The effects of the increasing internationalisation on innovation, technological upgrade and productivity of manufacturing firms have rarely been considered in previous research and are of especial interest for the developing and transition economies, which mostly base its economic development on lower salaries and investments costs. This issue is crucial to shed light on the policy debate over the nature of structural weakness that prevent European transition economies from generating competitive advantage out of their own research and innovation efforts.

This policy brief focuses the attention on the effect of internationalisation on innovation in the cross border manufacturing sector with the participation of Russian companies. The analysis investigates how Russian manufacturing firms respond to international trade with product innovations, R&D expenditures and technologies’ upgrade. The discussion is guided by the theoretical models for heterogeneous firms engaged in international trade which predict that more productive firms generate higher profit
gains, therefore they are able to afford high entry costs, while trade liberalization encourages the use of more progressive technologies and brings higher returns from R&D investments. We test the theory using a panel of manufacturing Russian firms surveyed in 2004 and 2009, and use export and import entry indicators to identify the causal effects on various direct measures of technologies’ upgrade.

This policy brief forms part of SEARCH’s policy brief series. It contains key observations on how to understand the effects of internationalisation on innovation in the manufacturing sector in the case of transition economies.
EVIDENCE AND ANALYSIS

There is strong evidence that, as predicted by the theory, the Russian manufacturing firms self-select for export and import by size and productivity. Moreover, productivity advantage prior to international trade entry is much stronger for exporters than for importers. Respectively, the self-selection effect is found to be higher for importers of machinery than for importers of intermediaries – raw materials and components. Continuous traders – those who exported or imported materials/equipment in both years - are significantly more productive than non-importers. But the group of new importers of input - firms which started to import between 2005 and 2009 - does not differ by productivity from those who never imported.

The econometric analysis of the panel survey data indicates the relevance of the learning effects for exporters: the probability of a firm to start financing R&D and introducing new product/technology is significantly higher for this group than for non-exporting firms. We also found that the learning effects for importing firms are higher than for exporters and seem to be higher for those firms which import technological machinery than for importers of raw materials. These results are consistent with the empirical research for other countries, and show that in general the relationship between export, import and innovation for Russian firms is similar to what is observable in other opening economies.

In addition we observed the difference between continuous exporters and new world market entrants in their decision to innovate. Thus firms engaged in exporting activities in both periods of observation significantly more often decide to invest in R&D, and perform product and process innovations than recent exporters. This may suggest that technological learning resulting from trade needs time.

As documented in many other empirical surveys in Russia, we didn’t find any evidence of the link between innovations and competitive pressure. This suggests that exporting firms acquire knowledge as they interact with their foreign clients, and raise funds for innovations when export increases the market share and returns to scale, while...
increased competition does not yet provide the mechanism for learning from export.

The study reports some evidence of complementarity between import of raw materials and import of technology. The probability for a firm to introduce new product is higher for firms which had initially high share of imported raw materials and entered import of machinery. Thus, we see that the import of machinery provides the quickest and the strongest impact on innovation which may have implications for economic policy of Russian government. So far import of capital equipment and input was significantly mistreated by the policy. Custom’s duties and their administration were reported in our 2009 survey as a serious constraint to business by 46% of continuous R&D spenders as compared to 27% among non-spenders.

Besides the favorable influence of foreign trade on innovation activity we have found some evidences of the importance of other types of communications – networking activity of firms. Our research indicates that active creation of partnership relationships between firms positively impacts some of the innovation activities. Both foreign and domestic partnerships positively influence technological innovations in terms of R&D, new products and new technologies. However, the domestic partnerships are more strongly associated with innovations than the partners in the foreign networks. The impact of new foreign partners is strongest for R&D spending compared to the impact of new technology and new products. Foreign co-owners do not influence innovations directly. However, the presence of foreign owner among the stockholders strongly increases a chance of acquiring new foreign partner(s), which, in turn, is a positive factor for innovations. Yet, the presence of state owners directly, positively influences R&D expenditures and the implementation of new technologies (though not new products), but has virtually no impact on formation of partnerships. Other significant factors are foreign ownership, i.e., FDI and export activity, proving that both FDI and exports are evident channels for searching for new partners. Export both to and outside of the CIS countries are positively related to new foreign partners. Other factors
that increase the chance of acquiring new foreign partner in most specifications are associated with the location of a firm – location in Moscow or in the regional capital is positively related to the appearance of new foreign partners.

The likelihood of appearance of new domestic partners is related to the initial competitiveness level (measured by self-estimation of the top managers). This is evidence that leaders formed their partnership networks prior to the period surveyed, while catching up firms actively searched for partners inside Russia to increase competitiveness. Firms belonging to a group (holding) are less likely to form partnerships.
POLICY RECOMMENDATIONS

INTERNATIONALISATION AS A CHANCE FOR RUSSIA

This analysis suggests that Russia should reveal the potential of internationalization to stimulate industrial innovation through effective policy making and institutions building.

Business is interested not only in direct and indirect incentives to innovate. It wants political frameworks in which it can efficiently profit from reduced global and local uncertainty, reduced barriers to innovations and trade, and integrated international production and trade.

Government could play an active role in promoting innovation via internationalization avoiding, however, discriminatory practices. In terms of economic policy the strong self-selection effects for exporting firms indicate that the entry barriers to foreign markets and initial fixed costs needed to overcome them are higher than in other countries. Policy measures aimed at lowering those barriers could significantly facilitate the export growth, in particular in currently non-exporting industries, and will help to diversify Russian manufacturing export. The high self-selection effects found for importers of equipment show that a lot of relatively small and less productive firms are cut from the global sources of modern technologies and this fact impedes their opportunities for modernization and closing down the productivity gap with the domestic leaders as well as with the foreign companies. Thus, the state policy should be aimed at lowering barriers not only for exporters but for importers as well, including the development of institutions to inform producers about the opportunities and helping them to establish contacts with foreign suppliers.

THE ROLE OF TRADE COSTS

Trade costs should be lower in order to increase firm productivity gains in manufacturing. The trade costs associated with geography, remoteness, cultural and language gaps are hard to eliminate. On the other hand improvements in the artificial trade barriers, like strategic industries prohibited for trade and FDI, export tariffs or poor transport and communications
infrastructure can significantly help to integrate Russia further into the trade system.

**THE ROLE OF IMPORT**

Import is usually perceived by the governments in the context of dependence on imports, protection of domestic producers that are not capable to compete effectively with import. The analysis suggests that it is advisable to distinguish between imports of ready consumer goods and import of intermediaries, raw materials and machinery. In general, we find positive effects of firms’ participation in global value chains on their innovation activity. And this has a certain policy implications. In order to increase competitiveness of domestic firms their international trade activity should be stimulated. Empirical finding of the positive effects of the intermediate inputs and machinery import on firm propensity to innovate suggests that this import should be supported in order to increase the probability for a firm to introduce a new product. At least it should not be prevented by creating additional non-tariff barriers and by restrictive regulation of state procurement and procurement of state-owned or state-controlled corporations. The main findings show that the import of machinery provides the quickest and the strongest impact on innovation. While the policy measures facilitating modernization of Russian industrial enterprises on the base of imported technologies may have short-term negative effect on domestic machinery-building sector, findings indicate that this protection may have negative impact on innovation strategies for firms and their long-term competitiveness.

**THE ROLE OF EXPORT**

In addition, export should be supported because it is stressed the relevance of learning effects for continuous exporters which are much more likely to start financing R&D and introducing new products or new technologies than new entrants or non-exporting firms.

**THE FIRMS’ SELECTION PROCESS AND RISKS**

The policy should also consider the disadvantages and risks associated with increased international participation of the Russian manufacturing firms. For
example, the estimated lowering of import tariffs as a result of WTO commitments are higher than cuts in export tariffs, and such industries under consideration as timber, pulp and paper, light industry and food processing are expected to meet the highest growth of competing consumer goods’ import. Moreover, greater openness to trade and investment may become disruptive for the underperforming firms staying far from technological frontier. Therefore it is important to make trade and innovation policy interrelated and consistent with the broader economic objectives.

To facilitate the international networking of firms the state should first of all create a legal prerequisites for such long-term cooperation schemes. The lack of trust between private firms is one of the main obstacles for establishing such links and the state can do a lot to overcome it. The possible policy measures should include improvements in Russian juridical system for better property rights protection, in particular in the field of intellectual property rights, contract enforcement, etc. Also the state should be less prejudiced against strategic partnerships between Russian firms and foreign partners and balance the anti trust policy.
Research Parameters

Introductory statement

The current Policy Brief incorporates the policy implications related to the SEARCH WP4.4 (V. Golikova, K. Gonchar, B. Kuznetsov) about the effect of internationalisation on innovation in the manufacturing sector with the main aim of analyzing the effects of internationalisation on innovation in the cross border manufacturing sector with the participation of Russian companies.

Objectives of the research

The main objectives of the research were to:
- understand the mechanisms of technology diffusion, upgrading and new product development caused by increased participation of manufacturing firms in international trade;
- verify if really the quality of economic growth in Europe depends on the qualities of all trade and investment partners involved;
- examine if the increased participation in international trade can explain changes in firm’s decisions to innovate.

Methodology

The working paper is based on the data obtained through the two rounds of manufacturing industry survey, made in 2005 and 2009, using the method of face-to-face interviews with the top company managers. The panel sample is randomly stratified across industrial sectors and size group of enterprises. We employ different econometric models to test how decision to enter the international markets as exporter or importer affected the later decision to innovate. The discussion is guided by the theoretical models for heterogeneous firms engaged in international trade and modern growth theories which predict that innovations may be learnt and can contribute to growth.

Empirical testing of learning-by-exporting and learning-by-importing effects on the Russian data is scarce if not not-existing, and has the capacity to generate policy-relevant findings. The existing official statistics of trade and innovations, and empirical evidence based on other countries’ data is non-conclusive for understanding the relevance and mechanism of the above mentioned effects.
**PROJECT IDENTITY**

**Project name**
Sharing KnowledgE Assets: InteRregionally Cohesive NeighBorhoods (SEARCH)

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   Athens, Greece

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16. Hebrew University of Jerusalem – HUJI – Jerusalem, Israel

17. The Scientific and Technological Research Council of Turkey – TUBITAK – Turkey

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Collaborative Projects

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**Website**

www.ub.edu/searchproject

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**Further Reading**


López-Bazo E., Motellón E. “Firm exports, innovation, … and regions. Lessons from Spain”, SEARCH WP4.19

Di Guardo M. C., Paci R. “Firms’ transactions and knowledge flows in the European Union’s Neighboring Countries” SEARCH WP4.23

Kuznetsova T., Roud V., Bredikhin S. “The collaboration activities in the innovation...
system of Russia” SEARCH WP4.24