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PROSPECTS FOR MONETARY INTEGRATION IN THE EURASIAN ECONOMIC UNION

The article reveals the features and prospects of monetary and financial integration within the Eurasian Economic Union. The article highlights the negative aspects, which hinder monetary integration and ways to overcome those. The aim of the study is to identify the degree of readiness of the participating countries to introduce a single currency, as well as the benefits and costs they may face. The object of the research is the Eurasian Economic Union (EAEU), the main economies of which are characterized by raw materials specialization. Research methodology. Theoretical model explains the change in commodity prices that will arise after the introduction of a single currency. The model assumes that export prices will decline after the introduction of a single currency due to the absence of currency risk. Then the volume of exports will increase, but the negative side is that it can bring additional competition to local companies. In empirical part of the study, an attempt was made to quantify the value of currency risk, which is currently present in trade between Russia and Kazakhstan, the largest economies of EAEU. Empirical studies were conducted through OLS regression, as a result of which currency risk was estimated. The practical significance lies in the fact that in the case of the creation of a monetary union on the territory of the EAEU, we can expect a decrease in prices up to 10%, due to the exclusion of currency risk. However, this does not compensate for the negative consequences for the economies. The results of the study lead to the conclusion that due to the lack of basic prerequisites for monetary and financial integration, the introduction of a single currency will not accelerate the development of national economies, but rather create additional risks.

Key words: currency integration, EAEU, monetary policy, currency union, exchange risk, internationalization, national currency, common currency.

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Еуразиялық экономикалық одақтағы валюталық интеграцияның келешегі

Мақалада Еуразиялық экономикалық одақ шеңберіндегі валюталық-қаржылық біріктірудің ерекшеліктері ашылған. Валюталық-қаржылық біріктіруге кедергі келтіретін келеңсіз салдар мен оларды еңсеру жолдары айқындалған. Зерттеудің мақсаты – қатысушы-мемлекеттер бірыңғай валютаны енгізуге дайындығының деңгейін, олар пайда болуы мүмкін пайда мен шығындар анықтау. Зерттеу нысаны – Еуразиялық экономикалық одақ (ЕАЭО). ЕАЭО ішінде біріктірудің негізгі мәселелерінің бірі – негізгі қатысушы-мемлекеттер экономикаларының шикізат бағытында болуы. Зерттеудің әдістемесі. Ұсынылған теоретикалық үлгі бірыңғай валюта енгізілген соң пайда болатын шикізат тауарларына деген бағалардың өзгеруін түсіндіреді. Үлгі бірыңғай валюта енгізілген соң, валюталық тәуекелдің болмауына байланысты экспорттық бағалар төмендейді деп болжайды. Сол кезде экспорттың көлемі ұлғаятын болады, дегенмен мұның келеңсіз жағы жергілікті компаниялардың қосымша бәсекелестігіне әкеп

соқтыруы мүмкін. Зерттеудің эмпирикалық бөлігінде валюталық тәуекел шамасын сандық бағалау әрекеті жасалған. Бұл қазіргі уақытта осы одақтың ең ірі экономикалары болып саналатын Ресей мен Қазақстан арасындағы сауда-саттықта бар. OLS регрессиясының көмегімен эмпирикалық зерттеу жүргізіліп, оның нәтижесінде валюталық тәуекел бағаланды. Зерттеудің практикалық маңызы, ЕАЭО қатысушы-мемлекеттердің аумағында валюталық одақ құрылған жағдайда валюталық тәуекелді алып тастау нәтижесінде бағалардың 10% дейін төмендеуін күте аламыз. Алайда бұл экономикалар үшін келенсіз салдарды өтемейді. Зерттеу нәтижелері валюталық-қаржылық біріктіруге негізгі алғышарттардың болмауына байланысты бірыңғай валютаны енгізу – ұлттық экономикалардың дамуын жеделдетпейді, керісінше қосымша тәуекелдер тудырады.

Түйін сөздер: валюталық интеграциясы, ЕАЭО, ақша-кредит саясаты, валюталық одақ, валюталық тәуекел, интернационалдандыру, ұлттық ақша өлшемі, бірыңғай валюта.

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Перспективы валютной интеграции в Евразийском экономическом союзе

В статье раскрываются особенности и перспективы валютно-финансовой интеграции в рамках Евразийского экономического союза. Выявлены негативные аспекты, препятствующие валютно-финансовой интеграции и пути их преодоления. Целью исследования является выявление степени готовности стран-участниц к введению единой валюты, а также выгод и издержек, с которыми они могут столкнуться. Объект исследования – Евразийский экономический союз (ЕАЭС), основные экономики которого характеризуются сырьевой направленностью. Методология исследования. Представленная теоретическая модель объясняет изменение цен на сырьевые товары, которое возникнет после введения единой валюты. Модель предполагает, что после введения единой валюты экспортные цены будут снижаться в связи с отсутствием валютного риска. Тогда объемы экспорта будут увеличиваться, но негативная сторона заключается в том, что это может принести дополнительную конкуренцию местным компаниям. В эмпирической части исследования предпринята попытка количественной оценки величины валютного риска, который в настоящее время присутствует в торговле между Россией и Казахстаном, являющимися в настоящее время крупнейшими экономиками этого союза. С помощью регрессии OLS проведены эмпирические исследования, в результате которых был оценен валютный риск. Практическая значимость заключается в том, что в случае создания валютного союза на территории стран-участниц ЕАЭС мы можем ожидать понижение цен до 10%, вследствие исключения валютного риска. Однако это не компенсирует негативные последствия для экономик. Результаты исследования приводят к выводу, что в связи с отсутствием базовых предпосылок валютно-финансовой интеграции введение единой валюты не ускорит развитие национальных экономик, а наоборот, создаст дополнительные риски.

Ключевые слова: валютная интеграция, ЕАЭС, денежно-кредитная политика, валютный союз, валютный риск, интернационализация, национальная денежная единица, единая валюта.

Introduction

Due to the growth of global political and economic tension, regional integration associations have become widespread. This form of integration allows states to establish the internal market that is more resistant to the volatility of the outside world and, additionally, allows countries to more confidently respond to economic and political challenges from other states. The Eurasian Economic Union (the EAEU) – the zone of integration of the countries of Central Asia can be considered of one of the examples of a regional

integration association established on the modern world stage.

The Eurasian Economic Union (EAEU) was created in 2015 on the basis of the Customs Union of Russia, Kazakhstan and Belarus and the Common Economic Space as an international organization of regional economic integration possessing international legal personality. Member States are Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia.

The main objectives of the Union are to form a single market for goods, services, capital and labor resources, comprehensive modernization, coopera-

tion and increase of the competitiveness of national economies.

Although, the Treaty on the Eurasian Economic Union does not contain provisions expressly providing for the development of a monetary union and the introduction of a single currency, Section XIV of the “Treaty on the Eurasian Economic Union” provides for measures aimed at ensuring the possibility of the establishment of a monetary union. Monetary union is the highest stage of economic integration, including processes of the coordination of monetary policy, the formation of a supranational mechanism of currency regulation, the establishment of interstate financial and monetary organizations and national currencies, aimed at ensuring monetary stabilization while liberalizing the movement of goods, capital, labor force, the development of a regional zone of monetary stability for solving integration tasks (Khapillin, 2016: 28).

For the period from 1994 to 2018 the Eurasian integration went through almost all stages of integration before the establishment of the EAEU in 2015. So, accelerated transferring from the Customs Union to the Common Economic Space, and then to the EAEU without completing the previous stages of the integration process, caused the complicated methodological problems, the solving of which largely determines the success of the integration.

To understand the prospects of possible monetary integration, it is necessary to clearly understand the degree of readiness of states for this kind of interaction as well as what benefits and costs countries can bring from a monetary union. The study of the conditions under which monetary integration will be mutually beneficial, is becoming increasingly important.

Materials and Methods

The authors use official daily exchange rates RUB/KZT, presented by the National Bank of Kazakhstan and official daily data for KASE Index (Kazakhstani Stock Exchange Index) for the period from October 1, 2007 to July 28, 2018. The dataset was tested for stationarity using Augmented Dickey-Fuller Test, test gave enough evidence to reject null hypothesis of data being non-stationary at both 5% and 10% significance levels (test statistic for ‘KASE growth’ variable is -13,4; the test statistic for ‘RUB/KZT growth’ variable is -

10.3, critical values are -1.6 and -1.9 for 10% and 5% significance levels, respectively).

The first OLS regression is applied on the growth rate of the exchange rate between the ruble and tenge and the growth rate of the KASE index (growth rate of KASE index being the dependent variable) for the period from October 1, 2007 to June 1, 2015, the second regression includes period up to June 28, 2018 inclusively.

Literature review

According to the theory of optimal currency zones, the benefits and costs of the establishment of the currency union are directly dependent on the level of integration of the union members (Mundell, 1961). Implementation of the unified currency policy is most closely integrated via international trade and the transfer of production factors to countries, which is associated with the decrease in transaction costs and fluctuations in price levels, more efficient allocation of financial and labor resources, convergence cost of capital (Grauwe, 2018; Tenreyro, 2001).

The main benefit for member states in creating a monetary union is the elimination of exchange rate uncertainty, which leads to the following important consequences:

- Reduction of uncertainty in planning, which increases the efficiency of resource allocation and innovation, contributing to the growth of foreign trade and GDP (trade effect);
- Reduction of risk premium, which leads to a decrease in interest rates and, accordingly, to the increase in investment and GDP (risk premium effect);
- Damping exchange rate shocks, reducing their role as the source of fluctuations in business cycles (the effect of synchronization of the last-named);
- Liquidation of transaction costs associated with currency exchange as well as the need to hedge currency risks (the effect of reducing transaction costs). Released resources can be more effectively used in other areas of activity, which leads to the increase in production output (Vinokurov, 2017; Lane, 2006; Scharpf, 2011; Alesina, 2002).

However, simultaneously, there are significant negative consequences, in particular, the internationalization of the monetary unit can reduce the effectiveness of monetary policy in the country,

lead to excessive strengthening of the national currency, and also destabilize the domestic financial market as a result of sharp changes in non-resident capital flows (Cacciatorrea, 2016; Clancy, 2016).

Consider the advantages and disadvantages for countries participating in the EAEU within the framework of a monetary union.

The EAEU has united the states with common past, but different present, first an economic one. Each of the former Soviet republics also had its own specialization during the Soviet period, and during the years of independence many other changes took place related to attempts to find a place in the world market and in the regional division of labor. At the present stage, Russia and

Kazakhstan are exporters of energy resources, Armenia and Kyrgyzstan are exporters of labor, Belarus is an exporter of processed products.

At the European Union level, Belarus and Kyrgyzstan, which are equally distant geographically and economically, have few mutual interests. However, the economic structure of both countries since Soviet times has been built in such a way that it needs the Russian market. The situation in Kazakhstan and Armenia is somewhat different, however for them relations with Russia are extremely important, largely due to geopolitical reasons.

The GDP indicators of the countries also confirm the differences in the economies, not only in terms of the volume of production (Table 1).

Table 1 – Gross domestic product of the EAEU countries (at current prices; millions of US dollars)*

	2013	2014	2015	2016	2017
Armenia	11 121	11 610	10 553	10 546	11 537
Belarus	74 761	78 536	55 317	47 479	54 413
Kazakhstan	236 633	221 418	184 387	137 278	159 407
Kyrgyzstan	7 335	7 469	6 678	6 813	7 565
Russia	2 298 363	2 085 848	1 374 665	1 287 722	1 577 870
the EAEU	2 628 213	2 404 881	1 631 600	1 489 838	1 810 792

* The indicator is calculated at the exchange rates of national (central) banks for the year: in Belarus – at the weighted average exchange rate of the Belarusian ruble against the US dollar; in Armenia, Kazakhstan, Kyrgyzstan and Russia – at the average exchange rate of national currencies against the US dollar.
Source: Eurasian economic commission. Brief Statistics Yearbook 2018. Retrieved from: http://www.eurasiancommission.org/ru/act/integr_i_makroec/dep_stat/econstat/Documents/Brief_Statistics_Yearbook_2018.pdf (date of access: 10-08-2018)

The significant difference in GDP is observed not only between the largest and the smallest economies, the Russian and Kyrgyz, however also between the Kazakhstan and Belarusian economies.

If national economies grew until 2014, then in 2015-2016 the GDP of all countries declined significantly, which was due to both the fall in world prices for the main export goods of these countries, the reduction in consumption of hydrocarbons and metals in importing countries, and the negative dynamics of the exchange rate of national currencies against the dollar and euro. The structural problems of national economies (a significant share of the fuel and energy complex in exports of Russia, Kazakhstan and Belarus, a low share of mechanical engineering) as well as geopolitical reasons (sanctions against Russia and Belarus and Russian counter sanctions) had a

negative impact on the development. The improvement of the economic situation in the economies of the EAEU countries has been observed since the second half of 2016.

Taking into consideration that Russia's GDP makes 87% of the total share of countries, it can be assumed who will manage the single emission center if the single currency is introduced. Then the main problem for other countries will be the complete loss of control over national monetary policy. The loss of independence in the conduct of monetary policy will lead to the fact that members of the EAEU will not be able, if necessary, to devalue national currencies to support their exports or to equalize the balance of payments.

Dynamics of changes in the level of GDP is directly proportional to the volume of foreign trade. Consider the indicators of mutual trade (Table 2).

Table 2 – Volumes of mutual trade in goods of the EAEU countries (millions of US dollars)

	2013	2014	2015	2016	2017
Armenia – Belarus	41,0	38,3	34,6	35,4	41,4
Armenia – Kazakhstan	8,1	7,3	4,9	5,5	9,3
Belarus – Kazakhstan	928,7	940,8	578,6	411,2	689,9
Belarus – Kyrgyzstan	110,8	95,3	61,0	52,0	132,1
Kazakhstan – Kyrgyzstan	1 054,0	1 206,5	756,1	702,7	800,5
Kazakhstan – Russia	23 847,0	20 196,2	15 413,7	13 005,6	16 839,1
Kyrgyzstan – Armenia	1,1	0,5	0,5	1,0	1,8
Kyrgyzstan – Russia	2 182,1	1 856,8	1 467,3	1 211,0	1 651,1
Russia – Armenia	1 332,1	1 397,0	1 295,8	1 337,0	1 773,5
Russia – Belarus	39 744,3	37 374,0	26 003,2	26 198,9	32 218,5
the EAEU	69 249,2	63 112,7	45 615,7	42 960,3	54 157,2

Source: Eurasian economic commission. Brief Statistics Yearbook 2018. Retrieved from: http://www.eurasiancommission.org/ru/act/integr_i_makroec/dep_stat/econstat/Documents/Brief_Statistics_Yearbook_2018.pdf (date of access: 10–08–2018).

The organization was established primarily as a trade union, but in 2015 the trade turnover between its member countries fell by 40%, and in 2016 – by 15%. The reasons were obvious: the fall in oil prices and the “war of sanctions” led to the drop in the Russian ruble and a reduction in consumption in the Russian market. This has a negative impact on the economies of the EEU countries.

By 2017, there has been the indicators recovery. Compared to 2016, the EAEU's GDP grew by 1.8%, the volume of mutual trade – by 26.1% and foreign trade – by 24.4%.

Share in mutual exports under results of 2017: Armenia – 1%, Kazakhstan – 9.5%, Russia – 63.4%, Kyrgyzstan – 1%, Belarus – 25.1%. The contribution of Belarus to the purchase of goods in the common market (import) – 37%, Armenia – 2.5%, Kazakhstan 23%, Kyrgyzstan – 3.5%, Russia – 34%.

The structure of exports from the EAEU indicates a lack of diversification, since the EAEU countries have similar competitive advantages. In this case, mutual trade loses its effectiveness, which reduces the competitiveness of counterparties. In addition, the relatively low share of turnover between the EAEU countries in the total volume of their export-import operations is to a certain extent a consequence of the insignificant size of these economies and weak mutual economic ties.

About 97% of the total commodity turnover within the EAEU occurs with the participation of Russia, including 60% of the total volume

accounted for by Russian trade with Belarus, 31% with Kazakhstan. Russia has a positive balance with all other EAEU member states.

It is worth noting that the decline in foreign trade in third countries was more significant than in the area of mutual trade, which also indicates a low level of integration in the EAEU.

Export settlements are mainly carried out in US dollars, which is largely due to its traditional structure among the EAEU states (primarily Russia and Kazakhstan), which are suppliers to world markets for raw materials (these goods are usually priced in reserve currencies primarily in US dollars).

The greater the level of interaction of member countries among themselves, the greater will be the demand and the need for settlements in national currencies, the more interested countries will be in keeping their reserves in national currencies (Frankel, 2002).

In recent years, there has been the increase in the share of national currencies, among which the Russian ruble prevails, in the turnover between the members of the EAEU (Table 3).

From 2013 to 2017, the share of the ruble in calculations in the structure of settlements within the EAEU increased from 61.8% to 74.9%, and the dollar's share decreased from 30.3% to 18.3%. At the same time, currencies of other countries of the EAEU occupy a very small share in the calculations: Armenian dram – 0.1%, Belarusian ruble – 0.4%, Kazakhstan tenge – 0.9%, Kyrgyz som – 0%.

Table 3 – Currency structure of payments (receipts) for export and import goods and services between the EAEU member states (per year, percent)

	2013	2014	2015	2016	2017
in Armenian dram	0,1	0,1	0,1	0,1	0,1
in Belarusian ruble	0,4	0,3	0,5	0,4	0,4
in Kazakhstan tenge	0,4	0,5	1,1	0,7	0,9
in Kyrgyz som	0,0	0,0	0,0	0,0	0,0
In Russian rubble	61,8	67,4	68,0	74,1	74,9
In US dollar	30,3	26,3	25,0	19,3	18,3
in Euro	6,8	5,2	5,1	5,2	5,2
in other currencies	0,2	0,2	0,2	0,2	0,2

Source: Retrieved from: http://www.eurasiancommission.org/ru/act/integr_i_makroec/dep_stat/fin_stat/express_information/Documents/ei_payments/express_payments_2017.pdf (date of access: 10.08.2018).

At the same time, the US dollar remains the dominant currency when paying for goods and services between the EAEU countries, excluding Russia. In particular, in the calculations of the Republic of Belarus with the countries of the EAEU, except Russia, it accounts for about 50%, in the calculations between the Republic of Kazakhstan and the Kyrgyz Republic – about 80%.

Use of national currencies of the EAEU instead of reserve ones in mutual transactions or the introduction of a common currency would eliminate undesirable currency risks for many entrepreneurs, reduce economic and regulatory barriers to participation in foreign economic operations, and contribute to strengthening macroeconomic stability and developing national financial markets and intermediaries.

The main obstacles to increasing the share of local currencies in the calculations are: the low liquidity of the market for conversion operations in local currency pairs, the lack of tools to hedge currency risks, the lack of loans for trade financing in local currencies, which leads to additional costs for participants in foreign trade activities, and also creates additional uncontrollable risks for them (Dobronravova, 2017).

The absence of developed financial markets in most EAEU countries significantly reduces the attractiveness of investments in these countries, primarily portfolio ones, for which the opportunity to “exit from investments” is particularly important, which implies the existence of a liquid market. Poor investment climate makes investors hide behind “offshore signs” and, accordingly, use reserve currencies (Danilov, 2018).

The lack of an adequate level of macroeconomic stability in the countries of the

EAEU contributes to the high volatility of their currencies, significantly reduces confidence in national currencies. This creates additional risks both in foreign economic activity and for national economies as a whole (Bouchet, 2018).

The benefits of economic integration and trade interdependence occur through a mechanism for reducing price volatility of exchange rates. According to the optimum currency area theory, the higher volatility of the bilateral exchange rate of national currencies may indicate higher costs that a country will incur when joining a monetary union (Frankel, 1999).

All EAEU countries have weak volatile currencies that have only internal convertibility, are tied to the US dollar or the dual currency basket. The currencies of the countries of the Union have different dynamics. So, if oil prices rise, the currencies of Russia and Kazakhstan go up in price, and Belarus, on the contrary, becomes cheaper, because expensive oil leads to higher costs and lower competitiveness of the country's economy. Given the differences in the structure of economies, for each individual economy it is necessary to use individual tools of monetary policy (Fontagné, 2009).

For Belarus, Kyrgyzstan and Russia, a flexible exchange rate is characteristic, Kazakhstan is moving from the pegging to the US dollar to the floating exchange rate, and in Armenia there is a stabilized exchange rate regime. As for the monetary policy, inflation targeting is in effect in Armenia, and Russia switched to this strategy in 2015. In the same year, monetary targeting was established in Belarus. In Kazakhstan and Kyrgyzstan, controlling inflation is at the heart of monetary policy, and interest rates serve as

operational targets; however, the difficulties associated with the practical implementation of monetary policy in these countries do not allow them to unambiguously classify exchange rate regimes.

To assess the degree of stability of the national currencies of the EAEU countries, the index of their real effective exchange rate (REER) is most representative (Table 4). An increase /

decrease in this index means that the REER of the national currency is actually increasing / decreasing in relation to the basket of currencies of the main trading partners. With the increase in the REER of the national currency, more favorable conditions are created for national importers and currency debtors, and with a decrease in the REER – for exporters and currency lenders (Krasavina, 2017).

Table 4 – Real effective exchange rate index (as percentage of 2010)*

Year	Armenia	Belarus	Kazakhstan	Kyrgyzstan	Russia
2010	100	100	100	100	100
2011	99,1	85,9	99,6	106,0	104,7
2012	94,5	79,5	104,7	105,6	107,2
2013	95,8	85,8	104,8	106,2	108,5
2014	102,5	95,8	97,9	110,0	99,4
2015	108,4	92,4	102,7	115,1	82,9
2016	107,6	84,7	76,4	113,2	82,6
2017	104,0	80,7	81,9	113,3	95,7

*When calculating the REER, the weights of the countries – major trading partners are formed in Armenia for 5 years and revised in 5 years, in Russia and Belarus – for the previous year and revised annually, in Kazakhstan – for the three previous years and revised annually.

Source: Retrieved from: http://russiancouncil.ru/upload/iblock/ba6/edb-centre_2018_report-48_national-currencies_rus.pdf (date of access: 10-08-2018)

Accordingly, it can be concluded that the official estimates of the competitiveness of national economies are too high and do not correspond to the real competitive potential of the EAEU countries in international and regional trade, at least their purchasing power. In retrospect, national currency rates are inflated from 10–30% of their effective level. In general, the economic situation in the EAEU countries does not give grounds for optimistic forecasts, especially in the area of stability in the foreign exchange markets. At the same time, the values of short-term factors have a negative trend to a greater extent and are aimed at accelerating the rate of devaluation of national currencies of the EAEU countries. Thus, it remains an open question who should be more dissatisfied with the manipulation – countries with overvalued or undervalued. Of course, the latter maintain their competitiveness. However, this is done at the cost of almost interest-free crediting of a competitor's economy, which receives a lot of cheap goods, moreover, in debt and at extremely low interest rates. It benefits the US economy more than other countries (Myrzahmatova, 2016).

Indicator of the state of stability of the currencies of the EAEU member states by their internal purchasing power is inflation data (Table 5).

The indicators of the degree of stability of national currencies, measured by the level of their domestic purchasing power, differ by considerable differentiation. According to the results of 2017, the rate of inflation in Kazakhstan is the highest at 7.4%. Belarus also has the highest inflation rate, despite its decline from 59.2% in 2012 to 6% in 2017. In Russia, there is a tendency for inflation to decline in 2012–2014, it was replaced by a sharp increase in 2015 to 13.5% under the conditions of economic depression and a significant devaluation of the ruble, Western sanctions and Russian counter-sanctions. In Kyrgyzstan, under the influence of the economic depression and the deflationary trend, the inflation rate is insignificant. In Armenia, economic depression was combined with deflation – falling prices. Externally, the impression of an increase in the purchasing power of the dram. In fact, there is a decline in conditions of economic depression – a decline in business

activity and production, national income, a decline in wages, and an increase in unemployment. There is a deflationary gap, in which the national income

per capita falls below total expenditures, consumer demand falls and the purchasing power of a currency actually decreases.

Table 5 – Inflation in the EAEU member states*

	Kazakhstan		Armenia		Belarus		Russia		Kyrgyzstan	
	Value	Change, %	Value	Change, %	Value	Change, %	Value	Change, %	Value	Change, %
2006	8,6		3,4		7		9,7		5,6	
2007	10,8	25,75	4,6	32,62	8,4	20,55	9	-6,94	10,2	84,26
2008	17,1	59,04	9	98,07	14,8	75,92	14,1	56,63	24,5	139,69
2009	7,3	-57,46	3,5	-60,70	13	-12,67	11,7	-17,39	6,8	-72,12
2010	7,1	-2,33	7,3	105,25	7,7	-40,21	6,9	-41,19	8	16,54
2011	8,3	16,88	7,7	5,21	53,2	587,43	8,4	23,18	16,6	108,79
2012	5,1	-38,54	2,5	-66,81	59,2	11,25	5,1	-39,97	2,8	-83,36
2013	5,8	13,89	5,8	127,87	18,3	-69,09	6,8	33,45	6,6	138,95
2014	6,7	15,25	3	-48,50	18,1	-1,07	7,8	15,69	7,5	13,91
2015	6,7	-0,94	3,7	25,16	13,5	-25,32	15,5	98,52	6,5	-13,68
2016	14,6	118,63	-1,4	-137,68	11,8	-12,53	7,1	-54,60	0,4	-93,93
2017	7,4	-48,94	0,9	-164,58	6	-48,99	3,7	-47,90	3,2	703,04

*Inflation data are taken on average per year
Source: compiled by the author based on the Knoema database

In order to get out of economic depression and deflation, economic growth is necessary, an increase in national income and a small inflation, which, unlike deflation, can stimulate this process (Abramova, 2016).

Thus, the development of monetary integration in EAEU is hindered by a number of problems:

- gap in the level of development of national economies;
- significant gap in inflation rates, macroeconomic instability, volatility of national currency rates;
- export dependence of economies, low competitiveness of goods;
- undeveloped international financial center, lack of a unified and efficient settlement and payment system in the EAEU;
- high dollarization of economies.

In such conditions, any advancement of events with the advancement of monetary integration will not accelerate the development of common markets, but, on the contrary, will create additional risks. In addition, there are no basic prerequisites for monetary and financial integration due to the instability of national currency rates (Sedalishchev, 2017, Zhanbulatova, 2018, Katarzyna, 2016).

Before the countries of the EAEU approach the turn of the transition to a currency union, it is necessary to solve the following tasks:

- coordination of currency and monetary policies (transition to mutual settlements in national currencies, mutual coordination of national currency rates, etc.);
- establishment of a common monetary policy in relation to third countries;
- development of a common payment space infrastructure, ensuring compatibility of national payment systems of the EAEU member countries.

Results and discussion

The theoretical model presented in the article rests on the fundamental assumption of the rationality of the agents in the economy. The article, then, makes another assumption of the existence of only two economies in the world, and the only company, producing unified good. This product has identical constant elasticity in both markets.

The procedure for selling a product is as follows: in the first period, the company signs and establishes conditions with the buyer through a contract and delivers the agreed quantity of goods,

in the second period the buyer makes payment at the agreed price of the product in the contract. Therefore, in order to calculate the current value of the goods sold, the company needs to discount cash flows from trading activity. The discount on the part of the benefit that comes from foreign sales contains a currency risk component: the exchange rate between two currencies can change between two periods, so the company can earn less than expected in the event of a sudden fall in the exchange rate.

Further, the article contains model additions, which are aimed to quantify risk and empirically attempt to predict the scenario for the economy of Kazakhstan.

The theoretical model considers the interaction between the two countries, further, the internal and external economies. According to the model, the only company in the domestic economy produces an aggregated normal product, which is sold in both economies: internal and external. The only goal pursued by the aforementioned company is to maximize the value, which is the current value of the benefits from the sale of goods. Following the notion, the value of the company is comprised from all the cash inflows minus the cost of the good produced.

$$W = \frac{p_f \times q_f}{(1+r_d + \alpha)} + \frac{p_d \times q_d}{(1+r_d)} - C(q) \quad (1)$$

Notes:

p_f, p_d – the price of goods in foreign and domestic markets, respectively;

q_f, q_d – the quantity sold on the foreign and domestic markets, respectively;

r_d – internal discount rate;

α – risk premium when trading on the foreign market;

$C(q)$ – Company expenses function

The cost function of the company shows a negative scale effect:

$$C(q) = 2 + \frac{(q_f + q_d)^2}{2} \quad (2)$$

The price of goods is displayed separately for each market from the formula of elasticity. Taking into account the constant value of the elasticity of the product, first of all, consider getting prices in the domestic market.

According to the general formula of elasticity for a normal product:

$$-\frac{dq_d}{q_d} \div \frac{dp_d}{p_d} = e \quad (3)$$

After integrating and taking the exponent:

$$p_d = \sqrt[e]{\frac{e^{c_d}}{q_d}} \quad (3.1)$$

The price of the product on the external market can be obtained in a similar way.

Thus, the monetary value of the domestic economy before the introduction of the single currency is represented by the following formula:

$$W_1 = \frac{q_f \times \sqrt[e]{\frac{e^{c_f}}{q_f}}}{(1+r_d + \alpha)} + \frac{q_d \times \sqrt[e]{\frac{e^{c_d}}{q_d}}}{(1+r_d)} - 2 - \frac{(q_f + q_d)^2}{2} \quad (1.1)$$

Since the company aims to maximize its wealth, it will tend to choose such q_f and q_d , which maximize W_1 :

$$\frac{q_d}{q_f} = \left(\frac{1}{\sqrt[e]{e^{(c_f - c_d)}}} \times \frac{(1+r_d + \alpha)}{(1+r_d)} \right)^e \quad (1.2)$$

After differentiation:

$$\frac{d\left(\frac{q_f}{q_d}\right)}{d\alpha} = e \times \left(\frac{1}{\sqrt[e]{e^{(c_f - c_d)}}} \times \frac{(1+r_d + \alpha)}{(1+r_d)} \right)^{e-1} \quad (1.3)$$

From the final formula, we can trace directly proportional dependence of the proportion of quantities on α . Also, the effect will be greater, the greater the value of elasticity will be.

After the introduction of a common currency in both states, the effect α will disappear from equality:

$$\frac{q_d}{q_f} = \left(\frac{1}{\sqrt[e]{e^{(c_f - c_d)}}} \times \frac{(1+r_d + \alpha)}{(1+r_d)} \right)^e \quad (1.4)$$

Or:

$$\frac{q_d}{q_f} = \left(\frac{1}{e^{\sqrt{e^{(c_f - c_d)}}}} \right)^e \quad (1.5)$$

That is, after the introduction of a common currency in the territory of two countries, the proportion of the quantities sold depends only on the difference in the size of the countries.

Consequently, the ratio becomes less with the disappearance of currency risk, which means the following:

- Decreasing q_d supplied by a company
- Increasing q_f , supplied by a company

To trace the effect on prices, recall the demand equation:

- For domestic market:

$$p_d = \sqrt[e]{\frac{e^{c_d}}{q_d}} \quad (1.6)$$

- For foreign market:

$$p_f = \sqrt[e]{\frac{e^{c_f}}{q_f}} \quad (1.7)$$

When prices are inversely proportional to the quantity of products supplied in both economies, further conclusions follow:

- Domestic price will increase, following the decrease in the quantity supplied;
- The price on the foreign market will decrease, following the increase in the quantity of goods supplied.

Denote the exchange rate risk as α . The risk of changes in the exchange rate will increase the overall risks of the company. Thus, we can quantify the effect of risk β .

The basic formula for β is:

$$\beta = \frac{\text{cov}(r_i, r_m)}{\text{var}(r_m)} \quad (4)$$

To measure β , it is required to calculate a complicated interest rate of a company. The discount rate of a company can be determined by the following factor model. In our particular model, the factors will be the cumulative effect of all the processes occurring in the domestic economy. The

exchange rate will affect the share of business in the external economy:

$$r_i = r_f + \beta_1 F_1 + \delta e \quad (5)$$

Designations for the formula are as follows:

r_i – a company discount rate;

r_f – risk free rate;

F_1 – aggregate factors affecting the exchange rate for a firm in terms of the domestic economy;

e – exchange rate;

δ – share of the company's foreign business.

Substituting the expression for r_i in the formula, we divide the influence of the exchange rate and the cumulative factors of the economy:

$$\beta = \frac{\text{cov}(r_f + \beta_1 F_1 + \delta e, r_m)}{\text{var}(r_m)} \quad (4.1)$$

Open brackets:

$$\beta = \frac{[\text{cov}(r_f, r_m) + \beta_1 \text{cov}(F_1, r_m) + \delta \text{cov}(e, r_m)]}{\text{var}(r_m)} \quad (4.2)$$

Order the expressions:

$$\beta = \frac{\text{cov}(r_f, r_m) + \beta_1 \text{cov}(F_1, r_m) + \delta \text{cov}(e, r_m)}{\text{var}(r_m)} \quad (4.3)$$

In the above given formula, the effects of different variables are now separated, the first expression is the effect of “internal” factors, which are determined within the domestic economy, and the external factor is the expression of the exchange rate.

Since we are interested in the implications for the economy of Kazakhstan, we substitute components with the appropriate symbols as follows:

$$\beta_{ig} = \frac{\text{cov}(r_f, r_m) + \beta_1 \text{cov}(F_1, r_m)}{\text{var}(r_m)} \quad (4.4)$$

$$\beta_e = \frac{\text{cov}(e, r_m)}{\text{var}(r_m)} \quad (4.5)$$

Having performed all these operations, we managed to separate the influence of internal and external factors on the total beta.

$$\beta = \beta_{ig} + \delta\beta_e \quad (4.6)$$

Subject to effective markets, the discount rate for the company can be determined using the CAPM model, β will be determined by the formula above, λ is the risk premium ($r_m - r_f$):

$$r_i = r_f + \beta\lambda \quad (6)$$

We substitute the formula for β :

$$r_i = r_f + (\beta_{ig} + \delta\beta_e)\lambda \quad (6.1)$$

Open brackets:

$$r_i = r_f + \beta_{ig}\lambda + \delta\beta_e\lambda \quad (6.2)$$

where $\beta_e\lambda = \alpha$

In the case of the introduction of a single currency in the territory of both countries, the exchange rate term will disappear.

As can be seen from the conclusions of the model, the introduction of a common currency is usually beneficial for exporters. Consequently, the country's exports will increase, which has a positive effect on the country's trade balance. In addition, it will further expand the already existing export industries, such as wheat production, mining, and also help the growing manufacturing industry, as it will stimulate exports (Gaur 2018).

On the other hand, common currency can neglect price differences inside the monetary union. Additionally, it will create greater opportunities for importers by easing the price analysis and bargaining process. At the same time, such a transparency in terms of price quotations will increase competition between companies and make it difficult for weak companies to survive, especially under the condition of low production levels. Thus, the overall effect is mixed.

Table 6 – OLS Regression for Tenge / Ruble Exchange Rate

Parameter	Regression 1	Regression 2
b – regression coefficient	.1995264	.0954698
t-statistic of b	5.25	3.50
a – constant term	-0.00350	0.0001256
t-statistic of a	-0.77	0.36
R-squared	0.0144	0.0046
Number of observations	1889	2627

The first number in the table represents β_e from the equation 6.2, if we assume that the share of foreign business in the company is equal, on average, to 10%, the exchange rate risk (α) for an average Kazakhstani company is 1.9%. Assuming that the discount rate for domestic sales is 10%, then for foreign business it will be 11.9%. The company shall charge a price no less than 19% higher at a price that is sold differently. With the introduction of a single currency, the company will not have to compensate for the risk, so it can reduce the price.

The results of Regression 2, the one updated with a more recent data, shows that the exchange rate risk for an average Kazakhstani company has decreased to 0.9%. Assuming that the discount rate for domestic sales is 10%, then for foreign business

it will be 10.9%. Company shall charge a price not less than 9.5% higher at a price sold in the external economy, to compensate for the exchange rate risk. In the event of a transition to a common settlement currency, company will be able to lower its price in the foreign market by 9.5%, which is also equivalent to the abolition of a tariff of the same size.

The risk compensation has almost halved when adding data for the last three years. This can be attributed to the fact that the National Bank of the Republic of Kazakhstan has taken and continues to take certain steps towards the transition to the market exchange rate of tenge.

Compared to the previous regression, the R-squared score almost halved to 0.0046 (the previous R-squared value was 0.0144). One of the

possible explanations for this phenomenon is the relative decrease in the influence of the Russian economy on the Kazakh economy as well as the significant volatility of other, more significant, economic indicators and economic spheres. One of them is the oil crisis of 2015-2017, when the price per barrel reached 27.72 USD in January of 2016.

The diagram below (Figure 1) shows the change in the KASE index, the ruble exchange rate in relation to the tenge and the price of Brent crude for January 2015 – June 2018. The oil crisis can be

traced well on this diagram: the price of Brent crude began to fall amid the news on the discovery of shale oil deposits in the United States of America, due to the increase in world production (the main players in the oil market, the United Arab Emirates and Iran did not reduce their production volumes), the price of oil began a steady decline and HVA its minimum in January 2016 (30.8 USD per barrel of Brent crude oil). After January 2016, the price began to rise gradually. The KASE index behaves in a similar way (Cheung, 1998).

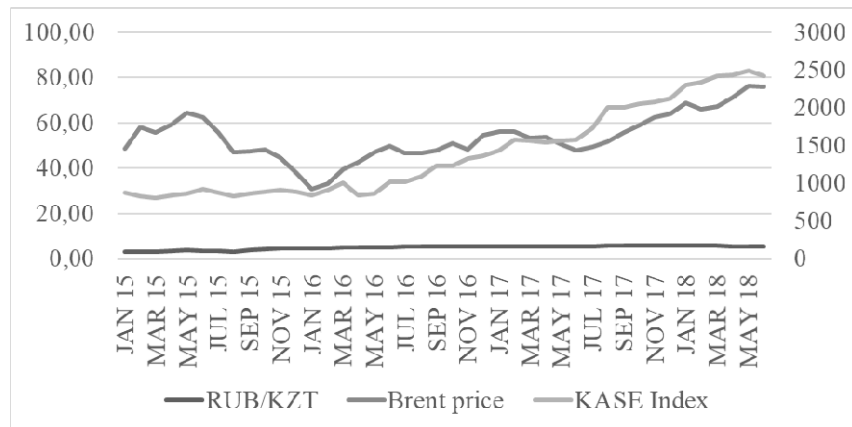


Figure 1 – The timeline of RUB/KZT, Brent Price and KASE Index changes

At the same time, the sharp depreciation of the ruble exchange rate that occurred until September 2015 could not be compared in magnitude and scale with the global oil crisis. In addition, the RUB/KZT ratio was rather quickly restored to the usual 1 ruble = 5 tenge and subsequently did not change dramatically.

And although the correlation of both indicators with the KASE index is practically equal to 0.7 ($\text{cov}(\text{RUB} / \text{KZT}, \text{KASE}) = 0.690119773$, $\text{cov}(\text{Brent}, \text{KASE}) = 0.704152269$), the R-squared value during the regression of the KASE index on the price of Brent oil 0.495830418.

Conclusion

The theoretical model presented in the work explains the price change that occurs after the introduction of a common currency in two countries. The risk of exchange rate arises from the difference in the periods of receipt of the product by the buyer and the period he pays for the goods. The model states that the introduction of a single currency in the two countries will increase the

export of countries, at the same time reducing prices for exported products. Risk was quantified. If the Monetary Union was to be created in the current situation, there could be expected the decrease of prices up to 10% (given 0.9% currency risk and 10% discount rate), which couldn't compensate for the negative effects for countries-participants economic state.

Currently the countries of EAEU are not ready to form a monetary union on the territory of countries-participants either technologically or economically. Although technical part of the process can be greatly enhanced with political instruments (as it was with economic integration), it is not possible to influence economic state in the same way. The risks of currency union creation are likely to be multiplied by the countries-participants' own problems, such as low economic diversification and vulnerability to external shocks. Further integration demands the harmonization plan for all aspects of economies.

In the conclusion, beside the fact that creation of monetary union can bring numerous benefits, the current goal of the EAEU should be to establish an

infrastructure for a switch to national currencies in intra-union payments. In the midterm, the establishment of common currency will be a next step to facilitate payment process between

countries. As of current situation, the question of currency union creation is still a matter of long-time perspective, because risks of creation of such a union prevail over the advantages.

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