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# Perception of risks associated with economic sanctions: the case of Russian manufacturing

Victoria Golikova and Boris Kuznetsov

Institute for Industrial and Market Studies, National Research University Higher School of Economics, Moscow, Russia

## ABSTRACT

This paper is focused on assessing the risk factors for Russian manufacturing firms posed by sanctions imposed on Russia by the EU, US, and other countries in 2014. While there is an extensive literature assessing the successes and failures of international sanctions on the economies of both those imposing and targeted by sanctions on a macroeconomic level, we are more interested in trying to understand the corporate response – i.e. which firms evaluate the introduction and increasing scale of economic sanctions as a threat to their corporate strategy, and their possible reactions aimed at adjusting to a changing environment due to the geopolitical shock. Our research, based on a recent survey of manufacturing companies, provides evidence that over the last decade Russian manufacturing firms have become much more integrated into the global economy than is commonly assumed, through foreign direct investment, foreign trade (including imports of both technological equipment and raw materials and components), international partnerships, and by extensively supplying foreign companies that operate in Russia. Considering the self-selection effect of the top-performing firms in terms of foreign trade, we can state that sanctions could prove most harmful not only for the targeted firms, but for the entire population of better-performing and globalized firms involved in foreign trade with the EU and Ukraine. Thus, the impact of the sanctions on the prospects of the Russian manufacturing sector may be very strong over the medium-to-long term.

## ARTICLE HISTORY

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## KEYWORDS

Economic sanctions;  
perceptions of risks;  
manufacturing firms; Russia

## Introduction

Sanctions against countries are not an extraordinary event in modern history. On the macroeconomic level the problem has been extensively researched (Hufbauer, Schott, and Elliott 2007; Drezner 1998, 2003; Morgan, Bapat, and Krustev 2009; Krustev 2010). It has been noted (Oxenstierna and Olsson 2015, 9) that they are “the foreign policy instrument commonly used by the twenty-first century West to signal disapproval of countries breaking international law” and “the EU [European Union] alone had restrictive measures in force against 36 countries as of 19 March 2015” (Oxenstierna and Olsson 2015, 10). Nevertheless, for Post-Soviet Russia, the sanctions introduced in 2014 represent the first such instance since the Cold War and the dissolution of the USSR in 1991.

While the declared goals of the sanctions were to pressure Russian leaders to change their policies toward Ukraine rather than to inflict extensive harm on the Russian economy, it is evident that their impact has been felt not only by the specific persons and organizations listed as subjects of the sanctions, but on the majority of economic agents, including a substantial proportion of businesses and

households. As with any economic shock, this impact was not homogeneous, and some types of economic actors have been damaged more than others. Revealing the major sources of this heterogeneity and the most potentially damaged categories of firms is the main focus of this article. We explore in detail whether the top managers of Russian manufacturing firms consider the economic sanctions to be a factor aggravating current and future business performance, even if they are not *directly* targeted by the sanctions regime. We argue that, despite the fact that the design of the sanctions regime was focused on selected top firms in Russia, in practice its negative consequences are considered an obstacle by a much larger number of firms, and particularly by the better-performing and most globalized companies.

## General background of sanctions against Russia and its impact on the economy

Economic and political sanctions against Russia were imposed by Western countries in 2014 as a reaction to the incorporation of the Crimea Peninsula of Ukraine into the Russian Federation (“reunification of the Crimea and Russia” according to the Russian side, “annexation” according to opponents), and as a response to Russia’s support for the separatist movement in the eastern Ukrainian regions. The “war of sanctions” was waged in three waves, starting with individual, “personal” sanctions against particular Russian politicians and companies involved in the Crimean annexation in March–April 2014, continuing with sanctions against several state-owned banks and companies in June–July, and then with sectoral sanctions (and Russian counter-sanctions) in August–September 2014.<sup>1</sup> In response to Western sanctions, in August 2014, Russian authorities introduced “counter-sanctions” that involved a trade embargo on certain goods (mostly food imports). The sanctions regime has been extended by both the US and EU. In March 2016, for instance, US President Barack Obama extended sanctions for one additional year, and in March 2015 the EU extended sanctions until 25 September 2016. According to Russian media, the base-case scenario employed in the economic forecast developed by the Russian Ministry of Economic Development presumes that the sanctions will be in place until at least 2020.<sup>2</sup> It thus appears as though the sanctions will continue to be an important factor for the Russian economy for a long time.

Since the introduction of the sanctions regime, the impact of both sanctions and counter-sanctions on the Russian economy has been extensively debated and researched in both the Russian and international economic literature and media. Although the assessments of the overall impact of sanctions on the Russian economy vary significantly, the most recent estimates are broadly similar. The International Monetary Fund (IMF 2015) estimates the long-term impacts to be upwards of 9% of GDP. Russian economists (Shirov, Yantovskii, and Potapenko 2015) also estimate that overall losses to the Russian economy due to sanctions will amount to 8% of GDP. As far as short-term losses are concerned, the IMF expects them to equal 1.5% of GDP (IMF 2015, 7), whereas Gurvich and Prilepskiy (2015) estimate the losses due to sanctions by 2017 at 2.4% of GDP, while noting that this figure is only one-third the losses caused by the drop in oil prices.

There are both direct and indirect channels through which sanctions can damage an economy. World Bank experts have mentioned the increased volatility on the foreign exchange market and a depreciation of the national currency; restrictions on Russia’s access to international financial markets have undermined domestic business and consumer confidence as well (World Bank 2015, 46). Macroeconomists warn of slower technological development and modernization of production capacities, the degradation of the institutional environment (Vercueil 2014), additional barriers to non-energy exports, and problems for the state budget (Ćwiek-Karpowicz and Secrieru 2015).

However, the most important consequences of sanctions are related to reduced opportunities to attract investment. From a business perspective, sanctions can: (a) damage or at least increase risks for international trade, by imposing additional barriers to both exports and imports; (b) restrict access to imported technologies and equipment; (c) restrict mergers and acquisitions (M&As), making it more difficult to attract foreign direct investment (FDI) and/or placing additional barriers for outward FDI; (d) limit access to financial services provided by foreign banks; and (e) endanger existing partnership relationships established during the previous period and reduce opportunities for new ones.

In addition, the general uncertainty surrounding potential changes in the “rules of the game” always negatively impacts firms’ investment decisions. In other words, the perception of risks, either based on actual assessments or simply on “business intuition,” is a major factor in firms’ decision-making. The opinion that the long-term consequences of economic sanctions could de-motivate investment and slow modernization is more or less shared by Russian macroeconomists (Gurvich and Prilepskiy 2015; Shirov, Yantovskii, and Potapenko 2015).

### **What Russian manufacturing firms are most likely to be punished by sanctions?**

Our main goal in this paper was to determine what types of Russian manufacturing firms feel most threatened by the sanctions. This may indicate which area(s) of Russian manufacturing will have reduced opportunities for growth in the globalized world in the coming years.

Russian manufacturing firms are actually much more closely interlinked to the world economy than is usually presumed. Although the economic crisis of 2008–2009 slowed the globalization of Russian firms, it did not stop it. According to data of the RuFIGE survey,<sup>3</sup> in 2013, of manufacturing firms with 10 or more employees, approximately 25% exported their products, 25% imported equipment, 16% imported raw materials and components, and 8% were involved in importing both equipment and raw materials/components, and more than 13% had established strategic partnerships with foreign counterparts.

From the beginning of the transition period until 2014, the Russian economy continuously grew more open to global competition. Russian companies have to compete not only with local firms but also with foreign companies that often have more resources and experience. Globalization trends were most pronounced during the years of high economic growth (from 1999 to the crisis of 2008–2009). Imports of industrial equipment, FDI, and extensive borrowing from foreign markets have been the core factors underlying investment growth and technological modernization. The Russian manufacturing sector has been extensively modernizing its assets by importing equipment since before the mid-2000s. According to the estimates of Aleksei Ulyukaev, the Russian Minister of Economic Development, the manufacturing sector is more than 40% dependent on imports.<sup>4</sup> Nonetheless, Russian businesses remain far behind the technological frontier (Sabirianova, Svejnar, and Terrel 2012). According to official statistics, the share of vintage equipment (more than 20 years old) in Russia’s mining and manufacturing industries is still very high – 17% in 2013 – and is declining too slowly (Rosstat 2014, 113). To close the gap and speed up “learning,” firms need access to advanced technologies.

Empirical evidence from large-scale surveys in Russia shows that many Russian firms have extensively used imported technologies and equipment, benefitting from the knowledge transfer (embodied in the technology) to improve production efficiency. According to survey data (for a description of the survey, see Kuznetsov et al. 2011), in 2009, 39.9% of medium and large manufacturing firms had large investments in machinery, and among them, 91.4% reported purchases of imported equipment – i.e. modernization programs were highly dependent on technology and transfer of know-how, mostly from developed countries. A stable and rather strong national currency exchange rate and access to international financial markets with low interest rates led to an increase not only of equipment imports but also of raw materials and components. According to the aforementioned survey, half of medium-sized and large manufacturing firms used imported technology for their production processes. While the growth of manufacturing exports has been much less spectacular than the growth of raw materials imports, the share of exporters and the average share of export revenues in total sales have also been increasing (Golikova, Gonchar, and Kuznetsov 2012). In addition to arms-length transactions, other forms of globalization activities also were developing. In particular, networking and the formation of partnerships with foreign partners stimulated innovation and the upgrading of technology (Golikova and Kuznetsov 2013).

Like firms in other countries, Russian manufacturing firms are quite heterogeneous in terms of productivity and other performance indicators (Dosi, Lechevalier, and Secchi 2010; Kuznetsov et al. 2011). It is reasonable to assume that heterogeneous firms in the same industry were impacted differently

by the sanctions shock introduced in 2014, which could increase company costs, lower the quality of inputs due to import substitution, aggravate entry into export markets or limit product scope in contracting markets, provoke distrust in establishing partnerships, and make it necessary to reorganize cross-border production and value chains.

For both economic and political reasons, companies under the sanctions regime will be less oriented toward (or constrained in) using imported raw materials, components, technological equipment, and external knowledge; therefore, they will have to overcome additional barriers while exporting and establishing long-term relations with foreign partners, among other activities, and their indirect production losses will be much higher than the direct damages due to sanctions. All in all “life under sanctions” means additional direct and indirect costs for the owners and managers of the firms and additional uncertainty concerning business prospects.

## Data

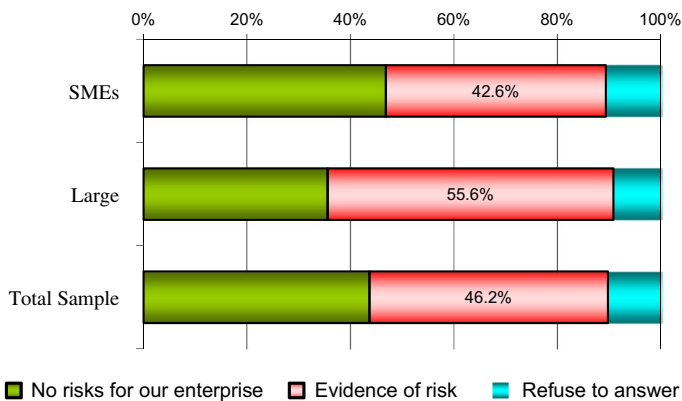
The database we use was drawn from the RuFIGE (Russian Firms in the Global Economy) survey of 1950 Russian manufacturing firms with more than 10 employees in 2014. The survey was conducted by GFK-Russia, a surveying company active in 60 regions across Russia in June–October 2014. The random structured sample was designed to be representative in terms of distribution by industry and size of the firm. Face-to-face interviews were conducted with top managers (CEOs and CFOs) of the firms. Our questionnaire included two questions that directly concerned the attitude of firms toward the economic sanctions imposed in 2014.

Taking into consideration international sanctions against the Russian Federation, what risks do you see currently for your enterprise in the integration into the global Market? (MULTIPLE ANSWERS ALLOWED)

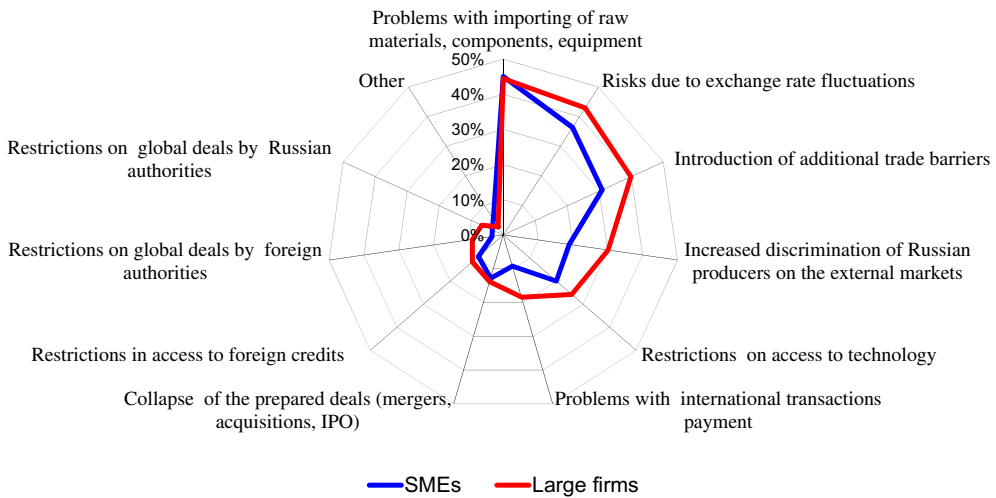
What has your enterprise done in order to reduce the risks that emerged in 2014? (MULTIPLE ANSWERS ALLOWED)

The second question was asked separately to gauge actions taken in different markets – Russia, the developed countries, and developing countries. In general, about half of the firms in the sample in the second half of 2014 experienced negative consequences as a result of the economic sanctions (Figure 1). Among these, small and medium-sized enterprises (SME) (fewer than 250 employees) foresaw fewer risks, which is not surprising because they work mostly in local markets and are less involved in globalization activities.

At the time this paper was written, we were not able to estimate the *real effect* of sanctions on a firm, so we focused on top-management *perceptions* of the related risks. The underlying logic is that those perceptions (of not only the actually imposed sanctions but also of the threats of future ones) in line with Hovi, Huseby, and Sprinz (2005) have a high probability of resulting in changes in the economic behavior of firms. Thus, understanding what types and groups of firms would react more strongly may



**Figure 1.** The share of firms foreseeing at least some risks for their business due to the sanctions imposed in 2014, in percent.



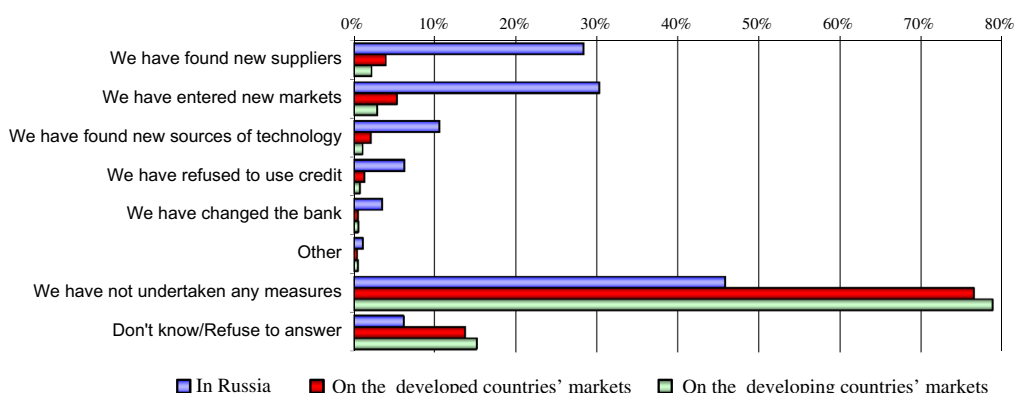
**Figure 2.** Perception of different types of risks posed by economic sanctions by firm size, in percent (of those who perceive any risk).

be important both for a better understanding of the firms' behavior under the pressure of shocks and for developing economic policy measures to respond to such a type of geopolitical crisis.

Perception of risk is not an "objective" indicator, although it may reflect the current situation. Nevertheless, it has an advantage of also reflecting expectations and is often used as a "leading indicator," which dynamically precedes actual changes. During the five months, the survey was implemented in the field, the official statistics on manufacturing according to MED RF (2015) demonstrated stagnation, showing less than 1% growth (although there was some recovery of growth in September–October 2014), and real wages continued growing although more weakly than during the same period in 2013 (MED RF 2015). At the same time, two indicators that are usually considered to reflect expectations – the exchange rate and the stock exchange index – clearly showed downward trends: the ruble depreciated by approximately 20%<sup>5</sup> and the index of the Russian Stock Exchange (RTSI) also dropped by 20%.<sup>6</sup> The real crisis on the currency and stock markets began later, in November–December 2014, which was mostly due to the steep fall in oil prices (Dreger and Kholodilin 2015). We presume that our respondents – mostly experienced top managers – assessed future "threats" posed by the sanctions regime for their firms rather than the current situation of their company at the time of the interview. We, therefore, assume that the managers' perception of risks could be treated as an expert forecast, and that this kind of indicator is viable for estimating the heterogeneity of the sanctions' impact on the different types of firms.

The difference in risk perception between large companies and SMEs largely reflect fears about the exchange rate, restrictions on entry into foreign markets, and problems with international financial transactions and access to technology (Figure 2). At the same time, one of the most frequently mentioned points – problems importing equipment and/or raw materials and components (reported by 43% of those who perceive any risks from the sanctions) – represents a concern of all of firms equally, regardless of size.

As we are measuring the subjective perception of risks, we face a potential problem because the survey was conducted over an extended period of time – from June to October – and the intensification of sanctions was occurring during this period (both in terms of expansion of the lists of companies and the persons under sanctions as well as in terms of the broader scope of the sanctions). We, therefore, divided the entire period of the survey field work into three subperiods: (1) June–July 2014 (mostly personal sanctions and sanctions against firms working in/with Crimea); (2) August (sectoral sanctions introduced, Russia's "counter-sanctions" introduced); and (3) September–October (restrictions on state-owned banks, the enhancement of sectoral sanctions). The sample is distributed across those three



**Figure 3.** Reaction to sanction risks, in percent (in response to the question: "What have you done to mitigate sanctions-related risks: in the domestic market; in the markets of developed countries; in the markets of developing countries?").

periods more or less uniformly: June–July – 32.0%; August – 30.4%; and September–October 2014 – 37.6%.

The share of firms (estimated using weights to correct the structure of the sample in line with the general population of manufacturing firms in Russia) perceiving at least one of the risks due to sanctions does not change greatly across these subperiods, although there is some growth of general risk awareness from 50.3% in the first subperiod to 54.8% in the last subperiod. For the specific risks, there is strong growth in concern related to importing raw materials and components: The share of firms rose, consequently, from 25.2% in the first subperiod to 28.9% in the second, and to 29.8% in the third period. Of course, there are significant differences in reactions across industries, although less than might be expected. The share of firms perceiving at least one sanction-related risk varies from 45% in the food industry to 60% for transportation machinery.

In terms of an actual response to those risks, approximately half of the firms at the time of the interview had not changed anything in their current strategy and economic behavior to mitigate the risks. Those who did take action mostly reacted by changing suppliers and customers (moved to different markets); 28% of firms reacted in this way (Figure 3), yet these reactions involved activity almost exclusively on domestic markets (Figure 3). The share of companies that changed their behavioral pattern in external markets was very low. This is mostly because the survey was administered "parallel" to the escalation of sanctions, and most of the managers were still waiting to see "how it will be" before making any strategic decisions.

Given that approximately half of the surveyed firms' managers view sanctions as a source of additional risk, we shall try to estimate the difference between those who perceive risks and those who do not. Several hypotheses will be tested.

## Hypotheses

First, we attempt to check whether more globalized firms view risks due to sanctions as being more serious than less globalized firms do. Although this hypothesis is more or less self-evident and does not need to be clarified, for our purposes, it is interesting to: (a) control for globalization while assessing the impact of other factors; and (b) try to evaluate the relative importance of different channels or features of globalization on the perception of risks (i.e. imports of equipment, imports of raw materials and components, exports, and international partnerships). Thus:

H1: Globalized companies are more concerned about sanctions-related risks than companies that do not do business or communicate internationally.



A second point we attempt to verify is that, unlike a “standard” economic crisis (such as the recent one of 2008–2009), the pressure from current sanctions has a potentially stronger and more prolonged negative impact on the manufacturing sector because this impact (somewhat in contrast to usual demand shocks during crises) will be felt by “better-performing” firms. In other words, a “sanctions crisis” may have a negative selection effect.

H2: “Better-performing” firms are more concerned about risks even if their assessment is controlled for globalization indicators.

Another question we attempt to answer concerns whether the magnitude of sanctions matters. If we interpret sanctions as simply a signal to the country and to business in particular that there may be additional risks to international activity, it is important how strong this signal is. We use the opportunity provided by the fact that our survey period coincides more or less with the three waves of sanctions imposed in 2014 to test following hypothesis:

H3: The tightening of sanctions matters: enhancement of sanctions and counter-sanctions increases concerns about risks *ceteris paribus*.

Direct indicators of productivity are not available in our data-set, so we must use indirect measures to identify the “better,” more competitive firms. First, we presume that international activity is itself an indirect measure of competitiveness. According to theory (Melitz 2003) and considerable empirical evidence for different countries, including Russia, exporters are usually more productive if they are self-selected for export, i.e. they are more productive prior to the beginning of export activity (Greenaway and Kneller 2007; Castellani, Serti, and Tomasi 2010; Delgado, Farinas, and Ruano 2002; Yang and Mallick 2010; Golikova, Gonchar, and Kuznetsov 2012). For other globalization indicators, the self-selection effect is less prominent, but there is some empirical evidence that both importing (Löf and Andersson 2010; Vogel and Wagner 2010; Wagner 2012) and foreign partnerships (Aw, Chung, and Roberts 2000; Helpman, Melitz, and Rubinstein 2008) are also associated with better performance, higher innovation activity, etc. We also include an innovation indicator as a proxy for better-performing firms. As an additional indirect measure of higher productivity, we include a self-assessment by top managers regarding distance to the technological frontier. These indicators will be described in more detail below.

We test these hypotheses by including a categorical variable indicating the period of interview corresponding to a tightening of the sanctions regime. A set of control variables includes ownership (foreign, state, affiliation with a group of companies), indicators of firm size measured as the number of employees and age of the firm, as well as industry dummies.

## Model

For the dependent variable, we created a simple dichotomous indicator dividing firms into two subsamples: those that see certain risks to their activity due to sanctions and those that do not feel endangered by sanctions. The estimation technique is straightforward: We ran probit regressions with various specifications in which the dependent variable is the risk perception dummy (1 – see at least some risks, 0 – otherwise) and the determinants are firm-specific indicators of the firm being involved in foreign trade (importing raw materials and components, importing equipment, or exporting), or an integrated “globalization” indicator that is equal to 1 if a firm is using at least one of the channels to contribute to the world’s economy (involved in international trade and/or having a strategic partner[s] abroad).

The structure of the model is as follows:

$$Pr(Risk\_perception_i) = \alpha_1(Globalization\_indicators_i) + \alpha_2(Individ\_controls_i) + \alpha_3(Sectoral\_controls) + \alpha_4(Regional\_controls) + \alpha_5(Time\_controls_i) + \varepsilon$$

where *Risk\_perception<sub>i</sub>* is a dummy variable equal to 1 if a firm sees at least some risks because of sanctions, 0 otherwise; *Globalization\_indicators* are integrated or separate indicators for a firm being involved in international trade (export/import activity) and/or having a strategic partner(s) abroad; *Individ\_controls* are individual characteristics of a firm such as ownership (state owned/foreign owned,



affiliation with a group of companies), size, and age of the firm; *Sectoral\_controls* are dummy variables for aggregated industries; *Regional\_controls* are dummy variables for a region; and *Time\_controls* represent the interview date grouped according to the three stages of the introduction of sanctions. The model is estimated with several specifications.

Common predictors in all the models are indicators of ownership: foreigners/state present among shareholders, firm affiliation with a group of companies (the “holding” variable), and firm size (logarithm of number of employees). We also control for the age of a firm (three categories: “Soviet” enterprises founded before 1991; founded between 1992 and 1999, i.e. during the period of privatization and economic transition; and “new” firms established after 1999 during the period of economic growth or later). The time of the interview is also included in all the specifications to verify our third hypothesis and to address any possible bias due to the tightening of the “war of sanctions” during the execution of the survey field work. Moreover, in all of the estimations, industry and regions are controlled for, although we do not report coefficients here due to lack of space.

Model 1 is a baseline regression linking risk perception to an integrated index of the firm’s globalization calculated as follows: It is 1 if the firm is involved in foreign trade (i.e. in exporting or importing raw materials and components, or if it is importing equipment) and 0 otherwise. The existence of a strategic foreign partner is also included as another indicator of the firm being globalized. In Model 2, the index of globalization is disaggregated and specific components of the integrated index – evidence of exporting, evidence of importing raw materials and/or components, or evidence of importing equipment – are directly included in the regression.

According to the literature (McLean and Whang 2010) on the macroeconomic level, the effectiveness of sanctions strongly depends on the importance of trade flows between “sanction provider” and “sanction receiver” countries. To verify this using micro-level data, we look at the geographical dimension of the surveyed firms’ foreign trade. We find that (in line with macro statistics) the major trade counterparts for Russian manufacturing firms are Ukraine and the EU: Approximately 13% of companies have some trade with these regions (approximately 30% of those that trade internationally). It would be natural to assume that firms trading with the EU and Ukraine should be much more troubled by sanctions than globalized firms that are oriented toward other regions.<sup>7</sup> To verify this, in Model 3, we add dummies for firms that trade with Ukraine and/or EU countries and for those trading with other countries (the reference category being firms not involved in foreign trade).

Model 4 is aimed at verifying our second hypothesis and includes two qualitative indicators of innovation and technological level: evidence of the introduction of a new product and a self-assessment of the firm’s general technology level. While the *New\_product* variable is a simple dummy, the indicator for the technological level requires some clarification. The variable is based on responses to the question: “Please estimate the technological level of your main product line” (only one answer is allowed): (1) matches the best foreign practice; (2) matches the average level of foreign competitors; (3) matches the best domestic practice; (4) matches the average level of domestic competitors; (5) is below the average level of domestic competitors.

These answers were used as categorical variables to proxy for the technological level of the enterprise; the reference category corresponds to a self-assessment of technological level matches the best foreign practice.

In the specification of Model 5, disaggregated components of globalization and qualitative indicators of innovation and technological level are included simultaneously. And in Model 6, we include dummies for trade destinations along with innovation- and technological-level variables.

Table 1 presents the descriptive statistics by two groups (according to risk perception) and the total sample. The results of estimations in terms of marginal effects<sup>8</sup> for all the models are provided in Table 2.<sup>9</sup> To check the results for robustness, we ran all the models with some additional variables included (not reported): age of the respondent, position of the respondent, and sex of the respondent. None of those factors are significant, and all of the other results remained significant.

As the size of a firm seems to be very significant for risk perception, we also verified our results by running our models for two subsamples – for SMEs (fewer than 250 employees) and for large firms (250

**Table 1.** Descriptive statistics by sanctions risk perception: share of firms in subsamples and in total sample, in percent if not otherwise indicated.

	Firms perceiving sanctions risks	Firms perceiving no sanctions risk	Total sample
Exporters	35.3	15.7	25.1
Importers of equipment	41.1	24.6	31.5
Importers of raw materials and components	29.1	9.7	19.0
Traders with Ukraine	21.7	5.3	12.7
Traders with EU	22.8	5.3	13.4
<i>Technology-level assessment</i>			
Matches best level of foreign competitors	14.0	10.8	11.6
Matches average level of foreign competitors	15.0	10.4	12.5
Matches domestic best practice	38.8	37.2	37.8
Matches average level of domestic competitors	30.3	38.8	35.2
Below average level of domestic competitors	1.9	2.8	2.7
New product	57.2	38.9	47.3
Foreign owned	7.7	3.3	5.4
State owned	5.1	2.9	4.2
Holding	18.8	14.0	16.5
Foreign partnership	20.1	7.7	13.6
Employment (mean, number of employees)	406.1	304.9	350.8
<i>Firm established</i>			
Before 1992	25.8	24.2	24.8
1992–1998	65.7	66.0	66.0
After 1999	8.5	9.8	9.2

Source: Survey data.

**Table 2.** Factors associated with risk perception.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Global_trade	0.173***			0.165***		
Ukraine_trade			0.230***			0.214***
EU_trade			0.284***			0.324***
Global_trade (excluding Ukraine and the EU)			0.0515			0.0464
Exporter		0.157***			0.168***	
Importer of raw materials		0.224***			0.235***	
Importer of equipment		0.0938**			0.0783*	
Introduced new product				0.106***	0.0918**	0.110**
<i>Technology level assessment<sup>a</sup></i>						
Matches average level of foreign competitors				0.149*	0.151*	0.133
Matches domestic best practice				0.130*	0.177**	0.176**
Matches average level of domestic competitors				0.147**	0.197***	0.191**
Below average level of domestic competitors				0.0329	0.0827	0.0975
Foreigners among owners	0.0908	0.0372	−0.0334	0.122	0.0675	−0.0124
State-owned	0.270***	0.271***	0.309***	0.269***	0.270***	0.296***
Holding	−0.0488	−0.0406	−0.0534	−0.0408	−0.0291	−0.0496
Foreign partner	0.192***	0.120*	0.167**	0.215***	0.154**	0.202**
Size (log of employees)	0.0300*	0.0225	0.013	0.0301*	0.0254	0.0137
Established in 1992–1999	0.113**	0.113**	0.0959*	0.120**	0.120**	0.106*
Established after 1999	0.219***	0.230***	0.200***	0.224***	0.237***	0.209***
Date of interview – August 2014	0.110**	0.108**	0.0982*	0.0987**	0.0925*	0.078
Date of interview – September–October 2014	0.255***	0.242***	0.220***	0.263***	0.245***	0.222***
Observations	1339	1332	1116	1309	1302	1084

<sup>a</sup>Reference category is technological level that matches best foreign competitors.

Robust standard errors in parentheses;

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .

employees and more). We do not report the results here, as they are mostly the same as for the total sample. The only fact worth noting is that risk perception among larger firms is higher for traders with the EU, while among SMEs the most concerned are traders with Ukraine.

## Results and discussion

As expected, involvement in international trade increases a firm's awareness of risks related to sanctions (H1 is confirmed). The most "troubled" firms are exporters and importers of raw materials and components, the importers in particular. An analysis of marginal effects shows that being an exporter increases the probability of perceiving some sanctions-related risks by 16–17%, while being an importer of raw materials and components increases this probability by 24% (depending on the model specification). The importing of equipment is less significant, although it does increase the probability of risk perception by 8–9%. It should be stressed that this result is not highly reliable, as all of the indicators, namely exports, the import of equipment, and the import of raw materials and components, are strongly correlated. Thus, additional research is needed to verify the relatively stronger impact of imports of raw materials and components on risk perception.

However, it seems to be not so much international trade in itself that makes firms feel threatened by sanctions, but rather having Ukraine or the EU as a trade partner. If we include both the Ukraine and EU dummies and, simultaneously, the dummy for firms that do trade internationally but not with those two regions, the coefficient of the last variable ceases to be significant (Models 3 and 6, Table 2). This means that Russian companies (at least in 2014) treated sanctions (and the related risks) as risks of bilateral trade relations (Russia – Ukraine; Russia – EU) rather than as an indicator of any potential international isolation of Russia. Still, this does not mean that sanctions are not important, as nearly 40% (37.1%) of internationally trading firms have some trade with either the EU or Ukraine.

The H2 hypothesis is also confirmed: overall risk perception increases with the distance from the technological frontier: having a technology level at the global average (i.e. "average level of foreign competitors" in Table 2) increases the probability of risk perception by 13–15%, the level "of best domestic practice" increases it by 13–18%, and the level "average for domestic producers" – by approximately 17%; however, the difference between these three categories is not significant. The exceptions to this trend are firms reporting a very low level of technology (below the domestic average), which seem to be less aware of (or concerned with) sanctions-related risks. This is likely due to their low level of development, i.e. their likely work in specific domestic niche markets that are not open to global competition. This explanation is supported by the fact that 54% of such firms report no impact of competition with imports (the sample average is 34%), and 62% report no competitive pressure from transnational companies working in Russia (the sample average is 35%).

A possible explanation for why firms closer to the technological frontier are somewhat less sensitive to sanctions (Table 2) is that they had already finished their modernization programs before the current geopolitical crisis. Thus, they are less concerned about the immediate negative consequences of possible restrictions to modernization, whereas the firms with unfinished modernization of outdated assets are concerned about the possibility of fully implementing their investment programs. It may even be the case that, being more advanced technologically than their Russian competitors, they may see sanctions as a "good thing," a shift toward a more closed, protected economy with less competition from imported goods and transnational companies producing in Russia.

It is also evident that innovating firms are more sensitive to sanctions-related risks, probably because the introduction of a new product, which we selected as an indicator of innovation, is often linked to imported raw materials and components and/or equipment and/or, in some cases, with new opportunities to export. On the whole, our results indicate that more technologically advanced and more innovative firms (and, we can presume, more productive firms) perceive risks from sanctions significantly more frequently. Thus, we see strong evidence supporting hypothesis H2.

The results also verify hypothesis H3 – that the magnitude of sanctions (i.e. the extension of sanctions to a broader albeit still very limited circle of firms, banks, and individuals, and the widening of sanctions

to entire sectors of the economy) significantly increases the awareness of sanctions-related risks. This is confirmed by the dependence of risk perception on the dates of the interviews. We see that in all specifications, the perception of risks are significantly higher for the second period (i.e. August 2014) and even higher for the third period (i.e. September–October 2014) in comparison with the June–July 2014 period. Particularly impressive is the difference between the September–October and June–July periods; if the interviews were conducted in autumn, the chances of a firm reporting sanctions-related risks would be about 25% higher than in June–July. It is interesting to note that while foreign ownership does not seem to be important for higher risk perception, established foreign strategic partnerships significantly increase the probability of risk awareness (by 15–20% depending on specification). The presence of the state among owners significantly increases risk awareness: Being state-owned (fully or partly) increases the probability of risk perception by at least 27%. This undoubtedly reflects the actual design of the sanctions with only state-owned firms being “blacklisted.” If a firm belongs to a group of companies, it foresees risk less frequently, although the coefficients for the “Holding” dummy, while always negative, are mostly insignificant. We presume that this negative sign reflects the “not-my-baby” attitude of subsidiary companies’ management toward sanctions, as being a problem for big bosses at the headquarters offices.

## Conclusions

Our main findings provide empirical evidence that firms involved in foreign trade (both through exporting and importing of raw materials and components, or equipment) with specific ties to EU countries and/or Ukraine are more sensitive to economic sanctions. For other firms trading internationally, however, the risk perception is also positive (although statistically insignificant).

Second, we have revealed a heterogeneous impact of sanctions on Russian manufacturing firms. Better-performing firms perceive a greater impact (higher risks) from the sanctions. And, at least among those firms that perceive risks, there is a larger share of innovative firms, firms closer to the technological frontier, and firms more integrated into the global economy.

Third, the “amount” or magnitude of imposed sanctions matters for the level of risk perception. The addition of new sanctions and their expansion to a broader swath of the entire economy send a stronger signal to businesses that the problems may be more serious and prolonged. These extensions have demonstrated the consistency of the sanctions regime and have made many more businesses aware of the risks, enhancing the perception of “hard times ahead.” We presume that it also sent a strong signal to the foreign counterparts of Russian firms (suppliers, customers, investors, partners, etc.) of the risks involved in working with Russians, de-motivating them from developing new forms of cooperation. The importance of such signals to firms from countries imposing sanctions is noted in Servettaz (2014).

We have based our analysis on the subjective opinions of respondents. We believe that perceptions of risks due to sanctions are important, as they reflect not only the emotional reactions of top managers, but also, and more importantly, their rational and realistic expectations of the business environment that impacts firms’ strategic decisions.

Those expectations have been fulfilled; the Russian economy experienced a decline comparable to the 2009 global shock – in particular, in terms of investments. We believe that risk awareness in itself and the growth of uncertainty about the future, including possible changes in business climate, compounded the shock from diminishing oil revenues and will become an important factor in future crises.

Currently, two years since the first sanctions were imposed against Russia after the events in Ukraine and, in particular, Crimea; it is clear that sanctions have had strong negative consequences for the Russian economy. Yet the sanctions pressure no longer is stronger – there have been no significant extensions of the sanctions regime since autumn 2014. Nonetheless, the understanding that sanctions will not be merely a short-term shock has become widespread. Indirect consequences – such as currency devaluation and exchange rate volatility, interest rate increases due to restricted access to foreign financial markets for Russian banks and the Russian government, and a resulting drop in GDP, incomes, and investments – concern every firm regardless of size and location.

Our main conclusion is that contrary to the usual cyclical crises that are supposed to have a “creative destruction” effect, clearing the economy of less efficient firms, sanctions-related risks are greater for more advanced (better-performing) firms. Or in our case more specifically, more advanced firms believe themselves to be much more threatened by sanctions.

There may be different scenarios for the future development of the situation. If the current level of sanctions is “frozen,” there is a high probability that the Russian economy will adjust and reach a new (albeit inefficient) equilibrium. The history of sanctions includes many cases of such adjustment. The restrictions on FDI from the US and EU may be compensated by investments from third parties (Lektzian and Biglaiser 2013), or as is shown in Barry and Kleinberg (2015, 881), firms from a sanctioning state may move investments to countries that can provide indirect access to the sanctioned economy. In the case of Russia, this could easily be members of the Eurasian Economic Union (Armenia, Belarus, Kyrgyzstan, and Kazakhstan). Trade flows (both exports and imports) could be redirected to other countries, although with some costs (Peksen and Peterson 2016). This “inertia” scenario will undermine growth in the long term, but would hardly lead to radical changes in the behavior of firms and in the overall development model.

In contrast, we cannot exclude another scenario, especially in the case of the escalation of sanctions on both sides. In this case, the general vector in Russian economic development will change from globalization and further integration into the world market toward self-sufficiency and protectionism. We believe that this would represent a bad outcome both for Russian firms and for their Western counterparts.

Our results seem to show that the magnitude of sanctions matters: The harsher the sanctions, the larger the share of economic agents who being to feel endangered. For instance, the perception of risk is more acute for respondents interviewed at the later stages of our data collection when additional sanctions have been introduced. However, the unprovoked imposition of further sanctions will only make all actors in Russia – society, business, government – believe that the recently followed model of development through globalization (e.g. foreign trade, inward and outward FDI) has no future, and that the only option is to switch to the autarkic practices of the Cold War, when the state sought to minimize dependence on the world economy, at least from the Western countries that use this dependence as a political weapon.

Escalation of a war of sanctions will probably not only prevent deeper economic involvement of Russia in the world division of labor, but also will lead to the reconstruction of the outdated framework of economic autarky and inevitably provide a strong impulse for the resurrection of the institutions required for such an economy. We cannot help but agree with Lektzian and Patterson (2015, 57), who argue that sanctions “... when implemented without consideration for how they might affect internal political dynamics in the targeted nation, ... may even strengthen the targeted regime and harden its current position.”

The war of sanctions has already led to definite changes in state economic policy, facilitating numerous “counter-sanctions,” large-scale programs of import substitution, and other measures to reduce the dependence of the Russian economy on the developed countries (Connolly 2016). It will inevitably result in further increases in state intervention in the economy, preserving the relatively high concentration and monopolization level inherited at least partly from the Soviet period (Kudrin and Gurvich 2015; Kuznetsov et al. 2011). If sanctions are prolonged, they may reduce competition from foreign producers in the Russian economy and lead to stronger deviations from market mechanisms and institutions. Thus, one might expect a reconstruction of the Cold War economy in modern Russia along with the corresponding institutions, posing a real danger to fragile market-economy institutions that are not yet sufficiently deeply embedded.

## Notes

1. A comprehensive list of EU, US, and other Western sanctions against Russia can be found in Čwiek-Karpowicz and Secieru (2015).
2. See <http://www.vedomosti.ru/economics/articles/2016/03/03/632333-tri-goda-krizisa>.
3. The survey of 1950 manufacturing firms was conducted in 2014 by GFK-Russia for a project financed by HSE entitled "Russian Firms in the Global Economy" (RuFIGE). The data are described in detail in the following section of the paper.
4. See <http://www.vedomosti.ru/newspaper/articles/2014/12/18/etot-shtorm-my-sami-i-gotovili-aleksej-ulyukaev-ministr>.
5. From the official website of Central Bank of Russia: [http://cbr.ru/currency\\_base/dynamics.aspx](http://cbr.ru/currency_base/dynamics.aspx)
6. From the official website of Moscow Exchange (MOEX): <http://moex.com/ru/index/stat/dailyhistory.aspx?code=RTSI>
7. The number of firms trading with the US and Canada is rather negligible – less than 2% of all firms – and only four firms trade with North America and do not trade with either the EU or Ukraine.
8. Marginal effects are estimated at the mean values of the independent variables.
9. As our sample is initially a structured one by industries and size groups, all models are estimated using weights to correct the sample structure and to make the results representative for the general population of firms in the selected industry-size groups.

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