

Export Competitiveness and FDI Performance across the Regions of the Russian Federation

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Abstract

The Russian Federation's regions not only have highly uneven degrees of development, they also have very uneven degrees of foreign orientation. Regions with the highest foreign orientation—exports of goods per capita or inbound foreign direct investment per capita—almost across the board have the highest standard of living; and those with the lowest foreign orientation generally have the lowest. In this paper, the Russian federal regions are grouped into three categories—lagging, middle-range, and leading—according to real per capita gross regional product. Leading regions seem to be those specialized in mineral exports; lagging regions are not. In addition, the richest regions tend to have high per capita exports, high foreign direct investment, or both; middle-range regions with relatively higher incomes often have high per capita non-mineral exports. Russia's lagging regions have much more tenuous international engagements

than the rest of Russia in exports and foreign direct investment. These findings suggest that foreign orientation is an important determinant of socioeconomic development and could be an important item on Russia's regional policy agenda. Such policies might have a variety of objectives: (1) earning income (export goods in which Russia has traditionally had a comparative advantage); (2) diversification and economic stability (minimize risk from drops in oil prices or crises in individual markets and add exports for which demand is likely to be steady over the medium term); (3) technological upgrading (move to more sophisticated goods with greater innovation content); and (4) regional development (promote the uplift of lagging regions). Each of these motives has a different profile of goods exported, regions, and most closely associated destination markets.

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Abbreviations

BRICS	Brazil, Russia, India, China, and South Africa
CIS	Commonwealth of Independent States
EACU	Eurasian Customs Union
ECU	Eurasian Customs Union
EU	European Union
FDI	Foreign Direct Investment
GRP	Gross Regional Product
GTIS	Global Trade Information Services
HHI	Herfindahl-Hirschman Index
nec	Not elsewhere categorized
OJSC	Open Joint Stock Company
OECD	Organization for Economic Co-operation and Development
LLC	Limited Liability Company
RCA	Revealed Comparative Advantage
SITC	Standard International Trade Categories
UNCTAD	United Nations Conference on Trade and Development
WDI	World Development Indicators

All monetary amounts are US\$ unless otherwise indicated.

1. Introduction ¹

As is true worldwide, it appears that foreign orientation is an important determinant of socioeconomic development. While there is no theoretical consensus on the role of exports and foreign direct investment (FDI) in economic growth, trade and export activities, as well as inbound FDI, are expected to promote growth by enhancing the country's capacity to import essential intermediate and capital goods, easing balance of payments constraints, and promoting specialization through better access to advanced technologies and management practices (Melitz, 2003; Helpman and Krugman, 1985).

In the Russian Federation, regions are characterized by uneven levels of development; income disparities within the country are very wide. If regions were separate countries, the highest-income regions would be considered high-upper-middle income or high income, comparable to many countries in the Organisation for Economic Co-operation and Development (OECD). The lowest-income regions are comparable to many countries in Sub-Saharan Africa. For example, in real PPP terms, the per capita income of the Far Eastern region of Sakhalin, one of Russia's richest (\$15,850) would qualify it for the World Bank's high-income group if it were a separate country. In 2011, among all Russia's regions Sakhalin received the fourth largest FDI inflow and reported the highest value of mineral exports. It also maintains a diversified exports basket, as evidenced by the high value of its non-mineral exports, where it ranked eighth among all Russian regions. As a result, the standard of living in the Sakhalin region is among the highest in the country—10 times better than in the region with the third lowest income, the Southern region of Kalmyk. Kalmyk's per capita income is closer to that of Nigeria or India.²

In this paper, we studied the relationship between the degree of Russia's foreign orientation – exports of goods per capita or inbound FDI per capita - and the standards of living, as measured by real per capita income. First, we evaluated Russia's trade potential by differentiating between fuel and non-fuel exports, and looking at orientation and growth, diversification, sophistication and survival of Russia's exports. Next, we analyzed Russia's ability to attract FDI - in comparison to other BRICS countries, and correcting for round-tripping – by looking at source countries, sectoral distribution, and types of recent major acquisitions.

Because of wide geographical income disparities within Russia, in our analysis, we grouped the Russian federal regions into three categories—lagging, middle-range, and leading—according to real per capita gross regional product. In the most lagging category are regions in the North Caucasus, Southern, and Volga. Those in the leading category are concentrated in the Far East, the Urals, and the North West. All

¹ This paper is part of the research project on Trade and FDI Competitiveness Across Russia's Regions in the post-WTO Accession and Eurasian Customs Union Environment, prepared under the guidance of Birgit Hansl, who provided valuable comments throughout. The authors would like to thank the peer reviewers Jean-Pierre Chauffour and Borko Handjinski and would also like to acknowledge the additional support of Patrick Ibay.

² Average PPP per capita income for all high-income regions worldwide in 2011 was \$17,008. Country comparators for Sakhalin include the Slovak Republic at \$17,100 and Estonia at \$15,700. Kalmykia's PPP per capita income comes to \$1,556, comparable to \$1,710 for Nigeria and \$1,450 for India. Conversions from rubles to dollars were made using the PPP conversion factor for all of Russia. Real per capita GDP for Russian regions, from Rosstat, reflects that prices in Russia are region-specific.

regions in the North Caucasus are lagging; none are in the Far East.

Our main findings were that (i) regional export performance has been uneven, and (ii) there is a close positive association between per capita income in a region and its ability to attract FDI, and (iii) the types of FDI a region attracts tend to be consistent with the comparative advantage of that region in goods markets, and may drive transformation of that comparative advantage in the future.

The data in this analysis come from a variety of sources, which have been triangulated and harmonized to form a fuller picture of Russia's trade performance both within the world and as it varies across regions. Not all of these sources are readily available. The data for regional trade by sector, which is at the heart of the analysis, was made available by special arrangement with GTIS, a private provider. The Ruslana data, for firm-level FDI, originates from a different private provider (Bureau van Dijk) and requires a subscription to access. The analysis also makes use of official data on the economies of the Russian federal subjects from Rosstat, FDI data from the Russian central bank, and detailed trade data at more aggregate levels from the United Nations' COMTRADE system via the WITS portal. The result yields a picture of both Russia's external economic linkages and the manifestation of those linkages at the regional level, which could not have been obtained through a single source.

The rest of this paper proceeds as follows. Section 2 discusses Russia's export performance and ability to attract FDI in recent years, analyzing outcomes in detail through indicators that provide insight into regional and sectoral differences, comparisons with other BRICS, and references to future prospects. Section 3 goes into greater depth in terms of the regional disparities and categorizes Russian federal areas as leading, middle-range, or lagging status. This categorization is used as the basis for quantitative and qualitative analysis of export performance and FDI inflows. Specifically, Russian outward orientation is categorized across the country's wide geography in terms of dominant and secondary economic activities and main export destinations and FDI sources, and the analysis then distinguishes between leading, middle-range, and lagging regions. The final section draws conclusions and discusses the policy implications.

2. Russian Exports and Incoming FDI

The Russian Federation economy is reasonably well-integrated into global markets, in terms of both trade and attracting FDI, in spite of the regional disparities within Russia. In terms of trade openness, Russia's actual trade-to-GDP ratio is slightly lower than that of most of its BRICS comparators (Table 1, column 2). Column 3 shows the potential trade (ratio of predicted to actual trade) based on a bare-bones regression of trade/GDP against real GDP per capita. In a regression of the actual trade-to-GDP ratio on per capita income and population (column 4), Russia's actual trade is less than predicted, which suggests that Russia is under-trading. However, when arable land area is added to the regression as a variable (column 5), Russia's actual trade is then significantly greater than its predicted trade.

2.1 RUSSIA'S TRADE POTENTIAL

Oil and gas have been the dominant Russian exports, their increasing share in the export portfolio largely driven by high prices in world markets (Figure 1 and Figure 2). Mineral fuel exports accounted for about 70 percent of total Russian exports in 2012. However, in 2009 the steep drop in the price of oil adversely impacted Russia. Falling oil prices in 2014 will likely have a similar effect. Dependence on commodities with volatile pricing exposes Russia both to frequent shocks to its terms of trade and to risks from the development of new technologies in other countries that produce oil and gas.

Russia's comparative advantage (RCA) is limited to mineral fuels, metals, and wood (Table 2). Exports of mineral fuels grew notably between 2007 and 2012, but the annual average growth rate of 11.2 percent was mainly driven by higher prices rather than volume (Figure 2). Despite a continuing RCA in wood and metals in 2012 (as defined by an RCA index [RCAI] higher than 1), the value of exports in 2012 was lower than in 2007—a trend that threatens Russia's RCA. However, in the short to medium term, most revenue can be earned from exports in which Russia already has a comparative advantage.

It should be noted that a comparative advantage in primary products is not necessarily an obstacle to economic development per se. While it has long been believed that natural-resource exporters are subject to a “primary product curse,” the balance of more recent evidence shows that primary product exporters tend to outperform other countries in terms of economic growth (Lederman and Maloney, 2012). Among resource-rich Eurasian countries, performance in poverty reduction has exceeded that of resource-poor Eurasian countries. Yet these countries have had challenges in building up capital faster than they deplete non-renewable resources (Gill et al., 2014).

Exports of food and agricultural products, non-fuel minerals, and miscellaneous other products have seen above-average growth in recent years, helping to diversify Russia's exports. Between 2007 and 2012 average growth of exports in these categories was 15.2 percent in food and agricultural products, 19.1 percent in non-fuel minerals, and 20.4 percent in other products (Table 2). The RCAI for those sectors went up during the period.

Yet Russian exports still tend to be concentrated in raw materials and intermediate goods rather than in the final stages of the value chain. The share of final goods in total Russian exports accounted for a mere 5 percent in 2012; the bulk of exports were in such raw products (47.5 percent) as crude oil; intermediate goods (24 percent) such as processed metal products; and processed fuels and lubricants (23 percent; Figure 3). The composition of exports between 2007 and 2012 shifted somewhat toward processed fuels and lubricants and away from other intermediate goods, but there is still minimal diversification away from mineral fuel exports.

The sophistication of Russia's export basket has been low compared with other BRICS countries and has declined in recent years. The evolution of real per capita GDP and export sophistication, as measured by EXPY (see box 1) in BRICS countries shows that China has been the only one of the BRICS to sustainably raise the sophistication of its exports over time (Figure 4). If Russia chooses to follow a path similar to China's, it would need to diversify its exports away from fuels toward more sophisticated products.

A variety of factors may contribute to underperformance of Russia's manufactures and weak export sophistication. Besides the extent to which increasing oil exports have driven the sophistication index, Russia's domestic economy lags some of its peers in terms of service intensity (Sáez and van der Marel 2015). An increased abundance of modern business services could improve innovation and competitiveness in goods as well. Also, Russia's policy regime for product standards departs significantly from international practice, which may make it difficult for Russia to produce and export complex and sophisticated goods of the type expected in international markets (Ferrantino, Gillson and Schmidt, 2015).

The European Union (EU) is the main destination for Russian exports, receiving more than half of the total in 2013. Since Europe is Russia's largest market, any negative shock there can undermine Russia's economic performance, as Europe's debt crises did in 2010–13. Evidence of the dominance of fuel exports to the EU market is that 46 percent of Russian exports to the EU are fuels and only 9 percent are non-fuel products (Figure 5). This "one product-one market" pattern underscores Russia's vulnerability to shocks in the EU, particularly if a slowdown in EU growth coincides with a falling price of oil as it did in late November 2014.

China as a market has increasing importance for Russia; its exports to China account for 8 percent of the total; exports to all of the rest of Asia including Japan account for just 12 percent. Exports to Eurasian Customs Union (EACU) partners make up 8 percent of Russian exports, whereas exports to other Commonwealth of Independent States (CIS) countries account for 6 percent. Because non-fuel exports to the EU are larger than the value of total exports to most destinations (Figure 5), they are central to Russia's diversification strategy.

Russian exports have been shifting gradually away from Europe and toward China and the rest of Asia. China's share has gone up by more than 2 percent and that of the rest of Asia by more than 3 percent; meanwhile, China's relative share in global GDP has increased by more than 5 percent and that of the rest of Asia by 2 percent (Figure 6). This is true for the change in the share of Russian exports by destination as well as the change in each export destination's share of global GDP between 2007 and 2012. By contrast, the shares of both fuel and non-fuel exports to the EU and the rest of Europe dropped between 2007 and 2012.

Russian fuel exports to China and the rest of Asia in 2013 were more than three times the level to both destinations in 2009, whereas non-fuel exports did not experience much of a change to any destination. This tripling of the 2009 level contributed to the increase in export shares to Asia (Figure 6).

Figure 7 shows the evolution of mineral fuel exports by comparing average exports in 2007 and 2008 with the averages for 2012 and 2013 to destinations other than the EU. Russian fuel exports to China and the rest of Asia roughly doubled. Overall exports are highly dependent on oil prices.

Russian non-fuel exports went up between 2007 and 2008, and 2012-13, but much more slower than mineral fuel exports. The largest increase was registered in non-fuel exports to the rest of Asia and Kazakhstan (Figure 8). The growth of Russian non-fuel exports to Kazakhstan and (although smaller) to

Belarus is associated with those two countries having adopted the EACU common external tariff (Ferrantino, Gillson and Schmidt, 2015). Metals and chemicals are the dominant non-fuel exports, between them accounting for about half of Russian non-fuel exports going to each destination in 2013.

About 45 percent of metal exports and 30 percent of chemical exports go to the EU (Figure 9). Regarding food and agricultural exports, 25 percent are exported to the Middle East and North Africa region (MENA). China imports the most Russian minerals other than fuels (about 44 percent) and the most wood exports (28 percent). Kazakhstan and nonCU-CIS countries import the most Russian machinery and transport exports, with more than 20 percent of exports in this category going to each destination.

Non-fuel exports to EACU and CIS partners tend to be more sophisticated than those to other destinations, particularly machinery and transport equipment. To Europe, the predominant non-fuel exports are metals, as is also true of the rest of Asia and North America. In Kazakhstan and Belarus, the two EACU partners, and in CIS countries not part of the customs union, machinery, metals, and chemicals are the main non-fuel imports from Russia. China's main non-fuel imports from Russia are chemicals, wood, and minerals, in that order. For MENA countries 32 percent of non-fuel imports from Russia are agricultural and food products. Chemicals dominate Russian non-fuel exports to other regions, such as Latin America, Africa, and Oceania.

Russian exports to China and the EU are the most concentrated in terms of products (Figure 10); those to Kazakhstan are the most diversified when applying the common measure of market concentration, the Herfindahl-Hirschman Index (HHI). The HHI scale is zero to one; the higher the score, the more concentrated the exports to a given destination. Exports to MENA countries are also diversified, largely due to the variety of food and agricultural products they receive. Russia has difficulties in diversifying its exports to its largest markets, and there is a mismatch between the markets in which Russian exports are diversified (Kazakhstan and MENA absorb only 15 percent of Russia's exports) and the markets that receive the most exports.

Russia's export relationships within the EACU (Belarus and Kazakhstan) and secondarily in the rest of the CIS are far more durable than those with other regions as measured by survival rates (Figure 11).³ Use of a common language and long-standing business relationships are factors, as are the effects of the EACU in reducing competition from non-EACU exports in these markets (Ferrantino, Gillson and Schmidt, 2015). The survival rates of exports to CIS countries that are not part of the EACU are the next highest, followed by the probability of survival with China and Asia.

Russian exports of primary and resource-based intermediate goods have higher survival rates than other manufactured exports (Figure 12). There is thus a tension between survival of "product relationships" and survival of "geographic relationships." Russia's primary product exports have the highest survival rates, and these go primarily to the large European and Asian markets. But, Russia's high-survival destinations

³ The survival rate measures the share of export relationships in place in a given year that is still active after a certain number of years. An export relationship is defined as exports of a particular HS-6 product to a particular country (e.g. bowling balls to Belarus).

geographically are the EACU and other CIS partners, which absorb a more diverse mix of products that do not easily survive in the world as a whole. In sum, Russia has had difficulty introducing products that diversify beyond its natural resource base to most of the world beyond the niche markets of the former Soviet Union.

Russia's comparatively low survival rates relative to the other BRICS is accounted for by the low survival of exports to destinations outside the former Soviet Union and of goods other than traditional resource-based exports; the probability of Russian exports surviving for each year is lower than for Chinese or Brazilian exports and fairly similar to South African exports (Figure 13), with only Indian exports less likely to survive.

Compared to its peers, Russia's success at selling to new markets has not only been limited, it has declined since 2008. In recent years export of new products has been negligible (Figure 14) as seen in the growth in BRICS exports decomposed into the intensive margin (increased sales of old products in old markets) and the extensive margin (sales of new products or of old products to new markets). For each country, the sum of the seven categories equals 100 percent. Russia's sales of old products to new markets accounted for only 7 percent of its export gains in 2006–08, declining to 6 percent in 2011–12; these products are mainly mineral fuels. Russia has virtually no sales of new products of any kind; thus, if the comparison were to focus on non-oil trade, the extensive margin would not look any better.

2.2 ATTRACTING FDI

Russia's ability to attract FDI in recent years compares favorably with that of the other BRICS even after correcting for round-tripping. After removing FDI that reportedly originated in Cyprus, Bermuda, and Caribbean countries, the ratio of Russia's FDI inflows for 2007–13 is about 2.4 percent, comparable to that for Brazil (Figure 15). The growth-enhancing effects of FDI (Lee and Liu 2005) are predicated on the idea that foreign firms carry ownership-specific advantages in technology, managerial practices, or both that allow them to overcome the disadvantages of being foreign. Geographically within Russia, those federal regions that have been most successful in attracting FDI have also had the healthiest economic growth. Box 2 contains background for the empirical exercise that shows the link between FDI and growth across Russia's regions.

Box 2: Growth and FDI across Russia's Regions

The ability of Russia's regions to attract FDI is one of the strongest single predictors of the growth of their per capita income. This ability can be quantified by estimating a cross-sectional model of regional income growth over the period 2001–11. The model is a modified version of that found in Mankiw, Romer, and Weil (1992) in which variables are measured as period averages, either in per capita terms or in shares, and are expressed as follows:

$$y_{i,t} - y_{i,t-1} = \beta_0 + \beta_1 y_{i,t-1} + \beta_2 \text{human_capital}_{i,t-1} + \beta_3 \text{exports}_{i,t-1} + \beta_4 \text{FDI}_{i,t-1} \\ + \beta_5 \text{business_climate}_{i,t-1} + \beta_6 \text{share_mineral}_{i,t-1} + \beta_7 \text{share_urban}_{i,t-1} + \varepsilon_{i,t}$$

In this model, y denotes real per capita income in federal region I , $y_{i,t-1}$ represents 2001, the initial year, human capital is measured by the percentage of population enrolled in secondary school, FDI is measured in U.S. dollars per capita, business climate is based on scores from consulting firm Expert RA for 2003, mineral exports are expressed as a share of total merchandise exports, and urban population as a share of total population. For dependent variables other than income, $t-1$ denotes the period averages.

Along with attracting more FDI, more rapidly growing regions are likely to have higher business climate scores and are more likely to have rural than urban populations—other things being equal, poorer regions grow more rapidly than rich regions (“beta convergence”). The other variables (human capital, total merchandise exports, share of mineral exports) are not independently significant as determinants of regional growth; however, regions that attract more FDI also tend to export more.

As an illustration of the importance of FDI, if annual FDI in Krasnoyarsk Republic (\$14.90 per capita in 2011) were increased to the level of St. Petersburg City (\$219.20 per capita), its annual growth in per capita income would increase by an estimated 2–2.27%, raising income by 30 percent after 10 years. And if the initial business climate score of the Komi Republic, 3B2 (“marginal potential-moderate risk”) were raised by one point, to 3B1 (“reduced potential-moderate risk”), estimated annual growth would have increased from 4.27 to 4.55 percent, raising per capita income by an additional 32 percent after 10 years.

Despite the finding of beta convergence, Russia’s poorest regions have not caught up to the richer regions in absolute terms on average in recent years. Sigma convergence, measured by the trend in standard deviation of log per capita income across regions, fell from 0.585 in 1996 to 0.511 in 2001, but increased to 0.528 in 2011.⁴ (Thus, regional inequality has gotten worse over the period of the regression.) The level of income inequality across regions in Russia is higher than that in some other countries. Beta convergence, which has been found for subnational regions in the EU, Japan, and the U.S. (Barro and Sala-i-Martin, 1995), is necessary but not sufficient for sigma convergence (these regions, other than Russia, also experience sigma convergence). That is to say, these countries have less regional income inequality than Russia, and regional incomes have become more equal over time. Comparisons for available time periods are as follows (Barro and Sala-i-Martin, 1995, and authors’ calculations for Russia):

Russian Federation (1996)	.58	Russian Federation (2011)	.53
United States (1940)	.35	United States (1988)	.19
Japan (1940)	.63	Japan (1987)	.15
Italy (1950)	.42	Italy (1987)	.27
France (1950)	.21	France (1987)	.14

⁴ This calculation is made for 83 federal subjects with complete data from 1996-2011. Since the subjects with partially missing data are at the extreme ends of the income distribution, actual regional inequality is somewhat greater than that reported here.

Thus, while poorer regions within Russia have caught up to richer regions that look similar, the regions do not in fact look similar at all, and the forces which make them different are currently outweighing the forces making for income convergence. The finding of greater dispersion and weak convergence has been confirmed recently by Guriev and Vakulenko (2012) who also find that interregional income inequality in Russia is high relative to other countries for a more recent sample (1985–2005), even as compared to other countries at a similar level of development, and they find a lack of convergence in per capita income across Russia’s regions during the 2000s, though other measures (such as wages and unemployment rates) have converged. Guriev and Vakulenko (2015) find evidence that lower-income households in the poorest regions of Russia may have particular difficulty in moving to richer regions. These results suggest that maintaining a good business climate and being attractive to FDI are important for Russia’s growth prospects. This implies that continuing and accelerating the pace of domestic reform is important to growth and underlines that the Russian economy would benefit from normalization of international economic ties, especially an ending to the current sanctions.

Over a third of FDI in Russia may have been round-tripping—Russian investors sending capital to other countries to re-invest it in Russia (Figure 16). This is a relatively high share compared to most of the other BRICS.⁵ Round-tripping FDI is less likely to bring the benefits of enhanced technology and productivity than genuinely foreign FDI. Round-tripping may be motivated by, among other factors, deficiencies in property rights and poor enforcement of the laws in the Russian domestic market, and to a minor extent by tax advantages (especially in terms of the choice of country of origin). If FDI firms are in fact domestic firms that earn additional rents from round-tripping, there is no reason to assume that they can help enhance technology and productivity. However, some round-tripping FDI may represent repatriation of previous capital flight. Thus, estimates of Russian capital flight that do not take this possibility into account may be overstated.

The sectoral distribution of Russia’s FDI has become more diverse over time. In 2005–12, Russia’s FDI in secondary activities (manufacturing, utilities, and construction) grew four times faster than in mining and fossil fuels, and in services it grew three times faster (Table 3). This is in part due to the reduced valuation of investments in fossil fuels after the oil price drop of 2008–09. It also reflects the fact that the FDI position in oil is of older vintage and foreign investors are now pursuing more diverse opportunities.

Sectors with the most dramatic improvements in FDI were chemical and pharmaceutical products; machinery and equipment; electrical, electronic, and optical equipment; transport equipment; utilities; construction; and financial intermediation. These investments have been linked to technological and quality upgrading (Kuznetsov 2010). Foreign producers of motor vehicles have widened the range of affordable and higher-quality cars in Russia. The expansion of FDI in chemicals leverages Russia’s

⁵ Estimated round-tripping over the sample period is about 35 percent for China, 6 percent for Brazil, and negligible for India and South Africa.

comparative advantage in fossil fuels, as well as bringing foreign firms into pharmaceuticals, such as Slovenia's Krka and Hungary's Gedeon Richter. Similarly, German firms have introduced new construction services. Minority participation in Russia's telecommunications sector has brought modernization through technology transfer, although there has also been significant round-tripping in this sector.⁶

Certain sectors are more attractive for round-tripping rather than conventional FDI based on ownership-specific advantages. For instance, 89 percent of the Russian FDI in basic metals and metal products originates in the round-tripping countries of Cyprus, Bermuda, and the Caribbean (Table 3). Similarly, close to half of FDI in services and construction is of the round-tripping type, with particularly high percentages in financial intermediation and real estate. By contrast, FDI in mining and quarrying and in most lines of manufacturing other than iron and steel is more likely to be "high-quality" FDI, proxied by the share that is not obvious round-tripping.

Recent large cross-border mergers and acquisitions of Russian companies focus on a few sectors and are often carried out from round-tripping locations. The largest transactions since 2008 have involved electricity and heating, oil and natural gas, railroads, and telecommunications (Table 4). Buyers or sellers in six of the nine largest transactions were from either Cyprus or the Jersey Islands or firms from such locations were part of the chain of ownership. For instance, the gold mining company Polyus Zoloto was sold to a Cypriot company in 2009, and resold to a Kazakhstan company two years later. Russia's largest rail freight operator, Pervaya Gruzovaya Kompaniya, is owned by another Russian transport company, which is owned by a Netherlands company, which is in turn owned by a Cypriot company.

3. Leading and Lagging Regions in Russia

Russia's export performance by region has been uneven. Since the crisis in 2009, the export intensity of GDP has declined or remained steady in all Russian regions except in Moscow (Figure 17). Performance in Siberia and the Far East has been relatively low; exports from firms based in the North Caucasus, the region with the lowest per capita income, are especially low.

CHARACTERIZING LAGGING AND LEADING REGIONS

Per capita gross regional product (GRP) varies considerably for Russia's lagging, middle-range, and leading regions.⁷ The highest-income regions of Russia would be considered high upper-middle- or high-income if they were separate countries, comparable to many OECD countries. The lowest-income regions are comparable to many countries in Sub-Saharan Africa. Ranked by decreasing real GRP, the six regions

⁶ For example, the acquisitions of OJSC "MegaFon" and OJSC "TelekomInvest" by Cyprus-based investment companies in 2012 (UNCTAD 2013, p. 225).

⁷ GRP is calculated using a deflator that takes into account important structural differences between Russian regions that likely affect purchasing parity power.

that had per capita real GRP higher than RUB 200,000 are noticeably outliers (Table 5).⁸ Dividing the rest into three equal thirds, the high-range portion spans RUB133,330–RUB200,000 (making up the rest of the upper range); the middle-range portion spans RUB66,666–RUB133,330, and the lower-range regions have with real per capita GRP of less than RUB66,666. The distribution is skewed toward lower-end values, with only 12 regions in the top category (7.23 percent of all regions), a majority of 44 in the middle category (53.01 percent), and finally 27 in the bottom segment (33 percent).

Russia's leading regions in terms of development other than Moscow and St. Petersburg are in a broad swath across the north. Its lagging regions are concentrated in pockets in the south and southwest (Figure 18). As will be shown, the uneven distribution of oil and other mineral resources in Russia does a lot to explain this pattern. The federal regions with the highest proportions of lagging subjects are North Caucasus, where all are lagging, and Southern and Volga, both of which have a larger share of lagging federal regions than the Russian Federation as a whole.

The best-performing regions are in the Far East, which has the second highest share of leading regions and none lagging; Ural, with the largest share of leading regions at 50 percent, and North Western, with the third highest share of leading subjects (Figure 19). Figure 20 shows that the picture is not much different on a population-weighted basis. All regions in the North Caucasus are lagging, and none in the Far East.

Poverty is more persistent in the Far East and Siberian regions, which border China and Central Asia (Figure 21); but GRP per capita is not the lowest, suggesting that poverty in the Far East and Siberia coexists with opportunity. In other words, the distribution of income in the Far East and Siberia seems to be more unequal; in the North Caucasus it seems to be more equal but lower.

As expected, the relationship between the poverty rate and real per capita GRP is negative (Figure 22). Only two outliers are identified, corresponding to areas in the Southern and Siberia federal regions where the poverty rate is considerably higher than would be expected for the value of real per capita GRP.

INBOUND FDI IN RUSSIA'S REGIONS

The regional distribution of FDI is highly concentrated, although it has recently become more even. Driving the concentration are both the geographical concentration of oil and gas resources and the concentration of business activity in Moscow and St. Petersburg. As measured by the HHI,⁹ the distribution of FDI across Russia's 83 regions is significantly more concentrated than the distribution of GDP or population, though not as concentrated as the distribution of mineral exports (Figure 23). The share of the top three federal regions in Russia's FDI inflows fell from 69 percent in 2002 to 48 percent in 2011. In both years, the largest FDI flows were to Moscow city and Moscow oblast in the Central District and Sakhalin Oblast in the Far East District.

⁸ There are no evident outliers at the bottom of the distribution, except for the two poorest, Ingushetia and Chechnya.

⁹ The Herfindahl index is calculated as the sum of squared market shares of the variable of interest and has a maximum value of 100 if the distribution is completely concentrated in one region.

There is a close association between per capita income and attraction of FDI across the income spectrum. Richer regions attract the most FDI per capita, and many of the poorest regions attract none (Figure 24). All seven regions that attracted no FDI at all are among the 10 lowest-income regions in Russia. Five are in the North Caucasus (Ingushetia, Karbardino-Balkar, Karachevo-Charles, North Ossetia, and Chechnya); one in the Southern (Kalmyk, bordering North Caucasus); and one in Siberia (Altai Republic). Most have difficult investment climates, as reflected in ratings from the advisory service Expert RA.

Firms in the Central and Northwest regions are more likely to have foreign majority ownership than those in other regions (Figure 25). The Far East region has absorbed the most FDI relative to regional GDP and on this measure has been the leading destination for FDI since 2002 (Figure 26 and Figure 28). Nationally, about 2.3 percent of all active firms in the Ruslana database had majority foreign ownership in the year most recently observed (usually 2012). This suggests that in the Far East foreign-invested firms may be significantly larger on average than in the Central and Northwest, probably due to a different sectoral composition of FDI.

Russian mining and quarrying firms are most likely to have foreign investors, followed by financial and insurance businesses (Figure 27). The attraction of mining and quarrying (including oil and natural gas) is consistent with Russia's natural resource endowments and its pattern of exports. The relatively high frequency of majority foreign ownership in financial services has occurred even though restrictions on FDI in financial services are high (Figure 27), which suggests that there is room for policy moves to make these sectors even more attractive. From the fact that about half of all FDI in financial services is obvious round-tripping it can be inferred that many of the investments are driven by insufficient law enforcement and insecure property rights. The Central region, including Moscow, is relatively attractive for wholesaling, retailing, and most of the service sectors.

The types of FDI attracted by Russia's regions tend to be consistent with the comparative advantage of those regions in goods markets and may drive future transformation of that comparative advantage (Table 6). The largest share of majority-FDI firms in mining and quarrying is in the Far East (11.2 percent), followed by Siberia (8.6 percent) and Ural (7.9 percent). At present, mineral fuels dominate Far East and Ural exports; but not Siberia's, it may be that ultimately FDI will drive Siberia to specialize increasingly in mineral fuels. Agriculture, forestry, and fishing are also attracting FDI, in the relatively affluent Far East, in the South, and in the relatively poor North Caucasus. These three regions have the highest concentration of food and agriculture exports. Manufacturing FDI is a specialty of the Volga region, which has an export base of chemicals, machinery, and transport equipment.

COMPETITIVENESS OF RUSSIAN REGIONS

There is a close association of leading regions with mineral exports and of lagging regions¹⁰ with a dearth of such exports (Figure 29): 90 percent of the exports of leading regions are minerals, which are less than 30 percent of lagging region exports. Figure 30 displays the scatterplot association of specialization in minerals and per capita GDP. The Central Region has the highest share of mineral exports—although some of these are mapped onto company headquarters in Moscow whose operations are elsewhere—and the North Caucasus has a very small share.

The richest regions tend to have either relatively high per capita mineral exports, relatively high per capita FDI, or both. Of the 12 leading regions, seven are among the top 15 percent of mineral exporters. Also, seven leading regions have per capita FDI that lies within the top 15 percent of the distribution. Both FDI and mineral exports seem to have a positive association with regional per capita income (Figure 24 and Figure 30). Meanwhile, only two of the 12 leading regions are not within the top 15 percent on at least one of the two criteria. One is the Sakha (Yakutia) Republic in the Far East federal region, whose success seems to be supported by high per capita mineral exports even though it is not within the highest 15 percent of mineral exporters. The other is Krasnoyarsk Krai in the Siberia region, which has the lowest per capita real GRP of the leading regions. Although its mineral exports and FDI are relatively low, its success seems to be supported by relatively high per capita non-mineral exports; this suggests that its development trajectory is more in line with the 44 middle-range regions. Finally, the Nenets Autonomous Okrug in the North Western region and the Chukotka Autonomous Okrug and the Magadan Oblast in the Far East have relatively high per capita FDI (although not within the top 15 percent) but it is not associated with high per capita exports of any kind. It may be that the activity into which the FDI is flowing is not exported, or at least not exported directly from the region itself.

For the middle-range group, high per capita non-mineral exports are especially common for those regions with higher incomes. As real per capita GRP lessens, performances worsen in terms of both per capita exports and per capita FDI.

The composition of non-mineral exports differs by federal region (Figure 31). The central Federal Region has the highest exports of machinery and transport equipment. Ural and Siberia have the highest share of metals exports, the North Western and Far East regions highest shares of wood exports, North Caucasus and Volga Federal the highest shares of chemical exports, and North Western and Far East the highest shares of agricultural exports.

Among non-mineral exports, the leading regions are more likely to export machinery and transport equipment and lagging regions to export chemicals. Figure 32 shows the composition of non-mineral exports by leading, middle, and lagging status. While there are no strong linear relationships between product mix and level of income, the leading regions seem to be more likely to export more sophisticated product categories, such as machinery and transport equipment, and exports of chemical products are larger for lagging regions.

Markets for exports depend on where the region is located. The EU-28 is the destination that receives the largest export value for about half of all Russian federal regions (40), followed by the nonEU-CIS, which

¹⁰ “Regions” here mean federal.

is quantitatively the most important destination for 20 regions. However, regions on the Eastern coast and the South-East of Russia are oriented toward Asia orientation, the latter mainly to China and the former to the rest of Asia. Data on the export orientation of Russian regions are from GTIS, which does not report Russian exports to Kazakhstan and Belarus, the other members of the EACU.

No matter what the export category, the EU-28 and the nonCU-CIS always rank either first or second in the count of products for which they are the main destination, with the third most frequent top destination being Rest of Asia. The EU-28 is the main destination for exports of oil, minerals,¹¹ and metals by most regions as well as for all non-oil and all non-mineral products when grouped together. Meanwhile, the nonCU-CIS is the main destination for exports from most regions of machinery & transport, food and agriculture, chemicals, and wood, though for the last two product categories the EU-28 is the main export destination for nearly as many regions. Rest of Asia is the third most frequently reported destination for exports of oil, metals, food and agriculture, and aggregate non-mineral exports.

When relating the analysis of export intensities and geographic orientation by product categories to that of leading and lagging regions of Russia, the EU-28 is the main destination for total exports of leading (55 percent) and middle-range (58 percent) federal regions. The nonCU-CIS is the main destination (55 percent) for the exports of most lagging regions. The same pattern emerges in analysis of the main markets for exports of wood, chemicals, non-oil products, and non-mineral products; a close but not identical pattern is observed in exports of metals, minerals, and oil.¹² This suggests that while pursuing export opportunities within the former Soviet Union may be of some benefit to lagging regions, high standards of living require the ability to compete globally.

Wood exports have a strong geographical orientation (see Figure 35), with the main destinations being near exporting federal regions, perhaps because transport costs as a share of the value of the goods are high. Even though the nonCU-CIS and the EU-28 are the two most targeted destinations for most regions in this product category, China is also a relatively big consumer of wood in that it is the most important destination in this product category for roughly twice as many of the regions for whom it is the main destination in the case of aggregate exports. These regions are also among those reporting the largest per capita values of wood exports.

The EU-28 is the main partner for Russia's exports of metals from 33 federal regions—far above the 15 for whom the nonCU-CIS is the most important destination for metals, and the 13 for whom Rest of Asia is most important. The largest per capita exports of metals are quite evenly distributed across Russian territory, with notable clusters of federal regions reporting relatively high per capita values in the West (targeting mostly the EU-28 and nonCU-CIS); the Center (targeting mainly the EU-28 and in some cases Rest of Asia); and the Far East (targeting mainly Rest of Asia, and to a lesser extent China).

¹¹ The definition of minerals includes oil.

¹² In these three product categories, the majority of leading and middle-range regions still have the EU28 as their main export destination; lagging regions target the EU28 to an equal or slightly larger extent than the nonEACU-CIS. Thus, even when the EU28 is the main destination for exports of certain products of a majority of lagging federal regions, there is still a relatively strong orientation toward the nonEACU-CIS, which is still the second most frequently reported main export destination and is close to the first.

The nonCU-CIS appears to be the main destination for exports of machinery and transport equipment for a large majority (57 percent) of Russian federal regions. However, the aggregate figure hides marked disparities. For lagging and middle-range regions, the number one export destination is overwhelmingly the nonCU-CIS. The leading regions target mostly the EU-28. This pattern reinforces what has already been seen at the national level: Russia's exports in sophisticated product categories tend to be directed toward less competitive markets in the immediate neighborhood. Indeed, whereas the nonCU-CIS is the main destination for 69 percent of the lagging regions and 58 percent of the middle-range regions with positive exports of these relatively complex goods, among leading regions 58 percent have the EU-28 as their main export destination for this product category, with only 11 percent of these richer regions targeting the nonCU-CIS as their main market for these products.

In quantitative terms, there is a trend for the highest per capita exports of machinery and transport equipment to originate predominantly in middle-range federal regions to the west of the country, with the notable exceptions of Chukotka, whose main export destination is North America; Sakhalin, which mainly targets the rest of Asia; and Buryatia, whose top market is China. The first two are in the Far East and the third in Siberia; all three report relatively high per capita exports of machinery and transport equipment.

Finally, exports of food and agricultural products also have a strong geographic orientation, with the largest export values reported on Russia's most eastern and most western borders. This may be due both to lower transport costs associated with exports to nearby partners and to better conditions for production of these products in these areas compared to the central parts of the country.

Exports of food and agriculture that originate in lagging and middle-range federal regions have the nonCU-CIS as their main destination in a majority of cases (46 percent for the former and 44 percent for the latter); leading regions exporting these products target mostly Rest of Asia (37.5 percent), and to a lesser extent China (in terms of both number of regions reporting this country as their main export destination and by per capita export value). The proximity of different regions to different partners probably underlies this pattern, although there could also be differential quality implications that might be worth exploring if the data available are adequate.

4. Conclusions

Russia's regions not only have highly uneven degrees of development, they also have very uneven degrees of foreign orientation. Regions with the highest foreign orientation—exports of goods per capita or inbound FDI per capita—almost across the board have the highest standard of living; and those with the lowest foreign orientation generally have the lowest. As is true worldwide, it appears that foreign orientation is an important determinant of socioeconomic development and could be an important item on Russia's regional policy agenda.

Policies to promote more foreign regional orientation might have a variety of objectives, such as (1) earning income (export goods in which Russia has traditionally had a comparative advantage); (2) diversification and economic stability (minimize risk from drops in oil prices or crises in individual

markets and add exports for which demand is likely to be steady over the medium term); (3) technological upgrading (move to more sophisticated goods with greater innovation content); and (4) regional development (promote the uplift of lagging regions). Each of these motives has a different profile in terms of goods exported, regions, and most closely associated destination markets.

In the short to medium run, the most income can be earned from goods in which Russia already has a comparative advantage, which are natural resource-based products such as mineral fuels, metals, and wood. Mineral fuels, main oil, and natural gas (including refined and processed products) accounted for 72 percent of Russia's exports in 2012.¹³ Metals and wood and products made there from together accounted for an additional 11 percent. Exports of mineral products¹⁴ are highly concentrated in certain regions, for example in the Urals and the Far East, while many of Russia's regions export little or no mineral fuels. About half of Russia's total goods exports are of mineral fuel to the EU, which forms the foundation of Russian export income generally. China and the rest of Asia receive a large share of the other mineral fuel exports.

Diversification of export products and destinations helps to alleviate the risks associated with price and macroeconomic shocks. For example, the steep drop in the price of oil in 2008–09 severely impacted the Russian economy, as did the slowdown in Europe associated with the debt crises in many EU countries in 2010–13. Since Europe is Russia's largest market for mineral fuels, these shocks interacted in a negative way for Russia's exports and economy. Above-average growth in new categories of exports—food and agriculture, non-fuel minerals, and miscellaneous exports—helped to diversify Russia's exports, as has a pivot to China and the rest of Asia, Latin America, and Africa as new destinations for exports. The regions differ in their ability to take advantage of emerging diversification. For example, the Far East is oriented toward Asia (regional diversification), while regions in the South, the North Caucasus, and the Far East are oriented toward food and agriculture (product diversification).

Russia's current export basket offers different levels of stability. Some of Russia's exports can be sold year after year in the same markets and enjoy a solid competitive position. Others have higher rates of experimentation and failure. In an analysis of export survival, Russia's relationships within the EACU¹⁵ and secondarily in the rest of the CIS are by far the most lasting compared with other geographical regions, while export of primary and resource-based intermediate goods have higher survival rates than other manufactured exports. Russia's comparatively low survival performance relative to the BRICS is accounted for by low survival of exports outside the former Soviet Union and of exports other than the traditional resource-based exports.

Exporting for technological upgrading can promote greater sophistication of products. While the broader benefits of a strategy of promoting high-technology exports are a subject of some dispute among

¹³ The source is Comtrade

¹⁴ "Mineral products" in this report includes not only mineral fuels (HS 27), but non-fuel mineral products (HS 25 and 26), which account for 1 percent of Russia's exports. Rosstat data on regional exports group all mineral products together, but in fact 98 percent are mineral fuels. Since exports are assigned the location of company headquarters, high export shares for places like Moscow city, Moscow region, and St. Petersburg city may not reflect where the exports are actually produced.

economists,¹⁶ there appears to be an association between exports of technology-intensive goods and the development of innovation and new capabilities among firms. Promoting technology-intensive exports is a stated objective of current Russian export policy.¹⁷ Regionally, Russia's exports of machinery, equipment, and transport equipment mainly originate in the Central and Volga districts. About 60 percent of Russia's exports of machinery and transport equipment are sold in EACU markets and other CIS countries.¹⁸

Increasing exports and FDI attractiveness are central to efforts to promote living standards and development in lagging regions. For example, the North Caucasus contains six of the 11 lowest-income regions in the Russian Federation. All these regions had export performance far below the Russian average in 2011, and that year four of the six received no FDI at all. A strategy to develop the North Caucasus by increased outward orientation would take account of the existing pattern of exports, over half of which are in chemicals and related industries, and its geographical orientation, with the potential for closer links with Turkey and the Middle East.

¹⁶ See Lederman and Maloney (2012), ch. 3, for a discussion.

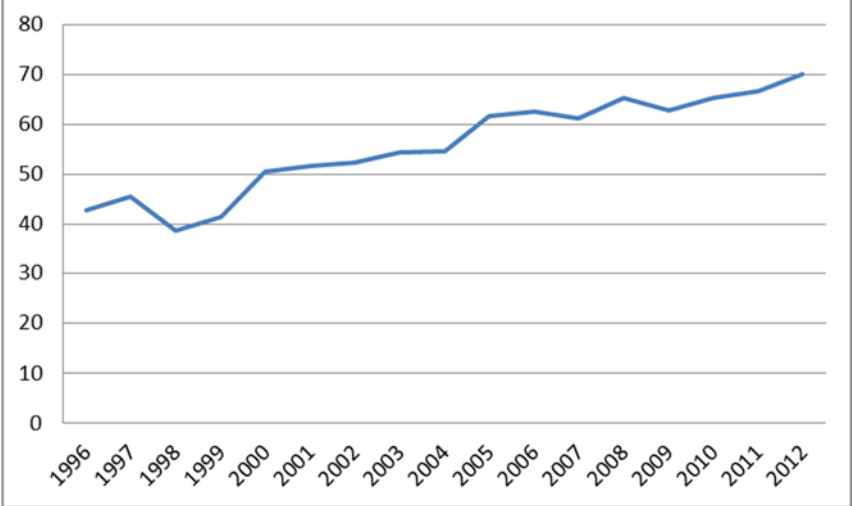
¹⁷The development of high technology sectors is a policy priority for Vneshecombank (the Bank for Foreign Economic Activity, the Russian development bank): see <http://veb.ru/en/strategy/support/>. The Export Insurance Agency of Russia, founded in 2011, also has top-priority sectors for export support that are mainly high-tech. These include mechanical engineering, aircraft construction, rocket and space industry, automotive industry, shipbuilding, power engineering, and the chemical industry. See <http://veb.ru/en/strategy/support/export/>.

¹⁸ This is a foreshadowing of a policy theme to be expanded on later—they are selling these goods in a protected market (see “stability”). These goods will not be more broadly competitive unless there is continued FDI and other technology flow from the most advanced countries. However, the historical ties in machinery and transport equipment within the former Soviet Union have some development value in terms of relationships and the stock of entrepreneurial experience.

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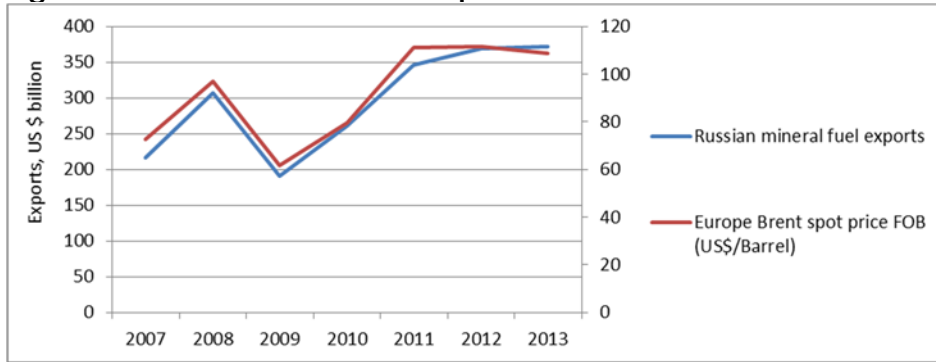
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Figure 1: Share of Mineral Fuels in Russian Exports, 1997–2013, Percent



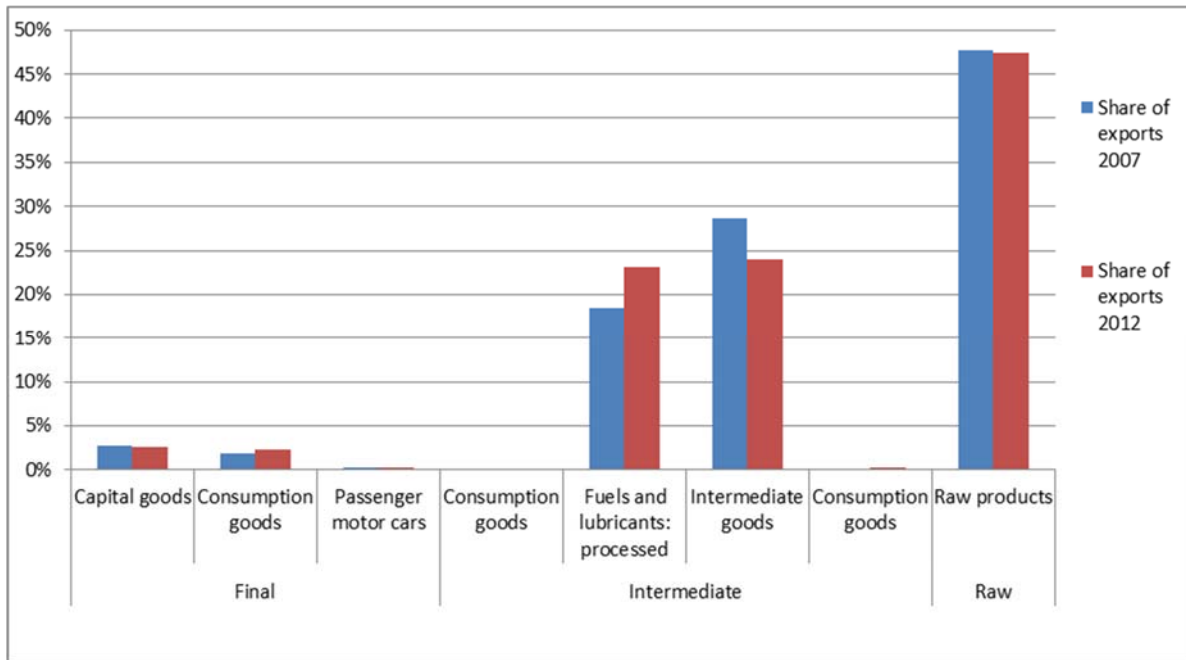
Source: COMTRADE.

Figure 2: Russian Mineral Fuel Exports and World Oil Prices



Source: U.S. Energy Information Administration and COMTRADE data.

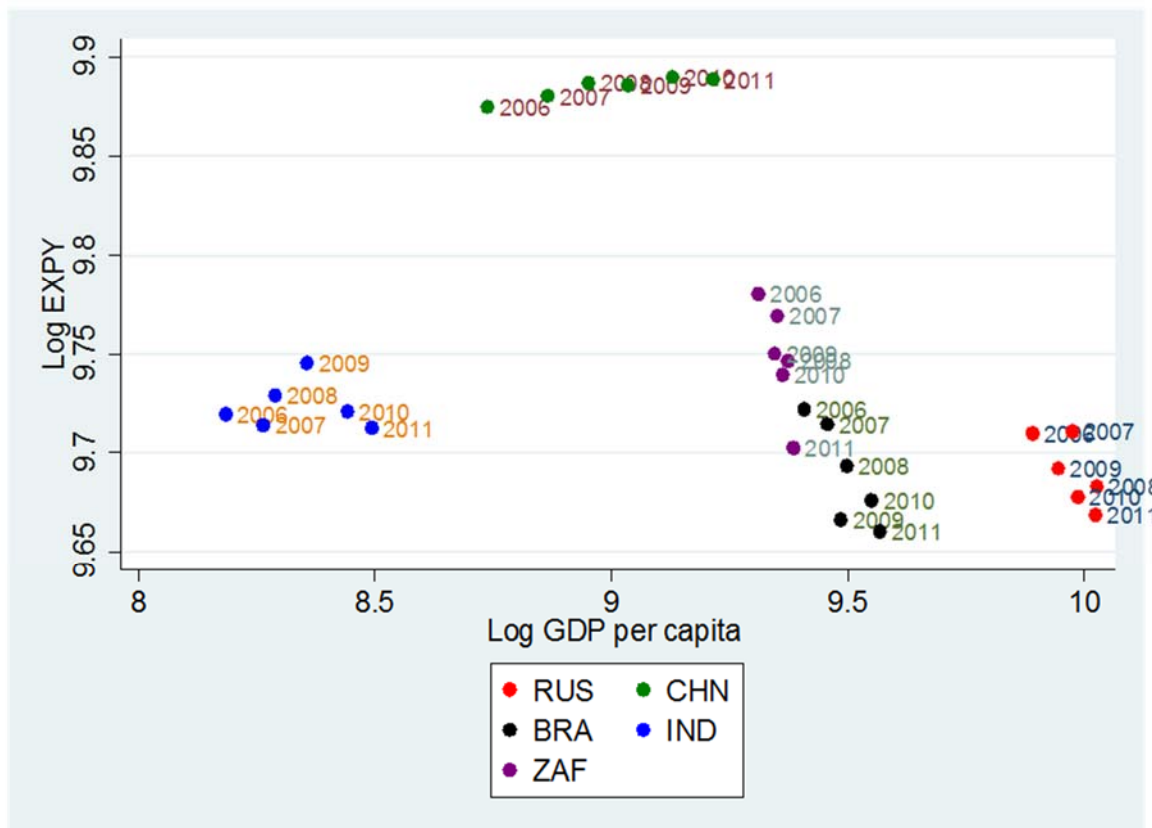
Figure 3: Russian Exports of Raw, Intermediate, and Final Products, 2007 and 2012, Percent



Source: COMTRADE data.

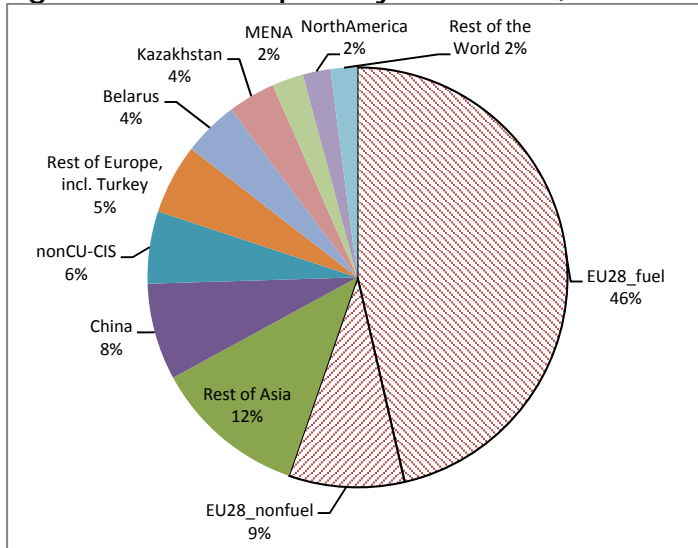
Notes: Data is organized by BEC categories. The categories Raw, Intermediate, and Final were developed by the Kazakhstan Ministry of Economy and Budget Planning.

Figure 4: Change in Sophistication of BRICS Exports



Source: Real GDP per capita in purchasing power parity (PPP) is compiled from World Development Indicators (WDI), EXPY from COMTRADE data.

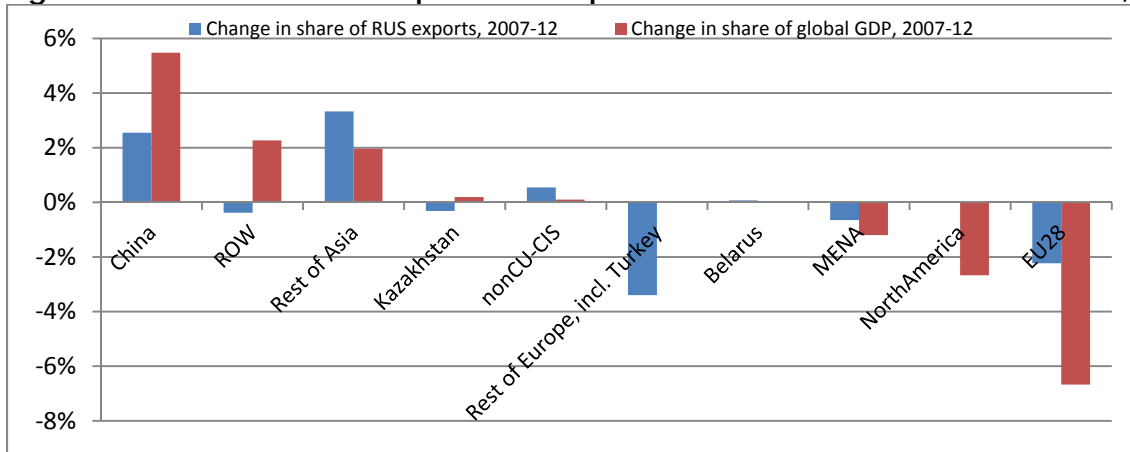
Figure 5: Russian Exports by Destination, 2013



Source: COMTRADE data.

Note: Fuel exports refer to chapter 27 in the Harmonized System (HS).

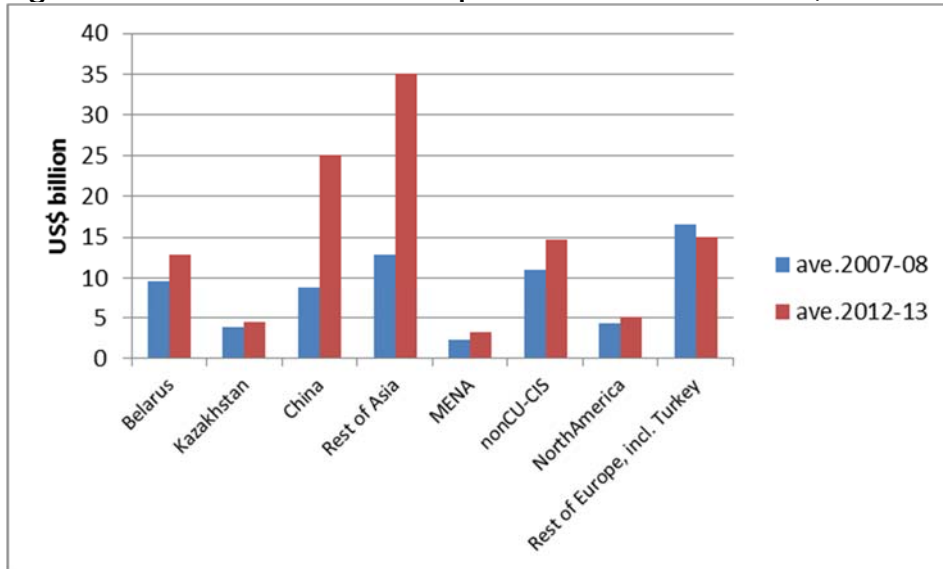
Figure 6: Shares of Russian Exports and Export Destination Shares of Global GDP, 2007–12



Source: COMTRADE and WDI data.

Notes: MENA = Middle East and North Africa; NonCU-CIS = members of the Commonwealth of Independent States, except the original three members of EACU; ROW = Rest of World; EU = European Union.

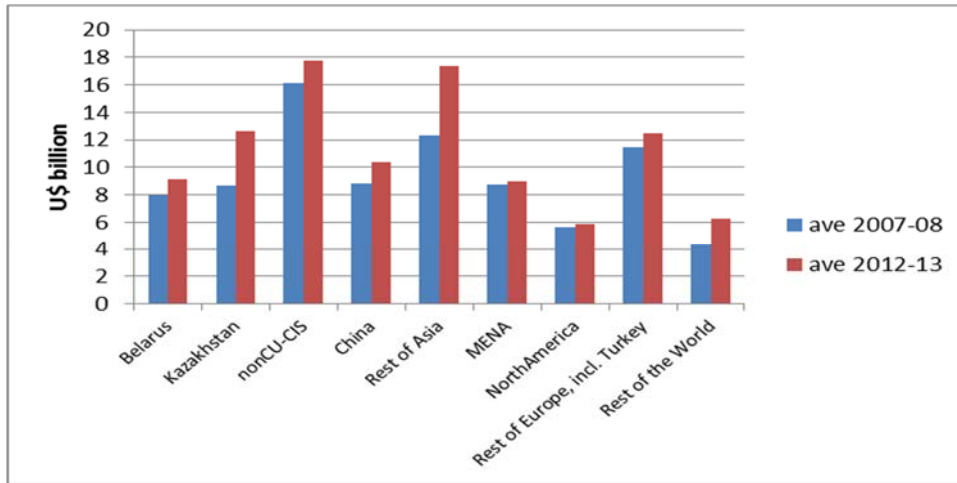
Figure 7: Russian Mineral Fuel Exports to non-EU Countries, 2007-08 and 2012-13



Source: COMTRADE data.

Notes: MENA = Middle East and North Africa; NonCU-CIS = members of the Commonwealth of Independent States, except the original three members of EACU; ROW = Rest of World; EU = European Union.

Figure 8: Russian Non-fuel Exports to Non-EU Destinations

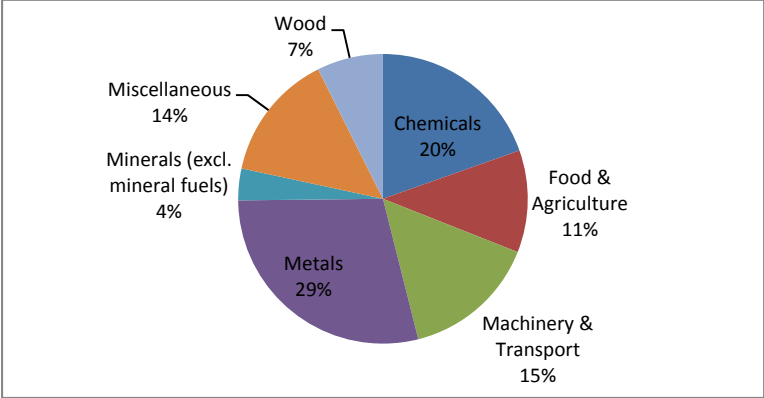


Source: COMTRADE data.

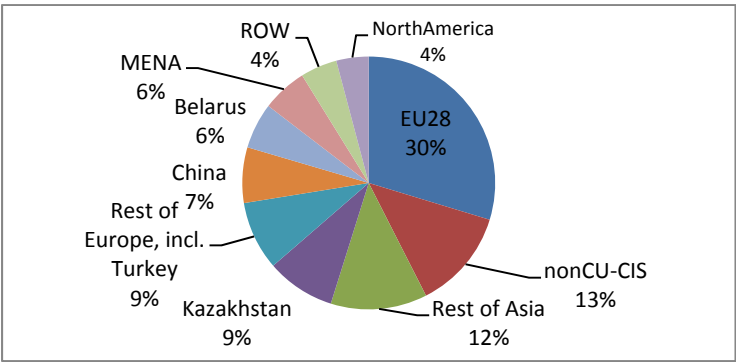
Notes: MENA = Middle East and North Africa; nonCU-CIS = members of the Commonwealth of Independent States, except the original three members of EACU; ROW = Rest of World; EU = European Union.

Figure 9: Russian Non-fuel Exports by Product and Destination, 2013

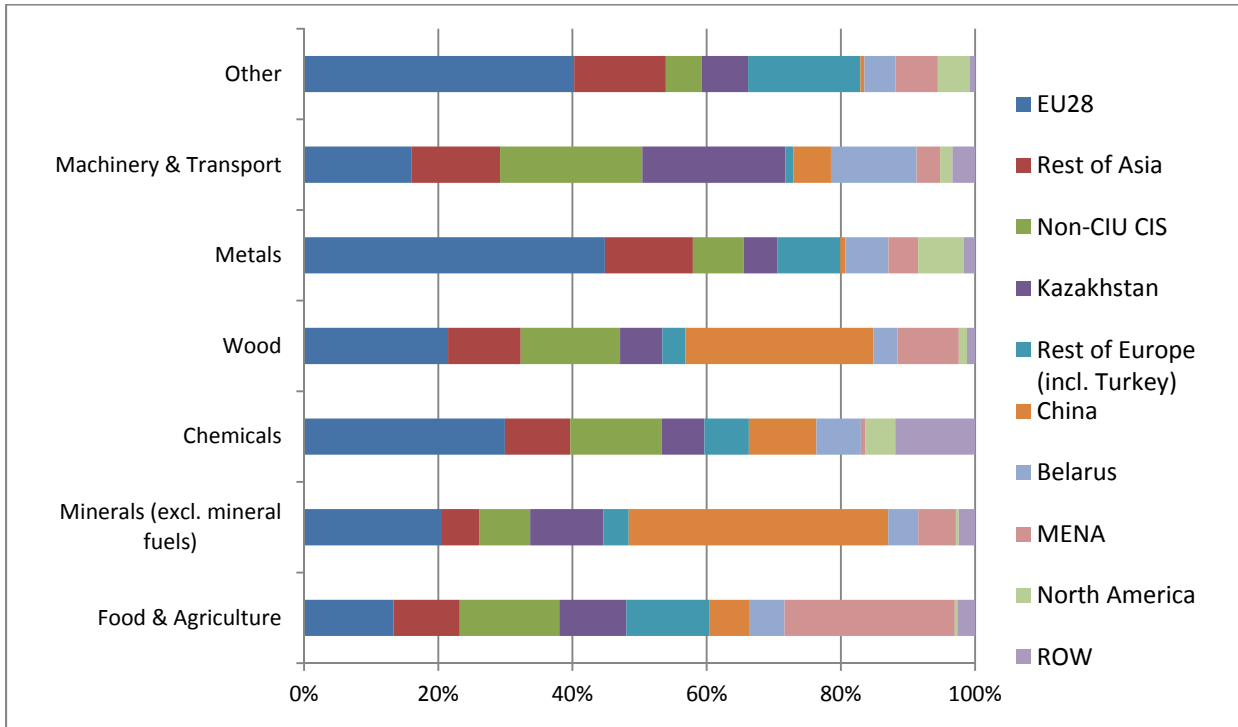
a) Composition of Non-fuel Exports



b) Non-fuel Exports by Destination



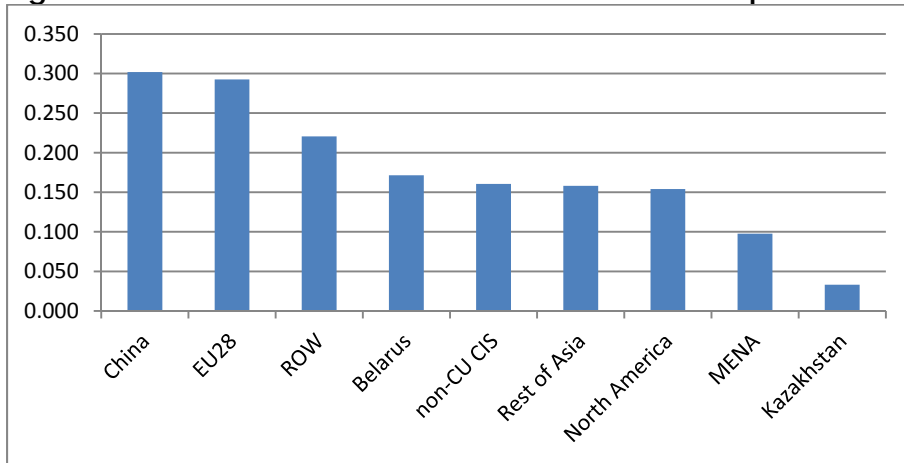
Destination by Type of Non-fuel Export



Source: COMTRADE.

Notes: MENA = Middle East and North Africa; nonCU-CIS = members of the Commonwealth of Independent States, except the original three members of EACU; ROW = Rest of World; EU = European Union.

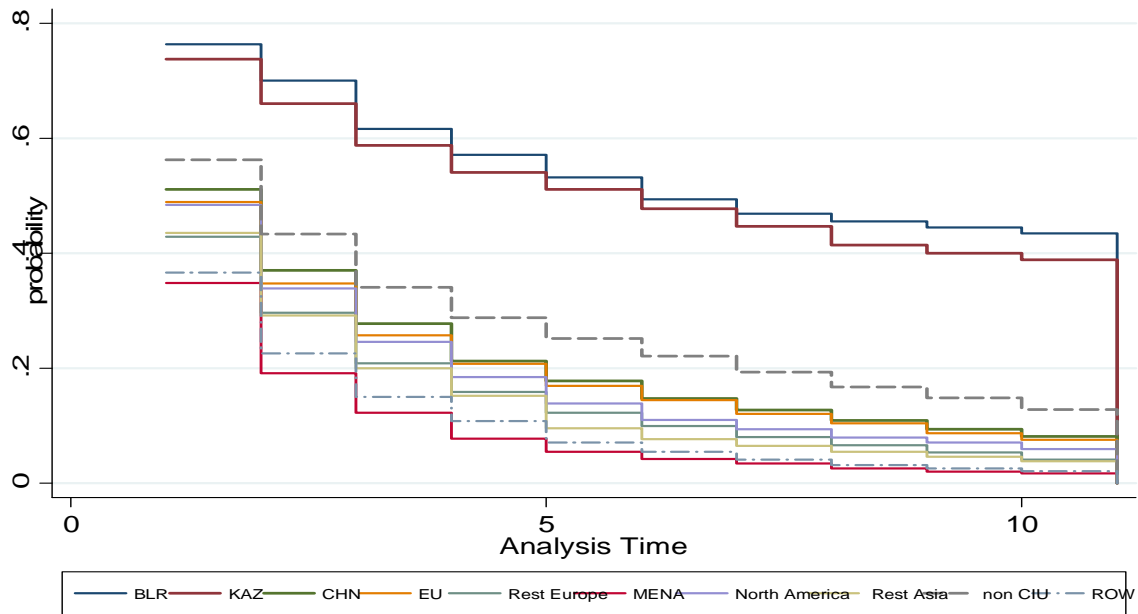
Figure 10: Herfindahl-Hirschman Index for Russia's exports in 2012



Source: COMTRADE data.

Note: The index is calculated over three-digit categories of the SITC (Standard International Trade Categories).

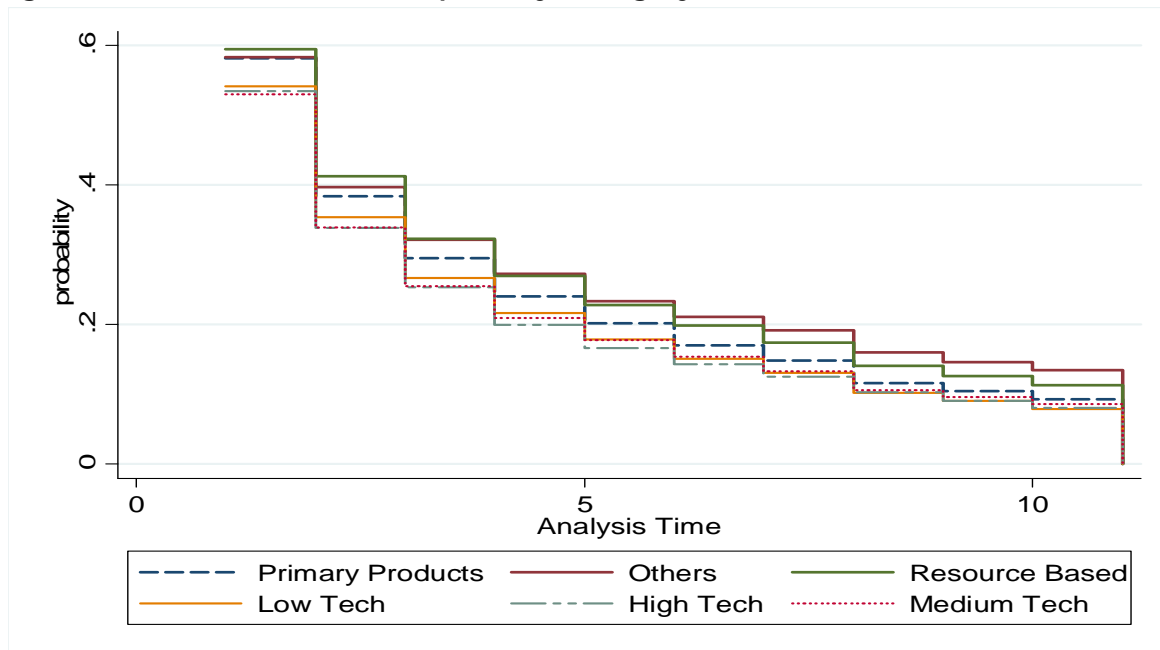
Figure 11: Survival Rate of Russian Exports by Destination, EACU and Other Countries, 2002-12



Source: COMTRADE data.

Notes: Analysis time is in years, with year 0 = 2002 and year 11 = 2012. BLR = Belarus; KAZ = Kazakhstan; CHN = China; MENA = Middle East and North Africa; nonCU-CIS = members of the Commonwealth of Independent States, except the original three members of EACU; ROW = Rest of World; EU = European Union.

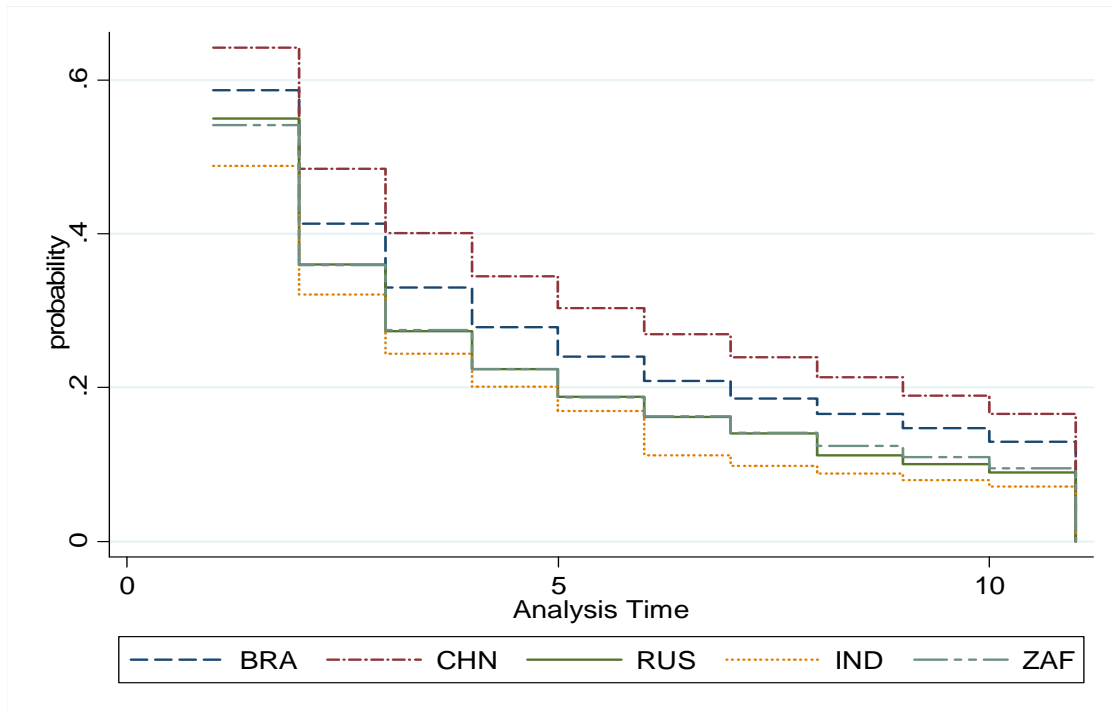
Figure 12: Survival of Russian Exports by Category, 2002-12



Source: COMTRADE data.

Note: Analysis time is in years, with year 0 = 2002 and year 11 = 2012.

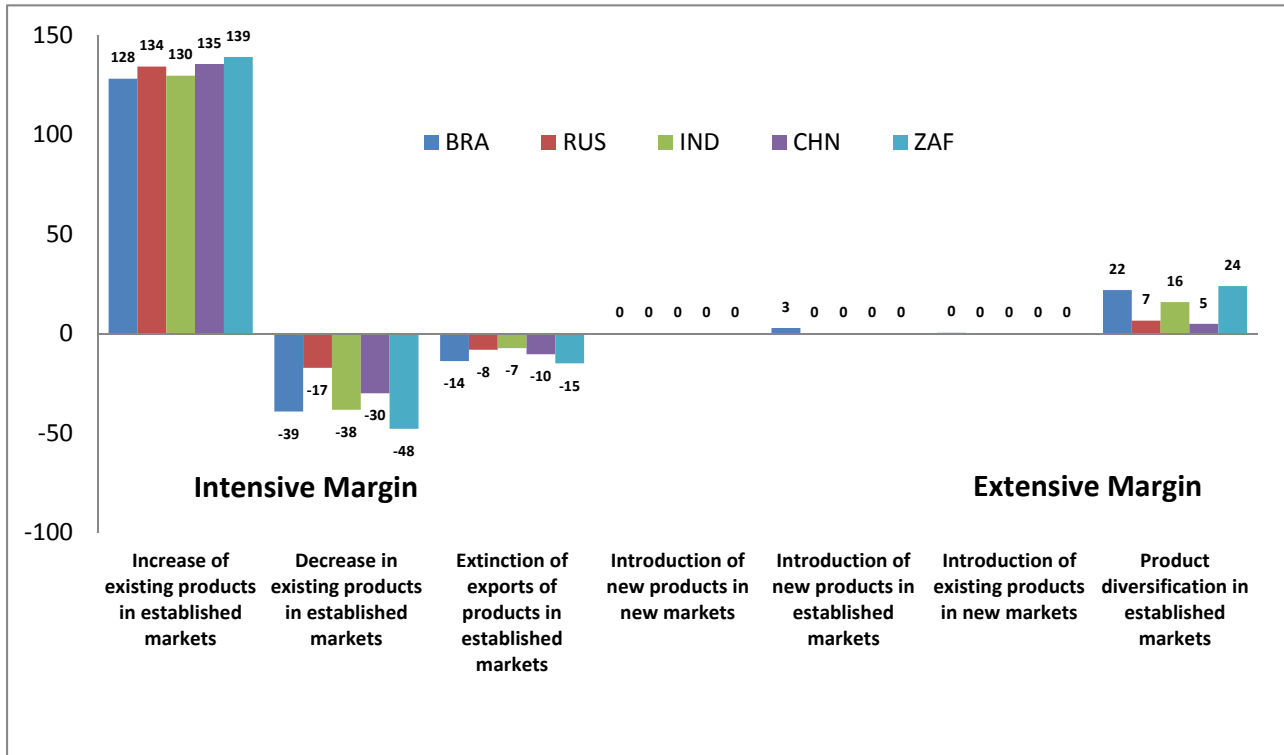
Figure 13: Survival Rate of BRICS Exports, 2002–12



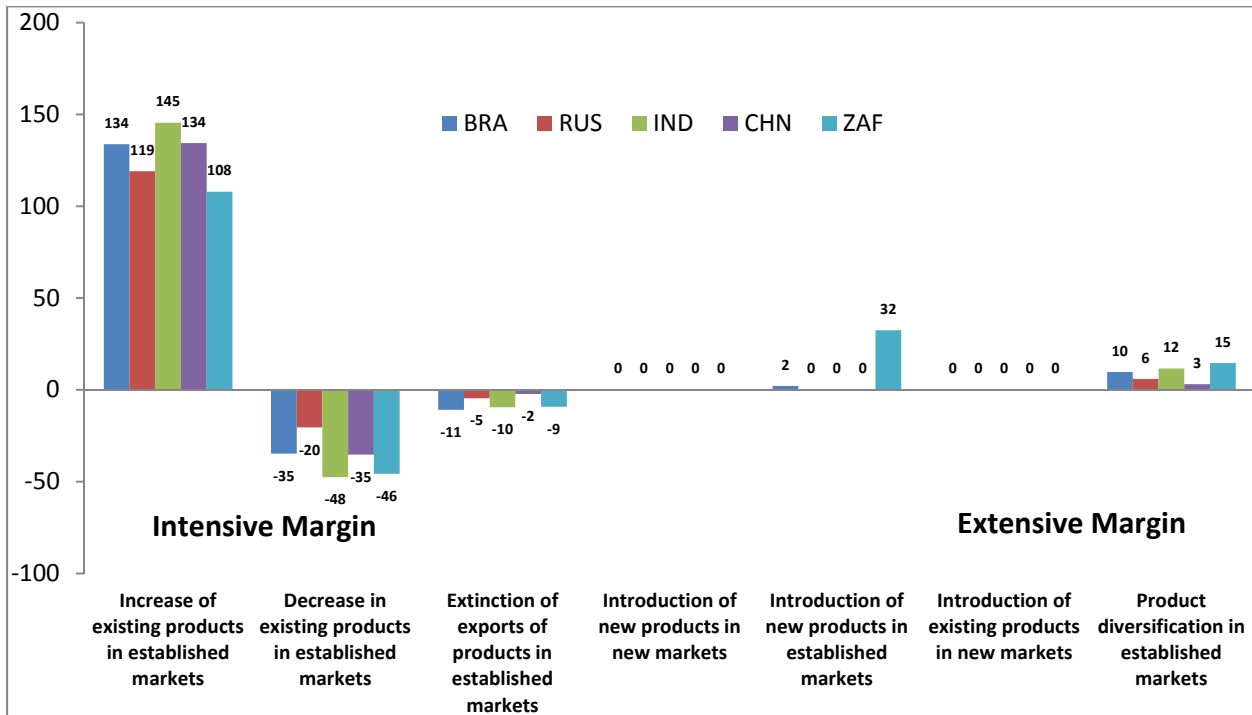
Source: COMTRADE data.

Notes: Analysis time is in years, with year 0 = 2002 and year 11 = 2012. BRA = Brazil; CHN = China; RUS = Russia; IND = India; ZAF = South Africa.

Figure 14: Export Growth in BRICS Countries, 2006–08 vs 2011–12)
a: 2006–08



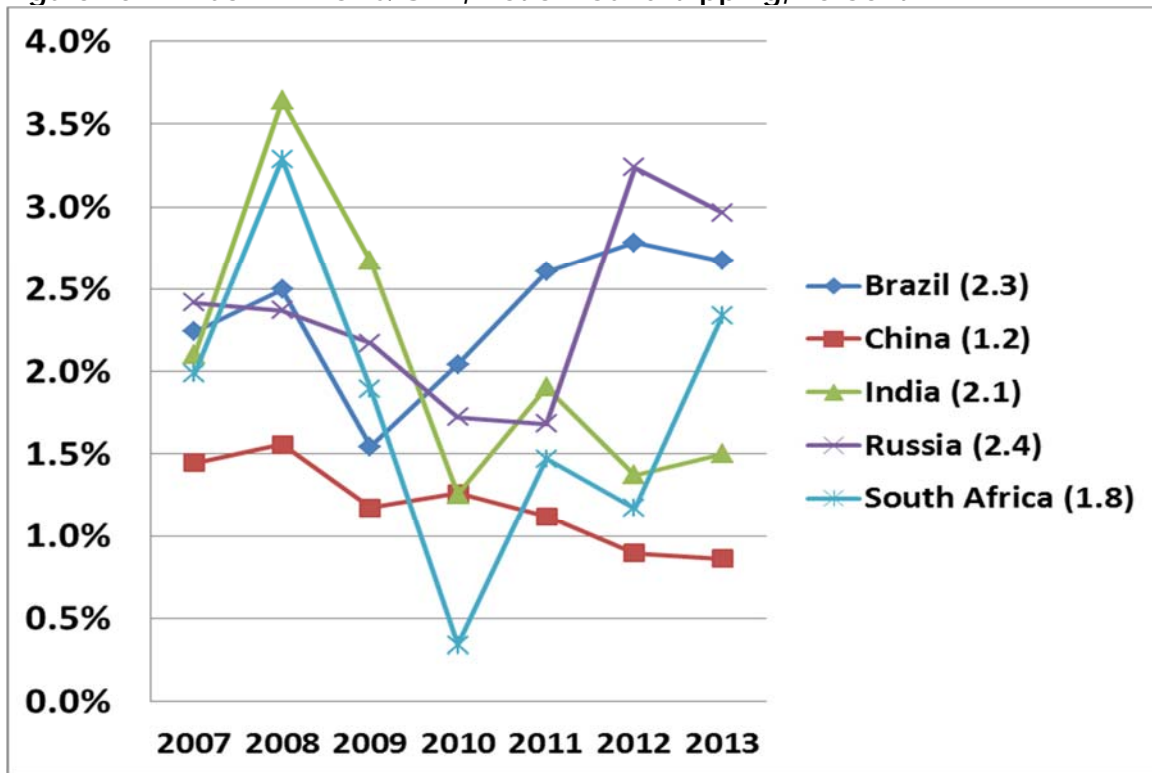
b: 2011–12



Source: WITS

Note: The analysis excludes 2009, the year of the trade crisis, in order to focus on periods of trade growth.

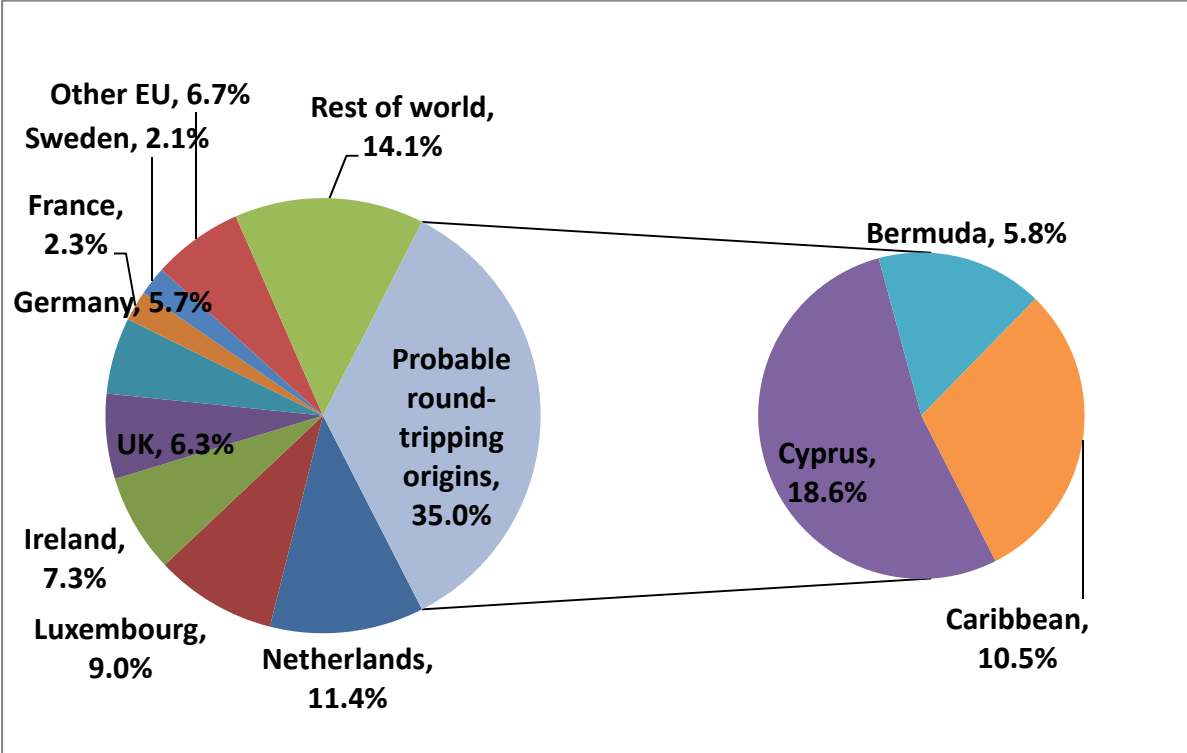
Figure 15: Annual FDI Flows/GDP, Net of Round-tripping, Percent



Source: UNCTAD and Bank of Russia data.

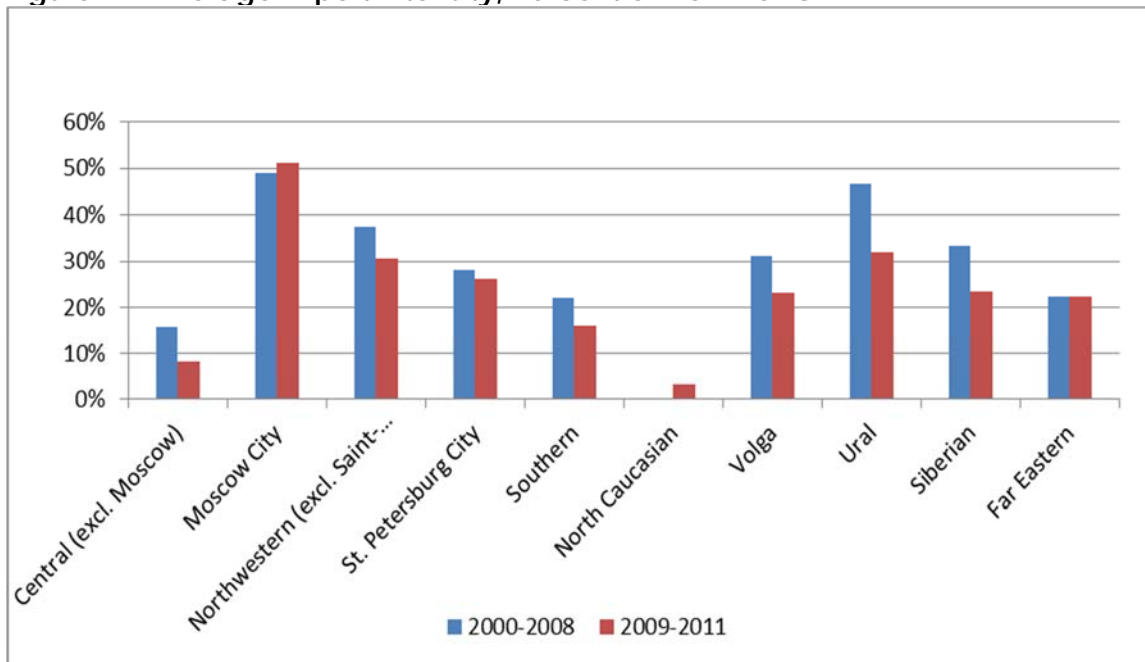
Note: Round-tripping sources of FDI are defined as Bermuda and the Caribbean, plus (for Russia) Cyprus, and (for China) 40 percent of FDI of Hong Kong, China, origin (midpoint of the range in Xiao 2004). Percentage of round-tripping for 2013 for countries other than Russia is based on the 2007–12 average. Values in the color key refer to period averages.

Figure 16: Sources of Russian FDI, 2007–12



Source: Central Bank of Russia.

Figure 17: Average Export Intensity, Percent of Nominal GRP



Source: Rosstat.

Note: Location of exporting firms is based on where the firm's headquarters are located the firm.

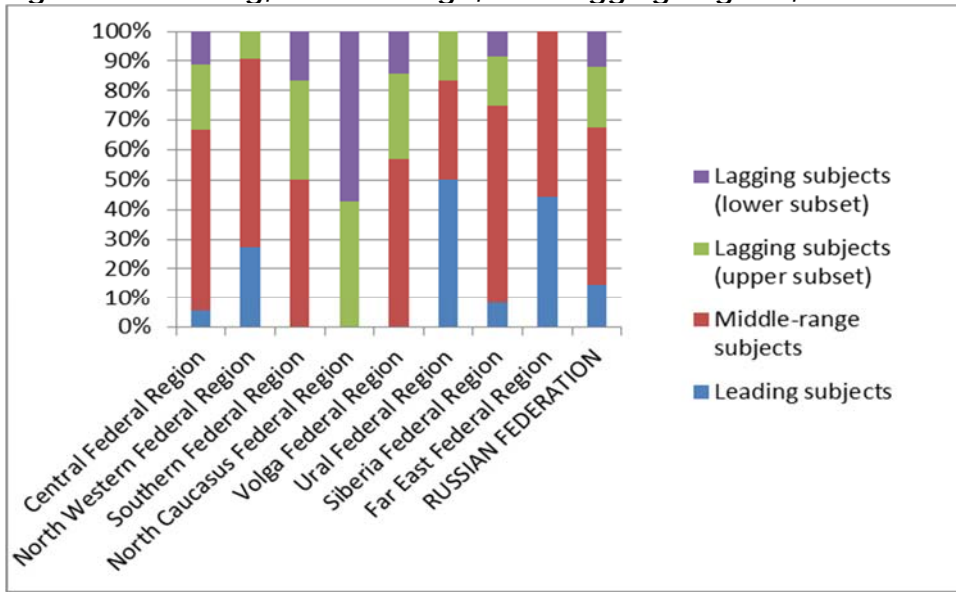
Figure 18: Leading and Lagging Regions of the Russian Federation



Source: Rosstat.

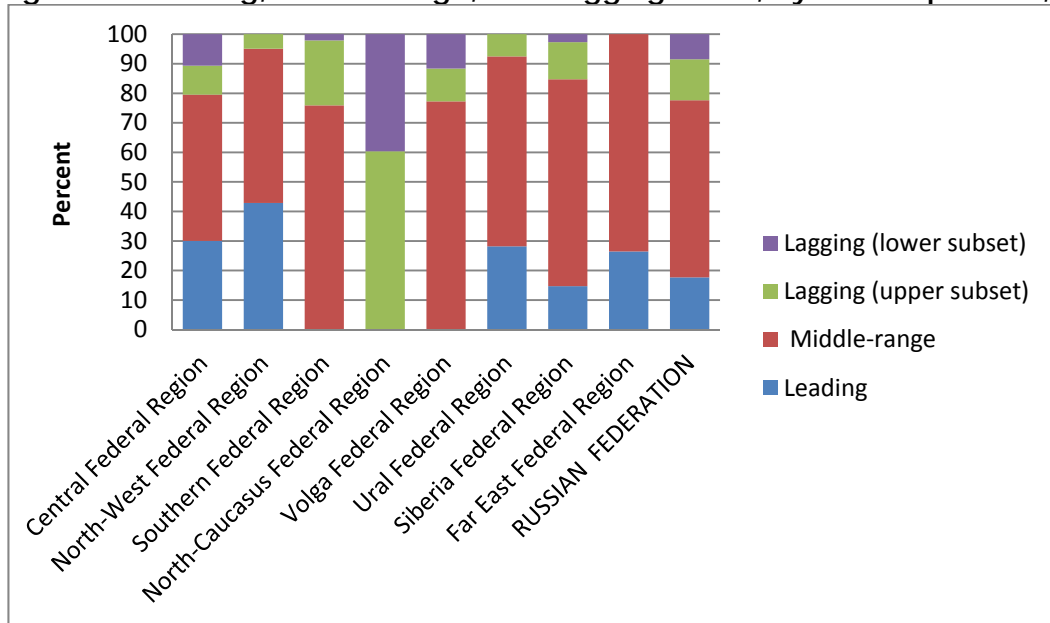
Notes: Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhny Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

Figure 19: Leading, Middle-range, and Lagging Regions, Russian Federation



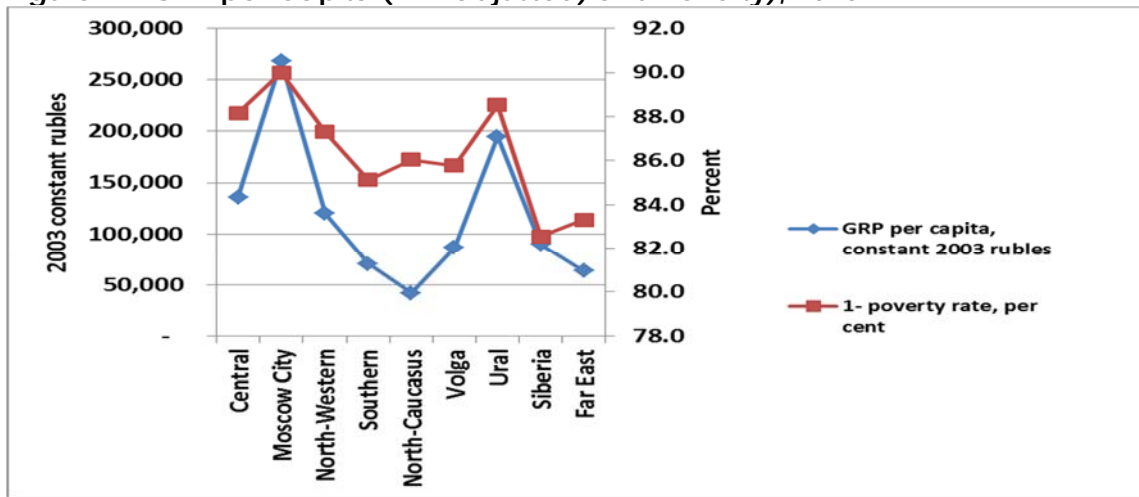
Source: Rosstat.

Figure 20: Leading, Middle-range, and Lagging Areas, by Total Population,



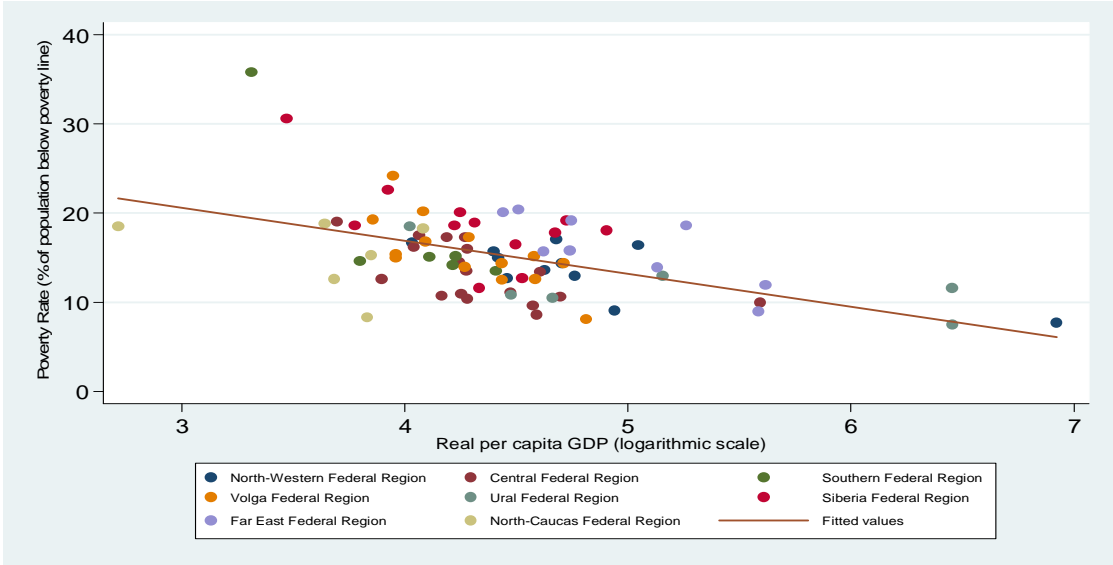
Source: Rosstat.

Figure 21: GDP per Capita (PPP-adjusted) and Poverty), 2010



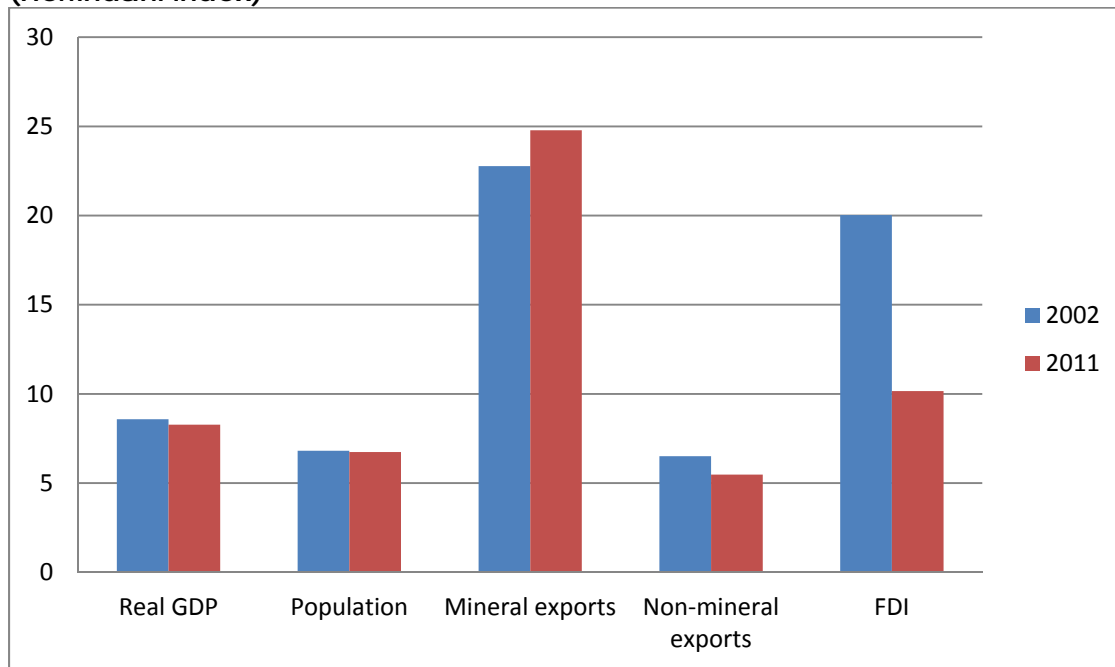
Source: Rosstat.

Figure 22: Poverty Rate and Real Per Capita GRP, Russian Federation



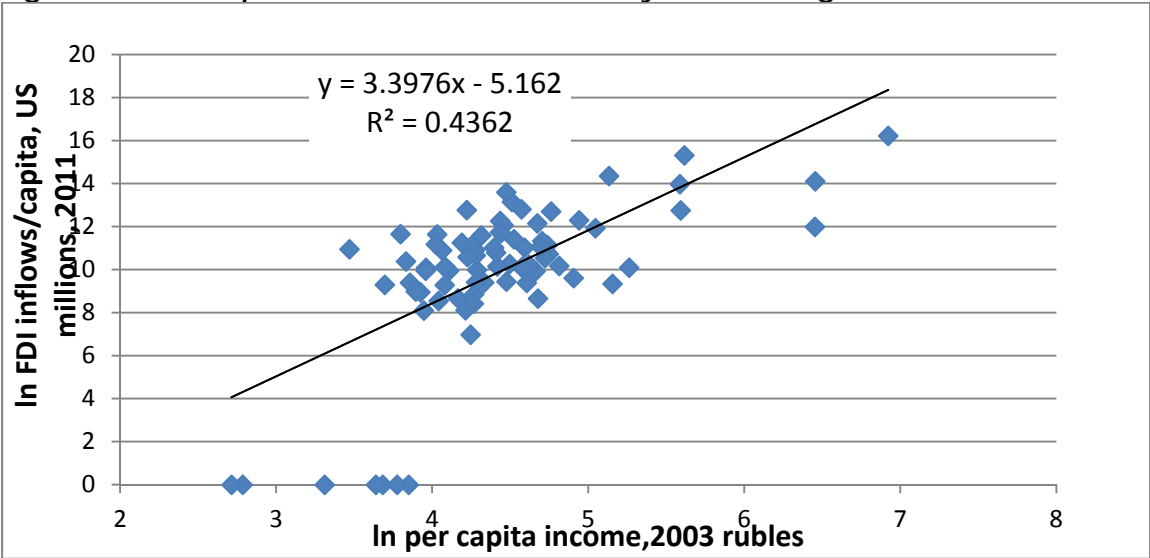
Source: Rosstat.

Figure 23: Concentration of Economic Activity, Russian Federation (Herfindahl index)



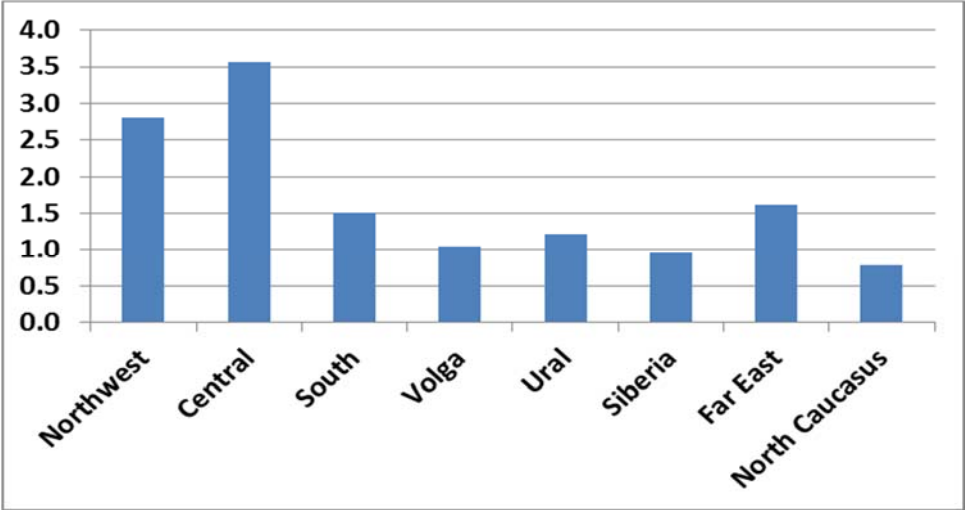
Source: Rosstat.

Figure 24: Per Capita Income and FDI Flows by Federal Region



Source: Rosstat.

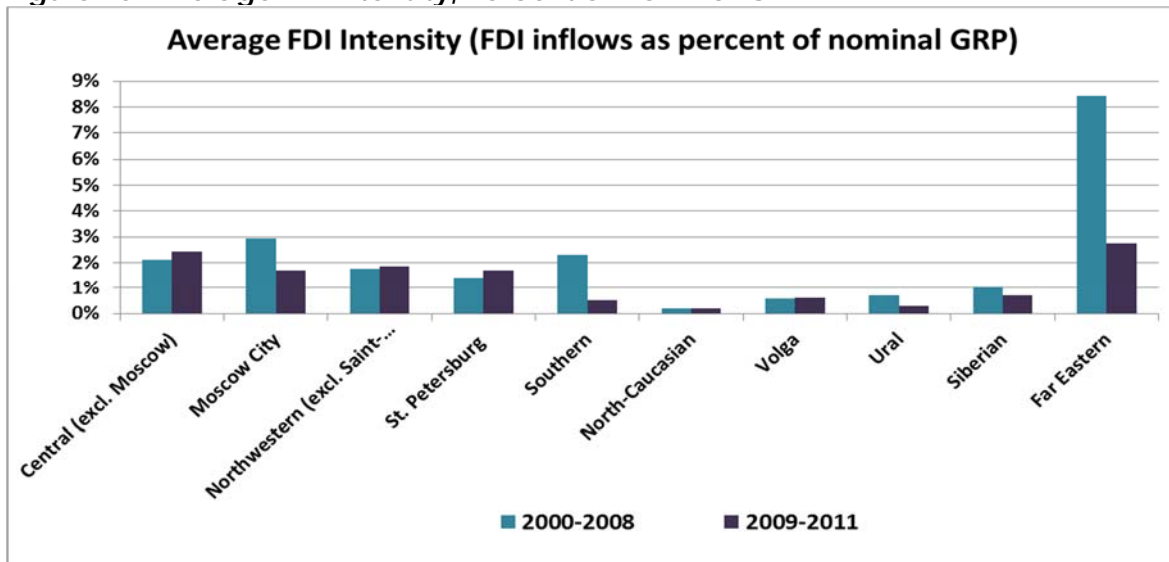
Figure 25: Firms with Majority Foreign Investment by Region, Percent



Source: Ruslana.

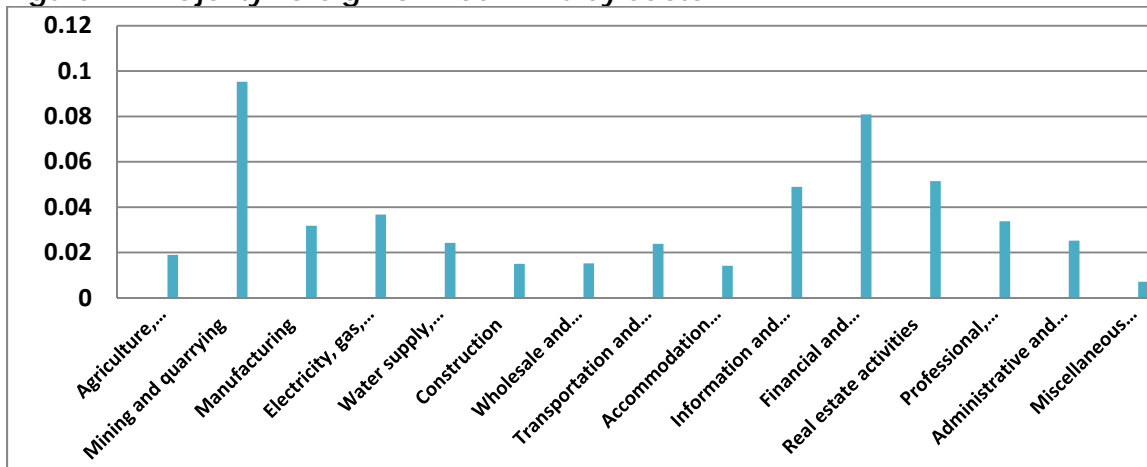
Note: Share of all active firms; data for the most recent year available (usually 2012).

Figure 26: Average FDI Intensity, Percent of Nominal GRP



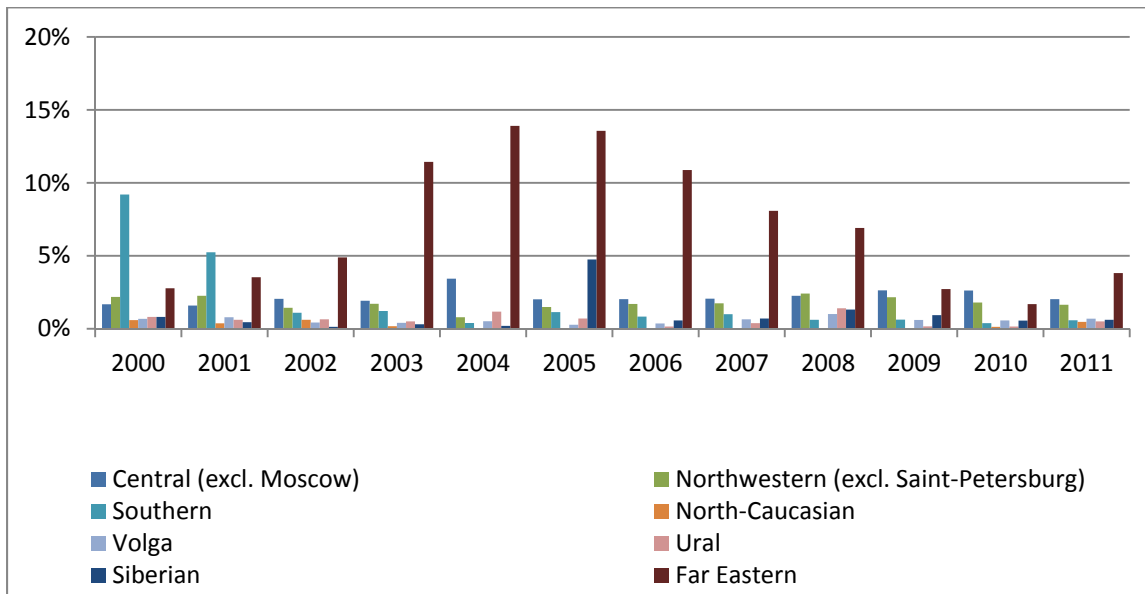
Source: Rosstat.

Figure 27: Majority Foreign-Owned Firms by Sector



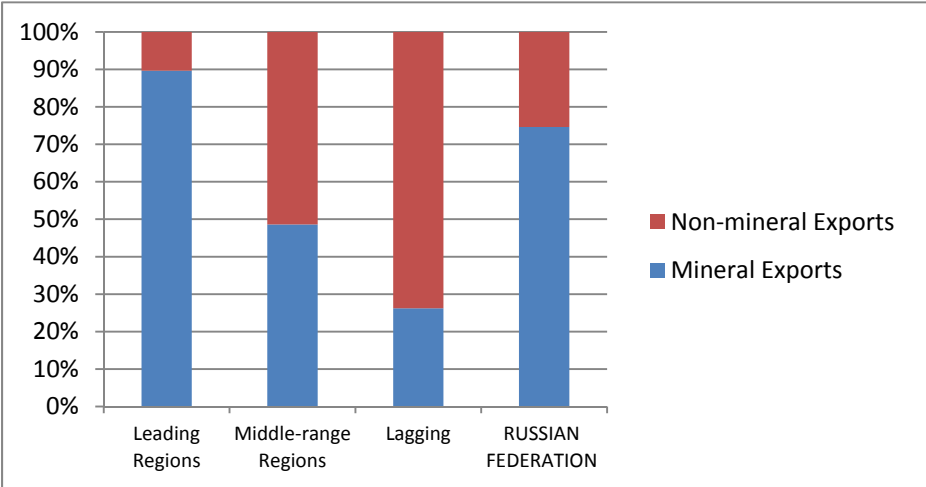
Source: Ruslana. Share of all active firms listed; data for the most recent year available (usually 2012).

Figure 28: FDI Intensity, Percent of GRP, 2000–11



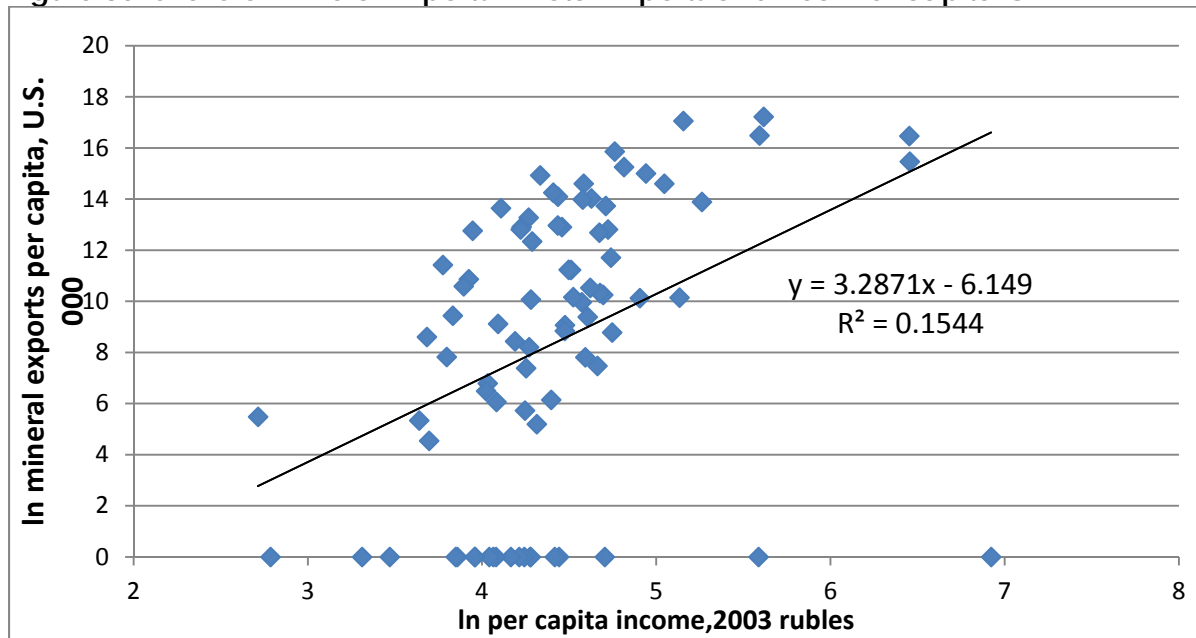
Source: Rosstat.

Figure 29: Mineral and Non-Mineral Exports by Type of Region, 2011, Percent



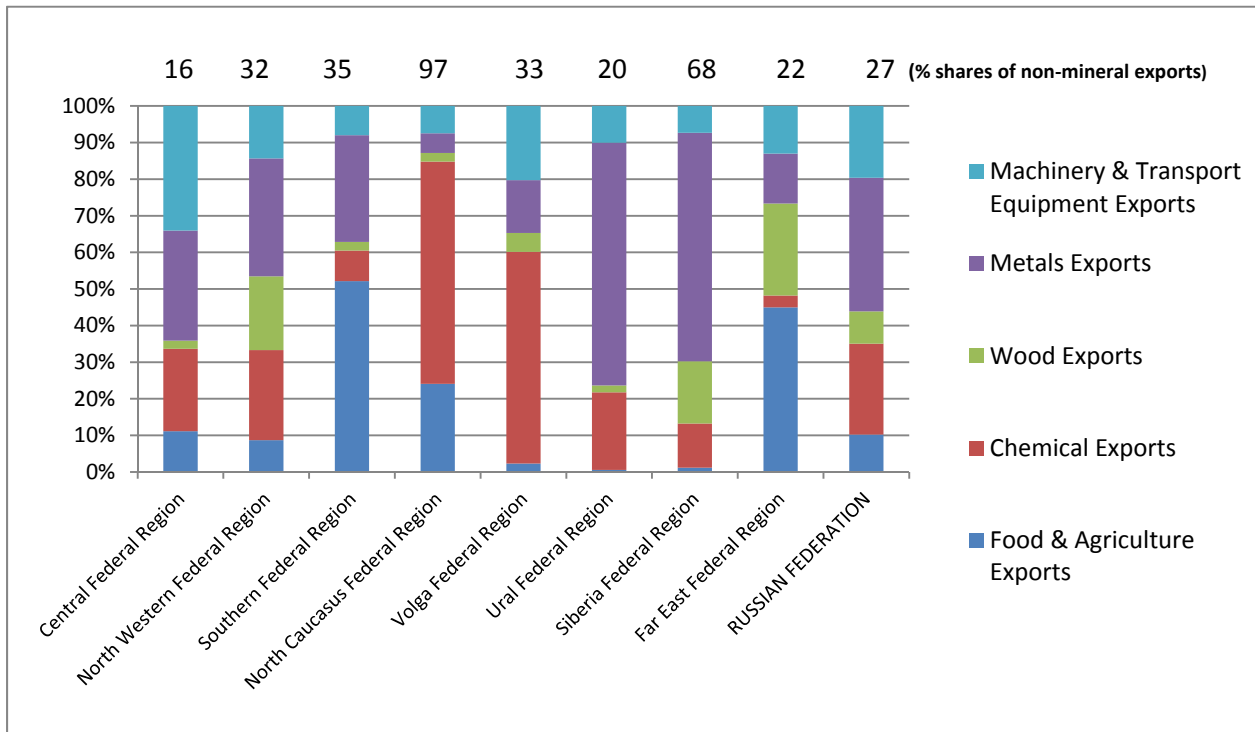
Source: Rosstat.

Figure 30: Share of Mineral Exports in Total Exports and Real Per capita GDP



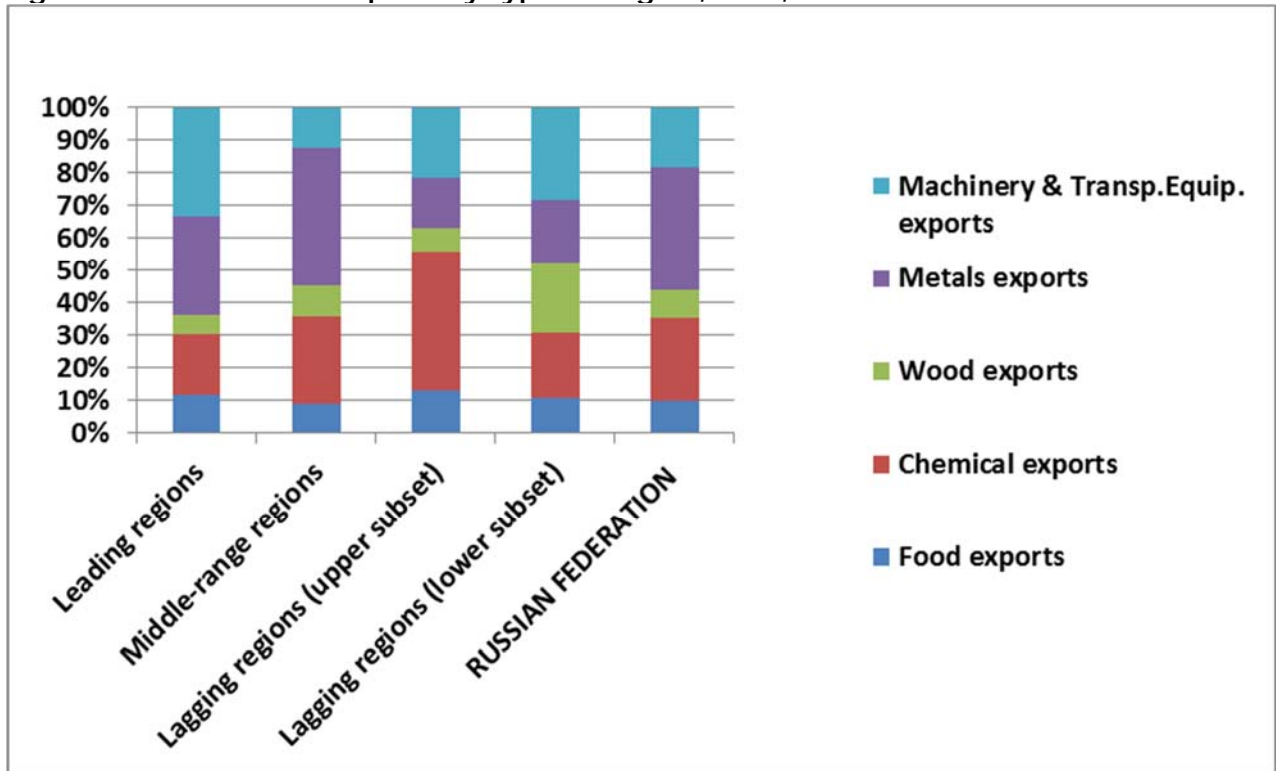
Source: Rosstat.

Figure 31: Non-mineral Exports by Product and Federal Region, 2011, Percent



Source: Rosstat.

Figure 32: Non-mineral Exports by Type of Region, 2011, Percent



Source: GTIS,

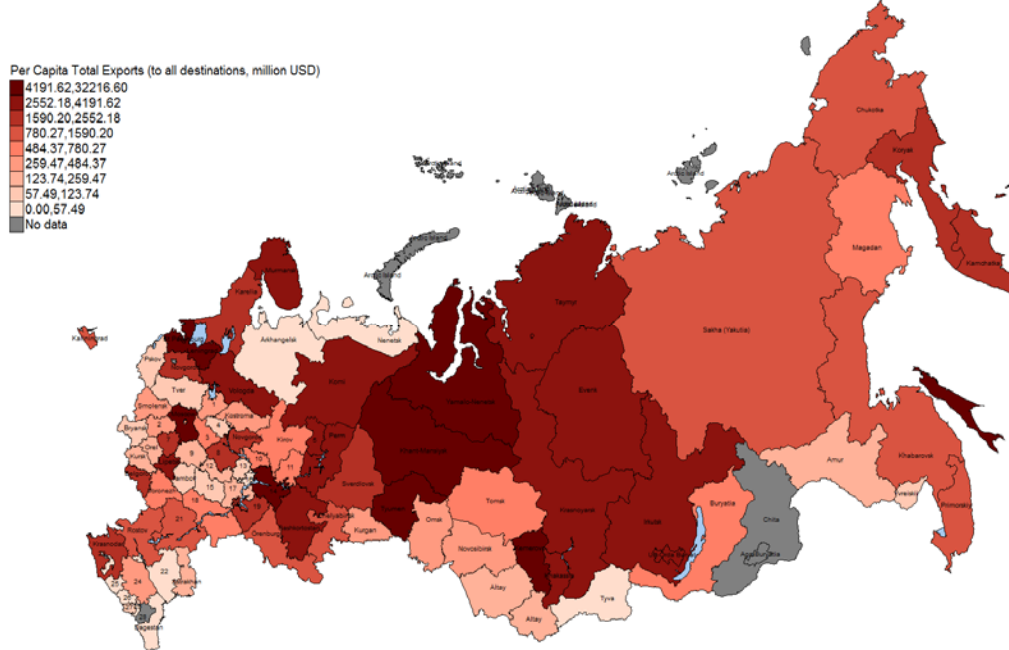
Figure 33: NonCU Destinations for Russian Regional Exports ^a
(largest total export value)



Source: GTIS.

Notes: GTIS data were used because Rosstat, which was used to analyze exports of different product categories to pooled destinations, does not provide information on destinations by federal region. The GTIS data cover the same federal regions as Rosstat except for the Nenets, Yamalo-Nenets, and Khanty-Mansi Autonomous Okrugs. However, for the other federal regions, data from both sources are very close (correlation coefficients were 0.99 for mineral exports and 0.94 for non-mineral exports). GIS also severely underreports Russian exports to the EACU members Belarus and Kazakhstan, which are therefore excluded here. Exports to Abkhazia and South Ossetia are also excluded because their territorial status is disputed. MENA = Middle East-North Africa; nonCU-CIS = members of the Commonwealth of Independent States but not among the first three members of EACU; EU = European Union; ROW; Rest of World. Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia, (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

Figure 34: Total Exports Per Capita to all Destinations (US\$, millions)



Source: GTIS.

Notes: Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia [[2 twelves]], (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

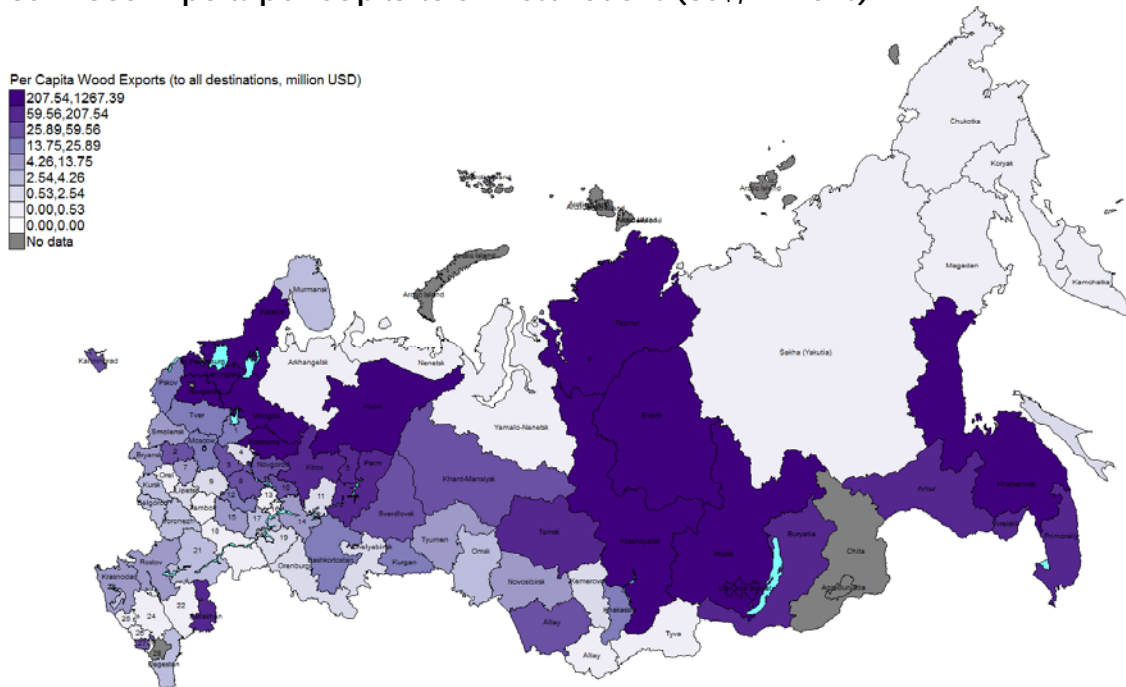
Figure 35: Main Destinations for Exports of Wood, excluding Eurasian Customs Union



Source: GTIS.

Notes: MENA = Middle East-North Africa; nonCU-CIS = members of the Commonwealth of Independent States but not among the first three members of EACU; EU = European Union; ROW = Rest of World. Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

Figure 36: Wood Exports per Capita to all Destinations (US\$, millions)



Source: GTIS.

Notes: Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia], (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

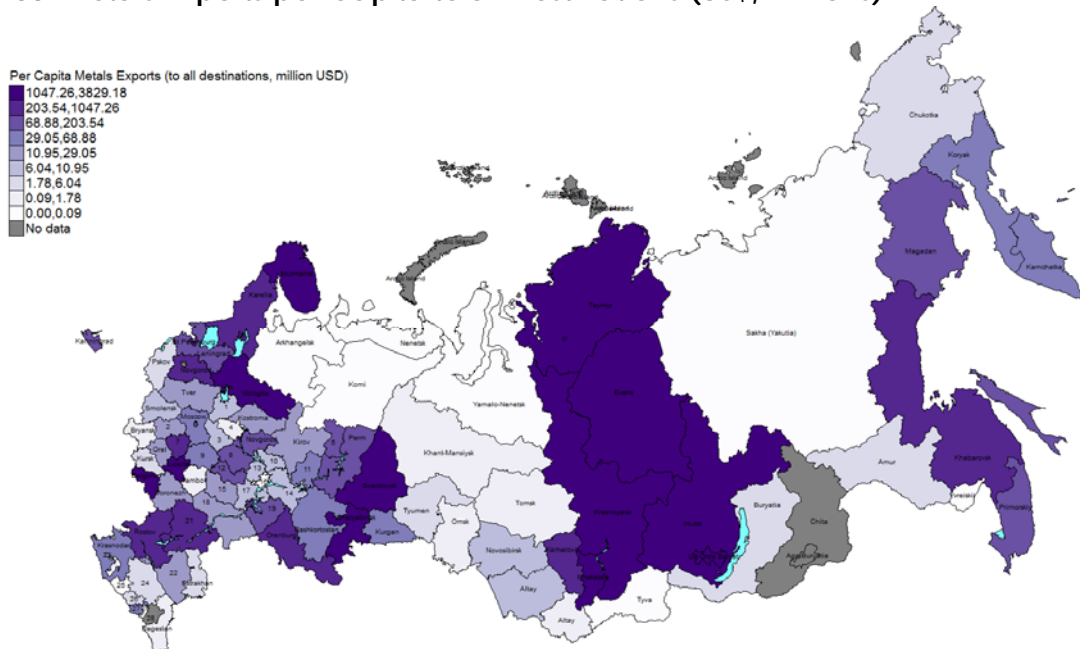
Figure 37: NonCU Main Destinations for Exports of Metals



Source: GTIS.

Notes: MENA = Middle East-North Africa; nonCU-CIS = members of the Commonwealth of Independent States but not among the first three members of EACU; EU = European Union; ROW = Rest of World. Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

Figure 38: Metals Exports per Capita to all Destinations (US\$, millions)



Source: GTIS.

Notes: Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

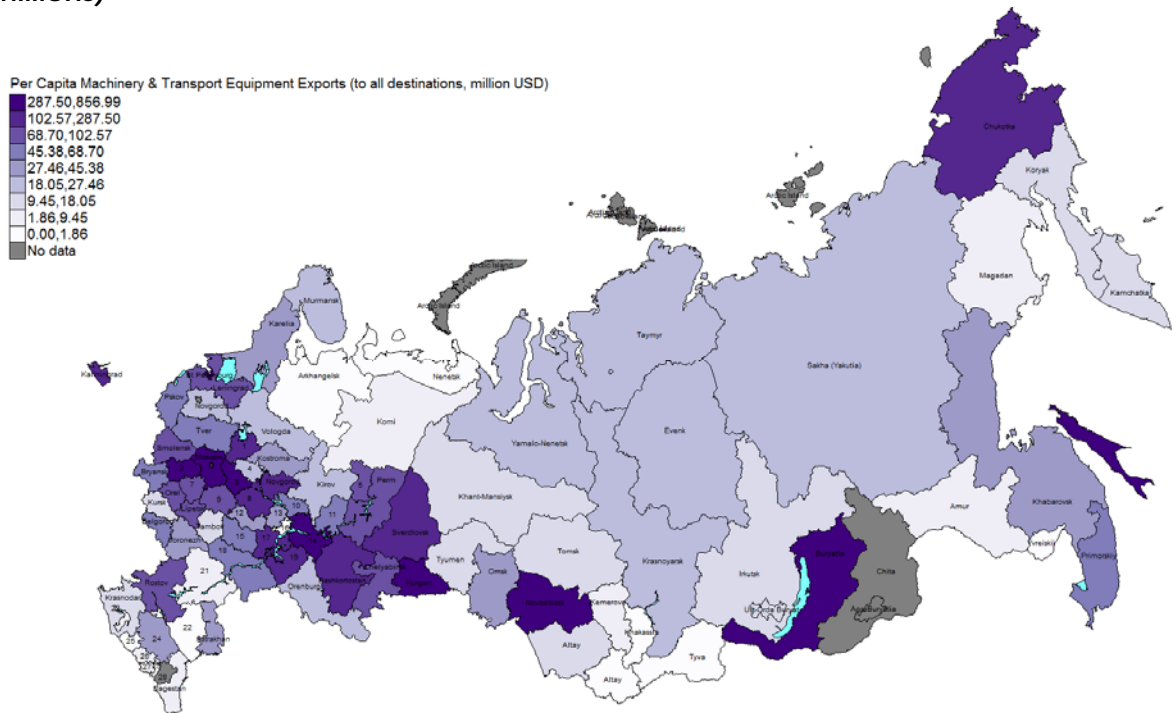
Figure 39: NonCU Main Destinations for Exports of Machinery & Transport Equipment



Source: GTIS.

Notes: MENA = Middle East-North Africa; nonCU-CIS = members of the Commonwealth of Independent States but not among the first three members of EACU; EU = European Union; ROW = Rest of World. Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia, (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

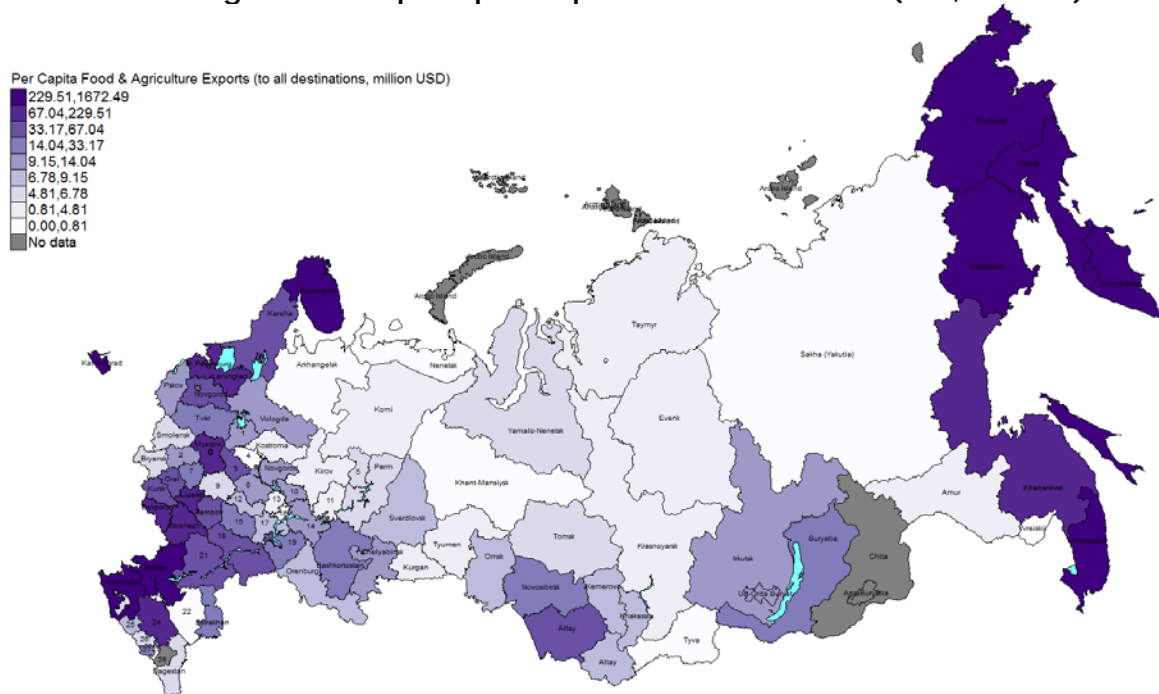
Figure 40: Exports of Machinery and Transport Equipment per Capita to all Destinations, (US\$, millions)



Source: GTIS.

Notes: Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia], (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

Figure 41: Food and Agriculture Exports per Capita to all Destinations (US\$, millions)



Source: GTIS.

Notes: Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia (14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

Figure 42: NonCU Destinations for Exports of Food and Agriculture



Source: GTIS data.

Notes: MENA = Middle East-North Africa; nonCU-CIS = members of the Commonwealth of Independent States but not among the first three members of EACU; EU = European Union; ROW = Rest of World. Numbered regions: (1) Yaroslavl, (2) Kaluga, (3) Vladimir, (4) Ivanovo, (5) Perm, (6) Moscow City, (7) Tula, (8) Nizhniy Novgorod, (9) Ryazan, (10) Mari El, (11) Udmurtia, (12) Mordovia, (13) Chuvashia [(14, 16) Tatarstan, (15) Penza, (17) Ulyanovsk, (18) Saratov, (19, 20) Samara, (21) Volgograd, (22) Kalmykia, (23) Adygea, (24) Stavropol, (25) Karachevo-Chercheskia, (26) Kabardino-Balkaria, (27) North Ossetia, (28) Chechnya, and (29) Ingushethia.

Table 1: BRICS Adjusted Trade Openness Ratios, 2012

	Real GDP per Capita, PPP, \$ (1)	Actual Trade/GDP(%)[*] (2)	Potential Trade1/GDP(%) (3)	Potential Trade2/GDP(%) (4)	Potential Trade3/GDP(%) (5)
Russian Federation	15,177	51.3	102.6	70.0	39.9
Brazil	10,264	26.9	98.3	61.8	47.1
China	7,958	58.7	95.6	32.8	42.8
India	3,341	55.4	86.1	25.8	27.6
South Africa	9,860	59.6	97.9	80.4	73.3

Source: World Bank *Trade Competitiveness Diagnostics*.

Notes Predicted trade ratio is estimated by regressing the actual trade-to-GDP ratio on: the log of real per capita in column (3); the log of real per capita and log of population in column (4); the log of real per capita, log of population, and the log of arable land in column (5).

* Actual trade-to-GDP ratio for China is for 2011.

Table 2: Russia's RCA Index, Export Values, and Export Share

HS Chapters – Sectors	2007			2012			2007-12	2012-07
	Exports (US\$, Millions)	Export Share	RCAI	Exports (US\$, Millions)	Export Share	RCAI	Annual Average Growth	RCAI Difference
01-24 Food & Agriculture	16,516	2.6%	0.33	33,490	3.3%	0.47	15.2%	0.14
25-26 Non-fuel Minerals	4,684	0.7%	0.45	11,230	1.1%	0.68	19.1%	0.23
27 Mineral Fuels	433,031	66.9%	4.21	737,707	72.1%	4.28	11.2%	0.07
28-40 Chemicals	34,329	5.3%	0.37	57,834	5.6%	0.48	11.0%	0.11
44-48 Wood	22,997	3.6%	1.29	19,983	2.0%	1.1	-2.8%	-0.19
72-83 Metals	94,530	14.6%	1.52	88,810	8.7%	1.41	-1.2%	-0.11
84-89 Machinery & Transportation	26,626	4.1%	0.1	37,422	3.7%	0.13	7.0%	0.03
Miscellaneous	14,748	2.3%	0.14	37,372	3.7%	0.29	20.4%	0.15
Total	647,461	100%		1,023,849	100%		9.6%	

Source: COMTRADE data.

Note: HS refers to chapters of the Harmonized System of trade and tariff data of the World Customs Organization.

Table 3: Inbound FDI by Sector

	2005		2009		2012	Annualized growth rate of total FDI stock 2005-2012	Share of "quality" FDI 2009
	Total	Without the three main round-tripping FDI economies	Total	Without the three main round-tripping FDI economies	Total		
All sectors/industries	49,751	33,986	109,022	68,504	136,018	15.5%	62.8%
Primary	13,392	12,229	26,123	21,153	40,493	17.1%	81.0%
Agriculture, forestry, and fishing	520	354	1,343	948	1,727	18.7%	70.6%
Mining and quarrying	12,872	11,875	24,780	20,207	19,383	6.0%	81.5%
Mining of fossil fuels	12,200	11,460	22,567	19,212	17,510	5.3%	85.1%
Other	672	415	2,213	995	1,873	15.8%	45.0%
Secondary	20,217	12,068	42,811	25,926	99,603	25.6%	60.6%
Manufacturing	19,405	11,389	37,095	22,043	44,150	12.5%	59.4%
Food products	3,164	2,824	4,782	3,688	8,075	14.3%	77.1%
Wood and wood products	959	682	1,905	1,476	2,232	12.8%	77.5%
Pulp and paper	499	401	1,264	1,011	1,970	21.7%	80.0%
Refined petroleum and coke	3,589	2,939	4,365	4,331	2,038	-7.8%	99.2%
Chemical and pharmaceutical products	607	587	1,847	1,574	3,477	28.3%	85.2%
Rubber and plastics	436	391	1,041	836	1,540	19.8%	80.3%
Non-metallic mineral products	1,222	1,066	3,340	2,422	3,495	16.2%	72.5%
Basic metals and metal products	6,601	313	12,886	1,464	11,799	8.7%	11.4%
Machinery and equipment	378	369	1,493	1,367	2,520	31.1%	91.6%

Electrical, electronic and optical equipment	255	218	948	849	1,950	33.7%	89.6%
Transport equipment	753	735	1,992	1,889	4,349	28.5%	94.8%
Other manufacturing	942	864	1,232	1,136	705	-4.1%	92.2%
Utilities (electricity, steam, gas, and water supply)	255	218	3,038	2,466	4,460	50.5%	81.2%
Construction	557	461	2,678	1,417	6,843	43.1%	52.9%
Services	16,142	9,689	40,088	21,423	58,888	20.3%	53.4%
Wholesale and retail trade and repairs	3,274	2,871	11,311	7,498	13,319	22.2%	66.3%
Transport and communication	3,625	2,908	4,270	2,636	5,649	6.5%	61.7%
Financial intermediation	3,448	796	5,674	2,974	17,779	26.4%	52.4%
Other	5,795	3,114	18,833	8,315	22,141	21.1%	44.2%

Source: Rosstat, including tabulations in Kuznetsov (2010) for 2005 and 2009.

Note: Industry categories have been harmonized as feasible. "Other manufacturing" includes textiles and apparel, leather, and miscellaneous manufacturing. "Other services" includes real estate, rental, and business activities; education; health and social work; and other activities. "Quality FDI stock" is defined as total FDI minus FDI from the three main round-tripping FDI economies (Cyprus, the British Virgin Islands, and the Bahamas). Some FDI registered from other locations may also be round-tripping.

Table 4: Major Cross-border Mergers and Acquisitions Completed, 2008–12

Value (US\$, billions)	Year	Acquired Company	Industry of Acquired Company	Acquiring Company	Head-quarters	Industry of acquiring company
3.2	2008	Territorial Generation Co. No. 10 (TGC-10)	Electricity and heating	Fortum Oyj	Finland	Electric services
4.0	2009	OJSC “Severneftegazprom”	Crude petroleum and natural gas	E ON AG	Germany	Electric services
1.2	2009	OJSC “Polvus Zoloto”	Gold ore	Wandle Holdings Ltd.	Cyprus	Holding company
6.3	2011	OJSC “Polyus Zoloto”	Gold ore	Kazakh Gold Group Ltd.	Kazakhstan	Gold ores
5.5	2011	OJSC “Polimetall”	Gold ore	PMTL Holding Co.	Jersey	Holding company
4.2	2011	OJSC “Pervaya Gruzovaya Kompaniya”	Railroads, line-haul operating	LLC “Nezvaisimaya Transportnaya Kom-paniya”*	Russia	Courier services
4.0	2011	OJSC “Novatek”	Crude petroleum and natural gas	Total SA	France	Crude petroleum and natural gas
5.2	2012	OJSC “MegaFon”	Radiotelephone Communications	Investor Group	Cyprus	Investors, nec
3.3	2012	OJSC “TelekomInvest”	Radiotelephone communication	AF Telecom Holding	Cyprus	Investors, nec

Source: UNCTAD *World Development Report*, various years, and company information. Includes deals worth over \$3 billion, except for 2009 for which deals over \$1 billion are included.

Notes: nec = not elsewhere categorized; OJSC = open joint stock company; LLC= limited liability company.

* This firm is owned by Universal Cargo Logistics Holding BV (Netherlands), which is in turn owned by Fletcher Group Holdings Ltd. (Cyprus)

Table 5: Leading and Lagging Regions of Russia

Region Code	Russian Federal Subjects	Federal Region	Real GDP per capita 2011, 1000 rubles	Mineral Exports per capita 2011, US\$	Nonmineral Exports per capita 2011, US\$	FDI per capita, US\$ 2011
LEADING REGIONS	25 o/w Nenets autonomous okrug	NorthWestern	1,014.72	0.00	0.00	11,116.99
	69 o/w Yamalo-Nenets autonomous okrug	Ural	635.68	5,224.75	24.88	1,347.84
	68 o/w Khanty-Mansi autonomous okrug	Ural	634.39	14,200.91	37.60	161.52
	92 Sakhalin oblast	FarEast	274.82	30,287.33	1,929.26	4,485.97
	20 Moscow city	Central	268.37	14,506.65	1,219.34	346.40
	94 Chukotka autonomous okrug	FarEast	266.96	0.00	932.01	1,179.42
	86 Sakha (Yakutia) republic	FarEast	192.84	1,081.75	18.37	24.18
	70 o/w Tyumen oblast separately	Ural	173.32	25,707.45	645.77	11.37
	91 Magadan oblast	FarEast	169.55	25.55	706.07	1,721.68
	23 Komi republic	NorthWestern	155.46	2,200.47	516.24	152.09
33 St. Petersburg city	NorthWestern	139.89	3,295.73	937.81	219.22	
79 Krasnoyarsk kraï	Siberia	135.10	25.17	3,124.73	14.91	
MIDDLE-RANGE REGIONS	53 Tatarstan republic	Volga	123.28	4,228.74	1,028.99	26.29
	29 Leningrad oblast	NorthWestern	116.94	7,756.34	1,278.08	329.89
	87 Kamchatka oblast	FarEast	115.24	6.53	1,719.43	45.49
	89 Khabarovsk kraï	FarEast	114.40	122.65	1,002.74	68.72
	80 Irkutsk oblast	Siberia	112.50	367.72	2,184.46	37.87
	56 Perm kraï	Volga	111.11	924.91	1,670.06	71.52
	26 o/w Arkhangelsk oblast separately	NorthWestern	110.43	0.00	0.00	83.12
	11 Lipetsk oblast	Central	109.42	28.50	4,025.57	64.15
	27 Volgãa oblast	NorthWestern	107.49	30.72	3,613.32	5.74
	84 Tomsk oblast	Siberia	107.07	325.31	353.19	190.04
	66 Sverdlovsk oblast	Ural	105.88	1.77	1,869.14	20.60
	30 Murmansk oblast	NorthWestern	102.25	1,241.95	1,473.09	24.57
	88 Primorskiï kraï	FarEast	101.62	37.37	742.90	27.55
	19 Yaroslavl oblast	Central	100.12	11.96	425.69	11.94
	3 Belgorod oblast	Central	98.71	2.48	1,740.83	61.21
	50 Bashkortostan republic	Volga	97.84	2,202.61	424.28	22.80
	61 Samara oblast	Volga	97.29	1,187.60	937.32	25.32
	12 Moscow oblast	Central	96.78	21.31	376.32	364.99
	83 Omsk oblast	Siberia	92.20	26.00	233.46	90.93
	90 Amur oblast	FarEast	90.96	75.54	96.87	513.60
	82 Novosibirsk oblast	Siberia	89.72	75.94	359.60	28.65
	71 Chelyabinsk oblast	Ural	87.85	8.69	1,518.24	12.61
	8 Kaluga oblast	Central	87.77	6.94	411.22	806.54
	28 Kaliningrad oblast	NorthWestern	86.33	403.26	833.17	172.83
	93 Evrei autonomous oblast	FarEast	84.90	0.00	61.80	121.73
	58 Nizhny Novgorod oblast	Volga	84.42	1,331.40	480.24	212.26
	59 Orenburg oblast	Volga	84.31	431.16	684.43	125.79
	31 Novgorod oblast	NorthWestern	82.88	0.00	2,044.63	25.65
	7 Krasnodar kraï	Southern	82.16	1,554.61	319.72	48.67
	22 Karelia republic	NorthWestern	81.17	0.47	1,589.73	61.31
	81 Kemerovo oblast	Siberia	76.19	3,052.09	1,139.53	12.08
	78 Zabaykalskiï kraï	Siberia	74.77	0.18	172.28	107.95
	62 Saratov oblast	Volga	72.77	229.67	461.76	21.79
	14 Rязan oblast	Central	72.29	23.70	152.71	12.25
	10 Kursk oblast	Central	72.19	0.00	123.74	42.65
	17 Tver oblast	Central	71.96	0.00	111.96	55.08
	15 Smolensk oblast	Central	71.54	3.66	477.16	7.11
	54 Udmurtia republic	Volga	71.30	583.14	97.34	4.52
74 Tula oblast	Central	70.32	1.61	1,696.32	67.43	
18 Buryat republic	Siberia	69.84	0.31	742.64	1.07	
13 Oryol oblast	Central	69.57	0.00	128.17	4.67	
40 Rostov oblast	Southern	68.52	403.04	793.03	39.56	
76 Khakassia republic	Siberia	68.15	368.04	2,824.88	351.89	
38 Astrakhan oblast	Southern	67.56	0.00	173.45	3.35	
LAGGING REGIONS	6 Voronezh oblast	Central	65.98	4.63	531.95	77.34
	16 Tambov oblast	Central	64.41	0.00	57.48	8.78
	39 Volgograd oblast	Southern	60.86	844.37	479.42	21.06
	63 Ulyanovsk oblast	Volga	59.84	9.14	165.24	22.58
	48 Stavropol kraï	NorthCaucasus	59.31	0.43	383.46	25.31
	52 Mordovia republic	Volga	59.16	0.00	152.33	10.77
	5 Vladimir oblast	Central	58.21	0.00	494.97	53.83
	9 Kostroma oblast	Central	56.90	0.00	284.02	8.26
	32 Pskov oblast	NorthWestern	56.38	0.89	90.12	113.51
	65 Kurgan oblast	Ural	55.86	0.66	359.30	71.64
	57 Kirov oblast	Volga	52.45	0.00	653.22	24.03
	60 Penza oblast	Volga	52.35	0.00	39.20	20.85
	71 Mari-El republic	Volga	51.75	349.97	134.39	3.29
	50 Altai kraï	Siberia	50.60	52.41	133.03	7.73
	4 Bryansk oblast	Central	49.12	89.91	72.99	7.97
	55 Chuvash republic	Volga	47.34	0.00	101.77	13.02
	44 Kabardino-Balkar republic	NorthCaucasus	46.99	0.00	39.98	0.00
	42 Dagestan republic	NorthCaucasus	46.15	12.63	13.37	32.23
	35 Adygeya republic	Southern	44.58	2.50	17.01	115.18
	73 Altai republic	Siberia	43.81	91.51	36.01	0.00
	7 Ivanovo oblast	Central	40.29	0.00	68.39	10.88
	46 North Osetiya republic	NorthCaucasus	39.78	5.47	134.05	0.00
	45 Karachaevo-Cherkess republic	NorthCaucasus	35.07	0.21	21.18	0.00
	75 Tuva republic	Siberia	32.23	0.00	1.30	56.72
36 Kalmyk republic	Southern	27.42	0.00	28.33	0.00	
47 Chechnya republic	NorthCaucasus	18.22	0.00	0.65	0.00	
43 Ingush republic	NorthCaucasus	15.09	0.24	0.00	0.00	

Source: Rosstat.

Notes: Arkhangelsk Oblast (24) and Tyumen Oblast (67) are aggregations of other Federal Subjects already listed, and thus are not listed again to avoid redundancy. The top 15 percent of the sample for each variable is highlighted in red, and the bottom 15 percent of the sample is highlighted in green. o/w = otherwise.

Table 6: Majority-FDI Firms, by Sector and Region

Industry	Northwest	Central	South	Volga	Ural	Siberia	Far East	North Cau
AGRICULTURE, FORESTRY AND FISHING	3.0%	2.0%	8.1%	5.3%	1.5%	4.3%	11.8%	11.9%
MINING AND QUARRYING	1.9%	1.0%	2.4%	4.0%	7.9%	8.6%	11.2%	2.8%
MANUFACTURING	16.7%	10.7%	15.2%	23.7%	16.6%	14.0%	9.7%	18.2%
ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	0.8%	0.7%	0.9%	1.8%	2.9%	4.5%	0.0%	2.8%
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	0.7%	0.4%	0.9%	2.3%	1.3%	1.4%	1.0%	0.7%
CONSTRUCTION	7.8%	7.1%	8.9%	6.6%	6.7%	7.6%	7.1%	4.9%
WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	24.4%	30.1%	24.9%	23.4%	24.0%	24.5%	26.0%	21.7%
TRANSPORTATION AND STORAGE	8.5%	3.8%	12.0%	4.2%	5.3%	4.4%	9.2%	7.7%
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	1.6%	1.1%	2.7%	1.3%	2.5%	1.6%	2.8%	4.9%
INFORMATION AND COMMUNICATION	4.5%	6.1%	2.4%	5.0%	3.4%	6.5%	2.2%	2.8%
FINANCIAL AND INSURANCE ACTIVITIES	3.8%	9.8%	3.7%	3.8%	5.7%	2.4%	1.3%	0.7%
REAL ESTATE ACTIVITIES	14.0%	12.4%	8.9%	8.0%	11.4%	7.6%	4.6%	11.9%
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	7.7%	10.7%	5.4%	6.4%	6.7%	8.2%	7.9%	4.2%
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	3.4%	2.4%	1.5%	2.5%	2.0%	2.7%	3.6%	0.7%

Source: Ruslana.

Box 1. Measuring Export Sophistication

Computing export sophistication has two stages. The first consists in measuring the income associated with each export product in the world, which is named PRODY.¹⁹ The PRODY of a particular product is a weighted average of the per capita GDP of all countries exporting that product. The weight given to each country is based on its revealed comparative advantage in exporting that product, defined as the share of its exports that comes from that product relative to the average country. Therefore, a product that typically makes up a large percentage of a poor country's export basket will have more weight in that country's GDP per capita. This will be less true of a product that makes up a small percentage of a poor country's exports but is a significant component in many rich countries' export baskets.

The second stage consists in measuring the income associated with a country's export basket as a whole; this is its EXPY. Since each product exported by a country has a PRODY, the EXPY is calculated by weighting these PRODY by the share that each good represents in the country's export basket. If agricultural products make up 15 per cent of a country's exports, its PRODY will be given a weight of 0.15. Countries whose export baskets are made up of "rich-country goods" will have a higher EXPY, and those made up of "poor-country goods" will have a lower EXPY.

$$PRODY_k = \sum_j \left(\frac{x_{jk}}{X_j} \right) Y_j \quad \text{and} \quad EXPY_i = \sum_k \left(\frac{x_{ik}}{X_i} \right) PRODY_k$$

¹⁹ The indices PRODY and EXPY are based on Hausmann, Hwang, and Rodrik (2007).