

Estimating potential effect of sanctions on economic development in Russia and EU

The article reviews the key macroeconomic effects of imposed sanctions in various aspects of the trade and economic relations between Russia and EU. Adverse effects of trade and financial restrictions in the short-, mid- and long-term are considered. Conclusions about significant potential losses for both parties from sanctions are made.

General

Worsening of political, trade and economic ties between Russia and EU and implementation of mutual trade restrictions have created additional difficulties for the development of relations among the countries on the Eurasian continent. These restrictions create adverse effects on the economic development both in Russia and EU.

In 2014, as the conflict in Ukraine was escalating, the Western countries imposed various restrictions on the Russian economy. The most important are so-called sectoral sanctions which were implemented in July 2014 and included significant restrictions in the financial sector, ban on export of dual-use goods, military technologies and equipment and technologies for oil extraction on the deepwater, Arctic offshore or shale fields, and restrictions on export of certain types of power engineering equipment to Russia. In return, Russia banned imports of certain types of agricultural products, raw materials and food products from several countries.

In the context of economic theories sanctions are an element of non-tariff barriers in trade operations. They are intended to create additional difficulties for financial and economic systems while their original purpose is to reach certain political goals. It should be noted that there is a critical distinction between the current sanctions and the similar restrictions imposed on the Soviet Union's economy. Russia is an element of the current open model of world trade with a 3% share in the global GDP. Therefore, trade restrictions should a priori affect the development of both the Russian economy and economies of its key trade partners much more than it could have been some thirty years ago.

For the first time in the post-Soviet period an acutest political conflict has arisen between Russia and Western countries accompanied by unfriendly economic measures in macroeconomic scale proportions. Over the last 20 years Russia has been gradually entering the world economic system and building an open economy with close financial and industrial ties with the leading

¹ Institute of economic forecasting RAS

countries of the world. The European Union has always been the leading trade partner of Russia with a significant niche within the Russian domestic market. Russian demand was an important driver of development in several European economic sectors such as agriculture and engineering.

The sharp deterioration of the Russia-EU trade and economic relations calls for a detailed assessment of potential short- and long-term consequences of such developments for both parties.

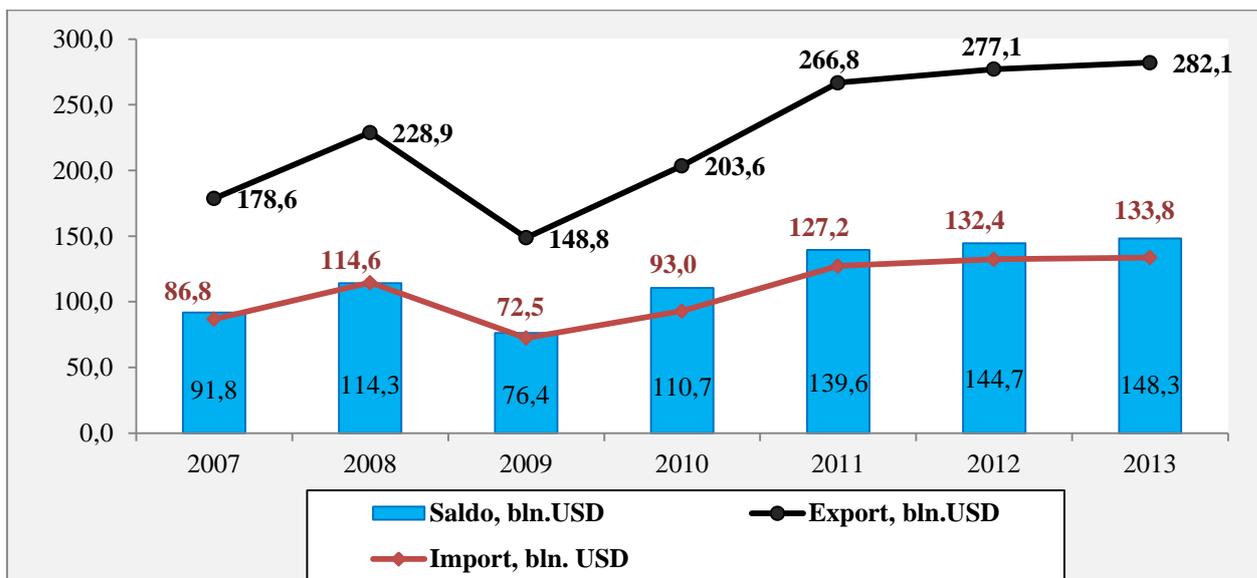


Fig.1 Russia-EU-27 foreign trade in 2007-2013, US\$bn.

Deterioration of relations coincided with an unfavorable situation in the Russian economy which many people and experts associated with or a fallout of the sanctions' effect. But is it true?

Effect of sanctions on the Russian economy

In Russia, the key channels of this impact involve: restrictions on debt financing in the EU and US markets, restrictions on trading in dual use goods, lowered level of industrial (production) cooperation, reduction in direct foreign investments from the EU countries, growth of internal prices on certain goods, embargo on access to high technologies in the energy sector.

However, if one considers the quarterly GDP dynamics over the last few months (Fig. 2) a clear conclusion would be that significant problems in Russia's economic dynamics have begun since early 2013. In the first quarter of 2013 the GDP growth rate went down to 0.8% against the same period in 2012 and remained at this level with slight fluctuations during 2013-2014. Stagnation in the Russian economy was due to two key factors: unfavorable situation at a number of world commodity markets and a significant reduction in investment activities of major Russian companies. The key adverse effect on economic dynamics followed by the low level of investment activity caused by mismatch between economy financing schemes and actual market

requirements. Therefore, the fundamental factors contributing to the unfavorable economic development in 2013-2014 were mostly homemade. The growing impact of external factors was primarily due to the increasing worsening of the situation at the world oil market in the fourth quarter of 2014 and not directly caused by the sanctions regime. On the other hand, the lack of external financing and large amount of corporate debt payments have become important factors of pressure on the currency rate dynamics.

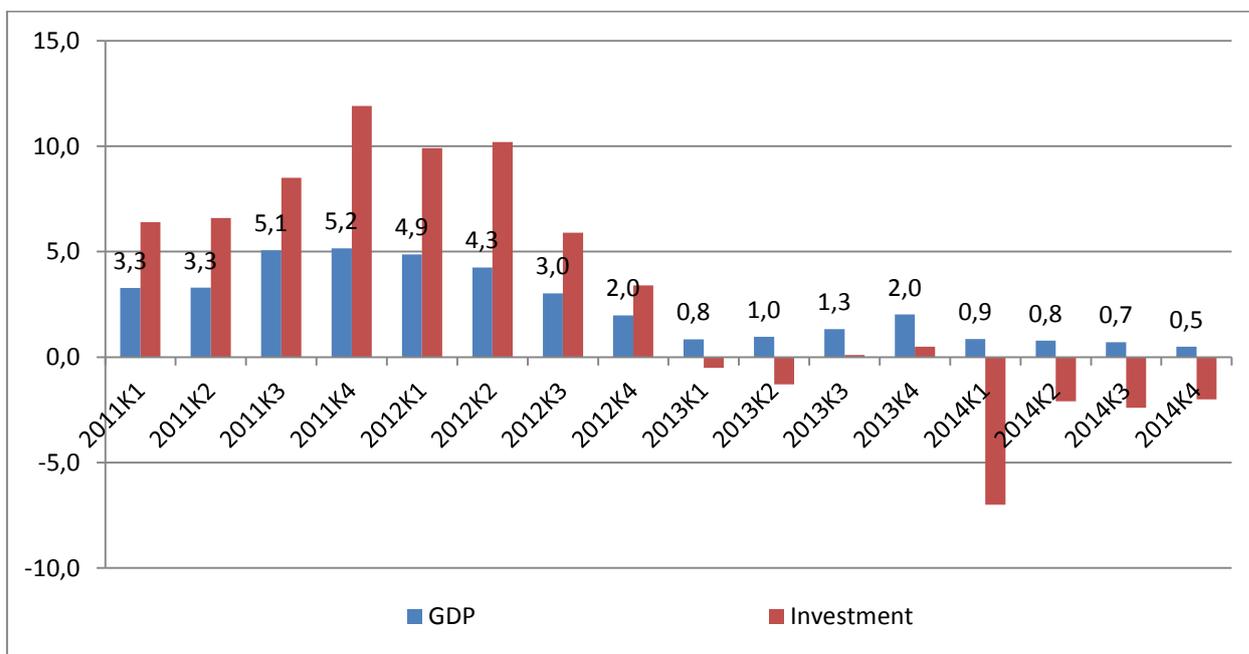


Fig.2 Dynamics of the Russian GDP and fixed capital investments, percentage of the same quarter last year²

Therefore, one fails to argue that the sanctions have directly and significantly affected the short-term growth rates. However, these may become an important factor in the mid-term perspective.

Let us consider the main channels of potential adverse effect of sanctions on the Russian economy. We believe that the most significant risks in the short- and mid-term perspectives are related to the restrictions in financing of the Russian companies and banks at the EU markets.

In 2007-2013, Russian nonfinancial institutions obtained loans in the EU countries worth over US\$1 trillion. Annual volume of loans from the EU countries was US\$150-200 bn and decreased to \$80 bn only during the 2009 crisis. Traditionally, the Russian companies widely used the debt refinancing schemes. This allowed them to lower peak corporate debt payments (e.g. the total Russian foreign debt service payments in 2015 will make up nearly US\$125 bn). From now on such opportunities will be sharply restricted. This means that large companies will have to resort to equity financing or internal debt financing. Anyway, this will negatively affect both

² Q4 2014 – the authors' estimate

investments of large companies and distribution of financial resources in the Russian economy. Major holdings will somehow be able to replace external financing by domestic funding but loan opportunities for small and medium businesses will be reduced.

At a glance the structure of the Russian corporate debt reveals that the major Russian creditors reside in Great Britain, Cyprus and the Netherlands. This list suggests that, just like direct foreign investments [2], a large part of these resources is involved in the re-export of capital, and a number of the Russian companies are hedging their risks by such loans. Moreover, there are still the possibilities to partially replace these resources by loans from other regions, mainly from Asia. Nevertheless, potential adverse effect of this factor on the Russian economy is the most significant amounting up to US\$150-200 bn.

As to direct foreign investments, we think that their reduction will produce a considerably lesser impact on the Russian economy because their scope still has a limited effect on investment activity and a major part of these investments is directly controlled by Russian companies. However, if the sanctions become long-term this factor might significantly inhibit economic growth. It should be particularly taken into account that direct investments are more often than not related to high-tech production development.

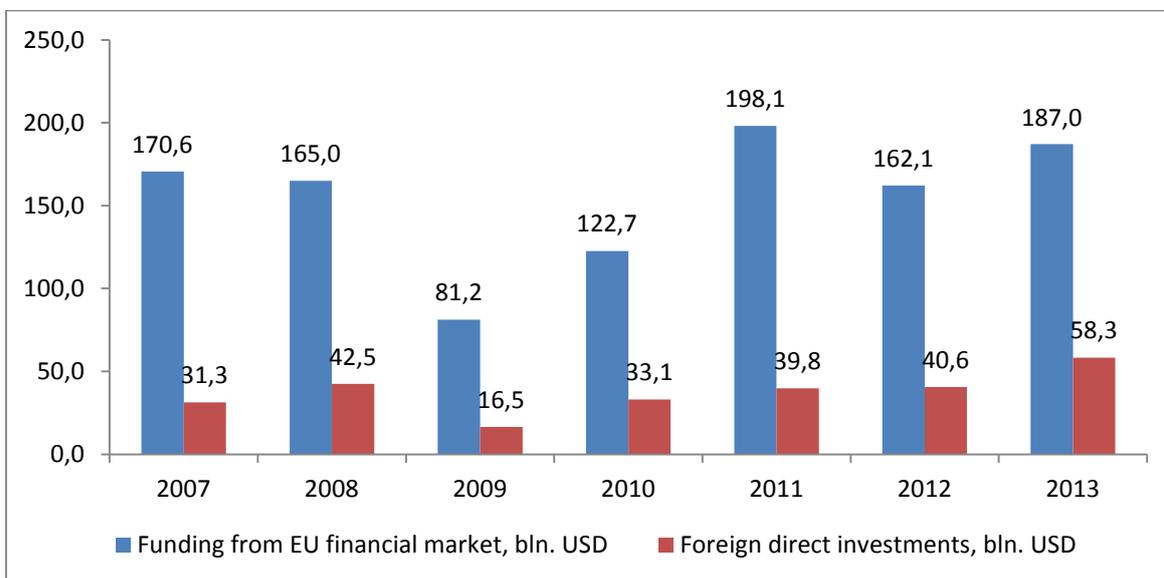


Fig.3. External financing of the Russian economy by the EU countries

In the short- and long-term perspectives, the only and the most important source of compensating for the shortfall in financial flows from the EU countries to Russia will be the funds of all economic agents. These reserves are quite significant. We estimated in October 2014 that these amount to \$445 bn. of organized households' savings, \$280 bn of deposited funds of organisations , \$450 bn of accumulated funds from export of capital, \$420 bn of gold and foreign

reserves (of which \$173 bn belong to sovereign wealth funds). Overall, concurrent computation of difference between investment and savings ratio in the Russian economy over 1998-2013 provides an estimated reserve of US\$1.7 trillion. Needless to say, when it comes to the funds exported from Russia, one can hardly count on high possibilities of their return to the Russian economy. At the same time, we believe that the total reserves are sufficient to compensate for the shortfall in loans and direct investments from the EU countries during 2-3 years. Rigid sanctions continued for a longer period will present a key threat to the macroeconomic stability in Russia.

Another important channel of sanctions' pressure on the Russian economy is a reduction in cooperation ties and a ban on access to dual-use technologies.

Russia depends on imports of European goods from various economic sectors, primarily from chemical, pharmaceutical and engineering industries. European imports (in terms of value) provide some 50% of medical supplies demand and almost 25% demand for chemical products.

However, the greatest impact the sanctions produce on mechanical engineering. Table 1 shows that Russia is critically dependent on imports of various technological equipment and certain types of engineering products. As of 2013, judging by physical indicators, imports of textile machines, lathes (including numerical control lathes) and beam-pumping units for the oil industry exceeded their production by nearly 15 times. Imports of ball bearings and roller bearings exceeded their production 1.3 times in 2013. Imports of all types of engineering products from the EU supply 20% of the Russian domestic demand. In 2013, the engineering products imported from European countries were worth US\$65 bn or 48% of the total European imports to Russia.

Table 1. Production, exports and imports of engineering products in 2013

	Production, pcs	Imports, pcs	Imports/production (pcs), times	Imports, MUSD
Concrete mixer trucks	2874	518	0.2	28
Crane trucks	5063	646	0.1	179
All-terrain dumptrucks	2457	1300	0.5	637
Plain bearings, mln pcs	52.9	15.5	0.3	85
Ball/roller bearings, mln. pcs	63.5	81.3	1.3	394
Tools for materials processing by removal of material by laser , ultrasound or likewise	110	9390	85.4	178
Drill machines, boring units and milling machines + threading machines and tapping machines not included in other groups	1282	1120	0.9	44
Textile machines	43	725	16.9	23
Lathes	531	8531	16.1	328
Numerical control lathes	133	1925	14.5	289

Beam-pumping units	900	14238	15.8	8
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Source: Production – Rosstat, foreign trade – IEF RAS estimates based on FCS data

In 2013, China was the main supplier of the most types of engineering products presented in Table 2. Nevertheless, the share of imports (for each position) from the countries that imposed sanctions on Russia was also significant.

The share of the countries imposing sanctions on Russia within the structure of value added of imports is the biggest for all examined positions. This is an indirect indication that imports from the European Union, USA and Japan are more high-tech than those from China and occupy the niches of more complicated products at the Russian domestic market.

The Russian economy is highly dependent on supplies of high-tech goods given that there are vital to Russia to ensure an acceptable level of competitiveness in the sectors where the key competences have been reduced or lost.

Table 2. Structure of imports to Russia of specific engineering products by countries in 2013, %

	PCS			USD		
	Countries imposing sanctions*	China	Other countries	Countries imposing sanctions*	China	Other countries
Concrete mixer trucks	20.5	45.4	34.2	40.7	39.6	19.7
Crane trucks	25.4	63.0	11.6	78.5	17.6	3.9
All-terrain dumptrucks,	40.8	2.4	56.8	46.7	1.8	51.5
Plain bearings, mln pcs	29.0	53.0	18.1	62.0	15.7	22.3
Ball/roller bearings, mln pcs	24.2	35.2	40.6	50.5	6.1	43.4
Tools for materials processing by removal of material by laser, ultrasound or likewise	25.6	63.5	11.0	61.6	9.0	29.4
Drill machines, boring units and milling machines + threading machines and tapping machines not included in other groups	50.0	24.7	25.3	89.0	3.7	7.4
Textile machines	57.0	25.2	17.8	77.9	8.6	13.5
Lathes	16.6	70.5	12.9	69.1	9.7	21.2
Numerical control lathes	44.8	23.1	32.1	73.3	6.1	20.5
Beam-pumping units	36.4	47.6	16.0	65.6	33.6	0.8

*Countries which imposed sanctions on Russia – European Union, USA, Japan, Canada, Australia, New Zealand
Source: IEF RAS estimates based on FCS data

It should also be taken into account that a great number of the Russian enterprises use imported components. A considerable part of them is supplied by the EU countries. Analysis based on interindustry and intercountry WIOD (World Input-Output Database [1]) tables shows that total losses from breaking ties with the EU may soar to US\$15 bn annually, leaving alone US\$5 bn of losses from embargo on supplies of dual-use products. Accordingly, the maximum estimated

losses from reduction of cooperation between Russia and the EU may total to \$20 bn p.a. Russia will certainly expand import substitution measures to compensate these losses but implementation may take some time. Accordingly, the greatest threat from shrinking technological cooperation will become explicit in the short- and mid-term perspectives.

One of the key long-term development restrictions is the sanctions' possible negative effect on the energy sector. The key threat for oil and gas production in Russia is the risk of restriction of debt financing in the open market and various technological embargoes restraining oil exploration and production in the remote regions (first of all, in the Arctic shelf).

As already mentioned, depriving the major Russian companies of debt financing will lead to a series of negative consequences. First of all, internal debt resources will likely move to the largest companies to compensate for the lack of external financing. This might result *inter alia* in the lack of lending resources for medium businesses including those engaged in the economic activities in mining. There is also a possibility that the oil sector will have to increase investment of its funds for direct support of shipbuilding, engineering industries and services. Second, the current refinancing to bridge the gaps at the open market will lead to the need to withdraw large funds for debt servicing which will also adversely affect the energy holdings' investment capabilities.

According to the most unfavorable scenario, continuation of sanctions in the long-term is very likely to create a sort of "clipping level" for oil production projects with a high capital cost per unit of output. First of all, these are the projects in the remote regions, Arctic offshore projects and hard-to-recover reserves. We believe that such developments may lead to an important change in the oil production profile in the period up to 2030.

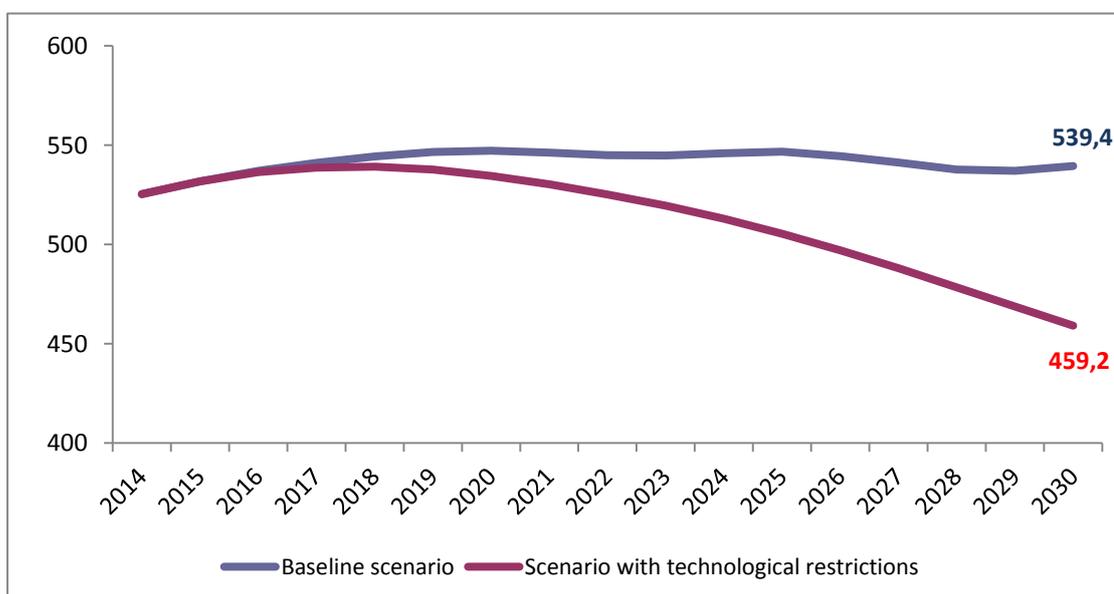


Fig. 4 Possible effects of technological restrictions in oil production, million tons

Oil production may drop by 15% (80 million tons) against the 2030 baseline scenario. A particularly big gap in oil production volumes will be observed after 2025 when production at old wells will significantly decrease and production maintenance measures will not be able to compensate for this decrease.

Therefore, the greatest threat to the Russian economy in the short-and mid-term perspectives is posed by financial sanctions and in the long-term perspective by technological restrictions in the energy sector. The total potential impact of economic sanctions on the Russian economy may amount to 8-10% GDP. Yet it might be considerably less thank to the compensatory measures. At the same time, based on the assessment of the sanctions' possible adverse effects we estimate them as macroeconomically significant.

Effect of sanctions on the EU economy

As already mentioned, over the last twenty years the world economy has developed a considerably higher level of openness, and mutual influence of countries on the economic dynamics has increased. The European Union as the Russia's largest trade partner cannot but experience difficulties caused by the worsening of common economic ties and slowing Russian economic activity. It is necessary to estimate the degree of this influence and possible consequences of persistence of the current problems in the bilateral relations for economic development in the EU.

Just like in Russia, in the EU the negative effects from deterioration of trade and economic ties may be short-, mid- and long term. Moreover, in certain cases the sanctions' effects can be viewed as mirror-like effects.

For example, in the financial sector, the ban on lending to a number of Russian companies results in falling incomes of financial institutions in the EU countries. The Russian banks and companies directly affected by the sanctions have always been the prime borrowers in the West. It is not so easy to replace them by the companies from other countries. Annual interest payments on the Russian loans alone amount to US\$25-27 bn. Losses from ceasing to lend to the big Russian companies will total to some US\$8-10 bn p.a.

It should also be taken into account that economic sanctions are intended to lower the economic potential of the Russian economy. But a drop in economic activity will inevitably lead to a drop

in demand for imported goods. This effect may be significantly increased in conditions of the ruble devaluation and an import substitution policy.

Table 3. Import parameters in January-October 2014

	Imports at present prices		Physical volume of imports	Imports price competitiveness index ³	Index of production** ⁴
	USD bn.	% to the same period of prior year			
Textile production	10.7	96.0	97.6	95.3	99.0
Production of leather and leather goods	4.3	82.2	81.9	92.7	97.3
Production of pulp-and-paper and printed products	3.8	93.2	94.4	95.4	100.9
Chemical production	30.7	95.1	98.7	93.2	100.1
Production of rubber and plastic articles	8.1	93.8	97.3	93.7	106.7
Metallurgy and hardware production	17.2	91.6	91.1	98.4	100.3
Mechanical engineering	108.1	89.8	92.3	93.1	100.7

Source: FCS, authors' estimates

In 2014, the Russian economy experienced stagnation in economic growth and the ruble depreciation which accelerated by the end of the year. Such dynamics *inter alia* provided for the lower price competitiveness of imported goods in the Russian domestic market. Such a situation could be observed in all the key commodity groups except metallurgical products where a big segment of the market was occupied by the Ukrainian manufacturers. However, their export potential was considerably limited thanks to the grave economic situation in Ukraine and to other nontariff trade barriers. Still, against this background there was an insignificant growth of internal production in the majority of commodity groups. Negative output dynamics persisted within engineering industries; however, even there production was decreasing slower than imports.

Such a trend became possible due to the reserves for increasing production at the available facilities, particularly those put in operation in 2008-2014.

³ Calculated as a product of producer price index in domestic market for a specific economic activity and inverse value of ruble/currency exchange rate growth index, using by weighing indices for a given economic activity by the main Russian trade partners (EU-27, China, Japan, Korea, USA, Belarus, Kazakhstan, Ukraine). Index growth indicates a favorable price situation for importing products of a given economic activity, and vice versa.

⁴ January - November

Import substitution opportunities can be evaluated on the basis of available production facilities. It goes without saying that, firstly, 100% capacity load is impossible and, secondly, part of available facilities is noncompetitive and cannot be used because of physical deterioration, obsolescence or both. Nevertheless, potential for growth still exists in this area. We estimate the average level of production capacity load in the Russian industries in 2014 at 60%. If in the majority of processing industries (except metallurgy and chemical production) the maximum capacity load is supposed to be 80%, we assume the additional capacities which can be used amounting to a half of the difference between this maximal level and the current capacity load in each type of economic activities. Using assumptions above we obtained a value of potential substitution of imports from the EU countries, reaching some US\$30 bn.

Table 4 Import substitution potential in Russian industries (based on the 2013 data)

	Output, USD bn	Exports, USD bn	Imports, USD bn	Imports from EU, USA and Japan, USD bn	Imports from EU, USD bn	Capacity utilization in Russia, %	Imports substitution potential, %	Reduction of imports from EU, USD bn
Machinery and equipment	46,6	4,9	51,2	32,6	27,4	37,3	31	8,4
Electrical, electronic and optical equipment	50,3	6,7	47,7	19,3	15,3	53,1	34	5,2
Transport vehicles and equipment	108,2	10,3	53,3	33,3	22,0	62,6	22	4,8
Textile	10,3	0,9	13,1	1,3	0,9	57,4	89,6	0,8
Leather and leather goods	2,1	0,4	5,8	0,6	0,4	58,8	39,0	0,2
Metallurgy	147,0	42,5	22,0	8,7	7,5	76,4	29,1	2,2
Chemical products	67,5	23,8	39,3	28,5	25,8	83,0	20,2	5,2
Rubber and plastic articles	23,4	2,3	10,2	5,3	4,3	60,8	42,2	1,8
Total								30,0

Source: Rosstat, authors' estimates

Another important factor in combating against the sanctions is the situation in the food markets. In response to technological and financial sanctions Russia imposed an embargo on imports of food products from several Western countries. This was one of the reasons of food inflation accelerating in Russia. The countries in the Russian sanction list account for a large share of exports of agricultural raw materials and foodstuff to Russia.

Russia largely depends on imports of a number of food products. In particular, in physical terms, imports of beef accounted in 2013 for 57% of the apparent consumption⁵ (although only 4% beef consumption was supplied by imports from the EU), pork – 30% (19% – imports from EU), butter – 32% (7%), cheese and curd – 28% (17%).

In 2013, Russia imported foodstuff from the EU worth US\$15.2 bn, and embargo was imposed on the supplies worth US\$6.2 bn (mostly meat, milk and milk products, fruits and vegetables). Embargo affected primarily Poland (in 2013, imports of banned goods to Russia worth US\$1.1 bn), the Netherlands and Spain (US\$0.8 bn each) and Germany (US\$0.6 bn).

Table 5 Food import parameters in 2013

	US\$bn			Share in supplies to Russia		
	All countries	EU, USA, Canada, Australia, Norway	EU	All countries	EU, USA, Canada, Australia, Norway	EU
Agricultural raw materials and foodstuff	43.2	18.9	15.2	100	43.7	35.2
Items under sanctions	22.5	8.6	6.2	100	38.0	27.4
Meat	5.9	2.3	1.5	100	38.9	26.4
Fish	2.9	1.6	0.2	100	54.3	7.5
Milk and milk products	4.2	1.8	1.7	100	42.8	41.7
Vegetables	2.9	0.9	0.9	100	32.8	32.5
Fruits and nuts	6.4	1.8	1.5	100	27.5	23.7
Other products	0.4	0.2	0.2	100	65.0	60.8

Source: FCS, authors' estimates

Although food sanctions are not very significant in value terms, these are aimed at the agrarian sector of the European economy which has been experiencing serious difficulties over the last years. Moreover, this sector is quite sensitive both to the level of government support and market fluctuations.

Sanctions are means to reach political goals using economic tools. Therefore, they are aimed at deteriorating the Russian economic situation which sooner or later will lead to negative changes in macroeconomic indicators. However, a decrease in the Russian economic growth rates because of sanctions will lead to negative consequences for the EU countries even without any counter-sanctions. Any decline in economic activity in Russia is followed by reducing of internal consumption of goods including imported goods. This in turn leads to reduced supplies of the

⁵ Visible consumption = production + import - export

European products to Russia and loss of a part of external market. In 2013, Russia imported from European Union agricultural products and foodstuff worth US\$15.2 bn; textile, clothing and leather goods of approx. US\$3 bn; chemical products worth US\$26 bn; engineering products of US\$64 bn of which machinery and equipment made up US\$26 bn, electronic, optical and electric equipment worth US\$16 bn, and transport vehicles and equipment of US\$22 bn.

The current 10% reduction of the Russia's demand for European products will mean a potential decrease of production in the EU countries due to the loss of the sales market by 0.4% in agriculture and food industry, 0.3% in the light industry, and 0.26% in the chemical industry. Gross output of machinery and equipment may fall by 0.56%, that of electrical equipment by 0.3% and of transport vehicles and equipment by 0.8%.

Still, these estimates are based on evaluation of direct effects and do not take into account the intersectoral ties within the European economy. In fact, a decrease in any production sector negatively affects other sectors and the entire economy through the system of production links. First of all, decreasing output means a reduction in production expenses resulting in a lower intermediate demand for production of other industries and sectors. This, in turn, provokes further slowing of rates of production. In addition, shrinking output leads to a reduction of paid wages and salaries, profits and tax payments. This affects the household consumption, capital investments of entrepreneurs and government expenses, followed by a decrease in the final demand and further reduction of production.

The static input-output model based on WIOD (World Input-Output Database) for the European Union can be used for operational evaluation of the full gamut of cross impacts and dependencies. Total effects on the EU economy obtained from using this model includes a reduction in agricultural production and food industries by 0.9% and in the textile, clothing and leather industries by 0.7%. Chemical production will experience practically the same amount of reduction in output (0.7%). A 1% reduction is expected for gross output of machinery and equipment, 0.65% for electrical equipment, and 1.32% for transport vehicles.

A potential decrease in the total EU production output will reach nearly 0.75% or about US\$180 bn.

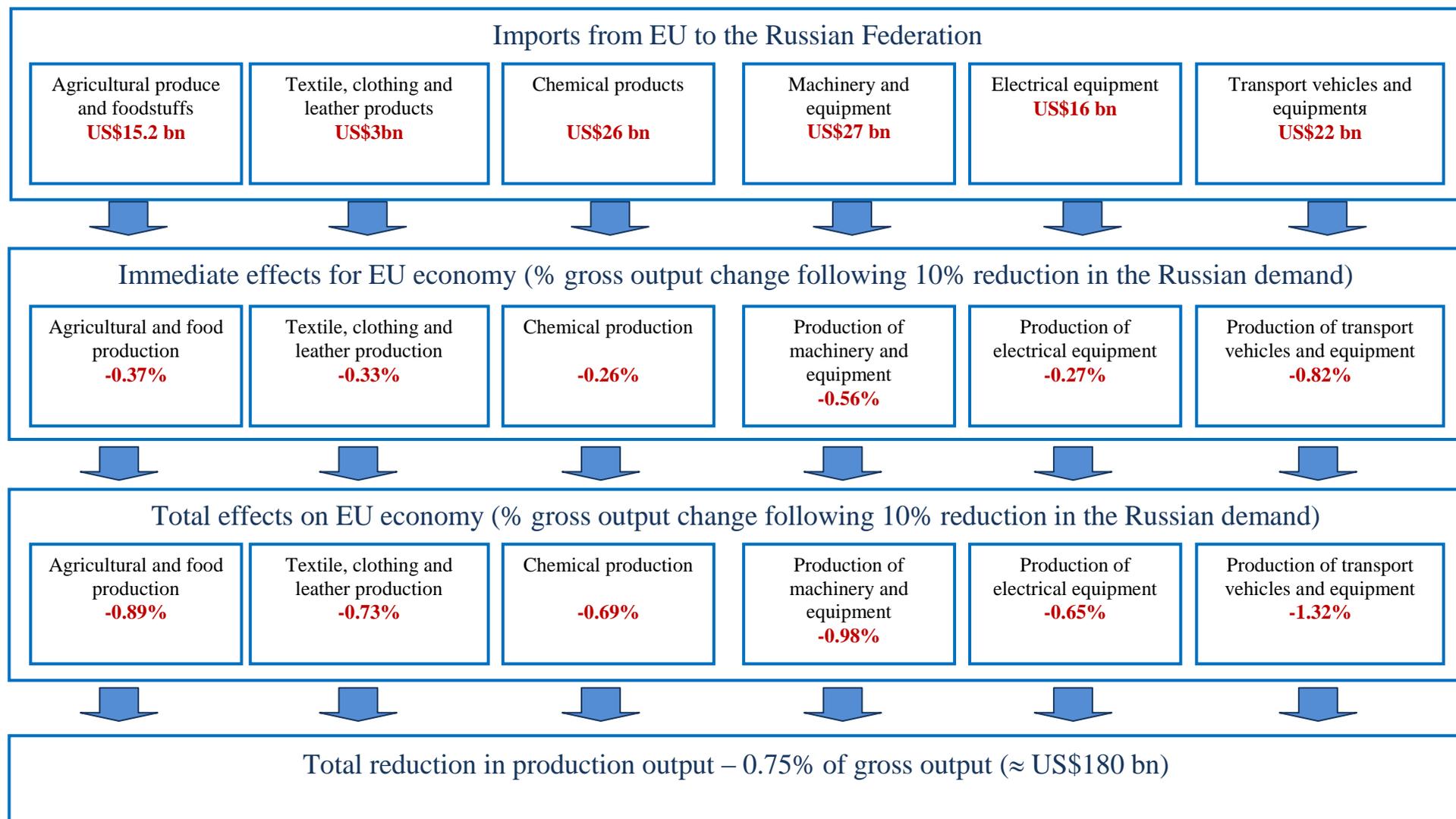


Fig. 5. Effects produced by reduction of the EU imports to Russia

Energy issues are the most important when we analyze long-term effects. As already mentioned, sanctions in the energy sector may considerably affect the production of energy power resources. This will correspondingly reduce exports of these products to the world market and the EU countries. This will give rise to the two main effects. First, reduction of exports to the European Union will make these countries searching for the new sources of energy supply in the world market. Other conditions being equal, this will increase energy expenses. Secondly, a decrease in the Russian export capacity will boost world prices on hydrocarbons. Cumulative effect of these two factors can be evaluated as equal to an increase in purchasing prices for European countries by US\$10 per barrel. Given the current consumption of oil and gas in the EU, this may result in additional losses worth US\$3 bn p.a.

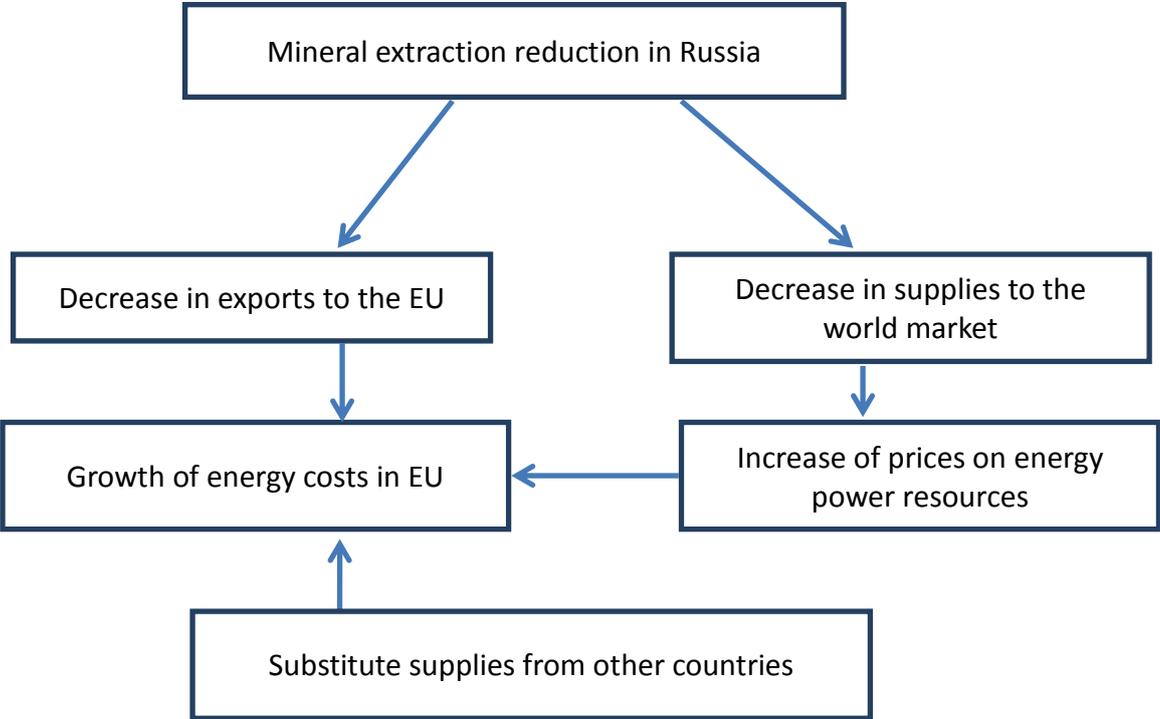


Fig. 6 Effect of increasing energy costs in the EU countries due to a drop of exports of energy products from Russia

Summing up all effects produced by the sanctions on the Russia-EU relations one can evaluate the potential negative boomerang impact on the EU economy at not less than 0.5% of annual GDP. The number seems not very big but it will strip the EU budget of tens of billions of US dollars. If one looks at the current economic indicators of the EU countries this may be enough to reverse the slight growth and turn it into stagnation or even into a negative growth of GDP. Moreover, the sanctions` negative impact will be concentrated in the most vulnerable economic sectors of the EU: agriculture, capital-intensive engineering and energy sector. Added to these effects could be losses from a reduction in the tourist flow from Russia. According to various estimates, this flow

is worth up to US\$20 bn annually. Therefore, there is no reason to believe that these effects are insignificant. Moreover, in the course of time the negative effects from continued tensions between Russia and the EU may accumulate.

In nominal terms, the losses of both parties are comparable and macroeconomically significant. However, given the sizes of both economies, the sanctions regime will potentially exert a stronger effect on the Russian economy. Therefore, it is necessary to radically improve the quality of current economic policy. From the point of view of evaluation of the Russian contribution to the world economy, economic development rates will be the key. Accordingly, reasonable economic dynamics and structural change shall become the most adequate and comprehensive political response to the sanctions pressure.

The experiences of a number of nations exposed to sanctions in the past and present show that effectiveness of this policy as a means of influencing political decisions is rather limited. Suffice it to recall the sanctions against China or Iran. For such large players in the world economy as Russia and the EU no alternative exists to the search for compromise based on mutual respect both parties.

As regards to the future of relationships between Russia and the EU, we argue that no alternative exists to economic and political rapprochement within the framework of common European market processes. Sanctions inflict unacceptable damage both to the Russian and EU economies and the future competitiveness of the European continent within the global economy. From this point of view the sanctions must be abolished as soon as possible. In the short- and mid-term perspectives, the parties should initiate negotiations to create a free trade zone between Russia, the Eurasian Economic Union and the European Union. Whatever distant this perspective might seem now, we believe this project is quite feasible and mutual beneficial [3, 4].

Conclusions

- Sanctions are a kind of nontariff trade barriers to reach political goals by inflicting unacceptable economic damage. However, in conditions of open world economy, sanctions imposed on big countries lead to emerging of negative mirror effects;
- Sanctions produce short-, mid- and long-term effects on the Russian and EU economies in a number of sectors. The key sectors are energy, financial sector, inter-sector cooperation links, and trade in high-tech products;

- The sanctions' gravest short-term effects are explicitly experienced in the financial sector. Russia will have to replace US\$160-200 bn shortfall in borrowings, while European financial institutions are exposed to annual losses of US\$8-10 bn from a reduction in interest payments;
- Shrinking cooperation ties and a ban on supplies of dual-use technologies will cost the Russian economy some US\$20-22 bn, while the losses of the EU from the impact will amount to US\$10-15 bn;
- Impact on the energy sector will be the most protracted. In the marginal case, oil production in Russia may fall by 10-15% by 2030, and in Europe this will lead to an increase in energy costs by US\$3 bn annually;
- Most effects from continuation of sanctions policy involve both direct and indirect consequences and affect the structural characteristics of economic development. Unlike direct effects, total effects from sanctions are macroeconomically significant both for Russia and the EU. Potential adverse impact of sanctions on the Russian economy is estimated at 8-10% of GDP and that on the EU economy at some 0.5% of GDP.
- Available resources of the Russian economic agents are sufficient to partially compensate negative effects of the sanctions regime in the short- and mid-term perspectives. The gravest effects may be observed if sanctions persist long-term.

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