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ABSTRACT

This paper provides an assessment of Russia's long-term growth prospects. In particular, it addresses the question of the medium- and long-term sustainability of the country's currently high growth rates. Starting from the notion that Russia's fast economic expansion in recent years has benefited from a number of singular factors such as the unprecedented rise in oil prices, the paper presents new evidence on Russia's oil price dependency using a Vector Error Correction Model (VECM) framework. The findings indicate that the positive impact of rising oil prices on Russia's GDP growth has increased in recent years, but tends to be buffered by an appreciation of the real effective exchange rate which is stimulating imports. Additionally, there is empirical confirmation that growth in the service sector – a symptom usually associated with the Dutch disease phenomenon – is mainly a result of the transition process. Finally, the paper provides an overview of the relevant factors that are likely to affect Russia's growth performance in the future.

JEL classification: O43, O 47, O51, O11, O14

Keywords: Russia, economic growth

NON-TECHNICAL SUMMARY

This paper addresses the question of whether Russia's currently high growth rates are likely to be sustained over the medium to longer term. In particular, the paper presents new evidence on how Russia's oil price dependency has evolved over recent years. It also discusses the country's medium to longer term growth outlook.

In the first section, the paper analyses the role of the oil and gas industries in the Russian economy. Its findings indicate that the role of these industries has increased in nominal terms but less so in real terms. An econometric analysis of the sensitivity of Russia's GDP growth to oil prices and the real exchange rate suggests that 1) the observed de-coupling of growth from rising oil prices over the past few years does not imply that growth is no longer sensitive to oil price fluctuations and 2) one explanation of the de-coupling phenomenon may be the surge of imports, triggered by real appreciation. Additionally, the section finds limited evidence of symptoms of the Dutch disease.

The second section of the paper assesses Russia's medium- and long-term growth outlook from two perspectives. The time series perspective, i.e. an extrapolation of historical GDP data suggests that Russia's current growth momentum is strong. However, a number of factors such as structural breaks and the need for a further restructuring of the Russian economy suggest that inferences from past historical data should be treated with caution. From a cross-country perspective, maintaining the current high growth rates would appear to be a considerable challenge. While Russia's high level of human capital suggests that the country may have brighter growth prospects than other emerging market economies, other factors – such as the country's low investment rate and the fact that its natural resource endowment may become a curse rather than a blessing in the longer-term – point to a more challenging growth outlook. In addition, demographic and health issues have to be addressed in order to limit their potentially negative impact on Russia's long-term growth outlook.

INTRODUCTION

Interest in Russia's longer term economic prospects is on the increase. The recent rapid economic expansion of the Russian economy has contributed considerably to raising living standards in Russia and narrowing the income gap vis-à-vis other emerging markets and the euro area. The increasing market size of the Russian economy has started to attract greater inflows of foreign direct investment which traditionally has been low in Russia. Similarly, rating upgrades and improved earnings prospects backed by strong economic growth have resulted in the inclusion of Russian assets in the standard emerging market portfolios of international investors. Consequently, Russia's importance for global financial stability has been increasing. In addition, Russia, the second-largest oil producer in the world, has contributed significantly to the increase in the global oil supply over the past few years. The longer-term outlook for the Russian economy is therefore not only of interest to the Russian authorities and citizens who have a natural interest in the further improvement of livings standards but also to policy-makers in mature economies and international investors.

Russia's dependence on natural resource extraction has raised some concerns about the sustainability of the current high growth rates. Over the past five years, Russia has enjoyed a period of strong growth. Even when allowing for the fact that the country has – as any emerging market economy with comparable levels of income – a substantial "catching-up" potential, recent growth rates of 6-7% per annum appear exceptionally high. Apparently, this high rate of economic expansion has been due to a number of singular factors such as the unprecedented rise in oil prices, the gain in competitiveness following the 1998 devaluation of the rouble and rapid increases in total factor productivity. The assumption that these factors are unlikely to last into the future has triggered a discussion about the sustainability of Russia's current high growth rates and its medium to longer-term growth potential.[1] In particular, it has been argued that Russia's dependence on natural resource extraction may be aggravated in the future by what has become known as the "Dutch disease", i.e. a situation in which real appreciation – triggered by surging commodity prices – crowds out manufacturing and other non-oil exports. In addition to the Dutch disease concerns, most assessments of Russia's medium- and long-term growth potential point to structural challenges such as capacity constraints due to insufficient investment, banking sector weaknesses, negative demographic trends and health issues. On the other hand, it is sometimes argued that Russia's GDP growth has de-coupled from oil prices in recent years. Some observers have concluded from this observation that the current strong growth momentum can be maintained without further oil price increases.

This paper examines first whether the Russian economy has become more or less dependent on the oil and gas industries and whether symptoms of the Dutch disease are already visible in current economic data. The second section addresses Russia's medium- and long-term growth outlook from both a time-series and a cross-country perspective. The paper ends with a summary of the main conclusions.

I EMPIRICAL EVIDENCE ON RUSSIA'S OIL PRICE DEPENDENCE AND THE RISK OF THE DUTCH DISEASE

Russia's oil price dependence and the risk of the Dutch disease are often considered as the main long-term challenges to sustainable growth in the country. In this regard, it is worth studying the available economic data for evidence of these phenomena. This section examines whether in Russia:

– exports have become more biased towards oil and gas (Section 1.1)

1 See for example Ahrend (2004), Beck and Schularick (2003) and World Bank (2003).

– domestic production has become more oil and gas-dependent (Section 1.2)

– GDP growth has become more sensitive to oil price fluctuations (Section 1.3)

– the economy is showing symptoms of the Dutch disease (section 1.4).

1.1 THE ROLE OF RAW MATERIALS IN RUSSIA'S EXPORTS

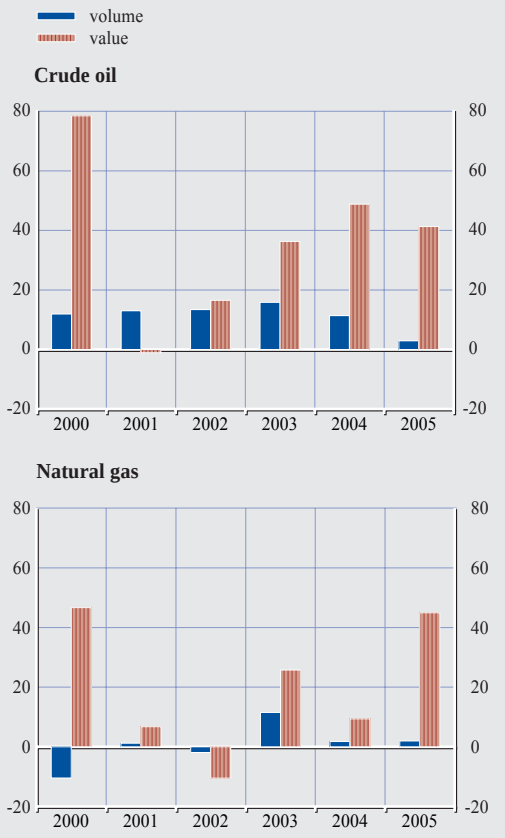
Crude oil is currently Russia's most important export commodity. The massive growth in oil export revenues, however, is mainly due to the sharp spikes in oil prices. As the upper panel of Chart 1 illustrates, while the physical volume of Russian crude oil exports has been rising at a relatively moderate pace, oil export revenues have increased by between 35% and 50% each year during the same period.

A similar trend is observed in the volume and value of natural gas exports. In fact, gas export revenues also rose faster than quantities, but owing to the long-term nature of natural gas contracts prices are generally more stable.[2] As Chart 1 (lower panel) shows, significant increases in gas export revenues occurred in 2000, 2003 and 2005, most likely on account of contract re-negotiations.

Consequently, Russia's dependence on exports of natural resources is significant in nominal terms, but less pronounced in real terms. As Table 1 indicates, the share of oil and oil products in total exports rose with the increase in oil prices. However, the increase in the share of oil exports – measured in constant 2000 prices – was more subdued. The share of natural gas in total exports has been declining in both nominal and real terms during the period under review.[3]

Chart 1 Crude oil (top panel) and natural gas (bottom panel) exports

(year-on-year percentage change)



Sources: BP, Central Bank of Russia and ECB calculations.

2 In contrast, Russia sells most of its crude oil to traders, who then resell the contracts on the spot market (Energy Intelligence, 2004).

3 Exports of other raw materials (e.g. coal and iron ore), chemicals and manufactured goods increased considerably in 2003 and 2004, in both volume and value, but declined in 2005.

Table 1 Share of oil in total exports

(as a percentage)

	2000	2001	2002	2003	2004	2005
Current prices	31.0	29.8	32.8	34.9	38.1	43.4
2000 prices	31.0	33.1	35.1	36.6	36.4	37.6

Sources: Bank of Russia, WEO and ECB calculations.

Although services still contribute only 10% to the total value of exports and Russia is a net importer of services, there are some encouraging trends in a number of export services sectors new to the country. Transportation services, which include pipelining oil and gas, continue to dominate Russia's services exports (currently accounting for more than a third of services export revenues). Since 2000, however, new exportable services, such as computer and information services and insurance, have seen export growth rates of over 50% on average, albeit from a very low base.

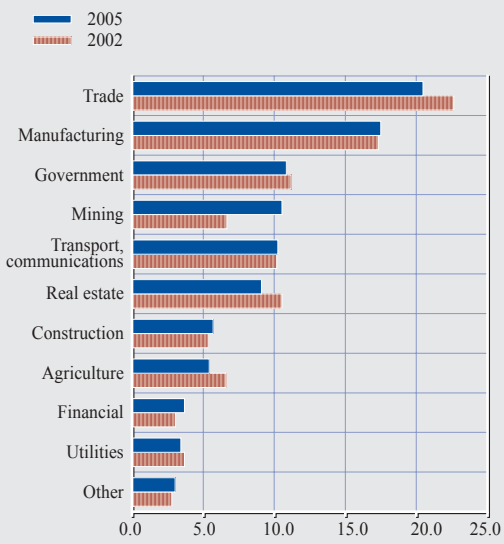
1.2 THE ROLE OF RAW MATERIALS IN DOMESTIC PRODUCTION

Domestic production appears to be well-diversified at first glance.[4] According to official statistics, almost half of Russia's GDP is accounted for by the services sector. Both transport and communications and real estate each make up about one-quarter of total services. The industrial sector generates slightly more than 40% of GDP according to the Russian Federal State Statistics Service (Rosstat). The remainder of the value added in the economy (10.9%) is provided by government services. Surprisingly, the share of mining (which includes oil and gas production) in Rosstat's breakdown of Russian GDP was only 10.5% in 2005 (see Chart 2).

The actual size of the oil and gas industry in Russia may be more than twice the reported figure. According to a study by the World Bank (2004), which uses the country's input-output tables to recalculate the contribution of the oil and gas sector to total production, its share in total GDP increases from the reported 8% to 20% in 2000. The authors of the study explain that many Russian firms use transfer pricing to avoid the higher taxes in the extractive industry. Hence, a large portion of oil and gas revenues are moved from the producing subsidiary to the trading arm. As a result, the share of trade in GDP is inflated (currently over 20%) while that of oil and gas production (mining) is understated. A similar study commissioned by the Economic Expert Group, which works in close cooperation with Russia's Ministry of Finance, found that the oil and gas sector share of GDP reached a peak of 26% in 2000 and declined to 21% in 2003 (Gurvich, 2004). Recently, the Russian government has also indicated that the importance of the oil and gas sector to the Russian economy may be greater than in the official breakdown of GDP.[5]

Chart 2 Nominal GDP by sector, in 2002 and 2005

(as a percentage)



Sources: Rosstat and ECB calculations.

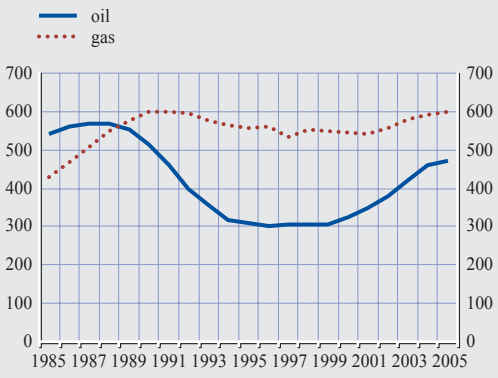
At the same time, the shares of oil and gas extraction in total production have not grown substantially. The volume of natural gas produced in Russia has remained more or less stable in the last 15 years. Crude oil production, on the other hand, has grown between 8 and 11 percent each year between 2001 and 2004, to

4 Owing to data constraints, this section refers only to total manufacturing and total services. It should be noted that two important industries related to the oil and gas sector are accounted for within these two categories: oil refining is included in the figures for manufacturing, while pipeline transportation is part of services. According to Rosstat reports for the period 2000-05, oil refining grew at a rate similar to the other branches of manufacturing, with the exception of machine building, which showed faster growth, and light industry, which basically stagnated over the period. The conclusions regarding the Dutch disease in Section 1.4 should therefore not be affected.

5 In early 2006, the Russian Prime Minister was quoted as saying that the "heating-energy complex" accounts for more than 30% of GDP (see Suomen Pankki – Finland's Bank, 2006).

Chart 3 Crude oil and natural gas production

(million tonnes or tonne equivalent)



Source: BP.
Note: Gas volumes are expressed in "tonne equivalent".

some extent reflecting a swift return towards full capacity following the decline of oil production during the 1990s. In 2005, however, production increased at the significantly lower rate of 2.4 percent. In spite of the recent growth, the oil sector still produces at a level substantially below the peak volume level of the late 1980s (see Chart 3).[6]

1.3 HAS RUSSIAN GDP GROWTH BECOME LESS DEPENDENT ON OIL?

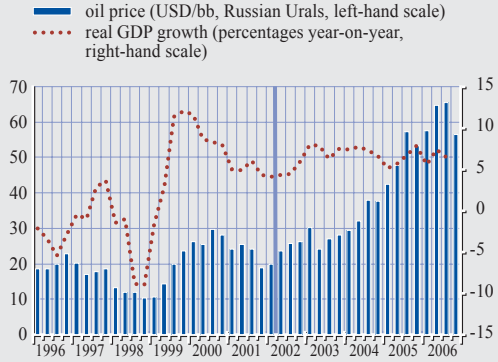
Empirical studies indicate that oil prices have a considerable impact on GDP growth in Russia. Given the prominent role of the oil and gas sector in the country's exports and, to a lesser extent, in its GDP (see Section 1.1 and 1.2), one would expect there to be a close relationship between Russia's GDP growth and oil prices. Indeed, empirical studies have found that the oil price has a significant impact on Russian GDP growth with long-run elasticities ranging from 0.15 to 0.2%.[7] According to these estimates a permanent 10% increase in oil prices would, in the long run, lead to a 1.5-2% increase in Russian GDP.

However, the correlation has weakened in recent years. Since 2002, the continued steep increase in oil prices does not appear to have translated into even higher GDP growth. In fact, a simple correlation analysis suggests that Russia's GDP growth de-coupled from oil prices in early 2002 and even more markedly in 2004 (see Chart 4). One might expect this de-coupling to be due to the strong import growth that may have been stimulated by the real appreciation of the rouble. However, the correlation between real import growth and the real effective exchange rate also appears to have weakened (see Chart 5). In addition, a

6 Nevertheless, the increase in Russia's oil production has, in recent years, significantly contributed to the rise in global oil supply.

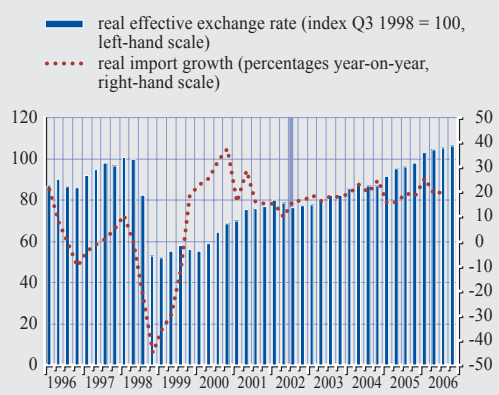
7 See, for example, IMF (2002) in which the magnitude of this effect depends on policy reactions, and Rautava (2004).

Chart 4 Real GDP growth and oil prices



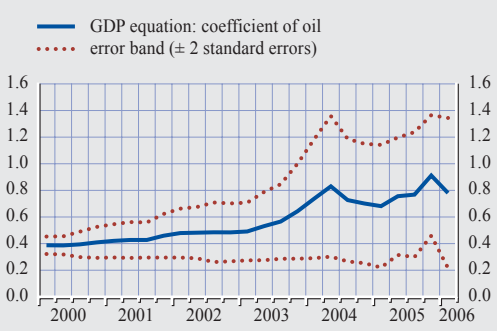
Sources: Rosstat and Bloomberg.

Chart 5 The real effective exchange rate and real import growth



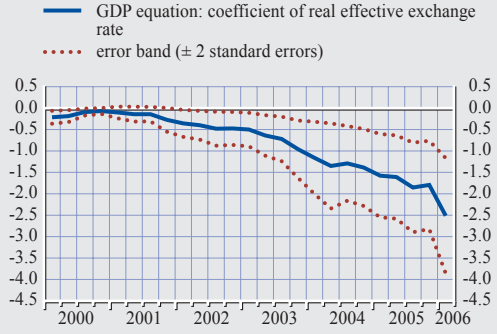
Sources: Rosstat, Globalinsight and ECB calculations.

Chart 6 Recursive estimates of the oil price coefficient in the GDP equation



Source: Authors' estimates

Chart 7 Recursive estimates of the real effective exchange rate coefficient in the GDP equation



Source: Authors' estimates.

tight fiscal policy, capacity constraints in the Russian economy and a muted response by investment to rising oil wealth may have contributed to the weakening of a simple correlation between Russia's GDP growth and oil prices.

Since simple correlations do not capture the impact of other variables … The decline of the simple correlation between real GDP growth and the oil price, on the one hand, and between real import growth and the real effective exchange rate, on the other, implies neither that oil prices no longer have an impact on Russia's GDP growth, nor that Russian imports are no longer stimulated by real appreciation. Only an econometric analysis that controls for other relevant variables and allows for feed-back between the variables can shed light on these issues. For example, rising oil prices may not only stimulate GDP growth in Russia but may also lead to an appreciation of the real exchange rate, thus offsetting the oil stimulus to some extent. Similarly, real import growth may depend not only on the real exchange rate, but also, as a result of wealth effects, on oil prices.

… a VECM is estimated, suggesting that the impact of the oil price on Russia's GDP growth, all things being equal, has increased in recent years … In a cointegration framework (see Box 1), the long-run coefficient of the oil price in the GDP equation – ceteris paribus – has not become smaller but actually even larger in recent years (see Chart 6).

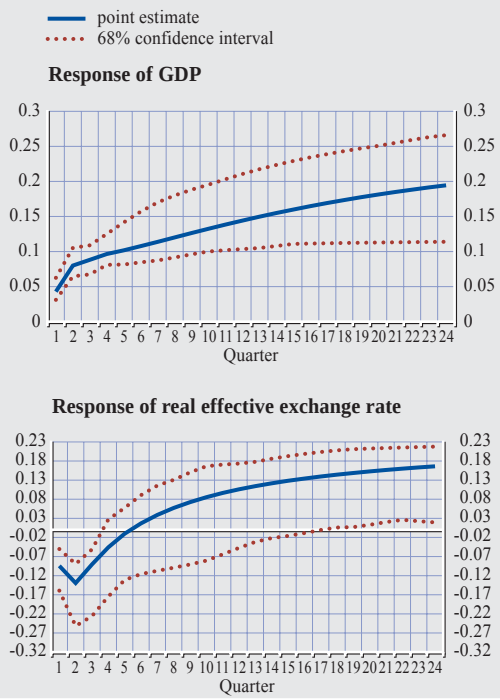
… while endogenous real appreciation stemming from rising oil prices appears to have offset this effect. This finding is compatible with broadly constant GDP growth since 2001 since the real exchange rate – endogenously responding to the rise in oil prices – appreciated during that period and the negative impact of the real exchange rate on GDP growth seems to have become stronger (see Chart 7). Keeping in mind that the data sample for the recursive estimations is relatively small, this would suggest that Russia's GDP has become increasingly dependent on oil but that the growth dampening effect of an appreciating real exchange rate has also increased.

Indeed, the real exchange rate is appreciating in response to an oil price shock. In order to illustrate the reaction of real GDP and the real exchange rate to a permanent 1% positive shock to the price of oil, their responses have been plotted in Chart 8.

As shown in the top panel of Chart 8, the output response to a permanent shock in the oil price is positive and statistically significant. The cumulative effect of a 1% increase in oil prices on GDP, which takes into account the endogenous reaction of all the other variables,

Chart 8 Responses of Russia's real GDP and its real effective exchange rate to a permanent 1% oil price shock

(permanent oil price shock (VECM: rank of pi = 2))



Source: Authors' estimates.

is estimated to be around 0.2%. This number is comparable with the long-run impact of oil prices on Russian GDP found in other studies.[8]

In the bottom panel of Chart 8, the impulse response of the real exchange rate suggests that – in the long run – the real exchange rate reacts to a positive shock in the oil price by appreciating. This finding confirms that the overall impact of a positive oil price shock on GDP is dampened by an intrinsic real appreciation. The significant real depreciation in the short run (three quarters) could be explained by the fact that rising oil prices lead directly to higher inflation in the economies of Russia's trading partners (through higher import prices), while domestic energy prices in Russia are kept at below-market prices. In the longer run, the second round effects of higher inflation in Russia due to rising wages and wealth, appear to prevail and lead to a real appreciation of the rouble.[9]

An error correction model suggests that real appreciation is stimulating imports. The negative impact of the real exchange rate on GDP in the VECM is most likely due to its effect on net exports. Given that Russian oil exports are mostly invoiced in US dollars (and the demand for oil is price-inelastic), the main channel of influence of the real exchange rate is most likely through imports. In order to demonstrate econometrically that imports are indeed stimulated by the real appreciation of the rouble, an error correction model is estimated for real imports (see Box 1). In this model, a 1% appreciation of the real effective exchange rate leads, in the long run, to a 0.7% rise in real imports.

To sum up the econometric findings presented above, it appears that GDP growth in Russia is still benefiting from high oil prices. Indeed, Russia's GDP growth appears to have become more sensitive to the oil price while real appreciation – endogenously triggered by rising oil prices – is increasingly acting as a "buffer" by stimulating imports. The findings presented do not rule out that other factors such as a tight fiscal policy, capacity constraints in the Russian economy and a muted response by investment to rising oil wealth, may also have contributed to a more subdued response of Russia's growth to rising oil prices.

8 See, for example, IMF (2002), which finds an elasticity of a similar magnitude.

9 In their analysis of the response of the real effective exchange rate of oil exporting countries to real oil prices, Habib and Kalamova (2006) find similar results for Russia.

Box 1

ECONOMETRIC ESTIMATION OF THE IMPACT OF OIL PRICES ON THE RUSSIAN ECONOMY

This box summarises the econometric methodology used in the analysis of Russia's oil price dependency presented in Charts 6 to 8.

A Vector Error Correction Model for Russia's GDP growth and oil prices

Following Rautava (2004), a Vector-Error-Correction Model (VECM), including a long-run relationship between real GDP (*gdp*), the price of oil (*oil*), the real effective exchange rate (*reer*) and real government revenues (*realrev*), is estimated. The analysis is based on quarterly data, spanning from the first quarter of 1995 to the first quarter of 2006, for real GDP (seasonally adjusted), real government revenues (deflated with the consumer price index), oil prices (Brent price in U.S. dollars) and the real effective exchange rate. First, the variables are tested for stationarity. Results from a Phillips-Perron test suggest that the variables are non-stationary and integrated of order 1 (see table)[1].

Unit Root Phillips-Perron Tests

	GDP		REAL REVENUES		REER		Oil	
	Test statistic	p-value	Test statistic	p-value	Test statistic	p-value	Test statistic	p-value
Variables in levels	-1.51	0.81	-2.65	0.26	-1.73	0.72	-2.01	0.58
Variables in differences	-5.48	0.00	-10.28	0.00	-4.11	0.01	-5.16	0.00

Source: Authors' calculations.
Note: Null hypothesis: no unit root, includes constant and trend.

To see if a linear combination of the variables results in a more stable relationship, we perform a trace test for cointegration.[2] The test results indicate that there are two long-run relationships in our system; therefore a VAR with two cointegration relationships is specified in which the oil price is treated as weakly exogenous. Focusing on the first cointegration equation for real GDP, a significant positive relationship between the oil price and real GDP as well as a significant negative relationship between the real effective exchange rate and real GDP of the following form is found:[3]

$$\Delta Y_t = \Pi_y Y_{t-1} + \Gamma_{y_1} \Delta Y_{t-1} + \Gamma_{y_2} \Delta Y_{t-2} + \Pi_x X_{t-1} + \Gamma_{x_1} \Delta X_{t-1} + \Gamma_{x_2} \Delta X_{t-2} + \Phi D_t + \varepsilon_t \quad (1)$$

where Δ is the difference operator and the vector of endogenous variables Y can be expressed as $Y=[gdp_t, reer_t, realrev_t]'$. The vector of exogenous Variables X includes the price of oil and a

1 Other standard unit root tests suggest the same degree of integration. According to the ADF test, it cannot be ruled out that oil is integrated of order 2 I(2).
2 A trace test for cointegration that adjusts for a possible short-sample bias yields similar results.
3 For the VECM, different specifications have been estimated. The use of Russian Ural oil prices instead of North Sea Brent does not change the estimates qualitatively. The use of euro area GDP as a proxy for foreign demand does not improve the model. The same is true for using the fiscal deficit as a share of GDP instead of real government revenues. The model is robust regarding the choice of cointegration relationships. The impulse responses and long-run elasticities of GDP and the real exchange rate are almost identical, regardless of the number of cointegration relations. Likewise, the choice of the restrictions does not change the impulse responses either as the restrictions are not over-identifying. In the first cointegration relationship, the long-run effect of real government balances on real GDP is restricted to zero. For the sake of brevity, the second cointegration relationship of the government real revenue equation is not discussed in detail. In this equation the long-run effect of the real exchange rate is restricted to zero, while both real GDP and the oil price have a positive long-run effect on real revenues (this effect is not significant for oil, however).

constant restricted to the cointegration relationship. The vector of dummies D includes two dummies for the periods 1998:3 and 1998:4 to capture the effects of the 1998 financial crisis.

The recursive estimations shown in the main text depict the concentrated model, where adjustment exclusively takes place towards the long run equilibrium relations. The full model, including all the short run adjustment yields very similar results but is more unstable in the beginning of the estimation period due to the relatively short baseline sample and reduced degrees of freedom as compared to the reduced model. As visible in charts 6 and 7, the coefficients of the oil price and the real effective exchange rate in the cointegration relationship become increasingly large – with a positive and a negative sign respectively – over time. However, this finding should be interpreted with caution due to the relatively short sample for the recursive estimation. In addition, running the model over the whole sample period still seems to be appropriate because the tests of the constancy of the β coefficients cannot be rejected.

An impulse-response analysis generated by the estimated VECM suggests (see Chart 8) that a shock to the oil price leads to a more muted response of real GDP than suggested by the corresponding coefficient of the long-term equation. The error bands for this exercise are created with a bootstrap procedure, according to which the errors of the estimated model are randomly reshuffled and used to construct new bootstrap endogenous variables. The parameters are then re-estimated from the generated data and impulse response functions are calculated. This procedure is repeated 500 times and the resulting distribution is taken to calculate the appropriate error bands. In this study, the confidence interval is chosen at one standard deviation (a confidence interval of 68% rather than 95%) as recommended by Sims and Zha (1999).

An error-correction-model for Russian imports

The following error correction model (ECM) for real imports is estimated for quarterly data from the first quarter of 1995 to the first quarter of 2006:

$$\Delta im_t = \underset{(-4.07)}{-4.97} \quad \underset{(-4.50)}{-0.65}[im_{t-1} - (\underset{(4.13)}{1.28}\, exdd_{t-1} + \underset{(4.28)}{0.70}\, reer_{t-1} + \underset{(2.57)}{0.11}\, oil_{t-1}) + short\text{-}run\ dynamics + dummies$$

$R^2\ adj = 0.92$; $DW = 2.06$; $AR(1) = 0.84$; $AR(4) = 0.68$; $AR(8) = 0.53$

where im is real imports of goods and services, exdd is real exports plus real domestic demand, oil is the US dollar price of oil and short-run dynamics is the differences of the explanatory variables at the lag level chosen by the optimum lag length selection criterion up to a lag length of 6 and dummies is the two dummies for the third and fourth quarter of 1998 capturing the effect of the 1998 crisis.

In this specification, the long-run elasticity of imports with respect to exports and domestic demand is 1.3, which is comparable with estimates for other countries. The long-run elasticity with respect to the real exchange rate is 0.7, suggesting that Russian imports, which are almost exclusively invoiced in foreign currency such as the euro, do indeed respond considerably to

changes in the real effective exchange rate. The long-run elasticity with respect to the oil price is 0.1. Thus, some of the increase in oil revenues generated by higher oil prices seems to be spent on imports.

1.4 IS RUSSIA SHOWING SYMPTOMS OF THE DUTCH DISEASE?

The prominent role of raw materials in Russia's exports and the significant real appreciation of the Russian Rouble, may lead to concerns about the competitiveness of the non-oil industrial sector. The high importance of mineral extraction for Russia's economy makes the country susceptible to the Dutch disease phenomenon. The term "Dutch disease" refers to a situation in which new discoveries of natural resources or, as in the case of Russia, sharp rises in commodity prices lead to an increase in the equilibrium real exchange rate, thus undermining the competitiveness of the other tradable sectors in the economy. As suggested in the academic literature (see Box 2), the Dutch disease is associated with four main symptoms: i) a slowdown in manufacturing output, ii) a booming non-tradable sector, iii) an increase in real wages and iv) real exchange rate appreciation (Kalcheva and Oomes, 2006).

The evidence on the first symptom – manufacturing sector decline – is mixed. One way to check for a slowdown in the non-oil tradable sector is to compare its growth rate with growth rates in the rest of the economy. In comparison with the manufacturing sector, Russia's mining industries, which include the extraction of oil, natural gas, coal and other raw materials, grew faster in 2003, at a similar pace in 2004, and much more slowly in 2005 (see Table 2). A second approach is to examine the changes in the shares of the various industries in total output. Rosstat data indicates that the share of upstream oil production has increased marginally in real terms from 10.4% in 2000 to 12.1% in 2004. Similarly, the share of the fuel industry as a whole (i.e. crude oil, natural gas and coal) saw a small rise from 15.8% to 17.1% of total industrial production. The 2004 share,

Table 2 GDP growth by sector

(year-on-year percentage change)

	2003	2004	2005
GDP at market prices	7.3	7.2	6.4
Agriculture, hunting, forestry	5.5	3	1.1
Fishing	3.4	2	4.6
Natural resource extraction	10.8	7.9	1.7
Manufacturing	9.5	7.8	4.4
Electricity, gas and water supply	1.6	2.1	1
Construction	13	10.2	9.7
Retail and wholesale trade; repair of vehicles and household goods	13.2	9.8	12.4
Hotels and restaurants	1.3	3	15.6
Transport and communication	7.2	10.5	6.2
Financial intermediation	9.6	4.5	6.4
Real estate and leasing	3	4.5	9.0
Public administration and defence	-0.5	0.6	2.8
Education	0.9	1.2	1.9
Health and social work	-3.9	1.1	1.0

Source: Rosstat and ECB calculations.
Note: Sectoral growth rates exceeding the respective annual GDP growth rate are printed in colour.

however, is hardly different from the respective figure for 1995 (16.9%). The chemical and machine-building industries have seen their shares rise slightly since 1995, while the share of the remaining branches has been broadly stable. An additional test for symptoms of the Dutch disease in the manufacturing sector involves an inspection of its profitability which may be negatively affected by real appreciation. According to World Bank figures, profitability in the manufacturing sector grew the least compared with the other sectors of the economy (World Bank, 2006).

In relation to the second symptom, the growth of the non-tradable (services) sector, especially construction and trade, outstripped the growth of the other branches of the economy (see Table 2). While this evidence conforms to the theory of the Dutch disease, there are two caveats. One is the fact that services – such as transport, computer and financial services – are no longer necessarily non-tradable since Russia also exports them. In addition, it should be noted that the growth of the services sector may be, to a large extent, related to Russia's transition to a market economy. In fact, as shown in Box 3, cross-country regressions support the notion that the size of the services sector in transition countries – relative to the size of the manufacturing sector – is closely related to the transition process.

Available evidence on labour shifting from manufacturing to services and natural resource extraction – another prediction of the Dutch disease hypothesis – is ambiguous. The number of workers in the services sector has been growing steadily since 1999. Employment in agriculture, on the other hand, has been declining consistently. However, the figures for manufacturing and the extractive industries – crucial for demonstrating the presence of the resource movement effect – give mixed signals, i.e. employment has been alternating between positive and negative growth rates in recent years (see Table 3).[10] In addition, the empirical verification of the resource movement effect is hampered by the fact that employment in Russia's mining sector is very small – currently 1.6% of the total labour force. Owing to the capital-intensive structure of oil and gas production, any movement of labour into the natural resource sector from the manufacturing sector will be almost insignificant.

10 It should be noted that Rosstat, the International Labour Organisation and the World Bank give somewhat different figures for some categories on account of the different industrial classifications they use. Conclusions based on the data presented here should therefore be treated with caution.

Box 2

THE DUTCH DISEASE – A REVIEW OF THE LITERATURE

In the basic Dutch disease framework, as developed by Corden and Neary (1982), new discoveries of natural resources or sharp rises in commodity prices increase employment and wages in the extractive sector at the expense of a country's (tradable) manufacturing and non-tradable sectors (the so-called "resource movement effect"). The "spending effect", on the other hand, is caused by the higher wealth generated by the rise in prices and wages in the natural resource extraction industries and the resulting increase in aggregate demand. Since prices in both tradable sectors are set abroad, the overall result is higher prices in the non-tradable sector and, consequently, higher wages and employment. The increase in the relative price of non-tradables with respect to tradables is, in effect, a real exchange rate appreciation. In the end, the manufacturing sector becomes non-competitive, unprofitable and dwindles.

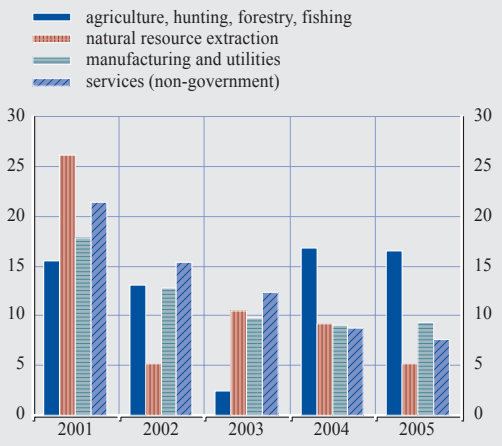
Although the outcome described above represents a more efficient allocation of the factors of production, economic growth which is dependent on the energy sector, may prove unsustainable in the long run owing to the volatility of commodity prices.

Empirical tests of the symptoms of Dutch disease are inconclusive. Hutchison (1994) cannot confirm the existence of a clear long-term trade-off between the development of the energy and manufacturing sectors in the Netherlands, Norway and the United Kingdom during the 1970s and 1980s. However, he shows that in the short run Norway did experience an adverse effect on its non-oil tradable sector, given the large size of oil income flows relative to the size of its economy. In the case of the United Kingdom and the Netherlands, the short-term effect of their energy booms was the opposite: the rise in aggregate demand led to a boom in the manufacturing sector in the presence of domestic unemployment.

A more recent study by the IMF (2005a) which is based on data for Norway spanning from the late 1970s to 2004, finds both a long-term decline in the manufacturing sector and inflationary pressure. However, the authors point to another potential reason for the contraction of the non-oil tradable sector, namely that higher oil prices may depress EU GDP and thus reduce EU demand for non-oil Norwegian exports. The IMF analysis also shows that the energy boom has had no impact on government expenditure on account of Norway's prudent fiscal policy.

An empirical study by Kalcheva and Oomes (2006) on the Dutch disease symptoms in Russia concludes that, although some manufacturing industries are dwindling, a strong industrial slowdown has not occurred. At the same time, the authors find strong support for a booming services sector in Russia. However, they conclude that the latter could stem from post-Soviet transition rather than the Dutch disease. Finally, the authors also find evidence of faster real exchange rate appreciation as a result of high oil prices. Nonetheless, according to this study, the real appreciation of the rouble has not led to a loss of competitiveness.

Chart 9 Real wage growth by sector



Source: Rosstat.

An increase in the real wage level – the third testable implication of the Dutch disease – is observed in the data. Following the initial spike in oil (and other commodity) prices in 2000, the mining industries experienced a significant rise in real wages (see Chart 9). In the following years, real wages in all sectors grew at similar rates. However, this overall wage increase could be caused by a number of factors, including the spending effect (see Box 2), productivity gains and the recovery from the financial crisis.

The rouble's real effective exchange rate has appreciated significantly since 1999 indicating "Dutch disease" challenges.[11] Since 2000,

11 It should be noted that the real exchange rate may also have overshot during the 1998 crisis so that its appreciation since 1999 can be seen to some extent as a correction of an overshooting.

Table 3 Employment growth by sector

(year-on-year percentage change)

	1998	1999	2000	2001	2002	2003	2004	2005 [1)]
Agriculture, hunting, forestry, fishing	-8.8	7.3	14.7	-13.9	-0.2	-5.6	-12.0	-4.3
Natural resource extraction	-7.0	15.3	3.2	4.0	1.1	-15.5	5.7	-2.0
Manufacturing and utilities	-4.3	4.6	10.9	-1.4	2.1	5.2	-5.4	-0.9
Services (non-government)	-3.7	2.2	5.5	9.2	2.9	11.2	5.9	2.5

Source: International Labour Organisation.
1) 2005 data are from Rosstat.

Russia's real effective exchange rate has appreciated by more than 50%. However, there are a number of reasons for this appreciation, some of which go beyond the standard Dutch disease explanation. First, as demonstrated in the econometric analysis of Section 1.3, an appreciation of the real exchange rate can be seen as an equilibrium adjustment to rising oil prices.[12] Second, an increase in government consumption, through its positive impact on inflation, may have contributed to real appreciation of the rouble.[13] Finally, a high productivity differential affects the real exchange rate through the Balassa-Samuelson effect.[14]

Although the rouble has appreciated significantly in the last five years, Russia does not seem to have lost competitiveness. According to the IMF (2005), Russia's relative price level is still well below that of the Baltic countries and Poland, which have similar levels of income. Similarly, the appreciation of the real effective exchange rate has not exceeded Russia's productivity gains relative to the United States and the European Union. Finally, the country's share of world non-oil exports has remained broadly unchanged since 2000.

12 A mechanical link between the terms-of-trade and the real effective exchange rate exists only in the case of sticky producer prices and perfect pass-through (see Obstfeld and Rogoff (2000) as quoted in Cashin, Cespedes and Sahay, 2004, p. 241). Korhonen and Juurikkala (2006) find empirical evidence that oil prices have a significant positive impact on the real effective exchange rate in oil-exporting countries. Habib and Kalamova (2006) also find, as in Section 1.3 of this study, that the initial response of the real effective exchange to a rise of the real oil price in Russia, Norway and Saudi Arabia tends to be negative, while the long-term impact is positive.

13 See Kalcheva and Oomes (2006) who suggest that in Russia the effect of a 1% increase in either government consumption or the productivity differential explains approximately 2% of real exchange rate appreciation. The impact of changes in oil prices is lower: 0.4% or 0.7% real appreciation for each 1% increase in petroleum prices, depending on the specification of the estimated model.

14 According to Egert (2005), however, the contribution of the Balassa-Samuelson effect on average CPI inflation in Russia during the period 1996-2001 amounts to only around 1%.

Box 3

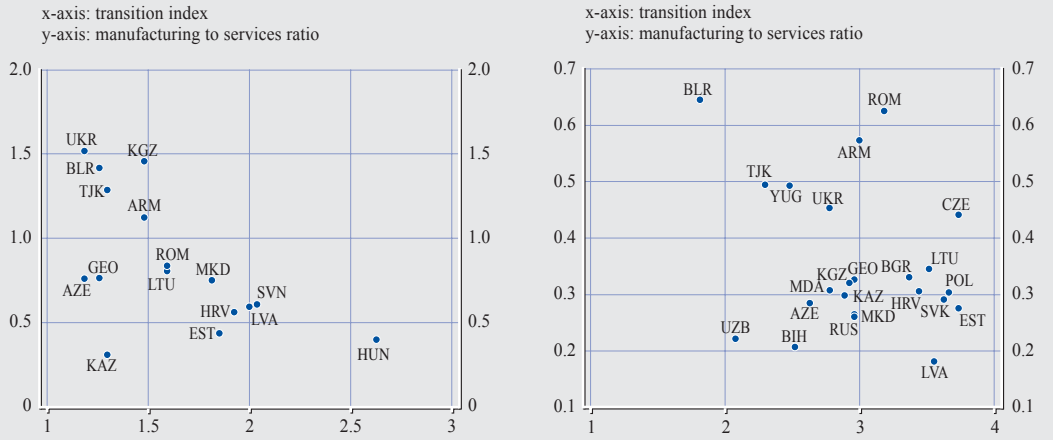
THE SHIFT TO SERVICES – A SYMPTOM OF THE DUTCH DISEASE OR A CONSEQUENCE OF THE TRANSITION PROCESS?

As explained in Section 1.4, one of the symptoms of the Dutch disease is a decline in the share of the manufacturing industry in favour of the services sector. The shift to services, however, is a process also linked to the transition from a planned to a market economy. This box attempts to disentangle these two effects empirically.

There are three main reasons for a structural shift from a dominant industrial sector to the prevalence of services in any economy.[1] One explanation is based on the "hierarchy of needs"

1 See, for example, a review of the literature by Schettkat and Yocarini (2003).

The stage of transition and the decline of the manufacturing sector in 1994 (left-hand panel) and 2004 (right-hand panel)



hypothesis, according to which the demand for services rises with income levels. This demand view of expansion in services sector, however, is generally not supported by the empirical literature, because the income elasticity of the demand for services varies across types of service (e.g. health versus education or the arts) and between countries.[2] A second approach considers the supply-side effects of sector productivities. Since manufacturing productivity rises faster than services productivity, the number of employees in the services sector is higher and, if their wages rise in line with the average wage, the sector's share of this branch in nominal GDP will increase. Finally, changes in the inter-industry division of labour may also have an impact on the services sector. For example, the outsourcing of services by manufacturing companies to firms specialising in services (e.g. accountancy or human resources firms) leads to a rise in the relative service share, because the same activity is re-allocated to a different sector.

A particularly marked shift to services has taken place in the transition countries. In order to illustrate this change, a new dataset – including 23 transition countries for which appropriate sectoral data for the period 1994-2004 is available – is analysed.[3] As can be seen from the left-hand panel of the chart, the ratio of manufacturing to services in 1994 was relatively high in the transition countries, mainly as a result of the limited availability of market-based services during the central planning era. In particular, countries at a relatively early stage of transition, as measured by the transition index of the European Bank for Reconstruction and Development (EBRD), had high manufacturing to services ratios. By 2004, the ratio of manufacturing to services had decreased – particularly in countries with a high transition index (see right-hand panel of the chart).[4] Therefore, the rising importance of the services sector in transition countries appears to be closely related to the countries' transition process to a market-based economy. The empirical relationship between the manufacturing/services ratio and the stage of transition should therefore be negative.

2 Income elasticities are estimated in Summers (1985) and Curtis and Murthy (1998).
3 The described shift to services is even more pronounced, if the total industry to services ratio is used. For the analysis the manufacturing to services is used since it relates more closely to the Dutch disease concept.
4 Breitenfellner and Hildebrandt (2006), for example, discuss service sector developments in the Czech Republic, Hungary, Poland and Slovakia in this context.

To show what impact the above-mentioned demand and supply factors have had on the sectoral composition of the transition economies during the period 1992-2004, the following unbalanced panel regression of 23 countries is estimated:

$$\left(\frac{Mnfg}{Svcs}\right)_{it} = \beta_0 + \beta_1 (TransIndex)_{it} + \beta_2 \ln(GDP)_{it} + \beta_3 \ln(ProdDiff)_{it} + \\ + \beta_4 (Oil)_{it} + \varepsilon_{it}. \qquad (1)$$

in which the ratio of manufacturing to services (in terms of value added, as a percentage of GDP) is the dependent variable. The explanatory variables are the EBRD Transition Index[5], real GDP per capita in purchasing power parity (PPP) terms[6], the productivity differential of the industrial and the services sector (*ProdDiff*)[7] and an oil interaction term. The last variable is the product of an oil dummy (which takes the value of zero, if the country is not a large oil exporter and 1 otherwise)[8] and the average annual Urals crude oil spot price.

Factor explaining the increase in services in transition economies

Dependent variable: manufacturing to service sector ratio

Independent variable	Coefficient estimate
Transition index	-0.53 1)
GDP per capita (PPP)	0.32 1)
Productivity differential	0.40 1)
Oil interaction term	-0.20 1)
Number of observations	161
Number of country groups	21
R-squared (overall)	0.63
Wald statistic p-value	0.00

Source: Authors' regressions.
Notes: Random effects estimator for unbalanced panels with AR(1) disturbance due to Baltagi and Wu (1999) (program in Stata: xtregar).
1) Indicates significance at the 1% level.

The results of an autoregression-consistent random-effects estimation are reported in the table.[9] The negative first coefficient indicates that the further a country moves along the path to market economy, the more its manufacturing sector declines relative to its services sector. Similarly, countries at an advanced stage in their transition process have relatively smaller manufacturing/services ratios compared with countries with slower paces of restructuring. In fact, each point change in the EBRD transition index decreases the ratio by half. [10]

Contrary to the predictions of the demand theory of a shift to services, our estimates reveal that income per capita is positively related to the manufacturing/services ratio. In addition to the explanations given in the literature, which are mentioned above, an important reason for this result in our sample of countries is the transition shock that they experienced in the 1990s: manufacturing output and income per capita declined considerably and simultaneously, while the drop in services output occurred to a lesser extent and for shorter periods of time. Our

5 A simple average of the EBRD transition indicators, which consist of a number of different scores grouped by four main categories, namely enterprise privatisation and restructuring, prices and trade liberalisation, financial institutions developments and infrastructure reforms is used for the regression. The indicators range from 1 to 4+ where 1 represents little or no change from central planning and 4+ represents an industrialised market economy (EBRD, 2006).
6 Purchasing power parity GDP per capita is appropriate here, since the prices of services are determined in the local market. Thus, the purchasing power of domestic consumers and, consequently, the demand for services do not depend on the exchange rate.
7 The productivity differential is calculated as the ratio of manufacturing output per person employed and services sector output per person employed.
8 The four transition economies, for which oil and gas represent a considerable share of the industrial sector, are Azerbaijan, Kazakhstan, Russia and Turkmenistan.
9 Given that random effects are used, the results have both a time and a cross-country dimension. We performed a Hausman specification test, which did not reject the null hypothesis that the random effects model is appropriate. The results do not change considerably, if fixed effects are used instead.
10 This result is robust to a number of other specifications, such as a stepwise regression or the use of the services sector share of GDP as a dependent variable (in which case the estimator is, of course, positive).

second control variable, on the other hand, has the expected positive sign, i.e. an increase in the productivity differential leads to growth in the manufacturing sector.

Finally, our results suggest that rising oil prices are linked to a decrease in the share of the manufacturing sector relative to the services sector as predicted by the Dutch disease hypothesis. A 10% increase in the oil price leads to a 2% decline in the manufacturing/services ratio in the four oil-exporting countries included in the panel.[11] However, as suggested by additional regressions, in which the GDP shares of services and manufacturing were the dependent variable, the impact of oil prices on the services and the manufacturing sector is not robust. In these regressions, the oil price was not statistically significant in the case of services and negative and significant in that of manufacturing.

The main conclusion drawn from this analysis is that the shift to services in the countries of Eastern Europe and Central Asia is mainly driven by the transition process and sectoral productivity trends. However, in line with the Dutch disease predictions, there is also some evidence that oil prices may have a negative impact on the manufacturing sector in the oil-exporting transition countries.

11 If the oil price is included in the equation for all countries in the sample, the estimator, unsurprisingly, is not statistically significant.

2 THE MEDIUM- AND LONG-TERM GROWTH OUTLOOK FOR RUSSIA

Despite a currently strong growth momentum, maintaining high growth levels in the medium and long term will be a challenge. This section examines the country's growth prospects using statistical filtering techniques, growth accounting considerations and insights gained from the empirical cross-country growth literature. However, owing to a combination of major structural changes in the Russian economy, the presence of singular factors that have underpinned growth in recent years and poor data quality, these considerations are supplemented with more qualitative assessments.

The section is organised as follows:

– First, standard statistical filtering techniques are used to gauge Russia's current growth potential (Section 2.1).

– Second, Russia's growth potential is put into a cross-country perspective, while bearing in mind "Russia-specific" factors and long-term challenges (Section 2.2).

2.1 TIME SERIES CONSIDERATIONS

Standard statistical filtering techniques suggest that Russia's potential growth rate could be 4-6% per annum, depending on the time-span taken into consideration.[15] The application of a conventional two-sided Hodrick-Prescott filter[16] to Russian GDP data since 1995 yields a smoothed trend series that exhibits a pronounced swing of trend growth from around -0.5% in 1996 to more than 6.5% in 2003, before levelling off slightly to around 6% in the first quarter of 2006 (see Chart 10).[17] The large changes in the trend growth rate mainly reflect the mechanical smoothing around the 1998 crisis. Likewise, the application of a Hodrick-Prescott filter to annual GDP data available since 1980 yields a trend series that shows trend growth falling from around 3% in the early 1980s to -4%

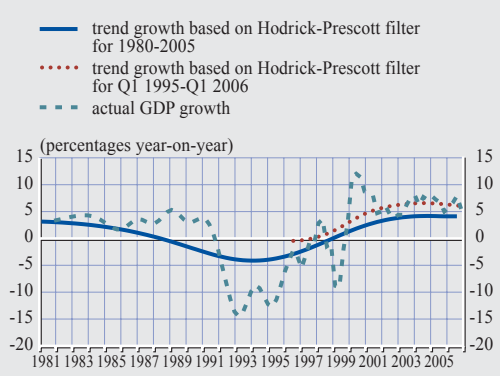
15 This finding is broadly in line with the latest assessment by IMF staff, which uses a production function approach and suggests that Russia's growth potential may have increased to 6.25-6.5%.

16 The results do not change qualitatively if a bandpass filter, using the Baxter-King approximation, is used instead.

17 It should be noted that statistical filtering techniques smooth a time series in a mechanical way. The use of the smoothed values for forecasting purposes is therefore only indicative since changes due to future developments of growth determinants are not taken into account.

Chart 10 Trend growth according to the Hodrick-Prescott filter

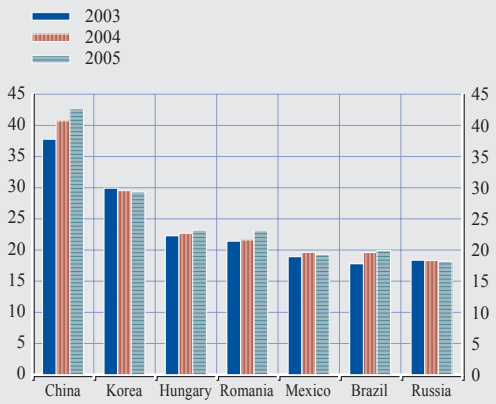
(percentages year-on-year)



Sources: Rosstat, IMF and ECB calculations.
Notes: Smoothing factor for HP filtering lambda set to 1600 (quarterly series) and 100 (annual series). Annual series converted to quarterly frequency using a standard cubic interpolation procdure as provided by Eviews.

Chart 11 Gross fixed capital formation

(as a percentage of GDP)



Source: Global Insight.

during Russia's transition recession, before subsequently recovering to around 4%.[18]

Owing to the high volatility of Russia's economic performance over the past few decades, projections for potential growth that are based on historical Russian GDP data have to be interpreted with caution. Russia's transition from a planned to a market-based economy which led to a sharp contraction in output in the period 1991-95 and the financial crisis of 1998 marked deep structural breaks in the country's historical GDP series. The ranges for potential growth as suggested by the Hodrick-Prescott filter are therefore only a rough indication of trend growth.

A "second transition" may be needed. While one could argue that the transition from a planned to a market-based economy is over – suggesting that the transition recession during 1991-95 should not be considered in a smoothing exercise – it should be borne in mind that some sectors of the Russian economy may still not be internationally competitive. Indeed, as many branches of the economy continue to be sheltered from international competition (e.g. through tariffs and import quotas) and have access to energy at artificially low prices, inefficient production structures may still be widespread. Consequently, more restructuring may be needed once more sectors are fully exposed to international competition following the accession of Russia to the World Trade Organisation.[19]

In addition, the high growth rates of recent years have been mostly driven by strong increases in total factor productivity that are unlikely to last in the long run. A qualitative decomposition of Russia's historical growth rates into its traditional components of changes to labour utilisation, changes to the capital stock and increases in total factor productivity (TFP) suggests that GDP growth over the past decade has been almost exclusively driven by TFP growth since investment rates and labour force growth have been low.[20] These large gains

18 Russian GDP data dating prior to 1995 should be treated with caution since they are unlikely to have matched international dissemination standards. In addition, prior to 1992, prices were not set by market mechanisms.

19 The restructuring of non-competitive industries can lead to a (temporary) decline of output if one assumes that growth in new industries takes place only after some time.

20 As pointed out in Ahrend (2004, p. 12), a more formal growth accounting exercise is hampered by the fact that Russian capital stock data are not very reliable, since investment undertaken in Soviet times is difficult to evaluate. Nevertheless, tentative estimates presented in Ahrend (2004) appear to confirm the claim that Russian growth has been almost exclusively driven by TFP growth. In fact, according to Ahrend's framework which relies on a Cobb-Douglas production function with standard labour and capital elasticities, neither changes to labour utilisation nor changes to the capital stock made a significant contribution to Russian growth in the period 1995-2002.

in productivity have been possible on account of capacity under-utilisation, which is unlikely to last in the long run.

In fact, growth accounting considerations suggest that investment would have to rise significantly to maintain high growth rates in Russia. As suggested by above description of the decomposition of Russia's recent growth, future growth will require more investment to allow for an expansion of Russia's capital stock. In addition, the ratio of investment to GDP has proven to be a significant and robust determinant of economic growth in many cross-country studies.[21] However, despite a booming economy, high marginal returns in a catching-up economy and low interest rates, investment in Russia has remained low by international standards and has stagnated at around 18% of GDP (see Chart 11).[22]

2.2 CROSS-COUNTRY CONSIDERATIONS

Cross-country evidence on economic growth suggests that it will be a challenge to maintain currently high growth rates over the longer term. As shown in Chart 12, in the period 1961-2002 the historical mean in a sample of around 100 countries was around 2% per annum.[23] Likewise, real per capita growth rates above 5% per annum have historically been rare. In addition, Russia may be an example of "growth acceleration" as suggested in Hausmann et al. (2004). According to this study, positive external shocks tend to lead to growth accelerations that phase out after 7-8 years.

In addition to cross-country evidence on growth, a look at Russia-specific factors is necessary. While empirical evidence from large cross-country panels reveals some information about historically common average growth rates, a look at Russia-specific factors complements an assessment of the country's growth prospects. In particular, Russia's large geographic size, abundant natural resources, the lack of investment in the oil and gas sector, relatively high stock of human capital and challenging demographic and public health trends stand out as special circumstances and are analysed below.

The impact of Russia's large geographic size on its growth outlook is not clear-cut. On the one hand, the academic literature on country size and growth suggests that a large country may benefit from its size in a number of ways. For example, large countries may enjoy economies of scale in the production of public goods, a large market size and the accompanying competitive pressures, as well as better provision of insurance to regions affected by imperfectly correlated shocks. On the other hand, a large size can have costs related to the heterogeneity of preferences that may make the provision of public goods more difficult. In addition, as shown by Gallup, Sachs and Mellinger (1998), high transportation costs in a country may have a negative impact on economic growth.[24] A recent empirical study by Alesina et al. (2005) shows that both size and trade openness benefit growth, but the importance of size declines with international integration. Therefore, as Russia continues its international integration (e.g. through membership of the World Trade Organisation), the net effect of its large size becomes more uncertain.

An abundance of natural resources can have a negative impact on growth. With the exception of Iran, most major oil-exporting countries, including Russia, experienced lower growth rates than the world average in the periods after the second and before the most recent oil price

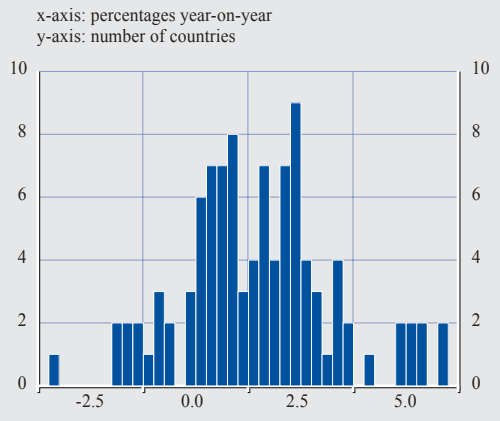
21 See, for example, the seminal paper by Levine and Renelt (1992) which demonstrates there is a robust relationship that explains per capita growth as a function of the share of investment to GDP, a country's income level, the population growth rate and the secondary school enrolment rate.

22 Most observers hold the view that low investment ratios in Russia reflect to a large extent uncertainties with regard to the investment climate, in particular with respect to the enforcement of property rights (see, for example, IMF, 2006, p. 23).

23 The sample includes all industrial and developed countries for which data are available in the World Bank's World Development Indicators database since 1961.

24 Owing to extremely large distances between areas of population, natural resources and business centres, transportation costs in Russia are about three times international standards (see Beck and Schularick, 2003).

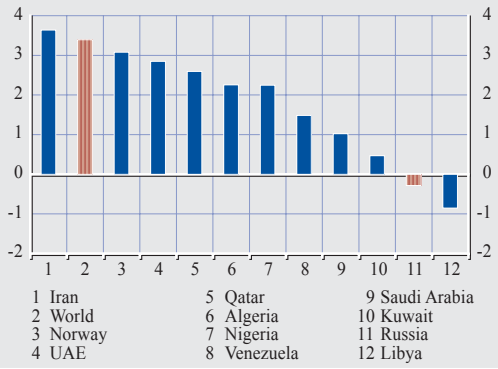
Chart 12 Distribution of average real per capita GDP growth rates (1961-2002)



Sources: World Bank and ECB calculations.

Chart 13 Average real GDP growth, 1981-2000

(in year-on-year percentages)



Sources: IMF and ECB calculations.

shock (see Chart 13). While this observation may to some extent reflect country-specific factors (e.g. the transition recession in Russia) and the drop in and the volatility of oil prices during that period, it has been shown that an abundance of natural resources can be a curse rather than a blessing. In fact, controlling for other standard growth determinants, Sachs and Warner (1995) show that the natural resource endowments may have a negative impact on growth. More recently, it has been shown that this effect applies, in particular, to countries in which institutional arrangements favour rent-seeking.[25] As Russia, while not explicitly included in this study, scores low in most surveys on the quality of institutions[26], the "resource curse" argument may play a role for Russia's long-term growth outlook.[27]

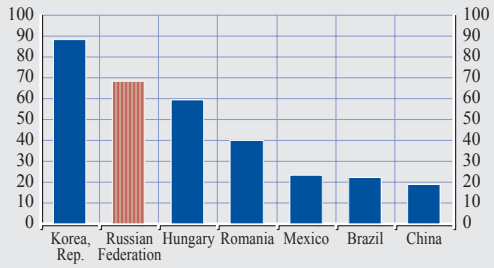
As the oil and gas industry is likely to remain the main driver of economic growth for some time, investment in this sector is of particular importance. Notwithstanding the emergence of new businesses in Russia, economic diversification is a gradual process that may be hampered by real appreciation and a persistent lack of financing of private investment through the banking system.[28] Despite the importance of the oil and gas sector in Russia oil production growth has started to decelerate which underscores the need for large investments in these industries.[29] Without massive new investment, oil and gas production could start to decline as early as in the next decade (Bank of Finland, 2006).

Russia's high stock of human capital suggests a more promising growth outlook. The empirical growth literature has unambiguously shown that human capital has a positive impact on economic growth. [30] In Russia, the stock of human capital – particularly with respect to

25 See Mehlum, Moene and Torvik (2006).
26 For example, according to the World Bank survey "Doing Business in 2007" Russia only ranks 96 in the world (out of 175 countries) in terms of "ease of doing business".
27 In addition, Lederman and Maloney (2003) have shown that the "resource curse" argument applies, in particular, if raw material exports are concentrated in a few products, as in the case of Russia.
28 Credit to the private sector has been recently growing fast at a nominal rate of around 40% per annum and some progress in the area of banking sector reform has been made. Nevertheless, 80% of investments in 2005 were financed through retained profits (see OECD, 2006).
29 According to the International Energy Agency, the Russian oil sector needs around USD 14 billion annually in order to maintain moderate growth rates as indicated in the country's energy strategy.
30 For example, the seminal contributions by Barro (1991) and Levine and Renelt (1992) demonstrated the importance of human capital for per capita growth. However, it should be noted that the ideal measure for the impact of human capital on growth would be additions to the stock of human capital, measured as average years of education of a country's working population (see Bergheim, 2005).

Chart 14 Tertiary school enrolment

(as a percentage of age group1))



Source: World Development Indicators.
1 The ratio of total enrolment to the population of the age group that officially corresponds to the tertiary level of education.

university education – has remained higher compared with other catching-up economies which points to a more promising growth outlook for Russia (see Chart 14).[31]

In the long-term, negative demographic effects are likely to depress headline growth. In addition to the challenges of maintaining high per capita growth as mentioned above, overall GDP growth in Russia is likely to be negatively affected by a declining population and workforce. In fact, owing to a combination of low fertility and high mortality rates, Russia's population has been declining since 1993. According to the United Nations Population Fund (UNFPA, 2006), the rate of decline could stabilise at 0.4% per annum. This would imply that the population will shrink from 142 million in 2005 to 139 million by 2010 and 112 million by 2050.

Public health may be negatively affected by the spread of HIV, possibly affecting economic growth in the long-term. According to Hamers et al. (2006), Russia is among the countries in the EU Neighbouring Regions with the highest rate (more than 200) of HIV infections per million inhabitants. While the rate of newly registered infected individuals in Russia has trended downwards recently, this development is to some extent due to a reduction of HIV testing (UNAIDS 2006). Around 80% of HIV-infected individuals in Russia are between 15 and 30 years of age, i.e. the economically productive age group. According to World Bank (2002) estimates, without preventive policies or treatment, this could lower annual growth by half a percentage point by 2010.

3 CONCLUSION

The oil and gas sector is of growing importance for the Russian economy, but its rising share is less pronounced in real terms. In addition, other sectors, particularly services, are also expanding. Compared with other oil-exporting economies, the role of the oil and gas sector is still relatively moderate as Russia has a significant industrial base and a high level of human capital.

The apparent de-coupling of Russia's GDP growth from the oil price in recent years does not necessarily imply that growth is no longer sensitive to oil price fluctuations. In fact, the econometric findings presented suggest that one reason for the de-coupling of Russia's GDP growth from oil prices could be the surge of imports which may have been stimulated by real appreciation.

The empirical evidence on the symptoms of the Dutch disease is mixed. While some typical signs of the Dutch disease such as a growing service sector and real appreciation are observed, they may also stem from other factors such as economic restructuring and catching-up.

Russia's current growth momentum is strong, suggesting that robust growth rates may be maintained over the next couple of years. In fact, statistical filtering techniques, while subject to many caveats, suggest that potential growth is currently standing at around 4-6% per annum.

31 However, in its PISA studies, the OECD has pointed to serious shortcomings in the Russian education system that will make it difficult to maintain Russia's high human capital stock.

Cross-country estimates of economic growth indicate that it will be a challenge to maintain the current growth momentum over the medium and long term. In fact, other countries have grown on average at a much slower pace than Russia currently does. A review of several Russia-specific factors such as the risk of the Dutch disease, abundance of natural resources and low investment suggest that the medium and long-term growth outlook for Russia may be even more challenging than for an "average" catching-up economy. At the same time, other characteristics, such as the high stock of human capital, point to a more promising outlook.

The increase of the current low investment rates appears to be the key policy variable for safeguarding high growth. Improvements to the investment climate and continued progress in the area of banking sector reform appear, at this stage, to be the key policy variables for ensuring that the sizable necessary investments – particularly with regard to the expansion of transport capacity in the oil and gas sector – are undertaken.

Long-term challenges to Russia's growth outlook appear to be manageable through appropriate policy measures. In order to safeguard growth in the long term, public spending should address demographic and health problems with a high priority.

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