

UDC 330.5:336.748 (479.25)

THE IMPACT OF MACROECONOMIC FACTORS ON THE EXCHANGE RATE IN THE REPUBLIC OF ARMENIA

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This article dedicated to modern monetary policy of the Republic of Armenia. In the article it was determined the influence of macroeconomic factors on the formation of exchange rate of dram in Armenia. Also in the article it is proved that in terms of the country's foreign trade imbalance the increased turnover of Armenia strengthens its national currency.

The authors concluded that the concept of monetary policy in Armenia requires reconsideration. In terms of Armenian economy functioning, when there is a significant role of external cash flows and selected regime of floating exchange rate, and as a model of monetary policy the targeting of the monetary base is chosen, the sterilization instruments become ineffective due to lack of capacity, and their use distorts the real picture, or leads to a sharp rises in the rate.

Through the article was revealed likelihood of the «Dutch disease», when in a case of a sharp reduction in external flows (export of capital), the money market of the country can lose its balance, and the national currency can be devalued. In this regard, it is proved that the targeting of monetary aggregates seems the unreasonable and inefficient regime of monetary policy, especially for such countries as Armenia.

Keywords: *national economy, macroeconomic indicators, econometric models, inflation targeting, exchange rate.*

Ця стаття присвячена сучасній монетарній політиці Республіки Вірменія. У статті було визначено вплив макроекономічних чинників на формування валютного курсу драма у Вірменії і було виявлено основні показники, що визначають ступінь ефективності можливого застосування таргетування інфляції в країнах з перехідною економікою. Також у статті доведено, що при незбалансованості зовнішньої торгівлі країни, збільшення товарообігу Вірменії сприяє укріпленню її національної валюти.

Автори прийшли до висновку, що концепція монетарної політики Вірменії потребує перегляду. В умовах функціонування економіки Вірменії, коли значна роль зовнішніх грошових потоків і вибраний режим плаваючого валютного курсу, а в якості моделі грошово-кредитної політики обрано таргетування грошової бази, інструменти стерилізації стають неідеальними через недостатню пропускну здатність, і їхнє застосування спотворює реальну картину або призводить до різких скачків курсу. Завдяки статті виявлена вірогідність появи «голландської хвороби», коли в разі різкого скорочення зовнішніх потоків (вивіз капіталу), грошовий ринок країни може втратити рівновагу, а національна валюта може девальвуватися. Тому, доведено, що таргетування грошових агрегатів представляється необґрунтованим і неефективним режимом грошово-кредитної політики, особливо для таких країн, як Вірменія.

Ключові слова: *національна економіка, макроекономічні показники, економетричні моделі, інфляційне таргетування, валютний курс.*

Эта статья посвящена современной монетарной политике Республики Армения. В статье было определено влияние макроэкономических факторов на формирование валютного курса драма в Армении и были выявлены основные показатели, которые определяют степень эффективно-

сти возможного использования таргетирования инфляции в странах с переходной экономикой. Также в статье доказано, что при несбалансированности внешней торговли страны, увеличение товарооборота Армении способствует укреплению ее национальной валюты.

Авторы пришли к выводу, что концепция монетарной политики Армении нуждается в пересмотре. В условиях функционирования экономики Армении, когда значительную роль внешних денежных потоков и выбранный режим плавающего валютного курса, а в качестве модели денежно-кредитной политики выбрано таргетирование денежной базы, инструменты стерилизации становятся недействительными из-за недостаточной пропускной способности, и их использование искажает реальную картину или приводит к резким качкам курса. Благодаря статье выявлена вероятность появления «голландской болезни», когда в случае резкого сокращения внешних потоков (вывоз капитала), денежный рынок страны может потерять равновесие, а национальная валюта может девальвироваться. Поэтому, доказано, что таргетирование денежных агрегатов представляется необоснованным и неэффективным режимом денежно-кредитной политики, особенно для таких стран, как Армения.

Ключевые слова: *национальная экономика, макроэкономические показатели, эконометрические модели, инфляционное таргетирование, валютный курс.*

The world crisis underlined that Armenia, having a small open economy, is vulnerable to possible external shocks. With the exchange rate of the dram RO the foreign trade turnover directly bears the impact of fluctuations on the international markets. The research of the influence of macroeconomic variables on the exchange rate is relevant from the point of view of the development of Armenian macroeconomic policy and its comparative analysis with the situation in Ukraine.

Significant contribution to the study of the scientific issues of the formation of the currency exchange rate have been made by such famous foreign scientists as M. de Atspilkueta Navarro, J. Bikerdayk, E. Birnbaum, A. Braun, F. Graham, B. Eyhengrin, J. Ingrem, J. Kassel, J. M. Keyns, P. Kennen, G. Knapp, P. Krugman, L. Lerner, A. Lindek, J. Lock, F. Mahlup, R. Mandell, M. Obstfeld, J. Robinson, J. Saks, P. Samuelson, I. Fisher, J. Fleming, M. Friedman, A. Hansen and others.

The nature, the evolution and the problems of integration processes were studied by such foreign scientists as B. Balasha, I. Valerstayn, J. Wiener, P. Ziltener, W. Corden, P. Krugman, J. Mead,

L. Winters, M. Schiff, and Russian scientists A.S. Bulatov, N.N. Levintsev, Y.V. Shishkov.

The purpose of the article is to determine the impact of macroeconomic variables on the exchange rate and to identify the nature of the exchange rate in Armenia.

Armenia's economy has always been the most vulnerable compared to other former Soviet republics. There's no oil (unlike Azerbaijan), no fertile land and access to the sea (unlike Georgia). As a result of the economic blockade Armenia was cut off from Turkey and Azerbaijan, as well as temporarily from Georgia, where there was a civil war. 90% of Armenian transportation of the goods previously were directed by railway through Abkhazia, but this way is still closed, and Armenia has the access to the world market via Iran. The current state and development prospects of the country's economy is closely linked to the solution of the Karabakh problem. At present, most of the aid coming from abroad, is being sent to Nagorno-Karabakh. [1] In 2007 the construction of the pipeline for delivery of natural gas from Iran was completed [2].

In the mid-2000th the annual growth of the Armenian economy in a few years was more than 10%, but in 2009 Armenia experienced a sharp

economic recession, GDP fell by more than 14% despite large loans from international organizations. The main causes of the crisis were the sharp decline in the construction sector and reduced remittances from workers who had left to work abroad. In 2010 a certain revival of the economy started [2].

The period, that is being studied, is characterized by significant fluctuations in the exchange rate of the national currency of Armenia, which is reflected in the graphic representation of this dynamic range (Fig. 1). Devaluation of the na-

tional currency at the beginning of the 2000th was connected with the complex state of the national economy of Armenia, the significant macroeconomic imbalances of the state and foreign economic and cooperative relations of the country with the outside world. This is the common situation for most of the former Soviet Union countries, but these processes in Armenia were complicated with ethno-political conflicts and uncertainty in the integration aspirations of the country [1].

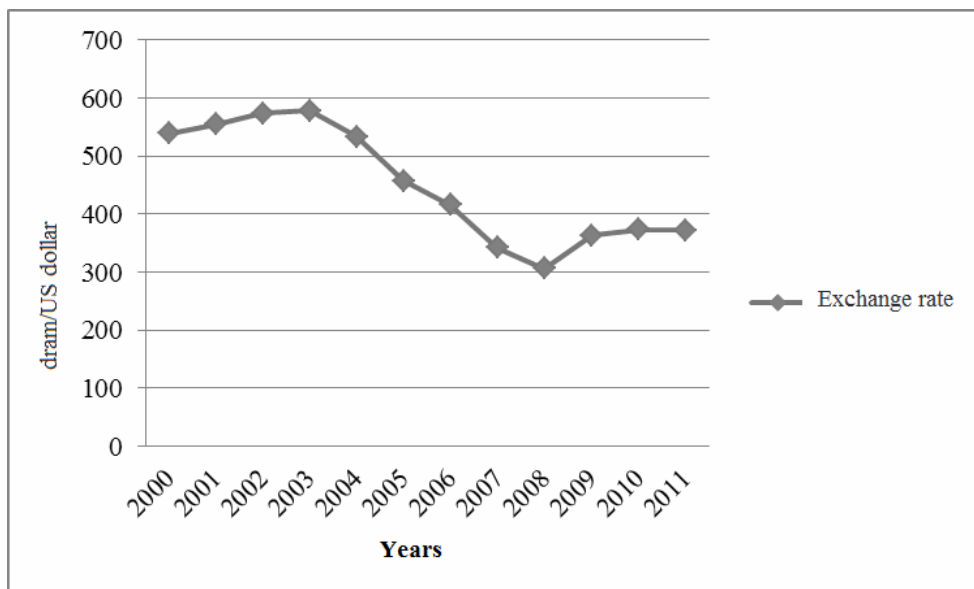


Figure 1 – The dynamics of the dram exchange rate to dollar

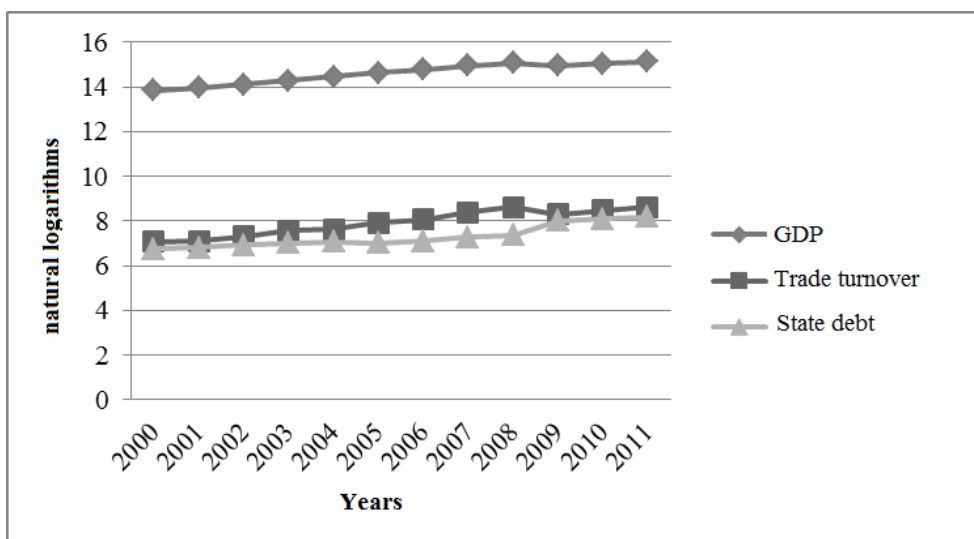


Figure 2 – The dynamics of the Armenian main macroeconomic indicators (in natural logarithms)

The next stage of our research is to determine the GDP growth in Armenia. Dynamic ranges of GDP, foreign trade turnover and foreign debt of the country were transposed into natural logarithms (Fig. 2).

Together with a tendency to strengthen the dram in the period of 2003-2008, there was a growth in GDP. However, a graphical representation of GDP indicates a certain relationship between economic growth and the increase in the debt of the country[2].

The beginning of the global financial crisis affected the economy of Armenia, but the characteristic feature of this process in the country was a slight lag of GDP with the dram parallel devaluation to the U.S. dollar.

To determine the effect of macroeconomic variables on the exchange rate of the national currency of Armenia, we suggested the usage of econometric regression analysis [3].

Table 1 – Regression model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	0.920712	0.251143	3.666086	0.0063
UNEMPL	0.169357	0.264318	0.640733	0.5396
Trade_ Turnover	-1.080016	0.297060	-3.635686	0.0066
State Debt	0.087068	0.118525	0.734594	0.4836
R-squared	0.871098			
Adjusted R-squared	0.822759			
Durbin-Watson stat	1.696185			

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Building a regression model showed two endogenous variables that are statistically significant – Armenia's GDP and the trade balance.

Herewith the correctness and significance of the model is determined by the indicators R2 and Durbin-Watson statistics. In our model, these two indicators are satisfactory.

In addition, we tested the distribution of residues of the regression model by determining the presence of residual correlation (Table 2) and

the presence of heteroscedasticity residues (Table 3) [3].

Table 2 – Test for residual autocorrelation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.582114	Prob. F(1,6)	0.2552
Obs*R-squared	2.503968	Prob. Chi-Square(1)	0.1136

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Test results on the Brush-Godfrey test for correlation remains indicate its absence.

The next step will be to identify the presence of heteroscedasticity

Table 3 – Test for heteroscedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.269534	Prob. F(4,7)	0.8886
Obs*R-squared	1.601563	Prob. Chi-Square(4)	0.8085
Scaled explained SS	0.524489	Prob. Chi-Square(4)	0.9711

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The results of the above table have not shown a different dispersion of remains of the model of linear multiple regression.

Thus, the correctness of the constructed model allows us to go to its economic interpretation:

– GDP growth in Armenia promotes the growth in income of Armenian population and has an impact on the exchange rate, causing the increase in import and demand for foreign currency;

– Increase in turnover of Armenia strengthens its currency.

Evaluation of the vector autoregression model in terms of impulse response helps to see the long-term dependency of the examined variables.

To confirm the correctness of the conclusions, we refer to the work of M.A. Burnusuzyan in which he says that the main factors that influence the export volumes of mining products are: the dram exchange rate, international prices on

mining commodities, global economic growth, electricity prices (for analysis the oil prices were taken).

One of the main explanations for the reasons for choosing a floating exchange rate regime is connected with the financial flows. For a small open economy in Armenia limit on cash flows means economic stagnation for several years ahead.

Armenia's foreign economic policy is aimed at attracting investment and the further liberalization of the foreign trade regime. In Armenia the duties and taxes on export are fully cancelled and as for import of goods aimed at the increase of the share capital, the zero rate is used. In Armenia there are no quantitative restrictions on export or import.

The foreign trade of the Republic of Armenia is regulated by the regime established by the legislations and regulations, bilateral and multilateral interstate and intergovernmental agreements of the Republic of Armenia, as well as commitments to the WTO.

Effects of the global financial and economic crisis of 2008 – 2010 for Armenia appeared the irrefutable proof of insolvency of the economy to withstand external negative shocks and in the short period of time to adapt to new market conditions. The main channels of the influence of global crisis on the Armenian economy are:

- Reduction of foreign private transfers;
- Reduction of foreign direct investment (FDI) and investment in the real estate market;
- Reduction of export [1].

Thus, Armenia, however, like most other countries in transition, found itself in a deep institutional crisis, a way out of which requires a major upgrade of the entire system of state regulation of the economy, but, first of all, the problems of modernization of financial markets and institutions need to be solved, that, in turn, re-

quires the implementation of new approaches in the macroeconomic and regulatory policies.

Another obstacle to the application of the model TI in Armenia is the actual absence of a perfect financial market, and hence the appropriate financial instruments that are necessary for the conduct of monetary policy. Therefore, first of all, there must be the appropriate national policy of comprehensive development of financial institutions (pension, insurance, mortgage crediting etc.) which may make a significant supply and demand for financial products, especially in the open stock market [4, 5, 6].

Summing up, we can say that the purpose of this article was to investigate the influence of macroeconomic factors on the exchange rate in monetary policy and the identification of key characteristics or indicators and determining the degree of effectiveness of the possible application of inflation targeting in transition economies. Thus, based on the foregoing, it can be claimed that the model of the TI is the most appropriate in relation to Armenia under the condition of the implementation of relevant institutional changes in the financial market, the improvement of the existing legislation and the application of modern methods of forecasting.

The concept of monetary policy in Armenia requires reconsideration. In Armenia, when there is a significant role of external cash flows (for example, the volume of private foreign transfers in recent years is 20-25% of GDP) and selected regime of floating exchange rate, and as a model of monetary policy the targeting of the monetary base is chosen, the sterilization instruments become ineffective due to lack of capacity, and their use distorts the real picture, or leads to a sharp rises in the rate. Thus, there is the likelihood of the «Dutch disease», when in a case of a sharp reduction in external flows (export of capital), the money market of the country can lose its balance, and the national currency can be deval-

ued. In this regard, the targeting of monetary aggregates seems the unreasonable and inefficient

regime of monetary policy, especially for such countries as Armenia.

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