

Foreign Exchange Regulation in Armenia: Current Status and the Need for Revision in the Context of Eurasian Integration Initiatives¹

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Abstract With the acceleration of economic globalization more and more countries begin to look for effective ways of deepening of integration processes with the regional neighbors. At the same time, each country, depending on the specific structural features of the domestic economy, in addition to the expected positive effects of trade and economic relations and increase of the level of welfare, has to deal also with the impact of certain negative effects, which in some cases are able to nullify all the favorable expectations.

Recent developments in the integration processes in the Eurasian space point to the inevitability of sophistication of integration levels between countries. Despite the fact that it is in the short term the currency or financial integration, however, clear that this possibility is not far off. And, given the seriousness of such a step, the preparation of the financial integration should start long before the actual financial integration. At the same time, it should be said that one of the most instructive examples of financial and monetary integration is an example of the Eurozone. However, as has shown experience, many aspects of integration were poorly thought out and resulted in negative consequences for the individual member countries. One of the key mistakes was the lack of effective harmonization of markets, regulatory institutions, financial intermediation and fiscal policy.

At the same time, taking into account the impact of the Russian economy on the economies of EAEC, should be taken to the issue of harmonization of monetary policies very carefully in the generated integration association. The events of the past year revealed the close dependence of economies of Eurasia as well and other post-Soviet countries, on the volatility, in particular, on the Russian currency market. The choice of currency regulation strategy by the Central bank always was and is one of the most complex challenges for “the monetary authorities” in emerging markets. On the one hand, to achieve effective interaction of market mechanisms in the economy must be accompanied by the presence of a floating exchange rate of the national currency. On the other hand, emerging markets are always characterized by significant risks associated with inflationary pressures; undeveloped financial system that denies, in fact, “the monetary authorities’ ability to apply more market-based mechanisms of

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regulation of the money market and the impact on prices; the overall macroeconomic instability undoubtedly affects the very high volatility of the exchange rate, which is also a negative impact on the real sector, etc. All these things together force the central banks of developing countries to resort to non-market mechanisms of regulation of the exchange rate. Armenia in this sense is no exception. Events of the last two years have shown that the policy of soft regulation of the exchange rate, combined with monetary inflation containment mechanisms, is used as a short-term anti-crisis mechanism for balancing state budgets and stimulate economic growth in the majority of the EAEC countries. At the same time, all the Union's members are implementing uncoordinated monetary and foreign exchange policy. The dissonance in the policy of currencies exchange rate regulation was most shown between the Russian Federation and Armenia. It is only enough to compare levels of devaluation of national currencies in relation to the US dollar. So, if in the period from 1 January 1 2014 to 1 January 2016 the Russian ruble depreciated 123.3% against the US dollar (the Central Bank of the Russian exchange rate as follows: As of 01.01.2016 - 72.9299 rubles for 1 US dollar, and as of 01.01.2014 - 32.6587 rubles per 1 US dollar), only 19.3% against the Armenian dram in the same period of time (the Central Bank of the Republic of Armenia exchange rate as follows: as of 01.01.2016 - 483,75 AMD per 1 US dollar, as of 01.01.2014 - 405,64 AMD per 1 US dollar)². This discrepancy is also observed in the level of inflation (if the CPI in 2015 relative to 2014 in Russia amounted to 12.9%, in the Republic of Armenia, respectively- 4.1%³). In other words, the monetary authorities in the Russian Federation and the Republic of Armenia for the past two years used the opposite approach to “protect” their markets and stimulate economic growth, including in the field of expansion of exports and import substitution. In the context of the above, considered topic is relevant and requires more detailed study.

Keywords Exchange rate - Integration - Central Bank - Inflation - Monetary regulation

JEL Classification E52 - O24

Theoretical basis of monetary integration associations

The processes of regionalization, formation of various trade unions, inter-country agreements on various economic issues, economic integration, monetary integration, starting from the second half of the XX century, are the most relevant economic and political issues of recent times. Since the 1960s, economists talk about the choice concept of monetary policy for member countries of a free economic zone. What currency should be used in mutual trade?

One of the first economists to begin consideration of the issue was Robert Mundell. In 1961, in the case of Canada and the United States he put the emphasis on the mobility of factors, in particular he noted that if the region has a high degree of labor mobility, it should have a fixed exchange rate within the borders of that region and a flexible exchange rate with the rest of the world. But if there is no labor mobility in the region, it does not matter which exchange-rate regime the country has. He also notes the importance of wage and price flexibility as a mechanism of demand shocks regulation. Therefore, if there is labor mobility, price and wage flexibility in an economy of a region, there is no need to exchange rate changes.⁴ Mundell's work is often cited significantly over the years, but it has also generated criticism, which helped develop the theory of optimum currency areas.

² Website Central Bank of Armenia: <https://www.cba.am/am/SitePages/ExchangeArchive.aspx>

³ Russian Federation Federal State Statistics Service - <http://www.gks.ru>; National Statistical Service of the Republic of Armenia - www.armstat.am

⁴ R. A. Mundell (1961) “A Theory of Optimum Currency Areas”, American Economic Review, pp. 657-665

Many analysts, like Paolo Pesenti⁵, Felipe Larrain⁶, Andres Velasco⁷ and Roberto Chang⁸ have pointed out that the international financial crises of 1994-95 (the Mexican crisis), 1997-98 (Asian crisis) were caused or reinforced, at least in part, by the predominance of fixed or semi-fixed exchange rate regimes in the affected countries, and, therefore, it is justified by the idea that flexible exchange rates may have been a better choice.

In 1988 Friedman found that the system of flexible exchange rates is a fundamental prerequisite for economic integration.^{9,10} Nevertheless, the flexible exchange rate regimes have been subject to criticism, in particular that referred to the emerging economies. Emerging markets, which use flexible exchange rate regimes are prone to instability and wide fluctuation in terms of exchange rates, which hinder long-term planning that is necessary for successful economic development.¹¹ However, knowing that fixed or semi-fixed regimes are sensitive to the crisis, it has been observed in Asia that a fixed exchange rate with the world's major currencies - US dollar, euro, yen - is often considered to be more advantageous than a flexible exchange rate. From the date of the entry of the Republic of Armenia in the Eurasian Economic Community discussions are under way on the problems of monetary policy coordination with the Member States. There is a high risk of devaluation of the national currency in the countries of the economic block that export energy resources (like Russia and Kazakhstan), and in order to maintain their position in the market of the EAEC and empowerment in foreign markets others have consistently lower rates of exchange that is not conducive to the development of integration processes between the EAEC countries. The depreciation of the national currency leads to more expensive imports and the expectation of rising prices, causing an immediate increase in prices. Theoretically there could be a special case in which the continuous devaluation of the national currency could ensure a competitive advantage for the country, without affecting producer prices and export prices. In practice, this would last for a very short period, and in the medium and long term continuous devaluation lowers the volume of foreign trade and balance of payments worsens.

Article 64 of Section XIV of the Treaty on the Eurasian Economic Union describes the objectives and principles of the agreed monetary policy. Annex 15 of this article explicitly mentioned the need for coordination of exchange rate policies to ensure mutual settlements between residents of Member States in the national currencies of the Member States.¹² If Member States will not make settlements in national currency, at least in certain product segments, central banks will have no incentive to comply with the requirements of the EAEC Treaty and to negotiate and adopt appropriate standards and documents. Settlements in national currencies directly contribute to a coordinated and more efficient policy of floating exchange rate.

5 Roubini, Nouriel, Giancarlo Corsetti, and Paolo Pesenti. (1998). "What Caused the Asian Currency and Financial Crisis? Part I: A Macroeconomic Overview", New York University, September.

6 Sachs, Jeffery and Felipe Larrain (1999): "Why Dollarization Is More Straitjacket Than Salvation. *Foreign Policy* 116 (Fall): 80–92;

7 Andres Velasco (1988): "Trade, Development and the World Economy: Selected Essays of Carlos Diaz-Alejandro". A. Editor. Oxford: Basil Blackwell.

8 Chang, Roberto and Andres Velasco (1998): "The Asian Liquidity Crisis." National Bureau of Economic Research Working Paper 6796, November

9 M. Friedman. (1988): "The Case for Flexible Exchange Rates." In *The Merits of Flexible Exchange Rates*, edited by Leo Melamed: George Mason University Press.

10 Michael Christz (2000): "Perspectives on a Potential North American Monetary Union". *Economic Review*, Vol. 85, No. 4

11 Hausmann Ricardo (1999): "Should There Be Five Currencies or One Hundred and Five?" 65–79

12 Eurasian Economic Commission, <https://docs.eaeunion.org/ru-ru/>

Monetary and exchange rate policy in Armenia: threats and prospects in the context of the entrance into the EAEC

A comparison of the national currencies exchange rates dynamics of EAEC countries allows to note that, unlike Armenia, in all countries of the Union for the mentioned period there was a significant depreciation of the exchange rates of national currencies and a substantial increase in the rate of inflation. Armenia was the only country that has managed to maintain the stability of the exchange rate substantially and to prevent inflation.

It should be noted that the policy of hard currency regulation in Armenia is not new and has already a long tradition¹³. The result of the maintained policy is the relative low level of prices, as well as the stability and predictability of foreign exchange and investment risks. On the other hand, it is important to understand the “price” of the achievement of such a stability and what risks add to the competitiveness of the Armenian economy, including in terms of the country’s economic potential in the EAEC markets. The Central Bank of Armenia managed to “ensure” the stability of the exchange rate mainly due to the use of foreign exchange intervention (in the period from 1 January 2014 to 1 January 2016 about 30% of foreign exchange reserves of the Central Bank¹⁴ were lost, in the same period the Central Bank lost 27,8% of its international reserves¹⁵), as well as the establishment of the “rough” increased rates of compulsory redundancy of foreign exchange liabilities of commercial banks in the amount of 20% with the condition of redundancy in the national currency (in Russia - 4.25%), so that now “connected” 7,5% of bank assets. Such a rigid approach to the reserve requirements which creates an unprecedented “artificial” demand for the national currency, leads to significant negative consequences - reducing the volume of lending to the economy, reducing the profitability of commercial banks, raising interest rates and finally it is responsible for derailing economic growth.

Such an approach could be justified if the Armenian producers managed to reach the “new” markets that do not depend on the ruble market. However, this did not happen. The situation was aggravated also by the reduction of the world prices for non-ferrous metals by about 40%¹⁶, in particular prices for copper and molybdenum which are exported to European and other foreign markets dropped by 11%. The natural result of the Armenia monetary policy was a significant deterioration in the competitiveness of the Armenian economy.

Let’s point out the main channels of the impact of the Russian economy on the economy of Armenia.

First Channel - private foreign transfers.

Armenia is known to be a rather transfer dependent economy. About 30% of GDP is cash transfers flows from abroad. At the same time, the main share of money transfers falls on Russia. One example of the negative impact of the crisis in Russia is considered to be the period 2014-2015. In connection with the devaluation of the ruble against the backdrop of falling oil prices and the strong dependence of the Russian economy on oil revenues, and as a result of a general decline in living standards, the overall level of cash flow declined significantly over the period. So, starting from 2014 to 2015 transfers decreased by 499 964 thousand USD including from Russia by 553 387 thousand dollars. (see Chart 1 и 2).

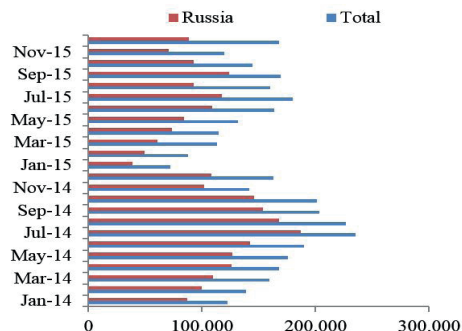
13 See. Eg: Sandoyan E.M., Voskanyan M.H., Mnatsakanyan L.A. «Evaluation of the influence of inflation and exchange rate in Armenia» Eighth Annual scientific conference (2-6 December 2013). Collection of scientific articles: Social and Humanities Sciences. Part II. - Yerevan.: Pub. RAU, 2013. - 344p. pp. 63-70; Voskanyan M.H. Currency regulations in Armenia in the framework of inflation targeting: myth and reality. XIX Kondratieff reading «Modernization of the Russian economy: lessons from the past, chances and risks», Participant s’ theses. N. D. Kondratieffs’ International Fund, pp. 69-71.

14 Webpage Central Bank of Armenia: <https://www.cba.am/am/SitePages/statexternalsector.aspx>

15 Webpage Central Bank of Russian Federation: http://cbr.ru/hd_base/Default.aspx?Prtid=mrf_7d

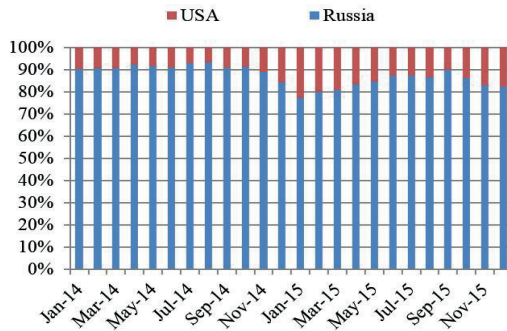
16 <http://money.cnn.com/data/commodities/?iid=intnlmkt>

Chart 1 Private transfers, Private transfers, thousands USD



Source: Database of the Central Bank of Armenia - <http://www.cba.am/>

Chart 2 Share of Russia and the United States in foreign private transfers to Armenia



Source: Database of the Central Bank of Armenia - <http://www.cba.am/>

If this trend continues, we can predict that by the end of 2016, the inflow of private foreign cash transfers into the Armenian economy will decrease by approximately 700-800 thousand USD. The reason for the reduction of transfers is the reduced current income of the Armenian Diaspora in Russia. Also the currency structure of the transfers changed - the share of ruble transfers in relation to the dollar, i.e. inflow is reduced not only in physical terms, but also because of the devaluation of the ruble. The first reaction to the decline in population income transfers line is to reduce the volume of sales of goods and services on the domestic market which in turn affects a significant reduction in imports.

The second channel - a decline of exports to Russia.

We cannot say that Armenia's economy is characterized by high export levels. However, one of the positive factors of the Armenian entry in the EAEC should be the improvement of the export position of the countries in the integration association. At the moment, the share of Kazakhstan and Belarus in the export of Armenia is scanty, while exports to Russia take the second place in the overall structure of exports from Armenia. Thus, exports to Russia can be considered a significant channel of influence of the Russian economy on Armenia.

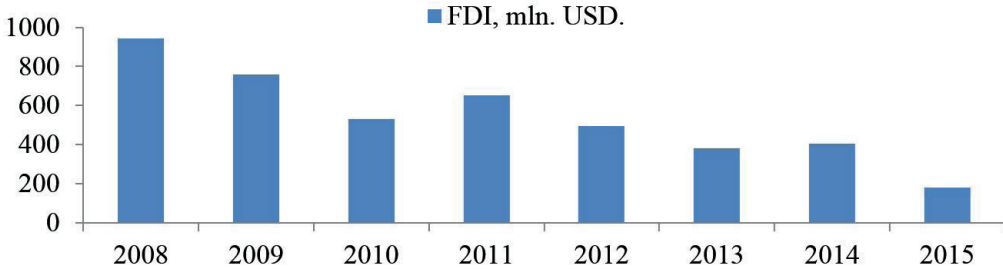
Again, the crisis of 2014-2015 and had a negative impact on economic relations between Russia and Armenia. According to official statistics in Armenia sales of goods and services, aggregate demand and income decreased. According to the NSS imports to Armenia in 2015 decreased by 19,3% while export from Armenia fell by 26,7%. At the same time, according to the Eurasian Economic Commission, the export from Armenia to Russia in 2015 compared with 2014 decreased by 26,5%, while imports from Russia to Armenia on the contrary increased by 3,8%. EAEC Statistics show that in 2015 Armenia lost markets in Russia on a number of traditional product groups, furthermore, the relevant goods from Russia began to replace the appropriate goods of Armenian origin already in the Armenian market. If we consider the export from Armenia to Europe, we can see that there was a reduction of 5.4%, i.e. in this case the situation is much better. However, there are significant problems associated with the reduction of stock in world prices for copper and associated non-ferrous metals. The price of copper fell by 26% in 2015 as a result of Armenia suffered losses in exports of raw materials and / or was forced to increase the volume of ore mining.

The third channel - Significant decline in FDI.

The Russian economy in Armenia is also a significant source of foreign direct investment. Much of the capital invested in the economy of Armenia is the name of the Russian. Therefore, of

course, the reduction of Russian direct investment flows will affect the economic development of Armenia.

Chart 3 Direct foreign investment in the Armenian economy, mln.USD



Source: National Statistical Service of the Republic of Armenia, www.armstat.am

Over the past three years, there was a significant decline in FDI in the Armenian economy (see Chart 3), which is explained along with the “Russian” factor, i.e. the reduction of the investment potential of the Russian Diaspora, the traditional problems of an institutional nature (disadvantaged investment climate and business environment, high concentration in the markets, monopolization of the economy).

The fourth channel - a reduction of tourism

Finally, the tourism sector of Armenia is also in many ways associated with Russia. A significant proportion of tourist spots in Armenia attract flows from Russia. According to the NSS in the fourth quarter 2015 256 572 tourists arrived in the republic. Compared to the same period of 2014 the tourist inflow decreased by 3.2%.¹⁷ If we consider the balance of payments data for tourism in the current account, we can see that there was a significant reduction in income compared with the same period last year. Thus, as has been shown above, there is a close macroeconomic relationship between the Armenian and the Russian economy. It is clear that at the level of one of the most important instruments of macroeconomic regulation, namely at the level of monetary and exchange rate policy the volatility relationship between drama and ruble is evident.

Let’s consider the results of the monetary policy of the Central Bank in recent years. In early 2006, the Central Bank switched to inflation target regime. However, as the experience of recent years has shown, monetary policy in Armenia is not sufficiently effective. Besides the fact that half of the central bank failed to achieve a nominal anchor (see Table 1), the analysis shows that most of the necessary preconditions for Inflation Target in Armenia is absent.

Table 1 CPI and the target RA landmark annually

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bottom target	1.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Top target	4.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
The real CPI	2.9	4.4	8.9	3.4	8.2	7.7	3.2	5.8	3	3,7
Deviation	0%	0%	61%	0%	49%	40%	0%	5.5%	0%	0%

Source: Database of the Central Bank of Armenia - <http://www.cba.am/>

It comes, first of all, to the credibility of the Central Bank, transparency policy, freely floating exchange rate of the national currency, a high degree of central bank independence, the presence of adequate development of the stock market and a substantial amount of short-term, medium-term and long-term government debt. In the period from 2009 to 2015 there was a steady growth in the value index of monetization economy of Armenia (the ratio of money supply to GDP), but

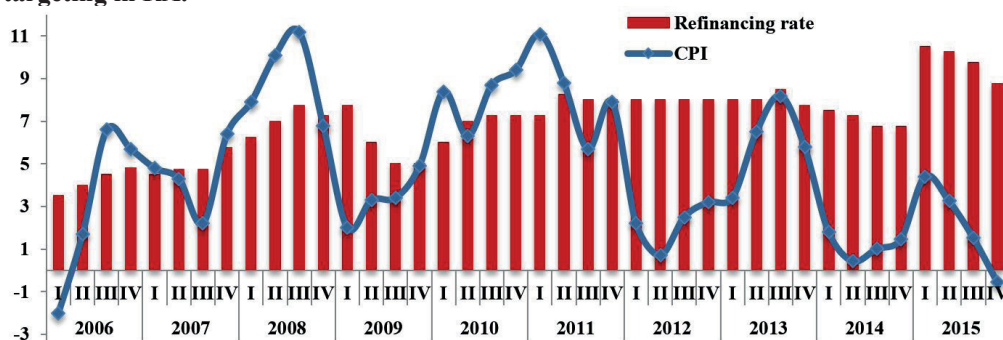
¹⁷ http://armstat.am/file/article/sv_12_15r_421.pdf

compared with other countries, EAEC and Georgia, Armenia has a rather poor performance. In part, this situation is due to the presence of the “Dutch disease” in the economy of Armenia, when the expansion of monetary aggregates is accompanied by an increase in inflationary pressures.

Over the entire period of inflation targeting in the context of the CBA quarterly almost never missed the mark. Moreover, it should be noted that practically throughout the entire period of the inflation targeting CBA conducted a policy of “expensive money” Even during the crisis, when the world adopted a policy of lowering interest rates in order to stimulate economic activity, the Central Bank, however, continued a policy of “expensive money”.

However, the strict policy pursued by “monetary authorities” in Armenia did not lead to effective results. The annual cross-sectional picture of a rainbow. However, in two of the five years of inflation targeting in Armenia, the Central Bank did not achieve this goal. So, with regret we can say that one of the main instruments in the conditions of inflation targeting tools “monetary authorities” - the interest rate - is not effective from the point of view of the impact on the real economy and the reduction of inflationary pressures (see Chart 4). The underdevelopment of the financial system as a whole does not allow the Central Bank to effectively use the interest rate instrument.

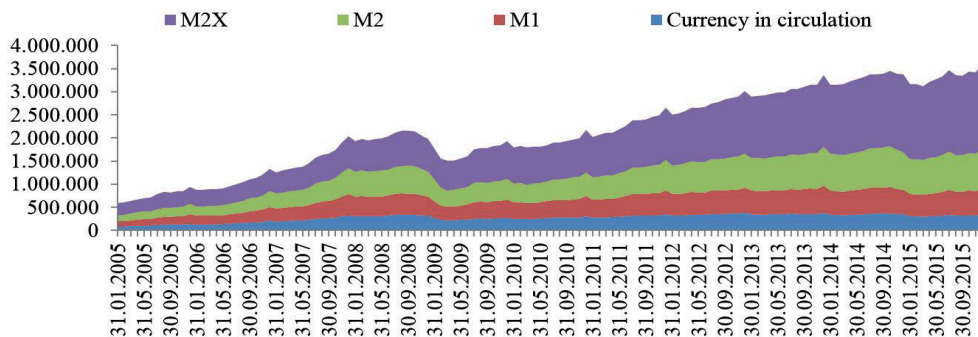
Chart 4 The refinancing rate of the Central Bank and the CPI in the period of inflation targeting in RA.



Source: Database of the Central Bank of Armenia - <http://www.cba.am/>

On the other hand, if we take into account that in the conditions of inflation targeting, the main instrument of the Central Bank, as a rule, are open market operations, it becomes clear that in an underdeveloped capital market in Armenia, this channel is the impact of the Central Bank on the aggregate demand also it does not work.

Chart 5 Monetary aggregates RA (mln. AMD)

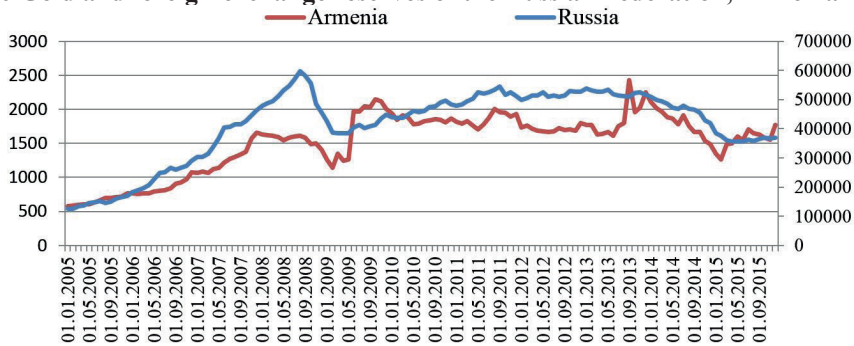


Source: Database of the Central Bank of Armenia - <http://www.cba.am/>

Finally, the structure of money supply in Armenia indicates a high degree of dollarization and the virtual absence of long-term financial resources (see Chart 5). At the same time, against the backdrop of, say, Georgia, Kazakhstan, Armenia seems quite poorly as regards the presence of at least medium-term financial resources in the economy. In addition, almost from the start of inflation targeting, the Central Bank has followed a strict monetary policy. Artificial strengthening of national currency exchange rate, which is carried out by the Central Bank, led to significant negative consequences. But it is also necessary to mention one of the most important conditions for the successful implementation of inflation targeting, namely free-floating exchange rate. In this sense, the Central Bank's de facto implementing of strict exchange control initially excludes the possibility of an effective monetary policy under inflation targeting.

With a view to keep depreciation of the dram the Central Bank in the period from December 2013 to February 2015 has lost about 1.0 billion US dollars to its international reserves, i.e. almost 30%, and the Bank of Russia, for example, which, in contrast to the CBA, has not borrowed and own and significant international (gold and foreign-exchange) reserves - much smaller - less than 15% (see Graph 6.).

Chart 6 Gold and foreign-exchange reserves of the Russian Federation, Armenia



Source: <https://www.cba.am>, www.cbr.ru,

The significant reduction of foreign currency inflow to Armenia from the above noted 4 channels (investment, private transfers, tourism, exports, which have been discussed above) had an impact on the sharp drop in the national currency. And on December 17 2014 AMD exchange rate rose to 527 (in exchange offices and 600), that is, A`MD depreciated by 48% (from the pre-crisis rate of 405) in such a short period. This fall caused a shock reaction. The Central Bank had to find a solution for the current situation.

After the Central Bank, trying through foreign exchange intervention, to suspend the depreciation of the national currency, could not withstand the excessive demand and the prevailing negative expectations for the exchange rate, it was decided the most non-market and can lead to negative consequences of the decision. On December 17th, 2014 the Central Bank increased the statutory rate of compulsory reservation bank liabilities in foreign currency from 12% to 24% with the condition of placement of reserves in the Central Bank exclusively in AMD (previously 6% required to reserve in drams, the remaining 6% - in the deposit currency), which caused a sharp strengthening of the drama the next day. Since 18 December, the dollar fell to 30.2 points and was fixed at around 497 AMD per 1 USD. According to AMD deposits this rate remains 2%. Later, on 23 December 2014, the Central Bank revised and lowered the reserve requirements rate from 24% to 20%, which operates to this day. Due to the action of the norm still the banking system forced freezes a significant amount on reserve accounts in the Central Bank (about 512 mln USD, or about US \$ 245 bln AMD, about 170 bln AMD of which are additional to the previously applicable requirements), carrying on These currency and interest rate risks to their investors. (see table 2).

Table 2 Foreign currency deposits of the banking system of Armenia

	AMD, mil.	USD, mil.
Foreign currency liabilities:	1,228,224	2,559
Required reserves:	245,645	512

Source: Database of the Central Bank of Armenia - <http://www.cba.am/>

Correlation of volatility of the exchange rate in EAEC countries

Thus, the exchange rate plays an important role in the country's trade policy. Relative revaluation of currencies and their volatility often have important implications for international trade, balance of payments and on the overall economic performance. Within the framework of this model the importance of exchange rates for trade by analyzing the impact of exchange rate volatility on trade will be discussed.

Let us consider this relationship based on the example of EAEC Union countries. We study how the volume of Armenian export to countries of the Customs Union is interconnected to exchange rate volatility, the coefficient recalculation of PPP, GDP per capita and 2 fixed time shocks: Macroeconomic Shocks and membership in the EAEC.

To calculate volatility methods are used where the volatility of the bilateral exchange rate is measured as the standard deviation of the difference between quarterly exchange rate values. exchange rate volatility between K and J countries in year T is defined by the formula:

$$ERvol_{kjt} = \text{std.dev.}[\ln(ER_{kjt,m}) - \ln(ER_{kjt,m-1})]$$

where ER - the nominal exchange rate,

m - quarter

$ERvol_{kjt}$ value, which equals to 0 means there is no volatility, as in the case of a fixed exchange rate regime. The standard deviation is calculated for a single quarter. Aggregate volatility at the country level is a weighted average of bilateral trade volatility.

A more general measure of exchange-rate misalignment is a deviation from the value of purchasing power parity (PPP). As the PPP index PPP conversion factor was taken in quarter section for the currency of each country. As fixed variables we took a number of macroeconomic shocks in the countries and the entry into an economic union. These variables act as binary and have the values $\{0, 1\}$ for the corresponding quarter.

To test the relationship between exchange rates and trade, we are using a simple econometric analysis of quarterly data which covers 4 countries of the Customs Union in the period from 2008 to 2015. As the dependent variable appears gross export from Armenia to Russia, Kazakhstan and Belarus for the quarter. (X_{jkt}) We estimate the model which is designed to explain the effect of the exchange rate and other variable data on trade between Armenia and these countries.

Assessment of the impact on trade due to changes in the variable data is calculated by the following formula:

$$X_{jkt} = \beta_0 + \beta_1 GDPPC_{jt} + \beta_2 PPP_{jt} + \beta_3 xratevol_{jkt} + \omega_{jt} + \Psi_{jt} + \phi_{jkt}$$

where $GDPPC$ – GDP per capita of country j in quarter t, PPP – conversion factor of the currency of country j in quarter t and $xratevol$ – the volatility of currency j relative to k in quarter t. ω_{jt} – a shock in country j in quarter t. Ψ_{jt} – membership in the Union of country j in quarter t. As Russia, Belarus and Kazakhstan have become members of the Union at the same time, we considered as variable only Russia, in order to avoid singular matrices and multicollinearity.

Methodology and model results

This study analyzed the quarterly data for 2008 - 4rd quarter of 2015 for 4 countries (Armenia, Russia, Belarus, Kazakhstan).

Background of the model:

- There is no correlation between macroeconomic shocks and country's membership in the Customs Union.
- The relationship between trade and the exchange rate is considered under the influence of a fixed time.
- GDP per capita and the PPP conversion factor - the best options that describe the willingness of the population to the imported products.

Hypothesis (H₀):

Fixed time effects have a significant impact on the volume of export from Armenia to Russia, Belarus and Kazakhstan.

Data analysis

Tables 1, 3 and 5 (see Appendix) show the descriptive statistics between these indicators. In table 2 (see Appendix) regression can be seen on the volatility of currency trading. A very small part of trade is due to the volatility of currencies and none of them is a significant factor since all p-values are greater than 5%. **In addition, even the Belarusian ruble absolutely not a significant factor, the likelihood that its coefficient is zero - 93.52%.** This can be explained by the fact that all these currencies are multicorrelated and they all depend on the dollar exchange rate. Table 4 (see Appendix) shows the regression of trade and GDP per capita of the population. It is important to note that the GDP per capita of the population of Kazakhstan is the most significant factor for the Armenian exports as a whole, as its p-value equal to 0.0065 while the same figure for Belarus makes this country again insignificant. In the final model, we eliminate all insignificant factors. Regression of trade and PPP conversion factors are presented in Table 6 (see Appendix). As it was expected, PPP to AMD is a very important factor for the Armenian exports. The most important thing to take into account is that the exchange rate is also very important in this case. The next step is to consider all of the variables with the fixed time effects and to find the best model that explains changes in commerce. Models with variable and fixed exposure time are presented in Table 7.

Formula 1

$$\begin{aligned} \text{TRADE} = & 0.0577*\text{ARMGDP} - 0.01082*\text{BELGDP} + 0.02232*\text{KAZGDP} + \\ & 0.00959*\text{RUSSIAGDP} + 215.43*\text{AMDPPP} - 0.4559*\text{BYRPPP} - 0.80141*\text{KZTPPP} + \\ & 134.9*\text{RUBPPP} - 54.292*\text{BYRAMDVOL} + 106.364*\text{KZTAMDVOL} + 55.723*\text{RUBAMDVOL} \\ & - 11.6543*\text{SHOCKARM} - 4.410*\text{SHOCKBEL} + 59.036*\text{SHOCKKAZ} - 41.751*\text{SHOCKRUS} \\ & - 34.1503*\text{UARM} - 2.003*\text{URUS} - 99.83 \end{aligned}$$

As seen from the results shown in Table 7 (see Appendix), all the factors together account for almost 91.6% of Armenian export changes, as adjusted R-square is 0.916. However, there are factors that are more important than others. If we consider the probability of the table to the right, we note that the most significant factor is GDPPC of Armenia, Kazakhstan and Russian and Kazakh GDPPC economic shocks and Armenia's membership in the Union.

Thus, we can conclude that the PPP conversion rate and the exchange rate are less important factors for the Armenian exports than shocks in Russia and Kazakhstan. To test our hypothesis we construct a model including GDP per capita of the population of Armenia, Russia and shocks in Russia and Kazakhstan and Armenia's membership in the Union. Consider the table 8 (see Appendix). R-square is less than in the model described in Table 7. However, the coefficients are

greater which gives greater reliability and confidence. Only UARM and Armenia's GDP are not significant in this case, so we remove them and get the final model.

$$\text{TRADE} = -39.77 * \text{SHOCKRUS} + 57.9763 * \text{SHOCKKAZ} + 0.038 * \text{RUSSIAGDP} - 59.204$$

In this case, all the variables are significant and the adjusted R-squared is equal to 80.4%. Thus, our hypothesis is that the fixed time effects have a significant impact on the volume of export from Armenia to Russia, Belarus and Kazakhstan holds 95% level of significance.

Thus, on the basis of the constructed model and the analysis it is revealed that Russia and Kazakhstan shocks are more significant factors in the Armenian export volume than the volatility of the exchange rate and conversion factors for PPP in these countries.

Conclusions and recommendations

Since 1 January 2015, after the Republic of Armenia officially became a member of the Eurasian Economic Union, it has already been a year. During this period there have been significant changes in the mutual trade regimes in the formation of a unified tariff policy.

Membership of Armenia in the EAEC from 1 January 2015 was accompanied by the intention of expansion of Armenian exports to the markets of the member-countries of the Union and increase the investment attractiveness of the country, primarily to Russian investors. However, in reality, is primarily due to the implementation of the RA inconsistent with the countries of the EAEC monetary and foreign exchange policies, there was a deterioration of the main indicators of the international trade and investment cooperation. It is important to note that the scope of trade and economic cooperation between Armenia and other countries of the EAEC, with the exception of the Russian Federation, is so small that it does not play any significant role, so in the foreseeable future Russia will continue to be the basic guideline for the development of Armenia's foreign trade. To date, Russia has found itself in two crises. The first is due to the oil factor which led to budget and other financial problems in the Russian Federation. The second is caused by the embargo policy. Russia solved these problems with the help of a floating exchange rate policy. The Russian Federation did not actually lose its reserves. CBR, applying the policy of floating exchange rate, continues to buy foreign currency and contribute to the depreciation of the ruble. It would seem that, in this period, the economy of Armenia, through integration, the oil crisis and the embargo policy has a chance to fill a niche, thus increasing exports to Russia. However, our products were not competitive in the Russian market.

Thus, taking into account the expected reduction in foreign exchange inflows through foreign private transfers, export, foreign direct investment and tourism in 2015 of Armenia may face the problem of "shortage" of foreign currency that must necessarily affect the course of the Armenian dram, deterrence which creates deeper and more difficult to insurmountable problems. Our calculations show that at the moment the market rate of the Armenian dram should be about 600 units per US dollar which will restore parity competitiveness of Armenian goods in the Russian market and prevent the substitution of Armenian goods that are cheaper than Russian goods, as well as to involve all the other benefits of with integration into the EAEC.

The current situation of the economy of Armenia, taking into account significant changes of external and internal factors, involves the use of new and more effective mechanisms of regulation of the financial intermediation system, aimed at improving the competitiveness of the Armenian economy.

The artificial strengthening of national currency exchange rate, which is carried out by the Central Bank, led to significant negative consequences. Of course, to some extent, this policy has led to the growth curb money supply and, consequently, reduced inflationary pressures to some extent. However, as shown above, CBA attempts have not led to significant successes. As a result, the tightening of foreign exchange controls have not allowed to keep the inflation rate

within the band and at the same time significantly reduced the export potential of the Armenian economy. It is also necessary to mention one of the most important conditions for the successful implementation of inflation targeting, namely free-floating exchange rate. In this sense, the Central Bank's de facto implementing a strict exchange control, initially excluded the possibility of an effective monetary policy under inflation targeting.

It is necessary to revise the current monetary policy, adhere to the target with corresponding real inflation in the country in order to stimulate economic growth. Thus it is necessary to target the significant lag of inflation from the devaluation of the dram, which will provide export promotion and increasing real incomes of those dependent on foreign transfers.

The Government of the Republic of Armenia in cooperation with the Central Bank must implement a policy aimed at identifying the main causes of poor access to financial resources for small and medium-sized businesses. It is necessary to develop mechanisms that allow through the development of non-bank financial intermediation institutions to shape the market demand for capital in the long-term and medium-term financial products and diversified offer on them. It should also tighten the requirements for financial reporting in the real economy, to ensure transparency of operations of business entities, to develop principles and corporate governance system that will significantly reduce the risks in the credit market.

References

- Velasco A (1988) Trade, Development and the World Economy: Selected Essays of Carlos Díaz-Alejandro. A. Editor. Oxford: Basil Blackwell.
- Hausmann R (1999) Should There Be Five Currencies or One Hundred and Five? 65–79
- Friedman M (1988) The Case for Flexible Exchange Rates. In *The Merits of Flexible Exchange Rates*, edited by Leo Melamed: George Mason University Press.
- Mundell R (1961) A theory of optimum currency areas, in: *American Economic Review*, 51(4): 657-665.
- Chriszt M (2000) Perspectives on a Potential North American Monetary Union. *Economic Review*, Vol. 85, No. 4
- Mundell R (1961) A theory of optimum currency areas, in: *American Economic Review*, 51(4) 657-665.
- Roubini N, Corsetti G, Pesenti P (1998) What Caused the Asian Currency and Financial Crisis? Part I: A Macroeconomic Overview New York University, September.
- Sachs J, Larrain F (1999) Why Dollarization Is More Straitjacket Than Salvation. *Foreign Policy* 116 (Fall) 80–92.
- Chang R, Velasco A (1998) The Asian Liquidity Crisis. National Bureau of Economic Research Working Paper 6796, November
- Sandoyan EM, Voskanyan MH, Mnatsakanyan LA (2013) Evaluation of the influence of inflation and exchange rate in Armenia. Eighth Annual scientific conference (2-6 December 2013). Collection of scientific articles: Social and Humanities Sciences. Part II. - Yerevan.: Pub. RAU, 2013. - 344p. pp. 63-70
- Voskanyan MH () Currency regulations in Armenia in the framework of inflation targeting: myth and reality. XIX Kondratieff reading «Modernization of the Russian economy: lessons from the past, chances and risks», Participant s' theses. N. D. Kondratieffs' International Fund, pp. 69-71.
- Website Central Bank of Armenia: <https://www.cba.am/am/SitePages/ExchangeArchive.aspx>
- Russian Federation Federal State Statistics Service - <http://www.gks.ru>;
- National Statistical Service of the Republic of Armenia - www.armstat.am
- Eurasian Economic Commission, <https://docs.eaeunion.org/ru-ru/>
- <http://money.cnn.com/data/commodities/?iid=intnlmkt>

APPENDIX

Table 1

	TRADE	BYRAMDVOL	KZTAMDVOL	RUBAMDVOL
Mean	60.30979	0.044922	0.013882	0.055493
Median	65.61690	0.017424	0.006409	0.018608
Maximum	105.5662	0.544087	0.067447	0.885149
Minimum	1.422223	0.001540	0.001014	0.004894
Std. Dev.	25.79242	0.104003	0.017160	0.156018
Skewness	-0.272982	3.974731	1.922261	5.082245
Kurtosis	2.317572	18.76906	5.741316	27.54718
Jarque-Bera	0.986554	402.8154	28.79793	911.7628
Probability	0.610622	0.000000	0.000001	0.000000
Sum	1869.603	1.392594	0.430350	1.720268
Sum Sq. Dev.	19957.47	0.324497	0.008834	0.730252
Observations	31	31	31	31

Table 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RUBAMDVOL	-36.80974	67.18096	-0.547919	0.5882
KZTAMDVOL	309.6833	293.4110	1.055459	0.3006
BYRAMDVOL	8.102195	98.66470	0.082118	0.9352
C	57.68938	6.445553	8.950261	0.0000
R-squared	0.059719	Mean dependent var		60.30979
Adjusted R-squared	-0.044756	S.D. dependent var		25.79242
S.E. of regression	26.36329	Akaike info criterion		9.501736
Sum squared resid	18765.63	Schwarz criterion		9.686767
Log likelihood	-143.2769	Hannan-Quinn criter.		9.562052
F-statistic	0.571611	Durbin-Watson stat		1.188778
Prob(F-statistic)	0.638549			

Table 3

	TRADE	ARMGDP	KAZGDP	BELGDP	RUSSIAGDP
Mean	60.30979	806.1743	2690.767	1591.510	2963.800
Median	65.61690	790.4595	3025.700	1593.882	3034.746
Maximum	105.5662	1277.599	3577.500	2008.977	3929.733
Minimum	1.422223	436.0000	1791.275	1067.382	1701.755
Std. Dev.	25.79242	230.9679	644.4634	285.3485	618.1815
Skewness	-0.272982	0.126622	-0.030577	-0.141987	-0.395383
Kurtosis	2.317572	1.886428	1.378085	2.252511	2.152079
Jarque-Bera	0.986554	1.684558	3.402702	0.825866	1.736363
Probability	0.610622	0.430728	0.182437	0.661707	0.419714
Sum	1869.603	24991.40	83413.78	49336.80	91877.80
Sum Sq. Dev.	19957.47	1600385.	12459993	2442713.	11464452
Observations	31	31	31	31	31

Table 4

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ARMGDP	0.067970	0.013284	5.116538	0.0000
KAZGDP	0.024957	0.008442	2.956353	0.0065
BELGDP	-0.000120	0.016127	-0.007421	0.9941
RUSSIAGDP	-0.003678	0.008827	-0.416676	0.6803
C	-50.54872	14.89591	-3.393462	0.0022
R-squared	0.771413	Mean dependent var		60.30979
Adjusted R-squared	0.736246	S.D. dependent var		25.79242
S.E. of regression	13.24622	Akaike info criterion		8.151992
Sum squared resid	4562.021	Schwarz criterion		8.383280
Log likelihood	-121.3559	Hannan-Quinn criter.		8.227386
F-statistic	21.93555	Durbin-Watson stat		1.899820
Prob(F-statistic)	0.000000			

Table 5

	TRADE	AMDPPP	BYRPPP	RUBPPP	KZTPPP
Mean	60.30979	0.187536	2.597175	0.016931	0.074095
Median	65.61690	0.185855	1.891373	0.016524	0.080108
Maximum	105.5662	0.221118	6.155452	0.025380	0.093817

	TRADE	AMDPPP	BYRPPP	RUBPPP	KZTPPP
Minimum	1.422223	0.166320	0.968620	0.013158	0.056441
Std. Dev.	25.79242	0.013744	1.706659	0.002642	0.013403
Skewness	-0.272982	0.297624	0.449776	0.898845	-0.061338
Kurtosis	2.317572	2.402371	1.633791	4.438962	1.541982
Jarque-Bera	0.986554	0.918996	3.456137	6.848801	2.765286
Probability	0.610622	0.631601	0.177627	0.032569	0.250915
Sum	1869.603	5.813602	80.51242	0.524855	2.296942
Sum Sq. Dev.	19957.47	0.005667	87.38050	0.000209	0.005389
Observations	31	31	31	31	31

Table 6

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ARMGDP	0.057774	0.013764	4.197426	0.0010
BELGDP	-0.010825	0.025417	-0.425911	0.6771
KAZGDP	0.022328	0.010841	2.059663	0.0600
RUSSIAGDP	0.009597	0.011523	0.832849	0.4200
AMDPPP	215.4379	359.1903	0.599788	0.5590
BYRPPP	-0.455984	4.035304	-0.112999	0.9118
KZTPPP	-0.801417	449.6403	-0.001782	0.9986
RUBPPP	134.9786	1211.406	0.111423	0.9130
BYRAMDVOL	-54.29286	40.68747	-1.334388	0.2050
KZTAMDVOL	106.3640	141.2140	0.753211	0.4647
RUBAMDVOL	55.72374	28.18849	1.976826	0.0697
SHOCKARM	-11.65435	8.402172	-1.387064	0.1887
SHOCKBEL	-4.410031	11.81644	-0.373212	0.7150
SHOCKKAZ	59.03698	10.87507	5.428652	0.0001
SHOCKRUS	-41.75110	19.39924	-2.152202	0.0508
UARM	-34.15037	15.93469	-2.143146	0.0516
URUS	-2.003234	7.345698	-0.272708	0.7894
C	-99.83092	71.74051	-1.391556	0.1874
R-squared	0.963509	Mean dependent var	60.30979	
Adjusted R-squared	0.915789	S.D. dependent var	25.79242	

Variable	Coefficient	Std. Error	t-Statistic	Prob.
S.E. of regression	7.484733	Akaike info criterion		7.155860
Sum squared resid	728.2760	Schwarz criterion		7.988498
Log likelihood	-92.91583	Hannan-Quinn criter.		7.427279
F-statistic	20.19108	Durbin-Watson stat		2.436108
Prob(F-statistic)	0.000001			

Table 7

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UARM	-13.66280	12.19762	-1.120120	0.2733
SHOCKKAZ	61.80057	13.57598	4.552198	0.0001
SHOCKRUS	-49.94936	15.01622	-3.326361	0.0027
ARMGDP	0.023439	0.011516	2.035307	0.0526
RUSSIAGDP	0.031285	0.004732	6.611268	0.0000
C	-55.12127	11.68419	-4.717594	0.0001
R-squared	0.852526	Mean dependent var		60.30979
Adjusted R-squared	0.823031	S.D. dependent var		25.79242
S.E. of regression	10.85028	Akaike info criterion		7.778244
Sum squared resid	2943.213	Schwarz criterion		8.055790
Log likelihood	-114.5628	Hannan-Quinn criter.		7.868717
F-statistic	28.90423	Durbin-Watson stat		1.373053
Prob(F-statistic)	0.000000			

Table 8

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SHOCKRUS	-39.77057	10.72181	-3.709316	0.0009
SHOCKKAZ	57.97643	8.912501	6.505068	0.0000
RUSSIAGDP	0.038468	0.003590	10.71587	0.0000
C	-59.20462	11.11350	-5.327268	0.0000
R-squared	0.823974	Mean dependent var		60.30979
Adjusted R-squared	0.804416	S.D. dependent var		25.79242
S.E. of regression	11.40668	Akaike info criterion		7.826189
Sum squared resid	3513.030	Schwarz criterion		8.011219
Log likelihood	-117.3059	Hannan-Quinn criter.		7.886504
F-statistic	42.12887	Durbin-Watson stat		1.565614
Prob(F-statistic)	0.000000			

Abbreviation

- BYR – Belarusian ruble
- RUB – Russian ruble
- AMD – Armenia dram
- KZT – Kazakhstan tengeVol – volatility
- Armgdp, rusgdp, belgdp, kazgdp – GDP per capita of the countries
- Amdppp, rubppp, byrppp, kztppp –PPP conversion factors for this currencies Shock-arm, shockbel, shockkaz, shockrus - macroeconomic shocks in countries
- Uarm, urus, ubel, ukaz – membership in the Union