Productivity and Privatization in Russian Oil & Gas

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This paper explores the hypothesis that privatization has resulted in better firm performance in the Russian oil and gas industry. The study focuses on three vertically integrated oil and gas conglomerates, Rosneft, Lukoil, and Gazprom Neft, to identify the effect of changes in ownership structure on production costs. The time-period of interest is from the years after the fall of the USSR to the present. Multivariate regression controlling for time trends and year effects shows that production expense per barrel of oil equivalent is negatively correlated with increases in government share. In the Russian political and economic context, comprised of privatization followed by a period of renewed government investment, increased government ownership is associated with lower production costs for the three firms studied.
1. Introduction

The goal of Russian privatization, as pursued through a comprehensive economic program led by President Yeltsin in 1992, was to create privately owned corporations that depend on their own profits instead of government subsidies for survival. Privatization relied on the idea that if firms were forced to internalize the individual costs and benefits of production, they would have to become more efficient in the use and distribution of their assets or necessarily go out of business (McFaul 1995, 229). The privatization program was designed without much involvement from other societal groups or branches of government, instead relying on neoclassical economic theory and western advisers. A backlash ensued by actors demanding that privatization be guided by the directors or employees of the firms, criticizing Yeltsin’s program for enabling those that had grown wealthy following the collapse of the USSR, including former black marketers, the mafia, and foreigners, to consolidate private ownership (McFaul 1995, 230).

After the failed Soviet coup in 1991, Yeltsin neglected taking the measures necessary to either consolidate his executive power in order to create a more authoritarian state or to make wide-scale constitutional and institutional changes that would truly democratize the political system. Yeltsin’s inability to create institutions that would support markets or provide a voice to mass-based groups allowed his plans for economic transformation to be blocked by societal groups that had grown into powerful economic forces under communism (McFaul 226, 1995).

One aspect of Yeltsin’s privatization program was a mass voucher system implanted in 1992. Each citizen was allocated a voucher, ostensibly worth 10,000 rubles, which each could redeem for company stock (Sim 2008, 52). In fact, ordinary citizens were excluded from at least a quarter of auctions, including that of most oil and gas firms (Sim 2008, 114). Furthermore, the enterprises that gave employees the right to buy up to 51% of a company’s voting shares typically came under the control of general managers who bought up shares from employees, often by using illegal methods. Foreigners were also initially limited by government decree to no more than 15% ownership in holding companies. By 1995, about 61% of Russian business oligarchs came from the Soviet Nomenklatura, having held key positions of responsibility in government. This type of managerial capture and other forms of corruption, which prevented any true restructuring of privatized firms, were later referenced by political actors as the alleged causes behind the poor performance of the economy (Sim 2008, 52).

The blatant corruption following the fall of the USSR left much of the nation resentful at how the government had handled privatization. The current government has exploited this resentfulness as a justification for renewed state control in order to fight corruption and reclaim stolen assets. Meanwhile, there has not been any substantive evidence on which method of ownership has resulted in better outcomes for firms in the oil and gas industry. This study examines whether changes in state ownership share in joint-stock enterprises have produced any significant impacts on firm performance and whether there is truth to the claim that privatization, through different incentive structures and forms of management and control, improves firm efficiency. I use expense and output data for Rosneft, Lukoil, and Gazprom Neft, to run a regression model that estimates the effect of government share on a firm’s production expense per barrel. Contrary to Yeltsin’s goals for privatization, I determine that the effect of greater government ownership on
the three largest Russian oil and gas firms is improved efficiency as evidenced by reduced costs per barrel.

The remainder of this paper is organized as follows. In section 2, I provide an overview of the privatization and nationalization periods. In Section 3, I review the work that precedes this paper about the efficiency of national versus private oil and gas firms in Russia as well as within a global context. In Section 4, I discuss my empirical strategy. In section 5, I present the results as well as potential causes. In section 6, I describe limitations and consider improvements to the model. In section 7, I offer conclusions.

2. History of Privatization & Nationalization

Privatization of oil and gas was conducted in two waves, first by corporatizing the former energy ministries and acknowledging that the state would sell off its shares within three years. The Ministry of Fuel and Energy transformed into a joint-stock company, Rosneftegaz, in September 1991 and splintered into over a dozen privatized entities. It later became Rosneft when the oil and gas entities separated in 1992, and it sold off two more of its largest holdings, Yukos and Surgutneftegaz, in 1993 (Goldman 2008, 61). The state enterprise of Rosneft managed the remaining assets until it was reorganized into an open joint-stock company, Rosneft Oil Company, in 1995. LUKoil was the first of the three private VOICs created from the remains of Rosneftegaz after the Minister of the Oil and Gas Industry splintered off three of its lucrative petroleum fields and appointed himself CEO, a month before the dissolution of the USSR. The Ministry of Gas was unique in that its senior government officials fought successfully in order to maintain its consolidated state. Instead, The Ministry of Gas became Gazprom, the first state-corporate enterprise, in 1989, and its former minister became CEO and president. The state initially owned all Gazprom stock before selling off a portion to private parties during its transformation into a private joint stock company in 1992 (Goldman 2008, 60). By 1994, the state owned 40% of shares, later reduced to 38%, 15% were allocated to employees, while 33% of shares, many of which were bought using vouchers, were sold to 747,000 individuals. Because of Chernomyrdin’s success in privatizing Gazprom, Yeltsin selected him as his Prime Minister in 1992, leaving Chernomyrdin’s former deputy in the Ministry to become CEO and Chairman of Gazprom. Due to this favorable arrangement, the company was able to evade paying much of its taxes as well as dividends to the state, its principal shareholder, while many of Gazprom’s assets were freely divvied out to the friends and family of executives (Goldman 2008, 61).

The second step, involving actual divestment, occurred between the years of 1995 and 1997 through “cash privatization” involving various methods (Sim 2008, 30). The share-for-loans method, proposed by Russian banks in response to the government’s inability to collect its taxes, involved bank loans to the government with government shares offered up as collateral (Goldman 2008, 64). Under this agreement, the government had a year to collect the taxes and repay, or the banks could sell the loans in “collateral auctions” in which the government would obtain 70% of proceeds, leaving the rest for the banks. The state received about $800 million from collateral auctions that resulted in the divestment of twelve companies, five of which were in the oil industry, including Yukos, Surgutneftegaz, LUKoil, Sidanko, and Sibneft (Sim 2008, 31). Most auctions were conducted through insider deals with prices beneath their capitalization on the Russian market and drastically below what foreigners were willing to pay (Goldman...
The other method involved investment tenders, in which a buyer acquired the state-owned portion of shares held by a VIOC’s investment fund in exchange for providing investments which would ensure the long-term viability of the firm. Investment tenders involved the same set of discriminatory practices, including insider deals and below-market prices, but typically dealt with smaller share amounts (Sim 2008, 38).

As a result of the lack of transparency and strict oversight throughout privatization, the small number of rich oligarchs that succeeded in seizing previously state-owned enterprises was comprised of former government officials that had managed the enterprises and served as their de-facto owners before the collapse of the USSR. Ownership was also seized by those that had grown wealthy through illegal black-market activities and had developed a knowledge of how markets operated by taking advantage of Soviet shortages (Goldman 2008, 58). Instead of being effective managers, many of these new owners sought to capitalize on the government’s weakness by transferring state assets to their newly privatized enterprises or selling them off in foreign markets for quick personal profit (Goldman 2008, 5). This type of “spontaneous privatization” caused an outflow of capital in the years from 1992 to 1995 estimated at $7.4 billion from the Russian oil industry alone (Sim 2008, 19).

Russia has always been one of the world’s leaders in oil production, surpassing all other players from 1898 to 1901, during the late 1970s and 1980s, and once more in 2006 (Goldman 2008, 3). As such, the price of the ruble relative to the US dollar has been highly correlated with the price of oil, and the success of the energy industry is closely tied to the economic well-being of the nation (Kojo & Sanghi 2017). The oil and gas industry remains vital for Russia’s budget, economy, and geopolitical goals by means of the export earnings, fiscal revenues, and cheap fuel that it provides (Moser 2016, 1).

Privatization in the early nineties was highly effective in transferring ownership in the energy sector. Among the top five VIOCs accounting for 55% of oil production in 1997, the state only retained shares in LUKoil. By the turn of the century, the only major oil firms that the state retained control over were the VIOCs of Rosneft and Slavnet, as well as some small production units and entities co-owned by regional authorities (Sim 2008, 39).

However, privatization was temporary and has been supplanted by renewed nationalization. Today the state holds majority stakes in two of the three largest Russian oil and gas corporations, Rosneft and Gazprom. The trend of state acquisition of oil industry assets began in the 2000s when Putin ascended to power as Prime Minister at the turn of the century. Appealing to populist voters, Putin championed the state’s renewed interests in the oil industry as a necessary attack on the oligarchs that had abused the loans for shares program. Having accused them of plundering the natural resources of the state in exchange for personal profit, Putin began a program of reacquiring the assets that had been broken apart through privatization (Sin 2008, 3).

Putin was ultimately successful in this goal as the share of crude oil production produced by state-dominated companies rose from about 24% in 2003 to 37% in 2007 with around 1.7 million barrels a day of production returned to state ownership in 2005 (Hanson 2013, 14). (Gorst 2007, 3). The encroachment of the government on the energy sector has been subtle, with many acquisitions conducted through holding companies in which the state has a majority stake. As
seen through the case studies in the appendix, government decisions have had a decisive impact on the future of individual firms while playing a dominant role in the industry at large. However, in contrast to the political incentives that were the driving force behind both privatization and nationalization, it is not clear whether the economic argument offered by Yeltsin in support of privatization has come to fruition. Yeltsin’s government claimed that privatization would improve industry operation and efficiency, but has this truly been the case in the context of Russian oil and gas?

3. Literature Review

The performance of the Russian oil industry has been studied in regards to production output, due to the reliability and availability of this data, which is collected monthly by the Ministry of Energy and Federal Customs Service and sold to private buyers (Moser 2016, 80). Moser (2016) analyzes three distinct periods by tracking the annual change in production within eight Russian firms. The firms are then grouped into the categories of outsider private, insider private, regional state, and federal. The average change in production for a firm within a particular time period is then aggregated with the results of the other firms within its category to evaluate the performance of each segment during each time period.

Moser (2016) finds that during the 12-year period between 1992 and 2004, the federal state group, comprised of only Rosneft, experienced the greatest average growth in output, at slightly higher than 40%. The second highest performing group was insider private, averaging about 30% in output growth, and made up of LUKOil and Surgut. The outsider private group, consisting of Yukos, TNK, and Sibneft grew at about 15%, while the output of the regional state group, comprised of Tatneft and Bashneft, actually declined by around 30% (Moser 2016, 81). This implies that connections to the federal government may have had more significance for growth than ownership structure itself, since LUKoil, although private, had close ties to the state through its CEO.

Using a global dataset from Petroleum Intelligence Weekly (PIW), which provides operating and financial data on 130 firms over 20 years, Wolf (2009) studies the effects of different forms of ownership on oil firms across the world. Wolf (2009) subdivides the panel data provided by PIW into four distinct ownership types, including fully state owned NOCs (100%), majority state-owned firms (over 50%), minority state-owned firms, and fully private companies. Wolf (2009) produces both a random and fixed effects estimator, the first of which he argues has no inherent bias relative to the question posed but may over or under estimate the effect of ownership by incorporating the effect of unobserved variables. The fixed effects model allows Wolf to control for the different ownership structures, which presumably have time-invariant characteristics, in order to identify the effect of a change in ownership on performance within a group composed of a particular ownership type.

Wolf (2009) finds that between 1987 and 2006, National Oil Companies (NOCs), particularly those that are OPEC members, produce a lower percent of reserves than do private companies, although Wolf warns that this may be due to conservative production policies or systematic overstatement of reserves rather than poor performance. In terms of input to output conversion of oil, private firms surpass state firms by 21-30%. However, no clear advantage is evident for any
group across all time periods when analyzing revenue generation per unit of output or profitability (Wolf 2009, 28).

Unlike the previous studies, which focus primarily on oil output and revenues as a proxy for growth and performance, I focus primarily on costs. Oil production quantities are influenced by a variety of factors, including firm size, level of proven and available reserves, oil price, and national considerations, such as a desire to limit supply in order to manipulate prices. Therefore, costs per barrel of oil may serve as a better measure of evaluating firm efficiency under different forms of control because a firm has every incentive to keep this ratio low. If privatization is correlated with reduced costs per barrel, while controlling for trends in technological advancements over time, it may be more feasible to attribute this change to the implementation of more efficient production practices and policies. I use similar economic methods as Wolf (2009) to analyze changes in individual firms, as opposed to groups, in order to make inferences about whether privatization has affected firm performance, specifically within the Russian political and economic landscape. I focus on Rosneft, LUKoil, and Gazprom Neft, three vertically integrated oil and gas firms of comparable size and output.

4. Model Description

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon \]

\( Y \) = Production Expense Ratio = Total Annual Production costs / Annual Production (BOE)

\( X_1 \) = Government Share %

\( X_2 \) = Dummy Variables for each Year

This multivariate regression model examines what impact changes in government share have on the performance of the three largest Russian firms as they undergo privatization or nationalization. The panel data is gathered from the financial statements and annual reports of Public Joint Stock Company Rosneft, Private Joint Stock Company LUKoil, and Private Joint Stock Company Gazprom Neft in order to analyze the relationship between share ownership and a firm’s production expense ratio. The production expense ratio is the firm’s production expense divided by the firm’s output of oil and gas in barrels of oil equivalents. The Energy Information Administration defines the production expense (also called lifting costs) as “the costs to operate and maintain wells and related equipment and facilities per barrel of oil equivalent (boe) of oil and gas produced by those facilities after the hydrocarbons have been found, acquired, and developed for production. The ratio can include either direct lifting costs, which are equal to “total production spending minus production taxes (and also minus royalties in foreign regions) divided by oil and gas production,” or total lifting costs which are “the sum of direct lifting costs and production taxes” (EIA 2011). I use direct costs in my research because they leave out depreciation, depletion, and amortization, and taxes, which are outside of the control of management. I specifically focus on lifting costs because they are a common metric used to evaluate how well an oil and gas firm can reduce operating costs as well as how efficient they are at extracting oil and gas.

I use dummy variables to control for the various outside influences on both costs and output that occur each year and affect all oil and gas firms similarly within Russia. By controlling for the year, I can control for changes in such factors as the current political climate in Russia, national
considerations, sanctions, exchange rates, oil demand and prices, and input costs, all of which could affect the lifting ratio through their effect on expenses or on output. I do not include any additional regressors since there are none that would foreseeably be correlated with both share ownership and production expense leading to omitted variable bias.

Share ownership by the government can be difficult to determine because the government can retain indirect ownership through holding companies in which they are a majority shareholder, as is the case with Gazprom Neft. In order to accurately assess the government’s share, I multiply Gazprom’s share in Gazprom Neft by the government’s stake in Gazprom.

### 5. Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff.</th>
<th>T-test</th>
<th>Std. Error</th>
<th>R-sq</th>
<th>Number Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share</td>
<td>-0.0147072</td>
<td>-2.78</td>
<td>0.0052852</td>
<td>60.66%</td>
<td>47</td>
</tr>
</tbody>
</table>

Chart 1

![Chart 1](image1.png)

Chart 2
The results are statistically significant at the 10% and 5% level. The share variable measures government ownership in percentage terms, so the coefficient indicates that a government share increase of 100% is associated with a decrease of 1.47 in the production expense ratio of the included firms, which is a number that varies from 1 to 8. I also include a simple linear regression for each individual firm to identify if there is a statistically significant relationship between share ownership and production expense at the firm level. This helps me to identify if there is a strong relationship between the two variables within one specific firm that may serve as the driving force behind the aggregate effect identified in the multivariate regression. However, these regressions cannot control for any external effects from outside influences that vary from year to year or for general time trends.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff.</th>
<th>T-test</th>
<th>Std. Error</th>
<th>R-sq</th>
<th>Number Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share</td>
<td>-.0027404</td>
<td>-.22</td>
<td>.0127135</td>
<td>.42%</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 3: Lukoil
<table>
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<tr>
<th>Variable</th>
<th>Coeff.</th>
<th>T-test</th>
<th>Std. Error</th>
<th>R-sq</th>
<th>Number Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share</td>
<td>-0.0745286</td>
<td>-3.26</td>
<td>0.0228694</td>
<td>38.45%</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 4: Gazprom Neft

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff.</th>
<th>T-test</th>
<th>Std. Error</th>
<th>R-sq</th>
<th>Number Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share</td>
<td>0.066989</td>
<td>2.46</td>
<td>0.0271793</td>
<td>31.85%</td>
<td>15</td>
</tr>
</tbody>
</table>

The results indicate that there is no significant relationship within Rosneft between share ownership and production expense. However, this may be because Rosneft had the least amount of variation in share ownership to analyze over this time-period. It was also the only firm that was never fully privatized and in which the state has always been a majority shareholder. It will be important to observe whether the 20% sale in 2017, the largest state share ever to be sold in Rosneft, had any impact on performance once the data is published. LUKoil indicates the strongest negative relationship between share ownership and production expense. However, Graph 2 indicates some of this may be attributed to time effects or a general increase in lifting costs over time. This may be the case since LUKoil was privatized early on while its lifting ratio has generally increased over the entirety of the firm’s existence, even when it was state owned. Seeing as a similar time trend is not clearly identifiable in the other firms, the trend could also be attributable to a characteristic specific to LUKoil that could be controlled for by including fixed effects. Gazprom is the only firm indicating that an increase in government share may have negatively affected performance by increasing the lifting ratio. The effect seems to be driven from the sharp rise in the lifting ratio after Gazprom purchased Sibneft, primarily an oil producer, renaming it Gazprom Neft. This change may actually be attributable to the fact that oil and gas can differ in the expenses necessary to produce a barrel of oil equivalent. Graph 3 indicates that a few years after the initial jump, the lifting ratio steadily decreases while under the auspices of government-controlled Gazprom, a trend more consistent with the aggregate regression result.

6. Limitations

The study is limited by the 47 observations I could gather from the limited information published by the firms. For Rosneft, Lukoil, and Gazprom Neft, I produce data from 2004 to 2016, 1998 to 2016, and 2002 to 2016, respectively. It would have been best to obtain data on all the years for each firm’s existence and to run a fixed effects model that could identify the intra-firm effect of government share on the lifting ratio. This model would have controlled for all of the time-invariant, firm-specific characteristics, which vary between the three firms but are consistent through time, such as strong leadership or political connections. However, it is difficult to identify any characteristics that did not change at all as the companies expanded through acquisitions and their ownership structures changed as shares were bought and sold. The data also lacks enough intra-firm variation in share ownership for the fixed effects model to produce significant estimators. This lack of variation is due to the fact that when transitions in ownership occurred they typically resulted in sharp, immediate increases or decreases in share. Therefore, I do not have enough data points for each level of government ownership share for each firm.
Instead, I attempt to compensate for any inter-firm differences by choosing three of the largest oil and gas producing firms that maintain substantial upstream and downstream operations so that they are comparable in size and scope. If I could produce data for all the Russian oil and gas VOICs during this period, the study could prove more elucidating.

I mitigate the effect of omitted variable bias by including dummy year variables. This is because many of the variables that could have an effect on the production expense ratio and may be correlated with share ownership, such as the current political climate or the price of oil, are likely to have similar impacts on each firm for any particular year. However, if lower lifting costs can induce the government to increase its investment, then reverse causality may still cause an endogeneity problem. I address this by investigating the motivations behind privatization and nationalization within Section 3 and the Appendix. My research finds that privatization was conducted primarily in response to government decree and the failure of the government to repay their bank loans, both of which were involuntary. In later years, privatization was a solution to counteract the depletion of budgetary funds necessary for government operation. Nationalization was utilized for its mass political appeal to a populace that felt robbed by the corruption manifested throughout privatization and as a means to retain the security and strategic strength of the government and the nation. In terms of selection, the government chose to purchase particular firms as punishment for disobedience, such as in the case of Rosneft’s purchase of Yukos, or to reward leaders it built close and trusted relationships with, such as through the privatization of LUKoil. In other cases, investment and acquisitions served to increase the capabilities of existing state firms, such as the purchase and consequential renaming of Sibneft Oil Company by Gazprom, a natural gas firm. Therefore, it is unlikely that operational competitiveness was at the root of these strategic decisions. However, the relationship between lifting costs and ownership can also be tested with the use of instrumental variables to further validate the flow of causality.

In terms of data, although the lifting ratio is a common ratio used to evaluate the performance of oil and gas firms, not all of the firms published this ratio for all years or at all. When the ratio was calculated, it was not always clear whether the firm used direct or total production costs or overall operating costs in their calculations. For example, the Financial Accounting Standards Board defines listing costs as “those costs incurred to operate and maintain an enterprise’s wells and related equipment and facilities, including depreciation and applicable operating costs of support equipment and facilities and other costs of operating and maintaining those facilities.” Examples of lifting costs include the cost of labor, repairs and maintenance, supplies, materials, fuel, property taxes, and severance taxes (Gallun & Wright 2008, 716). Therefore, to maintain uniformity, I calculate the ratio myself using the same line from each of the firm’s financial statements. I focus specifically on “production costs” under the heading “as a result of operations relating to oil and gas production” and exclude production taxes, depreciation, depletion and amortization, income tax, and other taxes, as these are not controllable by management or field and operating personnel. For all firms, I include production costs calculated for both consolidated subsidiaries and joint operations and ventures. Including joint operations and ventures in the production costs may skew the evaluation of an individual firm’s efficiency in its own operations if the firm had only a small part in the management of the joint operation. However, since expenses for subsidiaries and joint ventures are already combined in many
It is also important to consider that the production or lifting ratio is computed across oil and gas firms, but gas is typically costlier to produce than oil, so I collect data on firms that are comparable in terms of their production of both commodities (Gallun & Wright 2008, 716). This may be one reason behind the sharp increase in Gazprom Neft’s lifting ratio after acquisition by Gazprom and expansion of gas production. It may be a better indicator to create a separate ratio for each commodity if data is available on what proportion of production costs are attributed to each segment. Higher lifting costs may also be attributed to the costlier production of offshore drilling, which can produce oil of greater quality. In that case, a higher production expense ratio is not always a reflection of poor performance if the barrels can be sold for more revenue (Gallun & Wright 2008, 716). As such, it may be helpful to further evaluate the production expense in conjunction with revenue per barrel, or an additional regressor can be included that reflects offshore drilling volumes. If there is a correlation between share ownership and the decision to take on costlier ventures for greater returns, then omitting this regressor may lead to omitted variable bias.

For several years the firms reverted from US GAAP to International Financial Reporting Standards (IFRS) published in rubles. I convert the values to dollars based on year-long averages provided by the IRS and Oanda Average Exchange Rates. Often it was necessary to convert output in earlier years from cubic feet, cubic meters, and tons into barrels of oil equivalents using conversion factors provided by The Society of Petroleum Engineers and BP. Although I was methodological about these conversions and verified as often as possible that the numbers were consistent with the methods of accounting used by the firms, inaccuracies may exist.

Furthermore, the expenses associated with the specific oil and gas segments, such as acquisition, exploration, and development activities, and production activities were always unaudited, as they are considered supplementary and not integral to assessing the overall financial well-being of the firm. Therefore, the accuracy of the data provided may be subject to some scrutiny, especially in instances when subsequent reports posted conflicting expense values for preceding years. In such cases, I always defer to the production expense listed for that particular year in the report published for that year. It may be of future benefit to purchase access to some of the subscription-based sources used by economists and financial analysts to obtain data for longer periods and to verify accuracy in reporting.

7. Conclusion

According to The Energy Intelligence’s Annual Ranking of the world’s top 50 oil and gas companies in terms of reserves, outputs, and revenues, 60% of the current top 25 firms are majority government-owned, and national oil companies hold the top three spots (EIA 2018). Now there is reason to believe, at least within the political climate in Russia, that national oil and gas firms may also be out-performing their private competitors in terms of costs.

There are many reasons behind which greater ownership by the state is correlated with a lower production expense ratio, which occurs when a firm either reduces their expenses or increases
output. Some of these factors can be determined from the case studies. One such reason may be that governments tend to obtain ownership of larger oil conglomerates that dominate rivals in terms of production and therefore tend to benefit from the cost reductions associated with economies of scale. Corruption could also be a factor in the sense that national oil firms may be given preferential treatment when bidding for areas that hold reserves, such as when Rosneft was somehow able to outbid higher bidders in the substantially undervalued purchase of Yukos after Yukos had been bankrupted by the government. Firms that have high levels of reserves are able to keep their reserve replacement ratio over 100%, allowing them to produce more output without fear of depletion. It may also be the case that the “management capture,” which was prevalent throughout Russian privatization, ensured that many privatized firms simply retained the same structure and management as they had during the USSR, leading to little change in leadership or practice. Since the government was actively trying to pursue economic reform, they may have actually generated greater institutional changes than short-term profit-seeking owners.

However, due to the limited amount of data collected, I believe this study cannot conclude the direct effect of government ownership on the production expense ratio for the Russian oil and gas industry as a whole. Replicating this study with data on all Russian VOICs from 1991 to the present would help to produce a fixed effects estimator and more accurately control for time trends and year effects that may be driving the effect evidenced by the model.
References


Appendix

Rosneft

The privatization of Rosneft began when The Ministry of Fuel and Energy was transformed into a joint-stock company, Rosneftegaz, in September 1991 and splintered into a dozen or more independent entities by privatizing its pipelines, refineries, and fields (Goldman 61). In response to Presidential Decree 1403, the oil and gas entities of Rosneftegaz separated into two, creating the state oil entity of Rosneft (Poussenkova 2007, 3). In 1992 and 1993, Rosneftegaz’s main assets were sold off to form three of the largest private VIOCs, LUKoil, Yukos, and Surgutneftegas (Goldman 2008, 61).

Rosneft differed from the VIOCs in that it existed as a sort of holding company to reduce “spontaneous privatization” of remaining soviet assets, including the state’s shares in 259 oil-related enterprises, which existed outside of the increasingly powerful VIOCs (Sim 2008, 101). Some political actors hoped Rosneft would become a national oil company that could provide cheap energy for the public, while others wanted to divide Rosneft further by creating more VIOCs, ostensibly to create a more competitive landscape, but possibly driven by the hopes of seizing more of its components for personal gain (Sim 2008, 99). In 1993, Rosneft was responsible for over 60% of domestic oil production, but due to the economic and political impacts from the dissolution of the Soviet Union, the state could not effectively manage the conglomerate of dispersed enterprises throughout the former soviet territories (Poussenkova 2007, 4). In 1995, Yeltsin chose a compromise between fully privatizing and nationalizing Rosneft and passed Presidential decree 327, which corporatized and reorganized Rosneft into an open joint-stock company, Rosneft Oil Company (Goldman 2008, 61). Following the structure of other VIOCs, 51% of Rosneft shares were to be retained by the state for three years, 25% distributed at a discount to employees, and the remaining 24% sold to outside investors. Yeltsin also repealed an earlier restriction preventing foreign investment in strategic national industries, including oil and gas (Sim 2008, 102).

Attempts to privatize Rosneft in 1998, even with the inclusion of foreign bidders, failed for various reasons, including the collapse of oil prices, the devaluation of the ruble, an asking price from the government far exceeding the firm’s valuation, and ongoing internal conflict within the company’s management team which was the extension of a battle of influence originating in government (Sim 2008, 105). That same year, the state also failed to strengthen Rosneft through a merger with Slavneft and ONACO, other entities in which it held controlling interests. This was a result of resistance from private VOICs who feared the resurgence of Rosneft as a formidable competitor that would presumably hold the favor and privilege of the state. Subsequently, Rosneft remained a negligible actor for the rest of the century as it bled more of its assets to private firms run by oligarchs eager to take advantage of government weakness and corruption. It ranked behind seven competitors in terms of production, lifting costs, overemployment, and overall efficiency (Poussenkova 2007, 9).
Rosneft’s fortunes began to turn at the turn of the century as a result of an increased desire by the state to renew its role in the economy, primarily in energy (Goldman 2008, 15). To consolidate its hold on its remaining assets, Rosneft began to reassert control through greater share acquisition in its subsidiaries. This consolidation was done with ease after the RF Anti-Monopoly Ministry provided its permission in 2000, amid complaints that Rosneft’s asset valuations were subverting other shareholders through unfair pricing (Poussenkova 2007, 25).

Rosneft was finally able to regain a position of strength through its strategic acquisition of Yuganskneftegas in 2004, which transformed it into the third largest Russian oil firm. Yuganskneftegas had been the largest oil producing subsidiary of Yukos, a private firm that had earned the disapproval of the government and was bankrupted, broken apart, and sold off to satisfy alleged tax debts (Goldman 2008, 63). Putin and the Kremlin used the Yukos affair as a signal to the oligarchs who refused loyalty to the government (Sim 2008, 116). Through this favorable purchase at extremely low rates, Rosneft’s oil production rose from 21 million tons annually to over 75 million tons, and it gained substantial amounts of proven oil and gas reserves to fuel its growth in future years (Poussenkova 2007, 1).

Rosneft was partially privatized for the first time in 2006 when it sold off a 14.9% stake in the largest IPO for a Russian company. The sale was conducted to fund a purchase of 10.7% of Gazprom so that Rosneft could increase its gas capabilities. It was the first oil and gas privatization that allowed individual investors to take part, but strategically prevented any single shareholder, including institutions, to acquire more than 2% of shares (Sim 2008, 115).

In 2013, Rosneft strategically sold off shares in order to acquire TNK-BP from BP and four other firms. The deal made BP Rosneft’s second largest investor by provided it with an 18.5% stake as well as two seats on Rosneft’s Board of Directors. Meanwhile, the purchase of TNK-BP enabled Rosneft to surpass Exxon Mobil in oil production making it the largest publicly traded oil company in the world (Soldatkin, Callus 2013) (Rosneft 2013).

In 2017, 19.5% of state shares in Rosneft, in a $11.3 billion deal, were sold to a consortium headed by Glencore and the Qatar Investment Authority in what was labeled the largest privatization deal in Russian history by Rosneft’s CEO, Igor Sechin. This was the largest investment in Russia since the Ukraine crisis and was a result of budgetary needs caused by sanctions and declining oil prices. However, due to the complex structure of the deal, Qatar’s actual equity stake was around 4.7% and Glencore’s about .5% (Patterson & Marson 2017).

**Lukoil**

LUKoil was the first of the three private VOICs to be created from the remains of Rosneftegaz after the Deputy Minister of the Oil and Gas Industry, Vagit Alexperov, splintered off some of its most lucrative assets and appointed himself CEO in November of 1991, a month before the dissolution of the USSR. LUKoil was comprised of three petroleum fields in Western Siberia along with two refineries in Volgograd and Perm (Goldman 2008, 61). Alexperov, who had acquired knowledge of vertically integrated operations by visiting the headquarters of several large Western oil companies during his time as Deputy Minister, enabled LUKoil to quickly
surpass competitors though early investment in refineries and distributors. The vertical model of operation, while prevalent throughout the West, had been completely neglected in favor of horizontally integrated supply chains within the USSR (Sim 2008, 18).

LUKoil was one of the first to focus on building up reserves at the cost of production, displaying greater regard for future returns, while competitors eagerly maximized current yields (Gorst 2007, 10). It was also the first to purchase foreign assets in both upstream and downstream capacities in 1996 and to establish a presence in the US through the purchase of gasoline outlets in 2000 (Goldman 2008, 3) (Gorst 2007, 11). LUKoil was also the first to sell stocks to foreigners and enter into equity partnerships with foreign firms. As early as 1995, LUKoil gave up as much as 7.99% ownership to U.S.-based firm Arco (Sin 2008, 32).

LUKoil was once the largest oil producing company in Russia challenged only by Yukos, until Yukos was bankrupted and acquired by Rosneft in 2006. The second highest producer, TNK-BP, met the same fate six years later (Gorst 2007, 7). Acquisition rendered the future performance of these once private firms impossible to evaluate as they were dissolved and their assets were entirely incorporated into the consolidated financials of Rosneft. Despite this trend in reassertion of control through the acquisition of other private oil and gas firms, the Russian state gradually reduced its ownership and fully privatized LUKoil, presenting a unique case study. This may be due to the fact that LUKoil was too difficult to pursue as a result of it becoming a pioneer in the industry or the fact that Lukoil has always retained loyalty to the government, subjugating its commercial interests to the will of the state when required (Gorst 2007, 4).

LUKoil has no majority shareholders, but the state was originally one of its largest owners, holding shares worth 32% in 1998 until it sold off its remaining 7.59% share in 2004 to ConocoPhillips, a U.S.-based firm. During the time of the sale LUKoil had been the second largest oil firm with daily production of about 1.6 million barrels and reserve amounts second only to ExxonMobil (LUKoil 2004). Today, LUKoil remains Russia’s second-largest oil producer and its largest private oil firm (LUKoil 2016).

Gazprom Neft

The Ministry of Gas was unique in that its senior government officials fought successfully in order to maintain its consolidated state. The Ministry transformed into an open joint stock enterprise called Gazprom as early as 1989, and the Minister, Victor Chernomyrdin, became its CEO. While the state retained sole ownership of Gazprom, a conglomerate of assets that produced, processed, and shipped natural gas, the form of ownership was now through stock shares. In 1992, Yeltsin’s decree transformed Gazprom into a private joint stock company and resulted in the sale of a portion of assets, but the state remained the dominant shareowner (Goldman 2008, 48). By 1994, the state owned 40% of Gazprom shares, later reduced to 38%, while 15% were allocated to employees, Gazprom kept 10%, and 33% of shares, many of which were bought using vouchers, were sold to 747,000 private individuals. Because of Chernomyrdin’s success in privatizing Gazprom, Yeltsin selected him as his Prime Minister in 1992, leaving Chernomyrdin’s deputy in the former Ministry of Gas to become CEO and chairman of Gazprom. Due to this favorable arrangement, the company was able to evade paying much of its taxes as well as dividends to the state, its principal shareholder, while many of
Gazprom’s assets were freely divvied out to the friends and family of executives (Goldman 2008, 61).

Gazprom Neft was formed in 1995, under the name of Sibneft, from the sale of state owned shares in exploration, production, refining and distribution assets taken from Rosneft (Goldman 2008, 62). Sibneft was sold in a loans-for-shares auction which occurred due to the endeavors of Boris Berezovsky and Alexander Smolensky, in exchange for their support during Yeltsin’s 1996 campaign. A majority of shares were transferred from a bank controlled by Berezovsky to a holding company owned by Smolensky (Goldman 2008, 65). Further attempts at privatization of Sibneft through the investment tender method in 1996 sold 48% of shares in exchange for cash to service debts and update equipment. However, those that won shares were mainly companies associated or partnered with Sibneft. This left almost the entirety of the firm under the ownership and control of its own management team by 1997 (Sim 2008, 39).

In order to enter the oil industry, majority state-owned Gazprom bought 72% of Sibneft in 2005 and renamed it Gazprom Neft (Gorst 2007, 2). After the $13 billion purchase, involving the state’s largest corporate take-over since the start of privatization, the state came to control 30% of Russia’s oil output. Meanwhile several of Gazprom Neft’s original owners had been forced to flee the country (Goldman 2008, 63). After the initial purchase in 2005, Gazprom Neft’s ownership structure and the Russian Federation’s share in Gazprom (just over 50%), remained unchanged until 2015 when Gazprom’s share in Gazprom Neft increased from 73 to 96 percent.

It seemed that Gazprom Neft’s production had peaked in 2006 since it experienced declines of 6% annually after purchase by Gazprom. Similar to trends within Gazprom, Gazprom Neft’s operating expenses increased by 98%, while capital expenditures grew by 20%. However, by 2011 Gazprom Neft was again experiencing production growth, as well as the lowest growth in operating costs relative to competitors. VTB Capital reported that Gazprom Neft’s EBITDA increased by 28% from 2009 to 2010, net of any impact from macroeconomic effects and regulatory amendments. VTB attributes this turnaround to management-driven efficiency improvements; specifically due to investment in various complementary downstream segments, which helped the firm successfully diversify its revenue streams and offset the volatility of upstream performance (VTB Capital 2011, 5). VTB also acknowledges that Gazprom Neft has benefited from valuable mergers and acquisitions within Russia and from the efforts of management to make the firm and its reporting practices one of the most open and transparent in the industry (VTB Capital 2011, 7).