Belarus is the improvement of economic policy aimed at increasing the volume and improving the structure of financial savings, i.e. stimulating the growth of bank deposits, increasing the share of deposits in the national currency.

Demand for deposits in rubles is usually associated with rising incomes, slowing the rate of inflation and the relative stability of the exchange rate [1]. In such periods, deposits in national currency are the most attractive from the point of view of diversification of savings, and in terms of increasing the profitability of depositors. Thus, in 2017 and the first quarter of 2018 Other individual deposits in Belarusian rubles increased by 20.8%, while the refinancing rate dropped from 18% to 10.5%. Demand for foreign currency deposits traditionally increases on the back of high devaluation expectations. Marked tendencies are identified not only by the methods of correlation and regression analysis, but also by detailed statistical analysis, for example, annual growth of deposits of individuals (Graph 1). At the same time, the decline in the volume of individuals deposits in foreign currency can be explained not only by trends in the dynamics of exchange rates and interest rates, but also by consumer behavior of the population, which, under conditions of a decline in real incomes, continues to maintain the standard of living at the expense of accumulated savings.
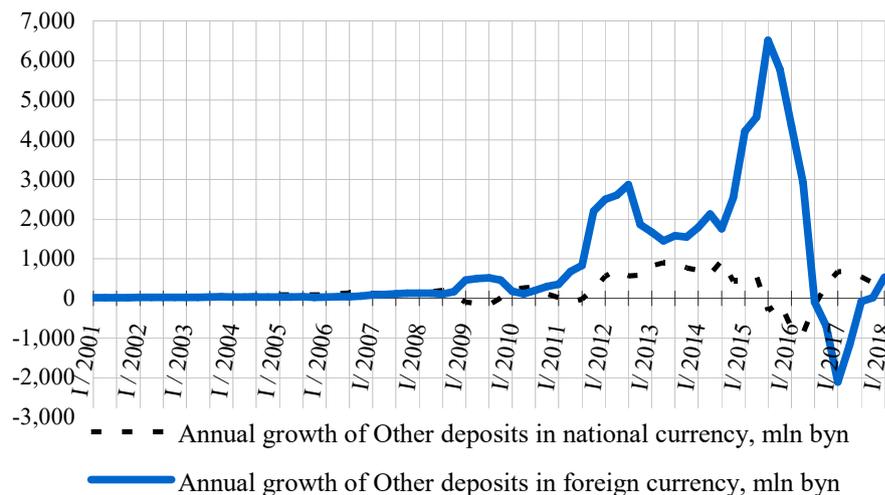


Graph 1. **Dynamics of Other household deposits [2].**

Econometric modeling allows predicting the future values of deposits based on time series regression models by determining in advance a number of factors that influence the choice of the population in favor of these types of savings. This is necessary, among other things, in order to assess the consequences of the destabilization of the monetary system and the development of possible ways for its elimination. Taking into account that the construction of the model was also aimed at making a retrospective forecasts, statistical data were used for the period from Q1 2012 to Q4 2016. The main factors, the influence of which was tested, were selected factors discussed in the publications of the analysis of the population's savings in the deposits, i.e. interest rate, the exchange rate, the price index, as well as the household income [3, 4].

Considering the improper use of standard methods for estimating the regression model in the case of nonstationarity of the time series used, it is necessary to conduct a preliminary analysis of the variables for stationarity, before proceeding to a description of model's specification. The Augmented Dickey-Fuller test (ADF) was used to determine the presence of unit roots and order of integration. The construction of the cointegration model, and then the model of the error correction mechanism (ECM), is possible provided that the time series is cointegrated. Based on the above results of the preliminary analysis of the stochastic properties of the time series, it was found that this approach was carried out in

the case of constructing a model for the variables of the dynamics of other deposits, household income and the exchange rate. Within the framework of the Engle-Granger approach an econometric model was constructed, whose residuals' testing confirms the cointegration relationship between the listed variables:

$$S_t = -501.3 + 6.73\,D_t - 785.73\,ER_t + e_t \qquad R^2 = 0.835$$
$$\quad (0.006)\quad (0.00)\qquad (0.00)\qquad\qquad DW = 0.521 \quad P_{ADF} = 0.007 \tag{1}$$

where under the model coefficients are given confidence probability or P-value for the coefficients' t-statistic which indicating their strong statistical significance; $R^2$ – coefficient of determination or R-squared; DW – Durbin-Watson statistic, according to which it is concluded that there is cointegration within the test CRDW; $P_{ADF}$ – P-value of Augmented Dickey-Fuller test for residual of model (1), by which it is also possible to conclude that we can reject the null hypothesis that there is a unit root. This allows to construct the error-correction model (ECM) for other deposits in national currency:

$$\Delta S_t = 802.04 + 0.622\,\Delta D_t - 598.67\,\Delta ER_t + 4.27\,R_{t-1} - 7.945\,P_t - 246.41\,M1_t -$$
$$\quad (0.038)\quad (0.068)\qquad (0.0002)\qquad (0.0097)\quad (0.022)\quad (0.0001)$$

$$-246.6\,D_{201308} - 301.9\,D_{201509} - 0.12\,e_{t-1} + u_t$$
$$\quad (0.0008)\qquad (0.0001)\qquad (0.098) \tag{2}$$

$$R^2 = 0.747 \quad P_F = 0.00 \quad DW = 1.938 \quad P_{JB} = 0.526 \quad P_{Wh} = 0.596 \quad MAPE = 5.373$$

in which the error term from (1), lagged once, acts as the error correction term; M1 – monthly dummy variable, modeling seasonal effects in January, $D_{201308}$ and $D_{201509}$ – dummy variables to represent additive outliers in August 2013 and September 2015 respectively; as before, the corresponding P-values are given in parentheses to accept the hypothesis of the statistical significance of the variables. All factors in the model (2) can be assumed to be statistically significant at least at the significance level $\alpha = 0.10$. For model (2) are also given: R-squared and confidence probability $P_F$ to accept the hypothesis about its statistical significance; DW statistic is used for testing the hypothesis of lack of first order autocorrelation in the disturbance term; and $P_{JB}$ for Jarque-Bera statistics to confirm the hypothesis of the normal distribution of residuals, $P_{Wh}$ – P-value of statistics of the White test for homoscedasticity, the mean absolute percentage error (MAPE).

The estimation results of models (1) and (2) confirm that the main factors determining the dynamics of Other individual deposits in national currency are the household income, the dynamics of the exchange rate (BYN/USD), the level of prices and the interest rate (on newly attracted bank deposits). The directions of influence of the factors correspond to the assumptions of the authors, the results obtained earlier by other researchers, and theoretical postulates. Model (2) achieved a satisfactory forecasting error 4.92% to Other deposit values for 2017. The analysis and test results are indicative of the fact that the resulting model can be used to predict savings in Other deposits on short- and medium-term time intervals.

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