

Customs unions, currency crises, and monetary policy coordination: The case of the Eurasian Economic Union

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Abstract

After achieving substantial progress in establishing a common customs territory and regulations, customs unions face potential disruptions due to a lack of monetary policy coordination. These disruptions might appear in the form of currency shocks and the ensuing trade conflicts. We approach this issue by looking at the case of the Eurasian Economic Union (EAEU). The volatility of national currencies in 2014–2015 resulted in sizable shifts in competitiveness, culminating in a currency crisis in some member states. This raises the questions of how to gradually achieve a more coordinated monetary policy, what monetary policy options are available, and what would be their relative impact on macroeconomic stability. Using a set of modeling tools and econometric models, we review three monetary regimes, which represent moves from fully independent exchange rate policy through increased policy coordination to joint exchange rate setting. © 2017 Non-profit partnership “Voprosy Ekonomiki”. Hosting by Elsevier B.V. All rights reserved.

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1. Introduction

Despite widespread skepticism towards Eurasian economic integration, the five countries of the Eurasian Economic Union (EAEU) have thus far achieved a certain degree of success. Notably, a common market for goods and services has

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been established, with several important exemptions to be phased out according to the schedule specified in the 2015 EAEU Treaty. A common external tariff has been in effect since 2011. A common set of WTO-compliant technical standards is being elaborated. A common labor market has been in place since the beginning of 2015. The first EAEU free trade area (with Vietnam) was signed in November 2015; several further negotiation tracks are ongoing (Vinokurov, 2017).

An advanced form of monetary policy coordination remains a possibility at a later stage. The volatility of national currencies in 2014–2015 resulted in real exchange rate misalignments that could have diverted trade and culminated in a currency crisis in some cases, e.g., Kazakhstan. This turbulence engendered interest in stronger monetary coordination by gradually increasing it, exploring monetary policy options available to EAEU member states, and considering their relative impact on macroeconomic stability.

Theoretically, coordinating monetary policies in an economic integration bloc is desirable. This is particularly true when member states are simultaneously moving towards a single financial market. A single market with no common monetary policy could lead to imbalances and misalignments related to financial instability (e.g., multiplication of contagion and spillover effects, beggar-thy-neighbor exchange rate policies, and non-desirable arbitrage capital flows because of differences in inflation levels and interest rates).

More generally, these are the problems of a customs union facing potential disruptions due to a lack of monetary policy coordination. Viewed in this way, such issues could be relevant not only for the EAEU but also for the Gulf Cooperation Council (GCC), MERCOSUR, the South African Customs Union (SACU), and possibly ASEAN in the long term.

This paper assesses the benefits of monetary cooperation by using new Keynesian modeling tools for the five EAEU countries and a set of econometric models to assess the equilibrium exchange rate. We review three monetary regimes, which represent moves from fully independent exchange rate policies through gradually increased cooperation to jointly fixed exchange rates. The last option is similar to a full-fledged monetary union.

To analyze various scenarios, we present three sets of model simulations based on a dynamic stochastic general equilibrium (DSGE) system of models run jointly by the Eurasian Development Bank and the Eurasian Economic Commission (Demidenko et al., 2016). It covers the five EAEU countries and can be used to analyze economic processes, make projections, and develop proposals and guidance on streamlining economic policies within the EAEU. An important advantage of the Integrated System of Models is that it allows analytical and forecasting tools to be applied separately (to individual EAEU member states) and collectively (to the entire customs union), taking into consideration the links between the bloc's economies and the external world.

The paper proceeds as follows. First, we present a literature review on the choice of an exchange rate regime and discuss why monetary unions (and more generally various forms of monetary policy coordination) are introduced (or not) in a customs union. Second, we discuss some stylized facts on the recent exchange rate turbulence in the EAEU. Then, we discuss the “reality on the ground” in the Eurasian Economic Union regarding coordination of macroeconomic policies. In the next section, we present the results on model simulations. The final section concludes the paper.

2. Choice of an exchange rate regime: Literature overview and international experience

For small open economies, the choice of an exchange rate regime is one of the most important policy decisions. Yet, the widest consensus is that there is no regime that fits all countries. In fact, even a single country might find different exchange rate regimes optimal at different points in time (Frankel, 1999).

Several factors, such as the degree of capital mobility, trade and financial openness, and the level of financial development, have to be considered when choosing an exchange rate system for a country. Even after considering these factors, there is still room for policy preferences. The choice of exchange rate system includes a decision about trade-offs among major policy objectives.

There are several types of exchange rate regimes—partly fixed or floating—but all of them fall between two extremes: a freely floating exchange rate and a hard peg. Pegged exchange rates provide *stability*. If exchange rates are fixed credibly (most obviously with a hard peg), uncertainty is lower in business planning and investment decisions and transaction costs are lower, which is beneficial. At one extreme, these advantages are most obvious in a monetary union. Freely floating exchange rates, at the other extreme, may have high short- and medium-term volatility, especially if the currency's financial market is shallow or dominated by a few entities.

Another important consideration is whether the current nominal exchange rate is consistent with the equilibrium real exchange rate. In general, the more flexible the nominal exchange rate is, the easier it is for the markets to correct a misalignment. However, a freely floating exchange rate is not by itself a guarantee for constant equilibrium in the real exchange rate (e.g., because of financial market imperfections). With intermediate regimes (e.g., managed float), authorities might have an opinion about the equilibrium real exchange rate and nudge the nominal exchange rate, if they see misalignments evolving.

Exchange rates could also be viewed as shock absorbers. Different kinds of shocks require different kinds of absorbers. The general finding in the literature is that the greater the role played by financial shocks in creating economic volatility, the more attractive a pegged exchange rate regime becomes, as opposed to a flexible exchange rate regime, and vice versa. If the volatility is predominantly the result of real shocks, then a flexible exchange rate should serve better (originally formulated by Mundell, 1961; Fleming, 1962).

Almost all of the aspects discussed above relate to *monetary independence* to some degree. This is purely a policy choice: pegging the exchange rate means giving up monetary independence, as domestic monetary conditions must follow external ones. In this case, the central bank has no discretion with respect to domestic money supply or interest rates. At the other extreme, freely floating exchange rates reserve full monetary independence, while intermediate regimes let monetary policy operate within certain boundaries.

A currency union's most important effect is on external trade, though empirical estimates of this effect are ambiguous. Early estimations showed a very significant and positive impact. Rose (2008) used gravity models of international trade to argue that the EMU increased trade within the euro zone by 8 to 23 percent. However, in a recent study, Glick and Rose (2015) state that the euro has stimulated exports only mildly, if at all.

Trade expansion can have two additional dynamic effects on the economy. First, the expansion of external trade leads to higher GDP, as documented by Baldwin and Seghezza (1996). Second, trade expansion can affect the business cycle: According to Rose (2008), higher trade means that the business cycles of member states will become more synchronized, making it easier to pursue a common monetary policy. This effect was shown to be statistically significant for EMU countries as stated by Rose (2008). At the same time, Krugman (1993) argues that monetary integration leads to increased specialization and thus to a higher probability of asymmetric shocks. This hypothesis has also gained empirical support. Caporale et al. (2013) found that euro area countries have been moving towards increasing specialization, particularly if core and peripheral countries are compared.

There is another strand of literature that does not estimate the effect of a monetary union (a relatively rare phenomenon in international samples) but instead tries to estimate the effect of exchange rate volatility on trade and growth. Grier and Smallwood (2007) report that real exchange rate uncertainty has a negative impact on export growth for the majority of less developed countries in their sample, while it has no significant effect for developed countries.

Aghion et al. (2006) found that exchange rate volatility negatively impacts economic growth. For countries with relatively low levels of financial development, exchange rate volatility reduces growth, while for financially advanced countries, the effect is insignificant. On average, an increase in exchange rate volatility of 100 percent can lead to a 0.66 percent reduction in annual productivity growth. Schnabl (2009) also reports a negative relationship between exchange rate volatility and economic growth.

Héricourt and Poncet (2012) used firm-level data from Chinese exporters. They also found that exchange rate volatility negatively affected exports (both intensive and extensive margins). Again, this export-detering effect depends on financial development: with a higher level of financial constraints, the reduction in exports due to exchange rate volatility is stronger (e.g., a one percentage point increase in the standard deviation of the real exchange rate could reduce exports by 1.5 percent).

Another potential gain from a common currency is a lower risk premium and consequently a lower interest rate, though the substantial decline in the risk premium at the inception of the euro area led to unsustainable debt dynamics and eventually boom-bust cycles and crisis (MNB, 2011).

With respect to the EAEU, the issues of deepening integration processes in monetary and exchange rate policies have been discussed by a number of authors. Dabrowski (2016) provides the detailed analysis of the history of currency crises in the post-Soviet space. He argues in favor of inflation targeting and freely floating exchange rate regimes, albeit in a much more stable macroeconomic and political environment. Dabrowski also argues that another solution, such as a currency board, might be an effective option for the smaller economies of the post-Soviet space, as it might help boost the credibility of the monetary authorities. Moiseev (2000) concludes that the economies of Russia and Belarus (the work is about the development of the Union State) sufficiently meet the criteria for an optimum currency area. Drobyshevskiy and Polevoy (2004, 2007) and Pankratov (2008) provide arguments for Russia, Azerbaijan, Kazakhstan, Moldova, Tajikistan and

Ukraine to pursue monetary integration to maximize economic gains. We note that all of these papers were written in different political environments: the theoretical premises may remain, but the practical utility is partially lost. Balashov (2011), studying the asymmetry of macroeconomic shocks, notes the close correlation of business cycles in the Russian Federation, Kazakhstan and Tajikistan. On this basis, the author concludes that the costs of a single monetary policy in these countries would be minimal.

Knobel and Mironov (2015) analyze the CIS countries' potential readiness to create a monetary union based on the criteria of the theory of optimum currency areas (OCA) and provide some analysis of the benefits and costs of such an initiative. Through a comparative analysis of the criteria, the authors identify a number of countries for which monetary integration with Russia would be the most economically attractive. The countries that meet at least half (7 of 13) of the analyzed indicators include Moldova, Ukraine, Tajikistan, Belarus, and Kazakhstan. The authors conclude that by achieving greater business cycle synchronization in the region, these countries can reduce integration costs, increase potential gains, and support sustainable development of the monetary union in the future.

A monetary union may be considered the final step in integration. However, as we will discuss further, creating a full-fledged monetary union requires significant transfers of political power to the supranational level. This is probably the main reason why establishing a single currency in the area of several states is such a long and difficult process that has yielded few examples throughout the history.

Actually, there are quite a few integration groupings that managed to negotiate and implement relatively successful customs unions. The Southern African Customs Union—the oldest existing in the world—was established in 1910 pursuant to the Customs Union Agreement between the Union of South Africa and the High Commission Territories of Bechuanaland, Basutoland, and Swaziland. MERCOSUR—an integration bloc of Argentina, Brazil, Paraguay, Uruguay and Venezuela—was established in 1991 by the Treaty of Asunción, which was later amended and updated by the 1994 Treaty of Ouro Preto. Currently, MERCOSUR is a functioning customs union, though the common external tariff has become less synchronized over the years (Gomez-Mera, 2013). The Gulf Cooperation Council (GCC)—a regional intergovernmental political and economic union consisting of all Arab states of the Persian Gulf, except for Iraq—was established in 1981 as a customs union. A common market was launched on January 1, 2008, with plans to establish a fully integrated single market.

Of all the examples above, only the members of the Gulf Cooperation Council have stated the establishment of a single currency as an explicit long-term policy goal.

In general, there are two major categories of reasons for creating monetary unions: political and economic. Political reasons are usually the most important. Bordo and Jonung (1999) argue that the strongest monetary unions emerge when currency unification comes as a part of political unification. These are known as national monetary unions and include the United States monetary union, created with the signing of the Constitution in 1789 (McCallum, 1992; Perkins, 1994; Rolnick, 1994; Fraas, 1974), the Italian monetary union, created in 1861 as a consequence of the unification process on the Apennine peninsula (Fratianni and Spinelli, 1985; Sannucci, 1989), and the German monetary union (Coinage acts

of 1871 and 1873 unified coinage throughout the Reich and introduced the mark as a decimal-based unit of account).

The second category of reasons is economic. Economic reasons are drawn directly from OCA theory and include factors such as reduced transaction costs through standardizing coinage and harmonizing policies, wage and price flexibility, and factor mobility.

Although the economic benefits are usually promoted as the primary reasons to move towards deeper monetary integration, it is political unity that holds a monetary union together. Once political ties are dissolved, a monetary union will most likely fall apart. For example, the ruble zone—a monetary union that arose immediately after the break-up of the Soviet Union—lasted only four years after political cohesion waned.

The effectiveness of a unified monetary policy largely depends on fiscal policy. Fiscal tools are often the only means available to an integration group's member states to respond to asymmetric shocks and stabilize the situation in their domestic markets (Gali and Monacelli, 2008). For example, internal devaluation, which reduces factor costs, can be achieved through austerity measures. Since the beginning of the global economic crisis of 2008, this instrument has been widely employed by the Baltic states, Ireland, Spain, Portugal and Greece.

Numerous theoretical and empirical studies emphasize that this approach is optimal when a single monetary policy is used to anchor inflation under a regional integration agreement, while fiscal policy is formed locally and aimed at mitigating country-specific shocks (Ferrero, 2009; Pappa, 2012). However, this is only true if member states implement disciplined economic policies. If one of the countries of an integration agreement implements fiscal policy that is too soft (or implements inefficient austerity measures not followed up by structural reforms), threatening the sustainability of public debt, then the availability of external financing is undermined for the whole region (Wyplosz, 2013).

The EU experience shows, however, that implementing supranational restrictions can be difficult in practice. The obligation to pursue a balanced fiscal policy within the EU was spelled out for the first time in the Stability and Growth Pact, which came into force in 1998. Since then, this pact has been violated regularly, which has caused it to be frequently revised and consequently to have little legal effect. The key problem in developing supranational control is associated with the difficulty of finding the optimal level of centralization for fiscal policy-making and with the availability of emergency financing (Rodden, 2002).

If targets and thresholds are set centrally, then fiscal policy tends to be more balanced. But this blurs responsibility and implies the availability of centralized emergency financing. Accordingly, some studies indicate that it is more effective to let individual countries set target parameters with absolutely no access to emergency financing (Rodden, 2002). However, to avoid the 2008 situation in the EU, when the banking crisis escalated into a public debt crisis, the approach above requires harmonized banking regulation and a centralized mechanism for emergency support of the banking system through monetary policy instruments (Wyplosz, 2013).

Furthermore, an important practical task for fiscal policy coordination is the development of adequate country-specific fiscal rules. Simply setting debt ceilings and/or budget deficit thresholds can produce a pro-cyclical fiscal policy,

which cannot respond to external shocks (Buti and Carnot, 2012). The problem can be solved by establishing target parameters for the structural budget balance, which is adjusted for the cyclical component and temporary shocks (Ferrero, 2009). The main difficulty in this case comes from the need to estimate the structural balance, which is not observable, and the calculation methodology can bias the final estimates.

3. Adjustment during the 2014–2015 ruble turbulence

In the last quarter of 2014, a complex set of shocks hit the EAEU region. The most significant was undoubtedly the oil price shock, as crude oil prices fell from approximately US\$100 to \$50 within two quarters. This shock led to sharp depreciation of the Russian ruble. In addition to the oil-price shock, the Western trade and financial embargo also contributed to rapid depreciation of the ruble against the U.S. dollar and other major currencies.

Shocks to Russia affected other EAEU economies through three main channels. First, the recession in Russia decreased import demand and remittances. Second, worsened investor sentiment in Russia spilled over to a higher risk premium in the region through financial contagion. Finally, the fall in oil prices *ceteris paribus* led to lower commodity price inflation in the other four countries.

Not only were the pressures on EAEU members different, but their reactions were also diverse. Kazakhstan opted for slow and minor adjustment in its nominal exchange rate until the monetary policy regime shifted toward more flexibility on August 20, 2015. Armenia chose a new level for its soft peg to the U.S. dollar after a period of high exchange rate volatility in the last months of 2014. Belarus abandoned its crawling peg and let its ruble float relatively freely after a sharp depreciation, while the Kyrgyzstani som depreciated smoothly in the last quarter of 2014.

Given the different paths of the nominal exchange rates, short-term real exchange rate misalignments have emerged (Fig. 1). This may have diverted trade

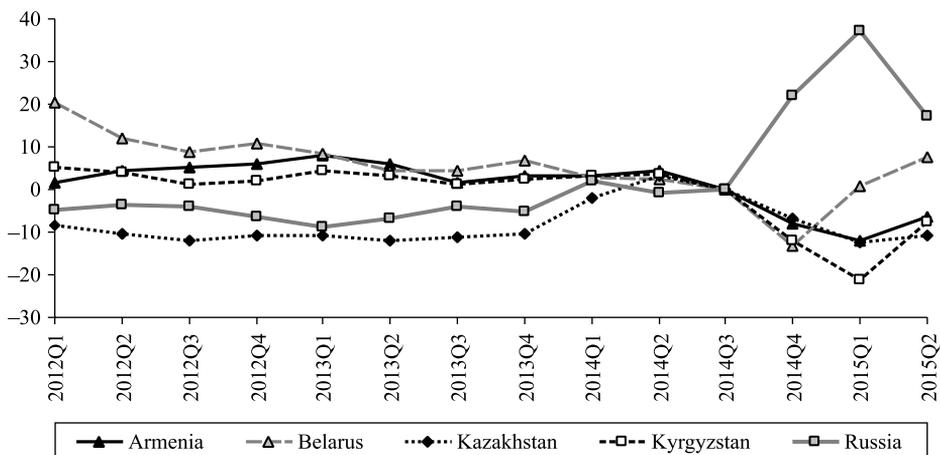


Fig. 1. Real effective exchange rates in log terms (2014Q3 = 0, positive meanings stay for appreciation).

Sources: Data from respective Central Banks; authors' calculations.

flows and increased macroeconomic volatility in general. In what follows, we assess whether more coordinated monetary policy within the EAEU could have reduced macroeconomic volatility under these circumstances. We also try to answer a more general question: What monetary policy rule and exchange rate regime would minimize macroeconomic volatilities?

4. Coordination of monetary policies in the EAEU: Reality on the ground

The Eurasian Economic Union is a relatively heterogeneous integration group. It is obvious that the individual economies are prone to different shocks and react differently to common shocks affecting the region. For instance, an increase in the global price of oil has different macroeconomic consequences depending on whether the country is a net oil exporter (Russia and Kazakhstan) or importer (Belarus, Kyrgyzstan, and Armenia). Kyrgyzstan, however, depends heavily on the export of gold. Moreover, EAEU member states differ significantly in economic scale, population, external trade volumes, etc. (Table 1). Managing economic integration under such conditions is not easy.

The Treaty on the Eurasian Economic Union (EAEU, 2015), which came into force on January 1, 2015, provides for “deepening economic integration of the Member States in order to create a common financial market within the Union and to ensure non-discriminatory access to the financial markets of the Member States” (Article 70 of “Objectives and principles of regulation of financial markets”). Additionally, the Treaty ensures guaranteed and effective protection of the rights and lawful interests of consumers of financial services, mutual recognition of licenses in the banking and insurance sectors, identification of risk management methodologies used in the financial markets of the member states in accordance with international standards, and so forth.

These measures bring member states certain benefits related to the elimination of restrictions on cross-country movement of private and public capital and expansion of investment and borrowing opportunities. However, these measures also entail a number of risks to financial stability that may arise because:

- Financial turmoil in one country can cause spillover effects on other economies through the free movement of capital flows, exchange rates, commodity prices, etc. Such effects were observed at the end of 2014 as a result of the sharp drop in oil prices and the devaluation of the Russian ruble;
- One member state may implement targeted currency regulations and monetary policy (to strengthen or devalue the national currency, lower/raise interest rates, etc.) aimed at stimulating growth and supporting export sectors, which could negatively impact partner countries (beggar-thy-neighbor policy);
- A difference in inflation levels and consequently in interest rates may result in speculative capital flows and debt growth (both public and private).

Therefore, the creation of a single financial market at some stage will inevitably require some coordination of member states’ monetary and fiscal policies. This is resolved in part by Article 64 of the Treaty (“Objectives and principles of agreed monetary policy”).

The Treaty states that member states shall develop and implement coordinated monetary policy based on principles such as phased harmonization and convergence monetary policies; establishment of the required organizational and legal

Table 1
Selected macroeconomic indicators for the EAEU, 2016.

Indicator	Armenia	Belarus	Kazakhstan	Kyrgyzstan	Russia
GDP					
nominal, USD billion	10.5	55.0	184.4	6.5	1331.1
PPP, USD billion	23.1	164.3	399.6	18.5	3402.9
nominal, per capita, USD billion	3515.0	5754.5	10 508.3	1112.8	9054.9
Population, million persons	3.0	9.5	17.7	6.0	146.5
External trade volume, USD billion	4.7	57.0	75.9	5.7	526.3

Sources: IMF; World Bank; national statistics agencies; authors' calculations.

conditions for the development of monetary integration processes; prohibition of any actions in the monetary sphere that may adversely affect integration processes, and so forth. According to the Treaty, exchange rate policies are to be coordinated by an independent authority consisting of the heads of the member states' national (central) banks: the Monetary Policy Advisory Board. There are also three criteria (similar to the Maastricht criteria) that member states must satisfy:

- Annual consolidated budget deficit—not to be higher than three percent of GDP;
- Government debt—not to be higher than 50 percent of GDP;
- Annual inflation level—not to be more than five percentage points higher than the lowest inflation level among all member states.

The Treaty on the EAEU stipulates some reasonable principles for monetary policy coordination, based in part on the EU experience. However, the Treaty does not provide a sound foundation for the enforcement of these principles. This situation became obvious in 2015 when the Bank of Russia's sudden policy regime shift led to sharp devaluation of the Russian ruble, which came as a surprise for EAEU economies and caused substantial shifts in bilateral exchange rates. Over the last two years, all three indicators have been violated by one or more countries. Essentially, the EAEU has been following in the EU's footsteps thus far. Before EAEU membership increased in 2015, the only country that had violated the EAEU's inflation criteria was Belarus. But in 2015 when Armenia and Kyrgyzstan joined the union, the minimum inflation level among member states decreased significantly, and the criterion was violated by other countries (Russia and Kazakhstan in 2015). Kyrgyzstan also violated the debt criterion in 2015.

However, implementing a fully formalized single monetary policy in the EAEU could cause substantial problems for member states in the current situation (analysis below: see also Vinokurov et al., 2017).

5. Model simulations of monetary cooperation in the EAEU

The question we intend to answer here is whether enhanced monetary cooperation would make sense for the EAEU in the future in terms of macroeconomic stability. To answer this question, we analyze past developments and present three sets of DSGE model simulations. We assume three policy regimes. In the baseline case, the monetary policy rate reacts to inflation and (somewhat less) to movements in the USD exchange rate (fear of floating). This arrangement describes the past behavior of EAEU central banks relatively well. Under

a fixed regime, the four smaller EAEU central banks peg their exchange rates to a basket of their currencies, which is determined by their relative economic importance, while Russia sets its policy rate based on domestic policy objectives. In the case of the intermediate cooperation regime, monetary policy is similar to the baseline case, but the four smaller EAEU countries also react to movements in the Russian ruble.

In the first sub-section, we simulate the effects of the historical shocks of the last quarter of 2014 under the various economic policy regimes. In the second sub-section, we explore the effect of different policy regimes on macroeconomic volatility under the identified historical long-term economic volatility. We ask how this volatility would have looked differently under alternative monetary policy regimes. Such an analysis also helps us understand whether a monetary union in these countries would contribute to lower or higher macroeconomic volatility. Finally, we use estimated exchange rate misalignments (based on the IMF methodology) to prepare projections on how they would be eliminated under a different set of policy regimes.

5.1. Historical simulations

In the fourth quarter of 2014, the Russian ruble depreciated sharply and the Russian economy fell into recession. The main causes of this development were the fall in oil prices and sanctions against Russia. In our simulation, we assume that the decline in Russian output is due to a combination of three factors: (i) the macroeconomic effects applied as a shock to the interest rate spread, (ii) oil prices' fall by 39 percent in 2014Q4 (QoQ, annualized), and (iii) there is a 14 percentage-point shock to the Russian risk premium, which spills over into the premiums of the other four countries.

The shocks cause inflation to increase because of the weakening of the exchange rate, despite a decrease in the output gap. Therefore, the central bank reacts by increasing interest rates. Nevertheless, the monetary stance is still somewhat accommodating due to the weak economy, as reflected by a negative real interest rate gap. Because there are lower revenues from oil exports, the government deficit increases.

Shocks to the Russian economy are transmitted to other EAEU countries through several channels. First, according to the real economy channel, the negative output gap in Russia leads to a negative output gap in other countries through lower trade and lower remittances. The second channel is financial, where the higher risk premium in Russia spills over to higher risk premiums on other countries' assets because of regional contagion. The third channel is commodity prices: the drop in oil prices, *ceteris paribus*, lowers inflation in all other countries.

In the baseline scenario, the monetary policy response in the other countries is less acute than in Russia (the results of the simulations can be provided by demand) given that only a fraction of the risk premium shock spills over into these countries. Additionally, the negative output gap is smaller in the other four countries. Under the intermediate rule, the policy is loosened from the outset in an attempt to stabilize the cross exchange rate with the ruble. This leads to somewhat higher depreciation, higher inflation, and a somewhat less negative output gap.

In contrast, a hard peg to a common basket would lead to an immediate interest rate hike. Because of uncovered interest rate parity (UIP), all of the other countries must closely mimic Russian monetary policy to keep the ruble cross-rates fixed. Importantly, we assume that while in the fixed regime, the exchange rate is determined by a fully forward-looking UIP. With the flexible regime, we use a hybrid UIP condition. This is consistent with the observation that under flexible regimes, exchange rate expectations respond with some lag to interest rate changes.

However, as the situation in Russia stabilizes and the ruble starts to appreciate, interest rates will decline below the baseline level. Overall, the peg regime closes the output gap more quickly but at the cost of higher and more volatile inflation. The second benefit of this regime is a smaller government deficit. This is true for all of the region's small countries.

5.2. *Optimal policy calculations*

We use the approach of Hurnik et al. (2010). It calculates which monetary policy regime is the most appropriate to create a smooth macroeconomic environment in the Czech Republic, i.e., low volatility of inflation and output, given the nature of the shocks it usually faces.

We simulate the effect of historical shocks on the sample of 2003Q2–2015Q2. To analyze the effects of different policy regimes on the volatility of inflation and GDP, we compute and decompose the sources of forecast error variance into seven groups. Domestic financial shocks include direct shocks to the exchange rate, monetary policy shocks, and inflation target shocks. Domestic real economy shocks are shocks to the output gap, domestic inflation, remittances, and real exchange rate trend. Technology shocks include only shocks to the GDP trend. Foreign real economy shocks are shocks to the euro area output gap, CPI, and real exchange rate; shocks to the U.S. output gap, CPI, real interest rate gap and trend, and shocks to the Russian output gap, CPI and real exchange rate. Foreign financial shocks are shocks to the Russian risk premium, RUB/USD exchange rate, Russian CPI target and Russian monetary policy shocks. Commodity price shocks are shocks to the trend and the gap components of the oil and gold gaps and price trends for oil and gold. The final group includes other remaining shocks in the model. The applied model does not cover direct effects of trade. Nevertheless, these effects are taken into account through foreign financial and foreign real economy shocks.

We compute two types of forecast error variances: one conditional on the forecast horizon and another unconditional or independent of the forecast horizon, where the conditional variance converges. This helps us see which shocks affect the volatility of macroeconomic variables in the short term versus the long term.

We evaluate the regimes based on their ability to mitigate the effects of shocks on the economy. The lower the volatility of these variables, the better the monetary regime is. As discussed above, in theory, the higher the importance of a financial shock, the better a pegged regime can work, while for predominantly real shocks, a flexible regime performs better.

Fig. 2 summarizes the key results from the analyses of unconditional, i.e., long-term, volatility for Armenia and Belarus. Figures 3–4 present decomposi-

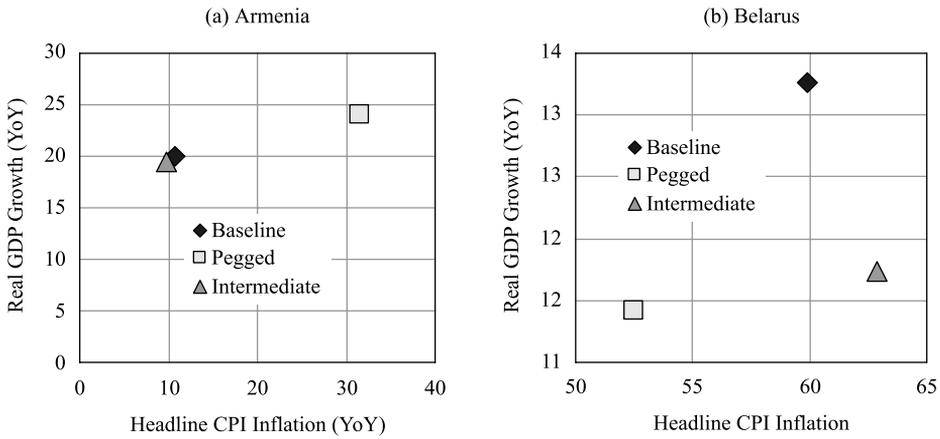


Fig. 2. Total variances under the various policy regimes in Armenia and Belarus.

Source: Authors' calculations.

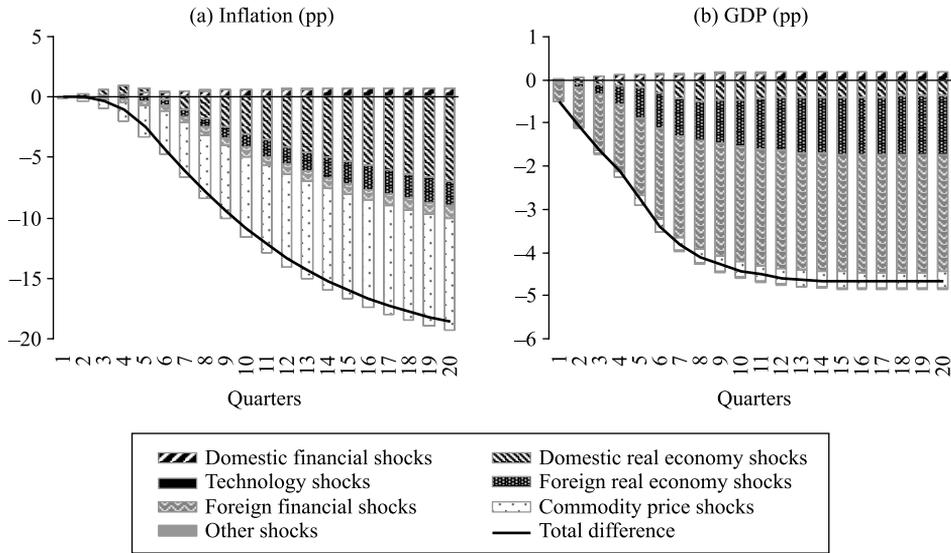


Fig. 3. Difference between conditional variances for intermediate-peg regimes for Armenia.

Source: Authors' calculations.

tions of conditional variances between the intermediate-peg regimes with respect to various shocks for Armenia and Belarus. Our results show that in three of the four countries (Belarus being the exception), the baseline and intermediate regimes are preferable to the pegged exchange rate regime in terms of both inflation and GDP volatility. This result is driven by the fact that although domestic financial shocks disappear in the pegged regime, the volatility of commodity prices and foreign real and financial shocks increases substantially, which has the net effect of increasing macroeconomic volatilities.

The case of Belarus is an exception, where the pegged regime produces the lowest volatility. This result is driven by the fact that in Belarus, domestic financial shocks' contribution to overall volatility is the highest. Therefore,

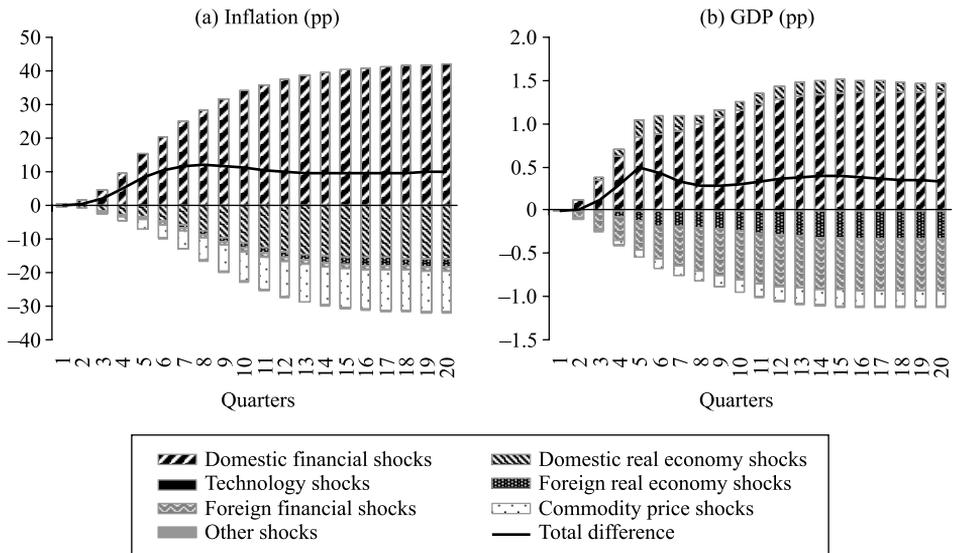


Fig. 4. Difference between conditional variances for intermediate-peg regimes for Belarus.

Source: Authors' calculations.

the corresponding decline under a peg regime is not fully offset by the increased volatility of real shocks, making the peg an attractive option.

5.3. Misalignment simulation

In the third exercise, we ask how well different policy regimes close an initial gap in real exchange rate misalignments. From a broader perspective, it is interesting to see how different policy regimes perform in eliminating potential imbalances between economies. We use estimates of real exchange rate gaps as the level of the initial misalignments.

We employ three different approaches. Table 2 summarizes our results. First, we calculate the exchange rate misalignments using the current account balance approach (EBA-CA, CGER-MB) using the current account norms calculated by the IMF (2014a, 2014b, 2014c, 2015). Then we calculate account gaps as differences between the adjusted current accounts and their norms. Second, we use a two-phased external sustainability (ES) approach involving calculation of the current account stabilizing the international investment position. Finally, we estimate the equilibrium exchange rate based on the behavioral equilibrium exchange rate (BEER) approach.

We use the average of the three estimated misalignments and look at two different sources of shocks that could have generated these initial positions. These are the premium shock (financial shock) and the shock to the domestic output gap (real shock). We use a simple visual approach, i.e., we compare the various policy regimes based on the volatility of inflation and GDP. The general conclusion is that for financial shocks, the peg regime seems best at stabilizing inflation and GDP growth, followed by the intermediate regime and the baseline regime. The picture is more complex in the case of real shocks. Here, the baseline regime produces the lowest volatility for Armenia, Belarus, and Kyrgyzstan, but the peg regime still performs better for Kazakhstan.

Table 2
Misalignment estimates (deviation from equilibrium, %).

Exchange rate gap	Russia	Kazakhstan	Belarus	Armenia	Kyrgyzstan	Average EEU
Based on current account	−7.0	−7.0	−8.0	−10.0	−6.0	−7.6
Based on external sustainability	−3.0	−8.0	3.0	−9.0		−4.3
Based on reduced-form equilibrium	13.0	−5.7		0.2	0.0	1.9
Average across methodologies	1.0	−6.9	−2.5	−6.3	−3.0	−3.3

Source: Authors' calculations.

6. Conclusion

What are the monetary policy options for a customs union facing currency shocks and trade disruptions? We approach this problem through the lens of the newest addition to the family of customs unions—the Eurasian Economic Union. We discuss and simulate the performance of various monetary policy rules representing different levels of monetary cooperation among EAEU economies. These rules are as follows: (i) a baseline rule representing a monetary policy reaction to inflation and, to a lesser extent, to the USD exchange rate (fear of floating); (ii) an intermediate rule, which extends the baseline rule in such a way that monetary policy also reacts to the Russian ruble exchange rate; and (iii) a peg rule under which exchange rates are fixed to a basket of EAEU currencies. In all cases, the rules apply only to the four smaller economies, while we assume that Russia only reacts to domestic policy objectives.

The results indicate that in three of the four smaller EAEU countries, pegging exchange rates at this stage of integration would increase macroeconomic volatility. Although in this case domestic monetary/financial shocks would disappear, the volatility of commodity prices and foreign shocks would increase and more than offset the former effect. Belarus is an exception, as GDP and inflation volatility are the lowest under the peg regime. This is explained by the fact that in Belarus, domestic monetary policy/financial shocks are much larger than in the other countries (indicated *inter alia* by the recurrence of very high inflation), and pegging the exchange rate would import foreign monetary policy credibility. For Armenia, Kyrgyzstan, and Kazakhstan, an intermediate rule performs best, under which monetary policy reacts to the Russian ruble, inflation, and the U.S. dollar exchange rate. However, the difference between the intermediate rule and the baseline rule seems minimal.

Overall, the results indicate that at this stage, EAEU countries are not mature enough for a completely pegged regime or a monetary union. However, some stabilization of cross-rate movements seems reasonable and could help to lower macroeconomic volatility. These results illustrate the potentially hard choices faced by a customs union: whether and to what extent to coordinate the member states' monetary policies or even to employ some degree of supranational policy to ensure that the common market for goods and services functions properly—even if the countries originally have no intention to move beyond that.

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