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A dawn for outward R&D investments from Russia?

Electronic Publications of Pan-European Institute 5/2010

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Pan-European Institute**

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The author wishes to express his sincere gratitude for the financial support from the Academy of Finland (grant 118338).

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INTRODUCTION

“We must start modernizing and technologically upgrading the entire production sphere. This is an issue of our country's survival in today's world”

- *Dmitry Medvedev, State-of-the-nation address, 12 November 2009*

Russia's President Dmitry Medvedev identified technological and innovation development as the key priorities of his presidential term. Shortly before his election, he outlined the ambitious “Four I's” (Institutions, Infrastructure, Innovation, Investment) -agenda, which called for steering Russia away from its energy exports dependency. The repetitious calls by Medvedev to modernise Russia's economy has led the international media to feast on the contrast between the claimed agenda of Prime Minister Vladimir Putin, Medvedev's predecessor, of turning Russia into an energy superpower by consolidating the state control over the economy and what is characterised as a more modern approach of Russia's current president.

When praising the visible divergence in economic policies of Medvedev and Putin, certain fundamentals of the new approach tend to be overlooked. No matter how prestigious the declarations of modernisation, the building blocks used for creating the new, innovative economy reflect the heavy burden of the past and the system which Medvedev himself helped to build not so many years ago. Medvedev's prior leadership of Gazprom and his responsibility for Russia's national energy during Putin's presidency mean that Medvedev currently faces the challenge of replacing the system he helped shaping with a new one. In addition, many of the current high-tech projects – the essential building blocks of the anticipated new economy – were laid down during Putin's presidency by using Russia's energy resources, the most powerful economic and policy tool at hands. Hence, depicting the current Russian president as a father of the recent quest for innovation and highlighting the contradiction between the approaches of the two presidents appears futile. The need for modernisation and economic restructuring has certainly been realised by Russia's political leadership already before the current president; rather is there now a resurging belief that the window of opportunity for modernisation and innovation is finally opening. The key questions that arise are how is the perceived opportunity grasped and how are the ambitious goals reached? In addition, what are the practical steps to be taken?

Ultimately, two complementary, or contrasting, depending on one's viewpoint, approaches to economic modernisation prevail. One is to encourage and create native or inborn innovations, while the other is to acquire the leading technology and innovations from outside – a motive allegedly behind several foreign acquisitions by Russian companies already. While notably faster and, in many instances, more efficient, the later approach can however be criticised as still leaving Russia in a catching-up phase of technological development and not so much bringing about structural changes in the economy.

Notwithstanding the criticism, the Russian political leadership has visibly encouraged major (state-owned) Russian companies to acquire technology-intensive foreign assets currently on sale due to the global financial crisis in order to update Russia's economy with leading technologies. The most prominent, albeit the most notorious, recent example of this is the nearly sealed acquisition by Sberbank of a controlling stake in Opel, a German car manufacturer put on sale by its troubled parent company, GM. Backed by Russia's highest political level and viewed as an opportunity to buy cheaply into one of the most innovative European carmakers and to stimulate technology transfer to the suffering Russian car industry, the deal fell through at the very last minute after GM's withdrawal. Despite the failure in the Opel deal, however, other high-tech acquisitions are planned as reflected by the Russian government's decision rebuild the overseeing body for foreign acquisitions by Russian companies.

The current report seeks to depict the scope and potential impact of outward R&D investments by Russian corporations. To set the context, the report first outlines contributions from earlier literature on outward R&D investments from developing and transition economies with adoptions to the Russian case. Subsequently, the questions addressed by the report include: what is the current extent of such acquisitions, and what would be the role of outward R&D investments in modernising Russia's economy? In addition, what type of policy efforts are required from the Russian Government in order to increase and gain more positive spillover effects from outward R&D investments?

Since straightforward R&D investments from Russia are notably scarce to date, the key part of the report consists of policy discussion reflecting the experiences from other developing and transition countries.

Turku, 19.2.2010

Peeter Vahtra

OUTWARD R&D INVESTMENTS FROM TRANSITION AND DEVELOPING COUNTRIES – AN INSIGHT INTO EARLIER LITERATURE

Technology and R&D investments and their spillover effects have attracted notable research attention. However, the literature on technological spillover effects largely emphasises knowledge flows from transnational enterprises (TNCs) to host country firms, often ignoring the impact of potential technological upgrade in investing country. In particular, while often concentrating on the effects of foreign trade, the research on contribution of FDI to technology upgrade in investing country remains rather fragmented. In the context of Russia, most research efforts have been focused on the effect of FDI inflows and spillover effects. However, it is only very recently that, along with the substantially growing outward FDI flows from Russia, scholars have turned their interest towards the role of outward FDI and its impact on domestic technology development and economic gains, or to be more punctual, the apparent lack of these in the Russian case. Despite its late comer position, the Russian Government has not initiated official strategies or set formal objectives of technology upgrading and acquisition of foreign know-how until very recently. Even now, the state support has largely concentrated on state-owned conglomerates viewed as the drivers of technological modernisation and innovation. In order to analyse the potential impact of outward FDI on technology development in Russia's context and thereby the consequences of rather short-sighted OFDI policies of Russia, this report utilises the earlier models that appear in the literature on R&D investments from developing and transition economies¹.

The importance of international R&D spillovers has been widely recognised since early the 1990s with the development of growth models by Romer (1990) and Grossman and Helpman (1991) among others. To a large extent, the first models were limited to trade and R&D spillovers and neglected the role of FDI on spillovers of investing country. The shift toward outward FDI, linkages cross-border knowledge transfer was initiated by Konut and Chang (1991) and Jaffe *et al.* (1993), establishing several key concepts in the research field, such as the concept of inverse technological transfer, citing the evidence that a large fraction of Japanese direct investment in the USA was restricted to industries where the Japanese companies lagged behind their US counterparts. Blomström and Kokko (1997) further

¹ Due to the apparent lack of (academic) literature on outward R&D investments from Russia, the experiences and literature from other peer countries are used and, upon possibilities, adopted to suit the analysis of outward investments by Russian TNCs.

established that spillovers occur when local firms benefit from the foreign investor's superior knowledge of production technologies or markets, without having to incur a cost that exhausts the whole gain from the improvement. On the other hand, spillovers may also occur when foreign investors take advantage of local technological capital and human capital that would not exist or would obtain at a higher cost in home market (Peng 2008). In turn, these findings have further contributed to the literature of technology-seeking investments of emerging market firms. Technologically less advanced enterprises from those markets may actively seek technological spillovers directly or indirectly, by locating close to the headquarters and production facilities of their more advanced competitors (Jaffe *et al.*, 1993).

The antecedent academic literature on outward R&D investments from emerging economies has largely concentrated on the particular case of China (e.g. Xian & Rui, 1999; Jiang, 2000), whose outward FDI is led by predefined governmental strategy emphasising technology development gains from outward FDI. For instance, Jiang (2000) argues that domestic companies likely benefit from spillovers by establishing R&D centers or high-tech companies in technologically more advanced countries, which helps them to develop their own innovative products. Ruman and Li (2007) argue that Chinese TNCs are likely to become knowledge seekers as they go abroad given that they have few firm-specific advantages that their foreign competitors enjoy. Along this line of thought, very much the same is true for the Russian TNCs, which could greatly benefit from technological upgrade provided by FDI, given their comparably lower levels of technological advancement. Empirical evidence from other countries thus suggests that outward FDI may greatly help Russian TNCs acquire more advanced technology, and thus improve their R&D capabilities.

With the phenomena of increasing cross-border M&As undertaken by Russian TNCs in recent years, the potential technology-sourcing FDI by Russian companies becomes an important topic. Empirical evidence from the Chinese case (Zhao & Liu, 2008) suggests that outward FDI by means of M&As may help emerging country TNCs acquire additional technology that is relevant to their core technology, and thus could improve their R&D capabilities. This could be particularly relevant for privately owned Russian companies in China, who consider acquisition of complementary technology as a key motive for undertaking cross-border M&As.

Although it is widely acknowledged in the literature that outward FDI has positive technological spillover effects to investing countries, the question remains, how do such effects materialise?

Earlier literature on outward R&D investments suggests four key mechanisms through which the parent company (home country) may benefit from such investments (see Zhao & Liu, 2008).

Sharing of R&D expenditures: Outward investments may allow foreign companies in host countries to take advantage of spillovers by domestic companies and thus lower their own R&D expenditures. In particular, the sharing of R&D expenditures is likely to occur when firms invest in R&D intensive locations. On the other hand, firms may reduce unit cost of R&D through market expansion and economies of scale.

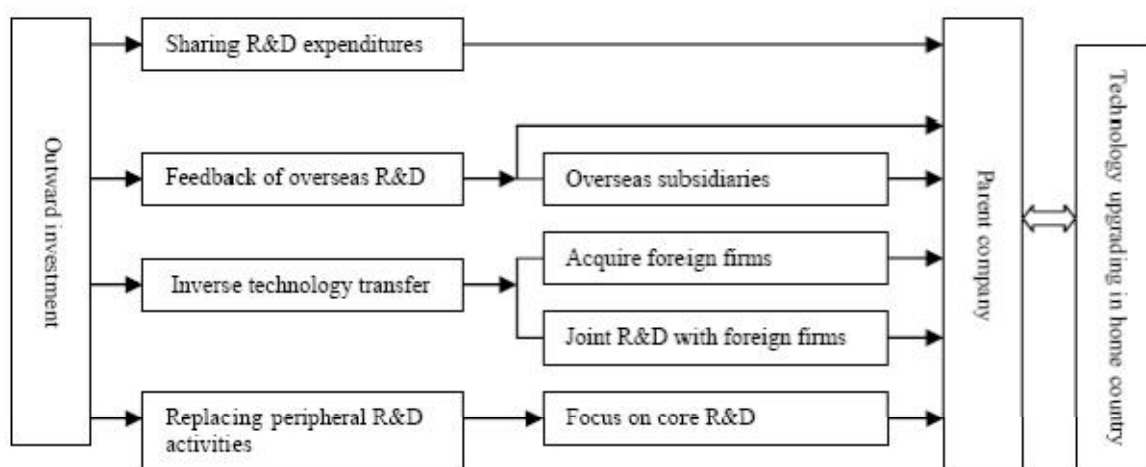
Feedback of R&D outcomes: Outward FDI can influence development of home country technology by sending new technology developed by overseas subsidiaries to parent companies. Similarly, foreign subsidiaries of TNCs may serve as listening posts for the home base (Frost; 2001); these subsidiaries should improve the absorptive capacity of the TNC home base for knowledge produced in the host countries (e.g. Dunning 1990). Earlier literature also suggests that new technologies developed by overseas subsidiaries may be better adapted to consumer preference of host countries, and thus strengthen competitive advantages of foreign TNCs. Further research evidence suggests that TNCs are as good at transferring knowledge from their subsidiaries to their home base as from the home base to the subsidiaries (Singh, 2004). Earlier research also demonstrates that R&D activities of overseas subsidiaries not only transfer technology to parent companies, but also have spillover effects to other subsidiaries of the same parent company.

Inverse technology transfer: TNCs may acquire inverse technology transfer through FDI in technologically more advanced countries (developed countries). Inverse technology transfer often occurs in the form of cross-border M&A. Through M&A or joint R&D, technologically less advanced firms may monitor new technological trends and transfer new technologies and know-how to home countries, thus promoting upgrade in home countries. It is a common practice for transnational corporations to acquire successful foreign companies in order to transform potential competitors into partners and to acquire research capabilities and (technological) outcomes, strengthening its own competitive position.

Replacement of peripheral R&D activities: Parent companies may outsource peripheral R&D activities and/or relocate them overseas in order to enable them to focus on key R&D projects, thus strengthening their core innovative capacity. The results of an extensive survey by

UNCTAD (2005) suggest that it is important for technology-oriented companies to invest in places close to pioneering R&D. Factors such as existence and availability of skilled labour clusters and low costs of overseas R&D have been seen among most attractive investment incentives among the senior managers of TNCs. The four mechanisms creating technological spillover effects are depicted in Figure 1.

Figure 1 Technological spillover mechanisms



Source: Adopted from Zhao & Liu, 2008.

The above mechanisms of potential spillovers from R&D investments are mainly derived from evidence of TNCs from developed countries. Hence, applications of such mechanisms to the case of developing and transition economies in general and Russia in particular are rather limited to date. Along with increasing cross-border mergers and acquisitions by Russian corporations in recent years, the topic of technology-seeking OFDI from Russia has, albeit slowly, raised its head in academic discussion. In order to assess the potential spillover effects in the Russian case, a following division is made between the investment target locations.

In developed economies, the *inverse technology transfer* and *feedback of R&D outcomes* are most likely to take place. As the Russian companies expand to developed markets, the absorption of R&D factors is more likely than from developing economies. Naturally, the initial motivation behind the investments is definitive for occurrence of possible technology transfer – market-seeking investments in low-tech industries of developed countries are not likely to yield

significant absorption of R&D factors. The earlier research suggests that inverse technological spillover effects exist when OFDI takes place and home country benefits from such technological flows. Inverse technological spillovers occur when multinational enterprises engage in direct investments and transfer technology from overseas subsidiaries to parent companies. To date, empirical evidence on such technology transfer is virtually non-existent in the Russian case, although it would be reasonable to assume that a certain amount of transfer takes place inside the largest Russian foreign investing conglomerates also in the lower-tech industries. In addition, given the fact that the Russian OFDI has surged over the past decade with a strong notion towards technologically advanced countries and regions, (see Chapter 3), the potential for spillover effects and technological upgrading as well as and productivity increases can be easily identified.

In less developed markets there is relatively lower potential for inverse technological spillovers, but the Russian companies would be more likely to seek *sharing of R&D expenditures*, especially what comes to investments in R&D-intensive developing markets such as China and India. Potentially, Russian TNCs might also engage in *replacement of peripheral R&D activities* in the future, transferring some of their technology development activities in research-intensive locations with comparable low labour cost levels. Outside the R&D-intensive developing country locations, the Russian OFDI is mostly motivated by market- and resource-seeking objectives, thus lowering the potential for technological spillovers. As of current, we lack empirical evidence of any major technology- or R&D-seeking investments by the Russian companies in the CIS, for instance.

In following, the key characteristics of Russia's OFDI are presented in order to assess the scope of outward R&D investments from Russia and their spillover potential in the case of Russian TNCs.

THE ROLE OF R&D INVESTMENTS IN RUSSIAN OFDI

Outward investments by Russian TNCs – general assessment

Between 2000 and 2008, the Russian OFDI stock grew more than tenfold, amounting to \$ 203 billion, by the end of 2008 (Figure 2). Without the deteriorating effects of the global financial crisis, the figure would be substantially higher (standing at \$ 370 billion in the end of 2007). The 2008 drop was mainly due to negative valuation changes of Russian companies' foreign assets, amounting to \$ 220 billion in 2008. The actual value of new OFDI transactions from Russia increased to \$ 53 billion in 2008. Hence, Russia stands out as one of the few economies posting growth in OFDI flows amidst the global economic crisis.

Figure 2 Russia's OFDI stock, 2000-2008



Source: Central Bank of Russia 2009.

The aggregate growth in Russia's OFDI is reflected in the performance of the country's leading TNCs. During the past six years, the value of the foreign assets of Russia's 12 leading TNCs has grown more than tenfold², amounting to nearly \$ 80 billion by late 2008 (Table 1).

² During the last months of 2008 and beginning of 2009, the value of assets of global (and Russian) multinationals has decreased notably, which is not indicated by the above figures.

Table 1 Russia's leading TNCs by foreign assets in 2008.

Company	Foreign assets, \$ bln	Principal host countries
Lukoil	23 512	Baltic States, CIS, Finland, USA, Venezuela
Gazprom	12 132 ³	The majority of the EU and CIS countries, Turkey
Norilsk Nickel	8 965	Botswana, South Africa, USA
Renova	8 200	Switzerland, Italy, USA
Basic Element	7 350	Australia, Kazakhstan, Nigeria, USA
Severstal	4 546	Italy, USA
Evrax Holding	4 450	USA
RusAl⁴	3 925	Armenia, Australia, Guinea, Kazakhstan, Nigeria
Altimo	3 825	Armenia, Georgia, Kazakhstan, Tajikistan, Turkey, Ukraine, Uzbekistan
Novolipetsk Steel	3 250	Belgium, France, Italy, USA
Mobile TeleSystems	2 000	Belarus, Ukraine, Uzbekistan
VimpelCom	1 350	Armenia, Georgia, Kazakhstan, Ukraine, Uzbekistan

Sources: Company information, author's calculations.

The motives of Russian corporations' outward investments vary significantly. In addition, the drivers of Russia's OFDI have evolved considerably during the past decade, typically towards establishing control over international value chains instead of mere market- or resource-seeking investments. Although the traditional outward FDI motives of Russian TNCs have been the search for new markets and resources, the more recent investments show increasing interest towards strategic asset-seeking acquisitions. Table 2 below outlines the largest OFDI projects by Russian corporations during 2006-2008. The listing depicts a clear division between the natural resource-based corporations (oil & gas and metal companies) and industrial and financial conglomerates (Renova, Altimo). The first tend to look abroad for extensions to their resource bases and strengthening their value chains as well as securing foreign market access as the latter have more recently started to seek overseas technological know-how. Renova in particular has recently stood out as attempting to acquire modern technologies for developing its operations in Russia.

³ The figure includes the combined value of the assets of some 20 subsidiaries of Gazprom, on which the information has been found. The authors estimate the actual value of all Gazprom's foreign assets to be roughly USD 15 billion after strong devaluation during the past year.

⁴ Part of Basic Element -conglomerate

Table 2 The largest foreign acquisitions by Russian companies, 2006-2008.

Buyer	Target company	Target country	Sector	Share, %	Value, \$ mln
Norilsk Nickel	LionOre Mining	Canada	Metals & mining	100	5 650
Evrax Holding	IPSCO Canada	Canada	Metals & mining	100	4 200
Altimo	Turkcell	Turkey	Telecommunication	13	3 200
Gazprom	Beltransgaz	Belarus	Oil & gas	50	2 500
Evrax Holding	Oregon Steel	USA	Metals & mining	100	2 300
Evrax Holding	Palmrose	Ukraine	Metals & mining	100	2 100
Lukoil	Nelson Resources	Kazakhstan/ Canada	Oil & gas	100	2 000
Lukoil	ISAB	Italy	Oil & gas	49	1 850
Renova	Oerlikon	Switzerland	High-tech	44,75	1 600
Mechel	Oriel Resources	UK	Metals & mining	47	1 500
Norilsk Nickel	Gold Fields Ltd	South Africa	Metals & mining	20	1 200
Severstal	Esmark	USA	Metals & mining	100	978
Severstal	PBS Coal	USA	Metals & mining	100	877
Gazprom	NIS	Serbia	Oil & gas	51	900
NLMK	Steel Invest and Finance	USA, Italy, Belgium	Metals & mining	50	800
Severstal	Sparrows Point	USA	Metals & mining	100	775
Renova	Sulzer	Switzerland	Machinery	32	725
Renova	Energetic Source	Italy	Electricity	80	700
Evrax Holding	Highveld Steel	South Africa	Metals & mining	79	678
Evrax Holding	Palini & Partoli	Italy	Metals & mining	75	620
Lukoil	SNG Holdings	Uzbekistan	Oil & gas	100	575
VimpelCom	ArmenTel	Armenia	Telecommunication	100	500
Severstal	WCI Steel Inc.	USA	Metals & mining	100	443

Sources: Vahtra 2009, company information, author's calculations.

According to the recent data by UNCTAD, the M&As by the Russian companies grew more than tenfold between 2005 and 2008, compared to the period of 2001–2004, from \$ 5.5 billion to USD 55.9 billion (Table 3). Most of the cross-border M&A, however, took place in the primary sector, which accounted for 60% of investments between 1997 and 2008. Manufacturing accounted for 23%, consisting mainly from machinery, metals and motor vehicles. The share of services was 18%, of which telecommunications was by far the most important sector. One should note that despite its notable growth over time, the share of traditional high-tech sectors of electrical and communications equipment is rather marginal accounting for less than 1% of the total investments between 2005 and 2008.

Table 3 Cross-border acquisitions by Russian multinationals, by sector/industry, 01/1992–06/2008, \$ million

Sector / industry	1992–1996	1997–2000	2001–2004	2005–2008
All sectors / industries	511	1,700	5,498	55,850
Primary	45	1,098	2,980	33,485
Agriculture, forestry, and fishing	-	-	5	-
Mining, quarrying and petroleum	45	1,098	2,976	33,485
Mining and quarrying	-	-	1,546	15,742
Petroleum	45	1,098	1,430	17,743
Secondary	451	146	661	13,430
Food, beverages and tobacco	-	90	9	2
Wood and wood products	3	-	-	34
Oil and gas; petroleum refining	-	7	161	589
Chemicals and chemical products	-	-	164	113
Metal and metal products	-	31	306	2,914
Machinery	6	-	17	7,575
Electrical and electronic equipment	-	2	-	453
Electronic equipment	-	2	-	217
Communications equipment	-	-	-	143
Transportation equipment	442	15	-	1,537
Motor vehicles	200	15	-	1,537
Services	15	456	1,857	8,935
Electricity, gas, and water	-	177	60	1,042
Construction firms	-	-	100	1,637
Hotels and casinos	-	-	2	468
Trade	-	235	536	350
Transport, storage and communications	15	13	1,106	3,880
Telecommunications	-	10	1,021	3,637
Finance	-	23	30	1,773
Business activities	-	2	23	116
Business services	-	2	19	250
Community, social and personal services	-	7	-	888

Source: UNCTAD 2009.

The recent years have also brought a change in geographical division of Russia's outward investments away from the traditional CIS region and towards the developed economies. On current estimation, more than three quarters of Russia's OFDI goes to the developed markets with the share continuously rising. As the Russian multinationals have gained on experience in international business, they tend to look beyond near abroad for acquisition targets. Besides Western Europe, Russian companies are increasingly active in the USA with several strategic investments in metal and machinery sectors, as well as in Africa with large-scale resource-

seeking investments. Regarding the geographical division of Russian OFDI, one should, however, note that the statistics are often somewhat biased due to large share of offshore investments and investment round-tripping. The continuously high rankings of countries such as Cyprus, Netherlands, and British Virgin Islands among the most popular destinations of the Russian OFDI serve as an indicator of these common practices.

Referring to the above, the UNCTAD M&A database indicates that the overwhelming majority of Russia's OFDI has gone to the European Union and the USA (Table 4). The domination of developed markets in the UNCTAD database is further due to the fact that the value of the deals in developed economies tends to be manifold compared to that in the CIS, for instance. As indicated by Table 4, however, also the value of the M&A deals in the CIS has grown substantially since 2000.

Table 4 Cross-border M&A purchases by Russian multinationals, by host country/region, 1992–2008, \$ million

Country / region	1992–1996	1997–2000	2001–2004	2005–2008
World	511	2,211	5,498	56,794
Developed economies	511	2,151	3,962	44,287
Europe	311	1,749	2,766	30,575
European Union	311	1,749	2,566	30,160
Austria	-	-	4	1,662
Belgium	-	90	-	-
Bulgaria	-	816	37	-
Cyprus	-	-	-	511
Finland	45	45	-	276
Greece	-	-	-	806
Hungary	6	6	-	177
Italy	-	-	-	1,280
Luxembourg	-	-	-	1,660
Netherlands	245	245	-	-
Romania	-	300	121	-
Slovakia	-	-	72	-
Slovenia	-	-	-	50
Sweden	-	-	-	4,652
United Kingdom	-	211	2,273	19,016
North America	-	170	1,195	13,247
Canada	-	-	68	7,937
United States	-	170	1,127	5,310
Other developed countries	200	232	-	465
Australia	-	2	-	461
Japan	200	200	-	-
Developing economies	-	-	-	3,210
Africa	-	-	-	250
Nigeria	-	-	-	250
Asia and Oceania	-	-	-	2,945
Turkey	-	-	-	2,006
China	-	-	-	786
Malaysia	-	-	-	92
South-East Europe and the CIS	-	61	1,536	9,297
Southeast Europe	-	-	303	257
Bosnia and Herzegovina	-	-	-	157
Croatia	-	-	76	-
Serbia and Montenegro	-	-	225	59
Commonwealth of Independent States (CIS)	-	61	1,233	9,039
Armenia	-	-	27	423
Kyrgyzstan	-	-	-	150
Russian Federation	-	47	990	5,614
Ukraine	-	13	199	2,769

The role of outward R&D investments

It is logical to assume the potential R&D investments to be targeted mainly towards the developed economies, in particular to absorb R&D factors and create inverse technology transfer (see Chapter 2). Investments in technologically more advanced (developed) countries have a potential to produce significantly higher positive spillovers and technological advancement than those in less-developed regions. Potentially, investments into developed markets further help investing companies to keep up with the latest industry trends and take advantage of the local (assumably more developed) infrastructure. In addition, collaboration with host country companies possessing developed technologies and know-how should greatly benefit the parent company. Looking at geographical division of Russia's OFDI, one might assume that the Russian companies have obtained the right course towards higher involvement in developed markets likely to produce higher positive spillover effects. The majority of Russia's OFDI is currently targeted to developed economies of the EU and the USA, creating notable potential for deriving positive R&D spillovers to the parent company. On the other hand, however, the sectoral analysis of Russia's OFDI indicates that the vast majority of outward investments have gone to the mineral extraction sector (Table 3).

The evidence of R&D investments by Russian companies thus remains notably scarce, a fact substantiated by the marginal share of traditional high-tech sectors in Russia's OFDI. It is therefore more likely that the possible R&D investments and subsequent spillover effects to the parent company and the home economy be in the traditionally low-tech and natural resource-based industries. Further, as the Russian OFDI remains concentrated in the hands of natural resource-based conglomerates, they can largely be seen as the major producers of outward R&D investments and their possible spillover effects.

As indicated by the list of largest OFDI projects of Russia's TNCs, the share of high-tech or R&D promoting investments is notably small. Up to date, only few financial-industrial conglomerates account for significant R&D-seeking investments. Russia's high-tech SME population is notably underdeveloped and accounts for a marginal share of innovation and technology development activities, let alone outward foreign investments.

The notably few recent examples of outward investments by Russian TNCs in high-tech sectors include (attempted) investments by the Russian investment company, Sistema. In 2008, the

Russian company entered the Indian mobile telecom and technology sector and 2009 saw an attempt to take over a German microelectronics company (Box 1).

Box 1 Sistema at the forefront of Russia's high-tech outward investments

Sistema is the largest public diversified corporation in Russia, managing companies in telecommunications, consumer services sectors and high technology-intensive industries. Sistema's subsidiaries are among the market leaders in several sectors, including telecommunications, technology, banking, real estate, retail, media, tourism and healthcare. The company was founded in 1993 and its total revenues for 2008 were \$ 15.8 billion with total assets exceeding \$ 35.0 billion at the end of 2008. Besides the Moscow stock exchanges, the company's shares are listed on the London Stock Exchange.

Sistema Shyam TeleServices (SSTL) is a joint venture company between Sistema and India's Shyam Group. Sistema is the majority stakeholder in the joint venture with a 74% stake. SSTL has licenses for providing mobile telephony services across India.

SSTL is looking to establish its position in the country by acquiring additional mobile technology development companies. Sistema has announced an estimated \$ 5-billion investment plan over a five-year period with the objectives to become a major player on the local market and advance its mobile service technologies.

Apart from establishing presence in India, Sistema has been on the forefront of Russia's high-tech investments also in Europe. In late 2009, the Russian investor was engaged in prolonged negotiations to buy stakes in a German-based microelectronics and semiconductor producer Infineon and daughter company Qimonda. According to the initial plan, Sistema was to buy a 51%-stake in the German high-tech producer for \$ 2 billion loaned from the Russian state-owned banks. It is noticeable that the negotiations over the deal have been concentrated on the highest political level instead of direct discussions between the companies. At the time of writing this report, the fate of the deal remains open, although the Russian investor has recently stated it might not be interested in the stake for its current price.

The potential acquisition by Sistema shares common characteristics with the recent bid of Russia's state-owned Sberbank and the Canadian company Magna, for the German carmaker, Opel, a subsidiary of General Motors, facing a bankruptcy procedure in the United States. For Sberbank and Russia this was seen as an excellent opportunity to buy cheaply into one of the

most innovative auto-makers in Europe, and a chance to stimulate technology transfer to the Russian car industry. The deal backed by the Russian and German political leadership, however, fell through on the last minute due to the GM's urge to hold on to Opel's technological know-how and, reportedly, due to the growing fear in the US company of losing part of its technological edge to the Russian competitor.

Both the Infineon and Opel deals were discussed on the highest political levels in Russia and Germany and enjoyed public support by the German chancellor and the president of Russia, who also confirmed having discussed potential partnership in the field of microelectronics and other high-tech industries. In addition, Russia's President Medvedev was quoted saying that the high-tech acquisitions such as Infineon and Opel would be exactly what Russia needs to improve the structure of its economy and provide protection during economic downturns.

The suspicions towards Russian investors again resurfaced in the case of the troubled Swedish carmaker, Saab, also on sale by GM. The US parent refused to sell Saab to a Dutch carmaker, Spyker, with connections to Russian investors. The deal was concluded only after the Russian investors pulled out from the Dutch company (see Box 2).

Box 2 General Motors suspicious of Russian investors

In late January 2010, General Motors signed a binding agreement with a Dutch company, Spyker, on selling the troubled Swedish carmaker, Saab, on the condition that the Dutch company divests itself of its key Russian investor, Vladimir Antonov, who controlled 30 percent of the company. According to the deal, Antonov, along with two other members of the Spyker supervisory board, will give up their seats after the Saab deal is finalised. The negotiations over GM's sale of Saab stretched out for several months, with both the management of GM and the Swedish government officials confirming that the Russian investor was the major point of contention in the deal. The price of Antonov's 4.6 million shares in Spyker, whose stock price has soared by nearly 150 percent since the beginning of the year, has not been publicly announced. Given the crucial role played by Antonov's stake in reaching the agreement, however, Spyker might well have overpaid for the 30 percent stake.

Financing for the deal was recently approved by European Union. The Netherlands-based Spyker Cars will pay \$ 74 million to GM for Saab, while the Swedish government will guarantee a loan of \$ 563 million from the European Investment Bank. GM will also get preferred shares worth \$ 326 million in the new company Saab Spyker Automobiles.

In the same vein, the GM management had previously expressed concerns about Russian involvement during negotiations with Magna and Sberbank over GM's Opel unit, in a deal, which was never completed. Industry analysts share the view that GM's fear was the same with Saab, that up-to-date engineering and technology will be disused, or even ultimately sold off by the Russian investor.

Based on the examples of Sistema and Sberbank, one may thus expect the R&D-seeking investments mainly to originate from the state-owned or –supported corporations. As recent examples from the car and machine building industries indicate, the Russian government has decided to encourage major Russian state-owned companies to acquire technology-intensive foreign assets. Therefore, despite the two recent setbacks, other acquisitions in Western technology companies are almost certainly planned, something reflected in the Russian government's recent decision to hire former chief of Morgan Stanley in Russia, Natasha Tsyganova, to oversee acquisitions of foreign assets by Russian companies.

Despite the fact that the visible evidence on outward R&D from Russia remain scarce, the leading Russian TNCs can nonetheless be seen to possess notable potential for R&D investments. The leading foreign investors from Russia include several metal and mining companies, which have established strong presence worldwide, including the developed

markets of the EU, the USA, Australia, and Canada. One may assume that the leading Russian steelmakers Evraz and Severstal as well as the world's largest aluminium producer, RusAl, have invested significant sums in technology development in the foreign subsidiaries. The steel companies' subsidiaries in the USA in particular reportedly serve to develop the technological know-how of the Russian parent companies, causing the inverse technology transfer to occur (see Chapter 2). In the same vein, the leading Russian oil producers Lukoil and TNK-BP have both acquired foreign service and oil field technology producers in order to enhance the technology development at home. In addition, the Russian energy majors are engaged in strategic partnerships with other leading energy companies and service providers of the world, which both serves to share their R&D expenditures and create synergies in the field of R&D.

Among Russia's leading TNCs, the most in need for technological upgrade are the manufacturing and machinery companies, whose operations are still very much based on outdated technologies causing them to lose out in global competition. Along with the creation of the state corporations in Russia in 2007, however some of the country's key manufacturing assets were transferred under the ownership of state conglomerates. In following subchapter, the basic structure of the state corporations in Russia is laid out in order to assess the potential of outward R&D by these conglomerates.

State corporations – the future of internationalisation of Russia's R&D?

The creation of state corporations has been the most visible act of increasing the state's visibility and role in the economy during the recent years. There are currently seven state corporations (in addition to several state-controlled corporations). Only two of the seven state corporations -- the Olympics Construction Corporation and the Housing Reform Assistance Fund -- have a clearly defined life span while the others have open-ended mandates. According to Deputy Prime Minister Aleksandr Zhukov, the goal of the state corporation system is to use governmental funds to stimulate investments in sectors where they would not otherwise be targeted or where private business refrains from investing for some reason. The Russian media generally reports on the accomplishments of state corporations, attributing their success to the state's larger role. Traditionally, much less attention has been paid on the downsides of the state corporation system, such as potential for abuses caused by the non-competitive transfer of state-controlled assets, especially non-defense or non-strategic assets, to state corporations.

Upon initiation of the state corporations, both Vladimir Putin and Dmitry Medvedev stood firmly in favour of more government support and control over industries and sectors claimed strategic for the Russia's national interest. These arguments were based on the statement that major Russian companies could not survive foreign competition without the government's political and financial support. The change of course regarding the state corporations, however, gradually surfaced already in early 2008 with Putin warning that the federal government needs to closely watch the activities of the state corporations so that they will not hamper other businesses. In February 2008, Medvedev went one step further and noted that "there is no reason for the majority of state officials to sit on the boards of those firms." He also stressed already in March 2008 that Russia's state corporations are created for a limited period of activity only, after which they should either be privatised or liquidated. In the same vein, First Deputy Prime Minister Igor Shuvalov stated at the St. Petersburg International Economic Forum in 2008 that "We believe we are right in creating state corporations," but called for replacing state officials with independent directors on the boards of state corporations and state-controlled companies. Though warning that one should avoid the aspiration of the state to increase its influence in the economy, he did not, at the time, suggest any sure way to make state corporations private-like companies which play by the economic rules and bear financial accountability.

Towards the end of 2009, the official policy course regarding state corporations further toughened. In late 2009, the state corporations came under direct pressure from the presidential administration that ordered a probe into their operations and financial activities in autumn 2009. Since then, the government and the president have repetitiously voiced partial privatisation plans of state corporations already in 2010. By the time of writing this report, the general prosecutor of Russia has opened a number of criminal cases against almost all state corporations over misuse of funds and underinvestment, among others. These events indicate that the two-year-long consolidation process of Russia's key industrial assets has seemingly come to an end and the government is looking for profitable ways to rid itself from certain assets affiliated with the state corporations.

The recent developments, however, may not mark the end of state corporations altogether, but rather pave the road for full or partial privatisation of their selected assets while retaining certain key companies under the state ownership. As such, it seems likely that the state corporations

continue to carry out the missions originally set to several of them, namely to establish stronger presence overseas through outward FDI. If and when the state corporations continue to enjoy financial and political support from the government, they will most likely continue at the forefront of Russian R&D. In particular, Rosnano and Rosatom are likely to continue as the key element of Russia's R&D policy working together with foreign technology and innovation centers on the fields of nanotechnology and energy. The industrial behemoth, Russian Technologies, already holds a notable foreign assets portfolio through its subsidiaries and will most likely to continue to establish overseas presence despite partial privatisation of its assets. Finally, as the cases of Sistema and Sberbank (Magna/ Opel) showed, the role of the the state-owned banks, and Vneshekonombank in particular, in overseas R&D investments from Russia remains vital.

Table 5 below presents the profiles of the most significant Russian state corporations regarding the outward (R&D) investments from Russia.

Table 5 Profiles of key state corporations in Russia

Rostekhnologii or Russian Technologies was established under a federal law signed by President Putin on November 23, 2007. Three days later, Putin appointed a trusted friend, Rosoboronexport Director Sergei Chemezov, President of Rostekhnologii, and Defense Minister Anatoly Serdyukov (and son-in-law of First Deputy Prime Minister Viktor Zubkov) Chairman of the Supervisory Board. On July 10, 2008, President Medvedev approved the transfer of 426 state assets, about 80 percent of which are defense-related companies, to Rostekhnologii. Chemezov said that he plans to unite these new assets into 30 holding companies and to arrange IPOs for non-defense, industrial assets. These assets include a 51 percent stake in AirUnion Alliance (which has major stakes in Domodedovo Airlines, Krasnoyarsk Airlines, and Samara Airlines). Rostekhnologii seeks to play a growing role in the industrial and high-tech sectors and will focus on assisting Russian high-tech companies with R&D, participating in price setting for products for defense purposes, attracting investment in Russia's industrial and defense sectors, and monitoring the finances of companies which participate along with Rostekhnologii in military-technical projects. Rosoboronexport and all its subsidiaries (including VSMPO-Avisma) are now under Rostekhnologii. Rostekhnologii will also acquire stakes in Russian and foreign companies engaged in the "development, production, and export of high-tech industrial products," open representative offices abroad, and send its representatives to work at Russian embassies, consulates, and trade representation offices. Rostekhnologii seeks to expand its activities beyond manufacturing through acquisitions in mining.

Rosnano, seeks to advance research and development in the field of nanotechnologies, especially for Russia's aerospace industry (Roskosmos), aviation (United Aircraft Corporation), and the nuclear power sector (Rosatom) in order to increase their competitiveness. The corporation's goal is to foster the commercialization of Russian know-how for the benefit of these and other sectors of the economy. Putin originally appointed Leonid Melamed as General Director of Rosnano and Andrey Fursenko, Education and Science Minister, as Chairman of the Supervisory Board of the corporation. In September 2008, Anatoly Chubais was appointed the General Director of Rosnano -- a signal that the Kremlin is serious about addressing the many challenges facing Russia's nanotech sector. Deputy Prime Minister Sergey Ivanov and Mikhail Kovalchuk, Deputy Chairman of the Government Council on Nanotechnologies, are among the other key decisionmakers and strategists of the corporation. About two hundred billion rubles (approximately \$7.75 billion) in government funding was originally requested to finance the corporation's activities for the first three years. The corporation, which currently manages about 130 billion rubles (\$5.2 billion), has also received funding requests worth about 550 billion rubles (\$22 billion) from over 350 organizations. Rosnano will use federal funding to co-finance existing R&D centers and to create new research centers at a number of Russian universities. Sergey Ivanov has also been seeking an endorsement for the allocation of federal funds to support small and medium-sized enterprises that work on nanotechnologies.

Rosatom was created in December 2007 on the basis of the Rosatom federal agency, the new state corporation includes state holding Atomenergoprom, as well as "all civilian and military nuclear facilities and enterprises, research institutions, and organizations working on nuclear and radioactive security." The federal government transferred the Russian atomic icebreaking fleet and the federal enterprise Atomflot (headquartered in Murmansk) to the corporation in August 2008. Rosatom is set to expand its operations globally, with a growing interest in China and India, to build nuclear power stations, sell nuclear fuel, and provide related services. According to Sergey Kiriyyenko, the corporation may build as many as 42 nuclear plants in Russia and 60 abroad by 2030. Gazprombank will finance some of Rosatom's projects, and Vneshekonombank recently sought to acquire a stake in a nuclear engineering holding company to be set up on the basis of Atomstroieksport which is currently owned by Rosatom (51 percent) and Gazprombank (49 percent).

Vneshekonombank, or The Bank for Development and Foreign Economic Activity, is a financial corporation is the only lender not subject to Central Bank regulations and therefore not obliged to hold a banking license. According to the bank's Chairman, Vladimir Dmitriev, the Development Bank is "a key tool of state investment policy" with investment activities primarily oriented toward projects of national importance in areas such as energy, mining, nuclear power, transportation infrastructure, and high-tech manufacturing. The bank also seeks to foster closer economic integration with CIS countries, especially Kazakhstan. Pyotr Fradkov, a member of the bank's executive board (and a son of former Prime Minister Fradkov, currently Director of the Foreign Intelligence Service), pointed out at a June 2008 meeting of the Russian Union of Industrialists and Entrepreneurs (RSPP) that the Bank was interested in "playing a coordination role between the state and business, as well as in channeling Russian investment abroad." The bank can conduct foreign economic operations and investment projects abroad in support of the exports of "goods, work, and services." It can open representative offices, create legal entities in the territory of the Russian Federation and abroad, and buy equity stakes in domestic and foreign commercial organizations. The bank's capital was around \$10 billion in 2007, with a loan portfolio of around \$7.6 billion for 2007 and \$30.8 billion projected for 2010. Prime Minister Putin chairs the Bank's Supervisory Council.

POLICY CONCLUSIONS

- 1) *Russia's OFDI has grown notably over the past ten years with increasing potential for outward R&D investments*

Despite the growing volume of Russia's OFDI and its relocation towards developed economies, Russia's outward R&D is notably scarce to date. Largely, the R&D investments are carried out by natural resource-based corporations or financial-industrial groupings (FIGs) with extensive networks of overseas subsidiaries.

- 2) *Major Russian investment conglomerates are likely to continue as key sources of outward R&D investments*

In the term of 5–10 years, the Russian FIGs can be realistically considered as the only major source of foreign R&D investments due to their advantageous financial positions and experience in investing overseas. Russian SMEs are not likely to start major overseas R&D expansion, a fact accentuated by the current poor domestic market conditions.

- 3) *Despite the investment re-orientation towards the developed economies, technological spillover effects are likely to remain modest*

Majority of Russian OFDI has been targeted towards developed economies, which creates potential for positive spillover effects from outward investments, however, the majority of investments are made in natural resource-based and low-tech sectors, which neither supports inverse technological transfer nor the development of domestic high-tech sectors.

- 4) *The Russian metal companies possess certain overseas assets which may prove to yield technological development at home*

Despite the low overall level of technology transfer from overseas subsidiaries, the experience of Russian steel and aluminium companies in foreign investments is encouraging, providing certain amount of inverse technology transfer to the home economy.

5) *There is an urgent need for supporting OFDI policies in Russia*

In particular for companies with less experience in overseas investment are in need for supporting networks at their home basin, in order to gain access to overseas business networks and financing.

6) *There is a questionable tendency of involvement of high-level politics in OFDI deals from Russia*

Despite the potential positive effects of such supportive policy course, these actions may cause unrest in recipient economies/ target companies, as indicated by the recently failed M&A attempts (Magna/ Sberbank – Opel and Spyker – Saab).

7) *The role of state corporations in OFDI in general and outward R&D investments from Russia in particular should be carefully considered*

The long-term vision should see more limited support to the state-run companies with increasing support to the internationalisation of private sector. As long as the state corporations remain a key vehicle of outward R&D investments, the policy actions should ensure the spreading of spillover effects from such investments outside the state-owned corporations.

8) *The Russian outward R&D investment potential needs to be utilised more systematically*

Following the examples of China, this could be done by supporting the establishment of R&D centers overseas (both state-owned and private companies) and creating policy support for so-called investment circles (similar to export circles).

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