Is Dutch Disease Responsible for Russia's energy dependent industrial structure?
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One of the main issues on the Russian development agenda is an acceleration of economic growth and creation of infrastructure that will ensure the sustainability of this growth. Current economic progress while being very impressive over last 4 years nevertheless provides certain reasons to worry about its endurance. Too many evidences indicate that the forces behind today success are generated by favorable external situation rather than internally evolved economic mechanisms. High oil prices over last years are considered to be the major source of Russian current GDP growth. Russia holds the world’s largest natural gas reserves, the second largest coal reserves and the eighth largest oil reserves. Russia is also the world’s largest exporter of natural gas, the second largest oil exporter and the third largest energy consumer (EIA Country Analysis Brief (2004)). However these sources of income are quite volatile and unpredictable and hardly can be regarded as a reasonable base for prolonged economic growth. Moreover as indicated by a number of studies to some extent it could be regarded as an obstacle to development. Therefore the question that we want to address in this chapter is what danger for country’s sustainable development is imposed by the facts that Russia is rich in natural resources and at current stage of development its economic structure is screwed toward resource intensive industries. Russian economy is not unique in this respect. Almost all resource rich countries face the same problem – how to diversify industrial production and export to become less dependent on resources. The broad economic literature tries to answer this problem.

**Natural Resources: a blessing or a curse?**

The general question that the literature tries to address with respect to natural resource abundance is whether natural resources are a blessing or a curse. On the first glance it seems strange that the fact that a country is granted by the fortune with a free endowment of valuable resource could be regarded as the reason for misfortune. However, as it often happens in economic system so many indirect negative effects can accompany the direct positive effect of additional wealth that the overall consequences of the natural resource presence in the economy can be evaluated as unfavorable from the perspective of country’s development.

Modern economic literature does not provide the definite answer to the above question. There are still a lot of theories and examples in favor of both outcomes. A number of researches, both
theoretical and empirical, deal with the investigation of the country’s natural resource endowments and the corresponding economic growth. While there is no uniform overall understanding of this relation we can distinguish several important mechanisms that can transmit the negative effect of natural resource abundance on country economic development. In this chapter we will mainly focus on the next two issues

- The overvaluation of the currency and the “Dutch disease” effect
- Political economy: non-productive activity of economic agents induced by the huge rents associated with natural resource endowments leads to low institutional quality of the government in such economies, which in turn slows down development

“The Dutch Disease” effect

Today in Russia we can quite often find the term “Dutch Disease” in newspapers and economic literature. However in many cases this term is used incorrectly being referred to a slightly different problem than was originally implied by this term. The original notion of “Dutch Disease” refers to the negative effect of natural resource discovery on the development of other tradable goods sectors within the economy. The same phenomenon may occur when the prices of resources that the country sells on the world market exogenously increases. In both cases the country’s external balance will be characterized by terms of trade increase. But often this term is used to describe the possible negative effect of natural resources on the long-term country’s development without referring to particular episodes of exogenous increase in the terms of trade. While this two issues are closely related we need however to distinguish among them since the propagation mechanisms behind them could be quite different and the corresponding policy tools used to correct the problem would differ too.

First of all we will look at the theoretical description of “Dutch Disease” effect. Let us consider a perfectly competitive neoclassical economy with fixed factor endowments that consists of three production sectors. The first sector – Oil – produces oil for export, the second sector – Tradable – produces the other tradable (exportable and importable) goods, and the third sector, Non-tradable, represents the sector which produces goods consumed exclusively domestically. Given exogenous world prices two first sectors produce certain quantities of goods and the differences between output and demand at these prices either are exported or imported. The Non-tradable sector differs in this respect: the price of its output is endogenously determined by the balance condition on domestic market: domestic output should be equal to domestic demand.
In order to specify the technologies in three sectors let us assume the specific factor model. Namely, we assume that the goods in each sector are produced by the capital, which is specific to the particular sector, and therefore, cannot move to the others, and the labor, which can freely move among all sectors. Free labor mobility ensures us that a wage payment is equalized in all sectors of the economy. The endowments of three specific capitals and total labor are exogenously given and fixed.

Suppose that oil price in the world market increases. The immediate effect will be the increase in the income of all factors employed in Oil sector. This, in turn, will have two important consequences.

**Spending effect.** Some part of income increase will be spent on goods, produced in Non-tradable sector. It can be done directly by Oil sector factor owners or by government through increase in tax collections from Oil sector. In any case it will imply the increase in the demand for non-tradables and the corresponding increase in the price of output in the Non-tradable sector. And what is relevant for our story is the increase in the relative price of Non-tradable sector output relative to Tradable sector output, since the price of Tradable sector output is fixed exogenously. Since the ratio of \( \frac{P_{\text{Non-tradables}}}{P_{\text{Tradables}}} \) approximate the real exchange rate we can expect the real appreciation of domestic currency and the corresponding movement of mobile resource, labor, from Tradable sector to Non-tradable.

**Resource reallocation effect.** The exogenous price increase in Oil sector will increase the marginal value product of both factors in this sector. At the initial level of wage rate it implies the increase in labor demand in this sector, which turns in the inflow of labor in this sector from the others. Both effects contribute in the decline of output in the Tradable sector while the effect on the output in Non-tradable sector is ambiguous: the spending effect tends to increase it while the resource reallocation effect moves it in an opposite direction.

The resulting contraction of output in Tradable sector because of increase in the price of Oil sector output is usually referred as “Dutch Disease” effect.

How robust is this result to the model assumptions? Let us change a little bit the assumptions with respect to factor mobility.

First of all, assume that the oil sector employs exclusively immobile factors, that is, all the factors that are used in oil-sector are useless in the rest of the economy. This extreme case is referred to as “enclave” Oil sector, implying that there is no interaction between domestic factor markets and Oil sector. In this case the resource reallocation effect will be absent and due to real appreciation we
unambiguously will get the increase in Non-tradable sector output as well as the decline in the output of Tradable in response to Oil price increase.

Therefore, we see that assumptions with respect to factor mobility are crucial to the resulting effects of Oil price increase on the development of the rest of the economy.

**Macroeconomic aspects of resource dependence**

Whether the macroeconomic consequences of such changes are more predictable?

Assume that the oil price increase is permanent and unexpected. This will raise current and permanent income. Due to income effect this should lead to increase in aggregate consumption in all sectors of the economy, Tradable and Non-tradable. It will imply the increase at least in the production of Non-tradable sector that should be matched by the corresponding increase in investments.

However, the extensive literature on this issue mentions several economic and policy mechanisms that could reduce the incentives to invest: the excess of profit can be captured by labor unions, the ceiling of production in OPEC countries in response for price increase can leaves little reason to invest in Oil sector, increase in income could lead to labor supply decline, etc. Therefore, there is no determined answer to how investment will react to oil price shock.

As real income increases we should expect the increase in savings. For a given level of investment, this will improve current account. However, if price shock turns into investment increase and assuming high import content of capital goods (which is quite a reasonable assumption with respect to developing countries) we could expect a temporary current account worsening due to increase in capital good imports.

**Empirical studies of “Dutch disease” effect**

Around a half of export earnings of developing countries comes from the export of primary commodities. The price of such commodities on the world market is highly volatile. Therefore, the overall external earnings of these countries are subject to extreme fluctuations. Besides short term changes commodity prices also exhibit long-term systematic movements. For example, the World Bank’s index of non-oil commodity prices shows a trend decline of about 1.5% per annum since 1948, cumulating to a 50% decline over 45 years. The forecast of World Bank for the next ten years is the reversal of the trend and a rise in the price level at the rate around 0.7% per annum. The question that arises is how the long-term changes in the external terms of trade affect the countries’ economic growth and development?

Looking at the experience of oil-exporting countries seems to be very relevant for analyzing this problem. The behavior of oil price on the world market shows the periods of sharp increases and
declines. Besides high short-term volatility a longer periods of persistent changes can be singled out. A major rise in the oil price happened between 1973 and 1981 (nominal price increased from $2.7 to $34.3 which using US PPI implies real increase in 580%), followed by a smaller but substantial decline between 1981 and 1989 (in real terms by 50%). Another important characteristic of these changes is that they were unanticipated.

**Cross-country studies**

Gelb (1988), Auty (1990) documented many of the development problems of natural resource dependent economies without showing the inverse association between natural resource intensity and economic growth. At the same time in empirical estimation of cross-country data Sala-i-Martin (1997), Doppelhofer et al. (2000) classify natural resources as one of the ten most robust variables negatively affecting countries economic growth.

A number of papers by Sachs and Warner (1995, 1997a,b, 1999a) devoted to the investigation of this problem. A cross-country econometric estimation (79 countries over period 1970-1990) indicates the negative relation between resource abundance and growth after controlling for a number of additional variables. Using natural resource export (which includes export of primary agricultures and basic metals and minerals) as a proxy for natural resource abundance Sachs and Warner estimated the coefficient on this variable which implies that an increase of one standard deviation in these variable was associated with a reduction in annual average growth of 0.39%, which is equivalent to 7% reduction of per capita GDP over 20 years.

Other results of these regressions indicate that resource abundant countries tend to have a larger service sectors and smaller manufacturing sectors than resource-poor countries, that countries that followed open trading policies tended to have higher growth in manufacturing sectors and after controlling for this resource poor countries tend to have faster growth in manufacturing exports.

However, the author stress that their study cannot distinguish among possible channels of the negative influence of resource abundance on the growth: the “Dutch disease” effect, political instability, costs of higher variability of export earnings, etc. They indicate that more analysis is needed for this purpose. This is quite a general remark with respect to growth regressions based on the cross-country data. Sachs and Warner (1999a) argue that cross-country evidence needs to be complemented by time-series evidence to study natural resource booms on economic long term growth because it is still an open question whether the observed negative association between growth and resource abundance is due to the fact that resource rich countries are more likely to experience resource booms or whether other important reasons (such as policy features) associated with resource abundance cause slower country growth.
**Time series analysis**

Warner (1992) studied the effect of international debt crises of 1982 on the investment decline in 14 developing countries. One of his results indicates that controlling for other shocks, the fall of export prices that happened along with the debt crises could partially explain the fall in investment on these countries. Studying the episode of Mexican investment decline in the beginning of 1980s Warner (1994) shows that the investment decline was due to rise in relative price of imported capital goods which in turn was due to falling world oil prices.

Spatafora and Warner (1995) studied the sample of 18 oil-exporting developing countries (Algeria, Bahrain, Congo, Ecuador, Egypt, Gabon, Indonesia, Iran, Iraq, Kuwait, Mexico, Nigeria, Oman, Saudi Arabia, Syria, Trinidad and Tobago, United Arab Emirates, and Venezuela) over the period from 1965 to 1989. They find strong evidence of the positive effect of the terms of trade shock on domestic investments. Due to lack of data on sectoral disaggregation of investment they find indirect evidence indicating that much of the investment increase occurred in the non tradable sector of the economies. For most of countries in their sample they also find the positive effect of terms of trade shock on consumption and no effect on savings. Their analysis also suggests that government consumption may respond almost twice as strongly as private consumption does. Given the lack of an impact on saving and a strong positive effect on the consumption and investment one should expect the negative effect of terms of trade increase on current account and this hypothesis was supported for all countries in the sample. Strong real exchange rate appreciation was observed for all countries in the sample except one, for which the effect was insignificant. The associated increase in value added in all non-tradable sectors authors interpret as the evidence in favor of spending effects as a key mechanism in the transmission of terms of trade shocks to the rest of the economy.

In order to estimate the “Dutch Disease” effect the authors use agriculture and manufacturing sectors as the closest approximation for Tradable good sectors. However, they were unable to detect any significant contraction in either of these sectors in response to a rise in oil-prices. The suggested explanation of this finding lies in the enclave feature of the oil sector, which does not participate in the domestic factor market. Estimating the overall effect of oil price shocks on the growth of the economy the authors separate the oil sectors from the rest of the economy and have found the positive effect of shocks on non-oil GDP driven mainly by the expansion of non-tradable sectors, which the authors consider to be the consequence of investment increase.

How different is the behavior of developed countries with the respect to oil price fluctuation?
Hutchison (1994) exploit technique of econometric analysis similar to Spatafora and Warner (1995) to investigate the “Dutch disease” effect in the experience of three developed countries: the Netherlands (1967-1989), Norway (1976-1989) and the United Kingdom (1976-1989). Common to these three countries is the large role of petroleum or natural gas energy sector in their economies. The vast Slochteren natural gas field in Groningen province in the Netherlands was discovered in 1959. The subsequent experience of this country: rapid growth of energy sector along with the contraction in other tradable sectors, give the name for such phenomenon as “Dutch disease”. Decade later oil was discovered in the Norway and British sectors of North Sea. Along with the sharp increase in oil prices in 1970s all these countries change their positions from net importers of energy resources from world market to net exporters. Therefore, according to the theory the evolution of structural development of these countries can be exploited to verify the presence of the “Dutch disease” effect.

The simple analysis of statistical data on these countries indicates the rapid growth of total energy production between 1970 and 1980: (in millions of tons of oil equivalent) from 9.0 to 61.2 in Norway, from 29.7 to 73.0 in the Netherlands and from 101.8 to 197.7 in the UK. Along with this the decline in the share of manufacturing value added was recorded: real manufacturing output was stagnant in Norway since its peak in 1974, in the UK the contraction was so large that production level had not approached the peak of 1973 until the late 1980s, while in the Netherlands manufacturing slowly grows and the volume index of manufacturing growth was around 30% between 1974 and the end of 1980s. Along this time service sector steadily rise in all countries.

However, while these summary statistics support the predictions of “Dutch disease” effect, the formal statistical analysis of time serial data do not indicate any clear long-term tradeoff between development of the energy sector and subsequent developments in manufacturing. According to variance decomposition no more than 12% of manufacturing output variance can be attributed to the developments of energy sectors in these countries. As far as the short-term effects are concerned only for Norway the statistically significant negative effect of the energy boom on the manufacturing growth was determined. It is not surprising given the most significant increase in the growth of oil extraction in this country.

The author explores other reason that could have effect on the stagnation of manufacturing sector over that time such as a temporary cyclical phenomenon associated with contractionary financial policies and world-wide energy price increase. Such views were supported by other researchers: Buiter and Miller (1983) argue that highly restrictive policy of Thatcher government reinforced the fall in aggregate demand and drop in manufacturing output in the UK over that time,
Bruno and Sachs (1982b) and Bean (1987) found that oil price shocks transmitted a substantial contractionary influence on manufacturing sector since energy is used as intermediary input in manufacturing production. Indeed, the author finds support to the view that for the UK the factors such as worldwide fluctuation in energy price and monetary conditions systematically and predictably influence manufacturing production rather than North Sea oil.

What is interesting that for the Netherlands, for which the term “Dutch disease” was initially applied, very little systematic and long-term negative effect of gas development on manufacturing output was found. On the contrary, for both the UK and the Netherlands more evidence indicate a positive effect on manufactures from energy boom in the short-run that can be regarded as a support in favor of the spending effect rather than resource reallocation effect in response for energy sector development.

Therefore, time series analysis of the developing and developed countries find a very little support that the national de-industrialization is the inevitable consequence of the energy sector booms.

Looking for “Dutch Disease” in Russia

Within Russian economy the natural resource rich sectors play an important role. However, there are some problems with identifying the correct proportions of GDP structure. According to Goskomstat data 40% of Russian GDP is production of goods and 60% - production of services, share of oil and gas sector is around 9% of GDP, while export revenues from oil and gas account for 20% of GDP. World Bank report (WB (2004)) argues that Goskomstat estimations are quite distorted by transfer pricing that takes place in vertically integrated producing and trading companies in natural resource dependant sectors. This leads to the underestimation of the share of resource-rich industries and overestimation of service (trading) sector in the production structure of the economy. Using trade margins from statistics of other countries (UK, Canada, Denmark) along with input-output table of Russian economy World Bank reestimates the shares of these industries and finds that the share of oil and gas industries could be as large as 25% of GDP, while trade sector declines from 30 to 10 percent of GDP.

Table 1. Russian GDP 2000 by sector of origin, basic prices.

*Source: WB Russian Economic Memorandum (2004)*

<table>
<thead>
<tr>
<th>Share in published Russian GDP, %</th>
<th>Adjusted Russian GDP</th>
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<tr>
<td></td>
<td>UK margins</td>
<td>Dutch margins</td>
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<td></td>
<td>Share in GDP, %</td>
<td>Change in share, %</td>
<td>Share in GDP, %</td>
</tr>
<tr>
<td>Industry - total</td>
<td>31.8</td>
<td>51.6</td>
<td>19.8</td>
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</table>
The next graph represents the Russia’s 2002 oil balance (EIA Country Analysis Brief (2004)). Blocks are sized to show proportionally where the oil goes as it moves from the well to the end-user. As the chart shows export of crude oil play a very important role with roughly half of crude production being directly exported and the remaining half is refined domestically.

**Figure 1 Russia's Oil Balance, 2002. Source: EIA Country Analysis Brief**

<table>
<thead>
<tr>
<th>Type</th>
<th>2002</th>
<th>2001</th>
<th>2000</th>
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<tbody>
<tr>
<td>Electro energy</td>
<td>2.8</td>
<td>2.8</td>
<td>0.0</td>
<td>2.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Oil and gas total</td>
<td>8.8</td>
<td>25.2</td>
<td>16.4</td>
<td>24.9</td>
<td>16.1</td>
</tr>
<tr>
<td>Oil extraction</td>
<td>6.5</td>
<td>12.9</td>
<td>6.4</td>
<td>12.9</td>
<td>6.4</td>
</tr>
<tr>
<td>Oil processing</td>
<td>1.2</td>
<td>5.0</td>
<td>3.8</td>
<td>4.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Gas</td>
<td>1.1</td>
<td>7.3</td>
<td>6.2</td>
<td>7.3</td>
<td>6.2</td>
</tr>
<tr>
<td>Coal</td>
<td>0.5</td>
<td>1.2</td>
<td>0.7</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Ferrous metals</td>
<td>2.3</td>
<td>2.4</td>
<td>0.0</td>
<td>3.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Nonferrous metals</td>
<td>3.3</td>
<td>3.4</td>
<td>0.1</td>
<td>4.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Chemicals</td>
<td>1.9</td>
<td>2.9</td>
<td>0.9</td>
<td>3.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Machinery</td>
<td>5.1</td>
<td>5.3</td>
<td>0.2</td>
<td>5.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Trade</td>
<td>30.8</td>
<td>11.0</td>
<td>-19.8</td>
<td>9.4</td>
<td>-21.4</td>
</tr>
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</table>

The oil and gas sectors in Russia account for more than 30% of total government revenues. Such strong dependence on resource revenues is a common characteristic of resource-rich countries. For comparison, the petroleum industry is the mainstay for Venezuela's economy accounts for more than three-quarters of total Venezuelan export revenues, about half of total government revenues,
and about one-third of GDP, Gabon’s exports (Sub-Saharan Africa's third largest petroleum producer) of crude oil account for around 60% of the government's budget, 80% of total export revenues, and more than 40% of GDP. The extreme case is Saudi Arabia where oil export revenues make up around 90-95% of total export earnings, 70%-80% of state revenues, and around 40% of the country's GDP (EIA Country Analysis Brief (2004)).

Rautava (2002) uses time-series analysis technique to demonstrate that there is a significant dependence of Russian GDP and government revenues on the world market determined oil price. The author uses quarterly data on Russian GDP, budget revenues, real exchange rate and oil price and shows that a 10% permanent increase in the level of international oil prices would in long run cause the level of real GDP to increase by 2.2% and 3.0% increase in change in federal real revenues. Analyzing short-run consequences of oil price change the author finds that there is no significant effect on real GDP while there is significant effect on budget revenues.

Another indirect evidence on the role of oil prices in Russian development can be inferred from the following graph (Fig. 2). It shows close link between the oil price and the level of fixed investments in Russian economy. Therefore, it is not only the level of GDP that is influenced by oil price but the growth rate of economy that is subject to variation due to oil price fluctuation on the world market.

Fig. 2 Investment level and oil price. Source: Yudaeva et al. (2004)

Most of researchers attribute a high growth rates that Russia achieved over last 4 years to high oil prices (EIA Country Analysis Brief (2004), Rautava (2002), WB Russian Economic memorandumt (2004)). At the same time the 4-fold increase in oil price over last 4 years also cause
worry with respect to Dutch Disease effect that can influence the further development of the country: real wages grew three times faster than productivity over 2003-2004. Sosunov and Zamulin (2004) analyzing the main reasons for 50% Russian ruble appreciating over the period 1998-2003 indicate that it can be explained by a combination of the oil price increase and increase in the volume of oil export. Therefore we could expect the Dutch Disease effect to be quite important for current Russian economy.

Looking at relative prices is quite useful in this respect (fig. 3). After the financial crises of 1998 service prices steadily increases relative to industry and food prices. However, to some extent the higher growth of service prices could be explained by their larger drop during the crises. Moreover, since correlation between both measures of relative price and oil price movement is statistically insignificant, it seems unlikely to explain the relatively faster service price increase by oil price increase.
The data on sectoral output dynamics (fig. 4) also do not support the existence of “Dutch Disease” effect in modern Russian economy. The lagging growth of services and retail turnover relative to machinery along with described above relative price movement do not fit the overall story behind the “Dutch Disease”.

The possible explanation for such counterfactual results can be that the reallocation of resources do not follow relative price movement. The reason for this could be low factor mobility that is documented in Russia in a number of researches.

Therefore, while the role of resource intensive sectors in Russian economy is substantial we do not observe the “Dutch Disease” effect in Russian economy either because of low factor mobility or insufficient time horizon of available data.

**Political economy features of natural resource abundant economies**

Because of their endowment nature and specificity of technology associated with their extraction (large fixed costs and small marginal costs) natural resources inevitably generates rents that will, in turn, generates rent-seeking behavior (the voracity effect), diverting resources from productive economic activity. Gylfason (2001) argue that the combination of huge resource rents, bad property right protection, imperfect and underdeveloped markets and judicial system may have very destructive consequences. The reason of many civil wars over the second half of 20th century was the attempt to gain control over natural resources’ induced rents. In less extreme cases the rent-seeking behavior induces corruption in business and government with the corresponding distortions of resource allocation in the economy. Using corruption perception index from Transparency International Gylfason (2001) demonstrates the significant positive bivariate relation between the
corruption level and the share of natural capital in total country national wealth for 60 countries in 1994. Of course, this kind of analysis can pretend neither for the causality nor for economic significance but still it provides a basis for future research.

Another consequence of such abundance empathized by Sachs and Warner (1999c) is the possibility that the abundant natural resources and persistent income flow associated with them may lead government to postpone the reforms necessary for improvement of country economic management such as free trade, bureaucratic efficiency and institutional quality or, in other words, abundant natural capital may crowd out social capital (Paldam and Svendsen (2000)).

Independently on what is the actual manifestation of government institutional weaknesses, either widespread corruption or low government incentive to create wealth through good economic policies all these consequences will inevitably damage countries’ development and growth perspective.

Looking what structural consequences will government institutional weaknesses lead to Auty (2001) develops “the competitive industrialization” and “the staple trap” models in which he compares the development of resource-poor and resource-rich countries with respect to industrialization. He distinguishes between two kinds of state –development and factional. The key characteristic of development state is a sufficient anatomy to pursue a coherent economic policy aiming to raise long-term social welfare. He argues that there are several reasons due to which this type of state is strongly associated with a poor natural resource endowment.

First, intensive pressure on limited natural resource rents creates a low tolerance by the poor majority for rent extraction. It increases the probability that the government will pursue the interests of low-income majority rather than industry-specific interests of particular pressure group. More open trade policy could be also one of the outcomes. Another outcome is the earlier diversification into competitive manufacturing. The reason is not only a fewer opportunity for a primary production but also the inability of a small resource sector or emerging manufacturing sector (with lower share of rent in this sector revenues compare to resource-rich countries) to support slow maturing protected industries or bloated government. Therefore the pressure for diversification into competitive manufacturing will happen at earlier stages of economic development in resource poor countries than in resource rich ones. Second, poor natural resource endowment creates incentives for efficient use of scarce resources and promotes market discipline and investment in more abundant assets, human and social capital.

The lack or delay in emergence of such mechanisms in resource abundant countries has a number of negative consequences. First, competitive industrialization initially occurs in primary
sectors, which significantly limits the possibility of product (and export) diversification. Second, sluggish industrialization slows down urbanization with the corresponding dilatory human capital accumulation. At the same time the prolonged phase of infant industry protection also creates a lot of distortions in the economic governance such as corruption, bad market discipline, inefficiency of investments and so on, which all contribute to the evolution of factional government. The author indicates that the economy can be locked in such “staple trap” of increasing dependency on commodities with declining competitiveness as ongoing structural changes shrinks the share of the primary sector in GDP and the protected manufacturing sector fails to mature.

To sum up, the staple trap model predicts slower human and social accumulation in the resource abundant countries as well as worsening of income inequality and economic growth.

A particular manifestation of low institutional development and its role in the country growth can be found in a numerous evidence of resource revenue wastes that accompany resource windfalls in a number of developing countries. Tornell and Lane (1994) documented a number of stories that can demonstrate the role of institutions in propagation negative effect of resource abundance. Because of coffee shock of 1975 Cameroon experienced a windfall equal to 9% of GDP during 1976-1979 and its current account improved by 0.4%. At the same time Costa Rica and Cote d’Ivoire which enjoyed windfalls of 11% and 20% correspondingly, managed to spend more than entire windfall: their current accounts deteriorated by –1.7% and –5.7% respectively. The authors consider fiscal policy to be responsible for such counterfactual outcome. Namely, they argue that it is government spending rather than private absorption that is the most important mechanism by which terms of trade shock are transmitted to the current account. Given huge resource generated windfall the fiscal authorities are less committed to follow strict rules of budget regulations and less able to stop the demands for greater fiscal resources from strong fiscal claimant. However, in most of cases because of their inefficiency government spendings on investment projects not only lead to current overspendings but also are unable to generate any important economic growth in future. Multiplied by widespread corruption the losses not only balance the volume of windfalls but in many cases even exceed them.

The Nigerian experience is the one that especially cited in this respect (Sala-i-Martin and Subramanian (2003)). Over the period 1978-1980 in nominal terms Nigeria’s exports increased from $12 bln to $28 bln. Then in two years it felt again to the level of $13 bln. The intense competition of regional governments for federal resources during oil boom led to huge losses. For example, one of the outcomes was the duplication of investment projects with large scale steel mills being constructed in two regions. The estimated cost of each plant was $1 bln. It turned out, however, to
be $6 bln. altogether. None of the plants has operated at more than 25 percent capacity till now (Tornell and Lane (1994)).

**Russian institutional underdevelopment and natural resources**

In the process of transition from the central planning to market economy in the past 15 years all structural components of Russian economy have experienced dramatic transformation. It specifically concerns the institutional structure: both market and governmental institutions have been created from the grounds. Both remain quite fragile and underdeveloped. In these circumstances we could expect that all range of problems that arise due to institutional drawbacks in the natural resource economies could be found in Russian economy especially in the period of high oil prices.

The importance of market institutions is emphasized by the fact that in the presence of competitive good markets most of the rent generated by the resource rich sectors will dissipate which will nullify the related problem: huge rents in the natural resource sectors do not create the incentives for structural reforms and, on contrary, create strong pressure groups fighting to prevent the efficient allocation of these rents. Therefore the widespread liberalization of the energy and fuel industries should be an important measure helping of the dissipation of the rents.

Oil sector in Russian economy seems to be quite competitive. Five largest companies (Yukos, LUKoil, Surgutneftegaz, Tyumen Oil Company and Sibneft) accounted for roughly 70% of the country’s oil production. The other 30% belongs to nearly 150 small-to-medium sized oil producers. At the same time, the crude oil exports via pipeline fall under the exclusive jurisdiction of Russia’s state-owned pipeline monopoly Transneft, which capacity incapable of meeting oil producer’s export potential. Recently, given huge increase in oil prices Russian oil producers redirected their surplus oil via railroad and river transport to foreign markets. The Russian government is acknowledged the capacity problem and takes some measures to develop new export facilities. However, at issue is not only the direction and scope of country’s export infrastructure development, but also the potential role that private firms and investors may play in these projects at the expense of stat monopoly Transneft. Since a big share of the oil rents is generated in the oil transportation system liberalization of this sector should be one of the important measures in the direction of overcoming resource dependence.

While oil industry was one of the first in the Russian economy that was subject to privatization reforms in gas industries were delayed indefinitely. Gazprom, Russia’s state natural gas monopoly produces nearly 90% of Russia’s natural gas and operates the country’s natural gas pipeline grid. Gazprom is also Russia’s largest earner of foreign currency and the company’s tax
payments account for around 25% of federal tax revenues. Because of this the domestic regulation of the company is enormous. Gazprom must supply the natural gas to domestic market at regulated prices despite the profitability. Along with complete non-transparency of the company governance this create an enormous possibility for rent seeking and now is widely recognized as the most severe problem in further restructuring of the economy.

Between these two extremes is the electric industry development that is now in the middle of reformation period. Since Soviet period, Russia's electricity sector has been dominated by Unified Energy Systems (UES), which is 52%-owned by the Russian government. UES controls around 70% of the country's distribution system and oversees Russia's 72 regional electricity companies. Reforms in the industry began in March 2003. According to the reform package, tariff rates on the domestic market could be liberalized by July 1, 2005, and UES should be liquidated beginning in 2006. UES's generation and distribution facilities are expected to be privatized, while the country's transmission grid will remain under state control.

Institutional development of markets other than goods’ is no less important with respect to the discussed problem. Current problems with corporate governance in Russia accompanied by loose rule of law create huge costs associated with investments and prevent a number of investment projects with positive net present values to be carried out. It means that only extremely profitable projects will find financing while less profitable will remain not undertaken since investors know that they may have large costs imposed on them if they appear to be profitable. It seems reasonable to expect that in this case most of financed projects will be in the sectors related to natural resources. Therefore bad corporate governance along with inefficient laws will channel inflow of investment capital mostly toward resource intensive industries. In these circumstances extra efforts of the government to diversify economic structure by any instrument that will do Russian economy more attractive for foreign and domestic investors will not only fail to solve the problem but will aggravate it.

Similar arguments can be applied to the development of financial market institutions. In a perfectly competitive economy with developed financial markets one could expect that the problem of resource dependence will dissipate by its own: financial markets will tunnel financing not only to short-term highly profitable projects but also to projects with longer maturity. By this more economic diversity will be generated both in terms of cross section and dynamic structures. It is worth to mention that the problems of financial market development, corporate governance and rule of law are closely related one to another because of their very nature – informational asymmetry that
lies behind all of them. No one of the problems could be resolved without solving the others. Therefore reforms and efforts on mitigating all these issues should be well coordinated.

The further liberalization of fuel and energy sectors, financial market, corporate governance and rule of law is accelerated by the pressure of Russian's foreign trading partners, who are pressuring the Russian government to synchronize their policies with those in Western Europe and North America, particularly vis-à-vis Russia's aspiration towards the World Trade Organization (WTO).

The role of Russian accession to WTO is also important with the respect of mitigating natural resource dependence problem because of stronger commitment of the government to open trade policies and faster reforms toward more liberalized markets in all economic spheres. This in turn will play an important role in further development of governmental institutions.

The problems with Russian governmental institutions are quite known and widely discussed in the society. The high level of bureaucratization and administrative barriers prevent free mobility of resources in the economy and contribute to the economic inefficiency. The efforts of the government over last three years to mitigate this problem face severe obstacles at the local level. Another side of underdeveloped governmental institutions is the widespread corruption. Both Transparency International that compiles annual ratings of countries’ “perceived corruption” and the World Bank that compiles a similar composite rating score Russia toward the bottom. For instance, in the 2001 version of the World Bank’s corruption index, Russia was 142nd out of 160 countries. In Transparency International 2002 corruption perceptions index, Russia came 71st-76th out of 102 along with Cote d’Ivoire, Honduras, India, Tanzania and Zimbabwe. Thus we could expect that the problem of wasting resources may be quite strong in Russian economy. One of the possible way to measure this problem is to look at the structure of the sources of investment financing in the economy (fig. 5).
The data indicate that the role of budget financing of the investment projects steadily declines in Russia over last 6 years while the role of other external sources constantly increases and provide some support for the hope that Russia will avoid the inefficient spending of resources on publicly financed investment projects.

To summing up we need to emphasize that while the problems of institutional underdevelopments imposes a persistent danger for Russian economy in a number of respects the natural resource abundance make these problems even more severe. At the same time without fundamental institutional reforms to achieve better governance, the rule of law and financial sector progress the economic diversification problems could not be solved.

Policy conclusions

What policy recommendations could we infer from this discussion? Are there opportunities for the government of the resource rich country to ensure that the access to natural resources is a blessing rather than a curse? While there is no direct and fully encouraging answers there are a number of useful recommendations based on both theoretical analysis and empirical data.

The overall performance of developing countries over last 25 years shows enormous progress in diversifying their exports from resource dependence. Martin (2004) provides data on the patterns of merchandise exports from developing countries demonstrating that while in the late 1970’s agricultural and mineral commodities accounted for about 75% of exports from developing
countries, by the late 1990s this share had fallen to less than 20%. Among reasons that could be responsible for these changes the author emphasizes the substantial decline in the extent of protectionism in developing countries since the early 1980s and essential improvement of market and physical infrastructure. He concludes that the acceleration of physical and human capitals accumulations, more openness of the country to trade, stimulation of technological changes in all sectors but particularly in the manufacturing and service sectors that are likely to lie on the evolution of the country’s comparative advantage, reforms aimed at reduction in transport and communication costs should be the major tasks of the government of natural resource abundant country. The key role of the government in these circumstances is emphasized by the fact that many important market and legal institutions are very weak and sometimes missed in developing countries.

The importance of “good” government policies should be stressed in a number of respects. Gylfason (2001) argues that it is not the existence of natural resources that seem to be the problem but the failure of the governments to prevent the dangers that accompany the gift of nature. Good policies can turn abundant resources in higher wealth and prosperity for current and future generations. The Norway example could be used as a guide as the countries are looking for right instruments. By law Norway’s oil wealth is a common-property resource and the government takes in about 80% of oil rent through taxes and fees. Then the government invests oil money in foreign securities in order to distribute oil revenues fairly between current and future generations while preserving today economy from overheating. Among the major government concerns are education and the proportion of each cohort attending colleges and universities increased from 26% in 1980 to 62% in 1997. An overall wealthy history of Scandinavian economies is a combination of education promotion and successful attraction of capital-intensive industries (Leamer et al. (1999)).

On contrary, the government policies with respect to savings and spending in a number of developing countries raise a lot of concerns. Farzin (1999) examines the optimal saving policy for a small exhaustible resource-exporting economy and compares it with the actual saving rates of 14 oil- and other mineral-exporting economies. His results indicate that these countries substantially under saves. This, first of all, prevents future generations from enjoying mineral rents and what is more important does not allow current generations to get easier access to modern education because of private and public under investment in human capital development. While in the world 64% of kids have access to secondary education this figure is 57% for OPEC countries. The world as a whole spends around 5% of the GNP on education while OPEC countries less than 4% (figures for 1997 from Gylfason (2001)).
One of the declared priorities of the Russian government is the decoupling of economic growth from commodity export. What instruments can be used for such purpose? Eismont (2000) argues that one of the instruments is the tax reform that will put more tax burden on natural resource sector while providing more incentive for investments in the other manufacturing sectors. Actually this argument was quite important some time ago: at the end of 90-s the overall tax burden on natural resource sectors were incredibly low, sometimes 30% lower than the rest of the economy (table 2)

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil sector</td>
<td>22.8%</td>
<td>33.3%</td>
<td>46.9%</td>
<td>42.6%</td>
<td>41.3%</td>
</tr>
<tr>
<td>Gas sector</td>
<td>29.7%</td>
<td>36.7%</td>
<td>47.5%</td>
<td>39.0%</td>
<td>32.9%</td>
</tr>
<tr>
<td>Rest of the economy</td>
<td>32.8%</td>
<td>33.7%</td>
<td>31.7%</td>
<td>32.3%</td>
<td>31.6%</td>
</tr>
</tbody>
</table>

Source: Gurvich and Vasiljeva (2004)

Tax reforms over the beginning of 2000-s improve the situation and now the tax burden on oil sector is 30% higher than on the rest of the economy (this figures are estimated taking into the account the extent of transfer pricing in the economy). Situation in the gas sector also changes however at much lower degree which reflects the overall slower path of reforms in this sector. It is hard to give precise estimations on whether the current tax receipts from oil and gas sectors are sufficient and allow to extract enough rent. An overall impression of economists in Russia is that there is still a room for increasing taxation as compared, for example, with Norway (Margolin and Semenov (2004)). However, we need to remember that the widespread practice of transfer pricing in Russian economy leads to shift of significant part of value added from natural resource rich industries to services therefore raising doubts in the ability of fiscal system to be used as an instrument for the declared goal. Moreover, further increase in taxation of resource rich sectors without overall improvement in tax administration, simplification and transparency of tax system could lead to opposite results: instead of rent extraction increase from resource sectors we could get further accumulation of structural disproportions and distortions.

One of the possibilities to diminish the negative consequences of the Dutch Disease effect is to mollify the spending effect due to the extra foreign currency revenues. Since the government is the active consumer in the economy and it gets a big share in the extra revenues through taxation the freezing of some of these extra revenues could be quite a ‘good’ policy to mitigate the spending effect across the economy. In 2001 the government reached a decision to create a stabilization fund committing itself not to spend surplus revenue in 2001 and planning a surplus of 1.6 percent of GDP in the budget for 2002. Due to the strong dependence of the federal budget on oil and gas prices the
stabilization fund could play an important role in lessening the pressure of excess revenues on the exchange rate and real wages. Similar funds have been created in a number of other countries that face fiscal risks due to commodity price fluctuation. Still the question of a relative size and a managing regime of this fund involve a careful consideration and given a bad demographic situation in the country, pressure over poverty decline and other social targets it seems that the government commitment over the fund could be seriously shaken.

The intelligent management of the stabilization fund will play an important role in the diminishing influence of the fluctuation of export earnings of the economy and federal budget revenues, therefore allowing country’s consumption smoothing. However at the beginning of 2004 we have already observed that the tension of interest groups regarding the access to stabilization fund resources increased substantially and the government is already eased to allow some portion of money from the fund to be spend on consumption purposes. This undermines the idea of stabilization fund as a measure to smooth consumption and decrease revenue fluctuations. This means that the legal basis of stabilization fund management need to be carefully revised to allow the fund to serve its main purposes.

As we mentioned above we do not observe now that Russia spends current windfall for a waste. However there are some worrying sighs that can change this tendency. The creation of Government Committee on National Competitiveness seems to impose some danger in this respect. If this committee will not only serve as advisory body but also will be allowed to distribute budget money it will worsen the situation considerably. There are a lot of evidence that not only in developing countries but in the developed as well the economic efficiency of state investment projects is much lower than the private ones. It diminishes The state can not be allowed to be a sole judge in identifying the sources of ‘national competitiveness’.

One of the measures to prevent excessive government involvement in inefficient spending of resources revenues should be increased transparency and accountability in the management of these revenues. For this the overall reform of governmental institutions is required. Administrative and tax reform that will provide the clear and reasonable responsibilities and revenue sources for each level of the government will considerably decline the extra costs due to corruption, economically unjustifiable resource movements across the economy, etc., and will serve the increased economic efficiency.

Summing up, we can conclude that while we do not observe any significant evidence in favor of “Dutch Disease” effect spreading across Russian economy the danger of resource dependence negative effect on Russian economic development still remains because of
underdeveloped market and governmental institutions. Without the complex reforms with respect to improvements in corporate governance, rule of law, financial system, government transparency and accountability the goal of increased diversification of economic structure could not be achieved.

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