AN ASSESSMENT OF THE SENSITIVITY OF EDB COUNTRIES’ MACRO INDICATORS
SPECIAL REPORT.

AN ASSESSMENT OF THE SENSITIVITY OF EDB COUNTRIES’ MACRO INDICATORS

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After the oil prices plummeted in 2015, economic growth slowed in the EDB countries, and in some economies (Russia and Belarus) it crossed into negative territory. The commodity orientation of exports from Russia and Kazakhstan makes them vulnerable to external price shocks, which, in turn, affect the economic situation of Armenia, Belarus, Kyrgyzstan and Tajikistan via mutual trade, remittances, and financial flow channels. The existing inter-linkages dictate the need to study the effects of petroleum prices and take them into account in developing responses to external risks with a view to reducing the vulnerability of specific economies and the regional economy as a whole. This paper quantifies the influence of oil prices on the macroeconomic indicators of Russia and Kazakhstan and assesses the effect of Russian GDP trends on the regional economies using an integrated system of models.

THE COMMODITY ORIENTATION OF EXPORTS FROM RUSSIA AND KAZAKHSTAN MAKES THEM VULNERABLE TO EXTERNAL SHOCKS.

The bank’s operating region comprises six EDB member States. On the one hand, the region’s economies share a common history and face similar structural problems. On the other hand, each State’s economic geography makes it unique. The region can generally be divided into a group of net exporters of oil and gas (Russia and Kazakhstan) and a group of net importers of hydrocarbons (Armenia, Belarus, Kyrgyzstan and Tajikistan). Russia is the main supplier of oil and oil products to the domestic market of Belarus and the main oil product importer to Armenia (76%) and Tajikistan (88%) [National Bank of Tajikistan (2015)]. Oil supplies to Kyrgyzstan originate from Russia (72%) and Kazakhstan (25%).

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6 The share of Russia and Kazakhstan in the total volume of the importing country’s oil product imports was calculated on the basis of statistics from the UN Comtrade database.
Russia accounted for 12.4% of worldwide oil production in 2015, while Kazakhstan accounted for 1.8% [BP (2016)]. For all the difference between the two countries’ economies, their oil industries are key contributors to their GDP, exports, and State budgets’ income side (Diagram 1). Oil and oil products account for half of the exports of both Russia and Kazakhstan, which makes them vulnerable to external price shocks, despite their steadily growing oil production volumes. Oil output was 3.3 times higher in Kazakhstan in 2015 compared with 1993 and 1.5 times higher in Russia. Oil prices also nearly tripled over that period (Diagram 2). However, as opposed to the steady trajectory of oil production growth, the oil price trend was quite volatile in the period under review.

Earlier studies of the effect of the oil price on economic trends in Russia show the following estimates: oil price elasticity of real GDP was 0.2 (Rautava, 2013), 0.24-0.25 (Ito, 2008; Korhonen, Ledyaeva, 2010), 0.15 (Kuboniwa, 2012), or 0.2 (Suni, 2007). According to estimates by the Russian Ministry of Economic Development published in April 2017, a change in the oil price by USD 5 per barrel leads to a real GDP change of 0.4-0.5 pp and to a change in the RUR to USD exchange rate by 5-7%. Given the actual oil price, this is equivalent to oil price elasticity of real GDP at a level of 0.04-0.05 and oil price elasticity of the exchange rate at a level of 0.5-0.7. As assessed by [Nurmakhanova Mira], the oil price elasticity of Kazakhstan’s real GDP is 0.05.

7 To calculate the share of oil revenues in the revenues of the state budget of Kazakhstan, the article «Receipt of transfers from the National Fund» was used.
To estimate on our own how much the world oil price affects Russia’s and Kazakhstan’s economic performance, we used the Integrated System of Models (ISM) implemented at the Eurasian Development Bank. The ISM supports the EDB’s and the Eurasian Economic Commission’s analysis and forecasting of the macroeconomic environment in the region and provides broader opportunities for analysing monetary policy responses to shocks and risks originating from the world and national economic systems, and from changes in commodity prices [EDB, EEC, 2016].

The ISM is based on semi-structural models with monetary and fiscal sectors. This integrated model used by the EDB covers all the Bank’s six member countries. An important advantage of the integrated model is the possibility to analyse and forecast each individual member country and the whole region simultaneously, taking into account the existing inter-linkages between the economies and the outside world.

To assess the effect of energy prices on the macroeconomic performance of Russia and Kazakhstan, we modelled a long-term oil price shock by changing the balances in the model’s equations that determine the oil price level.

The calculation results show that the cumulative effect of 10% long-term oil price growth leads to:

- growth of Russian GDP by 0.41 pp and a strengthening of the RUR to USD nominal exchange rate by 5.6%;
- growth of Kazakh GDP by 0.8 pp and a strengthening of the KZT to USD nominal exchange rate by 3.2%.

<p>| Table 1. Response of Macroeconomic Indicators of Russia and Kazakhstan to 10% Long-Term Oil Price Growth |
|---------------------------------------------------|-------------------------------------------------|-------------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>Oil price growth, %</th>
<th>GDP 9, pp</th>
<th>Oil price elasticity of GDP</th>
<th>National currency/USD 10, % (&quot;+&quot;= strengthening)</th>
<th>Oil price elasticity of the exchange rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>10</td>
<td>0.41</td>
<td>0.04</td>
<td>5.6</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>10</td>
<td>0.8</td>
<td>0.08</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations

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8 All the shocks in the model are symmetric due to its linearity.
9 An effect realised over four quarters.
10 An effect realised over four quarters.
The results reflect the net effect of oil price changes and exclude other factors that can be concurrently present both in the world economy and within each State. The elasticities obtained for the Russian economy match the estimates by the Russian Ministry of Economic Development. The deviation from earlier alternative estimates may be explained by both the assessment methods used and the gradual decrease in the dependence of real GDP on oil price movements. It should be noted that these elasticities ignore the effect of the new budgetary rule being applied since this year. According to estimates by the Ministry of Economic Development, the oil price elasticity of real GDP taking into account the new budgetary rule is 0.01-0.02, and that of the exchange rate, 0.15-2.5, which is less than a third of the results obtained without taking it into account.

REMITTANCES, TRADE AND FINANCIAL FLOWS AS THE MAIN CHANNEL OF RUSSIA’S ECONOMIC INFLUENCE ON THE COUNTRIES OF THE REGION

The 2015 decrease in economic activity in Russia mainly affected external demand trends in the EAEU countries. Among the common factors, we note decreased revenue, as Russia is a major trade partner for Belarus (accounting on average for 40.3% of the country’s exports in 2010-2015), Armenia (18.9%) and Kyrgyzstan (11.2%). The decrease in export revenues reduced aggregate income in the economy and, consequently, affected domestic demand trends. A considerable decrease in labour migrants’ remittances from Russia to Armenia, Kyrgyzstan and Tajikistan also affected domestic demand and the formation of long-term macroeconomic trends. Remittances are of paramount importance for those countries’ economic policies, accounting on average for 17.6%, 28.6% and 38.1% of GDP in Armenia, Kyrgyzstan and Tajikistan, respectively, over six years. Studies of Kyrgyzstan show that trends in remittances received in the Republic are procyclically dependent on real GDP trends in Russia and, importantly, this dependence is strengthening [Berdigulova, Imaraliyeva, 2017]. A statistical analysis made by a group of IMF experts showed that Russian GDP determines, with a certain time lag, trends in remittances to Armenia [Armine Ghazaryan et al, 2012].

In addition to being an important market for EDB member countries, Russia is also a key investor, holding key positions in the list of foreign direct investors in all other five countries of the region. Belarus is the leading recipient of foreign direct investment from Russia, followed by Armenia, with third place shared by Kyrgyzstan and Tajikistan.

Compared with other countries of the region, Kazakhstan has looser ties with Russia as regards both trade and financial flows.
Earlier studies point to the considerable influence of Russian economic growth on neighbouring countries’ economies. Thus, a study dedicated to the influence of the Russian economy on CIS and East European countries [Fahad Alturki et al, 2009] notes that an increase in Russia’s GDP by 1 pp leads to an increase in real GDP growth by 0.35-0.45 pp in the CIS countries, and by 0.45-0.52 pp in the oil importing CIS countries.

In this paper, the effect of Russia’s GDP on the economy of the Bank’s member countries was calculated as the difference between the base projection scenario for the countries of the region 11 for 2017 and an alternative one, envisaging growth of Russia’s GDP by an additional 1% in 2017. The Russian GDP shock was assumed to occur in 1Q 2017, and the effect of its occurrence over the following three quarters was taken into account.

The results obtained are shown in Table 2; they reflect the net effect of the change in real GDP of Russia and ignore other factors that may simultaneously exist in the world and national economies.

Table 2. Russian GDP Elasticity of EDB Countries’ Real GDP 12

<table>
<thead>
<tr>
<th></th>
<th>Armenia</th>
<th>Belarus</th>
<th>Kazakhstan</th>
<th>Kyrgyzstan</th>
<th>Tajikistan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elasticity</td>
<td>0.63</td>
<td>0.35</td>
<td>0.09</td>
<td>0.59</td>
<td>0.51</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations


12 All the shocks in the model are symmetric due to its linearity.
The model calculations confirm the findings of the above statistical analysis that the Kazakh economy is the most resistant to shocks occurring in the Russian economy. The Armenian and Kyrgyz economies are the most sensitive to changes in Russia’s economic trends.

**SUMMARY**

The economies of the countries in the EDB region remain vulnerable to external shocks. The commodity orientation of exports from Russia and Kazakhstan makes them dependent on movements in world oil prices. We estimate the oil price elasticity of Russia’s GDP to be 0.04, and that of Kazakhstan’s GDP to be 0.08.

The high degree of integration of oil-importing EDB countries with Russia also makes them dependent on trends in world oil prices. On the one hand, a decrease in world oil prices has a positive effect on their foreign trade balance. On the other hand, a deterioration in the economic situation in Russia resulting from the fall in world oil prices has a negative effect on the economies of Armenia, Belarus, Kyrgyzstan and Tajikistan via trade and financial flow channels. We estimate the oil price elasticity of GDP of this group of countries to be 0.52 on average.
REFERENCES


Nurmakhanova Mira. Oil and growth challenge in Kazakhstan. // Economic education and research center. Working paper No E16/06

