Is Russia's Growth a "Flash in the Pan?"

Daniel Berkowitz*
Department of Economics
University of Pittsburgh
Pittsburgh, PA 15217

Yadviga Semikolenova**
Division of Economics and Business
Colorado School of Mines
Golden, CO 80401

August 30, 2007

Abstract

Russia's impressive growth record since 2000 may be a "flash in the pan" because high oil prices enable the government to engage in rent-seeking. We document that the Russian crude oil pipeline is a potentially massive source of rents and we use detailed shipping data to check for whether the Russian federal government extracts rent from it. We find that by 2005 the Russian federal government uses cost-based criterion including company-level transport costs, production costs and productivity to determine the allocation of export routes on the crude-oil pipeline. Moreover, federal ownership positions in companies are more important determinants export access at the beginning of the Putin regime in 1999. Thus, by 2005 the Russian federal government appears to be controlling its rent-seeking activities. These results suggest the recent Russian growth may be sustainable.

*** dmberk@pitt.edu**
**** yadvigas@mines.edu**

This research was funded by the Davidson Institute at the University of Michigan, the Kennan Institute at the Woodrow Wilson International Center for Scholars, the Center for Industry Studies, the Center for Russian and Eastern European Studies and Associate Dean for Graduate Studies and Research at the University of Pittsburgh. We thank Svetlana Anisimova, Jagdish Bhagwati, Michael Cohen, Esther Gal-Or, Frank Giarratani, Alexis Leon, Jean-Francois Richard, Chad Syverson, Daniel Treisman, Nese Yildiz and participants at the Scientific Conference in Celebration of Padma Desai for their comments.

1. Introduction

Since 2000, real GDP in Russia has grown at impressive annual average rate of 6.8% (UN Statistics Division, 2007). This growth record is illustrated in Figure 1. Desai (2006) provides compelling evidence that these high oil prices have driven a surge in export revenues that accounts for a large share of the growth since 2000. This relationship between oil prices and growth is illustrated in Figure 2: here, world spot market prices for Russian oil bottom out in 1998 and per capita GDP bottoms out in 1999; both series grow and exhibit some co-movement during the period 1999-2005.

High oil prices are problematic for two inter-related reasons. First, the tax revenue from oil exports enables the Russian government to delay deep structural reforms that are necessary for sustainable growth (see Berglöf, et al, 2003). And, secondly, the easy money associated with high oil prices can create opportunities for rent seeking.[1] Thus, Russia's may be a "flash in the pan", i.e., just fortuitous due to the dramatic increase in oil prices which may be reversed.

In this paper we document that the Russian federal government's near monopoly control over the crude oil pipeline is a massive source of potential rents. We then use detailed export shipping data during 1999-2005 to test for whether the Russian federal government has used its control over the oil pipeline responsibly or to extract rents. We find that by 2005 the Russian federal government uses cost-based criterion including company-level transport costs, production costs and productivity to determine the allocation of export routes. Moreover, federal ownership positions in companies are more important determinants export access at the beginning of the Putin regime in 1999. Thus,

[1] Another problem is the well known Dutch disease, meaning that the surge in oil production and exports hurts the domestic manufacturing sector because the ruble has appreciated. We ignore this issue because Desai (2006) shows that there is no Dutch disease in Russia.

by 2005 the Russian federal government has managed curtail its rent-seeking activities. These results provide some support for the view that Russia's recent growth surge is sustainable

Over 95% of total crude exports from Russia are transported through a system of trunk pipelines. The system is state-owned and operated by a 100% federally-owned company, Transneft[2]. This export system is capacity constrained; moreover there are relatively cheap routes, for example, those terminating in the Russian Black Sea ports, and there are relatively expensive routes, for example, those requiring trans-shipment across second or third countries such Belarus and the Ukraine. Moreover, the export price of crude oil is typically higher than the domestic price. Thus, the federal government can use its control over the oil export pipeline to extract rents.

To determine whether or not the government uses the pipeline to extract rents, we use the theoretical analysis of "hold up" and privatization developed by Boycko, Shleifer and Vishny (1996).[3] This theory, when applied to institutional setting of the Russian crude oil sector, predicts that the way in which the government allocates access to export routes depends upon its ownership positions within that company. The government can use its control over access to the pipeline to hold up any company. When the government imposes quotas on enterprises over which it has substantial cash flow rights, it must also bear the financial costs of this diversion of oil from lucrative world markets. This implies that a rent-seeking government is more likely to impose costly regulation on companies owned largely by outside investors and regional governments. However, a government

[2] As of April, 2005, 100% of common stocks of the company belong to the Federal Agency of Federal Property Management (Transneft, 2005).
[3] The classic reference to hold up is Grossman and Hart (1986).

that uses its control responsibly employs cost-based criterion such as distance to port, company-level productivity and production costs to determine access to particular routes.

To measure federal ownership, we categorize oil companies into state-influence companies that have a substantial federal government presence on their board, and state-independents that do not have a federal presence on their board.[4] The federal government is engaged in rent-seeking when it provides preferential access to export routes to state-influence companies. And, the federal government is an efficient regulator when it provides no preferential access, and access to routes is based on a company's production costs, distance to destination and productivity.

We find that in 2003 state-independent companies had to be much more productive than state-influence companies to receive comparable access to world markets; state-influence companies had preferential access to all the export routes; and, the allocation of route capacity was sensitive to production and transport costs only in the state-influence sector. However, by 2005 there is no noticeable discrimination between state-independent and state-influence companies and the allocation of routes is based on company level costs and productivity. Thus, the Russian federal government clearly used it control over the pipeline responsibly by 2005. It is arguable that other rent-seeking methods were used in the oil sector such as direct bribes in 2005. We argue that this interpretation is not plausible since Transneft's ratings by international credit rating agencies improved during 2002-2006, and these rating in part account for transparency and corruption.

Our conclusions are controversial because there is evidence that the Putin administration has used its oil pipeline network as a weapon of political and economic

[4] See section 2.1 for a comparison of our company classification scheme with the influential scheme developed by Guriev and Rachinsky (2005).

pressure. For eample, in January 2007 Russia shut down all oil deliveries to Belarus (including those going to Western Europe through Belarus) after Belarus refused to pay oil customs duty and introduced tariff on Russian oil transits[5]. Oil exports were renewed only after Belarus revoked transit tariff. As a result of halted Russian exports through Belarus, Germany, Poland, Slovakia and Hungary were left without Russian oil shipments and had to tap into their strategic reserves (Financial Times, 2007). Half a year earlier, in July 2006, Russia shut the pipeline delivering oil to Lithuania's sole refinery allegedly because of a leak, but a lot of experts claimed that the shut down was caused by the decision of Lithuanian government to sell the refinery not to a Russian, but to a Polish company (Kramer for New York Times, 2006). Our results suggest that this kind of political interference is temporary and of second order importance. Moreover, the regulation in place by 2005 is a major improvement over the chaotic allocation system in 1999 at the beginning of the Putin regime.

The rest of this paper is organized as follows. The next Section describes the evolution of ownership and structure in the Russian oil sector; Section 3 describes how the federal government controls oil transport then uses this institutional information to generate predictions about how a rent-seeking government would allocate access to the pipeline; Section 5 tests our theory and Section 6 concludes.

[5] Belarus used to buy Russian crude oil duty free as a part of the Customs Union Agreement with Russia. In late December 2006, Russia decided to revoke oil trade preferences of Belarus and introduced oil customs duty of US$180/ton. The new export duty regime would have deprived Belarus's budget of US$1.7 bln (Ostrovsky for Financial Times, 2007). As a response, Belarus introduced $45/ton transit tariff on Russian oil exports going through Belarus to Western Europe to offset some of the damage. When Russia refused to pay, Belarus took 79,000 tons of crude from the pipeline as tariff payment.

2. Ownership and Structure

This section describes ownership trends and structural dynamics in Russia's crude oil sector based on state shares and federal government representation on company boards. We develop the distinction between state-independent and state-influence companies that is critical for our empirical work and provide some background on the evolution of the crude oil sector.

2.1 Ownership. Privatization of the oil sector was regulated by Presidential Ordinance #1403 approved on November 17, 1992 (President of Russian Federation, 1992). Vertically-integrated companies, for herein denoted "mothers" according to the Russian terminology, were created by joining some oil-producing enterprises and refineries into open-stock companies[6]. The shares of the newly-created mothers were distributed through several complex and frequently nontransparent auctions. The insiders who were allowed to participate in the bidding gained control over mothers with huge potential value in exchange for relatively small cash amounts (Megginson, 2005). Some of the smaller oil-producing enterprises were also transformed into open-stock companies and then later either became absorbed by a mother and/or had their stock allocations sold in an auction, or became joint ventures.

The privatization of mothers during 1997-2005 was partial because the federal government managed to maintain some substantial ownership positions. As it is documented in Table 1, during 1997-2005 there were three types of vertically-integrated oil companies: those fully owned by outside investors, companies where the federal government had majority or substantial minority shareholder positions (denoted **F** in

[6] An open-stock company publicly trades its shares; a closed-stock company distributes its shares through closed subscription based on the decisions of the company's founders.

Table 1) and companies where regional governments had substantial ownership (denoted as **R** in Table 1). In 1997 only four of the thirteen mothers were fully owned by outside investors, seven companies were either fully or partially owned by the federal government and two were owned by regional governments (the Republic of Tatarstan owned 30% of Tatneft and the Republic of Bashkortostan owned 63% of Bashneft).

By 1999 the federal government had managed to preserve its significant ownership positions in several companies and placed its representative on these companies' boards. In most of the cases, the federal government representatives were from the agencies that oversaw the oil sector. For example, LUKoil's board of 1999 included the Deputy Minister of Fuel and Energy, which at the time was responsible for allocating pipeline capacity for exports. Another member of the Board was the top manager of the State Antimonopoly Committee.

The regional governments also had influence on decisions of several mothers including Bashneft and Tatneft. However, we found no evidence that these regional governments had connection to the federal agencies that supervised the oil sector. Moreover, the regional governments in these Republics were highly independent and often pursued policies that conflicted with federal rules (see Treisman, 1999). Thus, regional government representation on the boards is unrelated to federal government influence.

The above analysis suggests that we can refer to state-owned mothers and mothers where federal government had significant interest as *state-influence companies*. On the other hand, regionally controlled and entirely private companies can be appropriately denoted as *state-independent companies*.

By 2003, privatization had progressed and there were only two state influence mothers: Rosneft and LUKoil. The federal government owned Rosneft (responsible for 5% of total Russian production in 2003) and had a significant share of 7.6% in LUKoil, the second biggest Russian oil producer after Yukos in 2003, and had seats on the boards of these companies.

By 2005, evidence of state interference in the oil sector was mixed. On the one hand, there is evidence of less interference because in September, 2004, the federal state auctioned off its shares in LUKoil to ConocoPhillips. However, there were two disturbing episodes where the state used its power to bully state-independent mothers. First, in December, 2004, Rosneft bought Yukos's biggest production subsidiary, Yuganskneftegas, in a controversial auction. As a result, Rosneft became the third largest mother and Yukos became one of the smallest mothers. Second, in October, 2005, state-owned gas company Gazprom bought 72.7% of Sibneft shares in another controversial transaction that made Gazprom the world's largest oil and gas company, while making Sibneft a state-influence mother.[7]

Our classification of the companies into state-influence and state-independent is similar to the one constructed by Guriev and Rachinsky (2005), who construct a classification of federal, regional, foreign and oligarch-controlled companies. However, there are some differences: since we are interested in state *influence* rather than state *control*, we rank regionally-controlled companies as state-independent and some privately-controlled companies as state-influence. In particular, in 2003 we rank Lukoil

[7] Since the formal transition of Sibneft ownership to state-owned Gazprom came through in late 2005, we code Sibneft a state-independent mother in 2005. Our results for 2005 still hold if we drop Sibneft from the sample.

as a state-influence company because of a substantial federal state ownership; Guriev and Rachinsky rank Lukoil as an oligarch-controlled company.

2.2. Structure. Russian crude production and exports have become more concentrated since 1997. By 2002, three firms (LUKoil, Yukos and Surgutneftegaz) were responsible for over 50% of total production and total exports: the 3-firm concentration ratio, R_3, in production grew from 0.40 in 1997 to 0.51 in 2002; R_3 in exports increased from 0.33 to 0.51 between 1997 and 2002, respectively[8] (see Table 2). These coefficients stayed virtually unchanged though 2005.

The expansion programs of LUKoil and Yukos during 1997-2003 suggest there are systematic differences between the operations of state-influence and state-independent mothers. The state-influence mother LUKoil acquired 33 new subsidiaries and the state-independent mother Yukos obtained 5 new subsidiaries. However, as Table 3 documents, the expansion programs were very different. By 2003, LUKoil improved its positions in Western Siberia where its productivity per well increased from 2.87 ton per well in 1997 to 6.11 in 2003; and, its acquisitions in the North were productive as well with 8.31 thousand tons per well in 2003. However, LUKoil also expanded into the old and over-exploited fields in the Urals where average productivity per well was 1.63 thousand tons in 2003. The state-independent mother Yukos, on the other hand, improved its existing position within Western Siberia only and its average productivity in the region increased from 2.68 to 10.78 thousand tons per well between 1997 and 2003.

[8] Concentration of Russian oil production sector is very high compared to other states where oil production is privatized. For example, in the United States, the third biggest oil producer in the world after Saudi Arabia and Russia, the 2-firm concentration ratio of oil production sector is 0.25; the three biggest US oil operators control only 33 per cent of total oil production (EIA, 2005).

Table 4 documents that whether we use return on assets or return on non-current assets (primarily property, plant and equipment), Yukos was more profitable than LUKoil during 1999-2003. Thus, Yukos appears to have pursued a more profit-driven expansion policy than LUKoil.

The expansion policies of the state-independent mother Sidanko and the state-influence mother Rosneft in 1997-2003 exhibit a similar pattern.[9] As Table 3 documents, Sidanko improved its productivity in Western Siberia from 2 to 7.4 thousand tons per well and its output in the less productive Volga region grew from 3.4 to 4.74 thousand tons per well. Rosneft, on the other hand, started developing the new North region, where it achieved productivity of 28.47 thousand tons per well, while maintaining less productive subsidiaries in the worked-out North Caucasus region that produced on average 1.31 thousand tons of oil per well. While we were not able to obtain financial data for Rosneft and Sidanko, the data suggests that state-independents were more profit-driven in their development policies.

By 2005, Rosneft, the only remaining state-influence mother, improved its position in Western Siberia by acquiring Yukos's biggest subsidiary Yuganskneftegas, and by selling off less efficient subsidiaries in North Caucasus and Volga regions.

In summary, the crude oil sector was highly concentrated during 1997-2005. Companies that remained state-independent appeared to be much more driven by economic criterion in 1997-2003. And, by 2005, Rosneft appeared to be concerned with improving the efficiency of its operations.

[9] We cannot make comparisons with other mothers because either they change ownership and/or they do not expand during 1997-2003

3. Control

3.1 Institutional Overview. In this section we argue that the federal government has the power to control exports because of its almost complete monopoly position as transporter of crude oil onto domestic-CIS and world markets. Because selling crude at world market is preferred to selling it domestically, this control over exports gives the federal government considerable leverage to "hold up" producers.

Exporting oil on worlds markets is generally more lucrative than shipping it to the domestic or CIS (countries such as Belarus and Uzbekistan that were former members of the Soviet Union that still enjoy preferential trade agreements) markets for two reasons. First, world prices for crude oil tend to be higher than domestic-CIS prices. For example, in February of 2003, local oil spelling prices were as low as $5 per barrel, compared to $31 per barrel on the world market (Raff, 2003). By the end of 2005, domestic prices increased to $26 per barrel, CIS prices for the Russian Urals blend ranged from $28.80 in Belarus to $47.70 in the Ukraine (Oil Export, 2005a; Oil Export, 2005b) and the average world market price for the Urals blend was $53.70 (Energy Information Administration, 2007). A second reason is that international buyers are more likely than customers in Russia and the CIS to pay in a timely fashion.

Over 95% of total crude exports from Russia are transported through a system of trunk pipelines that is operated by the federally owned company Transneft. The Transneft pipeline system had in 2001 the capacity to ship roughly 153-154 million tons (Oil and Capital, 2001). Since 2002, Transneft trunk pipelines have been operating at full capacity (Oil and Capital, 2004). As a result of system overload, available throughput capacity has to be rationed between the companies.

The export quotas allocation rules were introduced in 1994 and stayed practically unchanged through 2005. According to the official laws on the books in 1994 (Government of Russian Federation, 1994), export pipeline capacity is allocated between the oil companies according to a grandfathering rule: each company's quota is determined by its production in the past quarter. In particular, the allocation quotas depend on three factors: the capacity of the Transneft system, the production of an exporter in the previous quarter and, since 1997, her tax arrears (Government of Russian Federation, 1997). The rules are quite vague as to the exact relationships between past production, route capacity and current export access. Berkowitz (2001) documents that in 1995-1996 bribes and political favors played an important role in determining the size of the final quota. Furthermore, he also found that it is difficult to separate the impact of rules from the impact of the political influence that a company enjoys from being large on export allocations.

Contrary to the unchanged allocation rules, the agencies enforcing them changed over time. Before 2000, the Ministry of Fuel and Energy and the Interdepartmental Commission (controlled by the Ministry of Fuel and Energy) were responsible for export transport allocations (Government of Russian Federation, 1995). The oil export allocation schedule was prepared quarterly by the Ministry of Fuel and Energy. It received information on the capacity of the transportation system and quotas requests of mothers from Transneft, and then sent the preliminary schedule to the Interdepartmental Commission for confirmation. The final schedule was then sent to Transneft, who then processed it and issued it to the exporting oil companies.

In the spring of 2000, the Ministry of Fuel and Energy was restructured and became the Ministry of Energy, and the Interdepartmental Commission was dismissed (Government of Russian Federation, 2000a). As a result of this restructuring, the Ministry of Energy lost a lot of its responsibilities to other state institutions. In particular, the main responsibility of quotas allocation was shifted to the specially created Commission of Russian Government (Government of Russian Federation, 2000b) which now was controlled by one of the major players on Putin's team, the Vice Prime Minister Victor Khristenko, who later (in March, 2004) became Minister of Industry and Energy.

Because shipping routes are highly differentiated by transport costs and the federal government can assign these routes, the government has leverage over the oil producers. Russian crude is exported through ports and the pipeline sub-system called Druzhba that delivers oil directly to European refineries (see Figure 3). Because exports through Druzhba are constrained by the capacity of the European refineries to which it is connected, over half of the total Russian crude exports go through sea ports. In 1997 four ports were exporting Russian crude: Russian Novorossyisk and Tuapse, Ukrainian Odessa and Latvian Ventspils. By 2003, three more export ports appeared: Lithuanian Baltic export terminal Butinge[10] in 1999, Russian Baltic port Primorsk in 2001 and Ukrainian oil terminal "Yuzhnyi" in 2003.

The costs of the different routes can be roughly estimated by using the costs of delivering oil to a refinery or a port and the costs of oil transshipment in the port. The costs of shipping oil are determined by the operators of the pipelines. Oil transshipment costs are separately determined in each port. They include costs of transferring oil from a

[10] Yukos bought control of Butinge in mid-2002 from the American company Williams (Oil and Capital News, 2002a; Oil and Capital News, 2002b).

pipeline to a terminal and then to a tanker. The export and transshipment costs at different export routers are presented in Tables 6A and 6B. The table shows that Transneft (the operator of the Russian pipeline system) offers the best transit tariffs and that working with non-Russian countries adds substantial costs. Hence, the Druzhba route to Europe is the cheapest since the producers only have to pay transit costs and avoid transshipment costs. However, because of capacity constraints, this route may not be the most profitable. Among the sea exporting terminals, Russian ports charge charges the lowest transshipment fees, and passing through a non-Russian country to access world markets adds substantial costs.

3.2 Government Rent Seeking Behavior. Just how a rent-seeking government's allocation of pipeline access depends upon its ownership within the company can be understood by the following model based on Boycko, Shleifer and Vishny (1996). Suppose Transneft allocates export capacity, Q, in the form of access to a pipeline route to a company. In turn, the company chooses the share of its oil output that it exports on world markets and the share that goes to the domestic/CIS market. The world price exceeds the domestic/CIS price: $P_w > P_d$ since world prices are usually higher and many domestic and CIS refineries delay or simply withhold payments while this is not an issue on world markets. Formally, a company solves

$$Choose\ L \geq 0,\ and\ \alpha \in [0,1]: Max\ \beta\{(\alpha P_w + (1-\alpha)P_d)f(L) - L\} \qquad (1)$$

$$s.t.\ \alpha f(L) \leq Q\ ,\ where$$

L denotes a variable input, f(L) is a concave production function, α is the share of output that is exported on world markets, and (1- α) is the share shipped to the domestic-CIS

market. The parameter β captures ownership; when β is close to unity the company is a state-independent, otherwise it is a state-influence company.

When the export quota is non-binding, the company chooses α = 1 and exports all of its output on world markets and chooses L:

$$P_w f'(L^*) = 1 \text{ and } \alpha^* = 1, \text{ when } f(L^*) < Q \quad (2)$$

If the quota is binding, then Q = α*f(L) and the company sells (1-α*)f(L) on the domestic/CIS market. In this case, the shadow price of the quota is $\beta(P_w - P_d)$, which is the company's simply revenue lost by shifting a unit of output sales from the world to domestic-CIS market, and

$$P_d f'(L^*) = 1, \text{ where } \alpha^* < 1, \text{ and } f(L^*) = \left(\frac{Q}{\alpha^*}\right) \text{ and} \quad (3)$$

$$\frac{\partial \alpha^*}{\partial Q} > 0, \frac{\partial L^*}{\partial Q} = 0$$

A rent-seeking government wins loyalty, bribes and transfers in-kind when it has companies deliver cheap oil to its clients on the domestic-CIS market. Denote the political benefits of domestic-CIS deliveries as Z(f(L) – Q), where (f(L) – Q) denotes domestic-CIS deliveries and Z is increasing and concave. The cost of domestic-CIS deliveries is the foregone revenues $(1 - \beta)(P_w - P_d)(f(L) - Q)$. The government chooses the optimal quota, Q, in order to maximize $Z(f(L) - Q) - (1 - \beta)(P_w - P_d)(f(L) - Q)$:

$$-Z' + (1 - \beta)(P_w - P_d) = 0 \quad (4)$$

Implicitly differentiating (4), then

$$\frac{\partial Q}{\partial \beta} = (P_w - P_d)/Z'' < 0 \quad (5)$$

Thus, a marginal increase in private ownership, β, depresses the marginal cost of diverting oil from world markets and thus induces the state to tighten quotas. This implies that a rent-seeking government would use its control over pipeline to discriminate against state-independent companies. If a government promotes efficiency, then private ownership should not matter, but firm level costs should.[11] We take these predictions to the data in what follows.

4. Data

The data were acquired from ***Oil Trade***, a statistical annex to ***Oil and Capital***, a leading magazine for the Russian oil industry. Our dataset includes subsidiary level export volumes through different routes, measures of company size, measures of company efficiency, regional production costs, transportation, and transshipment costs as well as the capacity of each pipeline route. In the dataset we report the exports of 31 oil producing subsidiaries in 1999, 54 subsidiaries in 2003 and 71 subsidiaries in 2005 through each possible route.

4.1. Subsidiary Exports. These are reported in thousands of tons.[12] In the dataset we included exports of only those subsidiaries of mothers that reported production in 1999, 2003 and 2005, and reported production was higher than reported exports.[13]

[11] Boycko, Shleifer and Vishny (1996) predict that when private ownership is sufficiently high, private firms will make a side-payment so that politicians will remove inefficient regulations. For our model, this implies that when pipeline is efficiently allocated and there is no discrimination against private companies the government may or may not be involved in rent-seeking. We account for this problem in interpretation in our empirical work.

[12] There is a negligible difference in crude oil quality because after a company pumps oil into the pipeline, that oil is blended with all of the oil currently in the pipeline, so that at the final export destination oil is generally priced on world markets as the Urals blend. The exceptions to this are exports from the Rosneft subsidiary in the Sakhalin area, which typically prices closer to Asian blends, and exports from companies using the Caspian Pipeline Consortium. However, these companies are excluded from our sample. We

4.2. Size of Subsidiary. We use total operating wells and total wells as a measure of size. Both measures are highly correlated with total production in 1999, 2003 and 2005: 0.78-0.85 for the number of total wells and 0.75-0.81 for the number of operating wells.

4.3. Subsidiary Productivity. This is measured as output per operating well (we also check for output per well). We would expect this variable to be positively associated with export access when access to world markets is based upon efficiency.

4.4. Subsidiary Production Costs. We use regional producers' price (rubles per ton) as a measure of production costs for a subsidiary located in one of the six oil regions in Russia. If access to world markets is based upon economic criteria, then we would expect that this variable would be negatively associated with exports.

4.6. Subsidiary Transportation Costs per Route. This is measured as the tariff (dollars per 100 ton/km) times the distance from the subsidiary's location to the point of exit onto world markets for a particular route. Tariffs are listed in Table 6. We use distance in km from a subsidiary to ports or points of exit as a measure of distance from a subsidiary on a particular route. Distance in km was defined by the shortest route from a subsidiary allocation to a port or Russian border (in case of Druzhba) along Transneft

---

thank Michael Cohen from the Office of Energy Markets and End Use, the Department of Energy, for help with this issue.

[13] The reason to exclude exporting subsidiaries with no reported production or reported exports higher than production is the possibility that they exported re-distributed oil. Russian mother companies can re-distribute their output intended for export between the subsidiaries, i.e., a certain subsidiary may receive additional oil, produced by another subsidiary, for export. This re-distribution does not change the receiving subsidiary's production costs, but affects its transportation costs. Since it is impossible to tell how much extra oil the subsidiary received, the actual costs of the exporting subsidiary are impossible to calculate. There were four exporting subsidiaries that did not report production in 2003 and one subsidiary in 2005. In 1999 and 2003 all of the subsidiaries' exports were lower or equal to the reported production; there was one subsidiary in 2005 that reported higher exports than production.

trunk pipelines.[14] If the allocation of export capacity is related to efficiency considerations, then we would expect to observe a negative association for subsidiaries between export volumes on a particular route and transportation costs.[15]

4.5. Export Routes. In 1999, Russian crude oil exports went through five routes including the Druzhba pipeline sub-system and routes ending up in the ports of Novorossiysk or Tuapse, the Ventspils port and the Odessa port; in 2003 and 2005, a new route ending up in the port of Primorsk and another one ending up in the port of Butinge were added (see Figure 3).[16] Thus, in the dataset we look at the total of four export routes in 1999 (Druzhba, Tuapse-Novorossyisk, Ventspils and Odessa) and five export routes in 2003 and 2005 (Druzhba, Primorsk, Tuapse-Novorossyisk, Odessa and Butinge). Evidence of preferential treatment and rent-seeking is that state-influence subsidiaries get additional access to most or all of these routes.

4.7. Transshipment Costs for Routes. These are reported for 2003 and 2005 only. Transshipment costs are evaluated in dollars per ton and are stated in Table 6. For Tuapse-Novorossyisk route we use the average of transshipment costs in two ports. If pipeline access was efficiently allocated, we would expect to observe a negative association between subsidiary-level export volumes and transshipment costs.

---

[14] The location of a subsidiary was approximated either by location of its most productive fields or by location of its office. The information on the most productive fields was taken from mother companies' websites; the office addresses were obtained from the website of the Russian System of Full Information Disclosure and News "Skrin" (http://www.skrin.ru).The data on the pipeline routes location was taken from Transneft's website (www.transneft.ru). To calculate distance between cities where the pipeline nodes are located, we used the AutoTransInfo website (http://www.ati.su/) that provides information on distances between Russian cities and towns along highways. We assume that the oil from a subsidiary enters the pipeline at the node-city that is closest to the location of the subsidiary.

[15] As a robustness check, we also use an alternative distance measure. Following Berkowitz (2001), alternative distance is measured in total numbers of Transneft regional sub-systems the subsidiary has to pump its oil through to get to the port or Russia border. The two measures are highly correlated (0.83-0.85) for the three years of interest.

[16] We do not include the new Yuzhnyi export route for 2003 and 2005 since its exports account for less than 2% of total exports in 2003 and less than 3% in 2005.

4.8. Route Capacity. Route capacity is reported for 2003 and 2005 only in million tons per year in Table 6. Since the export system is capacity constrained, we would expect to observe a positive association between subsidiary route capacity and export volumes. But, a priori, it is not clear how this variable is indicative of efficiency or rent-seeking.

4.9 Number of Foreign Countries per Route. For 2003 and 2005, we report the number of foreign countries a subsidiary's export oil has to go through before reaching the world market. A priori, the relationship between the export volumes and the number of foreign countries per route is ambiguous: on the one hand it is negative because the more countries oil has to cross, the higher is the possibility of hold-up, so the relationship may be negative; it could also be positive, because the best access to the European energy markets is through Baltic export terminals, two of which (Ventspils and Butinge) are located in the states other than Russia. Again, just how this variable is related to efficiency and rent-seeking is unclear.

4.10. Additional controls. As additional control variables, we use route dummy variables, mother dummy variables and some mother-specific observables.

5. Empirical Analysis

We first test the prediction that the federal regulatory agencies provide preferential access to state-influence companies in 2003 and 2005. Then, we check if the efficiency of export allocations has changed between 1999 and 2005.

5.1. Preferential Access in 2003 and 2005. We want to test the null that there is no discrimination between state-influence and state-independent subsidiaries of mothers.

Thus, we set the indicator variable S = 0 for subsidiaries of state-independent mothers and S = 1 for subsidiaries of state-influence companies mothers. We estimate and conduct several hypothesis tests for the following two specifications in 2003 and 2005:

$$
\begin{aligned}
&\textit{Specification 1}\\
y_{pm_i} = {} & \alpha + (\alpha_1 + \alpha_2 S) * oil\_wells_{m_i} + (\alpha_3 + \alpha_4 S) * well\_prod_{m_i} \\
& + (\alpha_5 + \alpha_6 S) * reg\_costs_{m_i} + (\alpha_7 + \alpha_8 S) * transp\_costs_{pm_i} \\
& + (\alpha_9 + \alpha_{10} S) * transship\_costs_p + (\alpha_{11} + \alpha_{12} S) * route\_cap_p \\
& + (\alpha_{13} + \alpha_{14} S) * \#\_fcountr_p + \theta_{1j} mother_m + \varepsilon_{pm_i} \qquad (6)
\end{aligned}
$$

$$
\begin{aligned}
&\textit{Specification 2}\\
y_{pm_i} = {} & \alpha + (\alpha_1 + \alpha_2 S) * oil\_wells_{m_i} + (\alpha_3 + \alpha_4 S) * well\_prod_{m_i} \\
& + (\alpha_5 + \alpha_6 S) * reg\_costs_{m_i} + (\alpha_7 + \alpha_8 S) * transp\_costs_{pm_i} \\
& + \gamma_{1j} route_p + \gamma_{2j} S * route_p + \theta_j M_m + \varepsilon_{pm_i} \qquad (7)
\end{aligned}
$$

In specifications 1 and 2, the variables y_{pm_i} denotes thousands of tons of oil exported to world markets on the p[th] pipeline route for the i[th] subsidiary in the m[th] mother company, $oil\_wells_{m_i}$ is the number of operating oil wells in the i[th] subsidiary of the m[th] mother, $well\_prod_{m_i}$ denotes output per operating well of the i[th] subsidiary of the m[th] mother and measures productivity,[17] $reg\_costs_{m_i}$ denotes regional production costs for the i[th] subsidiary of the m[th] mother, and $trans\_costs_{pm_i}$ denotes transportation costs (dollars per km per 100 ton) for the i[th] subsidiary of the m[th] mother on the p[th] route.

Ideally, we would control for mother-effects and route effects as well as mother-specific observables and route-specific observables. However, we cannot control for all

[17] All of our results still if we use total well and output per total number of wells.

of these effects because some of the mothers consist of one subsidiary, and because there are several mothers that use the same combination of routes to send their oil to the world markets. Thus, in the first model we control for mother dummies, denoted $mother_m$, and route specific observables including $transship\_costs_p$ (transshipment costs for the pth route), $route\_cap_p$ (oil volume capacity for the pth route), $\#\_fcountr_p$ (the number of foreign countries the exports from a particular subsidiary have to cross along the pth route). In the second model, we control for a vector of mother specific observables, denoted M_m [18], and route dummy variables, denoted $route_p$.

In both specifications, the regressors interacted with S measure the differential impact of a particular explanatory variable on *state-influence net of state-independent exports.* Table 7 (on the next page) lists the hypotheses that we test that provide evidence of preferential access and rent-seeking. We have already discussed what we would expect to observe with the variables for subsidiary productivity, production costs and transportation costs and route transshipment costs if access is efficiently allocated.

Table 7: Hypothesis Tests for Preferential Access (Rent-Seeking)	
Specification 1	**Specification 2**
Hypothesis 1 The state-influence subsidiaries do not receive privileged treatment because they cannot ship more than the state-independents if they are less productive (the null is $\alpha_4 = 0$).	
Hypothesis 2 The state influence subsidiaries are not privileged because they cannot export more than the state-independents if their production costs are higher (the null is $\alpha_6 = 0$) .	

[18] These include at the mother-level the number of operating wells, output per well, the share of idle wells, the change in total wells compared to previous year and the number of new wells in new fields.

Hypothesis 3	
The state-influence subsidiaries do not have privileged access to export routes because of transportation costs (the null is $\alpha_8 = 0$).	
Hypothesis 4.1	Hypothesis 4.2
The state-influence subsidiaries do not receive better access to routes with lower transshipment costs (the null is $\alpha_{10} = 0$).	The state-influence subsidiaries do not receive better access to any particular route (the null is $\gamma_{21} = \gamma_{22} = \gamma_{23} = \gamma_{24} = \gamma_{25} = 0$).

Tables 8A and 8B report our results for 2003 and 2005. In 2003 there are 54 subsidiaries and five possible routes, yielding 270 possible observations. However, there are 145 cases in which a subsidiary does not employ a particular route. In 2005 there are 71 subsidiaries using the five possible routes, yield 355 possible observations. However, there are now 194 cases where a particular subsidiary does not ship to a particular port or to Druzhba. Thus, we estimate the specifications with the Tobit procedure and censor the dependent variable at zero.

In Tables 8A and 8B the columns denoted "State-Influence Net of State-Independent" report the results of our hypothesis tests that there is no preferential treatment. And, the columns entitled "State-Independent" and "State-Influence" present estimates of the associations between our independent variables and oil exports for the subsidiaries of different ownership. In each cell we first report point estimates, standard errors (in parentheses) and then quantitative significance which is the association between a one-standard deviation increase in the independent variable on thousands of tons of oil exports.

Checking column (1) in specifications 1 and 2 for 2003 (Table 8A), we reject hypothesis 1 that there is no discrimination by subsidiary-productivity per well at the 1 %

level. The point estimates provide evidence that state-independent subsidiaries export more on world markets only if they are more productive while productivity does not matter for state-influence subsidiaries.

We fail to reject the hypothesis 2 that the state influence companies are not privileged because of regional production costs in specification 1, but reject this hypothesis at the 10% level in specification 2. However, it is clear from columns (2) and (3) in both specifications that only the state-influence subsidiaries pay attention to regional production costs. A possible explanation for this is state-independents face tighter capacity constraints and will export as much as the federal government allows, while the state-influence companies can be more sensitive to costs.

We reject hypothesis 3 that the state influence subsidiaries do not have preferential access because of transportation costs at the 1 % level in both specifications. Once again, the estimates in columns (2) and (3) suggest there is a major difference in the treatment of state-independent versus state-influence subsidiaries. For example, the estimates in specification 2 imply that a one standard deviation increase in transportation costs is associated with a 1.7 million ton cut in exports in the state-influence group and a 1.7 million ton increase in the state-independent group. This suggests that when state-influence companies reduce their exports following an increase in transportation costs, the state-independents pick up their slack capacity.

We fail to reject hypothesis 4.1 for specification 1 that the state-influence subsidiaries have no preferential access to routes with lower transshipment costs. Both state-influence and state-independent subsidiaries tend to export less on routes with high transshipment costs, and the differential sensitivity of these two groups of subsidiaries is

not significant. However, in specification 2 we reject the null at the 1% level that state-influence subsidiaries received no preferential access to all routes including Druzhba, Novorosyisk & Tuapse, Primorsk, Butinge, and Odessa. The results show that state-influence subsidiaries received drastically better access to ALL the export routes, especially to Baltic ports of Primorsk and Butinge as well as Ukrainian port Odessa.

Thus, there is compelling evidence that in 2003 state-influence companies received preferential access and the government was involved in rent-seeking.

Table 8B reports our test results for 2005. It is striking that we now *fail* to reject the hypotheses in both specifications that state-influence subsidiaries receive no preferential access based on regional costs, productivity (output per operating well) and transportation costs. In specification 1 we fail to reject the hypothesis that state-influence companies get better access to the routes with the lower transshipment cost. And, in specification 2 where we fail to reject the hypothesis for each route that that the state-influence and state-independent subsidiaries have equal access.

Our tests for 2003 provide evidence of preferential treatment for state-influence companies. By 2005, this preferential treatment has largely disappeared, which suggests that rent-seeking has been eliminated. An alternative interpretation of these findings, however, is that rent-seeking has taken on new forms such as direct bribes for access to export routes (see footnote 10 on page 15). If this were the case, then we would expect that the level of corruption in Transneft as of 2005 is at least as bad as it was in 2003.

Table 9 (listed below) reports Standard & Poor's (S&P) credit ratings of Transneft during 2002 through 2006. Transneft has been taking out debt from international markets to finance its projects and these ratings measure Transneft's ability to honor its financial

commitments. In general, the ratings may vary from the highest mark, AAA, to the lowest, D. Ratings may also be marked by "+" and "-" to denote the intermediate rating categories. In particular, "B" rating indicates that a company has the capacity to meet its financial commitments but is rather vulnerable under unfavorable commercial, financial and economic conditions; "BB" rating indicates that a company is less vulnerable to nonpayment than other speculative issues, however, it faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions which could lead to its inadequate capacity to meet its financial commitments; "BBB" rating shows that a company exhibits adequate protection parameters, but adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the company to meet its financial commitments[19].

[19] Standard&Poor's Rating Definitions, http://www2.standardandpoors.com/portal/site/sp/en/la/page.article/2,1,1,4,1148442391999.html

Table 9. Standard & Poor's Ratings of Transneft

Date of Updating	2002			2003	2004	2006	
	June	July	December	July	January	November, 15	November, 29
Rating (International Scale)/Prognosis	B+ Positive	BB- Stable	BB Stable	BB Stable	BB+ Stable	BB+ Positive	BBB+ Stable

Source: Standard & Poor's, http://www.standardandpoors.ru/page.php?path=issuer&id=85

In the S&P reports, it is consistently mentioned that diversification of export routes, stable financial position as well as conservative financial policies of the company have positively affected its credit ratings; however, poor transparency of regulation as well as strong influence of the Federal government have had a negative impact of the company's rating. Nevertheless, it is notable that Transneft's credit rating has improved during 2002, which provides corroboration of our interpretation that government rent-seeking in the oil sector fell between 2003 and 2005.[20]

5.2. Efficiency of the Pipeline during 1999, 2003 and 2005. Since 1999 is the last year of the Yeltsin government and the Putin administration was firmly in control in 2003 and 2005, we check for the evolution of determinants of access to the pipeline. Since we lack detailed data on route characteristics in 1999, we estimate the specification in which we control for route dummies and mother observables.

These estimates and test statistics are presented in Table 10. Column (1) shows that in 1999 there is no discrimination between state-influence and state-independent subsidiaries in terms of regional costs, productivity and transportation costs. Column (2) shows that while productivity (output per operating well) is positively associated with access to the pipeline, regional costs and transportation costs had no significant influence.

[20] We thank Jagdish Bhagwati for discussions of this point.

This suggests that in 1999 efficiency considerations were not used in distributing the available pipeline capacity either. However, by 2005 regional cots and transportation costs have the expected and significant negative association with export access, which suggests that efficiency criterion have become more important over time.

6. Conclusions

The sustainability of Russia's impressive growth is controversial because of the role of high oil prices. While the analysis in Desai (2006) establishes that there is no Dutch disease, there is a still a concern that high oil prices allow the Russian government to delay restructuring and to engage in rent-seeking. Indeed, the Yukos affair, the growing influence of Gazprom, the growing concentration within the oil sector and episodes where the government has used its control over the pipeline to bully other countries is of concern. Moreover, the Russian federal government owns Transneft, and this enables the government to influence major oil companies on a day to day basis. Our analysis suggests that by 2005 the government has restructured its regulation of oil because it stopped discriminating against state-independents, and because access to export routes was largely determined by costs and company level productivity.

There are several possible reasons why Russian government became more efficient by 2005. First, the Russian federal government might be getting more professional. Second, the Russian near monopoly on oil transportation through Eurasia was challenged in 2005, when Baku-Tbilisi-Ceyhan (BTC) pipeline became operational. BTC pipeline connected Azeri giant oil structure Azeri-Chirag-Deepwater Guneshli (developed by a BP-lead consortium) with Mediterranean port Ceyhan bypassing Russia.

As a result, Azerbaijan started decreasing its exports through Russia and even considered to completely stop oil exports through Baku-Novorossiysk route. Hence, Russian officials may view BTC pipeline as potential competition and this forces them to operate Russian pipeline network more efficiently.

Third, the Russian government has been trying to collect more of the state's oil revenues from oil companies, partly by closing down the tax "loopholes" and partly by increasing taxes. In particular, oil export duties in Russia increased drastically between 2003 and 2005: in June, 2003, the duty was $26.80/ton; by June 2005 this duty increased to $136.2/ton and in August, 2005, it grew to a record level of $140/ton. Between 2003 and 2006, Russian Federal Tax Revenues increased by $625 billion (35%); tax revenues as a share of GDP rose from 16.5 percent in 2003 to 18.4 percent in 2006. Most of the increase came from increase in corporate income tax revenues (Congressional Budget Office, 2007). Hence, since the federal state has been able to collect more money through taxing oil mothers rather than through exploiting federal ownership in oil companies (that decreased over time), the government may have more incentive to efficiently regulate the oil sector.

Our results suggest that while it still worrisome that Russia is heavily dependent on oil and other natural resources, these results provide some optimism about Russia's growth prospects.

References

Berglöf, Erik, Andrei Kirnov, Julia Shvets and Ksenia Yudaeva, 2003. *The New Political Economy of Russia.* Cambridge MA: MIT Press.

Berkowitz, Daniel. 2001. "Does Russian Legal Reform Matter? Evidence from Russian Crude Oil Exports." In Peter Murrell, editor, *Assessing the Value of Law in Transition Economies*. Michgan: University of Michigan Press, pp.314-329.

Boycko, Maxim, Andrei Shleifer and Robert W. Vishny. 1996. "A Theory of Privatization." *Economic Journal* 106: 309-319.

Congressional Budget Office. 2007. Report to the Chairman of Committee on the Budget, United States Senate. http://www.cbo.gov/ftpdocs/81xx/doc8116/05-18-TaxRevenues.pdf

Desai, Padma. 2006. "Why is Russian GDP Growth Slowing?" *American Economic Review* 96(2): 342-347.

Energy Information Administration. 2005. "U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2003 Annual Report." http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/crude_oil_natural_gas_reserves/cr.html

Energy Information Administration. 2007. "Mediterranean Russian Urals Spot Price FOB (Dollars per Barrel)". http://tonto.eia.doe.gov/dnav/pet/hist/wepcuralsw.htm

Financial Times, 2007. "Russia Shuts Oil Pipeline to Europe." January 9, 2007.

Government of Russian Federation. 1994. "Ordinances of Government of Russian Federation from December 31, 1994, No.1446 "On Export of Oil And Oil Products from Russian Federation starting January 1, 1995". Main Rules of Using the System of Trunk Pipelines And Marine Terminals for Export of Oil And Oil Products from Russian Federation. (Постановление Правительства Российской Федерации то 31 декабря 1994 года №1446 «О вывозе нефти и нефтепродуктов за пределы таможенной территории Российской Федерации с 1 января 1995 года». Основные правила использования системы магистральных нефтепроводов, нефтепродуктопроводов и терминалов в морских потрах для вывоза нефти, нефтепродуктов за пределы таможенной территории Российской Федерации)". www.government.ru

Government of Russian Federation. 1995. "Ordinances of Government of Russian Federation from January 30, 1995, No.94 "On Interdepartmental Commission on Regulation of Usage of the Trunk Pipeline System And Marine Terminals for Export of Oil And Oil Products from Russian Federation" (Постановление Правительства Российской Федерации от 30 января 1995 г. №94 «О межведомственной комиссии по регулированию вопросов, связанных с использованием системы магистральных нефтепроводов, нефтепродуктов и терминалов в морских портах для вывоза нефти,

нефтепродуктов за пределы таможенной территории Российской Федерации»)". www.government.ru

Government of Russian Federation. 1997. "Ordinances of Government of Russian Federation from May 4, 1997, No.417 "On Additional Measures to Insure Tax Payments of Oil Producing Companies"(Постановление Правительства Российской Федерации от 4 мая 1998 года №417 «О дополнительных мерах по обеспечению полноты уплаты налогов нефтедобывающими организациями»)". www.government.ru

Government of Russian Federation, 2000a. "Ordinances of Government of Russian Federation from January 6, 2000, No.18 "On Amendments to Ordinances of Government of Russian Federation from June 2, 1999, No.589" (Постановление Правительства Российской Федерации от 6 января 2000 года №18 «О внесении изменений и дополнений в постановление Правительства Российской Федерации от 2 июня 1999 года №589»)". www.government.ru

Government of Russian Federation. 2000b. "Ordinances of Government of Russian Federation from November 2, 2000, No.843 "On Commission of Government of Russian Federation on Usage of Trunk Pipelines)" (Постановление Правительства Российской Федерации от от 2 ноября 2000 №843 «О Комиссии Правительства Российской Федерации по вопросам использования сисмы магистральных нефтегазопроводов и нефтепродуктопроводов»)". www.government.ru

Grossman, Sanford J. and Oliver D. Hart. 1986. "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration." *Journal of Political Economy* 94: 691-719.

Guriev, S. and A. Rachinsky. 2005. "The Role of Oligarchs in Russian Capitalism." *Journal of Economic Perspectives* 19: 131-150.

Kramer, A. 2006. " Lithuanians Are Given a Taste of How Russia Plays the Oil Game". New York Times, October 28.

Megginson, William L. 2005. *The Financial Economics of Privatization.* Oxford and New York: Oxford University Press.

Oil and Capital. 2001. "Internal Market is Not Ready for Increase in Oil Production (Внутренний рынок не готов к росту нефтепродуктов)". *Oil and Capital* 6.

Oil and Capital. 2004. "Deficit of Trunk Pipelines Capacity of Transneft (Дефицит трубопроводных мощностей Транснефти)". *Oil and Capital* 10.

Oil and Capital News. 2002a. "Butinge it Ahead of Ventspils (Бутинге обогнал Вентспилс)." *Oil and Capital News*.

Oil and Capital News. 2002b. "Following the Numbers (За игрой цифр)." *Oil and Capital News*.

Oil Export. 2005a. “Increase in Domestic Prices Turned out to Be Small (Рост внутренних цей оказался небольшим)”. *Oil Export* VII #50.

Oil Export. 2005b. Russian Oil Prices on CIS Markets, December 23 (Цены на Российскую нефть в СНГ на 23 декабря). *Oil Export* VII #50.

Ostrovsky, A. 2007. “Russia Halts Oil Exports to Belarus.” Financial Times, January 8.

President of Russian Federation. 1992. “Presidential Ordinance #1403 of November 17, 1992 “On Peculiarities of Privatization and Restructuring of State Enterprises of Oil and Oil Product Industry into Stock Companies” (Указ Президента Российской Федерации №1403 от 17 ноября 1992 года «Об особенностях приватизации и преобразования в акционерные общества государственных предприятий, производственных и научно-производственных объединений нефтяной, нефтеперерабатывающей промышленности и продуктообеспечения.»)”. www.government.ru

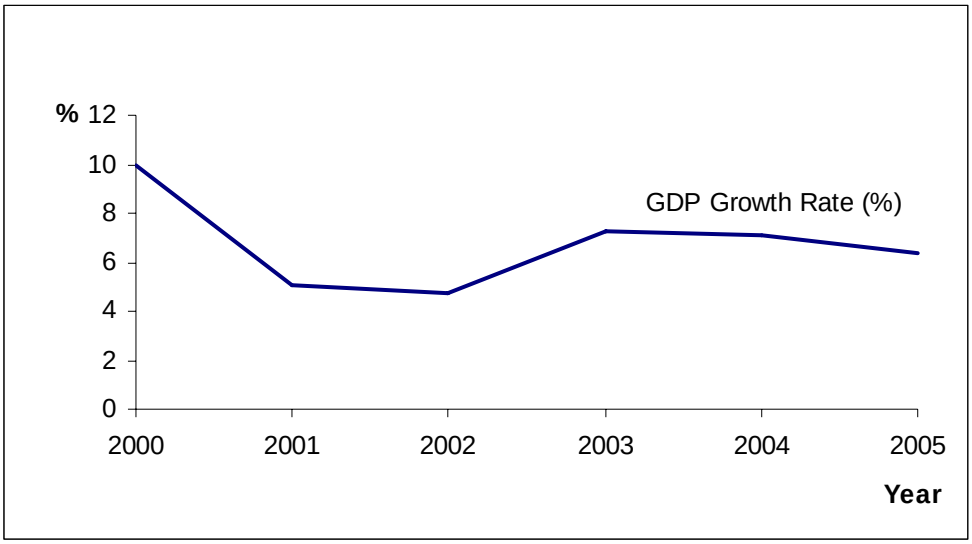
Raff, Anna. 2003. “Russian Oil Firms Face Export Woes.” *The Wall Street Journal*, February 12: B.5.E.

Transneft. 2005. “The List of Affiliated Persons of Open Stock Company “Transneft” as of 01.04.2005 (Список аффилированных лиц ОАО «Транснефть» по состоянию на 01.04.2005)”. http://transneft.ru/About/list_affil.htm

Treisman, Daniel. 1999. *After the Deluge: Regional Crises and Political Consolidation in Russia.* Ann Arbor, University of Michigan Press.

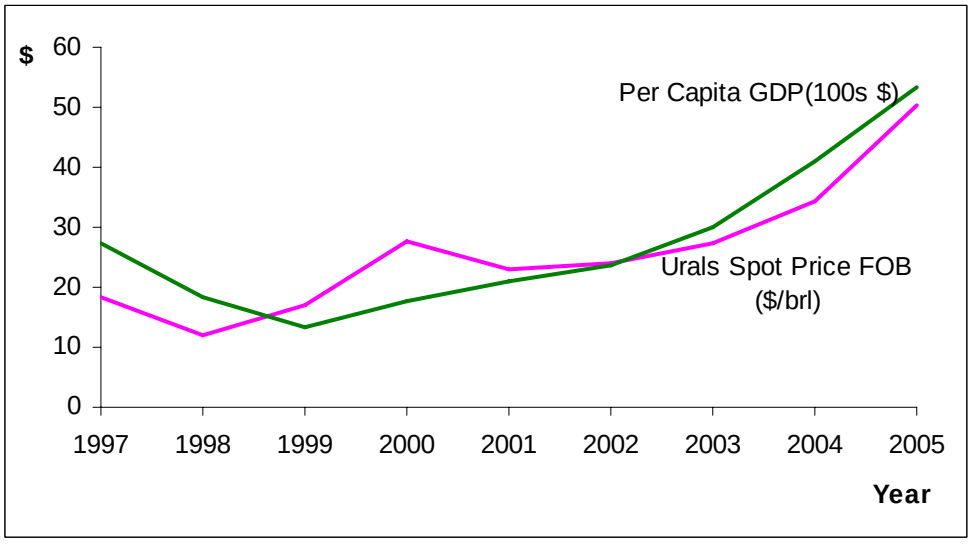
UN Statistics Division, 2007. National Accounts Main Aggregate Database. http://unstats.un.org/unsd/snaama/resultsCountry.asp?Country=643&SLevel=0&Year=2005&Year=2004&Year=2003&Year=2002&Year=2001&Year=2000&Year=1999&Year=1998&Year=1997&Selection=country&x=41&y=9

Figure 1. Russian GDP Grow Rate, 2000-2005



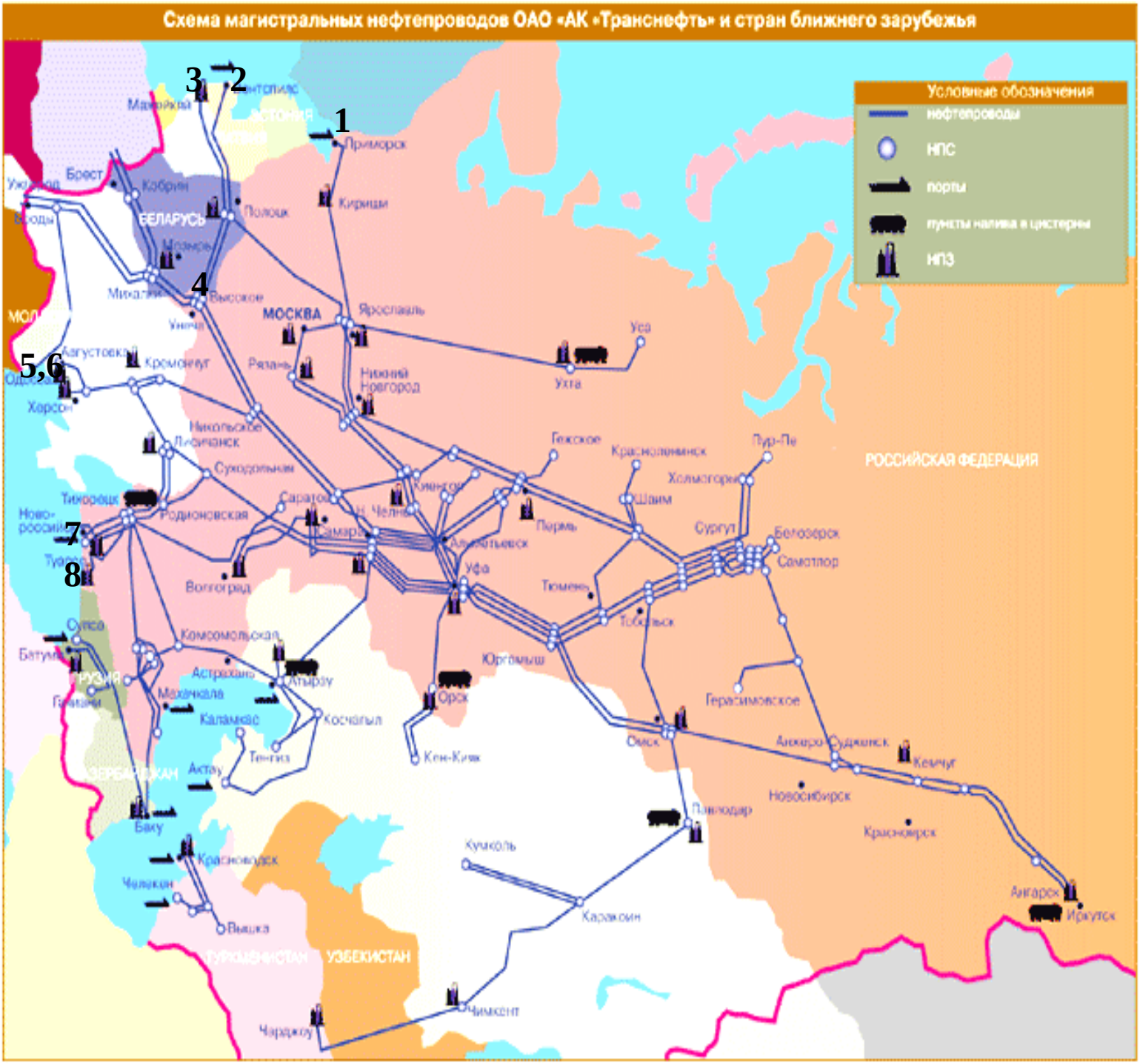
Source: UN Statistics Division

Figure 2. Urals Blend Spot Prices and Russian GDP per Capita, 1999-2005



Source: UN Statistics Division, Energy Information Administration

Figure 3. Export Routes for Russian Crude Oil.



CODE

1:	Primorsk	5, 6:	Odessa, Yuzhnyi
2:	Ventspils	7:	Novorossyisk
3:	Butinge	8:	Tuapse
4:	Druzhba		

Table 1. Evolution of Corporate Governance: 1997, 1999, 2003 and 2005

Mothers	1997	1999		2003		2005	
	Share of the State	Share of the State	Representatives of Russian Government on BOD	Share of the State	Representatives of Russian Government On BOD	Share of the State	Representatives of Russian Government on BOD
LUKoil	26.6[1] (**F**)	26.2[2] (**F**)	3 out of 11 (**F**)	7.60[3] (**F**)	1 out of 11 (**F**)	0[30]	0
Yukos	0[4]	0[4]	0	0[5]	0	0[31]	0
Sibneft	0[6]	0[6]	0	0[7]	0	0[32]	0
Surgutneftergaz	0[8]	0[8]	0	0[9]	0	0[33]	0
Sidanko	0[10]	0[10]	n/a	0[11]	0	Part of TNK-BP Holding	Part of TNK-BP Holding
Tatneft	30.34[12] (**R**)	30.9[13] (**R**)	5 out of 15 (**R**)	0[14]	5 out of 15 (**R**)	0[34]	4 out of 15 (**R**)
Onako	85 [15] (**F**)	85 [15] (**F**)	n/a	Does not exist	Does not exist	Does not exist	Does not exist
VNK	36[16] (**F**)	Does not exist	Does not exist	Does not exist	Does not exist	Does not exist	Does not exist
TNK	49.87[17] (**F**)	49.87[18] (**F**)	n/a	0[19]	0	0[35]	0
Bashneft	63[20] (**R**)	63[20] (**R**)	4 out of 14 (**R**)	1.34[21] (**R**)	3 out of 9 (**R**)	1.34[36] (**R**)	0
Rosneft	96.25[22] (**F**)	96.25[22] (**F**)	n/a	96.25[23] (**F**)	10 out of 11 (**F**)	100[37] (**F**)	10 out of 11 (**F**)
Slavneft	77.1[24] (**F**)	77.1[25] (**F**)	7 out of 12 (**F**)	0[26]	0	0[38]	0
KomiTEK	21.7[27] (**F**)	1.07[28] (**F**)	n/a	Does not exist	Does not exist	Does not exist	Does not exist
Russneft	Does not exist	Does not exist	Does not exist	0[29]	0	0[39]	0

Notes: **R** denotes a regionally owned company and **F** denotes a federally owned company, and no notation means outside ownership

Sources are listed in footnotes in the Appendix at the end of the paper

Table 2. Concentration of Russian Oil Production and Exports, 1997-2003

		1997	1998	1999	2000	2001	2002	2003	2004	2005
Production	**Share of Mothers**	0.89	0.87	0.83	0.87	0.87	0.90	0.88	0.92	0.92
	R_2	0.29	0.29	0.30	0.35	0.35	0.38	0.36	0.37	0.35
	R_3	0.40	0.41	0.41	0.47	0.47	0.51	0.49	0.50	0.51
Exports	**Share of Mothers**	0.69	0.46	0.78	0.80	0.85	0.90	0.88	0.90	0.90
	R_2	0.24	0.18	0.29	0.31	0.35	0.38	0.35	0.35	0.37
	R_3	0.33	0.22	0.41	0.42	0.47	0.51	0.47	0.52	0.52

R_n -- n-firm concentration ratio

Table 3. Subsidiaries and Average Well Productivity

Region	Mothers	1997			2003			2005		
		# of Producing Subsidiaries	Reported # of Wells	Average Production per Subsidiary Well (thousand tons)	# of Producing Subsidiaries	Reported # of Wells	Average Production per Well (thousand tons)	# of Producing Subsidiaries	Reported # of Wells	Average Production per Subsidiary Well (thousand tons)
Western Siberia	Lukoil	1 (4 subdivisions)	15227	2.87	6 (4 subdivisions)	16352	6.11	6 (5 subdivisions)	15689	4.96
	Yukos	1	10006	2.68	5	12106	10.78	5	2616	10.18
	VNK	2	3879	2.84	*	*	*	*	*	*
	Sibneft	1	6869	2.64	1	7997	3.93	4	4526	7.26
	Surgutneftegas	1 (6 subdivisions)	14133	2.40	1 (6 subdivisions)	16964	3.18	1 (7 subdivisions)	16693	3.83
	Sidanko	4	6837	2.00	3	3737	7.40	*	*	*
	TNK	3	9614	2.17	4	13277	2.55	9	19085	6.90
	Rosneft	*	*	*	2	2525	3.90	3	11387	4.96
	Slavneft	2	3599	3.41	6	3944	6.78	7	4014	12.28
	Russneft	1	2113	2.12	2	1168	2.80	18	2338	7.63
North	Komitek	1	1609	2.23	*	*	*	*	*	*
	Lukoil	*	*	*	11	3282	8.31	12	3473	19.40
	Rosneft	*	*	*	2	139	28.47	2	227	39.68
	Russneft	*	*	*	*	*	*	1	14	14.05
Volga	Lukoil	2	1067	3.08	2	1071	20.43	2	1051	20.46
	Yukos	1	5462	1.56	1	5609	2.20	1	5538	1.73
	Sidanko	1	339	3.70	1	380	4.74	*	*	*
	Tatneft	1 (14 subdivisions)	20711	1.18	1 (14 subdivisions)	21477	1.15	1 (11 subdivisions)	21460	1.18
	Rosneft	1	166	1.50	*	*	*	*	*	*
	TNK	*	*	*	*	*	*	4	3149	10.83
	Russneft	*	*	*	2	184	2.47	6	260	5.66
North Caucasus	Rosneft	4	4529	0.60	5	3753	1.31	4	3635	1.82
Urals	Lukoil	1	4670	1.21	6	6257	1.63	5	6104	1.73
	Sidanko	1	4448	1.27	2	4004	1.84	*	*	*
	Onako	2	2773	2.70	*	*	*	*	*	*
	Bashneft	1 (10 subdivisions)	16958	0.91	1 (10 subdivisions)	18505	0.65	1 (10 subdivisions)	18310	0.65
	TNK	*	*	*	2	2885	102.50	2	3965	1.50
	Russneft	*	*	*	*	*	*	5	1854	1.75
Far East	Rosneft	1	2263	0.66	1	2320	0.71	1	1748	1.07

Table 4. Profitability of LUKoil versus Yukos

Year	Return on Assets		Return on Non-Current Assets	
	LUKoil	Yukos	LUKoil	Yukos
1999	9.6%	20.4%	12.4%	31.4%
2000	22.4%	41.0%	32.4%	77.5%
2001	11.4%	33.2%	16.7%	80.0%
2002	8.8%	24.6%	12.4%	52.0%
2003	10.6%	21.6%*	15.0%	37.8%*

*The figures for Yukos in 2003 are calculated through September 2003 and are based on an un-audited interim report.

Notes: Return on assets (non-current assets) in year is net income at the end of the year t divided by the average value of assets (non-current assets) on December 31 of year t and year t-1. Non-current assets equity include (most importantly) the net value of property, plant and equipment; it also includes equity investees and long-term investments at cost, deferred income tax assets and other long term assets.
Sources: For Yukos, see http://www.yukos.com/New_IR/Financial_reports.asp
and http://www.yukos.com/New_IR/Financial_reports_archive.asp and download the YUKOS Oil Company U.S. GAAP Consolidated Financial Statements, from December 31, 2002, December 31, 2001, and December 31, 2000 . We also used (for 2003) the YUKOS Oil Company U.S. GAAP Interim Condensed Consolidated Financial Statement Setpember 30, 2003, which is an un-audited report that covers the first nine months of 2003. For LUKoil see http://www.lukoil.com/static_6_5id_210_.html and download the OAO LUKOIL Consolidated Financial Statements (prepared in accordance with US GAAP) As of December 31, 2002 and 2001; As of December 31, 2000 and 1999 and for each of the years in the three year period ended December 31, 2000; and As of and for the years ended December 31, 1999 and 1998.

Table 5. Exports of Crude Oil as Share of Production

Mothers	1997	1998	1999	2000	2001	2002	2003	2004	2005
Rosneft	0.47	0.36	0.40	0.23	0.19	0.19	0.44	0.35	0.39
LUKoil	0.26	0.23	0.30	0.16	0.17	0.17	0.36	0.37	0.39
Surgutneftegas	0.34	0.13	0.33	0.17	0.18	0.18	0.34	0.35	0.44
Yukos	0.26	0.25	0.44	0.19	0.20	0.18	0.34	0.35	0.06
Sidanko	0.26	0.19	0.25	0.12	0.14	0.16	0.31	**n.a.**	**n.a.**
Slavneft	0.24	0.12	0.33	0.17	0.18	0.19	0.32	0.37	0.22
VNK	0.25	0.19	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Onako	0.24	0.19	0.26	0.07	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
TNK	0.16	0.21	0.31	0.23	0.18	0.17	0.38	0.42	0.44
Sibneft	0.26	0.26	0.31	0.16	0.18	0.20	0.36	0.39	0.48
Tatneft	0.24	0.12	0.31	0.20	0.19	0.18	0.38	0.46	0.49
Bashneft	0.22	0.14	0.32	0.16	0.17	0.17	0.31	0.31	0.37
KomiTEK	0.24	0.36	0.41	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Russneft	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	0.41	0.43	0.50
AVERAGE PER MOTHER	0.27	0.21	0.33	0.17	0.18	0.18	0.36	0.38	0.38
TOTAL MOTHERS	**0.27**	**0.20**	**0.33**	**0.18**	**0.18**	**0.18**	**0.35**	**0.38**	**0.40**

Notes: **n.a.** means that these companies do not exist in a particular year.

Table 6A. Costs of Export Routes in 1999 and 2003

Port/Route	Route to Port or Refinery	1999	2003		
		Average Transit Tariff ($ per 100 ton/km)	Average Transit Tariff ($ per 100 ton/km)	Port Trans-shipment Tariff ($ per ton)	Capacity of the Route or Port (mln tons per year)
Druzhba (till Russian border)	Russia	0.20[0]	0.33[1]	-	62[6]
Novorossiysk	Russia	0.20[0]	0.33[1]	2[2]	45.3[7]
Primorsk	Russia	0.20[0]	0.33[1]	0.81[20]	30[8]
Tuapse	Russia	0.20[0]	0.33[1]	2.4[2]	20[9]
Odessa	Russia-Ukraine	Through Russia: 0.20[0] Through Ukraine: 0.44[0] **Average Tariff : 0.32**	Through Russia: 0.33[1] Through Ukraine: 0.44[1] **Average Tariff : 0.39**	3.5[21]	24[10]
Yuzhnyi	Russia-Ukraine	Through Russia: 0.20[0] Through Ukraine: 0.44[0] **Average Tariff : 0.32**	Through Russia: 0.33[1] Through Ukraine: 0.44[1] **Average Tariff : 0.39**	3.5[5]	n/a
Ventspils	Russia-Belarus-Lithuania-Latvia	Through Russia: 0.20[0] Through Belarus: Through Lithuania: 0.98 [0] Through Latvia: 0.71 [0] **Average Tariff : 0.63**	Through Russia: 0.33[1] Through Belarus: 0.64[3] Through Lithuania: 0.9 [3] Through Latvia: 0.6 [3] **Average Tariff : 0.62**	4.7[4]	50[11]
Butinge	Russia-Belarus-Latvia-Lithuania	does not exist	Through Russia: 0.33[1] Through Belarus: 0.64[1] Through Latvia: 0.71[1] Through Lithuania: 0.99[1] **Average Tariff : 0.67**	4.5[22]	14[12]

Table 6B. Costs of Export Routes in 2005

Port/Route	Route to Port or Refinery	2005		
		Average Transit Tariff ($ per 100 ton/km)	Port Trans-shipment Tariff ($ per ton)	Capacity of the Route or Port (mln tons per year)
Druzhba (till Russian border)	Russia	0.44[13]	-	65[15]
Novorossiysk	Russia	0.44[13]	2[14]	55[16]
Primorsk	Russia	0.44[13]	1.94[14]	60[17]
Tuapse	Russia	0.44[13]	2.90[14]	18[18]
Odessa	Russia-Ukraine	Through Russia: 0.44[13] Through Ukraine: 0.76[14] **Average Tariff : 0.60**	6.30[14]	24[19]
Yuzhnyi	Russia-Ukraine	Through Russia: 0.44[13] Through Ukraine: 0.76[14] **Average Tariff : 0.60**	3.50[14]	n/a
Ventspils	Russia-Belarus-Lithuania-Latvia	n/a	n/a	18[17]
Butinge	Russia-Belarus-Latvia- Lithuania	Through Russia: 0.44[13] Through Belarus: Through Latvia: 0.80[14] Through Lithuania: **Average Tariff : 0.62**	4.70[14]	14[17]

Sources are listed in footnotes in the Appendix at the end of the paper

Table 8A. Oil Exports in State-Independent and State-Influence Subsidiaries.
Dependent Variable Is Tons (000s) of Oil Exported by Route and Subsidiary in 2003

Independent Variables	**Specification 1 (mother dummies; route-specific observable data)**			**Specification 2 (route dummies; mother-specific observable data)**		
	1	**2**	**3**	**1**	**2**	**3**
	State-Influence Net of State-Independent	**State-Independent**	**State-Influence**	**State-Influence Net of State-Independent**	**State-Independent**	**State-Influence**
Operating Wells	-0.51** (0.240) *-2047.45*	0.93** (0.252) *3743.55*	0.42** (0.084) *2066.66*	0.00 (0.118) *2213.47*	0.45** (0.111) *1800.51*	0.45** (0.089) *16.08*
Regional Costs	-2.49 (1.605) *-807.25*	0.45 (0.1605) *145.95*	-2.04** (0.589) *-661.30*	-2.65** (1.472) *-842.92*	0.51 (1.405) *161.83*	-2.14** (0.609) *-681.09*
Production per Operating Well	-19.24 (5.318) *-1753.35*	19.35** (5.084) *1764.20*	0.12 (1.455) *10.85*	-16.86** (5.360) *-1536.80*	16.91** (5.160) *1541.62*	0.53 (1.335) *4.82*
Transportation Costs ($/100ton/km)	-3.67** (0.937) *-2737.77*	1.67** (0.822) *1245.33*	-2.00** (0.562) *-1492.44*	-4.57** (1.216) *-3401.64*	2.35** (0.928) *1746.44*	-2.23** (0.614) *-1655.20*
Pipeline Route Capacity	-36.46* (20.347) *-757.68*	69.89** (20.334) *1452.26*	33.426** (10.920) *694.57*	X	X	X
Transshipment Costs ($/ton)	162.13 (311.201) *269.34*	-802.62** (373.256) *-1333.31*	-640.48** (195.028) *-1063.98*	X	X	X
Foreign Countries per Route	1514.05** (682.457) *1768.62*	229.16 (768.954) *267.695*	1743.21** (442.068) *2036.31*	X	X	X
Druzhba	X	X	X	10322.0** (3345.051)	dropped	---
Novorossyisk & Tuapse	X	X	X	11170.7** (3599.277)	-1587.4* (976.368)	9583.3** (3330.73)
Primorsk	X	X	X	12364.7** (3679.947)	-2983.1** (1134.132)	9381.5** (3305.113)
Butinge	X	X	X	19285.5** (5366.71)	-7442.2** (2362.881)	11843.2** (3523.439)
Odessa	X	X	X	12656.5** (3900.414)	-5390.1** (1565.074)	7266.4** (3388.842)
Additional Controls	Mother dummies			Vector of Mother-specific observables		
Log Pseudolikeli-hood	-1157.29			-1164.96		

Notes: Results are base on a maximum likelihood estimation of a Tobit model where the dependent variable is censored at zero. All standard errors are adjusted for heteroskedasticity. There are 270 observations and ** denotes significance at the 5-% level and * denotes significance at the 10-% level. Productivity is output per well in per operating wells. The results are robust to using output per total wells.

Table 8B. Oil Exports in State-Independent and State-Influence Subsidiaries.
Dependent Variable Is Tons (000s) of Oil Exported by Route and Subsidiary in 2005

Independent Variables	**Specification 1 (mother dummies; route-specific observable data)**			**Specification 2 (route dummies; mother-specific observable data)**		
	1	**2**	**3**	**1**	**2**	**3**
	State-Influence Net of State-Independent	**State-Independent**	**State-Influence**	**State-Influence Net of State-Independent**	**State-Independent**	**State-Influence**
Operating Wells	0.64** (0.188) *2365.50*	0.47** (0.100) *1736.70*	1.11** (0.165) *4811.99*	0.82** (0.143) *3038.98*	0.33** (0.050) *1233.77*	1.16** (0.140) *5012.05*
Regional Costs	-2.57 (1.681) *-1613.78*	-0.59** (0.263) *-369.77*	-3.14* (1.662) *-1983.54*	-1.75 (1.423) *-1101.63*	-0.65** (0.256) *-409.47*	-2.40* (1.401) *-1511.09*
Production per Operating Well	7.70 (25.840) *97.69*	-2.60 (8.375) *-32.99*	5.10 (24.438) *64.70*	23.58 (23.625) *299.26*	-9.08 (8.035) *-115.24*	14.50 (22.161) *184.02*
Transportation Costs ($/100ton/km)	-0.42 (0.691) *-286.72*	-0.67** (0.317) *-469.46*	-1.11* (0.622) *-756.18*	-0.36 (0.621) *-245.08*	-0.61** (0.304) *-415.91*	-0.97* (0.549) *-660.99*
Pipeline Route Capacity	86.827* (51.763) *2052.63*	39.80** (14.703) *941.01*	126.62** (49.926) *2993.64*	X	X	X
Transshipment Costs ($/ton)	132.03 (295.792) *290.72*	-376.85** (104.048) *-829.81*	-244.82 (275.093) *-539.09*	X	X	X
Foreign Countries per Route	1943.91* (1067.789) *2270.17*	400.69 (348.800) *467.94*	2344.59** (1013.689) *2738.10*	X	X	X
Druzhba	X	X	X	1699.5 (4794.441)	dropped	---
Novorossyisk & Tuapse	X	X	X	3258.1 (4769.101)	-506.9* (281.945)	2751.2 (4765.476)
Primorsk	X	X	X	3043.5 (4558.156)	-411.1 (261.963)	2624.4 (4575.041)
Butinge	X	X	X	4300.0 (5025.118)	-2361.8** (699.810)	1838.2 (4959.017)
Odessa	X	X	X	-4484.5 (5010.014)	-4241.0** (1078.905)	-8725.5* (4987.298)
Additional Controls	Mother dummies			Vector of Mother-specific observables		
Log Pseudolikeli-hood	-1434.88			-1434.06		

Notes: Results are base on a maximum likelihood estimation of a Tobit model where the dependent variable is censored at zero. All standard errors are adjusted for heteroskedasticity. There are 270 observations and ** denotes significance at the 5-% level and * denotes significance at the 10-% level. Productivity is output per well in per operating wells. The results are robust to using output per total wells.

Table 10. Oil Exports during 1999 - 2005.
Dependent Variable Is Tons (000s) of Oil Exported by Route and Subsidiary

	1999		2003		2005	
	1	2	1	2	1	2
Independent Variables	State-Influence Net of State-Independent	State-Independent	State-Influence Net of State-Independent	State-Independent	State-Influence Net of State-Independent	State-Independent
Operating Wells	-0.24* (0.138) *-1035.62*	0.47** (0.136) *2028.51*	0.00 (0.118) *2213.47*	0.45** (0.111) *1800.51*	0.82** (0.143) *3038.98*	0.33** (0.050) *1233.77*
Regional Costs	0.01 (1.453) *2.70*	-0.87 (1.249) *-250.57*	-2.65** (1.472) *-842.92*	0.51 (1.405) *161.83*	-1.75 (1.423) *-1101.63*	-0.65** (0.256) *-409.47*
Production per Operating Well	-269.23 (177.86) *-1089.63*	389.03** (173.637) *1574.52*	-16.86** (5.360) *-1536.80*	16.91** (5.160) *1541.62*	23.58 (23.625) *299.26*	-9.08 (8.035) *-115.24*
Transport Costs ($/100ton/km)	-0.09 (1.033) *-76.99*	-1.10 (0.973) *-931.68*	-4.57** (1.216) *-3401.64*	2.35** (0.928) *1746.44*	-0.36 (0.621) *-245.08*	-0.61** (0.304) *-415.91*
Druzhba	413 (1605.748)	dropped	10321.96** (3345.051)	dropped	1699.47 (4794.441)	dropped
Novorossyisk & Tuapse	1554.49 (1836.52)	-1200.56** (601.791)	11170.72** (3599.277)	-1587.39* (976.368)	3258.11 (4769.101)	-506.90* (281.945)
Ventspils	925.59 (3213.90)	692.39 (1790.219)	X	X	X	X
Primorsk	X	X	12364.7** (3679.947)	-2983.1** (1134.132)	3043.5 (4558.156)	-411.1 (261.963)
Butinge	X	X	19285.5** (5366.71)	-7442.2** (2362.881)	4300.0 (5025.118)	-2361.8** (699.810)
Odessa	1860.1 (2098.48)	-2457.0** (933.508)	12656.5** (3900.414)	-5390.1** (1565.074)	-4484.5 (5010.014)	-4241.0** (1078.905)
Additional Controls	Mother-specific observable data		Mother-specific observable data		Mother-specific observable data	
Log Pseudolikeli-hood	-572.65		-1164.96		-1434.06	

Notes: Results are base on a maximum likelihood estimation of a Tobit model where the dependent variable is censored at zero. All standard errors are adjusted for heteroskedasticity. There are 270 observations and ** denotes significance at the 5-% level and * denotes significance at the 10-% level. Productivity is output per well in per operating wells. The results are robust to using output per total wells. X means that a route is not in operation in a particular year.

Appendix 1: Sources for Table 1

[1] Vedi (Analytical Laboratory). Lukoil (ОАО «Нефтяная Компания «Лукойл»»). http://www.vedi.ru/s_pe/pe5101_r.htm
[2] Lukoil. 1999. Annual Report. http://www.lukoil.ru/materials/doc/reports/annual/AR1999-rus.PDF
[3] Lukoil. 2003. Annual Report. http://www.lukoil.ru/materials/doc/2003/AR%202003%20ENG.pdf
[4] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Yukos («Юкос»). http://nefte.ru/company/rus/yukos.htm;
Yukos. "It Is Much Easier to Kill a Good Deed than Redo It (Доброе дело легче погубить, чем возродить)". http://www.yukos.ru/12218.shtml
[5] Yukos. 2003. 4th Quarter Report. www.yukos.ru/files/10851/4k2003.pdf
[6] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Sibneft («Сибнефть»). http://nefte.ru/company/rus/sibneft.htm
[7] Siblenft. 2003. 4th Quarter Report. www.sibneft.ru/investor/regulatory-filings/reports/rus/rtf/rep-2003-4-rus.rtf
[8] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Surgutneftegaz («Сургутнефтегаз»). http://nefte.ru/company/rus/surgut.htm
[9] Surgutneftegas. 2003. 4th Quarter Report. http://www.surgutneftegas.ru/pictures/qreport42004.pdf
[10] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Sidanko («Сиданко»). http://nefte.ru/company/rus/sidanco.htm
[11] Sidanko. 2003. 4th Quarter Report. http://www.tnk-bp.ru/investors/disclosure/
[12] Vedi (Analytical Laboratory). Tatneft (ОАО «Татнефть»). www.vedi.ru/s_pe/pe5601_r.htm
[13] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Tatneft Reports to Its Shareholders ("Татнефть" отчитывается перед акционерами).
http://nefte.ru/company/rus/tatneft2.htm
[14] Tatneft. 2003. 4th Quarter Report. http://www.tatneft.ru/info.htm
[15] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Onako («Онако»). http://nefte.ru/company/rus/onako.htm
[16] Vedi (Analytical Laboratory). VNK (ОАО «Восточная Нефтяная Компания»). http://www.vedi.ru/s_pe/pe5901_r.htm
[17] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). TNK («Тюменская Нефтяная Компания»). http://nefte.ru/company/rus/tnk.htm
[18] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). TNK. Monitoring of the Main Events of 1999 («Тюменская Нефтяная Компания». Мониторинг основных событий 1999г.). http://nefte.ru/company/rus/tnk_monit_2.htm
[19] TNK. 2003. 4th Quarter Report. http://www.tnk-bp.ru/investors/disclosure/
[20] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Bashneft («Башнефть»). http://nefte.ru/company/rus/bashneft.htm
[21] Bashneft. 2003. 4th Quarter Report. www.gkrcb.bashkortostan.ru/openinfobashoil/index.html
[22] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Rosneft. («Роснефть»). http://nefte.ru/company/rus/rosneft.htm
[23] Rosneft. 2003. Press Release. "Shareholders Meeting and Semi-Annual Results (Собрание акционеров и итоги полугодия)". http://www.rosneft.ru/news/archive/04-07-03-1.html
[24] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). Slavneft («Славнефть»). http://nefte.ru/company/rus/slavneft.htm
[25] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). And the "Daughter" Became a "Stepdaughter" (И стала «дочка» «падчерицей»).
http://nefte.ru/company/rus/slavneft5.htm
[26] Slavneft. 2003. Annual Report. http://www.slavneft.ru/files/report/slavneft_annualreport2003.pdf
[273] Vedi (Analytical Laboratory). KomiTEK (ОАО «Нефтяная Компания «КомиТЭК»»).
http://www.vedi.ru/s_pe/pe6101_r.htm
[28] Independent Oil Review "Well" (Независимое Нефтяное Обозрение «Скважина»). KomiTEK («КомиТЭК»). http://nefte.ru/company/rus/komitek.htm
[29] Russneft. 2003. 4th Quarter Report.
http://www.russneft.ru/files/13510037524l6d11de732e8/4_2003.doc#пять_1

[30] Lukoil. 2005. Annual Report. http://www.lukoil.com/materials/doc/annual_report_2005/LUKOIL_AR2005_RUS.pdf
[31] Yukos. 2005. 4th Quarter Report. http://www.yukos.ru/files/10851/4k2005.pdf
[32] Siblenft. 2005. 3th Quarter Report. www.gazprom-neft.ru/investor/regulatory-filings/reports/rus/rtf/rep-2005-3-rus.rtf
[33] Surgutneftegas. 2005. 4th Quarter Report. http://www.surgutneftegas.ru/pictures/qreport42005.pdf
[34] Tatneft. 2005. 4th Quarter Report. http://www.tatneft.ru/info/notcons.htm
[35] TNK-BP Holding. 2005. 4th Quarter Report. http://www.tnk-bp.ru/investors/disclosure/tnk-bp-holding/
[36] Bashneft. 2005. 4th Quarter Report. http://www.gkrcb.bashkortostan.ru/OpenInfo/BashOil/Index.htm
[37] Rosneft, 2005. Annual Report. http://www.rosneft.ru/Investors/information/annualreports/report2005
[38] Slavneft, 2005. Annual Report. http://www.slavneft.ru/shareholder/annualreport.php
[39] Russneft. 2005. 4th Quarter Report. http://www.russneft.ru/reporteskv/

Appendix 2: Sources for Tables 6A and 6B

[0] Russian Institute of Strategic Studies. http://www.riss.ru/library/vektor5-2000.pdf
[1] Transnet. 2002. "Tariffs (Тарифы)." http://www.transneft.ru/Tariffs/Tariffs_ru.asp
[2] Marine Tariff Center. http://www.russianports.ru/novo/Tarif/35_p.htm; http://www.russianports.ru/tuap/Tarif/52_p.htm
[3] Oil and Capital. 2000. "Awaiting Primorsk (В ожидании Приморска)." *Oil and Capital* 2.
[4] Ventspils Nafta. 2000. "The Council of JSC ***Ventspils Nafta*** Reviews the Company's Financial Results for 1999", *Ventspils Nafta News*. http://www.vot.lv/vnt/info/?aid=277
[5] Caspian Energy. 2003. "Our Main Task is To Provide Guarantees and Create Attractive Conditions for Private Businesses (Наша главная задача – создать гарантии и привлекательные условия для частного бизнеса)." Interview with Alexander Todiychuk, President of Ukrtransnafta, *Caspian Energy* 20. http://www.caspianenergy.com
[6] Energy Information Administration. 2005. "Major Russian Oil and Natural Gas Pipeline Projects." http://www.eia.doe.gov/emeu/cabs/russia_pipelines.html
[7] Oil and Capital. 2003. "Main Export Route (Главное экспортное направление)." *Oil and Capital* 9.
[8] Transneft. 2003. "Baltic Pipeline System Is an Example of Construction (БТС /Балтийскай Трубопроводная Система/: образец строительства)." *Transneft Publications*. http://www.transneft.ru/press/Default.asp?LANG=RU&ATYPE=9&PG=2&ID=4097
[9] Oil and Capital. 2003. "Oil Prospects of Tuapse Port (Нефтяные перспективы Туапсинского порта)." *Oil and Capital* 9.
[10] Odessa Maritime Port. http://www.port.odessa.ua/od199.php
[11] Oil and Capital. 2002. "Baltic Prospects (Балтийские перспективы)." Interview with Aivars Lembergs, President of Latvian Association of Transit Business, Mayor of Ventspils, *Oil and Capital* 9.
[12] Mazeikiu Nafta. http://www.nafta.lt/en/content.php?pid=18
[13] Oil Export, 2005. "Transneft Asks to Increase Tariff in 2006." («Транснефть» просит повысить тариф в 2006 г.) *Oil Export*. Petroleum Argus: November 14, 2005.
[14] Oil Export, 2005. "Economics of Russian Oil Export" (Экономика экспорта российской нефти). *Oil Export*. Petroleum Argus: November 14, 2005.

Note: average tariff per 100 ton/km is calculated as $\frac{\text{tariff per 100 tons}}{\text{approximate length of the pipeline through the territory of the country}}$

[15] Energy Information Administration. 2006. "Ukraine: Country Analysis Brief. Oil." http://www.eia.doe.gov/emeu/cabs/Ukraine/Oil.html
[16] Administration of Novorossiysk Maritime Port. 2005. http://www.ampnovo.ru/index.php?option=com_content&task=blogcategory&id=15&Itemid=27
[17] Energy Information Administration. 2006. "Baltic Sea Regional Factsheet. Oil." http://www.eia.doe.gov/emeu/cabs/Baltic/Oil.html
[18] Oil Export, 2005. "Oil Shipments through Tuapse Decreased by 9% in October." (Отгрузки нефти из Туапсе снизились на 9% в октябре) *Oil Export*. Petroleum Argus: November 14.
[19] Odessa Maritime Port. http://www.port.odessa.ua/index.php?page=2
[29] Federal Energy Commission of Russian Federation. 2002. "Enactment on Tariffs for Specialized Maritime Oil Port Primorsk (Постановление об утверждении тарифов и сбора в ООО «Специализированный морской нефтяной порт Приморск»" May 15. http://www.russianports.ru/prim/shvart1.htm
[21] Barabash, I. 2003. "Reverse or Averse of Odessa-Brody System: Advantages and Disadvantages (Реверс или аверс системы «Одесса-Броды»: преимущества и недостатки)". *Economic Chronicles-XXI*, #11. http://www.soskin.info/ea.php?pokazold=2003111206&n=11-12&y=2003
[22] Council for International and Defense Policy. "Russia and Baltic States: Tariff Policy and Price Dynamics." http://www.svop.ru/live/materials.asp?m_id=6884&r_id=6920