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Russia, Finland and Norway: Economic Essays



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Eirik Wærness

Foreword

Econ Pöyry is a Norwegian subsidiary of the Finnish global engineering company Pöyry. Since the mid-eighties we have taken pride in serving as a thought leader at the intersection of market and politics. With our accession to the Pöyry family technology has become a natural constituent to our integrated approach.

Econ Pöyry has run a Russia program since 2003, when we launched the scenario-book *Big Oil Play Ground, Russia Bear Preserve or European Periphery - the Barents Sea Region towards 2015*. Since then we have strengthened our Russia focus, working on issues related to energy, economics and politics.

Russia is a neighbor to both Finland and Norway. However, how the country develops is of importance also to a wider global audience. Cutting-edge understanding of the country is of vital importance to decision makers in both government and business in our two countries and beyond.

This publication is a result of a joint workshop between Econ Pöyry and Bank of Finland Institute for Economies in Transition (BOFIT) held in Helsinki on September 24, 2009. I would like to thank Head of BOFIT Pekka Sutela for suggesting this cooperation and the excellent research collegium at BOFIT for facilitating the event and this ensuing publication. Thanks are also due to his Excellency the Finnish ambassador to Norway, Peter Stenlund, for initiating contact between BOFIT and Econ Pöyry. A particular word of gratitude is also due to the Norwegian Ministry of Foreign Affairs for making this cooperation possible.

Though this is the first joint project between Econ Pöyry and BOFIT, we hope it will not be last. The aim should be that we will exploit future opportunities to cooperate and develop as two centers of excellence the study of Russian affairs.

Oslo, December 4, 2009

Eirik Wærness, Managing Director Pöyry AS

Laura Solanko

Energy and the Russian Economy

The severity of the global financial crisis in Russia underlined the dependency of the Russian economy on the smooth functioning of global markets for raw materials and on the global financial markets. Despite the desire to stress sovereignty and stability in Russian economic parlance, the federal budget is largely based on export tax revenues. On the other hand, the domestic financial system does not meet the investment needs of large Russian corporations. Therefore, having the world's third largest foreign exchange reserves notwithstanding, the world's largest producer of oil and natural gas is inherently open and dependent on the global economy.

The setting

Sizable resources

Much of the world's most important hydrocarbon resources are concentrated in a fairly small area stretching from the Middle East and Caspian region to Russian Siberia. Russia alone accounts for a quarter of the world's natural gas reserves while the next largest resource owners (Iran, Qatar and Saudi Arabia) together account for almost a third of the world reserves. Consequently, the world's largest natural gas producer country, Russia, alone accounts for 20% of the world's natural gas production. Global oil reserves are slightly less concentrated geographically but nevertheless three countries (Saudi Arabia, Iran and Iraq) account for 40% of total proven reserves. Russia's oil reserves are estimated at 80 billion barrels or slightly less than 10% of global reserves. Currently Russia - on a par with Saudi Arabia - is the world's largest crude oil producer. This means that Russia's crude oil reserves are likely to be depleted long before Saudi Arabia's.

As opposed to many other major oil and gas producers such as Qatar, Norway and Saudi Arabia, Russia is a large country, with a population of 142 million and a high level of domestic energy consumption. In per capita terms, Russia's hydrocarbon reserves are not huge. Proven crude oil reserves are the case in point; Russia's oil reserves per capita are only 1% of the corresponding figure for Saudi Arabia. (See Table 1 below.) Therefore, Russia cannot live on energy resources alone.

Inefficient usage

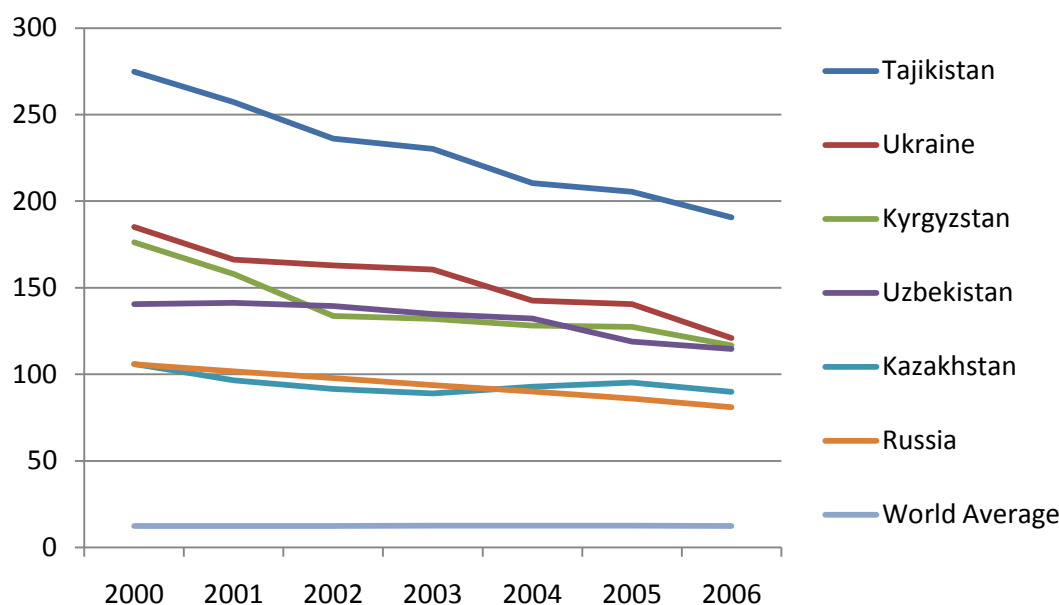
By global standards, Russia trails far behind almost everyone else in energy efficiency. Russia is the world's third largest energy consumer after the US and China. As the structural change towards services has proceeded in Russia both energy consumption per unit of GDP and the absolute levels of CO₂ emissions have declined slightly over the last 15 years. But Russia is still nowhere close to the average levels of industrialized countries. In relation to the size of the economy, as measured by GDP, Russia currently consumes 2.5 times more energy than China and a whopping nine times more than the US.

Table 1 Oil: Proven reserves at end 2007

Oil: Proven reserves at end 2007	Thousand million barrels	Share of world total, %	Reserves/ Current Production	Population, millions	Reserves per capita
Saudi Arabia	264.2	21.0	66.5	4.5	58.7
Iran	138.2	10.9	86.9	72.0	1.9
Iraq	115.0	9.1	47.5	29.0	4.0
Kuwait	101.5	8.1	99.6	2.7	37.6
Venezuela	99.4	7.9	38.7	27.0	3.7
United Arab Emirates	97.8	7.8	89.7	4.8	20.4
Russian Federation	80.4	6.3	21.8	142.0	0.6
Libya	43.7	3.5	64.6	6.3	6.9
Kazakhstan	39.8	3.2	70.0	15.4	2.6

Source: BP World Statistical Review 2009, CIA World Factbook

Figure 1 World's six most energy intensive economies and world average .
Primary energy consumption (Btu) per GDP, 2000-2006.



Source: EIA at <http://www.eia.doe.gov/emeu/international/energyconsumption.html>

Note: GDP is measured using market exchange rates in thousands of (2000) US dollars.

Some of the high energy intensity in Russia's economy is probably dictated by a harsh climate and long distances, but most of it is a legacy from the Soviet economic structure, tilted towards heavy, energy-intensive industries. According to recent government estimates, 45% of Russia's relative energy inefficiency is due to the inherited industrial structure, 35% to outdated technology, and only

20% to other factors, including climate.¹ If true, this would imply two things. First, Russia can go a long way to improve energy efficiency simply by adopting new technologies already in use elsewhere. And second, if Russia really wishes to approach Western European levels of energy efficiency, large-scale modernization of the Soviet industrial base is needed. That would mean closing down several large plants, with grave implications for local employment and public services.

A major obstacle to more rapid improvement in efficiency is domestic energy pricing. As consumer prices for natural gas and electricity continue to be regulated, incentives for energy efficient investments are weak. Dramatic increases in energy prices could, however, cause serious social problems, possibly reflected in increased non-payment.

Fragile trade balance

Russia exports around 70% of its crude oil and 30% of its natural gas production. These two items, combined with oil products, comprise 70% of the value of Russia's exports. Moreover, the rest of Russia's export goods are generally energy-intensive, low-value-added products of the metals, petrochemical and forestry industries. The share of machinery in Russia's exports is less than 6%.

Since the export price of natural gas depends on the world market price of crude oil, the total value of Russia's exports fluctuates widely, in line with fluctuations in the international prices of raw materials. The main driver of the 45% decline in the value of exports in the first half of 2009 was clearly the drop in oil prices. In volume terms, Russia's oil exports increased modestly, and gas exports were cut by "only" 30% compared to the first half of 2008.

Taxing oil and gas

Not only is Russia's external balance dependent on oil and gas exports. The country's budget balance is also critically dependent on proceeds from fees from natural resources extraction and from export taxes on crude oil. According to the Russian Ministry of Finance, almost 50% of federal government revenues derive from the energy sectors (mainly oil and gas). This indicates that at least a quarter of the enlarged government (federal, regional and local budgets plus major extra-budgetary funds) revenues are dependent on proceeds from the energy sector.

Russia taxes heavily crude oil exports, the tax rate depending on the export price. Therefore increases (decreases) in export prices are almost immediately translated into increases (decreases) in federal budget revenues. This is why a federal budget surplus of 4% of GDP in 2008 could turn into a deficit of 6% this year. Russian oil companies have long claimed that the effective marginal tax rate on oil exports is 90%, which discourages new investments even when the oil price is high.

Energy-dependent economy

Any list of large Russian companies includes energy companies and state-owned banks. The largest enterprises are oil and gas giants, which are large by any measure even by global standards. Fortune magazine places Gazprom (22nd) and Lukoil (65th) in its top-100 companies worldwide in the 2009 rankings.² An alternative ranking by Forbes includes Gazprom (43rd), Lukoil (114th) and Rosneft

¹ Speech by Vice-Premier Igor Setchin, as documented in *Energetitseskaja Politika* 4/2009.

² <http://money.cnn.com/magazines/fortune/global500/2009/>

(192nd) in the global top-200.³ Oil and gas companies and their subsidiaries are therefore unquestionably the major companies in Russia. Only 19 oil and gas companies made their way into the Expert rating of the top-400 companies in Russia in 2008. Those 19 companies accounted for 33% of the total sales of the 400 rated companies.⁴ The remaining 381 companies accounted for only two thirds of total sales.

Additionally, these energy majors are often the main customers (and owners) of many service companies, especially in transportation, banking and construction. Therefore, it is not surprising that the energy sector as a whole (including electricity and district heating) comprises a large part of the domestic economy. The draft government Energy Strategy 2030 states that the energy sector currently accounts for a third of Russia's GDP. The figure should not be an over-estimate, as the country's largest company, Gazprom, claims to produce alone some 10% of Russia's GDP.

Reducing energy dependency is a long term goal

Ambitious government programmes

Russia's economy is in many ways unavoidably dependent on energy production and energy exports. This dependence on global energy prices renders the Russian economy vulnerable to external shocks, as witnessed again during the global financial crisis of 2008/2009. Moreover, dependence on export earnings from a few raw materials is often seen to lead to the "resource curse", an equilibrium where the domestic economic institutions (eg rule of law, education, courts) remain in a poor condition, which leads to slow economic growth and wide income disparities. This scenario would clearly contradict all attempts to create a "modernized", innovations-based Russian economy – an idea most recently promoted by President Medvedev in his state of the nation speech in November 2009.

Russian policy-makers have a clear vision of the need to reduce Russia's energy dependency. Both the government's medium-term economic policy plan – the Russia 2020 programme - and the current draft for the government's Energy Strategy 2030 point to a diminishing role for the energy sector. The Energy Strategy strives for an economy in which the energy sector's role is less than 20% of GDP by 2030. These visions have yet to result in concrete action plans and forceful implementation, which have been in short supply in post-Soviet Russia.

Even in the best of the cases, reducing energy dependency is a long-term goal. It would imply that the non-energy sectors of the economy should grow at faster rates than the energy sector. Increasing global energy prices are likely to make this target extremely difficult to attain. Therefore, at least in the medium term, Russian economy is likely to remain just as energy-dependent as it is now.

Meanwhile, securing export capabilities is key

Perhaps paradoxically, this means that maintaining energy export capabilities will be a top priority in Russia's economic policy-making. As even the optimistic forecasts do not see large increases in production volumes in oil and gas over the next 20 years, securing export volume requires both curbing domestic energy consumption and securing the current volumes of energy imports (chiefly natural gas from Turkmenistan). Therefore, the improvement of energy efficiency will become

³ http://www.forbes.com/lists/2007/18/biz_07forbes2000_The-Global-2000-Russia_10Rank.html

⁴ Expert-400 rating in the Russian weekly Expert Magazine no. 38(675) 2009.

increasingly important for Russia. The potential is clearly huge and, encouragingly, Energy Strategy 2030 seriously discusses these issues. A new law on energy efficiency was adopted in November 2009, hopefully increasing awareness of energy efficiency in the country. Further, continuing price liberalization in wholesale electricity markets and in industrial use of natural gas will slowly force domestic consumers to optimize their energy use. But much remains to be done. Importing the already existing technologies and know-how from other countries would be the fastest way to achieve real results.

Vital pipelines

From the Russian perspective, the other important element in securing export capabilities is the securing of sufficient and reliable transport capacity. Besides the standard maintenance and repair, this includes the building of new oil and gas pipelines as well as new export harbors, in order to reduce dependence on sometimes unreliable transit countries. This explains why projects like the gas pipelines Nord Stream and South Stream, and the oil pipelines BPS-2 or TCP-2 are seen as vitally important by the Russian government.

Seen in this light, Nord Stream (planned to run from Russia through the Baltic Sea bed to Germany) is neither simply targeted against Ukraine or the Baltics nor meant to provide the Russian Baltic Fleet a missing *raison d'être*. It can be seen as an unavoidable investment for securing uninterrupted deliveries of natural gas to Russia's major export markets. Deliveries to the EU-27 countries plus Turkey account for two-thirds of Gazprom's total sales revenue. Deliveries to all CIS countries account for only a third of Gazprom's revenues, even though, in volume terms, two-thirds of its sales go to those markets.

Conclusions - of a sort

Due to its dependence on energy resources Russia is, and will continue to be, dependent on the gyrations of the global economy. During the last ten years the Russian governments have managed the windfall revenues of constantly increasing export prices very prudently, storing large shares of them in sovereign extra-budgetary funds. These funds, counted among the central bank's foreign exchange reserves, did indeed provide a warmly welcomed cushion that insulated public expenditure from the dramatic decline in revenues in 2009. But even the large stabilization funds and extremely low public debt cannot insulate the Russian economy from a global shock.

The current crisis underlined the fact that even a country that manages one of the world's largest hydrocarbon resources needs global financial markets for funding its largest corporations. This is especially true considering that huge new investments are needed to keep up the current production levels in the future. At the end of the day, this may be one of the major lessons for the crisis in the Russian energy economy.

Daniel Buikema Fjærtøft

Russian Gas – Has the 2009 economic crisis changed Russian gas fundamentals?

Introduction

European demand for natural gas is projected to increase in future. A large share of this increase has been assumed covered by imports from Russia. Repeated gas wars with Ukraine raised attention to security of supply, but the alarm bell went off even higher as observers started to question Russia's ability to deliver with or without the Ukraine (see e.g. CEPS, 2006). Persevering Russian gas demand has been deemed the main culprit along with limited upstream investments. The 2009 global crisis and recession has changed the global community's perspective on many issues. Has the crisis brought on significant changes to the Russian gas dilemma?

Russia is the world's largest gas producer and ranks number one in the world when it comes to the size of its natural gas resources. Energy companies are interested in Russian gas because of upstream opportunities as well as downstream implications. European policy makers take interest in Russian gas from the perspective of energy security. Russian gas is a favored subject among political analysts due to its entanglement with foreign policy and EU-Russian relations.

Meeting the need of these groups for correct and timely analysis is crucially dependent on an accurate understanding of Russia's relation to its own production, and also exports. The role of gas in the Russian economy and politics is discussed and commented on repeatedly by observers and analysts abroad as well as within Russia (e.g. Pelczynska-Nalecz, 2001 and Belyi, 2009). These contributions often take a discursive approach judging the credibility of statements put forward by decision makers and linking these statements to real life events. Economic assessments are, however, few and far between even though it's economic realities that make up the boundaries for decision makers' scope of action.

2008 started quite well for Russian gas and Russia in general. Economic growth in 2007 had stayed on track with previous years and prospects for the coming year were promising as well. So far critics of Putin's economic model and advocates of the model's unsustainability had waited in vain for the long heralded economic downturn (eg .IMF, 2003 or Bim and Iskyan, 2003). Raw materials prices were high and expected to remain so if not increase into the future. Gazprom was literally coming on track again with its upstream ambitions when railroad construction to Bonanenkovo was started up again as a sign of Gazprom's renewed commitment to the Yamal project. Gazprom also remained committed to the Shtokman project upholding 2013 as the launching date for dry gas to shore. Although GDP had shown strong growth, domestic gas demand had not followed as tightly as many feared meaning that Russia, thanks to these ambitious green-field developments, might have outmaneuvered the heralded supply squeeze. Controversy still remained to what extent Russia would depend on Central Asian gas to honor its export commitments, but overall things were much more uplifting for both Russian and European consumers of Russian gas than only a few years earlier.

2009 has pulled Russia further into economic turmoil than anyone had foreseen at the outset of the crisis. Forecasters have persistently revised their expectations downward and Russia now stands to lose some 8 % off of last year's GDP (BOFIT, 2009 and WB, 2009). The crisis has seemingly

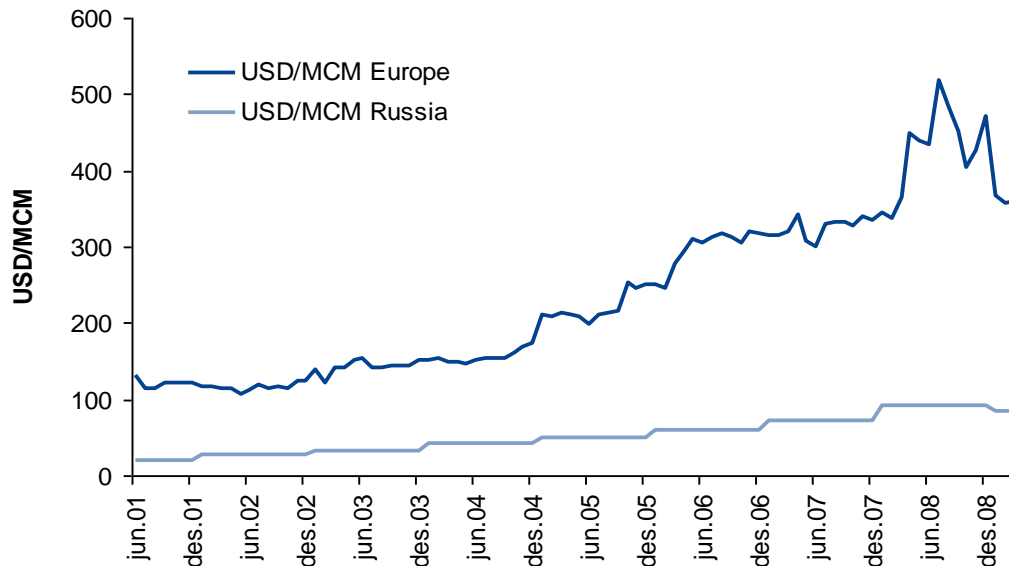
proven that Russia is even more dependent on world markets, and in particular the oil market, than one thought before.

The question at hand is whether the economic crisis has altered in any way the core drivers of Russian gas and if so how these changes affect the 2008 outlook. For the purpose of this article we define Russian gas as the interaction of domestic gas demand and gas supply. A common topic of discussion is the Russian gas balance, but we wish to emphasize a perspective beyond pure volumes. Ability to export follows in consequence from our discussion but is of secondary importance here. First we look briefly at the role of Russian gas in the Russian economy. Second we review the state of Russian gas in the years leading up to the 2009 crisis. In conclusion we comment on key aspects of post-crisis development.

Supply and Demand

The Soviet Union's gas supply was considered a public good and industry was built based on the low production cost of this input. This view prevails to some extent in the Russian populace as well as political and academic circles. Kuzovkin (2008) argues that domestic prices should be kept no higher than necessary to cover Gazprom's operating and capital expenditure out of concerns for GDP and inflation performance. Transitioning to market economy, the alternative cost of gas has yet to be fully incorporated into Russian domestic prices. Low prices have led to absent demand side restructuring and stagnant production (Makarov et al., 2005).

Figure 1 Natural Gas Prices in Europe and Russia (for Industrial Consumers)



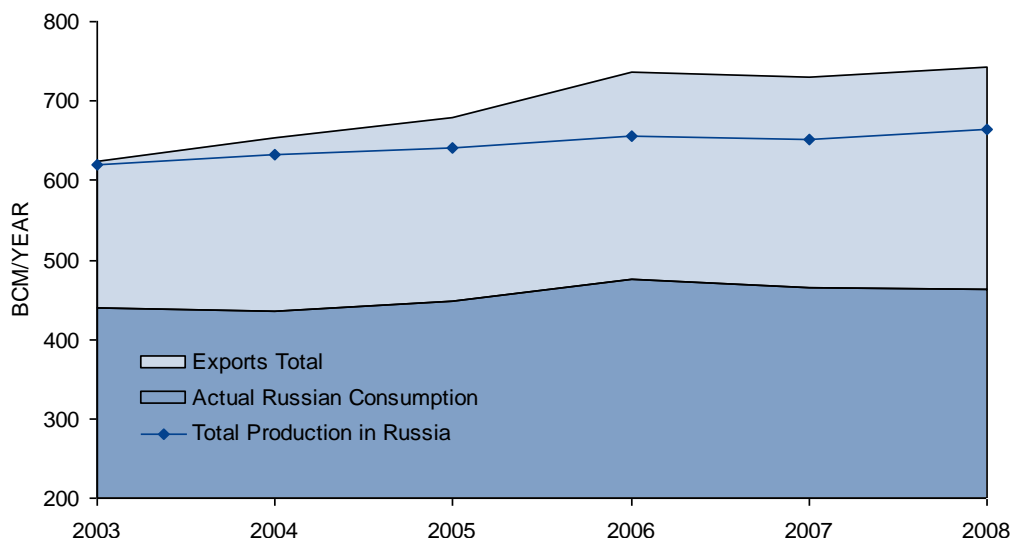
Sources: Heren, Rosstat

As the Russian economy came back to life in the 2000s, this happened partly because heritage enterprises, thanks to a favorable business cycle, could operate at a profit. Surviving companies have restructured in line with liberalized product, capital and labor markets but remain dependent on cheap energy. The Russian population remains dependent on cheap gas as well. District heating systems are extremely run down and a large share of Russian power is generated using more than obsolete gas turbines. Excessive energy use both on behalf of the population and industry has been

permissible due to cheap gas leaving little incentive to invest in more efficient technologies and general refurbishment (Kutshera and Øverland, 2009). See Figure 1.

In 2006 Russian consumption jumped 6 % to 475 BCM after a period of steady growth. Although the increase was due to cold weather it led to concerns that Russia would not have enough gas to go around. Since then consumption has fallen somewhat and stood at some 460 BCM in 2008 including losses and consumption in production (see figure Figure 2). The striking feature of Russian gas demand is therefore that it remains stably high despite the large efficiency potential rather than that it exhibits rapid growth. See e.g. Solanko and Sutela (2009).

Figure 2 Russian Production, Consumption and Exports



Sources: Gazprom Data Book, Econ Pöyry Analysis

On the supply side prices have not stimulated upstream development. From a monopolist's viewpoint it makes little sense for Gazprom to invest in upstream capacity if it has enough to go around now. However, from 2003-2008 Gazprom's share of domestic gas sales has decreased from around 80 % to 70 % to the benefit of independent producers. The Russian Energy Strategies till 2020 and 2030 both spell out an increased role of independent (non-Gazprom) producers in the Russian market. Gazprom's reduced share can therefore be argued to reflect political priorities. On the other hand the strategies envision however that independents increase their share in incremental production with Gazprom increasing its production as well. Rather, the independent share of domestic gas sales has increased on the backdrop of stable Gazprom production; suggesting that Gazprom has preferred to leave the domestic market to independents that de jure sell at deregulated prices and concentrate on the higher margin export market instead.⁵

This leads to the notion that for one Gazprom has a very limited scope short term production increases as it prioritizes the export market. Second, it implies that domestic prices and price outlook have not been sufficient to cover exploration, development and production costs. Had they

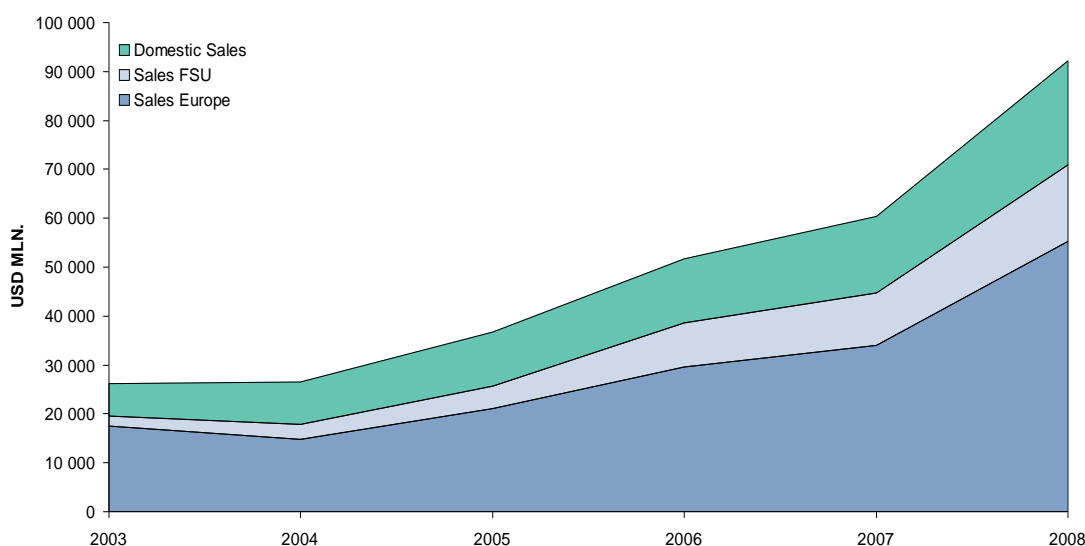
⁵ Gazprom production grew on average 1.3 % per year in 2003-2008. Notwithstanding Government intention to increase independents' market share Gazprom, as a commercial entity, acts according to own interest. Commonplace accusations of discriminatory access to the trunk line system support the notion that Gazprom, ceteris paribus, seeks to maintain its market position vis-à-vis independent producers.

been, one would expect Gazprom to increase production rather than sacrifice its domestic market share.⁶

Russia's total production has grown modestly at an annual average of 1.3 % and total of 7 % from 2003-2008. Gazprom's production has grown by a mere 0.4 %. For reference consumption grew 6 % and exports by more than 50 %. The difference has been covered by increased imports of Central Asian gas. Russia's implicit import needs rose from 45 BCM in 2003 to around 80 BCM in 2006-2008 (Econ Pöyry Calculations).⁷ This has to be covered by Central Asian gas which has been claimed sold in several directions and in addition the actual reserves of the main supplier Turkmenistan have recently been put to question (Dubnov, 2009). How much will be available in the future is therefore subject to uncertainty.

Stable domestic demand and expectations of export growth match poorly with an accelerating depletion of Gazprom's main production assets in West-Siberian. Thus 2006 and 2007 saw renewed vigor in Gazprom's efforts to develop its next giant on the Yamal Peninsula, the Bovanenkovo gas field, and conquer a new technological frontier in the Shtokman project. Substantial growth in export revenues and the looming gas deficit had seemingly put a lid to the long lasting Gazprom in-fight over which fields to develop first.

Figure 3 Gazprom Revenues by Geographical Market



Sources: Gazprom Data Book, Econ Pöyry Analysis

⁶ The issue of Gazprom's domestic market share vis-à-vis independent producers is closely linked to ongoing reform of the domestic gas market. An in depth discussion of this reform is unfortunately beyond the scope of this paper.

⁷ According to Gazprom (2003 and 2008) the company imported 44 BCM of Central Asian gas and in 2003 and 60 BCM in the years 2007-2008.

The Role of Russian Gas

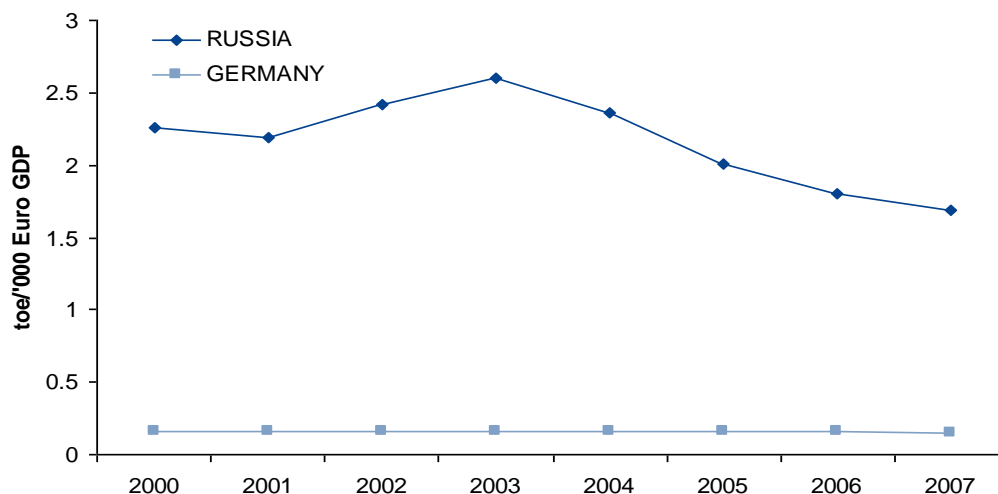
Russian gas plays an important role in Russian exports. Some 20-25 % of non-crude export revenues are generated from gas. Another 25 % is generated from petrochemicals exports. This underlines the well-known fact that Russian hydrocarbon dependency stretches beyond crude oil. The hydrocarbon dependency however stretches beyond its commonly highlighted fiscal implications.

The Russian exchange rate has been largely trade flow driven (Fjaertoft, 2008). Till now the price of gas has been closely linked to the price of crude and other oil products. In the future however this link is expected to abate as LNG ties regional markets and spot trading gains in significance vis-à-vis long term contracts (IEA, 2008). Macroeconomists might find need to be more explicit about gas price effects versus oil price effects in assessing the Russian economy. Although gas prices will remain correlated with oil a weaker relation and increased gas exports relative to oil might affect the way the Russian economy reacts to oil price volatility.

Development of production is highly dependent on export revenues due to the moderate level of domestic prices. Without the increasing export earnings, realizing the large upstream projects mentioned above scarcely seems possible.

At the other end cheap domestic gas has been vital to Russian industrial recovery. Russia inherited one of the world's most energy intensive economies. The absence of price reform, and rising raw material prices have enabled relatively inefficient soviet-built companies to operate at a profit without the owners embarking on substantial restructuring. In consequence Russian primary energy consumption per unit of GDP soars miles above the equivalent ratios of its European trading partners (see Figure 4).

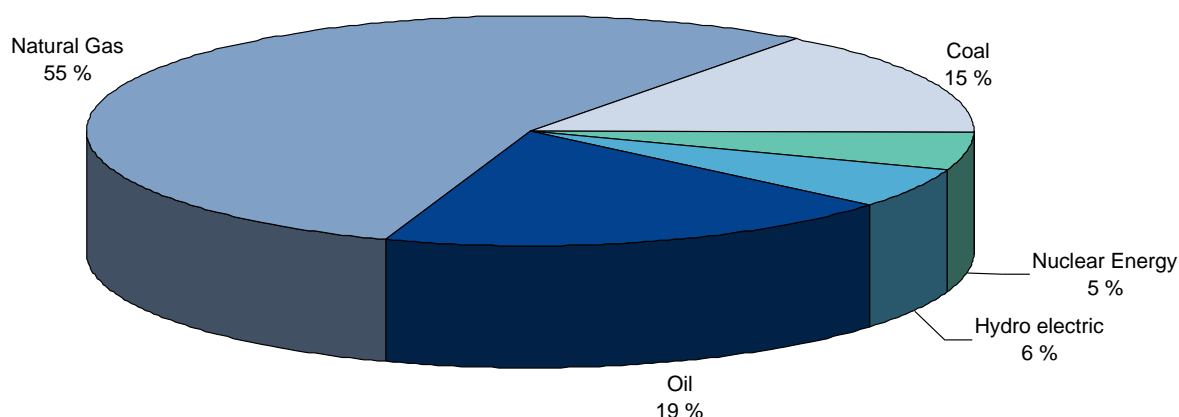
Figure 4 Energy Intensity of Russia and Germany



Sources: BP (2008), IMF WEO, Rosstat, Econ Pöyry Analysis

For a large part this energy intensity translates into heavy industry's reliance on gas as an input in production both directly and in form of electric power. In addition, decaying municipal infrastructure related to water and heat supply provides a substantial contribution to the large share of gas in Russian primary energy consumption (see Figure 5).

Figure 5 Primary Energy Consumption by Fuel (2008)



Source: BP (2009)

Table 1 summarizes the most important consumers of Gazprom’s domestic gas sales. Around 45 % of Russia’s installed generation capacity is gas fired (Econ Pöyry estimates) and 60 % of Russian power is consumed by industrial consumers (APBE, 2007). In addition the importance of gas in Russian energy consumption is illustrated by Rosstat reports for 2007 that 58 % of Russian gas consumption was transformed into other energy sources (i.e. power).

Table 1 Gazprom’s Domestic Sales (volume)

Metals and Fertilizer	12–14 %
Power	36–38 %
Municipal Services	9–11 %

Increased prices would imply a negative productivity shock to Russian industry and a negative shock to disposable income of the population. The latter effect comes into play directly through increased gas and power expenses, but also through the employment channel. Katyshev et al. (2007) find that a 10 % increase in gas and power prices leads to a negative 0.9 % growth in GDP⁸ Makarov et al. (2005) support the same short-run effect, but argue that in a 10-year perspective gas prices lower than European netback will lead to lower growth than a scenario with speedy transition to netback prices. The reason for this is twofold. First low prices provide incentives to continue on the same track of expanding energy intensive production. This production is however close to capacity limits and will exhibit increasingly diminishing return to scale and therefore lead to lower growth. The authors argue that higher prices provide incentive to invest in alternative production which will exhibit higher return to scale. The second negative long-run effect of low prices stems from reduced gas exports and ensuing government revenues. In so they support the argument of

⁸ With no real experience of gas price volatility in Russia the reliability of such quantitative estimates can be questioned. Nonetheless negative effects of gas price increases, at least in the short run, seem quite probable.

hydrocarbon dependency stretching beyond oil and that lack of price reform will be detrimental to Russian gas production.

Price Reform

Prices are key to the situation Russian gas saw itself in on the eve of the 2009 crisis. Low prices led to stably high demand necessitating green-field developments the prerequisite of which had been higher prices.

In early 2007 the government approved the goal of reaching equal profitability of foreign and domestic gas markets by 2011 (Decree No 333, 2007). The Federal Tariff Service was charged with developing a proper methodology for determining the corresponding domestic price. At the same time limits were set to maximum price increases allowed to reach this goal.

Since 2007 the Federal Tariff Service has published “would-be” prices according to the following equal profitability formula:

Figure 6 Equal Profitability Formula

$$P_i = (P_{em} \times (\frac{100\% - E}{100\%}) - \frac{\sum_{r=1}^3 CF_r}{\sum_{j=1}^9 V_{emj}} - M_{em} - \Delta T^{av}) \times K_{diff}^i$$

Source: Federal Tariff Service

Where:

P_i = Domestic Price

P_{em} = Average realized price in the European market

E = effective export toll in percent

CF_r = Customs fees collected in quarter r

V_{emj} = Volume sold on the European market in month j

M_{em} = Marketing expenses on the the European market

ΔT^{av} = Difference in average transportation cost within Russia and the Russian border, calculated based on regulated tariffs for third party access to Gazprom's pipeline grid

K_{diff}^i = differentiation coefficient applied to various price zones based on distance from place of extraction

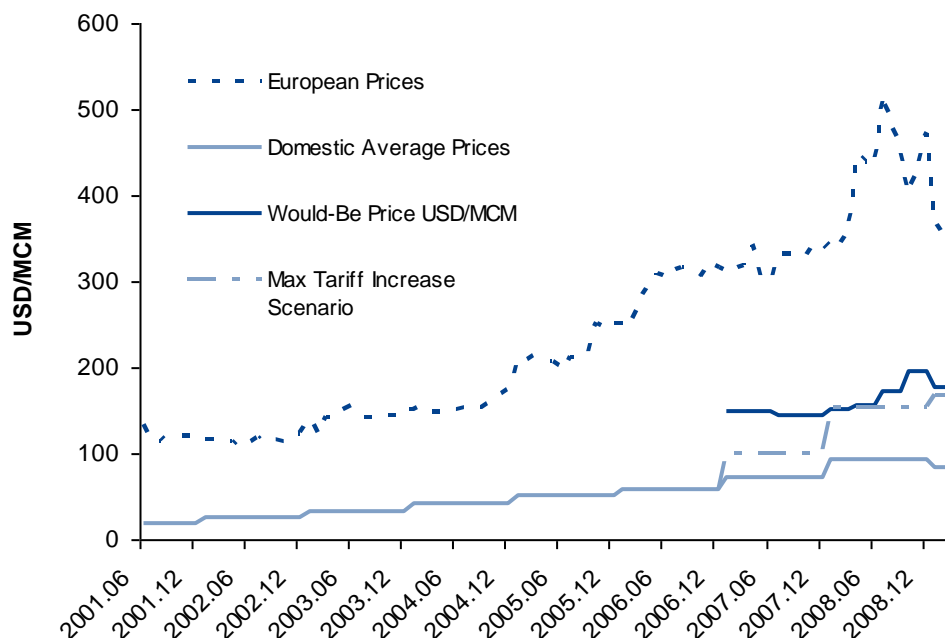
The formula above is often mistakenly referred to as a netback formula. The inclusion of the gross export toll means that prices will remain below real netback on par with the prevailing export toll. At present the nominal export toll stands at 30 %. Figure 7 illustrates how published would-be prices remain substantially below European levels.

Although would-be prices imply a doubling of domestic prices, the ability of price reform in its present layout to achieve efficiency gains on the demand side by incorporating true alternative cost should be put to question. Energy intensity will most likely be reduced, but as long as Russian prices remain below true netback Russian consumers will rationally choose a higher level of gas in the consumption compared to other goods and inputs than is justified by being closer to point of extraction. Russian society will continue to carry the cost of foregone consumption on behalf of its consumers.

The Russian discourse on price reform is however less concerned with consumption being optimal than Gazprom being able to cover the cost of sustained production. Price increases are referred to as being ‘lobbied’ by the gas monopolist while moderation is shown out of concern for

‘everyone else’. See Øverland and Kutshera (2009) for a discussion on price reform and the government’s susceptiblens to public discontent. As an illustration of the Russian perspective Kuzovkin (2008) argues that the full resource rent should be extracted by the government by adjusting the export toll so as to ensure equal profitability at fixed (and moderate) domestic prices.

Figure 7 Actual and Reform Scenario Prices (Industrial Consumers)



Sources: Heren, Rosstat, Federal Tariff Service, Econ Pöyry Analysis

Based on Figure 7 Russian price reform stands out as both having too little ambition and enjoying a low level of commitment from Russian policy makers despite active efforts on behalf of Gazprom in favor of higher prices. Actual price increases have persistently lagged behind the proclaimed goals.

Effects of the Global Recession

The global economic downturn has hit Russian particularly hard (WB, 2009) and not without consequence for Russian gas. Some effects on demand, supply and the progress of price reform are already visible although one must still wait to be conclusive of the recession’s full effect.

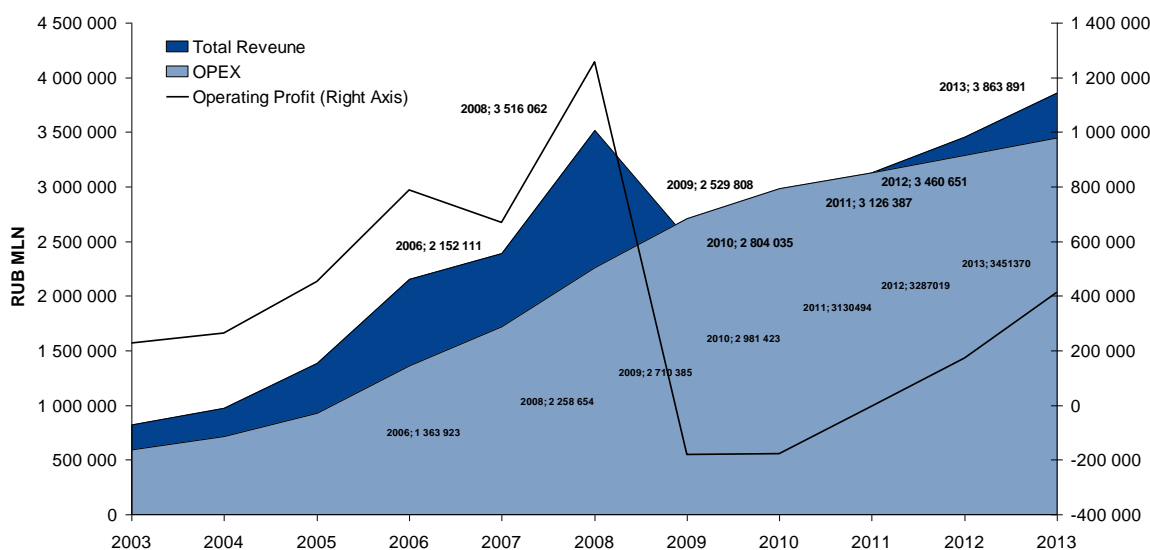
According to Rosstat total gas production was down 20 %, while Gazprom produced 25 % less gas during the first half of 2009 compared to the first half of 2008.⁹ Implicit Russian gas consumption decreased in the first half of 2009 by 10 %.¹⁰ The fall in consumption is modest compared to the expected decrease in GDP of around 10 % and industrial production of around 17 % reflecting a low elasticity of gas consumption to output. Russian export volumes to Europe and the CIS went down 40 % and 50 % respectively.

⁹ <http://www.kommersant.ru/doc.aspx?DocsID=1222973>

¹⁰ Implicit consumption = Production minus net exports

With both domestic and foreign consumption down the looming gas deficit might have been pushed into the future. Even if a quick recovery brings domestic and foreign consumption back to past trajectories, the level shift should buy Gazprom a few years of slack in bringing key projects on stream. Indeed if both the development of Yamal and Shtokman adhere to schedule, the recession might have provided the window needed to avoid defaulting on European or domestic contracts. Should Russian policy makers come through with price reform Russia could come out of the crisis significantly less dependent on gas.

Figure 8 Gazprom Revenue, OPEX and Operating Profit – History and Forecast



Note: History inclusive 2008, 2009-2013 Econ Pöyry projections.

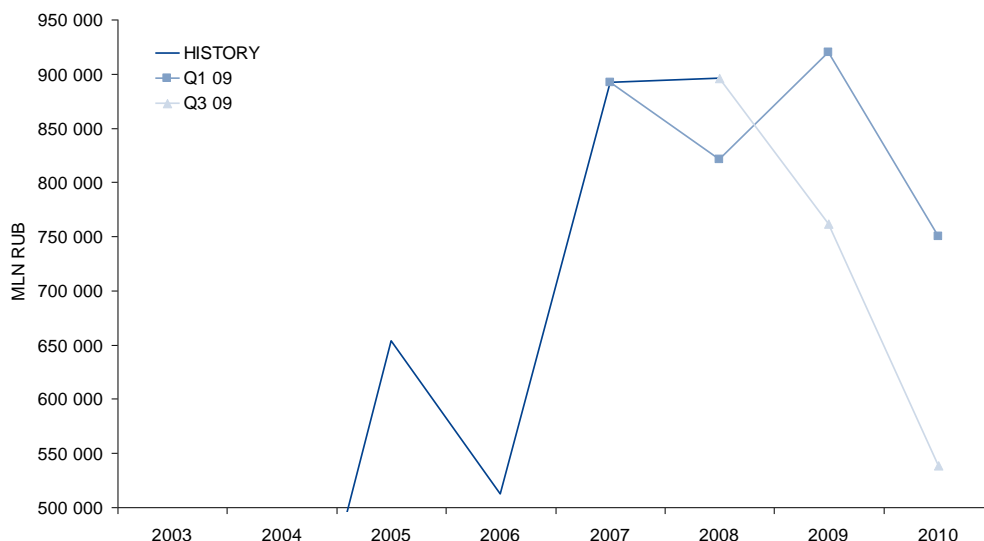
Sources: Gazprom Data Book, Econ Pöyry Analysis

As noted above, the main fuel for Gazprom's increased activity upstream has been steadily increasing export revenues. Operating expenses were growing as well and Gazprom's margins were secured only by an ever increasing export price. Because operating expenses were eating away at margins, expansive investment policies rested heavily on external borrowing. Through the recession, however, Gazprom has seen export revenues to Europe go down 23 % and to the CIS 30 % (Gazprom, 2009). Operating expenses, however, have stayed on their past trajectory increasing 18 % in Q1 2009 relative to Q1 2008. With old loans coming due and margins down it seems questionable whether Gazprom will have the financial muscle to lift the Yamal or Shtokman project let alone both in the next years.

Indeed Gazprom has revised down its 2009 investment program by some 17 % in ruble terms. CAPEX investments have been adjusted down 30 % compared to the investment program approved in late 2008.¹¹ Thus the outlook for 2009 and 2010 is a lot grimmer than one had reason to believe at the outset of 2009.

¹¹ <http://www.gazprom.ru/press/news/2008/december/article56840/>
<http://www.gazprom.ru/press/news/2009/september/article68557/>

Figure 9 Gazprom Investment Program - History and Forecast

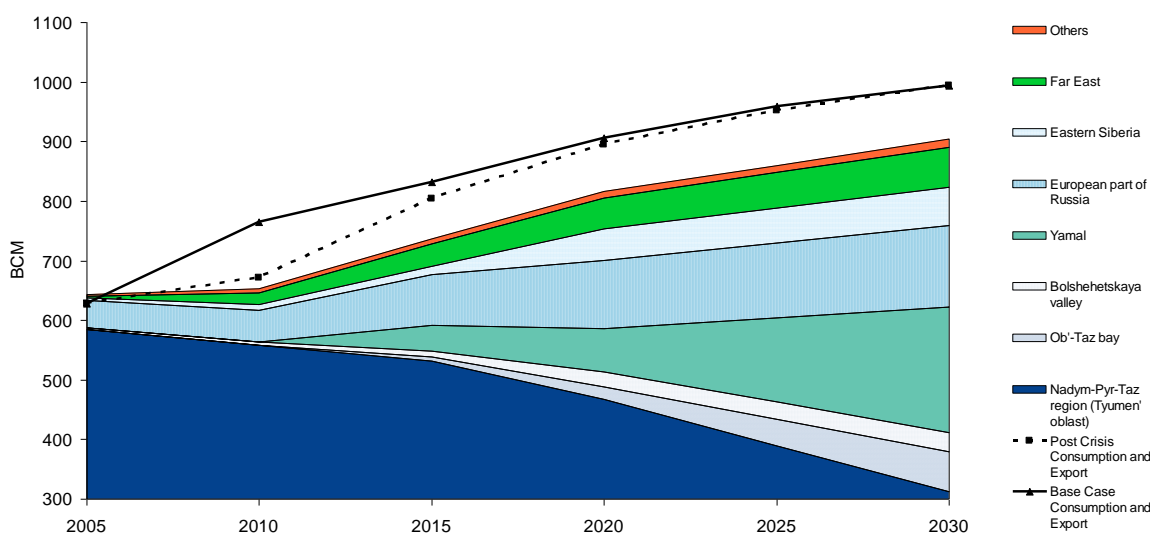


Note: History inclusive 2008. Projections Q1 09 and Q3 09 for 2009 and 2010 based on available information in Q1 and Q3 of 2009 respectively.

Sources: Gazprom Press Releases, Gazprom Data Book, Econ Pöyry Analysis

Figure 10 illustrates projected production by region according to the newly adopted Energy Strategy of the Russian Federation till 2030. This document, which is often criticized for being overly optimistic and parsimonious about details related to achieving proclaimed goals (see e.g. Ekspert No 34, 2009), presupposes that Yamal and Shtokman fields will come into play in time to preempt the increasing decline of the Nadym-Pur-Taz producing region between 2010 and 2015. Should this scenario play out, meaning that Gazprom follows through on its main upstream investments according to plan, the 2009 dip in consumption will avoid the deficit, or unsustainable increased reliance on Central Asian gas, that has been foreseen in recent years.

Figure 10 Russian Production by Region No-Delay

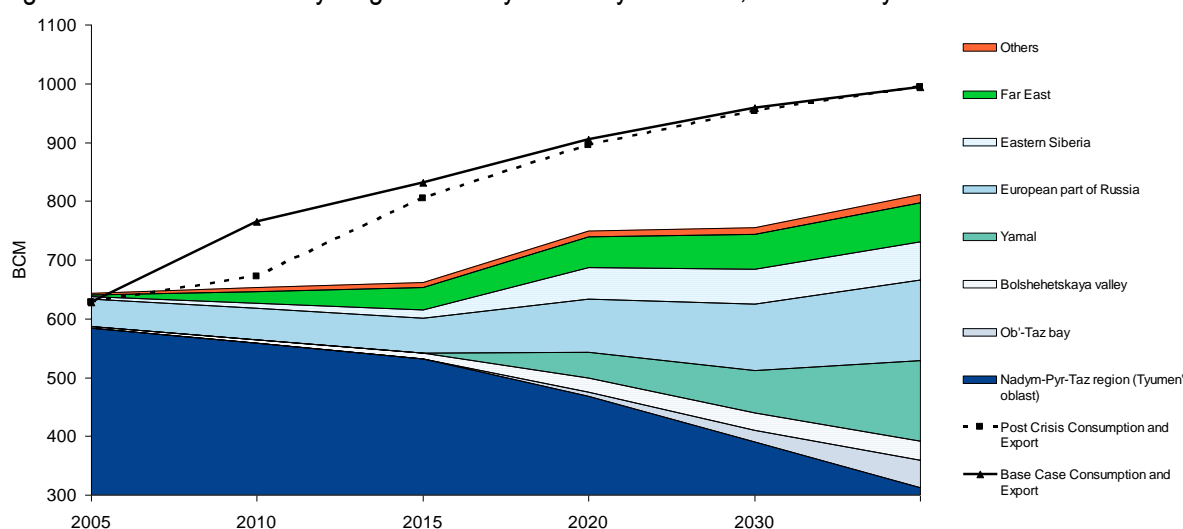


Note: Production figures reflect ES-2030 forecasts.

Sources: Energy Strategy Institute, Pöyry Oxford, Econ Pöyry

Following the line of argument in paragraphs above; the postponement of either Yamal, or Shtokman or both beyond 2015 stands out as a far more plausible scenario. Figure 11 provides an illustration of this scenario where start-up of Yamal, Ob-Taz and Shtokman fields have been assumed postponed 5 years with unchanged development timeframe and production build-up. Should Gazprom fail to follow through on these key projects, Russia will miss out on the opportunity created by the dip in domestic and export demand. Under the demand assumptions behind Figure 10 and Figure 11, the projects will also come into play too late compared to demand recovery implying an increased reliance on Central Asian gas to 140-170 BCM in 2015 and to 195-205 BCM in 2025.¹² In this case the 2009 recession will be a blow more than a break for Russian gas. Delayed upstream development will have repercussions for European energy security depending on the priority given by Russian authorities to domestic and export markets. Further elaboration on this point is unfortunately beyond the scope of this paper.

Figure 11 Production by Region with 5-year Delay of Yamal, Ob-Taz Bay and Shtokman



Note: Production figures reflect ES-2030 forecasts.

Sources: Energy Strategy Institute, Pöyry Oxford, Econ Pöyry

Concluding Remarks

The 2009 global recession provides Russian gas with vital opportunities. Reduced domestic and export demand provides an chance of bringing vital upstream projects on stream without relying too heavily on Central Asian imports in the interim and thereby a reduced chance of defaulting existing commitments due to supply uncertainty.

The demand side effects of the global recession do however transfer into substantial risk on the supply side, namely delays of key upstream projects caused by falling revenue and credit constraints.

¹² The base case demand forecast assumes 0.9% annual growth, while the crisis case assumes -9 % growth in 2009 and ensuing 1.2 % annual growth as the economy returns to trend consumption. Both assumptions are not excessive compared to an historic average growth of 1.3% over the years 2003-2008. Nonetheless historic growth averages must be seen in relation to strong GDP growth in recent years. Should the Russian economy exhibit slower growth in years ahead, gas consumption might also grow at a slower pace. However, this again will depend on the driving sectors behind Russian growth in years to come.

Reduced European gas prices mean that Russian prices have a smaller gap to fill up to netback parity. In August of 2009 Russian prices were 30 % of European prices compared to 19 % in December of 2008. However, the negative supply shock to Russian industry of increased prices should not be underestimated as shown above. Russian industry is in trouble with industrial production down 15 % in Jan-Aug 2009 compared to the same period in 2008. Russian policy makers' choice to raise domestic gas tariffs by 16 % for industrial consumers in 2009 in face of inflation expectations of 10-12 % is symptomatic of an understandable and expected sentiment that now is not the time for decisive price hikes.

However, keeping in mind the strong link between Russian economic performance and the price of raw materials, Russian recovery is likely to be accompanied by higher European prices pulling the target out of range. If the Russian government saw price reform as a complicated issue in a period of boom, it is likely to do so as well on the path of recovery.

Past predicaments of Russian gas remain firmly in place also in the wake of post-recession recovery. Supply and demand seem to be headed in equally incompatible directions and if anything the economic turmoil has added acuteness to the risk of failing domestic supply. Price reform remains the key to unleashing Russia's vast energy savings potential, but as before the government seems prone to continue waiting till more lenient times. The problem is when is a good time for a tough decision?

If the Russian government sticks to the current version of reform, prices will remain well below reasonable European netback. Russian consumers will continue to rationally choose a higher intensity of energy in their consumption of goods or inputs than their European trading partners. The 2009 recession has given Russian gas a short break, but unless policy makers handle the key demand side challenges, Russia will in time return to the situation where domestic demand and the wish to export are incompatible with own production capacity.

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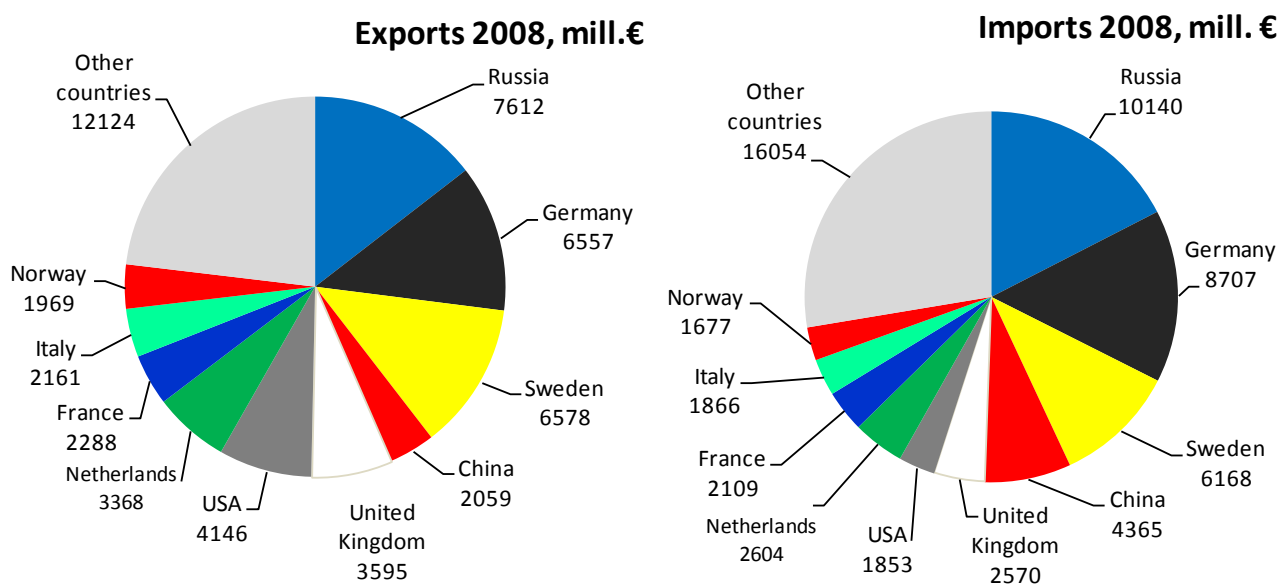
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Heli Simola

Economic relations between Finland and Russia

Russia is, together with Germany and Sweden, one of the main trade partners of Finland. At times it has been the biggest single export market. In 2008, on the back of high oil prices, it was the biggest trade partner overall. The export share has varied around 10-12%, and the import share has gone up to 15%. Still, Finland's economic relations with Russia have been markedly different from our other foreign economic relations. This was initially because of the Soviet Union's planned economy, and later due to the unusual operating environment caused by Russia's transition to a market economy. Some distinctive features relative to other foreign economic relations still remain, even though the Russian economy has become considerably more stable and open. These distinctive features are largely reflections of two factors: the Russian economy remains based on raw materials, and Finland is located between Russia and the markets of Western Europe.

Figure 1 The main countries of Finnish exports and imports in 2008



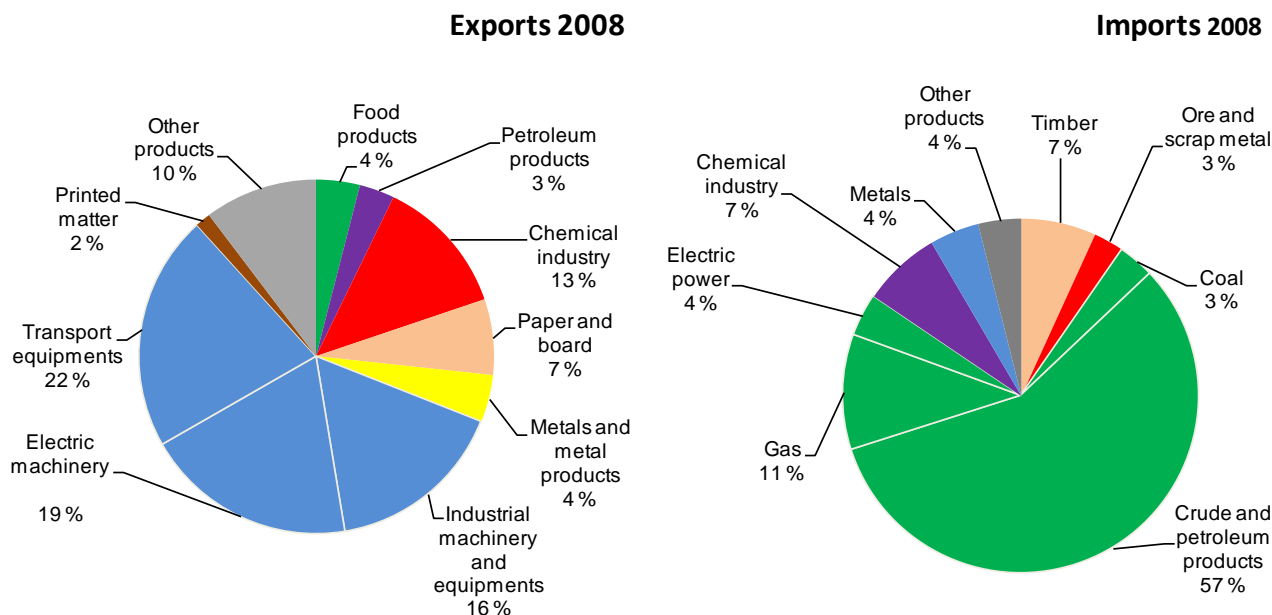
Source: Finnish customs

This paper proceeds in three steps. First, we look at length at traditional trade between Finland and Russia. Then, investments are briefly discussed. Finally, we venture a short look into the future.

The Russian economy is highly dependent on earnings from the energy sector, although this is not the real engine of growth in the economy. Over the course of the present decade, the Russian economy has grown at an average rate of 7% per annum. Growth has been driven primarily by domestic demand, supported by the strong rise in oil prices. High oil revenues have, following the logic of the Dutch Disease, meant that many other production sectors have tended to be neglected, and domestic output has been unable to meet the growing demand. Consumers and investors alike have preferred the choice, quality and brands available in international markets. Consequently, Russian imports have surged in recent years, at an average rate of around 20% per annum in real terms. Import growth has been supported by the steady real appreciation of the rouble. The lopsided structure of Russian exportable production has meant exports are made up almost entirely of energy

products and other commodities. This is a matter of lacking real, not price competitiveness. Even at lower prices the country would have few other products of interest to international markets.

Figure 2 Structure of Finnish trade with Russia



Source: Finnish customs

Also Finland's imports from Russia consist mainly of energy products and raw materials for domestic consumption and processing for higher value-added export goods. Russia's rapidly growing imports, meanwhile, have provided Finnish companies with a large export market close to hand, and they have taken advantage of this opportunity. However, supply and demand have failed to meet completely. Russia's growth has been driven by consumption. Investment goods dominate in Finland's exports. Consequently, though exports to Russia have grown, Finland-based companies have actually lost market share in Russia's imports.

Russia's geographical proximity and the fact that competition in many sectors used to be relatively weak, even as recently as the early 2000s, have made Russia also an important market for non-traditional exporters: small and medium-sized companies and companies operating outside of Finland's traditional export sectors. On the other hand certain products that otherwise play a major role in Finnish exports, such as paper and metals, are less important in exports to Russia, which has major output of its own in these sectors. Finland's very favourable location close to Russia has helped the emergence of this diversifying export trend. However, it should be re-emphasized that Finland does not produce many of the products that are in great demand in Russia, particularly consumer goods. This demand has been partially met by importing goods from elsewhere and re-exporting them to Russia, or simply by Finland serving as a route for the passage of transit goods to the Russian market. Both re-exports and transit are recent phenomena in Finnish-Russian economic relations. They however already seem to have peaked, and may not re-appear in anything like the recent magnitudes.

Re-exporting clouds the picture of export trends

Finnish-Russian trade should be discussed separately for 2001-2007 and for 2008-2009. The difference, obviously, is due to the crisis. The value of Finnish exports to Russia grew by an average of around 20% per annum in 2001-2007, and Russia's share of statistically recorded Finnish exports passed 10%. In 2007, the value of exports to Russia totalled EUR 6.7 billion. The largest product group was machinery, equipment and vehicles, which together accounted for over half of all exports to Russia in 2007. Over the course of the decade, cars and mobile phones have become the most important individual export items. Chemical industry products are also important, with their share of exports to Russia fairly constant at around 15%. In contrast, the share of exports to Russia taken by product groups that are important in other export markets, such as paper and metals, is much smaller and has contracted further in recent years. Russia, as mentioned, has major output of its own in these product groups. In addition, food products' share of exports to Russia has declined by approximately a half, to around 4%, during the present decade.

In recent years, however, the pace of growth in Finnish exports to Russia has slowed considerably, despite continued strong growth in Russia's total imports. In 2006 and 2007, the value of exports grew by just 8%, while Russia's total imports continued to grow strongly, by almost 30% in terms of their value in euro. This trend is partly explained by changes in the exports of two important individual products. Mobile phone exports to Russia declined considerably in 2006. This was followed by a marked deceleration in the pace of growth in car exports, which had been booming in previous years. Strong increase in exports of these two products boosted total export growth to Russia in previous years. In early 2008 car exports again picked up, to be followed by a sudden stop towards the end of the year. With the financial crisis hitting Russia, car importers ran out of necessary finance. Unsold cars filled Finnish transit harbours, and the congestion only eased towards the end of 2009.

Many of the mobile phones, and, in practice, all the cars, are not genuine exports but re-exports that simply pass through Finland en route to Russia. These products are not manufactured in Finland. They are brought into Finland from third countries as normal imports and then sent on (re-exported) to Russia. Products for re-export are imported to Finland as end products, and are therefore not further processed in Finland, but they may be re-packed or equipped with Russian-language manuals before export to Russia. Re-exports are estimated to have accounted for 25-30% of Finland's exports to Russia. Other important re-export products, in addition to cars and mobile phones, are home appliances and electronic equipment as well as some chemical products, such as medicines.

Changes in re-export patterns can be of sufficient magnitude to have a clear statistical impact. Until Spring 2006 Nokia channelled all its mobile phone exports to Russia via Finland. The policy was then changed, which caused a mysterious-looking drop in recorded Finnish export value, as most phones were re-channelled via Germany.

One should distinguish re-exporting from transit traffic, despite their evident similarities. Re-export goods are brought into Finland, primarily via a Finnish intermediary, and enter the country as normal imports that can be freely sold within Finland. In contrast, the destination, route and timetable for transit traffic is determined in advance at the point of origin, and transit goods can only be stored in designated storage facilities. Moreover, transit traffic is not included in Finland's foreign trade statistics, being recorded in separate statistics compiled by the National Board of Customs. Transit goods comprise largely the same products as re-export goods, particularly cars, but their volume is many times greater than the volume of goods for re-export. In fact, the value of transit has been much greater than that of all Finnish exports to Russia. There is also some transit

from Russia through Finland, particularly oil products and also iron ore pellets from Kostamuksha via Kokkola.

Why have re-exports and transit been so important? The political goal of Russia is to be independent of alien harbours, but that has not been feasible so far. In Soviet times, harbours in the Baltic states were of major importance for the whole country, but that has to a degree - by far not completely - changed due to political reasons absent in Finnish-Russian relations. The Finnish logistics chain is, according to World Bank ranking, also competitive, much better than the Baltic ones, and hugely so than the Russian one. Speed, predictability, safety and security matter, in particular when transporting high-value goods. They, not bulk commodities, have accounted for most re-export and transit via Finland. At peak in 2003-2004, transit via Finland accounted for a third of Russia's overall imports in value. The share then started to decline, and was under 15% in mid-2009.

As the crisis hit, such trade through Finland was badly damaged. In a matter of months, transit was halved. Also, there had been a domestic backlash, reaching the level of concrete political decision making, against pollution, congestion and accidents related to high road traffic intensity between harbours of Hanko, Kotka and Hamina and the Russian border. At the same time Russia has been upgrading its Baltic Sea harbour capacity. The Primorsk oil export terminal between St. Petersburg and Vyborg was the first one to be constructed, fast and to high technical standards. The Sovetsk oil product export terminal outside Vyborg, owned by privately held Lukoil oil company, followed. Major change is currently underway, as the large-scale and multi-use Ust-Luga harbour between St. Petersburg and the Estonian border is already partially operative and is slowly approaching finalization.

Will there be re-export and transit in the future? That depends on three factors. How fast will Russian imports grow? Will decisions on transport routes be made on economic grounds? Will Finnish harbours maintain their competitive edge? The least that Finnish authorities could do is to avoid any decisions that damage such competitiveness. According to our estimate, transit alone accounted at peak for some 5'000 Finnish jobs, concentrated in South-Eastern Finland, also otherwise badly hit by structural change.

Trade sector companies more prominent than others in exports to Russia

Re-exporting and transit are new phenomena related to Finland's geographical location. Re-exporting is pursued mainly by large trade companies. Because Russia has a lot of demand for goods that are not produced in Finland, Finnish trading companies supply the Russian market with goods produced elsewhere. Admittedly, some of the goods exported by Finnish trading companies are also produced in Finland. Re-exporting, in particular, is also partly explained by companies expanding their operations into Russia. It is often easier for these companies to import goods in bulk to Finland and then redistribute to Russia the quantities needed in the Russian market.

Re-exporting is also clearly reflected in the corporate structure of exports to Russia. Trade companies have one third share of exports to Russia, compared with just a one tenth share of total Finnish exports. As the goods are merely delivered via Finland, not produced here, the income and, particularly, employment effects of re-exporting are much less than with traditional exports. Admittedly, trade sector companies do benefit from these exports, as they receive income from their role as intermediaries. The other main beneficiaries from re-exporting are providers of storage and haulage services.

Russia is undoubtedly a significant export market for the trade sector, as almost one third of all exports by companies in the sector go to Russia. Even so, the overall significance of exports to

companies in this sector is rather small. Meanwhile, companies whose operations are based primarily on re-exporting could find it hard to sustain their competitive advantage in the future. In contrast to transit traffic, in re-exporting, the Finnish-based supplier must be able to retain its intermediary role so as to ensure the goods are not sent straight to the purchaser in Russia. The future of re-exporting could also be affected by a variety of extrinsic factors, with the potential for rapid changes that could be on a significant scale, such as has already happened with mobile phones. Such rapid changes could at the same time again obscure the overall trend in Finnish exports to Russia.

Russia as an extension of the domestic market

Most Finnish exports to Russia do, however, involve the traditional exporting of goods produced in Finland. The value of this trade has grown in recent years by a good 10% per annum. Because Finnish exports to Russia have, however, grown more slowly than overall import growth in Russia itself, Finland's share of the Russian market has declined in recent years by a couple of percentage points. This trend has, in addition to the supply-demand mismatch mentioned above, a number of other causes. The Russian market has become more competitive, with China in particular increasing its market share, as it has in world trade overall. Further, Finland is a small economy, and capacity constraints have sometimes restricted exports to Russia. Relative to the size of the economy, Finland nevertheless remains one of the EU's largest exporters to Russia. In some sectors, growth in exports has also been slowed by Finnish companies going local, replacing exports with production in Russia.

The majority of exports to Russia (excl. re-exports) are from companies that produce machinery, electronic equipment and chemical products. The share of Russia in these industries' total exports is however well below 10%. Forest and metals companies export little to Russia. Exporting to Russia is most important for generally home-market oriented industries, such as the textile and food industries as well as manufacturers of non-metal mineral products such as building materials. In these sectors, Russia's share of exports has in recent years varied between 10–25%. Such a high share of Russian exports is partly due to the proximity of the Russian market. In general their exports tend to go to nearby markets like Sweden. There is also an historical background, as many of such products had a relatively prominent role in exports to the Soviet Union. However, overall, no sector of Finnish industry is significantly dependent on the Russian market, as many were in the Soviet times. Exports to Russia account for only a few percentage points of total turnover in all sectors.

Russia is an important export market for SMEs

As foreign trade is carried out by individual companies, company level analysis can yield interesting additional information. International studies have shown that foreign trade, in particular exports, is as a rule pursued by a small proportion of companies, with the vast majority focusing exclusively on the home market. Foreign trade is also often concentrated, as most of it is in the hands of just a few of the largest companies. Moreover, many companies engage in trade with just one or a few countries and focus their foreign trade on just one or two products.

Many of the above features also apply to Finland's foreign trade. A relatively small proportion of companies engage in foreign trade, most of which is in the hands of only a few companies. The corporate structure of trade with Russia does, however, differ somewhat from the

rest of Finland's foreign trade. Detailed data is available just for 2006. Some 4,000 Finnish companies exported to Russia. Of these companies, a good 600 were large, and the rest are classified as SMEs. SMEs accounted for almost a fifth of total value of exports to Russia. This contrasts with aggregate exports: the share of SMEs has been just over 10% in recent years. SMEs were however losing position. Their exports to Russia grew by a third in total over the years 2002–2006. At the same time exports by large companies doubled. Both the SME share and the number of SMEs exporting to Russia dropped. Exports to Russia were becoming more normal.

Russia however remains of particular importance to Finnish SMEs. They sent almost 15% of their exports to Russia in 2006. Large companies, meanwhile, sent less than one tenth of their exports to Russia. Large companies generally export to a larger and increasing number of markets as they are better equipped to expand foreign operations. SMEs, in contrast, often find it easier to focus their exports on nearby markets. The share of SMEs is greatest in the exports to Russia from eastern and southeastern regions of Finland, ie close to the Russian border. Russia is not the easiest of export markets, but, in addition to proximity, the rapid growth in demand and often still remaining relative lack of competition have helped make the Russian market attractive to SMEs. Subcontracting is also important. Few SMEs are direct exporters. Many more SMEs are subcontracting, which boosts the importance to the SME sector of exports in general, including exports to Russia.

The Finnish companies that export to Russia are fairly specialised for the Russian market, and this is a feature that has increased further in recent years. In 2006, a stunning over half of companies exporting to Russia exported only to Russia. Russia's average share of total exports by Finnish companies exporting to Russia grew in the years 2002–2006 from around 60% to over two thirds. Despite the fact that in value terms the greater part of SME exports to Russia came from the Uusimaa area along the south coast, where the greatest concentration of companies is also located, the SMEs that are most strongly specialised in exporting to Russia are located in the southeast of the country, the area of Oulu and Kainuu in the north and along the Russian border in the east.

Exports to Russia accounted for an average 10% of the turnover of companies participating in this trade in 2006, a slightly higher figure than in 2002. For a small proportion of companies, however, exports to Russia are vital, as they account for over half of their total turnover. SMEs are particularly dependent on this business, while for large companies only a few derive even over a quarter of their turnover from exports to Russia.

Imports from Russia are very concentrated

The value of Finland's imports from Russia grew in 2000–2007 by an average of around 20% per annum, reaching EUR 7.8 billion in 2007. Basically, this was due to rising prices of oil and other commodities. Oil, oil products, gas and electricity comprise almost 70% of Finnish imports from Russia. The rest is divided between metals, roundwood and chemical products, each accounted for around 10% of imports in recent years. More refined or processed goods, such as machinery and equipment, are close to insignificant in imports from Russia, accounting for only one or two per cent of the total.

In 2006, there were approximately 1,400 companies importing from Russia, among them more than 300 large ones. The SME share of imports has remained steady at around 5%. This is considerably less than in imports from other countries, where SMEs account for almost a quarter of the total. The high concentration of imports from Russia naturally reflects the predominance of oil and other commodities. They are as a rule imported by just a few large corporations.

Contrary to SMEs, Russia is an important source of imports for large companies and industrial manufacturers. Such companies purchase close to a fifth of their imports from Russia. In some industries, like the manufacture of oil products and the forest industry, Russia's share of imports is much larger still, reflecting the structure of imports. In contrast, companies in the trade sector derive less than one tenth of their imports from Russia, while only one or two per cent of imports by SMEs come from Russia. Of these SME imports, the largest share is by trade sector companies. For SMEs in manufacturing, the most active importers from Russia are those that operate in the forest and chemical industries. In addition, most food industry imports from Russia are imported by SMEs, although the food industry's share of total imports is admittedly very small. Such imports basically consist of berries to be processed or cater for the 50'000 or so residents with a Russian background.

Of all companies involved in importing from Russia, just under a half import only from Russia. The importance of imports is greatest for a few major commodities importers, but many SMEs in eastern and northern Finland also import almost exclusively from Russia. While Russia's average share of all the imports by companies that import from Russia is a good 60%, the average for SMEs in eastern and northern areas is 90%. Among SMEs and companies in the north and east of the country, the structure of imports from Russia is also considerably more diversified than for the country as a whole; even so, it still comprises mainly relatively unprocessed goods.

Trade in services

In Soviet times, Leningrad and Tallinn were major destinations for Finnish tourists looking for cheap drink and entertainment. Such trade in services came to an end in the early 1990s, and Russia has not emerged as a tourist destination for Finns. Russian tourism into Finland, on the other hand, has recently boomed so that Russians have become the biggest single tourist group. Some 700'000 visas are issued to Russians annually. There are 6-7 million annual border crossings, two thirds of them by Russians. They come for shopping and entertainment, for sports facilities and peaceful lakeside holidays.

Some of the Russians buy real estate. During 2003-2008, identifiable Russians were involved in about 2000 real asset deals in Finland. As a rule, this involves leisure facilities, with Russians as the buyers. Deals are very concentrated in a few municipalities in South-Eastern Finland. In Southern Savo and Southern Karelia, the share of Russian-connected deals was between 7-9% of all real estate transactions in the peak year of 2008. In the next most favoured province, Kymenlaakso, the share was just 2%. There were practically no transactions in the western provinces of the country.

In spite of the modest scale of the matter, it has raised mixed feelings for a variety of reasons stretching all the way to security considerations. Finland now has a larger Russian-speaking population than ever before. Still, at some 50'000 also this is modest, and does not seem to be increasing, not fast at least. Even so, with numbers of immigrants overall increasing - from a miniscule basis - Finland is bound to become an internationalized society - to a degree, at least.

Investment

Russia is not a major target of Finnish investment. The estimated value of investment that can be defined as Finnish is 5-6 billion euros, a very modest amount. About half of that is accounted for by Fortum's acquisition of a power generating and distribution company active in Tyumen and

Chelyabinsk regions, Western Siberia. Other industries include some sawmills and related activities, as well as retail trade and such. By stretching the definition of being Finnish, one could point out companies like Baltika Breweries and Megafon, where the foreign owners are not - or any longer - Finnish, but the Russian operations have been largely run by Finns.

Notable for its absence is Finnish investment into Russia's pulp and paper production. Given that Russia has about 40% of the world's long-fibre wood, and Finland a premier forestry production, one would expect them to meet one another. When The Soviet forest industry companies were privatized, no Finnish companies were involved. This would seem a possibility lost. Other foreign investors have had mixed experiences, but the outcome after the second change of ownership often seems a positive one. The reasons why such involvement has not happened on a greenfield basis are enlightening.

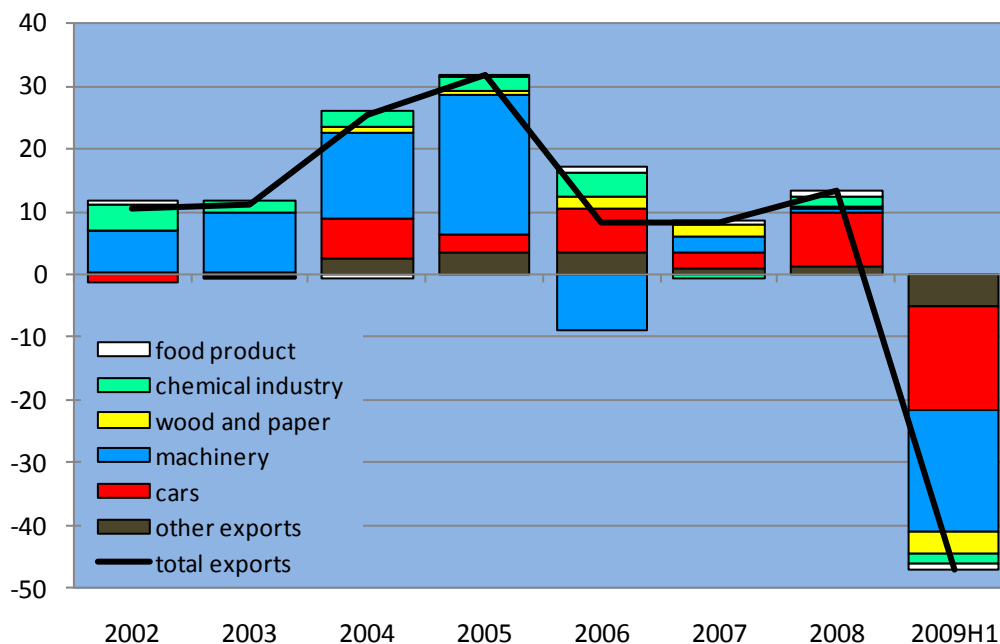
Pulp and paper are about raw materials, logistics and energy. In Russia, forests are legally jointly owned by the federation and the regions. In practice, the role of the federation is usually overwhelming. Their use is leased to specific companies with long-term contracts. How this will work out in practice for an investment that is made for a hundred years is not really yet known. Also, it is not known who will construct and maintain the thick network of forest roads needed for haulage of felled trees. Until now, they are basically absent. Constructing roads in territories that more often than not consist of very small particles and are wet, is a task of a different magnitude of difficulty than constructing forest roads in sand or gravel based Scandinavian environs. Even in North-Western Russia, gravel often should be hauled from distances of hundreds of kilometres. And if the roads could be built, who will own and operate the felling and haulage vehicles? One piece of each - a suitable technology for a family company - together easily cost over half a million euros. Further, though a pulp mill is a net producer of energy, a paper mill gulps huge amount of electricity. Both future availability and cost are unclear. Finally, the to and fro of the Russian government concerning export tariffs of roundwood has not particularly encouraged potential investors in the branch.

One Finnish company, Ruukki Group, had plans for a pulp mill in Kostroma district. They had been agreed upon with the local governor. When he was met with a car accident, the political balance between Moscow and Kostroma changed, and the plan was abandoned. The two big companies, UPM and Stora Enso, both announced in 2009 that they are postponing their plans for pulp mills, meant to feed paper mills sometime in the future.

Come crisis

On annual level, Finland's trade with Russia continued to grow in 2008. Exports were up by 13% to 7.6 billion euro, while aggregate exports stagnated. Imports were up by a fifth to 10.2 billion euros on the back of high oil prices. Russia was statistically Finland's biggest trading partner both in exports (11.6%) and in imports (16.3%), but the statistical caveats discussed should be remembered. In fact, the growth in exports was mainly due to re-exports of cars. Their export value increased from 825 million to more than 1.5 billion euros. The re-exports of passenger cars rose to 89'000 cars, while transit amounted to almost 740'000 cars. Debate on the pluses and minuses of transit heated.

Figure 3 Change in export to Russia by commodity group



Source: Finnish customs, BOFIT

First half of 2009 Finnish aggregate exports were down by more than third. Exports to Russia were even worse hit, by over 40%. The collapse had two major sources, investment goods and re-exports. In addition, as mentioned above, the value of transit was halved. The value of imports from Russia obviously also shrank with the oil price. As long as there was the possibility that Russia might be a relative safe haven in the turbulence, there were hopes that Russia-bound exports might help to limit the overall damage to Finland. Such hopes soon dissipated. But neither was it true that Russia would have been a particularly important channel through which the crisis hit the country.

Russia's significance as a trading partner is important, but limited

Trade between Finland and Russia remains largely based on comparative advantage and mutually complementary trading structures. Finland imports raw materials and exports manufactured goods. In contrast to Finland's overall foreign trade, there is very little intra-industry trade. Due to the commodity mismatch between Russia's consumer-oriented imports and Finland's investment-oriented exports, a fast growing market was found, at least for a time, in re-exports and transit. 2008 saw the statistical restoration of Russia as Finland's largest single export market. The large share of re-exporting however reduces the significance of this. A look at employment impact clarifies the situation. It was estimated at the time that exporting to the USSR provided some 150'000 Finnish jobs in the mid-1980s, when the Soviet share in Finnish exports peaked at some 25%. Finland, at the time, remained in many respects a closed economy, and foreign trade was of much less importance than it is today. On the other hand, the domestic contents of goods exported to the USSR under bilateral arrangements were closely watched, rule of thumb being that a domestic content of at least 80% was needed. Re-exporting was abhorred: using freely exchangeable currencies for components to be sold for tied roubles would have been insane. Also, the labour

intensity of production overall still remained high. Thus the large employment impact of exporting to the USSR. In 2007, in contrast, the employment impact of Finnish exports to Russia was an estimated 50'000 jobs. Just a third of the mid-1980s impact, but still larger than the employment of the whole financial sector.

In Finland's largest export industries pre-crisis, the Russian market accounted for well under a tenth of exports. In these globalized industries, both exports and production are often distributed across a number of markets, making them less dependent on any single export market. The rapid increase in import demand in Russia, however, compensated to a degree such companies for the more sluggish state of many other markets. When the crisis hit in 2008, such diversification did little to help. Most Finnish export markets contracted at the same time, and decline in investment was particularly severe. Therefore Finland, like Germany, Japan and Sweden, is among those suffering most.

Peculiarly and for reasons specified above, Russia is most important as an export market for those industries and companies exporting little. For home market oriented industries Russia has served as an extension to this core market, and a large proportion of exports go to Russia as well as to other nearby markets. There is, however, no industry in Finland that is highly dependent on the Russian market, like shipbuilding, textiles and footwear were in the days of the Soviet trade.

For SMEs, too, Russia is fairly important as an export market, and many SMEs export only to Russia. However, only a very small proportion of SMEs engage in any export activity; therefore, for the sector as a whole, the importance is marginal. On the other hand, a considerably larger number of SMEs participate in exports to Russia indirectly, as subcontractors.

Imports from Russia consist mainly of energy products and other commodities, and import trends have been largely determined by the rising prices for these products. Imports from Russia are concentrated in just a few industries, and Russia's share of imports in these industries is considerable. In terms of corporate structure, too, imports from Russia are dominated by a relatively small number of large industrial corporations, for whom they are very important.

Thus, Finland's trade with Russia still differs somewhat from trade with other countries. For exports, in particular, one factor driving this difference is the location and proximity of the Russian market, which make it a very important export focus for those Finnish companies that have less opportunity in other export markets. The differences in imports from Russia are largely due to the different product structure, with the strong focus on oil and other commodities.

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Morten Anker

The High North and Russo-Norwegian bilateral economic relations

Russo-Norwegian bilateral relations have been high on the Norwegian political agenda for nearly two decades. Several success stories can be noted, but there seems to be a pattern that success is easier to achieve on "soft" issues such as environment and culture than on "hard" issues like foreign policy and economic relations. But also in sectors such as environmental cooperation it has been difficult to realize the full potential of the Norwegian efforts, which often have included an element of aid¹³.

The current Norwegian government¹⁴ has been very explicit in placing the High North high on its political agenda. In December 2006 the Ministry of Foreign Affairs launched the Government's High North Strategy, a 70 page document describing the main features of the Arctic's position in Norwegian foreign policy¹⁵. Bilateral relations with Russia are given a prominent position in the strategy. On the economic field the strategy states that "The Norwegian authorities will facilitate business development in the High North and promote Norwegian business interests in Russia". So far, it is difficult to see any concrete results from the strategy manifested in bilateral trade or Norwegian investments in Russia.

This article will primarily look at the bilateral *economic* relations between Norway and Russia and will not discuss other fields of bilateral cooperation. The main focus of the article will be the significance of the Shtokman gas and condensate field development for Russo-Norwegian bilateral relations including some of the main risks.

The article will start out by presenting some key statistical features of the bilateral relations as a backdrop to the article's main topic. Then the opportunities and possible risks of the Shtokman adventure for Norwegian companies and authorities will be discussed. The main message of the article will be that the Shtokman development when it comes will provide ample opportunity for Norwegian companies, both for the developer StatoilHydro and for the Norwegian oil supply cluster, but that the opportunity also comes with a high degree political risk attached both for StatoilHydro and for the Norwegian government.

Economic Relations

The last few years Russia's relative positions as a trade partner for Norwegian companies has remained stable¹⁶. In 2008 Russia was only the 21st most important export destination for Norwegian goods and services and the 12th most important source of imports to Norway. As can be seen from Figure 1, Norwegian exports to Russia as a share of total Norwegian exports have varied between 0.6 and 0.8 percent the last six years from 2003 to 2008, with a peak in 2005. The corresponding numbers for Norwegian imports from Russia are between 2.1 and 2.5 percent of total

¹³ Rowe, Hønneland and Moe (2007): Evaluering av miljøvernssamarbeidet mellom Norge og Russland, FNI Rapport 7/2007.

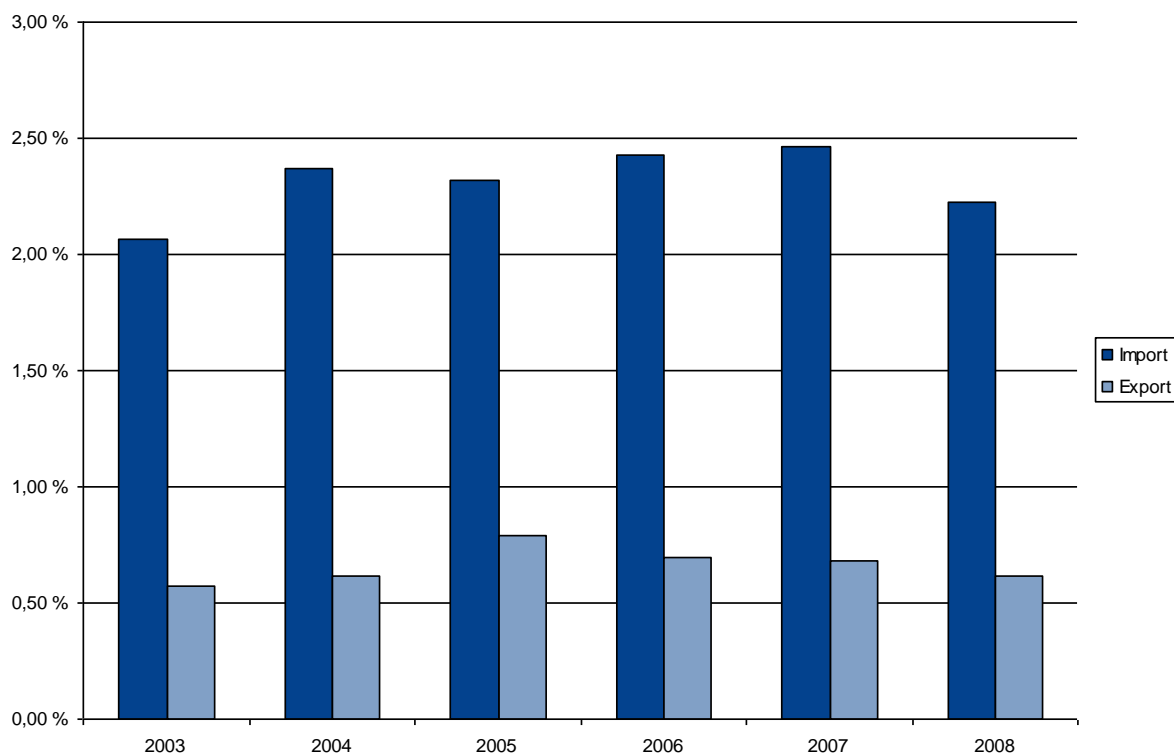
¹⁴ At the time of writing, the new government platform after the parliamentary elections in September 2009 has not been finalized. Therefore we consider the Soria Moria I government the 'current government'.

¹⁵ The Government's High North Strategy, accessed at <http://www.regjeringen.no/upload/UD/Vedlegg/strategien.pdf>

¹⁶ All numbers in this section are from Statistics Norway, accessed at www.ssb.no

imports. In absolute numbers, exports as well as imports have grown considerably; exports to Russia measured in NOK have more than doubled since 2003 while imports have all but doubled.

Figure 1 Bilateral trade Russia – Norway as share of total Norwegian trade



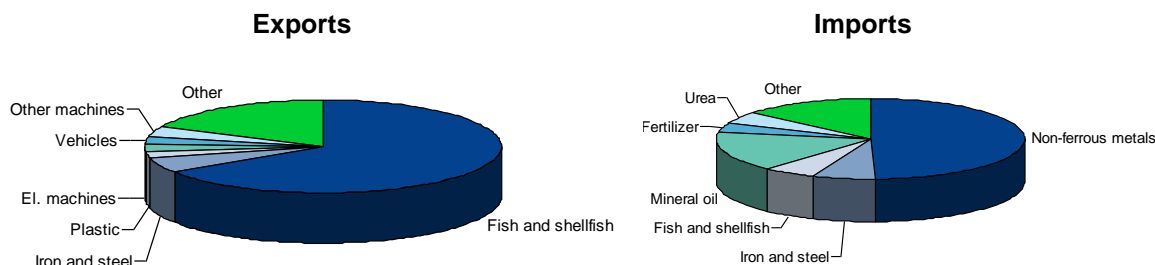
Source: Statistics Norway

The low Russian share of overall Norwegian exports could in part be explained by the fact that Russia does not import Norwegian oil and gas. With oil and gas prices sky-rocketing up to mid-2008, so did Norwegian export revenues. An increasing share of exports to a non-petroleum importing country would, in this time period, have implied a serious increase in the trade of other goods and services. Russia's share in Norwegian exports subtracting exports of oil and gas, ships and platforms is still low, 1.7 percent, making it the 17th most important export destination. The growth trend is also less positive for Russia than for Norwegian non-oil exports in total. While the value of exports to Russia has grown by 12 percent since 2005, the corresponding number for total non-oil exports from Norway is 42 percent.

Even though Russia does not stand out as a very important trade partner for Norway in general, it is a vital partner for a few sectors and companies. Norway's trade with Russia is highly concentrated. Most notably, Russia has grown to become one of the main markets for Norwegian seafood. Despite trouble due to the Russian import ban on Norwegian salmon in 2006, the Russian market has grown again and in 2008 Russia was export market number one for Norwegian fish (marginally ahead of France) with a total value of more than NOK 4 billion (EUR 490 million). This corresponds to 66 percent of all Norwegian exports of goods and services to Russia. Throughout 2009 Russia has maintained the position as a main destination for Norwegian fish despite the economic crisis' negative impact on Russian consumption. Eight months into the crisis year of 2009, Russia is the second most important market for Norwegian fish, now only just surpassed by France.

Imports to Norway from Russia are concentrated to metals, which constitute 56 percent of all imports from Russia. This import is important for the Norwegian metallurgy industry.

Figure 2 Composition of Norwegian trade with Russia in 2008



Source: Statistics Norway

The main Norwegian investment in Russia has been plagued with trouble

Norwegian companies have in general been reluctant to invest in Russia. Still, it seems to be a clear trend that Russia is increasing its share of Norwegian FDI (see 3). In 2007, according to statistics from Norwegian national accounts, the stock of direct investments in Russia from Norwegian companies totalled NOK 12.6 billion (EUR 1.6 billion). This indicates that the Russian share of total Norwegian FDI is around 1.8 percent. Now, it must be noted that national account numbers are a very imprecise way of measuring the actual investment activity. Because of the practice of registering daughter companies and affiliates abroad due, among other things, to tax regulations some of the major investments may slip under the radar of the official statistics.

Contrary to what could be expected, Norway and Norwegian companies have not been active investors in the oil and gas sector in Russia. To some extent this could be explained by the fact that the oil and gas sector in Russia is relatively closed and that the last five years has seen a Russian policy aimed at increasing control over the sector.

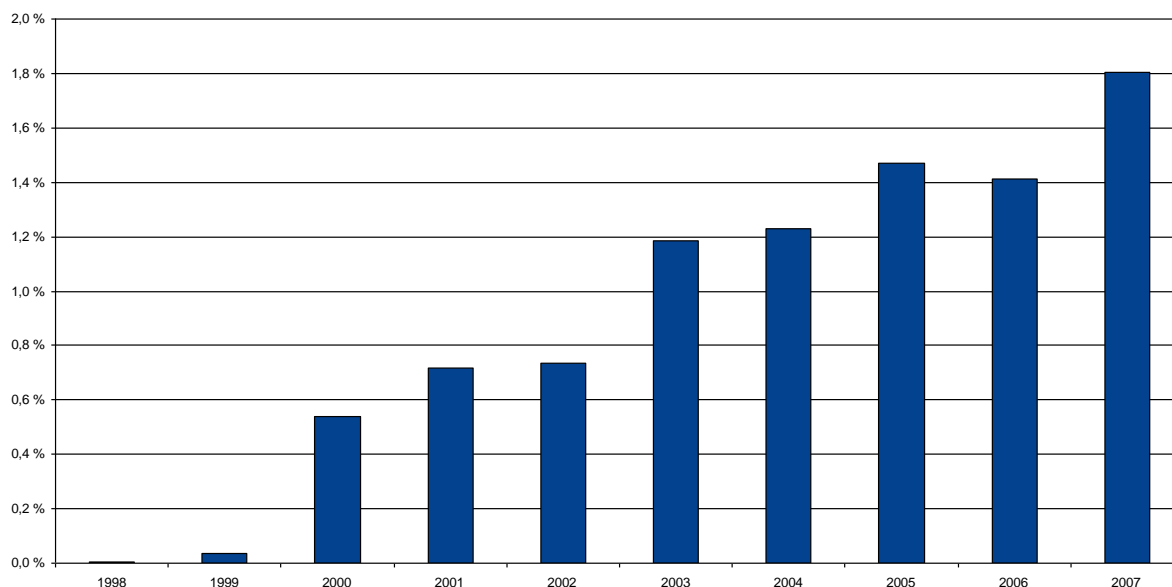
The main Norwegian investment in this sector in Russia stems from StatoilHydro's 40 percent share in the Kharyaga oil field in the Nenets Autonomous Okrug (Timan-Pechora basin) acquired in 1996, with the formal Production Sharing Agreement (PSA) approved in 1999. The StatoilHydro investment at Kharyaga is said to have reached approximately NOK 1.5 billion (EUR 190 million)¹⁷. In addition, two small oil companies, Saga Oil and Aladdin Oil beginning in 2005 and 2006 have acquired small Russian companies with production and licences in the Orenburg region in south Russia and licences in Timan-Pechora. These investments are relatively modest compared to the Kharyaga investments of StatoilHydro. Saga oil is currently threatened by bankruptcy and as of 30 September 2009 the shares had fallen by 98.57 percent the last 12 months¹⁸.

¹⁷ Grünfeld, Leo A. (2007): Norske handelsinteresser overfor landene Kina, Japan, India og Russland, MENON-publikasjon nr. 1 / 2007

¹⁸ Netf

onds, at <http://hopey.netfonds.no/ppaper.php?paper=SAGA.OTC>, accessed 30 September

Figure 3 Norwegian direct investments in Russia as share of total Norwegian FDI (stock figures)



Source: Statistics Norway

The biggest Norwegian investment in Russia up to now is the investments made by Telenor in the Russian telecom market, more specifically in the Russian mobile phone company VimpelCom. Telenor's total accumulated investments amount to several billion NOK¹⁹, probably around EUR 500 million²⁰.

The Telenor investment has been plagued with problems the last five years, basically due to a conflict between Telenor and the VimpelCom's other main shareholder Altimo, part of the Alfa Group controlled by Mikhail Friedman. Telenor's problems in Russia culminated in April 2009 when a court in Omsk held Telenor liable for USD 1.7 billion in damages for obstructing VimpelCom's expansion in Ukraine. Subsequently all of Telenor's shares in VimpelCom were taken in arrest and threatened with forced sale.

The background for the court ruling was a lawsuit in 2008 by a minority shareholder Farimex with a 0.002 percent share in VimpelCom called Farimex. Telenor claimed that Farimex had connections with Friedman and Alfa Group. A court in Khanty-Mansiysk supported Farimex and held Telenor liable for USD 2.8 billion in damages. An appeal from Telenor resulted in a reduction of the sum.²¹ On 5 October Telenor and Altimo agreed to put an end to their conflict and merge VimpelCom and the Ukrainian company Kyivstar into one company, VimpelCom Ltd. registered at Bermuda and listed at the New York Stock Exchange. As part of the agreement all ongoing disputes, including the Farimex case, are to be ended.²² However, there is at the time of writing no guarantee that Farimex will withdraw its lawsuit and that the Russian judicial system will drop the liability ruling.²³ Even though the parties for now seem to have put an end to their conflicts and thereby to the trouble surrounding Telenor's Russian investments, it is likely that the Telenor experience has affected the attractiveness of Russia as a market for Norwegian investments. The

¹⁹ Grünfeld (2007)

²⁰ Calculations based on statistics from Statistics Norway

²¹ See www.telenor.com, http://www.economist.com/businessfinance/displaystory.cfm?story_id=13962526

²² <http://www.dagensit.no/article1754971.ece#>

²³ Dagens Næringsliv 07.10.2009

case serves as a prime example of the high political risk perceived to be associated with investments in Russia.

The Telenor experience, together with a number of other negative experiences with investments in Russia²⁴ makes Norwegian companies in general reluctant to go into Russia with capital. In interviews the author of this article has conducted with Norwegian company representatives in 2007 and 2008, they express that the main obstacles to investments in Russia are: Lack of transparent and efficient bureaucratic procedures, problems with finding a reliable Russian partner, tax regime and corruption. These factors provide a substantial part of the explanation why Norwegian companies seem to be reluctant to make investments in Russia. These considerations are not, however, unique to Norwegian companies. Russia receives low scores on important indicators for business environment assessments such as corruption, where Russia ranks 147 out of 180 countries on Transparency International's corruption perception index (CPI)²⁵, and ease of doing business, where Russia ranks 120 out of 183²⁶.

The Shtokman opportunity

With the situation described above as a backdrop, it is easy to see why the Norwegian government and the Norwegian oil and gas cluster see the Shtokman field development as a golden opportunity. When Gazprom in October 2007 announced that StatoilHydro was to get a 24 percent share in the Shtokman development, a decision that was formalized in 2008 through the establishment of the Swiss registered company Shtokman Development Company AG (SD AG), the news was received not without a certain amount of euphoria in the Norwegian press. And it is no doubt that the Shtokman development may provide ample opportunity for Norway and Norwegian companies.

For the Norwegian government it could give a boost to the bilateral relations, taking economic cooperation to a completely different level. It will in reality be the first joint development by a Norwegian and Russian company of a Russian field (disregarding the Kharyaga field where the Russian partner Nenets Oil acquired its 10 percent share at a later stage of the development). And it is big.

Estimated total investments for the phase 1 development, not including the pipeline from Teriberka on the Kola Peninsula to Volkhov near St. Petersburg, are in the range of USD 15-20 billion. This means that the Norwegian share will be some USD 4-5 billion, planned to be invested over a period of four years. The official timeline for the Shtokman development, however, seems quite unconvincing. Gazprom and the two other partners have for a long time upheld the initial time schedule saying start-up of dry gas production in 2013 and LNG in 2014. This has been the official policy even after the investment decision was postponed from late 2009 to early 2010. Lately, however, sources in Gazprom have suggested that start-up may be postponed beyond 2014 due to the market situation in Europe²⁷. Compared to the experience of other difficult offshore developments a timeline of only three-four years from investment decision to first gas production seems overly optimistic.

²⁴ See *inter alia* "Evaluering av fondene for Øst- Europa og Nordvest- Russland", Econ rapport 2007-103

²⁵ http://www.transparency.org/policy_research/surveys_indices/cpi/2008

²⁶ http://www.doingbusiness.org/Documents/DB10_Overview.pdf

²⁷ <http://www.barentsobserver.com/index.php?id=4631507&xxforcedir=1&noredir=1>



Source: Gazprom

For StatoilHydro and the supply industry Shtokman represents a huge commercial opportunity. Due to the sheer size of the field, it will potentially be a revenue bearing project for Russia for a century. The first phase of the development, which is the phase StatoilHydro and Total are part of, will according to plan produce 27.5 bcm of gas annually for 25 years. The two partners, of course, hope that they will be part also of phase two and three, taking plateau production up to 70 bcm annually (2.5 times Troll production in 2009). For StatoilHydro it surely is a project with high commercial risk, and the profit potential of the first phase of the Shtokman is uncertain. The Shtokman agreement, as it is publicly communicated does not give StatoilHydro and Total ownership rights to the gas reserves, but to the infrastructure and the right to sell the gas to Gazprom when it reaches Teriberka on the Kola Peninsula. This means that their revenue depends entirely on the price they can get at Teriberka. These prices will be based on netback calculations where transportation and other costs as well as taxes are subtracted from the end-user price in Europe.

For the Norwegian supply industry the commercial risk is lower and the upside is high. There are high hopes that the Shtokman development will lead to major contracts for Norwegian companies, and in the northern part of Norway there are hopes for a petroleum boom from the Shtokman development²⁸. Aker Solutions has, in partnership with Technip and SBM offshore, already won the contract for the front end engineering design (FEED) for the floating production unit (FPU) at Shtokman, a contract estimated at approximately €25 million (USD 31.8 million). Aker Solutions has also announced that it will tender for the full Engineering, Procurement Supply Construction and Commissioning (EPSCC) for the FPU worth around USD 1 billion²⁹.

²⁸ Øverland, Indra (2008): "Natural Gas Projects in the Russian North", in Aalto, Blakkisrud and Smith (eds.), *The New Northern Dimension of the European Neighbourhood*, Brussels: CEPS.

²⁹ <http://www.oilinfo.co.uk/index.cfm?event=doLink&famId=78203>

Other companies are lining up for the bidding rounds for large and smaller contracts. At a meeting between the Norwegian supply industry network INTSOK and SD AG in late September 2009 more than 70 Norwegian companies were expected to participate³⁰.

In general Norwegian companies believe that they are in a good position to land several of the Shtokman contracts due to several factors:

- First of all, it is considered a huge advantage for the Norwegian industry that a Norwegian company is one of the three consortium partners in SD AG. StatoilHydro knows the Norwegian oil and gas cluster very well and has several decades of experience of working with Norwegian companies.
- Secondly, the Norwegian offshore experience has been stated as one of the reasons why StatoilHydro was taken in on the project in the first place. The Snøhvit development and Ormen Lange have given parts of the Norwegian industry valuable experience with offshore solutions in Arctic waters and high depths as well as LNG production under extreme conditions.
- Thirdly, several Norwegian companies have experience from Russian projects. Aker Solutions and Acergy have participated in the Sakhalin developments, and Norwegian companies are said to have delivered 25 percent of technical deliveries and services to the development of the Prirazlomnoye oil field in the Pechora Sea³¹.

Towards a hold-up threat?

Even though Shtokman may represent a huge opportunity both for StatoilHydro and for the Norwegian oil and gas supply industry, it does not come without a certain amount of risk. The commercial risk for StatoilHydro has been mentioned. However, there is also a high political risk potential. In the following, we will therefore consider the political risk for StatoilHydro of the Shtokman investments. This is not meant to be a probability assessment; the intention is merely to point to certain risk factors that may arise after the field development phase is completed. Certainly, StatoilHydro and Total have duly considered the potential political risk associated with investing in the Shtokman development and taken measures to reduce the risk. Still, there is a question whether it is possible to hedge all political risk and consider all possible scenarios. For StatoilHydro and Total it is also a question of a fine balancing act between efforts to control for risk and efforts to build trust. If too much weight is put on control for risk, Gazprom is likely to respond negatively. On the other hand, if more weight is put on building trust, StatoilHydro and Total may increase the chance of achieving a favourable agreement and a fast development but at the same time they may have to live with uncovered risk of unforeseen factors jeopardising the entire project and investments.

The road to the 2007 inclusion of Total and StatoilHydro in Shtokman phase 1 has been a bumpy ride and a long beauty contest with changing rules and conclusions. Only one year before the 2007-decision Gazprom disappointed the five companies that were on the short-list to be included in the development by stating that it would develop the Shtokman field alone. With the financial position of Gazprom becoming increasingly strained due to increasing costs and falling revenues (see article by Daniel B. Fjærtøft in this publication) it now seems clear that the company is not able to lift the Shtokman project alone and needs other co-investors for the Shtokman

³⁰ <http://www.oilinfo.co.uk/index.cfm?event=doLink&famId=97098>

³¹ INTSOK, http://www.nortrade.com/index.php?cmd=show_article&id=255

development to become a reality. All other things being equal, and the proposition that Russia and Gazprom need the project, this strengthens the negotiating position of the two non-Russian partners.

After the main investments are made and the main technological transfers have been implemented, however, the bargaining position is likely to change again in Gazprom's favour. This increases the chance of a hold-up situation, i.e. a situation where one party to a contract uses its new bargaining power to reduce or deprive the other party's rent. In contract theory it is assumed that the risk of a hold-up will lead the investing party to underinvest at the first stage to hedge the possible losses at the second stage³². However, in a situation where the future rent depends on a certain level of investment, underinvestment would not be an option. Thus, the risk premium will likely have to be included in the setup for future revenue.

The question is whether it is possible at stage two for one party (Gazprom or the Russian state) to use its new bargaining position to alter the terms of the contract. In the following we will suggest two possible bargaining chips that could be used by Gazprom or the Russian government.

The most extreme scenario would be that Gazprom or another Russian company forcefully takes over StatoilHydro and Total's assets, i.e. ownership rights to the infrastructure, before the agreed 25 years, leaving the companies with sunk CAPEX but no revenues (apart from possible reimbursements). It is difficult to make assumptions of the plausibility of such an extreme scenario, but it could be detrimental to Gazprom's reputation and it would surely be taken to court. However, experiences from Sakhalin-II (Shell, Mitsui and Mitsubishi) and Kovykta (TNK-BP) show that consortia with foreign partners are not immune to pressure from the Russian government. In both these cases Gazprom finally was given the possibility to acquire a majority position in the consortia after threats from government agencies of revoking production licenses. Gazprom now holds a 50 percent plus one share in the Sakhalin Energy Investment Company, while for Kovykta the asset transfer has not yet been made³³.

This expropriation scenario is probably one of the main reasons why the Shtokman Development Company is registered in a neutral third country. Illustratively, Telenor and Alfa Group have chosen the same solution for their new company.

Other, less dramatic, but still extremely important factors that can be subject to renegotiation attempts by the Russian side are the netback price received by the consortium partners for gas delivered at Teriberka and the tax scheme. The netback price will likely have to be renegotiated from time to time resulting from changes in export and transport tariffs. This could be exploited by the Russian side to put pressure on the two non-Russian partners from its new bargaining position.

Could politics become hostage to business?

In addition to the risk of Gazprom changing the rules of the game for the commercial players, bilateral political relations may find themselves held hostage to the commercial interests of Norwegian companies.

There are some factors that need to be considered when discussing this political risk for politics: Firstly, it is important to remember that the Shtokman investment if or when it is made will be the largest Norwegian investment in Russia ever³⁴. For a government that emphasizes bilateral relations with Russia, including the expansion of economic cooperation, Shtokman will become a

³² Schmitz, Patric W. (2001): "The Hold-Up Problem and Incomplete Contracts: A Survey of Recent Topics in Contract Theory", *Bulletin of Economic Research*, Volume 53: Issue 1, January 2001, 1-17

³³ <http://www.upstreamonline.com/live/article186045.ece>

³⁴ It may not show up in the national accounts as the procedure will be StatoilHydro investing in a Swiss company and the Swiss company investing in Russia. But this is only a technicality and does not influence the following argument.

show-case for this strategy's success and it is not inconceivable that it will feel a pressure to go some lengths to avoid a negative outcome of the project.

Furthermore, a substantial amount of political capital has been put into the project from the Norwegian government. StatoilHydro's part in the beauty contest before the 2007 decision received high-level political backing. The symbolism in the fact that the decision to invite StatoilHydro into the Shtokman project was first publicly announced in a telephone call from President Putin to Prime Minister Stoltenberg and not from Gazprom CEO Miller to StatoilHydro CEO Lund suggests the political aspect of the matter. If one also keeps in mind that StatoilHydro is a partly state-owned company and that Putin earlier has mentioned the company as an example of a national oil company, it is not unlikely that the Russian side believes that it could be possible to couple political and commercial issues.

Thus, a situation may arise where the Norwegian state feels subject to pressure to make political concessions to support the commercial interests of StatoilHydro. This article does not imply that Norwegian authorities will actually give in to such pressure, only suggests the possibility of such a risk. Covert, or more overt, political pressure could be linked to sensitive unresolved foreign political issues like the negotiations over the sea border between the two countries and the disputed area in the Barents Sea or an ease of Norwegian administration of the Spitsbergen archipelago. However, these are issues so high on the political agenda that concessions will be regarded as high cost.

Other, less obvious concessions could relate to how Norway considers Russian positions on the international arena. Will Norway more easily support Russia's positions in international issues, does Norway criticize Russia less over human rights violations than would otherwise be the case? These are questions that this article does not aim to answer. Here it is merely suggested that a Norwegian company's involvement a Russian mega-project may have strings attached. An even more subtle result could be that the Norwegian government, conscious or not, shifts its policy towards Russia in order to avoid a pressure where StatoilHydro's position in Shtokman could be at stake – as a preventive action. Norway has stood on Russia's side in the dispute over the US missile defence shield. Whether or not Norwegian politicians relate this to Shtokman, it is plausible that Russian policy makers do.

Seen from a company perspective, the interest of StatoilHydro is dependent on the general bilateral relations between Norway and Russia. Should governmental level bilateral relations worsen significantly, it could cause problems for the company and their position at Shtokman. This dependency is mutual. If the big oil players do well, that can strengthen the bilateral ties between their home country and Russia. This proposition seems particularly relevant in the case of state controlled and national oil companies. Success at Shtokman can therefore have some impact on state relations between Norway and Russia. A failure at Shtokman could, on the other hand, represent a blow to the bilateral ties between Norwegian and Russian political authorities³⁵.

Concluding remarks: Ample opportunity – High Risk

After the Russian decision in October 2007 to invite StatoilHydro as a partner in the Shtokman Development Company there has been something of a euphoric sentiment in the Norwegian public discourse. And the opportunity is clearly present. For StatoilHydro, Shtokman could become an important revenue source and, not less importantly, could pave the way for new projects further east in Russia, both onshore and offshore. Already, StatoilHydro CEO Helge Lund has announced that

³⁵ See Anker and Brunstad (2008): "Foreign Involvement in the Russian Energy Sector", in Aalto, Blakkisrud and Smith (eds.), *The New Northern Dimension of the European Neighbourhood*, Brussels: CEPS.

the company might be interested in taking part in upstream projects at the Yamal Peninsula. Furthermore, success at Shtokman could give a boost to bilateral political relations between Norway and Russia. In that case, all talk about friendly and mutually beneficial relations would be given far more substance.

On the other hand, the risk of failure is clearly present. In a worst case scenario the Russian party alters the premises of the cooperation after the main investments have been made. This could have seriously negative consequences not only for StatoilHydro but also for the Norwegian government and the overall bilateral relations with Russia. One question is how far the government is willing to go either in terms of political concessions or in terms of pressure on StatoilHydro to prevent Shtokman from becoming a liability instead of a success story.

Jouko Rautava

A forecasting model for Russia's economy

Recent turbulence in the world economy and its heavy impact on Russia has raised several interesting issues concerning Russia's economy. During the earlier years of fast growth many, including top Russian decision makers, evidently began to think that Russia's economic growth is no longer dependent on energy and raw materials but has gained a momentum of its own. This proved to be wishful thinking. The events in Russia after the onset of financial crisis and the collapse of international oil prices in the latter part of 2008 show that oil price developments are still important for Russia.

This article aims to contribute to the debate concerning Russia's oil dependence by presenting an econometric model for the Russian economy, which relies heavily on oil prices. In addition to the description of the model, we discuss various aspects related to its use in practice, particularly for forecasting. We start by describing the main features of our model, after which we discuss some data issues. The following parts deal with long-run analysis and the building of a short-run model for use in forecasting. After that, we evaluate the forecasting properties of the model. The article concludes with some comments on the benefits of a model-based approach for studying the Russian economy.

Main features of the model

In order to explain developments of some key variables of the Russian economy, we make use of vector autoregressive (VAR) modelling and cointegration techniques.³⁶ We focus on Russia's GDP and imports, since their behaviour is crucial for other countries' exports to Russia. In addition to Russian GDP and imports, our model includes the real exchange rate of the rouble as a third endogenous variable to be explained and forecasted by the model. International oil prices are treated as an exogenous variable determined in global markets and not by the Russia-related factors in our model. So, while the model is relatively small, it nevertheless sums up key domestic, external and financial aspects of the Russian economy.

In practice, use of the VAR approach means that we are attempting to explain the behaviours of our endogenous variables by their own lags, lags of other endogenous variables, and by data on oil prices. A constant term, time trend and dummies are also used as explanatory variables.³⁷ Cointegration, for its part, means that we are attempting to take into account also long-run dependencies among the levels of our variables. There are two interesting aspects here concerning cointegration analysis. First, the long-run equilibrium equations can offer useful information on how the levels of our model variables depend on each other, and such analysis is potentially important per se. Second, inclusion of long-run equilibrium conditions as equilibrium-correction (or error-correction) terms in the short-run (first differences) VAR model may be essential in order to complete the model and avoid misspecification errors.

³⁶ A more detailed treatment of the econometric issues discussed here is provided by Rautava (2004), The role of oil prices and the real exchange rate in Russia's economy – a cointegration approach, *Journal of Comparative Economics*, vol 32, 315–327.

³⁷ Altogether (long- and short-run models) six time dummies are included to control the excess volatility of the Russian economy around 1998–2001.

After estimating the basic short-run model with error-correction terms (to get a vector-error-correction or VEC model), we can proceed even further by imposing restrictions to exclude variables that are not statistically significant and applying other econometric techniques.³⁸ Consequently, we start with a purely statistical, theory-free and data-driven VAR model and end up with a model that has features in common with more traditional structural models (structural VEC or SVEC).

In order to ensure that there are no serious statistical problems with our system of equations, we employ at each step of the modelling process various statistical tests for individual equations as well as for the system.

Data characteristics

We use quarterly data from the third quarter of 1995 to the last quarter of 2006 to estimate the model, while data for 2007 and 2008 are saved for testing the model's forecasting properties. The real GDP (gdp) and real import (imp) indexes, in levels, are based on the Rosstat national accounts. The index for the rouble's real exchange rate (reer) is from the IMF's International Financial Statistics. Prices for Russia's Urals oil (oil) are in dollars per barrel, and the data is from Bloomberg. The estimation process reveals that current oil prices, rather than lagged or smoothed values, are best suited for estimating our model, which may reflect the importance of expectation factors in the transmission mechanism concerning oil prices and the Russian economy.

As indicated in Figure 1, identifiable seasonality is present in the GDP and import series, so we use seasonally adjusted data for these variables. All the variables are in logarithmic form, which enables interpretation of estimated parameters as elasticities. The use of logarithms allows for the possibility that a one-dollar/barrel change in the price of oil has a larger impact on the economy if oil prices are low than if they are high, which sounds reasonable.

Figure 1 suggests the existence of strong links among our variables in levels, as movements in Russia's GDP seem to have been affected by changes in oil prices, and imports co-move with GDP, oil prices, and the rouble's real exchange rate. These co-movements and the fact that our series are clearly nonstationary, in the sense that their statistical means seem to change over time, indicate the existence of cointegration among the variables, so we should also examine their long-run relationships.³⁹

However, graphical viewing does not enable a detailed analysis of the actual dynamics of the system of variables. For that purpose, we proceed to review the results of our model estimations.

³⁸ In practice, we employ simultaneous equations modelling and full-information maximum likelihood (FIML) estimation.

³⁹ The observation concerning nonstationarity of our series is supported by formal unit-root tests.

Figure 1 Model variables: Russian GDP, imports, real exchange rate and oil prices

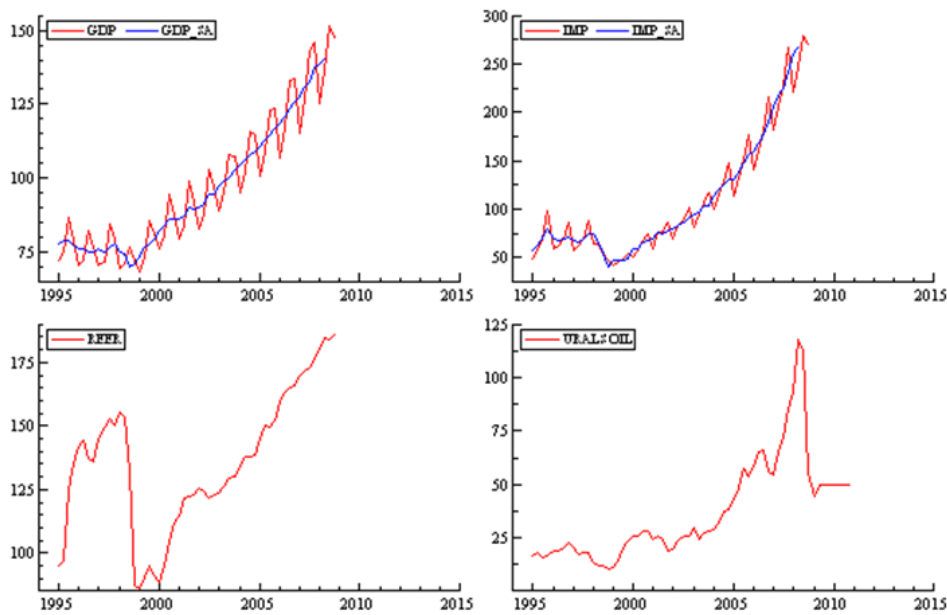


Figure 2a Recursive estimates of long-run coefficients in GDP equation (1)

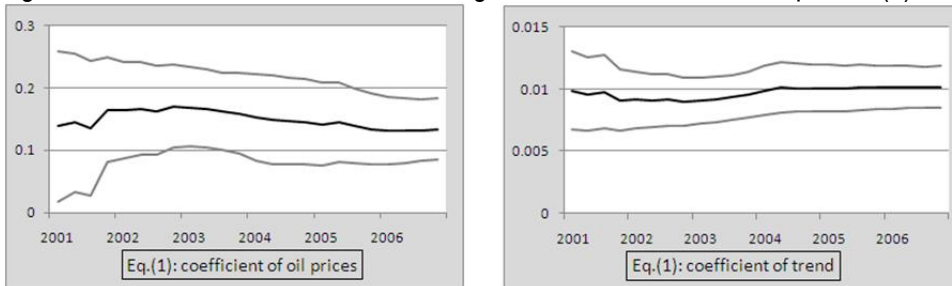
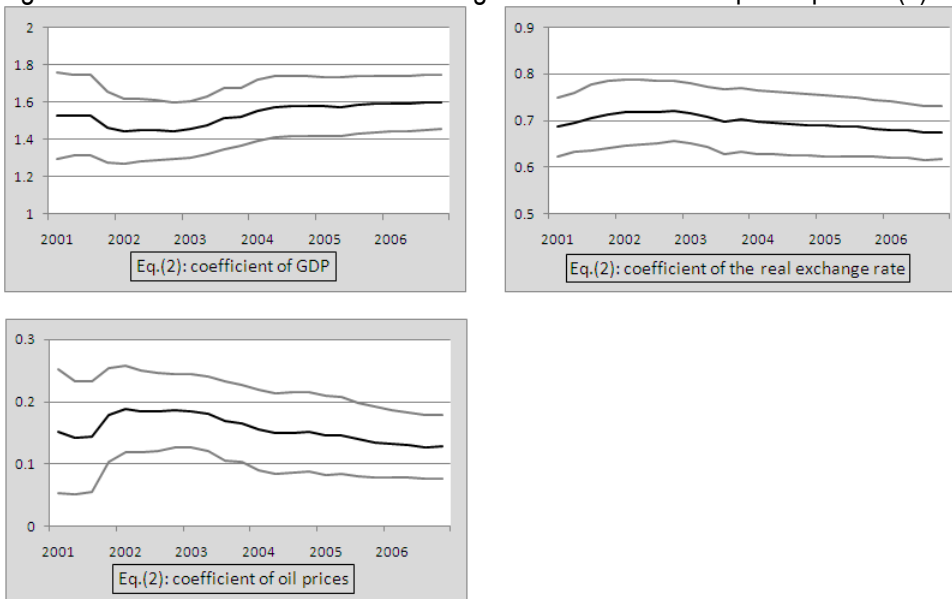


Figure 2b Recursive estimates of long-run coefficients in import equation (2)



Long-run analysis

Given our focus on GDP and imports, the small number of endogenous variables in our model, and prior knowledge of possible links among our variables, the identification of the two long-run equations is relatively straightforward. Equations (1) and (2) are the identified and restricted final long-run equilibrium conditions of our system.

$$(1) \quad \text{gdp} = 0.010 \cdot \text{trend} + 0.134 \cdot \text{oil}$$

$$(2) \quad \text{imp} = 1.600 \cdot \text{gdp} + 0.675 \cdot \text{reer} + 0.128 \cdot \text{oil}$$

The signs of the parameters in the long-run equations are as expected and their sizes seem reasonable. Regarding the equilibrium condition for GDP (Equation (1)), the parameter value of the trend variable, 0.010 per quarter, indicates that the long-run underlying (trend) growth of Russia's economy is about 4% per annum. The trend variable may relate to Russia's modernisation process, which involves overall economic reforms, opening up of the economy, and the introduction of new technology. One may also label it a catching-up effect. The coefficient of the oil price variable in Equation (1) suggests that a permanent 10% increase in international oil prices leads to a 1.3% increase in the level of Russian GDP, i.e. a gradual increase of output to a new sustainable level. An interesting feature of Equation (1) is that the real exchange rate seems not to affect Russia's GDP in the long run. While this finding may be at odds with intuition and with arguments raised in economic policy debates, it is consistent with the idea that in the long run the causality runs from output to real exchange rate rather than the reverse.

Interpretation of the long-run import equation (Equation (2)) is straightforward. The long-run output elasticity of imports suggests that a 1% permanent increase in the level of GDP is associated with a 1.6% increase in real imports. This accords with our prior knowledge that imports tend to overreact to changes in incomes (GDP). In a similar manner, a 10% appreciation of the rouble's real exchange rate tends to boost the level of real imports by almost 7%, while a 10% increase in the world market price of Urals oil is associated with roughly a 1% increase in real imports. The signs and sizes of the real exchange rate and oil price elasticities in Equation (2) seem reasonable.

Statistical tests do not reveal any particular problems with our equations. This is also evidenced by Figure 2, which portrays the evolution of the parameter estimates of our model over time. They are encouraging in that all the parameters are clearly significant, i.e. zero is not included in the confidence intervals. Moreover, given the frequent turbulence in the Russian market during the period studied, the recursive estimates of all the parameters appear to be relatively stable over time and do not reveal any major changes in the functioning of the Russian economy during this decade. Thus, while the role of oil prices is perhaps somewhat smaller than it was at the start of the decade, there is no evidence that the role of oil prices has continued to decline in recent years. According to the long-run analysis, oil prices are obviously important for the dynamics of the Russian economy.

Short-run model

The final test of the significance of our long-run equations is to include them in the short-run model as equilibrium-correction terms. This will indicate whether our system reacts correctly to deviations from long-run equilibrium conditions. The final parsimonious short-run SVEC model, with key variables expressed in first differences and including the above estimated error correction variables

for GDP and imports (ECgdp and ECimp respectively), is presented in Table 1. This is also the model that is used for forecasting.

As evidenced in Table 1, the parameter values of lagged error correction terms for output (ECgdp) and imports (ECimp) in their respective short-run equations are significant with negative signs, indicating that our model adjusts in an equilibrating manner to deviations from the long-run equilibrium. In addition to a strong impact of oil prices via the long-run equilibrium correction mechanism, oil prices also have a direct positive short-run effect on both output and imports. As regards the real exchange rate, while it is not linked to output in the long run, it seems that devaluation (appreciation) of the rouble may have a positive (negative) impact on output in the short run.

Table 1 A parsimonious short-run model*

	Coefficient	Std.Error	t-value	t-prob
Equation for Dgdp				
Constant	0.743	0.169	4.39	0.000
Dgdp_1	0.109	0.082	1.34	0.191
Dreer_1	-0.049	0.019	-2.64	0.013
Doil	0.040	0.011	3.51	0.001
ECgdp_1	-0.192	0.044	-4.33	0.000
Equation for Dimp				
Constant	-9.302	0.965	-9.64	0.000
Dimp_1	0.247	0.059	4.16	0.000
Dreer_1	-0.616	0.059	-10.5	0.000
Doil	0.113	0.021	5.5	0.000
ECgdp_1	0.639	0.136	4.71	0.000
ECimp_1	-1.068	0.078	-13.8	0.000
Equation for Dreer				
Constant	3.101	0.930	3.34	0.002
Dgdp_1	0.805	0.261	3.08	0.004
Dreer_1	0.153	0.048	3.15	0.004
ECgdp_1	-0.248	0.142	-1.75	0.091
ECimp_1	0.333	0.080	4.17	0.000

* Dummy variables are not reported.

It is interesting to note that there seems to be no short-run impact from oil prices to the real exchange rate. Thus, given the fact that we are not able to establish a long-run equilibrium condition for the real exchange in this model setup, oil prices appear to influence the real exchange rate only very indirectly via the output and error correction variables. The only true puzzle in Table 1 seems to be the sign of the real exchange rate in the import equation, as it indicates that appreciation (depreciation) of the rouble would have a negative (positive) impact on real imports, which is clearly not intuitive. Nonetheless, such problems are not uncommon for this type of model and, hence, we decided to keep the real exchange rate in the short-run import equation particularly as its exclusion would cause problems with the statistical-test diagnostics of our model.

Forecast properties of the model

While there are no obvious problems with test statistics of our model in Table 1, a true test of the model's goodness is its ability to forecast future developments. In order to evaluate the forecast properties of the model, we compare the model forecasts to actual developments in the period from Q1 2007 to Q4 2008. As regards forecasts, they are pure model forecasts, in the sense that only actual information on exogenous oil prices is used to compute forecasts, whereas the actual data on endogenous variables play no role (not even lagged values) in the forecasting process.⁴⁰ The results are illustrated in Figure 3, which presents the actual, fitted (model Q1 2000–Q4 2006) and forecast values for GDP, imports and real exchange rate, each in changes and levels.

Although point estimates for growth rates in particular quarters may differ widely from actual values, the model nonetheless seem to be able to produce reasonable forecasts, so that it can track the major trends of Russia's economy. This again demonstrates the key role of oil in the Russian economy. However, the fact that actual development was better than forecasted in 2007 and in the first half of 2008 and worse since then, indicates that oil prices are not the whole story.

The onset of financial crisis in the latter part of 2008 and subsequent developments raise several interesting issues concerning our model. While the model seems to track the slowdown of economic activity in late 2008, it is not able to forecast the severity of the impact of the financial crisis on the Russian economy. Moreover, given what we now know about the deepness and duration of recession in Russia in 2009, it is evident that the model gives an overly optimistic view of the start of the recovery.

However, while the model presented in this article clearly lacks some important factors, it is far from easy to identify the missing variables. There are reasons to believe that some additional financial market indicators should be included in the model to account for the excess liquidity and exceptional growth in Q1 2007 - Q2 2008 and for the impact of financial repression since then. For example, a preliminary exercise that included the squared first-difference of the nominal exchange rate as an exogenous variable for the short-run model - to represent excess uncertainty - seems to improve our forecasts. However, any such improvements should be weighed against the potential cost of making the model more complicated and time-consuming to use.

In practice, model forecasts can of course be adjusted in light of other information. Moreover, the evaluation of final forecasts in the framework of national accounts (aggregate demand and its main components) is useful in order to ensure the consistency of the figures and the story. It is interesting to discover that Russian forecasts, even by the respected institutions, are not always internally consistent.

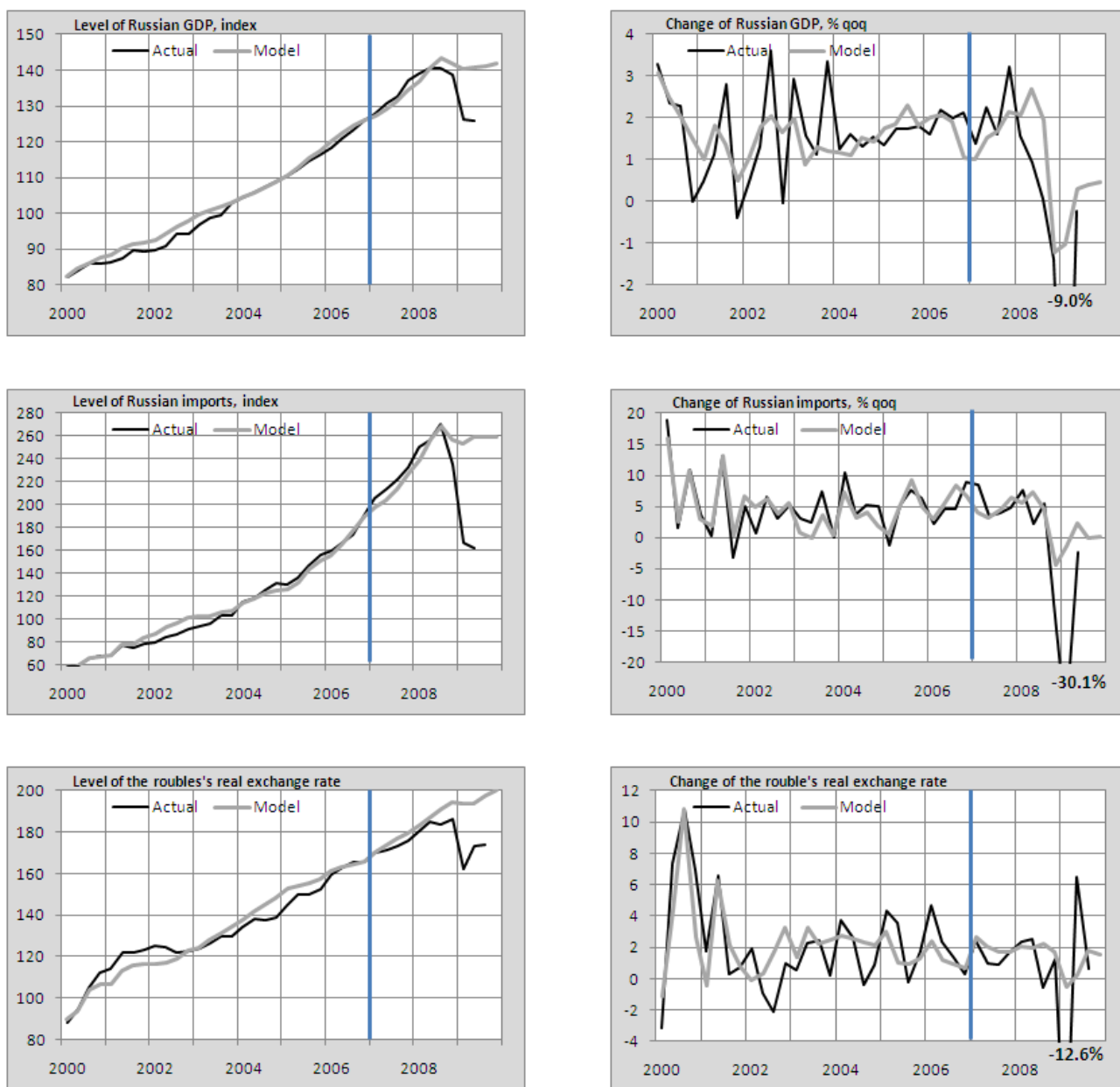
Strengths of a model based approach

In spite of its small size and some evident deficiencies, an econometric model like the one presented in this article may offer real benefits for everyday forecasting work. First, a model forecast can serve as a natural benchmark for discussions of Russian developments. Second, with the model, it is easy to produce scenarios for the Russian economy based on different oil price levels, which would be difficult, if not impossible, without a proper model. Third, in some instances a modelling exercise may even produce new interesting insights as to the functioning of the Russian economy. For example, while the finding that GDP is not influenced by the real exchange rate in the long run is perhaps debatable, it does offer a reasonable alternative for reconsidering the basic economic

⁴⁰ Oil prices are fixed to 50 USD/bbl from Q2 2009.

relationships. Finally, economic models can be used to support or challenge "old truths". As regards the role of oil in the Russian economy, our econometric model demonstrates that oil prices still play a key role, and there is no indication that this role has become less important. There is no room for wishful thinking in this respect.

Figure 3 Actual and forecast values of GDP, imports and the real exchange rate



Daniel Buikema Fjærtøft

Reflections on Modeling the Russian Economy⁴¹

Russia is Europe's largest neighbor. How Russia develops is of consequence to the foreign policy of all European countries and the European community as a whole. Economic integration makes Russian development a question of business opportunity and economic growth in border countries and beyond. Russia remains an underinvested market and from a European investment perspective has gained and will continue to gain increased attention.

Politics and business will always be constrained by economics and the latter will always be shaped by the former two. The Russian economy has gone through an unprecedented transition since the fall of the Soviet Union. While other European Comecon countries had a capitalist economic tradition to fall back on, the entirety of modern Russian economic history took shape under the principles of state communism. Since reforms began Russia has been through a painful transition period that more than halved GDP. On the verge of economic stabilization and possible upturn, Russia was hit by a financial crisis founded in the unsustainability of preceding reform policies that wiped out what little wealth had been accumulated among the Russian populace. The detrimental effects of which are felt today. Since the 1998 default Russia witnessed an uninterrupted economic boom until the world was hit by the 2008/2009 global recession.

Global relevance together with significant transitional volatility generates a certain intrigue among macroeconomic researchers. The time span over which Russia has operated in a market economy has only recently become sufficient to allow sound macroeconomic modeling and thus fed into both interest and efforts to model the Russian economy.

Through our involvement in the RussCasp research program Econ Pöyry is committed to the topics of Russian energy and relations between energy and general economic development. Core research topics include energy reform, macroeconomics, scenario foresight and country risk. A major part Econ Pöyry's contribution to the project is the development of a macroeconomic model for the Russian economy geared at analyzing effects of oil price volatility. The first phase of this task has been completed in cooperation with Statistics Norway.

Existing models

To our knowledge not many models of the Russian economy exist today. Among these only a few are available to the international research community. Computable General Equilibrium (CGE) models have been calibrated to the Russian economy by among others Wehrheim (2003). Nonetheless, in existing literature the general equilibrium (GE) approach has been used mostly to analyze trade policy effects on the Russian economy. Jensen et al. (2004) and Rutherford et al. (2005) employ a static comparative CGE model to assess trade liberalization effects of a Russia WTO accession. Alekseev et al. (2003) employ the same methodology to EU enlargement and the proposition of a free trade zone between Russia and the EU. Sulamaa and Widgrén (2005) study the

⁴¹ We would like to express our gratitude to the research collegium at BOFIT for inviting us to the workshop in Helsinki and also for the invitation to contribute to this publication. The Helsinki discussions were an important source of inspiration to our work. A particular thanks to Pekka Sutela for getting it all started and brought to conclusion. We hope we can continue our cooperation with BOFIT among other things, but also in particular with macroeconomic modeling of the Russian economy.

same topic using the multiregional general equilibrium model GTAP (Global Trade Analysis Project).

Hauer (2008) analyzes pension reform options within dynamic stochastic general equilibrium framework using the IMF GIMF model calibrated to the Russian economy. Also, related to energy, Kerkelä (2004) uses the GTAP model to assess price reform in Russian energy markets. Although GE modeling has been applied to issues beyond trade liberalization, policy assessment stands out as a common denominator for the studies reviewed above. The applicability of the GE framework in such context can easily be argued due to the non-repeating nature of the respective reform options. When studying possible impacts of principally yet-to-occur phenomena, one has little other option but to build one's argument on economic agents' expected behavior.

It is notable that the GE framework has not (to the extent of our knowledge) found application to research on Russian macro economic response to regular shocks – an issue of equal and perhaps greater relevance to decision makers, be they public or private. From our point of view the single most relevant relation in this regard is the Russian economy's dependence on the oil price. This relevance arises from the commonly accepted significance of the oil price to the Russian economy, but also from its' unpredictable nature.

Leaving the interests of Russian decision makers aside, foreign agents could derive substantial benefit from a comprehensible macroeconomic model of the Russian economy. To provide an example, foreign investors in the Russian banking market could gain important insights into probable development of domestic interest rates as well as consumer and investment demand. In addition disclosing the dependency of key variables on outer factors in a traceable manner would provide strategic support in investment processes. Exporters should benefit from an indication of growth prospects prior to making investments into the Russian market. The national defense strategist could benefit from a scenario-based projection of government spending.

The Institute of Economies in Transition at the Bank of Finland provides regular forecasts of Russian economic performance. The Vector Autoregressive (VAR) model lined out in Rautava (2002) focuses on long run effects of the oil price and the real exchange rate. Significant long run relationships are established between GDP and the oil price and real exchange rate. Also long run relationships between government revenue and the oil price and GDP are established. The oil price is found not to have a direct influence on the real exchange rate, only through the significant effects of GDP and revenue on the former variable. In addition a short run error-correction model (ECM) is constructed. However efforts are constrained to the trial of long-run relations established in the VAR analysis.

Merlevede et al. (2004) develop and estimate a simple ECM for the Russian economy on a sample 1994Q1-2002Q4. Later Merlevede et al. (2009) expand on this model. The sample is extended to 1995Q2-2007Q4. Exports are differentiated between oil and non-oil exports, the nominal exchange rate is endogenized and dummy variables are included in the government revenue equation to account for new oil taxation practices under Putin and in the expenditure equation to account for the introduction of the stabilization fund in 2004. In addition monetary policy is endogenized through a Taylor rule and is found to affect the nominal exchange rate and money supply.

Several reflections appear suitable based on the review above. First, despite the macroeconomic relevance of oil price developments, the topic remains understudied. Second, explicit studies of oil dependency have been concretized outside the GE-framework. As the objective is not to scrutinize effects of a particular reform but rather external volatility, modeling based on economic agents' assumed behavior stands out as unnecessary and a possible source of error due to strictness of imposed assumptions. While GE models are argued to be less prone to Lucas Critique due to their profit and utility maximizing foundation, misspecifications due to invalid assumptions are from our point of view a potential risk when modeling transition

economies. As an example the assumptions in Hauner (2008) of static (and short) planning horizons and credit constraints seem improbable in the Russian setting. The consequences of these assumptions for the outcome of model simulation are however not easily penetrated by the reader putting the benefit of the GE approach as risk. Furthermore the static approach of the CGE framework renders limited added-value to stakeholders interested in the effects of different shocks at various points in time.

Finally, ECM modeling within an IS-LM framework with endogenous fiscal and monetary policy stands out as a favorable approach to building a comprehensible macroeconomic model of the Russian economy that incorporates a sufficient set of interdependencies to be of use for decision makers also beyond academic circles.

A simple econometric ECM for the Russian macro economy

With this starting point Econ Pöyry and Statistics Norway have constructed a macro econometric model of the Russian economy with 14 estimated equations and 5 identities totaling 19 endogenous variables (see Benedictow et al., 2009 - *forthcoming*). Real GDP follows as a sum of domestic demand and net exports. All equations are estimated over the sample 1995Q1-2008Q1 with the exception of the exchange rate which is estimated starting 1999Q1. Oil exports are differentiated from non-oil exports and policy variables are made endogenous. Explicit government revenue and expenditure shifts are not included, but a “Putin dummy” is generally found to be significant. Focus is set on conveying the model’s setup in manner that allows prompt understanding and interested researchers to further develop the model.

The modeling exercise confirms the positive relation between oil prices and Russian economic performance. Government revenue, expenditure and consumption along with oil exports are positively influenced by the oil price leading to higher GDP both directly and through private consumption by means of higher real disposable income. The economy exhibits stabilizing properties as higher oil prices influence inflation directly and through the wage channel bringing about increased counter cyclical pressures through higher interest rates. The interest rate exercises influence on investment and the exchange rate, with the latter (along with higher inflation) putting increased downward pressure on non-oil exports through the real exchange rate. This process is reinforced by a direct negative dependency of the exchange rate on the oil price.

The model exhibits convincing fit and passes standard statistical tests. It should therefore serve as an adequate supplement to existing models for forecasting purposes and policy debate. From a model developer’s point of view it is of significant advantage that the model, despite its accomplishments remains work in progress. Although the model at its current stage deserves confident application to real-life problems, several issues remain to be discussed leading to possible modifications and improvements.

Challenges

A prime challenge in modeling in general and in modeling the Russian economy in particular is of course data. Econometric modeling and analysis prefer long, and well behaved, time series. For Russia, available data are neither. Data credibility no longer poses the same challenges for modelers as for Varshavsky (1999). However market generated data only stretch back to 1992-1994 limiting the scope for modeling operations. Furthermore, the Russia economy itself has been plagued by obvious and not so obvious structural breaks through the course of transition. Short history

complicates econometric diagnostics of these breaks. However their effects are apparent. In our model the exchange rate is estimated using only half the sample and nearly all econometric studies of the Russian economy involve some sort of “Putin” dummy capturing an unknown set of net effects coinciding with presidential succession. These breaks pose particular challenges to modeling policy variables. I return to this below after stopping briefly on the issue of tractability and uncovering a theoretical foundation in econometric models as our own.

When trying to convey the results and the relations behind the results of economic modeling to an audience beyond the modeling team itself, it is often handy to find the uncovered relations in economic theory. However, for certain relations in our model we have found that this is often easier said than done. While developing our model we have found that from an econometric point of view, the exchange rate may, and perhaps also should, be omitted from the import equation. It is more complicated however to serve a plausible story of why it should be so. In the course of the 2009 crisis Russia’s current account was rescued by falling imports. Partly this can be attributed to a collapse in past years growth in real disposable income, but can also be attributed to the ruble depreciation from 30 to more than 40 rubles for the dollar/euro basket. Explicit inclusion of the exchange rate in the imports equation could enhance tractability and possibly overall model characteristics. A parallel example refers to the role of oil income in determining imports. In the process of determining the import equation we found that oil income could be omitted from the import equation. Thus one might model imports to be under long-run influence of domestic demand exclusive oil exports and in the short-run under the influence of investment demand and non-oil exports. Oil income would thereby be assumed not to be of influence on imports apart from indirectly through the included constituents of domestic demand. Again omitting oil income does not make immediate theoretical sense. Balancing a coherent theoretical story with deriving sound econometric results is a general challenge, but perhaps more so when working with a sub-optimal dataset.

Both monetary and fiscal policy have undergone substantial change under the time period considered. Integrating known policy shifts into the model represents a challenge, but is still unavoidable for the dedicated researcher. On the fiscal side increased taxation of the oil and gas sector can be assumed to have increased the oil price elasticity of government revenues since Putin succeeded Yeltsin as Russia’s president. Government expenditure on the other hand has become more detached from oil revenues following the introduction of the stabilization fund. While the revenue shift might be adequately handled by Merlevede et al. (2009) by estimating separate oil price elasticities for government revenue prior to and after the year 2000, the expenditure issue is more complex. Russia has not committed itself to a particular rule on how to spend petroleum revenues as say Norway has. The only provision is that excess revenues above the budgeted are to be stuck away in the rainy-day Stabilization fund. The structural deficit of the Russian Federation started to increase in the second half of the 2000s suggesting an increased willingness to spend oil revenues as prices rose (see Anker and Sonnerby, 2008). Separate and static oil price elasticities of government expenditure proposed by Merlevede et al. (2009) might not be the most informative way to go. It might be investigated whether a de-facto policy rule for oil revenue spending would provide additional insights. Possible target variables of such a policy rule could be the oil price and/or size of the stabilization fund relative to GDP along with gap GDP growth.

Monetary policy in our model is assumed to follow a Taylor rule with long and short run effects of unemployment and inflationary considerations. The specification works fine econometrically, but the acceptability of implied assumptions may be questioned. Inflation targeting using the interest rate remains a strategic goal for the Central Bank of Russia (CBR), but has yet to be implemented let alone feasible (see Fjærtøft, 2008). Limited domestic savings and mortgage market can ex-ante be expected to render the interest rate a tool with limited bite. Our modeling reflects this as the interest rate is found to have insignificant effect on private consumption.

Furthermore such a policy rule would imply a free floating exchange rate. The ruble is arguably still on a leash although it might be discussed how much influence the CBR is actually able to exert. Regardless, concerns for the exchange rate have persistently interfered with the CBR's free float and inflation targeting ambitions. Looking forward inflation targeting might become an appropriate assumption, but if one strives for compliance between one's practical and theoretically permissible assumptions other approaches might be considered. In particular one might consider modeling a policy rule with the money base as instrument variable. Significant long and short term effects of inflation along with short term effects of the interest rate can be found for such a specification. However, integrating this approach into the larger model would likely not be as straight forward from a theoretical point of view as the interest rate.

The extensive foreign borrowing by the Russian financial sector witnessed in the years prior to the crisis suggest that foreign interest rates might be integrated into the model as regressors for consumer and investment demand. Such an approach would be inline with the argument above and de-facto assumption of an exogenous domestic interest rate due to the CBR's dirty float policy.

Despite the potential scope for improvements, resource constraints force us to be content with progress made so far and leave further research for a later stage.

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