NATIONAL RESEARCH UNIVERSITY
HIGHER SCHOOL OF ECONOMICS

Golikova Victoria, Kuznetsov Boris,

PERCEPTION OF RISKS ASSOCIATED WITH ECONOMIC SANCTIONS: THE CASE OF RUSSIAN MANUFACTURING

BASIC RESEARCH PROGRAM

WORKING PAPERS

SERIES: ECONOMICS
WP BRP 115/EC/2015

Golikova Victoria[1], *Kuznetsov Boris*[2]

PERCEPTION OF RISKS ASSOCIATED WITH ECONOMIC SANCTIONS: THE CASE OF RUSSIAN MANUFACTURING[3]

This paper is focused on assessing the factors of risks for Russian manufacturing firms due to the sanctions imposed on Russia by the EU, US and other countries in 2014. While there is extensive literature on assessing the successes and failures of international sanctions on the economies of both senders and targets on a macroeconomic level (Hufbauer et al., 2007; Drezner 1998, 2003; Morgan et al, 2009; Krustev, 2010; Morgan et al, 2009 among others), 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 Russian manufacturing firms have in the last decade become much more integrated into the global economy than is commonly assumed, via FDI, foreign trade, including both the importing of technological equipment and intermediates, via establishing international partnerships and extensively supplying foreign companies which operate in Russia. Considering the self-selection effect of the top performing firms in terms of foreign trade, we can state that sanctions could be the most harmful effect for the better performing and globalized firms and, thus, the impact of the sanctions on the prospects of the Russian manufacturing sector may be very strong in the medium and long-term perspectives.

Key words: economic sanctions, perceptions of risks, manufacturing firms, Russia

JEL classifications No. F14, O31, O33, P23

[1] NRU Higher School of Economics, victoria@hse.ru

[2] NRU Higher School of Economics , bkuznetsov@hse.ru

[3] This Working Paper is an output of research project implemented at the National Research University Higher School of Economics (HSE). Any opinions or claims contained in this Working Paper do not necessarily reflect the views of HSE.

Introduction: General Background

Twenty five years after the initiation of market reforms, some Russian sectors, in particular manufacturing, have still to complete the transition This is mainly visible in the technological backwardness of the many enterprises that need modernization. According to official statistics the share of vintage equipment (more than 20 years old) in Russian mining and manufacturing industries is still very high – 17% in 2013 and declining too slowly (Rosstat, 2014). From the beginning of the transition up until 2014 the Russian economy became continuously more open to global competition. Russian companies have to compete not only with local firms but also with foreign companies who often have more resources and more experience. Globalization trends were most pronounced during the years of high economic growth (from 1999 to the crisis of 2008-2009). Many Russian firms extensively used imported technologies and equipment, benefiting from the knowledge transfer (which is embodied in the technology) for improving the efficiency of production. According to survey data (Kuznetsov et al. 2012), in 2009 about 39.9% of medium and large manufacturing firms had large investments in machinery and among them 91.4% had 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 of not only imports of equipment but also raw materials and components. According to the above-mentioned survey, every other medium and large manufacturing firm used it for their production process. While the growth of manufacturing exports has been much less spectacular, the share of exporters and the average share of export revenues in total sales have also been increasing (Golikova et al, 2012). Beside the arm-length transactions other forms of globalization activities were also developing. In particular, the networking and establishing of partnerships with foreign partners which stimulated innovations and the upgrading of the technology (Golikova and Kuznetsov, 2013).

There are many studies which show that external knowledge and technology acquisition has been proven to positively affect companies' competitiveness, innovation activity and performance in developing countries with catch-up models of economic growth (Bøler et al, 2012, Woo, 2012, Araújo et al, 2011). As for the impact of intermediate imports on the productivity of firms, the empirical results are ambiguous but mostly show a positive impact on the macro-level (Bloom et al. 2011) and often on the firm-level as well (Ito et al. 2011, Fariñas and Martín-Marcos, 2010) though not always (de Groot and Mahlmann 2013). And, of cause, there is extensive research on the overall positive impact of FDI. Recent empirical evidence for India with the use of panel firm-level data analysis is provided in (Keshari, 2013).

The same positive results of globalization can also be found in Russia. Russian manufacturing has been extensively modernizing assets with imported equipment since before the crisis of 2008-2009. According to the estimations of the Russian Minister of Economy Alexei Ulyukaev, the manufacturing sector is more than 40% dependent on importing[4]. Russian businesses are still far from the technological frontier (Sabirianova et al, 2012) and to close the gap and speed up "learning" they need access to advanced technologies. The paper (Torvinen et al, 2014) analyzing external technology acquisition in Russian firms using a survey conducted in 2009-2010 provides evidence that companies sourcing, acquiring and implementing external technologies have been able to improve their performance by enhancing new product development and decreasing R&D costs.

[4] http://www.vedomosti.ru/newspaper/articles/2014/12/18/etot-shtorm-my-sami-i-gotovili-aleksej-ulyukaev-ministr

Furthermore, external technology acquisition helps companies to focus on their core competences and has a positive effect on companies' competitiveness and market expansion.

The crisis of 2008-2009 slowed down the integration of Russian firms into the World economy due to a sharp decrease of FDI, much more limited access to cheap external financing and a decline of investments, but has not stopped it. According to the RuFIGE survey[5] in 2013 approximately 25% of manufacturing firms with employment of 10 or more employees imported equipment, about 16% imported intermediate goods and 8% were involved in importing both. Among the large enterprises (with more than 250 employees) those figures were 50%, 30% and 20% respectively . Although we do not have panel data, the comparison of samples for earlier surveys and the survey of 2014 for the same industries and size groups show that among manufacturing firms with more than 250 employees the share of importers of equipment was about 35% in 2004, roughly 65% in 2008, and declined to 44% in 2013.

Russian manufacturing firms are very heterogeneous in terms of productivity and other performance indicators, similar to firms in other countries (Dosi et al, 2010). Even in the segment of medium and large firms, both between- and within- industry gaps, the efficiency of factors of production, profitability and competitiveness in general in the middle of the last decade were very high (Russian Manufacturing at the stage of growth, 2008). While in the period prior to the crisis (2004-2008) this differentiation had been slowly declining, it was still rather high at the start of the crisis (Kuznetsov et al, 2011). It is reasonable to assume that heterogeneous firms in the same industry were hit differently by the sanctions' shock that was introduced in 2014 as it could increase company costs, lower the quality of inputs due to import substitution, and limit product scope in contracting markets. All these changes as suggested by empirical evidence (Hottmann et al, 2014) are significant for a firm's size distribution and position in the marketplace. According to the official evaluation provided in the speech of President Putin, Russia lost $160 bl. in investments due to sanctions[6] . But the total losses for the economy, especially in the long run, will probably amount to much more. And not only in terms of direct damage due to cutting off international financing, the decline of international trade, the slowing down of FDI inflows, etc. While only a few specific corporations have been directly named in the sanction list there is no doubt that many more firms and companies have been indirectly damaged. This damage may have been due to the additional risks (and additional costs) in international trade, obstacles for attracting investments and the need to stop or delay the implementation of some investment projects, diminished interests in existing or potential partners abroad, etc. Our main goal in this paper is to attempt to find out what types of firms feel endangered by the sanctions. This may indicate which area(s) of Russian manufacturing will have less opportunities for growth in the coming years.

As companies, for both economical and political reasons, will be less oriented towards (or constrained in) using raw materials, components, and technological equipment coming from abroad, their indirect production losses will be much higher than the direct losses. International integration is of key importance to growth (Grossman and Helpman, 2015) and of vital importance for Russian manufacturing firms that need modernization in order to raise their competitiveness. Imposed sanctions could limit the flow of knowledge across borders;

[5] The survey of 2000 manufacturing forms was conducted in 2014 by GFK-Russia for the HSE financed project "Russian firms in a global environment".

[6] http://www.bloomberg.com/news/articles/2014-03-14/russia-wields-160-billion-stick-in-crimea-sanctions-standoff

seize potential foreign markets for inventors; and increase the costs of innovation and create difficulties in technological diffusion.

Our data does not allow us to evaluate the actual costs of sanctions for Russian manufacturing firms. Mainly because at the time of the survey firms probably could not assert them in full. Nevertheless, we expect that the sanctions' regime could be a long-lasting constraint to the development of Russian firms due to limited investment opportunities and restrictions in foreign trade. In this paper we try to understand which types of companies foresee more risk in the changes to the terms of international cooperation and globalization in general with the Western countries that introduced sanctions targeted at Russia, and provide evidence of their immediate reactions to the increase of geopolitical instability.

Data Description

The database we use was drawn from the RuFIGE (Russian Firms in the Global Economy) survey of 2092 Russian manufacturing firms with more than 10 employees in 2014. The survey was conducted by GFK-Russia surveying company. The random structured sample has been constructed to be representative in terms of distribution by industry and size of firm, though it is not representative by region of Russia. Our questionnaire included two questions which directly concerned the attitude of firms to 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 COMPANY ? */MULTIPLE ANSWERS ALLOWED/"*

"WHAT HAS YOUR ENTERPRISE UNDERTAKEN IN ORDER TO REDUCE THE RISKS WHICH EMERGED IN 2014?"

The last question was asked separately to gauge the actions in different markets: Russia, developed countries and developing countries. In general, about one out of two firms in the sample in the second half of 2014 pursued the harmful consequences of economic sanctions (Fig. 1). Among these, smaller firms (less than 250 employees) foresee less risks than larger ones, which is not surprising because they much more often work in local markets and are less involved in globalization activities.

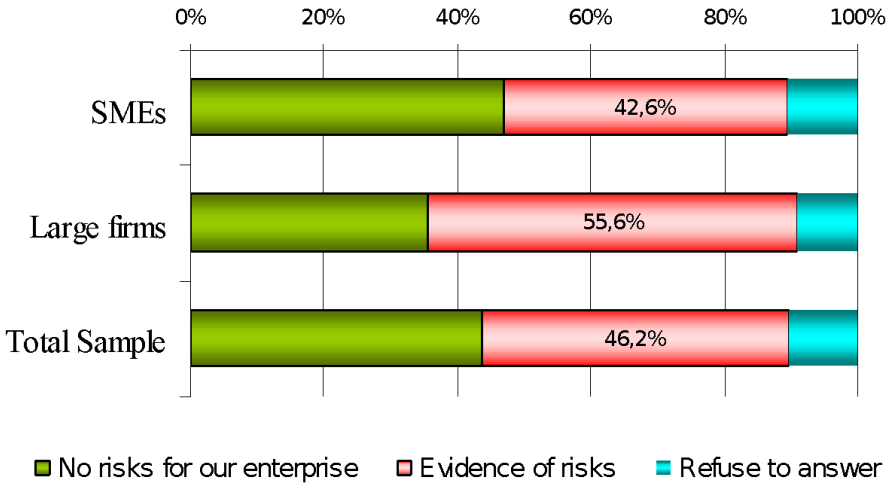

Fig 1. The share of firms foreseeing at least some risks for their business due to the sanctions.

The difference in risk perception between large and smaller companies is largely due to fears about the exchange rate, restrictions for entry to the foreign markets, problems with international financial transactions and access to technology (Fig.2). At the same time, one of the most often mentioned points – the problem with importing equipment and/or intermediates (43% of those who pursue any risks from the sanctions) – troubles all of the firms equally, regardless of their size.

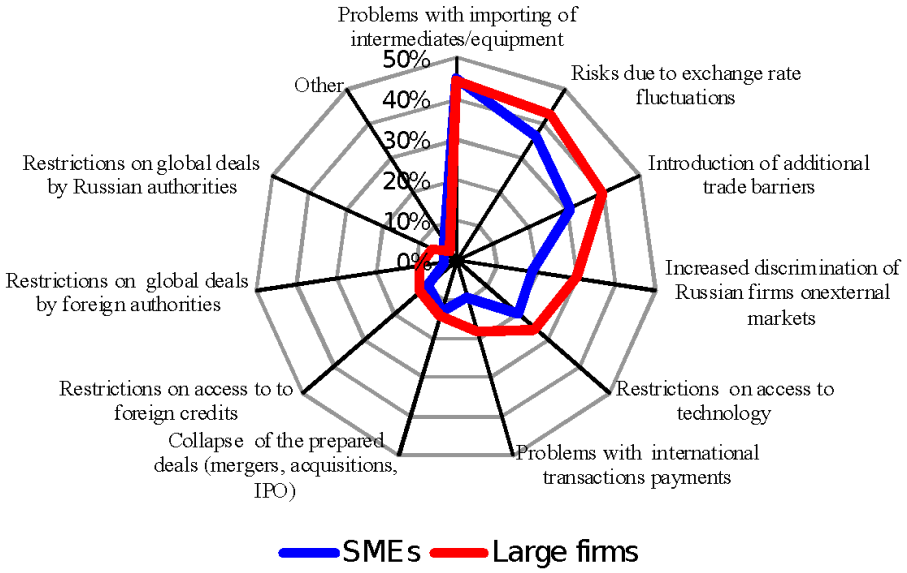

Fig. 2. Perception of different types of risks due to economic sanctions by firm size, % (of those who see any risk).

As we are using the subjective perception of risks, we have a potential problem due to the fact that the survey was conducted over a certain span of time – from June to October – and the amount of sanctions have been increasing over this period (both in terms of expansion of the lists of companies and the persons under sanctions and in terms of the wider specter of sanctions). Fig. 3 presents the difference in answers over three periods: June-July 2015 – mostly personal sanctions and sanctions against firms working in/with Crimea); August (sectoral sanctions introduced, Russia's "contra-sanctions" introduced); September-October (restrictions on State-owned banks, the enhancement of sectoral sanctions). We focused only on the most frequently mentioned risks (those which were mentioned by 10% or more respondents. The sample is distributed by those three periods more or less uniformly: June-July - 32.0%; August – 30.4%; September-October –

37.6%.

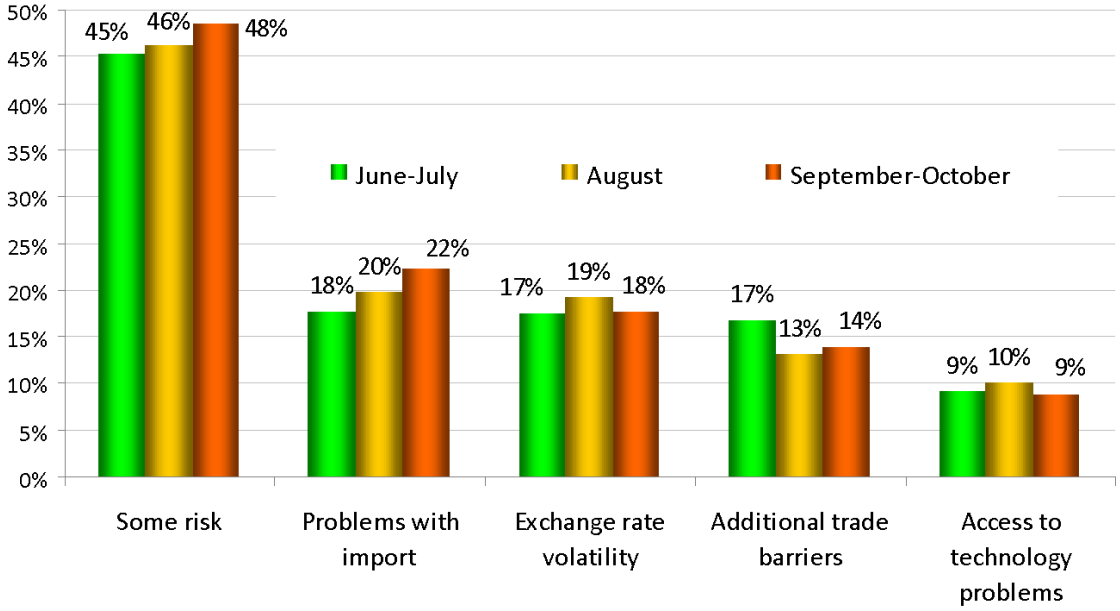

Fig. 3 Selected risk perception by the date of interview, %

As can be seen in Figure 3, the average ratios do not change very much, though we found some growth of general risk-awareness from 45 to 48% of the respondents and some increase in expectations of import-related problems – from 17.6% to 22.2%. Of course, there are significant industrial differences in reactions, though less than might be expected. The share of firms perceiving at least one sanction related risk vary from 45% in the food industry to 60% in transporting machinery.

As for the reaction to those risks, approximately half of the firms at the time of interview had not changed anything in their current strategy and economic behavior to mitigate the risks. Those who did something mostly reacted by changing suppliers and customers (moved to different markets), 28% of firms reacted in this way (Fig.4), yet these reactions concerned almost exclusive activity on domestic markets (Fig.4). The share of companies that have changed their behavioral pattern on external markets was very low. This is most probably due to the fact that the survey ran "parallel" to the escalation of sanctions and most of the managers were still waiting to see "how it will be" before making any decisions.

Hypotheses

As we cannot estimate the real effect on a firm due to sanctions, we concentrated on top-management perceptions of the related risks. The underlying logic is that those perceptions (of not only the actual imposed sanctions but also of the threats of future ones) in line with Hovi et al, (2006) with high probability will result in changes in the behavior of firms. Thus, understanding what types and groups of firms would react stronger may be important, both for a better understanding of the firms' behavior under the pressure of shocks, and for developing economic policy measures for such a type of crisis.

The main point we attempt to verify is that, contrary to the "standard" economic crisis (such as the recent one of 2008-2009), the pressure of the current sanctions has had a much stronger

negative impact, not on the least efficient but on "better-performing" firms involved in international trade. In other words, this type of crisis may have a negative selection effect.

H1. Globalized companies are more concerned about sanction related risks than companies which do not deal or communicate internationally.

This hypothesis is more or less self-evident and does not need to be clarified, though we try to assess the impact of different channels of globalization on the perception of risks (i.e. import of equipment, import of intermediates, export, international partnerships).

H2. "Better" performing firms are more concerned about risks even if the evaluation is controlled for globalization indicators.

Productivity indicators are not available in our dataset, but we use indirect measures for advanced firms such as innovations, distance to technological frontier (self-assessment).

H3. The tightening of sanctions matter: enhancement of sanctions and contra-sanctions increases ceteris paribus the concerns about risks.

We check these hypotheses by including a categorical variable indicating the period of interview corresponding to a tightening of the sanction regime.

A set of control variables include ownership (foreign, state), indicators of firm size measured as number of employees and age of the firm as well as industry dummies.

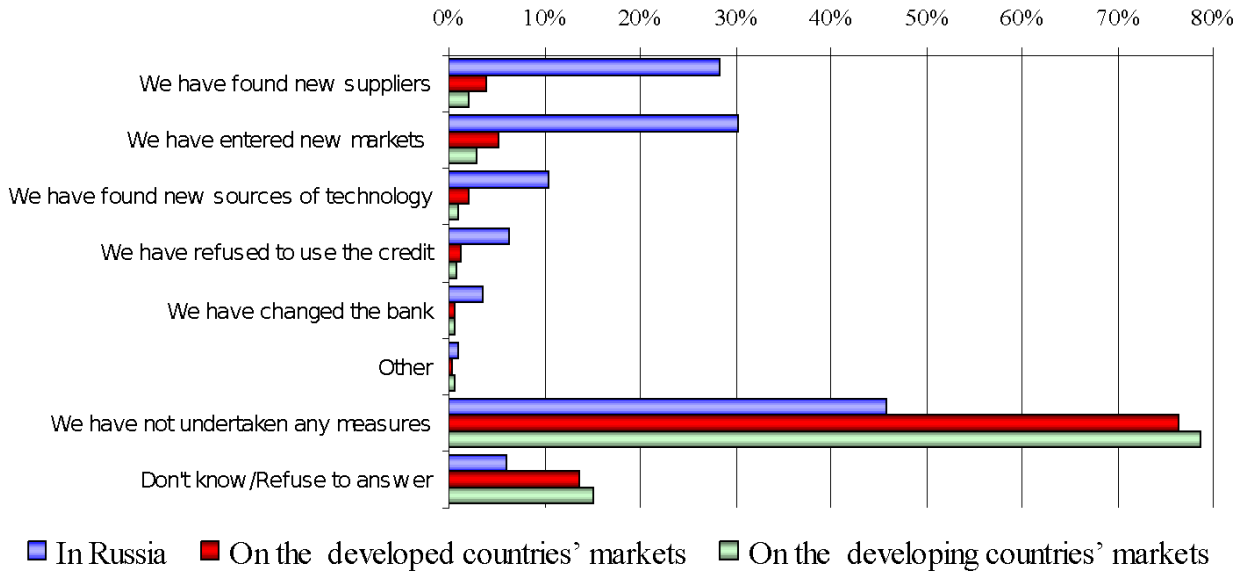

Fig 4. Reaction to sanction risks, % ("What have you done to mitigate sanction related risks: to the domestic market; to the markets of developed countries; to the markets of developing countries?")

Table 1 includes the descriptive statistics by two groups (pending risk perception) and the total sample.

Table 1. Descriptive statistics

	Some sanction risks	**No sanction risk**	**Total sample**
Exporters	35.3%	15.7%	25.1%
Importers of equipment	41.1%	24.6%	31.5%
Importers of intermediates equipment	29.1%	9.7%	19.0%
Technology level assessment			
____World's best	14.0%	10.8%	11.6%
____World's average	15.0%	10.4%	12.5%
____Best domestic	38.8%	37.2%	37.8%
____Average domestic	30.3%	38.8%	35.2%
____Below domestic average	1.9%	2.8%	2.7%
New product	57.2%	38.9%	47.3%
Foreign oned	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	406.14	304.94	350.8
Firm Established			
____before 1992	25.8%	24.2%	24.8%
____I992-1998	65.7%	66.0%	66.0%
____after 1999	8.5%	9.8%	9.2%

Model

For a dependent variable we created a simple dichotomous indicator dividing firms into two sub-samples: those that do 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 where the dependent variable is the risk-perception dummy (1 – see at least some risks, 0 - otherwise) and the determinants that are firm-specific indicators of the firm being included in foreign trade (the fact of import of intermediates, of equipment or being an exporter) or the integrated "globalization" indicator which is equal to 1 if a firm is using at least one of the channels to contribute to the world's economy.

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,

$Risk\_perception_{i}$ – is a dummy variable equal to 1 if a firm sees at least some risks because of sanctions, 0- otherwise;

Globalization_indicators – integral or several separate indicators for a firm being involved in international trade and/or having a strategic partner(s) abroad;

Individ_controls – individual characteristics of a firm such as ownership (state owned/foreign owned, affiliation to a group of companies), size (in logarithm of number of employees), age of a firm grouped at three sub-periods: before 1991(reference category), 1992-1998; after 1998.

Sectoral_controls – dummy variables for aggregated industries;

Regional_controls – dummy variables for a region;

Time_controls – Interview date grouped according to introductions of sanctions - June-July, 2014 (reference category); August, 2014; September-October, 2014.

The model is estimated with several specifications. Models 1.1-1.3 use the aggregated index of globalization of a firm calculated as follows: it is 1 if he firm is involved in foreign trade (i.e. in export or in import of raw materials and components, or is importing equipment), and 0 equals otherwise. The existence of a strategic foreign partner is also included as another indicator of the firm being globalized.

Other predictors in these models are indicators of ownership: foreigners/state present among shareholders, firm affiliation to a group of companies (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 privatization and transitional transformation period, and "new" firms established after 1999 during the period of economic growth or later).

As mentioned above, we control for the time of the interview to deal with any possible bias due to the tightening of the "war of sanctions" during the execution of the survey field work. As the size of a firm seems to be very significant for the risk-perception, we run the model for the total sample (model 1.1) and for two sub-samples – for SMEs (less than 250 employees) and for large firms (over 250 employees) – models 1.2. and 1.3.

In all of the estimations industry and regions are controlled for, though we do not report coefficients here due to lack of space.

The second block consists of models 2.1-2.3 that are identical to models 1.1.-1.3 except for global trade indicators (evidence of export, evidence of import of raw materials and/or components, import of equipment) being directly included into the regressions. The next block of models (also for the sample and sub-samples) besides the same variables as in models 2.1-2.3 include two qualitative indicators of innovation and technical level: evidence of the introduction of a new product and a self-assessment of the general technology level of the firm.

While the New_product variable is a simple dummy, the technical level indicator needs some clarifying. The variable is based on the answers to the question: "PLEASE ESTIMATE THE TECHNOLOGICAL LEVEL OF YOUR MAIN PRODUCT LINE:

1. Matching the best foreign practice
2. Matching the average level of foreign competitors
3. Matching the best domestic practice
4. Matching the average level of domestic competitors
5. Below the average level of domestic competitors

These answers were used as categorical variables as a proxy for the technological level of the enterprise: the reference category corresponds to self-assessment of technological level above the world average. The last model (Model 4) is the same as model 3.1 for the total sample but uses an aggregated index of participation in global trade.

The results of all the models we have outlined are provided in Table 2.

Table 2. Factors associated with risk perception.

	Mod. 1.1	Mod. 1.2	Mod. 1.3	Mod. 2.1	Mod. 2.2	Mod. 2.3	Mod. 3.1	Mod. 3.2	Mod. 3.3	Mod. 4
VARIABLES	Total	<250	>=250	Total	<250	>=250	Total	<250	>=250	TOTAL
Global_trade	0.439***	0.422***	0.628**							0.419***
Exporter				0.404***	0.350**	0.441*	0.433***	0.381**	0.541**	
Importer of equip.				0.238**	0.19	0.382*	0.198*	0.169	0.317	
Importer of raw mat.				0.595***	0.588***	0.853***	0.624***	0.639***	1.018***	
Introduced new prod.							0.232**	0.231*	0.149	0.268**
Tech level match the average level of foreign competitors							0.392*	0.912***	-0.0419	0.388*
Match domestic best practice							0.452**	0.755***	0.418	0.330*
Match the average level of domestic competitors							0.507***	0.805***	0.863**	0.375**
Below the average level of domestic competitors							0.212	0.591	1.01	0.0833
Foreigners among owners	0.233	0.284	0.367	0.0942	0.0907	0.132	0.172	0.175	0.0999	0.317
State-owned	0.762***	0.599	1.156***	0.770***	0.579	1.084***	0.765***	0.558	1.197***	0.755***
Holding	-0.123	-0.107	-0.368	-0.102	-0.126	-0.253	-0.0732	-0.0667	-0.147	-0.102
Foreign_partner	0.504***	0.383	0.579**	0.309*	0.202	0.383	0.400**	0.358	0.569**	0.570***
Size (logEmpl)	0.0755*	0.105	0.126	0.0568	0.0935	0.0484	0.064	0.109	0.0437	0.0757*
Established in 1992-1999	0.285**	0.402**	0.324	0.285**	0.390**	0.356	0.303**	0.438**	0.356	0.302**
Established after 1999	0.589***	0.638***	0.56	0.627***	0.661***	0.712	0.645***	0.698***	0.664	0.605***
Date of interview – August 2014	0.279**	0.385***	0.131	0.275**	0.377**	0.14	0.235*	0.384***	0.106	0.251**
Date of interview – September-October 2014	0.662***	0.787***	0.204	0.628***	0.758***	0.219	0.636***	0.800***	0.181	0.683***
Constant	-1.54***	-1.86***	-2.17**	-1.49***	-1.80***	-1.87*	-1.91***	-2.57***	-2.34**	-1.848***
Observations	1,339	943	344	1,332	938	341	1,309	1,302	911	338??????

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

To check the results for robustness we ran all the models with some additional variables included: age of the respondent, position of the respondent, sex of the respondents. All the results remained significant.

Looking at the geographical dimension of firms' foreign trade it is noticeable that the major trade counterparts for Russian manufacturing firms are Ukraine and the EU: about 13% of companies have some trade with these regions (about 30% of those that trade internationally). It would be natural to suppose that firms dealing with the EU and Ukraine should be much more troubled by sanctions than globalized firms which are oriented to other regions[7]. To check this we created dummies for firms that deal with Ukraine and with EU countries and added them to the basic model. The results are reported in Table 3.

Table 3. Risk perception as a factor of trade with Ukraine and EU

	Total	<250	>=250	Total	<250	>=250
	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	Risk_yesno	Risk_yesno	Risk_yesno	Risk_yesno	Risk_yesno	Risk_yesno
Ukraine_trade	0.558***	0.789***	0.783***	0.601***	0.813***	0.900***
	(0.199)	(0.290)	(0.300)	(0.200)	(0.290)	(0.323)
EU_trade	0.725***	0.342	1.575***	0.765***	0.379	1.668***
	(0.258)	(0.419)	(0.336)	(0.261)	(0.423)	(0.345)
Global_trade (excluding Urkraine and EU)				0.129	0.105	0.285
				(0.125)	(0.147)	(0.275)
Foreign_own	-0.0861	-0.521	0.604*	-0.0838	-0.520	0.603*
	(0.307)	(0.485)	(0.352)	(0.306)	(0.480)	(0.353)
gos_sobst	0.851***	0.363	1.691***	0.864***	0.381	1.693***
	(0.272)	(0.410)	(0.479)	(0.274)	(0.414)	(0.478)
Holding	-0.122	0.00905	-0.793***	-0.134	-0.00229	-0.837***
	(0.161)	(0.207)	(0.281)	(0.161)	(0.208)	(0.290)
Foreign_partner_yesno	0.446**	0.558	0.325	0.429**	0.517	0.331
	(0.218)	(0.349)	(0.335)	(0.219)	(0.354)	(0.336)
Size (logEmpl)	0.0409	0.106	-0.144	0.0326	0.0976	-0.143
	(0.0443)	(0.0723)	(0.134)	(0.0452)	(0.0732)	(0.136)
Established in 1992-1999	0.233*	0.427**	0.101	0.241*	0.431**	0.115
	(0.136)	(0.186)	(0.271)	(0.136)	(0.186)	(0.267)
Established after 1999	0.521**	0.615**	0.622	0.521**	0.611**	0.742
	(0.205)	(0.244)	(0.536)	(0.204)	(0.244)	(0.519)
Date of interview – August 2014	0.239*	0.331**	0.0783	0.247*	0.338**	0.110
	(0.135)	(0.157)	(0.295)	(0.135)	(0.158)	(0.295)
Date of interview – September-October 2014	0.545***	0.666***	0.135	0.562***	0.679***	0.176
	(0.159)	(0.183)	(0.366)	(0.159)	(0.183)	(0.362)
Constant	-1.418***	-1.794***	-2.501*	-1.444***	-1.804***	-2.620*
	(0.435)	(0.510)	(1.443)	(0.439)	(0.512)	(1.430)
Observations	1,116	785	289	1,116	785	289
Robust standard errors in parentheses		*** p<0.01, ** p<0.05, * p<0.1				

[7] The number of firms trading with US and Canada is rather negligible – less than 2% of firms and only 4 firms trade with North America and do not trade with either EU or Ukraine.

Results and Discussion

Involvement in international trade, as expected, increases a firm's awareness of risks related to sanctions (H1 confirmed). On the other hand though it seems to be not international trade in itself that makes firms feel endangered 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 who do trade internationally but not with those two regions, the coefficient of the last variable stops being significant (models 8-10, Table 2). This means that Russian companies treat 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, it does not mean that sanctions are not important as almost 40% (37.1) of internationally trading firms have some trade with either the EU or with Ukraine.

The most "troubled" firms are exporters and importers of intermediate goods, the latter in particular. The analysis of marginal effects shows that being an exporter increases the probability to perceive some sanction related risks by 20%, while being an exporter – by 14%. The import of equipment is less significant though it increases the probability of risk perception by 9%. It should be stressed that this result is not very reliable as all of the indicators, namely exports, the import of equipment and the import of intermediates, are strongly correlated. Thus, additional research is needed to verify the relatively stronger impact of intermediate import on risk perception.

Overall risk perception increases with the distance from the technological frontier: having the tech level of the world average increases the probability of risk perception by 13%, having the level "of the best domestic practice" – by 15%, and the average for domestic producers – by 17%, though the statistical difference between these three categories is not significant. The exception to this trend are firms reporting a very low level of technology (below the national average), who seem to be less aware of sanction related risks. This is probably due to their backwardness: they are probably working in specific domestic niche markets and 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 transnationals working in Russia (the sample average is 35%).

Innovating firms are more sensitive to sanction related risks, probably because the introduction of a new product, which we selected as an indicator of innovation, is often linked to imported intermediates and/or equipment.

Foreign ownership does not seem to be important for risk perception whereas the existence of a foreign strategic partner significantly increases risk perception (by 13%). The presence of the state among owners significantly increases risk awareness: being state owned (fully or partly) increases the probability of risk perception by 27%. This is undoubtedly due to the actual sanction design with only state-owned firms being "blacklisted". If the firm belongs to a group of companies it foresees risk less often, though the coefficients before the "Holding" dummy while being always negative are mostly insignificant. We suppose that this negative sign reflects the "not my baby" attitude of daughter-companies' management to sanctions as being a problem for "headquarters".

The last sustainable result worth mentioning is the dynamics of risk perception pending on the dates of interview. We see that in all the specifications the perception of risks are significantly higher for the second period (i.e. August, 2014) and even more higher for the third period (i.e. September-October, 2014) in comparison to 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 sanction related risks would be 21% higher than in June-July.

Conclusions and directions of future research

In this paper we tried to identify the features of firms that make them more sensitive to economic sanctions introduced by the EU against Russia in 2014. Our main hypothesis (H1) presumes that globalized firms are more susceptible to sanctions. We did discover empirical evidence that firms involved in foreign trade and especially those involved in export activity and/or in importing raw materials and components, more often feel themselves to be endangered by sanctions. While other globalization indicators such as foreign ownership and foreign partnerships display predictable signs, the evidence for them is less reliable. Foreign ownership and strategic partnerships seem to increase the risk perception only of larger firms (of over 250 employees) and for the overall sample but not for smaller firms. On the whole we believe that our first hypothesis is supported by the data.

Second, we supposed (H2) that advanced firms feel more endangered by sanctions. On this hypothesis the results are mixed. On one hand we found out that more innovative firms do perceive risks more often. On the other hand, our estimations suggest that firms closer to the technological frontier are less concerned about sanctions than those lagging behind, with the exception of the least technologically advanced firms. It may be that those firms who are closer to the frontier had already finished their modernization programs before the current geopolitical crisis and, thus, are less concerned about the consequences of possible restrictions.

Third, we presumed that the "amount of sanctions" matters, i.e. the perception is more acute for the respondents interviewed at the later stages of data collection when additional sanctions have been introduced. This hypothesis has been supported: in all of the specifications the time period of interviewing is significant and positively related to risk perception.

It is also worth pointing out that the existing trade links with both Ukraine and EU countries do increase the awareness of sanction related risks. Further to this, our results show that if we include Ukraine and EU trade in the model, the factor of globalization, while remaining positive, loses statistical significance. In other words, globalized firms not involved in trade relations with these two regions seem to be no different to their non-globalized counterparts.

It will be up to future research to verify the results obtained through empirical analysis of quantitative data on the evidence of the in-depth interviews with the top-managers of manufacturing firms which we collected during the same period of time. Another promising area to strengthen our conclusions lies in a more nuanced investigation of risk perception based on media statistics. We would like to incorporate characteristics of firms' regional institutional environments in our analysis, with which our respondents could also take into consideration as an additional constraint in evaluating their firms' sustainability and opportunities for doing business under sanction.

Acknowledgements

The authors are grateful to participants of the first World Congress of Comparative Economics held at University Roma Tre on June 25-27, 2015 (Rome, Italy) for their fruitful discussion of this research.

References:

1. Araújo B. C., Bogliacino F., Vivarelli M. (2011) Technology, trade and skills in Brazil: Some evidence from microdata. Università Cattolica del Sacro Cuore, Dipartimenti e Istituti di Scienze Economiche (DISCE). Working Paper N 1171.
2. Bloom N, Draca M, and Van Reenen J, (2011) Trade induced technical change? The impact of Chinese imports on innovation, IT and productivity. *NBER Working Paper* No.16717
3. Békés, Gábor, László Halpern, Miklós Koren and Balázs Muraközy (2011) "Still standing: how European firms weathered the crisis" - The third EFIGE policy report. *Bruegel Blueprint* 15, 55 pages.
4. Bøler E. A., Moxnes A., Ulltveit-Moe, K-H. (2012) Technological Change, Trade in Intermediates and the Joint Impact on Productivity. *CEPR Discussion Papers* N 8884.
5. Dosi, G., Lechevalier, S. and Secchi, A. (2010). Introduction: Interfirm heterogeneity – nature, sources and consequences for industrial dynamics. – *Industrial and Corporate Change*, Volume 19 (6): 1867-1890.
6. Drezner D. (1998). Conflict expectations and the paradox of economic coercion – *International Studies Quarterly*, (42), p. 709-731.
7. Drezner D. (2003). The hidden hand of economic coercion. – *International Organization*, (57), p. 643-659.
8. Fariñas J. & Martín-Marcos A. (2010). Foreign Sourcing and Productivity: Evidence at the Firm Level. *The World Economy*, Wiley Blackwell, vol. 33(3), pages 482-506, 03.
9. Golikova V., Kuznetsov B. (2013) Participation in domestic and foreign networks as a factor driving innovations: an empirical analysis of Russian manufacturing firms. University of Barcelona. *SEARCH Working Paper* N WP4/29
10. Gonzalez, A., Iacovone, L. and Subhash, H. (2013). Russian volatility. Obstacle to firm survival and diversification. – *Policy Research Working Paper* 6605, September, 34 pages.
11. Grossman, G.M. and Helpman (2015) E. Globalization and Growth. *American Economic Review*: Papers and Proceedings, 105 (5): 100-104.
12. Groot H., Mahlmann J. (2013). The effects of outsourcing on firm productivity: Evidence from microdata in the Netherlands, *CPB Discussion Paper* 250, CPB Netherlands Bureau for Economic Policy Analysis.
13. Hovi, J., Huseby, R. and Detlef, S. (2005) When do (imposed) economic sanctions work? *World Politics*, 57 (4), p. 479-499.
14. Hufbauer, G., Schott, J., Elliott, K. (2007). Economic sanctions reconsidered. 3rd Edition. Peterson Insitute for International Economics.
15. Keshari P. K. (2013) Efficiency spillovers from FDI in the Indian machinery industry: a firm-level study using panel data models. University Library of Munich, Germany. *MPRA Paper* N 47070.
16. Krustev, V.L. (2010). Strategic demands, credible threats, and economic coercion outcomes. *International Studies Quarterly*, 54(1), p. 147-174.
17. Morgan, T.P., Bapat, N., Krustev, V. (2009). The threat and imposition of economic sanctions, 1971-2000. – *Conflict Management and Peace Science*, 26(1), p. 92-110.

18. Russian Statistical Agency 2009 Social and economic situation in Russia in 2009. Available from: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1140086922125 (In Russian). [Accessed 9 may 2015].
19. Russian Statistical Agency 2014 Social and economic situation in Russia in 2013. Available from: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1140086922125 (In Russian). [Accessed 9 may 2015].
20. Rosstat (2014). Russian manufacturing, p. 113.
21. Russia Economic Report. The Dawn of New Economic Era? (2015). The World Bank Group, April. N 331:1-52.
22. Sabirianova, K., Svejnar, J. and Terrel, K. (2012) Foreign Investment, Corporate Ownership, and Development. Are Firms in Emerging Markets Catching up to the World Standard. *Review of Economics and Statistics*, 94 (4), pp.981-999.
23. Simachev Y.V., Yakovlev A.A., Kuznetsov B.V., Gorst M. Y., Daniltsev A.V., Smirnov S.N., Kuzyk M.G., 2009. An Assessment of Policy Measures to Support Russia's Real Economy Vol. 102. Bremen : Forschungsstelle Osteuropa an der Uni Bremen.
24. Torvinen P., Podmetina, D., Hinkkanen, J. and Väätänen, J. (2014). External technology acquisition in Russian firms. *International Journal of Procurement Management*. V.7(3), 2014: 257-278.
25. Woo J. (2012). Technological Upgrading in China and India: What Do We Know? *OECD Development Centre Working Papers* N 308.

Kuznetsov Boris

NRU Higher School of Economics , bkuznetsov@hse.ru

Any opinions or claims contained in this Working Paper do not necessarily reflect the views of HSE