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Effects of external shocks on Russian economy

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Contents

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Abstract

Russia is integrated with the global economy through trade and financial linkages, making it vulnerable to external shocks. To gain perspective on the importance of various external factors, we present a brief description of Russia's foreign economic relations and review the recent literature on the effects of foreign shocks on the Russian economy. We examine the impacts on Russian GDP from oil price, foreign output and interest-rate shocks and Western sanctions, as well as exchange-rate pass-through to Russian consumer price inflation. Our review shows that external shocks are important for Russian economic fluctuations. In quantitative terms, the estimates on long-term impacts of different external shocks vary from 0.1 % to 2 % of Russian GDP.

Keywords: Russian economy, international shock transmission, oil price

1. Introduction

The increase in international trade and financial integration during recent decades highlights the importance of external factors in economic fluctuations.[1] External shocks from changes in commodity prices, for example, can be global and affect all countries simultaneously. Country-specific shocks can have spillover effects on regional economies or globally, particularly if the disturbances occur in a large economy. The main transmission channels of external shocks are international trade and financial markets. Notably, commodity prices are often treated as a separate channel as they can have direct effects on commodity exporters beyond changes in demand volumes.

Russia is integrated into the global economy through its trade and financial linkages, and thus susceptible to external shocks. The IMF (2019) estimates that 40 % of Russia's weaker-than-expected GDP performance in 2014–2018 was caused by adverse external conditions. Kiselev & Zhivaykina (2019) find that common global factors account for about 30 % of the variation in Russian consumer price inflation.

To get an overview of the importance of external factors in the performance of the Russian economy, we review a number of recent studies. Although the estimates presented in these studies are not directly suited to forecasting purposes, they provide valuable information in assessing the importance and possible consequences of foreign shocks. We focus on the impacts of external shocks on Russian GDP, the key summarizing variable of economic trends. Most studies include estimates of GDP effects and the results are often more readily comparable across studies than estimates of other economic variables. While the results may not be perfectly comparable, we try to choose the most appropriate estimates for comparison from those reported in the various studies.

Our literature review begins with background information on the importance of foreign trade and financing for Russia. We then proceed to evaluating the importance of external shocks on Russia, starting with the impact of oil prices, foreign output and foreign interest-rate shocks on Russian GDP. Thereafter, we present estimates on the effects of Western sanctions on Russian GDP. Sanctions are not external shocks in the strict sense, but the result of Russia's own actions. Finally, we examine the impact of exchange-rate changes to Russian consumer price inflation (exchange rate pass-through).

2. Transmission channels: Foreign trade and financial markets

International trade is a key channel for the transmission of output shocks across countries.[2] Supply and demand shocks can directly affect a country's trade flows with other countries. Monetary policy shocks can affect trade both directly through the exchange rate or indirectly by causing changes in demand and supply. Besides the actual production of exported goods and services, a vast production network of intermediate inputs and supporting activities is associated with export production. As a result, changes in export demand are quite rapidly reflected in economic development of the exporting country. Export prices may even serve as an additional transmission channel. This is especially the case for commodities such as oil, because demand volumes remain relatively steady in the face of occasional huge price swings.[3] As production of goods typically relies on imported inputs, imports

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[1] See e.g. Bordo & Helbling (2011) and Mumtaz et al. (2011).

[2] There is abundant evidence on the importance of the trade channel in business-cycle synchronization and transmission of international shocks. Recent studies include Bagliano & Morana (2012), Dees & Zorell (2012) and Duval et al. (2016).

[3] Trade elasticities for various sectors are estimated e.g. by Caliendo & Parro (2015).

also act as a transmission channel for external shocks. Changes in prices or availability of such inputs affect domestic production and exports.

Financial markets are an important channel for international shock transmission. The significance of this channel has grown in recent decades with the international integration of financial markets.[4] Supply and demand shocks can cause changes in returns to capital or risks to markets experiencing the shock. Moreover, monetary policy shocks are usually reflected directly in domestic market rates and asset prices. These developments can lead to substantial inflows or outflows of capital that affect foreign interest rates, exchange rates, asset prices, bank lending and eventually the real side of the economy.

2.1 Foreign trade

The Russian economy is quite reliant on international trade. During the 2000s, exports of goods and services accounted for 25–40 % of Russian GDP, while imports were in the range of 20–25 %. In comparison, the corresponding average for OECD countries is 26 % for both exports and imports.[5] Commodities dominate Russian exports and Russian export income is largely defined by oil price trends (Fig. 1). The combined share of crude oil, petroleum products and natural gas in Russia's total export income from goods and services has varied between 40–55 % over the past decade. Russia's other exports also consist mainly of raw materials and unprocessed commodities such as metals, chemicals and wood. Russia mainly imports final goods for consumption and investment, but imported inputs are important in several sectors that supply domestic markets. The development of the value of imports tends to follow exports quite closely. As imports are mainly financed with export income, capital flows are closely associated to oil price trends.

Figure 1. Change in the USD value of Russian exports and imports and Urals oil price
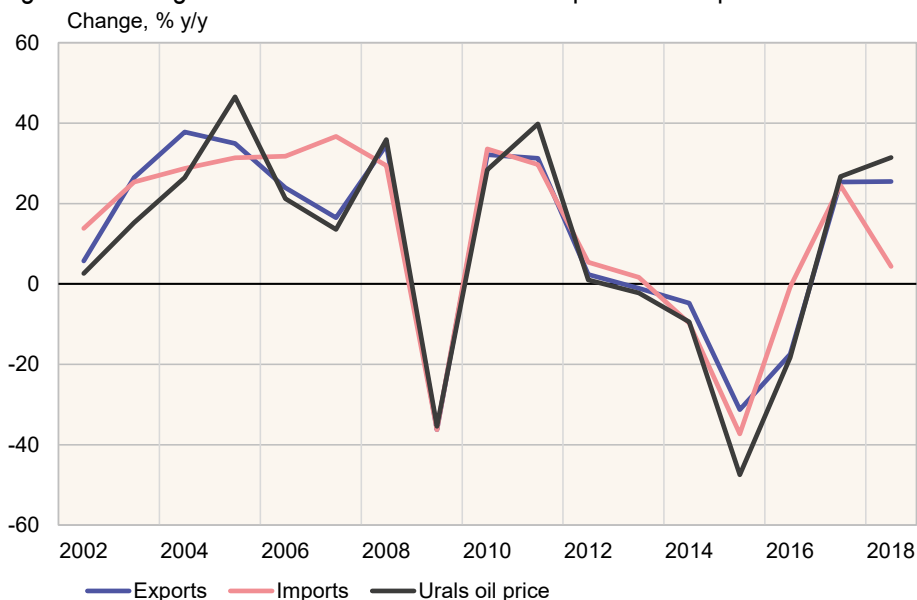
Source: CEIC.

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[4] Evidence on the importance of the financial channel in business-cycle synchronization and international shock transmission is provided e.g. by Bayoumi & Swiston (2009), Ductor & Leiva-Leon (2016) and Gong & Kim (2018).

[5] This is due to the product structure of Russian exports. According to the OECD TiVA data, for example, the share of domestic value added in Russia's gross exports averaged 90 % in 2005–2016, compared to an average of 74 % for OECD countries.

Russia's most important trading partner, the EU, currently accounts for nearly 40 % of goods imports and 45 % of goods exports (Fig. 2).[6] China's share has risen in recent years, and has surpassed that of countries in the Commonwealth of Independent States (CIS).[7] CIS countries today account for about 10 % of Russia's foreign trade. The US share is a few percent in both exports and imports. Russia's trade structure is segmented, particularly in exports. Commodities are mainly exported to the EU and China, while consumer and investment products are exported to CIS countries.

Figure 2. Geographical distribution of Russian goods trade in 2006–2008 and 2016–2018 (average)
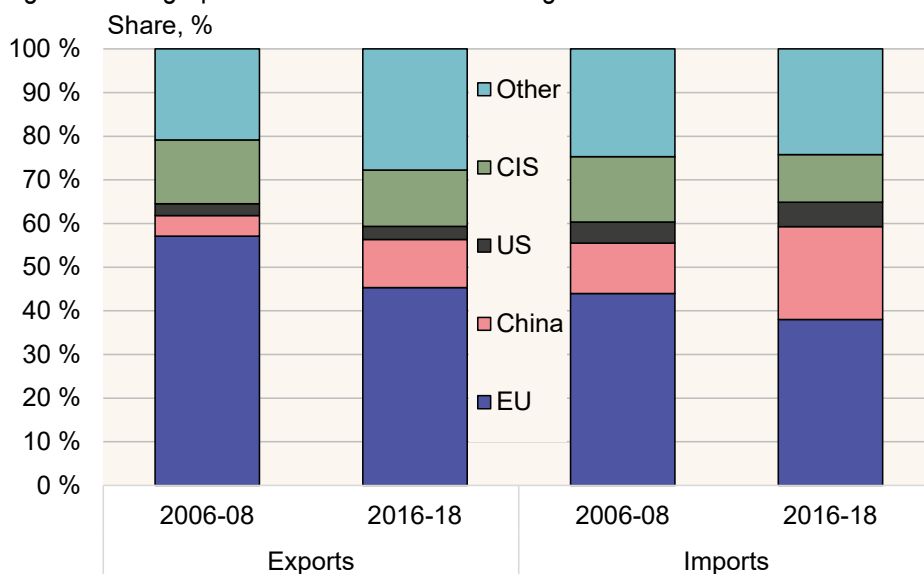

Source: CEIC.

2.2 Financial markets

The financial market channel is important especially for Russia's private sector. Russia's public sector, which carries little foreign debt (3 % of GDP in 2018) and has sizable foreign reserves (28 % of GDP in 2018), has little direct exposure to external financial market shocks. Russian businesses (including majority-state-owned companies), however, have greater dependence on international financial markets. During 2016–2018, Russia's total external assets corresponded on average to 87 % of GDP and liabilities to 69 %. Most inward capital flows are connected to oil price trends. Russia's main stock index, the RTS (denominated in USD), for example, closely follows oil price trends as oil & gas companies represent more than half of the index weighting. About a quarter of inward foreign direct investment (FDI) to Russia goes to the oil & gas production sector.

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[6] We focus here on goods trade, which as a rule is much more important for Russia than trade in services. The EU is Russia's most important trading partner of Russia also in services.

[7] The Commonwealth of Independent States, formed in 1991, consists of former Soviet states other than the Baltics.

Figure 3. Stock of inward foreign direct investment (FDI), foreign portfolio investment (FPI) and other foreign investment in Russia in 2010–2018, USD bn
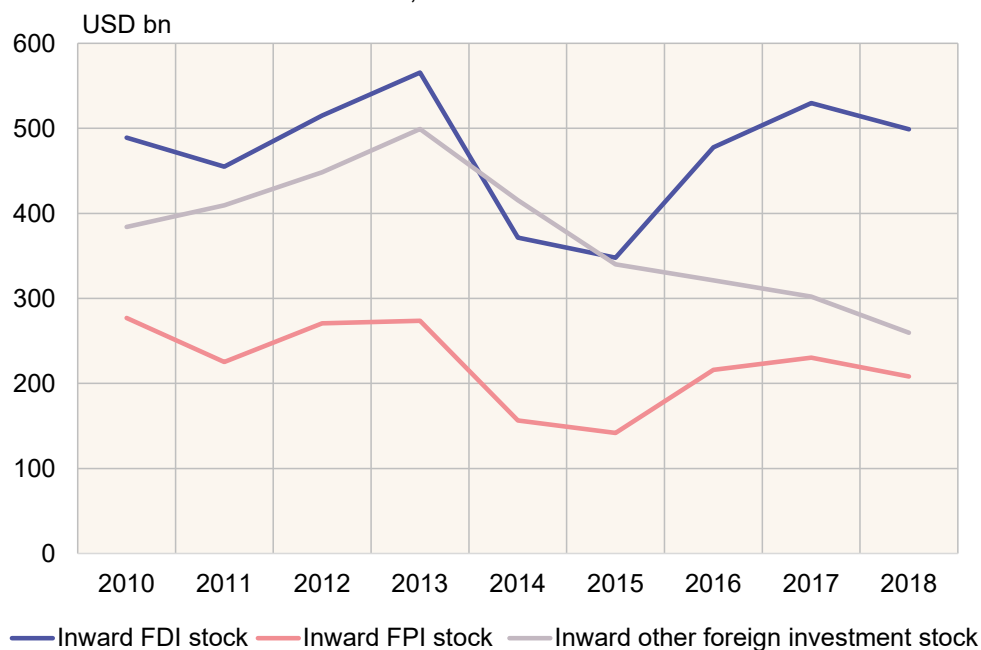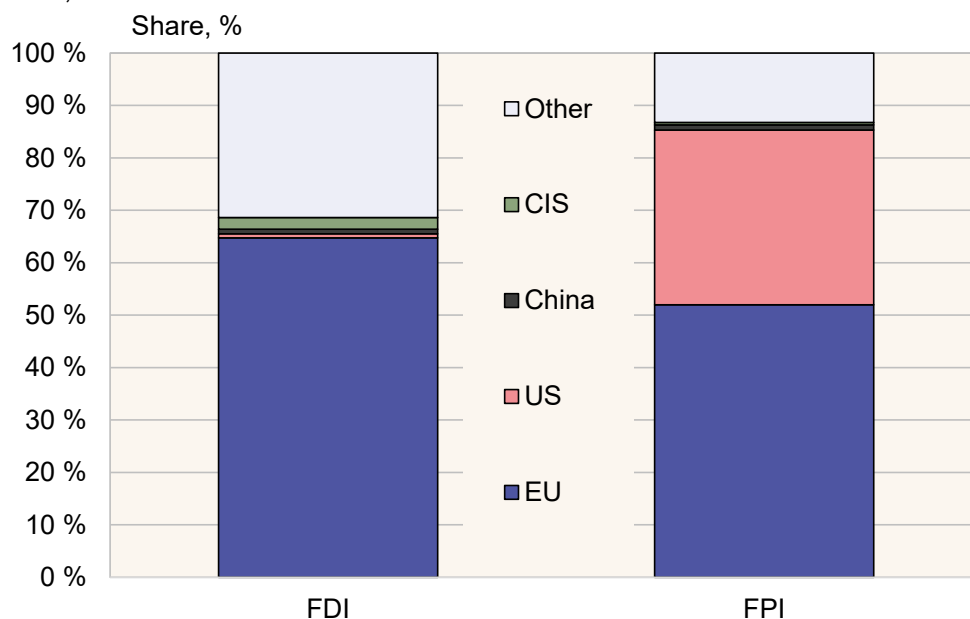

Source: Bank of Russia.

    The value of inward FDI stock in Russia was USD 500 bn (30 % of GDP) and the value of foreign portfolio investment stock USD 210 bn (13 % of GDP) at the end of 2018 (Fig. 3). Like with trade, the EU is Russia's most important partner in investment, accounting for the majority of inward investment to Russia (Fig. 4). The US accounts for a substantial share of portfolio investment to Russia. Unlike with trade, there are no major changes in the geographical distribution of foreign investment over the past two decades. China's investment contributions (including Hong Kong) are still small. The stock of Russian FDI abroad was USD 430 bn (26 % of GDP) at the end of 2018, whereas the stock of Russian portfolio investment abroad was only USD 70 bn (4 % of GDP). The EU remained the most important investment destination for Russian capital by far, accounting for 75–80 % of Russian foreign investment.

    It should be noted, however, that the major origin and recipient country of EU-Russia FDI is Cyprus. In addition, tax havens such as the Bahamas, Bermuda and British Virgin Islands account for a substantial share of FDI flows to and from Russia. Several large Russian companies are even registered in these countries. In other words, a substantial part of FDI coming to Russia from these countries is likely of Russian origin and just round-tripping through foreign countries due to e.g. taxation motives and Russia's poor business environment.[8] Thus, these capital flows should not be as sensitive to changes in economic developments of other foreign countries as to conditions in Russia.

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[8] See e.g. Bulatov (2017) on round-tripping related to Russian FDI. A recent estimate by the UNCTAD on ultimate sources of FDI supports the view that even when round-tripping investments are excluded, the EU is clearly the most important source of FDI to Russia. The US share is also notable.

Figure 4. Geographical distribution of foreign direct and portfolio investment stock in Russia at the end of 2018, %

Sources: Bank of Russia, IMF.

The stock of other foreign investment in Russia was USD 260 bn (16 % of GDP) at the end of 2018. It consisted mainly of corporate sector loans from abroad and deposits of foreign entities in Russian banks. There is less detailed data available on other foreign investment, but it seems that the EU was again Russia's most important investor in this category. In corporate sector loans, however, the role of China has increased in recent years. China's share in the cumulative flow of foreign corporate loans in 2010–2018 was 5 %. In the peak year of 2015, it accounted for 20 % of foreign corporate loan disbursements flowing into Russia.

3. Estimates on effects of external shocks on Russia

In this section, we review recent literature on the effects of various external shocks on the Russian economy. While studies on the topic are not abundant, they utilize a range of methodologies and focus on different aspects of external shocks. Certain caveats related to the analysis should be noted. First, the results achieved in different setups are not perfectly comparable, but we choose among the various alternative estimates reported in each work those we deem the most comparable with each other.

Moreover, most studies reviewed here are not explicitly differentiating between supply and demand shocks. As a result, we lump the most results together without taking a stand on the nature of the shock.[9] In most models cited here, the effects of shocks are assumed to be linearly proportional. Positive and negative shocks are often assumed to have symmetrical effects, but of opposite signs. In some cases, we calculate the effects of comparable shocks if they are reported differently in various studies. For example, if one study reports an effect to be of a 10 % change and another to be an effect of a 50 % change, we divide the latter effect by five to make the effects more easily comparable.

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[9] There is evidence that points to slightly different effects from demand and supply shocks in other setups. See e.g. Kilian (2009) on oil price shocks and Feldkircher & Huber (2016) on US output shocks.

3.1 Oil price shocks

As noted above, oil prices are a key factor influencing the development of the Russian economy. Thus, it is not surprising that most studies find quite strong effects from oil price changes on Russian GDP. There is, however, much variation across quantitative estimates. The studies of Merlevede et al. (2009), Korhonen & Ledyaeva (2010), Rautava (2013), Feldkircher & Korhonen (2014), Feldkircher (2015), Kuboniwa (2015), Faryna & Simola (2018) find that a 10 % permanent rise in oil prices leads to an increase of 0.6–2 % in the level of Russian GDP over the long term (i.e. 5–10 years). Models focusing only on the Russian economy tend to produce higher estimates, whereas studies utilizing multi-country models report lower effects. This could be related to negative second-round effects coming from Russia's trade partners that suffer from the oil price shock that are taken into account in a multi-country setup as noted by Korhonen & Ledyaeva (2010) and Feldkircher (2015).

There are also a few studies on the topic that use a more scenario-oriented approach. Suni (2008) and Benedictow et al. (2013) conduct a counterfactual experiment, whereby the oil price is assumed to have remained low for several years (around USD 23–24/bbl) instead of climbing to an average above USD 90/bbl by 2008. The results suggest that, on average, the lower oil price would Russia's GDP growth annually by around 1 %.

3.2 Foreign output shocks

Research suggests that Russia is quite sensitive to foreign output shocks, although there is again great variation in the results. In most studies a 1 % positive shock to US output is estimated to lead to an increase of 0.5–2 % of Russian GDP in the long term (Feldkircher & Korhonen, 2014; Feldkircher, 2015; Faryna & Simola, 2018). Shocks originating in the euro area, however, seem to have a more moderate impact on Russian economy. A 1 % positive shock to euro area output is found to increase the level of Russian GDP by 0.3–0.5 % over the long term (Feldkircher, 2015; Faryna & Simola, 2018). Fadejeva et al. (2017) report qualitatively similar, but quantitatively higher estimates: an effect of nearly 5 % from US shocks and 3.5 % from euro area shocks. As noted above, the US is not one of Russia's most important trading partners. The relatively large impact from a US shock on Russian GDP may reflect its oil price increasing effect (Feldkircher, 2015), as well as indirect trade channel effects (i.e. effects on more important trading partners of Russia) and effects from the financial market channel (Fadejeva et al. 2017, Faryna & Simola 2018).

There has been much interest recently in the effects of Chinese shocks on various countries. These have also been examined for Russia. Most studies point to relatively moderate effects from Chinese shocks on Russia. Estimates on the effect of a 1 % positive shock to Chinese output on Russia fall in the range of 0.03–0.1 % of GDP in the short term, and up to 0.2 % of GDP in the longer term (Dizioli et al., 2016; Faryna & Simola, 2018; Simola, 2019). The effect can be different if the shock includes demand rebalancing from investment to consumption (Dizioli et al., 2016; Simola, 2019). Moreover, Ahuja & Nabar (2012) find that a 1 % shock to Chinese fixed investment leads to a change of 0.05 % in Russian GDP and 0.25 % change in Russian industrial production.

There are also studies using a scenario-based approach for evaluating the international effects of Chinese growth slowdown. Gauvin & Rebillard (2018) find that Russia would be among the hardest-hit countries if Chinese growth slows sharply. Their results suggest that an average slowdown of Chinese GDP growth by 3 % for 5 years would lead to a cumulative GDP loss of 13.6 % for Russia and a 20 % depreciation of the Russian ruble's real effective exchange rate. In another scenario study, Dieppe et al. (2018) estimate that, depending on the model used, a slowdown of 0.7 percentage points in Chinese growth cuts the GDP of oil exporter countries (including Russia) by 0.3–1 % after three

years. A more abrupt slowdown in Chinese growth by 2.4 percentage points could lead to even 3–4 % lower GDP in oil exporter countries.

3.3 Foreign interest rate shocks

The few estimates on the effects of foreign interest rate shocks on the Russian economy suggest that the Russian economy is relatively sensitive to such shocks. Regarding shocks to US short-term interest rates, a 50 basis-point increase is found to cause a 0.3-0.6 % decline in the level of Russian GDP (Feldkircher, 2015; Georgiadis, 2016; Chen et al., 2017). The effect of a corresponding shock to short-term interest rates in the euro area is of similar magnitude, with estimates ranging between 0.4–0.6 % of GDP (Feldkircher, 2015; Chen et al., 2017). The findings of Kruglova et al. (2018) suggest that for US shocks at least, a key transmission mechanism is that they reduce notably the dollar-denominated lending of Russian banks, particularly banks that rely heavily on foreign funding.

The effects of interest rate shocks in Russia are quite in line with those of other emerging markets. In most emerging markets, the corresponding effects of US and euro area interest rate shocks lie in the range of a 0–0.8 % impact on GDP. The most vulnerable countries for interest rate shocks tend to be found in Southeastern Europe and Latin America, although there is some variation across studies. The literature suggests that spillovers from interest rate shocks are larger in countries that have fewer possibilities for trade and financial diversification globally (Georgiadis, 2016; Crespo Cuaresma et al., 2019).

3.4 Sanctions

Economic sanctions imposed by Western countries on Russia constitute a specific topic in the external shock discussion. We include the sanctions, although they are not external shocks in the same sense as the other shocks discussed here. The sanctions stem from Russian actions (annexation of the Crimean Peninsula and destabilizing measures in Eastern Ukraine). Russia can influence the continuation of sanctions by its own actions (e.g. the EU sanctions are explicitly linked to the fulfilment of the Minsk agreements).

Western countries have imposed a wide variety of sanctions on Russia related to the conflict in Ukraine.[10] From the macroeconomic point of view, the most important sanctions imposed by the EU and the US are prohibitions on long-term financing for select Russian banks and companies, restrictions on exports of military and dual-use goods, as well as certain goods and services related to unconventional oil production. We concentrate on the effects of Western sanctions on Russian GDP, noting that their effects on certain other economic variables and the impact of Russia's countermeasures (import bans on food products) have been discussed by e.g. Korhonen (2019), Korhonen et al. (2018) and Kuznetsova & Volchkova (2019).

The main difficulty in assessing the impact of the sanctions on Russian economy is to disentangle the consequences of sanctions from those related to the oil price slump that occurred almost simultaneously with the imposition of the sanctions. It is hardly surprising that there is much variation across the quantitative estimates presented in the literature. Moreover, the available estimates are quite hard to compare with each other. Most studies on the topic suggest, however, that the sanctions have had a negative impact on the Russian economy, but the effect of oil price trends

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[10] A comprehensive list of restrictive measures applied by the EU is posted at https://europa.eu/newsroom/highlights/special-coverage/eu-sanctions-against-russia-over-ukraine-crisis_en. In recent years, the US has also imposed restrictive measures on Russia related to other issues. The current estimates on the effects of sanctions consider only those related to the conflict in Ukraine. All US sanctions measures are posted at https://www.state.gov/ukraine-and-russia-sanctions/.

has been larger. In quantitative terms, estimates on average annual GDP losses of Russia due to the sanctions generally vary between 0.2–0.7 % (Gurvich & Prilepsky 2015, Sinyakov et al. 2015, IMF 2019, Pestova & Mamonov 2019). The estimates in the upper range concern the years on or immediately after the implementation of the sanctions.

3.5 Exchange rate pass-through

Finally, exchange rate pass-through, i.e. the transmission of exchange rate changes to Russian inflation) is quite relevant in Russian case (Fig. 5). The recent estimates for Russia itself are supported by several studies applied to a wider sample of CIS or emerging countries. The estimates on the short-term pass-through are quite close to each other. Most studies (Bank of Russia, 2017; Kataranova 2010; Ponomarev et al., 2016) find that a 1 % depreciation of the ruble against the dollar or the ruble's nominal effective exchange rate (NEER) is followed by an acceleration of about 0.1 percentage points in consumer price inflation three months later. This result comports with recent research on wider CIS, CEE or emerging countries that find a pass-through of 0.05–0.13 percentage points three months after a 1 % depreciation of the NEER (Caselli & Roitman, 2019; Comunale & Simola, 2018; Jimborean, 2013).

There is more variation in longer term estimates, however. For Russia, the estimates for pass-through after 12 months vary between 0.1–0.5 percentage points. There is similar variation in the results for other emerging markets. Given evidence that pass-through in Russia has declined recently (Bank of Russia, 2017), this might reflect the different time periods under examination. Several studies suggest that countries with inflation-targeting regimes experience lower exchange rate pass-through (Coulibaly & Kempf 2010, Caselli & Roitman 2019), so it could reflect Russia's shift to inflation targeting in 2014. There is also evidence on asymmetries in pass-through for Russia in particular and emerging markets in general. Depreciation of the ruble tends to accelerate inflation more than appreciation slows inflation, and the pass-through is stronger during larger swings in the exchange rate (Bank of Russia, 2017; Comunale & Simola, 2018; Caselli & Roitman, 2019).

Figure 5. Russian consumer price index and nominal effective exchange rate
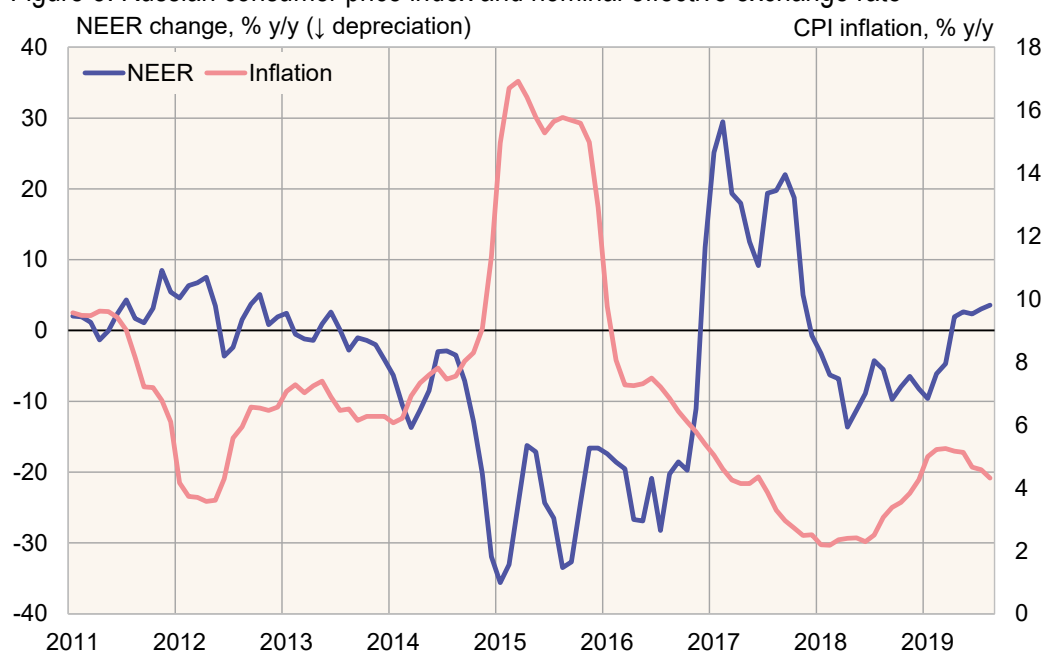
Source: Macrobond.

4. Conclusion

We have reviewed recent research on the effects of external shocks on Russian GDP and exchange rate pass-through to Russian inflation. Our examination shows that external shocks are important for Russian economic fluctuations. Unsurprisingly, all reviewed studies find that oil price shocks have a substantial effect on Russian GDP, although there is considerable variation across results (Table 1).

Research suggests that foreign output shocks and interest rate shocks can have significant effects on Russian output. Output shocks originating in the US are the most important for the Russian economy, whereas effects from shocks in the euro area are slightly more moderate. The baseline estimates on Chinese output shocks are relatively moderate, but their significance has increased in recent years as China become a major trading power internationally and one of Russia's top trading partners. Scenarios envisaging a more prolonged and more abrupt slowdown in Chinese growth with spillovers to financial and commodity markets suggest the adverse effects on Russian economy could be sizable.

The few of studies on transmission of US and euro area interest rate shocks to the Russian economy suggest that such shocks can have significant impacts on Russian output. The most difficult shock to estimate has been that of Western sanctions on Russia. Despite the large uncertainty related to these estimates, most studies find that sanctions have had a negative impact on Russian GDP, but their effect has been much smaller than that of the concurrent decline in oil prices. Finally, the contribution of exchange rate pass-through on Russian consumer price inflation appears to have declined recently, but it is still an important factor determining Russian price trends especially in the case of larger ruble depreciations.

Our review shows that external developments are important for Russia's economic fluctuations and should be taken into account when designing economic policy. This does not imply, however, that policies directed towards the domestic economy lack importance or that protectionist policies would be an optimal choice. Openness and integration to global economy support economic development and improve efficiency in many ways, e.g. by providing larger markets and making the best global technologies available. In order to reap the benefits from international integration and help mitigate the effects of external shocks, however, it is essential to foster policies that support diversification, competitiveness and flexible adjustment of the domestic economy.

Table 1. Estimates on effects of various external shocks on Russian GDP and consumer price inflation

	Effect on GDP, % (CPI for exchange rate)	Note
10 % increase in oil price	0.6–2	Long-term effect on level of GDP
1 % increase in US output	0.5–2	Long-term effect on level of GDP
1 % increase in euro area output	0.3–0.5	Long-term effect on level of GDP
1 % increase in Chinese output	0.1–0.2	Long-term effect on level of GDP
50 basis-point decline in US or euro area interest rate	0.3–0.6	Interest rates and GDP move in opposite directions (i.e. increase in interest rates has a negative effect on GDP)
Western sanctions	-0.2– -0.7	Average annual effect on GDP growth
1 % depreciation of ruble NEER	0.1–0.5 percentage points	Pass-through after 12 months

Sources: Various research publications, see section 3.

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