

State-owned enterprises in the Russian market: Ownership structure and their role in the economy[☆]

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Abstract

This article analyzes the ownership structure of state-owned companies and their role in the Russian economy. Using a sample of 114 of the largest Russian companies, we estimated direct and indirect state participation as a percentage of shareholdings for direct and indirect federal property during the time period of 2006–2014. We used two methods to estimate the role of state-owned enterprises (SOEs), which allowed us to compare our results with OECD and Rosstat statistics for a broader sample of Russian companies owned by the public sector. This study revealed a decline in SOEs' share in the capitalization of the Russian stock market and a slight increase in their share of total revenues and employment. The results indicated that public SOEs demonstrated significantly higher productivity compared to non-public SOEs and private companies had a distinct advantage in productivity compared with public SOEs. Despite the significant advantages in productivity of private companies over the SOEs, over a 9-year period, we observed that this gap narrowed. This may be due to conditions of high financial volatility and stagnation of the economy that result in certain advantages for SOEs in terms of access to sources of long-term funding and other forms of state support. However, SOEs with indirect state control experienced a rapid growth in revenue and productivity compared to other firms. This may indicate the presence of a specific stock selection mechanism for transferring more effective SOEs from direct state ownership to indirect control as an alternative to privatization.

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1. Introduction: SOE analysis methodology

Evaluating the role of the state as a company owner is one of the starting points in choosing an economic policy. Scholars have a long history of engaging in theoretical discussions regarding the permitted size of the public sector in the economy, the comparative efficiency of public and private property, and, consequently, the expediency of privatization.¹ Most empirical studies on this topic, including the ones conducted in Russia, were carried out following the mass privatization, prior to the 2008–2009 crisis. There is a great need to update methodological approaches and specify the data that are available for state-owned enterprises (SOEs) in Russia.

Rosstat's official data, which do not consider all of the pyramid-like holdings in the mixed sector, indicate that a reduction in the public sector's share of the Russian economy (with the exception of investments and employment) occurred from 2008 to 2015. According to the European Bank for Reconstruction and Development (EBRD), the public sector's share of Russia's GDP increased from 30% in 2005, to 35% in 2010.² These data are informative in terms of trends, but seem grossly understated with respect to Russia's public sector. By early 2008, the degree of concentration of property owned by the state had reached 40%–45% according to the Expert-400 database. In 2009, various experts estimated this figure to be near 50%. According to certain experts' estimates, in 2015, the share (contribution) of state-owned enterprises in the GDP was near 29%–30% and the total contribution of the public sector was near 70% (compared to 35% in 2005).³ The IMF (Hughes et al., 2014) and the Federal Antimonopoly Service (FAS) (2016) provided data that were similar in terms of totals, but differed in methodology.

In this study, we aggregated the results of the 2015–2016 empirical study. First, we analyzed the contribution of major Russian SOEs to the total economic activity and compared them to private businesses in terms of efficiency. From a methodological perspective, we focused on solidifying the term “state-owned enterprise” and analyzed the forms of government control over SOEs as indicated by direct or indirect ownership. In addition, this study evaluated the role of SOEs in the Russian economy, the financial market and changes over time by comparing the size of direct and indirect public ownership and a number of other indicators for private firms and for companies that were directly and indirectly owned by the state.⁴

First, we should specify the subject of research for analyzing SOEs efficiency. It may be unexpected, but academic sources and official documents issued by

¹ Various ideas on this matter have been cited in literature on multiple occasions, including those mentioned in the lengthy discourse about “government failures” (Radygin and Entov, 2012), in theoretical privatization effectiveness models (Polterovich, 2012; Radygin and Entov, 2013), and following numerous empirical studies of the efficiency of private and public goods production from the 1970s to the 1990s (Radygin, 2014).

² EBRD Transition reports 2001–2011. Private companies (as opposed to state-owned) included all companies whose controlling stake belonged to private individuals and legal entities. This indicator is no longer tracked.

³ Estimated data presented at the 2016 Gaidar Forum (Russia and the World: A Look into the Future) on January 14, 2016 (panel discussion “State-owned enterprises: Economic accelerator or brake?” <http://en.gaidarforum.ru>).

⁴ Because the process of comparing efficiency between companies with different forms of ownership is questionable, we intend to present a detailed econometric analysis in a separate article. A comparison of results obtained by analyzing statistics from various company samples and building econometric models will serve as additional evidence of the sustainability of our study's conclusions.

national or international statistical agencies do not apply a unified approach to addressing this issue.

OECD experts note that there has never been a unified definition for the term “state-owned enterprises” and the statistics used to assess their role in the economy are fragmentary in nature.⁵ In a number of cases, holding companies that were owned by regional authorities were not considered as shares owned by the state. This problem specifically affects the Czech Republic, Estonia, Finland, Mexico, Poland, and other countries. Samples of state-owned companies are not “scrubbed” in every country for organizations for which the state holds a minority stake (10% or less). Shares indirectly owned by the state through other organizations under its control are not always considered to be state-owned property.

This issue significantly complicates the ability to form a common approach to evaluate the role of SOEs in the economies of various countries. Nevertheless, the OECD (2015) has attempted to develop a unified definition of SOEs that would include companies controlled by the state, which acts as their sole owner or the owner of a majority or material minority stake (voting shares). Material minority ownership stakes represent shares (voting shares) of at least 10%.

Since the late 1990s, Russia’s national statistics have included a set of indicators that describe state-owned and mixed-ownership (with the state’s involvement) businesses. According to the Institutional Unit Classifier (IUC), state-owned companies include, for example, joint-stock companies where 50% (or more) of the authorized capital is owned by the state.⁶ This is calculated based on shareholdings (shares in the authorized capital) that are at the disposal of authorized government agencies. Rosstat cites data on the basic parameters of mixed-ownership organizations regarding the state’s involvement. However, unlike the OECD’s SOE definition, Rosstat’s definition does not include companies for which the state controls less than 10% of the authorized capital; Rosstat defines all organizations for which the state directly controls shareholdings (shares in the authorized capital) that exceed 0 as mixed-ownership companies.

A new system of indicators is currently being introduced to evaluate the efficiency of state-owned property management and to develop statistical monitoring for state unitary enterprises, government institutions (autonomous, budget-funded, and treasury-funded), and economic entities whose authorized capital includes a portion of shares owned by the state or joint-stock companies for which the Russian Federation or subjects of the Russian Federation own a special right to participate in the management (“golden share”). However, there are no plans to make drastic changes to accounting procedures for state-owned and mixed-ownership companies.

Because of differences in definitional approaches between the OECD and Rosstat, it is difficult to evaluate SOEs role in the economy. Statistical data for SOEs that is published by Rosstat cannot be compared to data from other countries that are presented by international financial organizations. To address this discrepancy, we formulated two definitions of Russian SOEs: one definition corresponds to the OECD methodology and the second definition corresponds to

⁵ The different definitions of SOE (e.g., in OECD countries) are considered in detail in Christiansen, 2011.

⁶ In this case, state-owned property is defined as property beneficially owned by the Russian Federation (federal property) and subjects of the Russian Federation (RF subjects’ property) (see: Rosstat, 2009, p. 314).

the Rosstat methodology. This process has enabled us to obtain two company samples. The indicators for one sample can be used for inter-country comparisons and the indicators for the other sample can be used to compare Rosstat's estimates of public sector involvement in the economy.

According to the first definition, SOE refers to an organization that is controlled by the state, which acts as its sole owner or owns a majority or material minority stake (shares in the authorized capital). Material minority stakes are viewed as stakes (shares) of at least 10%. This definition is consistent with the OECD (2005, 2015) definition. For the sake of brevity, we refer to this approach as "Methodology 1."

For the second definition, SOEs are defined as organizations for which the state owns any stake (share in the authorized capital), regardless of its size. This approach only considers entities for which the state's ownership functions are performed by authorized government agencies of the Russian Federation or a constituent entity. This definition of SOE is consistent with Rosstat's methodology for evaluating the public sector. This approach is referred to as "Methodology 2."

Another important issue concerns a methodological clarification for evaluating the state's share in the ownership structure of Russian companies. To evaluate the structure of state-owned property in companies, we considered both direct and indirect state-owned property.

This is not a new approach for evaluating the state's share in the ownership structure.⁷ However, we must ensure that the methodology used to calculate indirect ownership is transparent and data that accounts for recent trends in corporate governance are relevant.

Direct ownership implies that shares (stakes) owned by the state are managed by authorized government agencies. For example, as illustrated in Figure 1, approximately 60% of Company A's shares are directly owned by the state and managed by Rosimushchestvo (Federal Agency for Managing State-Owned Property). The remaining 40% shares are indirectly owned by the state because they are not managed by Rosimushchestvo, but by Company A1, which is controlled by the state.

A simple illustration of indirect ownership is as follows: the state owns company shares, not through authorized government agencies, but through other organizations or a chain of organizations. The size of the state's indirect ownership stake (share) in a given company is calculated as the product of shares owned by the state in the parent company, shares owned by the parent company in the subsidiary, those owned by the subsidiary in its subsidiary, etc., continuing to the company under review. This calculation method includes a unique feature: any majority (exceeding 50%) stake (shares in the authorized capital) of a parent company that is directly owned by the state is considered to be 100%.

We now explain the calculation for stakes (shares) that are indirectly owned by the state by using several illustrative examples (Fig. 2). The state indirectly owns 40% of the shares in Company A, which is calculated by multiplying the 40% share owned by Company A1 in Company A by 1, because in this case the stake directly owned by the state in the parent Company A1 is considered to be 100%.

⁷ See, e.g., OECD (2005, 2015). An evaluation of indirect ownership of Russian companies during the 1990s and 2000s is presented in Sprenger (2010) and Chernykh (2008).

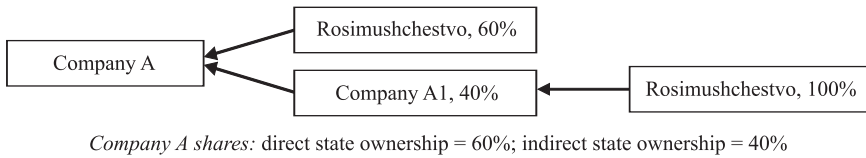


Fig. 1. Differences between direct and indirect state ownership.

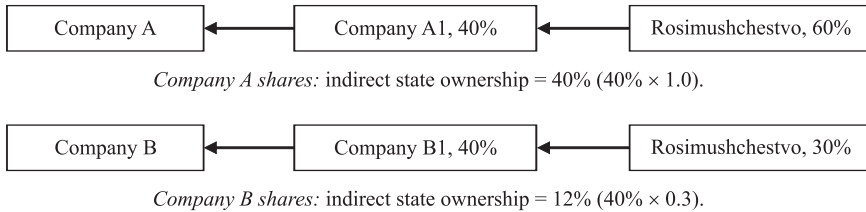


Fig. 2. Calculation of indirect state ownership.

For the second example, the stake indirectly owned by the state in Company B is 12%, which is calculated by multiplying the 40% share owned by Company B1 in Company B by 0.3, acting as a direct minority stake owned by the state in the parent Company B1.

For example, the share capital structure for Gazprom PJSC states that the Russian Federation, represented by Rosimushchestvo, controlled 38.37% of the shares as of 12/31/2014. This stake is directly owned by the state. In addition, Rosneftegaz OJSC owns 10.97% of its share capital which is in turn wholly controlled by Rosimushchestvo. Furthermore, the annual report for Gazprom PJSC names Rosgazifikatsiya OJSC as an owner, holding 0.89%, which in turn is controlled by Rosneftegaz OJSC (74.55%, a controlling stake considered as 100% for calculations). Therefore, the state's participation in Gazprom PJSC is identified at three levels in the ownership chain. In 2014, the direct share was 38.37% and the indirect share was 11.86%.

It should be noted that in each case the length of chain of ownership used for the calculation of indirect ownership was determined to be subject to the ability to identify stakes (shares) based on the companies' official statements. A more general view of the methodology for analyzing the hierarchical structure of ownership is presented in Figure 3. An analysis of the ownership structure begins with the company under review and ends with the state (top-down). The calculation of the indirect share begins with the state and ends with the company for which the estimate is made (bottom-up). Each element of this structure (the vertex is provided in Figure 3) corresponds to the holding company and the connections (edge weight) characterize its share in the higher-level company. The analysis ends when all terminal elements are owned by anonymous or private owners, or the state or when the set hierarchy level is reached.

The next stage identifies separate chains in the hierarchy, which terminate with the state, by identifying all possible routes between the two vertexes, i.e., the company under review and the state. These chains are highlighted in bold lines in Figure 3. Subsequently, all chains in the ownership structure between the company under review and the state are included in the calculation.

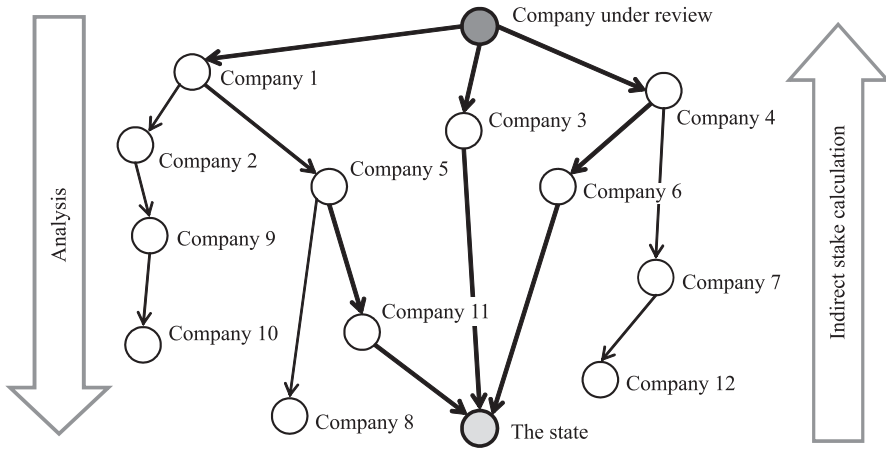


Fig. 3. Analysis of company ownership structure.

A controlling stake (a holding of more than 50%) of voting shares in each link of the ownership chain is considered to be 100% ownership for the calculations. We use v_i to represent the element in the ownership structure that corresponds to the i th company. d_{ij} represents the weighting that characterizes the stake owned by v_i in the v_j company. Then:

$$d_{ij} = \begin{cases} d_{ij}, & \text{if } d_{ij} \leq 0,5 \\ 1, & \text{if } d_{ij} > 0,5. \end{cases} \quad (1)$$

The contribution of C_k to the final estimate of indirect ownership is determined as a product of the stakes owned by all elements in the chain, beginning with the state:

$$C_k = \prod d_{ij} \text{ for all } d_{ij}, \text{ within the chain that leads to the state.} \quad (2)$$

The final estimate of indirect ownership represents the sum of calculated contributions C_k of all k chains.

Based on this methodology, we calculated the stakes (shares) in companies indirectly owned by the state. This calculation enabled a more precise evaluation of the contribution of state-owned enterprises to a number of relevant indicators of the Russian economy and an analysis of the performance efficiency of those organizations compared with SOEs that are directly owned by the state and private companies.

An important issue arises regarding the effect of state ownership on the performance efficiency of SOEs when compared to ownership by private companies. This matter will be reviewed in detail in a separate article. For this study, we only note that our approach (sampling SOEs with direct and indirect state ownership and comparing their performance to private companies) considers a new perspective of SOE business performance. We discovered that a comparison of the two samples with private companies yielded conflicting results, which suggests that there are substantial differences in efficiency not only between SOEs and private firms but also between SOEs that are directly and indirectly owned by the state.

2. Sample description

This study evaluated the role of SOEs in the Russian economy based on data from 114 companies for the time period from 2006 to 2014. The companies reviewed accounted for 63% of market capitalization and 5.9% of employment in 2014 and their total revenue accounted for 16.2% of all revenues reported for the Russian economy. Of the sample, 74 organizations were directly and/or indirectly owned by the state by percentages that exceeded zero. 61 companies met the definition of state-owned enterprises according to Methodology 1. 54 companies met the SOEs criteria according to Methodology 2.

The sample included the highest-cap public companies whose shares or bonds were listed.⁸ The analysis of the ownership structure also used data from the SPARK-Interfax database and annual reports published on the websites of the issuers. Due to insufficient transparency of the data, the sample did not include information about state unitary enterprises (SUE) and institutions, with the exception of Russian Post FSUE. The data included certain limitations on the sample size, particularly with respect to state-owned enterprises, because of limited availability of company data and official statements.

Table 1 provides the distribution of all observations that were included in the 2006–2014 sample. For illustrative purposes, we selected intervals corresponding to the criteria of fully private companies, companies for which the state owned up to 10% of the authorized capital, SOEs for which the state owned a material minority stake in the authorized capital (between 10% and 50%), and SOEs with state-owned majority stakes. The data are separated by direct ownership, indirect ownership, and the sum of direct and indirect ownership of the state. For one observation, we analyzed a set of factors regarding a company's financial condition i and its ownership structure during the year t . Accordingly, from the total sample of 114 companies with over 9 years of data, we obtained a total of 1,026 observations for each company-year pair; a certain portion of these pairs had gaps due to the unavailability of reports for certain periods in the database or in the public domain. A review of the sample suggested that 35.1% of all companies were entirely privately owned (0% direct and/or indirect ownership by the state) based on an aggregate accounting of stakes (shares) that were directly and/or indirectly owned by the state. A comparable number of companies (35.9%) were controlled by the state and the share of direct and indirect ownership exceeded 50%. Companies for which the state owned less than 10% of the shares (voting

Table 1

Distribution of observations between basic indicators of ownership structure (%).

State ownership	Number of companies from the sample within the stated range of state ownership			
	0%	> 0%–10%	10%–50%	50% to 100%
Direct	47.48	17.78	11.31	23.43
Indirect	76.36	2.88	9.25	11.51
Direct + indirect	35.05	14.18	14.90	35.87

Source: Authors' calculations.

⁸ These companies are required to publish quarterly reports on securities according to Appendix 3 of the Regulation on the Disclosure of Information by Issuers of Listed Securities, approved by the Bank of Russia Order No. 454-P, dated 12/30/2014. Data regarding the owners of such companies are contained in Section 6.3 of the quarterly reports published by the issuers.

shares) in the authorized capital, included approximately 14.2% of the observations. This total number of companies with minority stakes (shares) owned by the state did not generally fall within the SOE definition used by the OECD.

Using only the direct ownership criterion, 47.5% of all companies were fully private companies and 23.4% of all companies were state-owned according to the Rosstat definition, where the state owns more than 50% of the voting shares or shares in the authorized capital. Companies for which the state directly owns voting shares (shares in the authorized capital) between 0% and 50% accounted for 29.1% of the observations (17.8% + 11.3%).

The sample included 6 companies that had a “golden share” among the shareholdings in the ownership structure, which indicated additional state control in these companies. The companies were grouped according to industry; this grouping was based on the specializations used for the RBC-500 rating.⁹ The characteristics of the division between direct and indirect state-owned stakes are described in Table 2, by industry.

Table 2

Distribution of direct and indirect state ownership by industry, 2006–2014 (%).

Industry	N	m_{dir}	σ_{dir}	m_{indir}	σ_{indir}	m_{sum}	σ_{sum}
Air transportation	1.75	25.59	26.33	0	0	25.59	26.33
Automobile industry	2.63	14.82	21.45	5.08	9.89	19.89	20.11
Nuclear power	2.63	66.92	47.67	33.00	47.57	99.93	0.38
Airports	2.63	72.08	35.34	0.85	2.40	72.93	35.69
Banking	6.14	25.84	33.16	4.62	17.20	30.46	33.95
Geological	0.88	100.00	0	0	0	100.00	0
Hydro acoustics	0.88	100.00	0	0	0	100.00	0
Construction and development	0.88	0.00	0	15.54	11.97	15.54	11.97
Diamond mining	1.75	47.36	38.77	34.90	36.11	82.26	6.77
Gold mining	1.75	0	0	0	0	0	0
Coal mining	0.88	0	0	0	0	0	0
Railroad transportation	0.88	100.00	0	0	0	100.00	0
Mechanical engineering	7.89	10.47	15.64	13.29	28.00	23.76	28.65
Mineral fertilizers	1.75	0	0	0	0	0	0
Oil and gas	11.40	11.38	28.54	15.20	32.83	26.59	40.10
Real estate	0.88	6.43	4.82	0	0	6.43	4.82
Military-industrial complex	7.89	73.40	37.44	12.89	24.36	86.29	28.90
Wholesale machinery	0.88	0	0	0	0	0	0
Food production	0.88	0	0	0	0	0	0
Postal services	0.88	100.00	0	0	0	100.00	0
Stevedore operations	0.88	20.00	0	0	0	20.00	0
Infrastructure construction	1.75	0	0	47.06	51.45	47.06	51.45
Telecommunications	3.51	10.55	18.39	12.67	14.68	23.22	22.18
Transportation	1.75	0	0	30.59	36.27	30.59	36.27
Pipeline transportation	0.88	100.00	0	0	0	100.00	0
Coal production	1.75	0	0	0	0	0	0
Wholesale pharmaceuticals	0.88	0	0	0	0	0	0
Chemicals and petrochemicals	5.26	0	0	4.88	18.06	4.88	18.06
Non-ferrous metals	5.26	0	0	0	0	0	0
Electric power	21.93	20.89	33.33	17.32	27.66	38.21	36.19

Legend: N —the percent of observations in the sample; m_{dir} —the average shares directly owned by the state; σ_{dir} —the standard deviation of shares directly owned by the state; m_{indir} —the average shares indirectly owned by the state; σ_{indir} —the standard deviation of shares indirectly owned by the state; m_{sum} —the average total shares owned by the state; and σ_{sum} —the standard deviation of total shares owned by the state.

Source: Authors' calculations.

⁹ <http://www.rbc.ru/rbc500/>

Most of our sample included companies in the power industry (22% of observations), oil and gas (11.4%), mechanical engineering, and the military-industrial complex (7.89%). The highest average level of direct state ownership (over 47%) occurred in the nuclear power industry, airports, the military-industrial complex, diamond mining, and other industries that are represented by a small number of companies. For roughly half of the industries, we noted a significant dispersion of direct shares that were owned by the state, as reflected in the standard deviation, which suggests that the sample included companies from different industries and with different proportions of state ownership within the industry.

On average, the greatest indirect share of the state occurred in the nuclear power industry, diamond mining, infrastructure construction, and transportation (over 30%). The standard deviation is sufficiently high for most industries. When analyzing the sum of direct and indirect state-owned shares, the state's ownership in the nuclear power industry, airports, diamond mining, and the military-industrial complex exceeded 70% without accounting for industries represented by a small number of companies in the sample. Therefore, we identified industries with significant state ownership and significant dispersion among its stakes.

3. Evaluating the role of SOEs in the economy

The role of SOEs in the economy, as a general rule, is evaluated based on their share of total market capitalization, the number of employees, and total revenues. An analysis of those indicators within the major SOE sample provides a better understanding of the trend towards an increasing share of the public sector in the economy, allows to compare the scale of the state's presence as an owner of major companies with similar indicators in other countries, and, finally, the economic performance of SOEs and private companies. It is also important to evaluate the role of major public SOEs using performance figures for all companies with state and mixed ownership. This enables us to determine the level of concentration of entities within the public sector and indirectly analyze the efficiency of non-public SOEs.

3.1. The role of SOEs in capitalization

Most prior studies on the role of SOEs in capitalization are primarily concerned with the pre-crisis period (before 2008) and noted the trend of an increasing share of SOEs in the total capitalization of Russian public companies. According to Troika Dialog (Krasnitskaya, 2008), occasionally referred to (see, e.g., OECD, 2015; Polterovich, 2012; Sprenger, 2010), the share of state-controlled companies in the total capitalization of Russian companies increased from 24% in 2004, to 40% in 2007.¹⁰ This trend appears to reflect the ongoing growth of state ownership in the oil and gas sector and the process of creating state-owned vertically integrated companies. This partially coincides with our data (Table 3) which indicates that the share of SOEs according to Methodology 2 increased from 43.3% of the total capitalization of all companies listed on the Moscow Stock Exchange in 2006, to 44.6% in 2007.

¹⁰ The sample of companies used in the Troika Dialog study was more consistent with our SOEs sample that was formed according to Methodology 2.

Table 3

SOE capitalization in the economy and within the sample, 2006–2014.

Year	Company capitalization on the Moscow Stock Exchange, total RUB billion	SOE capitalization within the sample, according to			
		Methodology 1		Methodology 2	
		RUB billion	share, %	RUB billion	share, %
2006	25 482	13 413	52.6	11 031	43.3
2007	32 740	16 480	50.3	14 589	44.6
2008	11 017	5 300	48.1	4 259	38.7
2009	23 091	11 048	47.8	9 056	39.2
2010	28 975	12 327	42.5	10 459	36.1
2011	24 754	10 919	44.1	8 860	35.8
2012	25 213	10 956	43.5	8 004	31.7
2013	25 324	10 537	41.6	7 797	30.8
2014	23 156	9 092	39.3	7 728	33.4

Source: Authors' calculations.

However, following the financial crisis, the trend changed. Since 2008, the long-term reduction in the total capitalization of the Russian stock market has been accompanied by a reduction in the share of SOEs. Over the nine-year period, the capitalization of shares on the Moscow Stock Exchange decreased from RUB 25.5 trillion in 2006, to RUB 23.2 trillion in 2014, or by 9.0%. Concurrently, the share of SOEs for the Methodology 1 sample in the total Russian market capitalization decreased from 52.6% in 2006, to 39.3% in 2014, and for the Methodology 2 sample, from 43.3% to 33.4%, respectively. Although SOEs have often been in a more advantageous post-crisis position in terms of receiving state support, private companies have better adapted to changing economic conditions, which resulted in a slower rate of decrease in capitalization than for SOEs.

Our results coincide with study results published by the Ecstrat consulting company for Copley Fund Research in 2016, which are based on the analysis of performance results from 6,600 companies in 61 countries, including Russia. According to their estimates, “an enormous lag behind the market” resulted from the lower returns and decreased efficiency of the financial activities conducted by state-owned enterprises when compared to private companies (see Overchenko and Velichko, 2016).

According to our estimates, the share of SOEs in the capitalization of shares for Russian issuers is one of the highest within the sample of companies from OECD countries and China. As illustrated in Figure 4, in 2012, the share of SOEs calculated according to Methodology 1 in Russian stock market capitalization (32.7%) was lower than comparable indicators for the Czech Republic (43.5%) and China (42.9%). Concurrently, according to OECD estimates, the average share of SOEs in its member states was approximately 3%, and roughly 10.5% on average throughout the world. It should be noted that the capitalization calculation in our sample included only companies whose shares were circulated on an exchange. This did not include the Russian Post, Russian Railways, and companies in the military-industrial complex that hold public bond offerings and their shares do not freely circulate. This implies that the actual share of SOEs in the total market capitalization for Russian share issuers may be significantly higher than reported in this study.

It should be noted that privatization is again becoming a global trend in the world economy. The new and noticeable increase in privatization transac-

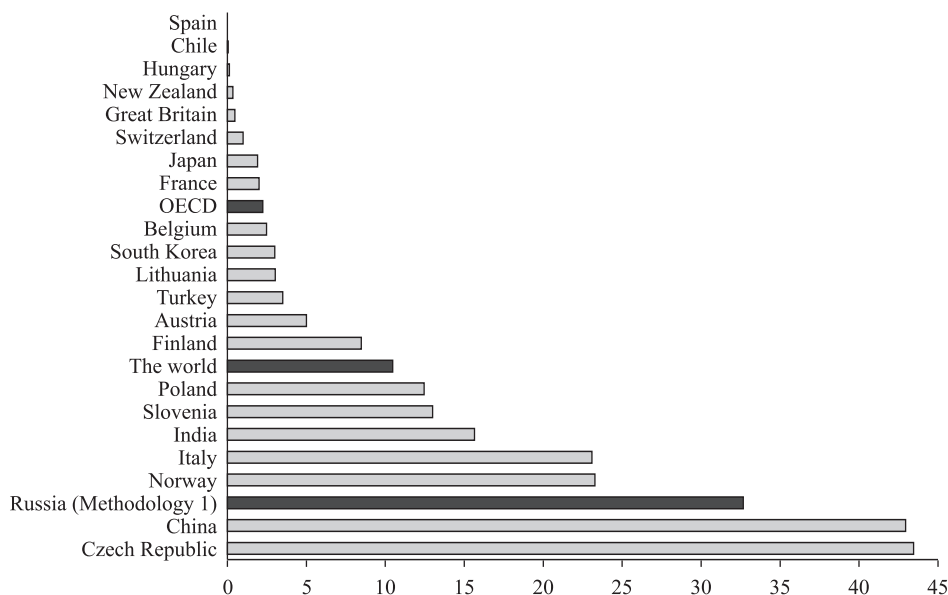


Fig. 4. Share of public SOEs in total market capitalization for various countries, 2012 (%).

Sources: Authors' calculations; data on SOE capitalization abroad—OECD (2016); consolidated capitalization of companies on the Moscow Stock Exchange and capitalization of SOEs in Russia according to Methodology 1 using data from Table 3; capitalization across foreign countries from the World Bank's WDI database.

tions around the world allows us to evaluate the 2012–2015 period as the beginning of a new and massive wave of privatization, which may last for many years to come.¹¹ In these conditions, discussions about decreasing the share of state ownership in the Russian economy are highly topical, particularly in the context of the public sector dynamics during the 2000s.

3.2. The role of SOEs in revenues and the GDP

Rosstat recently began to disclose data on total revenues for the entire Russian economy and for state-owned and mixed-ownership groups of companies within the Unified Interdepartmental Information and Statistics System. This is why, until now, there have been almost no evaluations of the contribution of SOEs to this indicator.

Taking into account the novelty of our analysis, we need to provide a number of methodological explanations. According to Rosstat, 529,300 enterprises are fully or partially owned by the state. This number includes companies of various organizational and legal forms and includes unitary enterprises, funds, non-commercial organizations based on the right of operating management, associations and unions of legal entities, non-commercial partnerships, joint-stock companies, autonomous institutions, and, in certain cases, state-funded institutions.

¹¹ Between 2012 and 2015, the governments of most countries, either directly or indirectly, initiated the privatization process for assets totaling USD 813 billion. New privatization plans are noted in countries in nearly every region of the world. Although they may differ significantly in strategic and/or structural considerations, purely tactical steps, including as a means to replenish the budget, improve overall economic performance, etc. (Megginson, 2015).

Unfortunately, Rosstat does not disclose the contribution of each organization type to the total revenues across state-owned and mixed-ownership enterprises. Therefore, in this study we only used its indirect estimates. To this end, we needed to evaluate the number of commercial organizations (i.e., those that generate revenues) included in Rosstat's sample and then compare their revenues to the sales of major public SOEs.

The IMF report (Hughes et al., 2014), with reference to the Russian Treasury, stated that the number of public corporations was approximately 31,000 in early 2013. In the same report, IMF experts demonstrated that in terms of the approaches used to define public corporations, there are minor discrepancies between Rosstat's and the Treasury's figures. However, for the purposes of our study, we assumed that between 30,000 and 31,000 commercial companies (i.e., those that generate revenues) are either fully or partially owned by the state. According to Rosimushchestvo¹² and the Federal Registry, as of December 1, 2015, Russia had 1,783 joint-stock companies with shareholdings owned by the federal government and 18,102 owners of federal property, including 1,257 federal unitary enterprises. Another 5,200 joint-stock companies (with direct and indirect state-owned shares exceeding 50%) and 4,200 unitary enterprises were controlled by subjects of the Russian Federation as of early 2015.

This array of organizations, classified by the IMF as “commercial corporations”, should be more correctly compared to our sample of SOEs according to Methodology 2. This sample includes 54 major public companies, each included among the enterprises under review, accounted for by Rosstat.

Based on Table 4, we reach the following conclusions. From 2006 to 2014, there was a trend towards a moderately decreasing share of organizations either fully or partially owned by the state in terms of total revenues across the entire economy. The share of these companies decreased from 13.5% in 2006, to 11.6% in 2014. These data indicate a reduced role of the public sector in the Russian economy, according to the official Rosstat statistics. The share of 54 public companies in our sample according to Methodology 2 also decreased over the nine-year period, from 8.9% in 2006, to 7.8% in 2014. Because those public SOEs are included in the extended Rosstat sample, data confirmed the generally positive trend towards a decreasing contribution of SOEs that are directly controlled by the state in the Russian economy.

Only 54 SOEs in the Methodology 2 sample generated more than $\frac{2}{3}$ of the total revenues from the sale of goods and services generated by approximately 30,000–31,000 public-sector organizations. For example, in 2014, these organizations accounted for RUB 14.5 trillion of a total of RUB 21.6 trillion across all state-owned or mixed-ownership organizations, or 68.0%. The remaining tens of thousands of non-public organizations in the public sector accounted for only RUB 7.1 trillion of revenues, or 32.0%, which indicates a very high concentration of production of public sector goods and services. Ultimately, this leads to the monopolization of economic sectors where major SOEs operate and limits competition and incentives for improving performance efficiency. Concurrently, a two-level economic structure is evolving within the public sector, where several

¹² 2015 performance report on the estimate federal property privatization plan for 2014–2016, <http://www.rosim.ru/about/reports>

Table 4

Share of the public sector in total revenues across the economy.

Year	Company revenues						
	According to Rosstat ^a			SOEs from the sample, according to			
	Entire economy, RUB billion	Including legal entities owned by the state or with mixed ownership ^b		Methodology 1		Methodology 2	
		RUB billion	share, %	RUB billion	share, %	RUB billion	share, %
2006	60 460	8 159.5	13.5	5 735	9.5	5 392	8.9
2007	75 281	9 450.9	12.6	7 225	9.6	6 340	8.4
2008	87 605	10 426.9	11.9	8 826	10.1	7 619	8.7
2009	83 450	10 097.0	12.1	9 305	11.2	8 135	9.7
2010	102 597	14 350.5	14.0	11 337	11.1	8 980	8.8
2011	120 183	17 282.4	14.4	13 690	11.4	10 770	9.0
2012	140 774	19 191.0	13.6	15 362	10.9	11 911	8.5
2013	174 224	20 416.9	11.7	18 105	10.4	13 010	7.5
2014	185 319	21 589.6	11.6	20 498	11.1	14 475	7.8

^a Unified Interdepartmental Information and Statistics System (<https://fedstat.ru>).

^b As noted above, we assume that these public sector revenues are generated by approximately 30,000–31,000 state-controlled companies.

Source: Authors' calculations.

dozen major companies concentrate the majority of financial flows and the remaining commercial organizations noticeably lag in terms of efficiency and the size of state financing, are not attractive for market investors, and do not have opportunities for modernization. It is expedient to develop a program to encourage these organizations to enter the public stock market (e.g., through bond offerings) and increase business transparency in exchange for market investments.

The revenues of SOEs for which the state has indirect control are growing faster than organizations across the economy as a whole. The SOEs sample according to Methodology 1, included 61 companies and demonstrated that their share of revenues across the economy grew from 9.5% in 2006, to 11.1% in 2014. To clarify, adding companies that are indirectly owned by the state changed the nature of the trend, which suggests their high performance results from selling goods and services.

It is more difficult to estimate the contribution of SOEs to the GDP from a methodological perspective because the statements of those companies should contain data consistent with international financial reporting standards. Unfortunately, not all SOEs, even those included in our samples, publish those statements.

For example, the data below include our calculations of the contribution to the GDP of two major Russian SOEs (i.e., Gazprom and Rosneft) using the expense method based on Eurostat's methodology (Table 5). The total share of these two companies in GDP grew from 11.7% in 2006, to 13.2% in 2014. However, although Gazprom's share decreased during the period from 7.1% to 6.9%, Rosneft's share increased from 4.6% to 6.3%, primarily due to acquiring TNK-BP. If we assume that the relation between GDP and revenues shares for these two major SOEs in 2014 (1:2.6) can be applied to all SOEs in the Methodology 1 sample, then the total contribution of the 61 major SOEs to GDP is approximately 30%. It is evident that this estimate can be specified if we consider industry-specific differences and the nature of the comparison; however, the overall values are extremely accurate and include comparisons with other data.

Table 5

Share of Gazprom and Rosneft in the GDP, revenues, and total capitalization, 2006 and 2014 (%).

Company	2006, share of:			2014, share of:		
	GDP	revenues	capitalization	GDP	revenues	capitalization
Gazprom	7.1	2.7	28.1	6.9	2.2	13.3
Rosneft	4.6	1.5	10.1	6.3	2.9	9.0
Total	11.7	4.2	38.2	13.2	5.1	14.2

Source: Authors' calculations.

The contribution of Russian SOEs to GDP, as calculated by the IMF for a smaller sample, noticeably exceeds our estimates. According to IMF calculations (Hughes et al., 2014) based on the expenses aggregation method, in 2012, 26 major state-owned companies produced 28% of the Russian GDP, which is comparable to the SOEs contribution to GDP according to our estimate for 61 major companies. Concurrently, the estimate of the contribution of the entire public sector, including budget-funded organizations to the GDP as indicated by the IMF based on 2012 data, at 68%, is fairly consistent with similar FAS calculations (2016). According to them, the aggregate contribution of the state and state-owned companies to the Russian GDP was approximately 70%, in 2005, this figure did not exceed 35%.

Clearly, the above example provides only approximate estimates of the contributions made by companies to the GDP, because of the lack of a unified methodology for calculating added value created by specific companies in Russia. Other funded calculation methods of the GDP at the level of specific companies should consider using evaluation methodologies for the respective indicators that were developed by Eurostat (2014) and require all public state-owned enterprises to publish IFRS statements.

3.3. The role of SOEs in the labor market

Based on official statistics, numerous researchers (see, e.g., Polterovich, 2012; Sprenger, 2010) have noted a trend towards a reduction in employment by state-owned and municipal companies and organizations with mixed ownership. In a review of the Russian economy, OECD experts (OECD, 2009) cited their own estimate of the share of Russian SOEs in overall employment, which decreased from 28.0% in 2000, to 17.0% in 2007. The methodology for this estimate did not consider the total aggregate of companies in the public sector by Rosstat, but only companies that were consistent with the OECD's definition of SOEs. This enables a comparison between employment figures in the OECD sample and our sample according to Methodology 1. Based on Table 6, we can draw the following conclusions.

For state-owned enterprises and organizations with mixed ownership, total employment decreased from 26.9 million (40.0% of employment in the economy) in 2006, to 22.3 million (32.2%) in 2014. Nevertheless, this sector employs approximately $\frac{1}{3}$ of all individuals employed across the economy.

Another trend in the number of individuals employed by SOEs was observed in both samples. From 2006 to 2014, the number of employees in the largest public SOEs was growing, although not at a very high rate. For example, in the SOEs sample according to Methodology 2, employment increased from 3.0 million (4.5% of total employment) in 2006, to 3.2 million (4.7%) in 2014.

Table 6

Public sector share of total employment across the economy.

Year	Employment						
	according to Rosstat*			for SOEs from the sample, according to			
	entire economy, thousands of employees	including legal entities owned by the state or with mixed ownership		Methodology 1		Methodology 2	
thousands of employees		share, %	thousands of employees	share, %	thousands of employees	share, %	
2006	67 174	26 893	40.0	2 868	4.3	3 031	4.5
2007	68 019	26 387	38.8	3 000	4.4	2 957	4.3
2008	68 474	25 804	37.7	2 860	4.2	2 977	4.3
2009	67 463	24 938	37.0	2 747	4.1	2 759	4.1
2010	67 577	24 446	36.2	3 045	4.5	2 961	4.4
2011	67 727	24 186	35.7	3 310	4.9	3 209	4.7
2012	67 968	23 549	34.6	3 312	4.9	3 174	4.7
2013	67 901	22 990	33.9	3 366	5.0	3 167	4.7
2014	67 800	22 300	32.9	3 402	5.0	3 186	4.7

* Unified Interdepartmental Information and Statistics System (<https://www.fedstat.ru>).

Source: Authors' calculations.

Major SOEs employ a small portion of those employed by state-owned enterprises and organizations with mixed ownership. For example, in 2014, 54 companies in the sample according to Methodology 2 employed only 3.1 million individuals, or 14% of 22.3 million across all of the state-owned companies documented by Rosstat. This is quite explainable, because the majority of employees in the public sector are employed by budget-funded and autonomous institutions and other state-owned and mixed-ownership organizations that do not generate revenue.

This study suggests there are significant differences between public and private SOEs in terms of the number of employees and their productivity. According to OECD (2009), in 2007, all SOEs employed 17.0% of all employees; however, 61 major public SOEs (for the Methodology 1 sample) employed only 4.4%. However, 2007 data from Table 4 demonstrate that all state-owned and mixed-ownership companies earned 12.6% of the revenues across the economy and we assume that this resulted from the operations of the same SOEs described by the OECD. Concurrently, the 61 major SOEs earned 9.6% of the revenues. Therefore, according to 2007 calculations, major public companies accounted for 25% of the employment and 77% of the revenues across all SOEs, while the remaining non-public SOEs accounted for 75% of the employment and 23% of the revenues. There is a clear gap in labor productivity in favor of public SOEs when compared to closed companies. We assume that entering the public capital market could improve the efficiency of a large number of closed state-owned enterprises and accelerate economic growth.

Figure 5 compares the share of employment by Russian SOEs according to Methodology 1 to similar indicators for 2012 for the listed foreign state-owned enterprises (see OECD, 2016). Initially, these results seem paradoxical. It appears that the share of employees at public SOEs in Russia is among the lowest in the world. In 2012, this figure for Russian companies was only 4.9% of total employment in the economy, with 15% on average across the OECD and 61% in China. In our opinion, this indicates that only a small number of companies

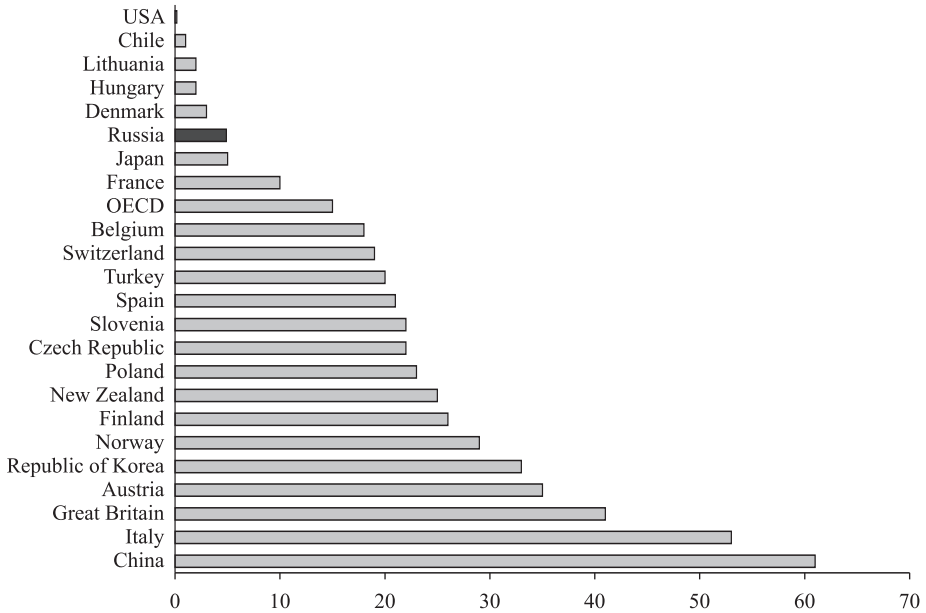


Fig. 5. Share of public SOEs in total employment, 2012 (%).

Sources: Russian data from authors' calculations; other countries from OECD, 2016.

(including SOEs) are entering the (public) exchange securities market. Companies that do not enter the public capital markets are, as a rule, less exposed to market pressure and can maintain a justified number of employees. Moreover, based on social considerations, these companies often pursue a more conservative policy and do not increase employment.

4. Specific features of direct and indirect state ownership

In the majority of prior studies on the role of SOEs in the economy, all company data are considered as a single array, which is hardly justifiable because direct and indirect ownership requires not only different mechanisms to control company operations but also various entities that act on behalf of the state. Under these conditions, it would be logical to presume that the economic results of the two groups of SOEs will differ.

4.1. Evaluation of shareholdings directly and indirectly owned by the state

The evaluation of the market value of shareholdings that are directly and indirectly owned by the state was based on all 114 companies included in the sample, regardless of the size of the shareholdings (Fig. 6).¹³

The value of shareholdings was calculated only for public companies that disclosed their closing share price at the Moscow Stock Exchange at the end of each year. This implies that not all companies in the sample for which the state owned shares had quotes for their shares. Specifically, major organizations such as Russian

¹³ The number of companies in the sample for which the state's direct and indirect share exceeded zero was 74.

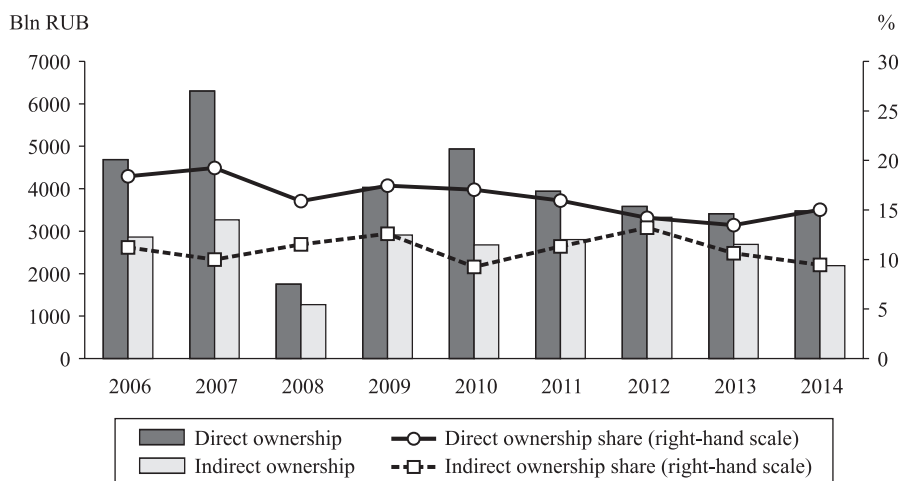


Fig. 6. Market value of shareholdings in companies directly and indirectly owned by the state and their share in total market capitalization on the Moscow Stock Exchange, 2006–2014.

Source: Authors' calculations based on Moscow Stock Exchange data.

Railways, Russian Post, and companies in the military-industrial complex communicated with the exchange when placing their bonds. However, their shares are not traded on the organized market. Therefore, they were not included in this estimate.

From 2006 to 2014, the value of shareholdings that were directly and indirectly owned by the state decreased both in absolute and relative terms. The market value of shareholdings directly owned by the state decreased from RUB 4.7 trillion in 2006, to RUB 3.5 trillion in 2014, or by 25.5%. Accordingly, their share of the total market capitalization for all companies traded on the Moscow Stock Exchange declined from 18.4% to 15.0%. The market value of shareholdings that were indirectly owned by the state decreased from RUB 2.9 trillion in 2006, to RUB 2.2 trillion in 2014, or by 24.1% and its share of the total market capitalization of Russian issuers decreased from 11.2% to 9.5%. This may have occurred because not only did the capitalization of private companies in the sample grow faster or decrease slower than SOEs capitalization, but major privatization transactions involving the shares of a number of SOEs were conducted during the period under review. From 2006 to 2014, because of the privatization of Rosneft, Sberbank of Russia, VTB, and ALROSA, the value of shareholdings owned by the state decreased by roughly RUB 1.2 trillion.

4.2. The capitalization of companies directly and indirectly owned by the state

The second method for comparing companies whose shares (stakes) were directly or indirectly owned by the state required a separate comparison of performance indicators between the two groups of companies. One of the groups included all organizations for which any shareholding (stake) was directly owned by the state; the other group included organizations whose shares (stakes) were indirectly owned by the state. Companies (e.g., Gazprom) with shareholdings that were both directly and indirectly owned by the state were included in both groups (Table 7).

Table 7

Capitalization of sampled companies compared to the total capitalization for all companies on the Moscow Stock Exchange, 2006–2014.

Year	Company capitalization on the Moscow Stock Exchange, total RUB billion	Specific weight of capitalization of sampled companies with state-owned shares, %		
		D&IO	DO	IO
2006	25 482	54.9	43.3	40.0
2007	32 740	53.1	44.6	34.2
2008	11 017	51.8	38.7	36.7
2009	23 091	51.9	39.2	32.2
2010	28 975	45.5	36.1	25.9
2011	24 754	46.3	35.8	30.5
2012	25 213	45.0	31.7	29.9
2013	25 324	42.9	30.8	27.4
2014	23 156	44.2	33.4	25.0

Notes. D&IO refers to direct and indirect ownership; DO refers to direct ownership; IO refers to indirect ownership. Here and in Tables 8 and 9, a simple addition of DO and IO indicators does not equal D&IO because the samples of DO and IO companies may include the same companies if a portion of their shares were either directly or indirectly owned by the state.

Source: Authors' calculations.

In this case, we discovered a trend towards a faster reduction in the share of capitalization of companies with shareholdings that were indirectly owned by the state when compared to the capitalization of joint-stock companies with direct ownership. In 2006, the share of capitalization by organizations with direct state ownership was 43.3% of the total capitalization of issuers on the Moscow Stock Exchange and companies with indirect state ownership accounted for 40.0%. In 2014, the specific weight of capitalization for organizations with direct state ownership fell to 33.4% (by 9.9 p.p.) and companies with indirect state ownership dropped to 25.0% (by 15 p.p.).

4.3. Revenues of companies directly and indirectly owned by the state

As illustrated in Table 8, from 2006 to 2014, when compared to the general trend towards an increasing share of SOEs directly owned by the state, corresponding revenues declined from 8.9% in 2006 to 7.8% in 2014 and increasing

Table 8

Revenues of sampled companies compared to revenues across the economy, 2006–2014.

Year	Revenues for the total economy, RUB billion	Specific weighting of revenues for sampled companies with state-owned shares, %		
		D&IO	DO	IO
2006	60 460	10.9	8.9	4.7
2007	75 281	10.5	8.4	4.8
2008	87 605	11.3	8.7	5.8
2009	83 450	12.1	9.7	5.9
2010	102 597	11.5	8.8	6.2
2011	120 183	11.7	9.0	6.8
2012	140 774	11.2	8.5	6.8
2013	174 224	10.7	7.5	6.4
2014	185 319	11.7	7.8	6.4

Source: Authors' calculations.

from 4.7% to 6.4% in the sample of organizations with indirect ownership. Sales by SOEs with indirect state ownership grew faster than SOEs directly owned by the state and privately owned organizations.

4.4. Number of employees of companies directly and indirectly owned by the state

Table 9 indicates that the relative indicator of the number of employees and its trend differ substantially for companies directly and indirectly owned by the state. First, the percent of individuals employed by SOEs indirectly owned by the state was substantially lower than for directly owned companies. Concurrently, based on relative revenues, the gap between the results for these groups was not very wide. For example, in 2014, companies that were indirectly owned by the state employed only 1.4% of everyone employed in the Russian economy (Table 9), but they accounted for 6.4% of total revenues (see Table 8); however, directly owned enterprises employed 4.5% of all workers and accounted for 7.8% of total revenues. This comparison indicates a higher level of efficiency for companies that were indirectly owned by the state than those that were directly owned by the state.

Second, over the period under review, the number of employees in companies indirectly owned by the state grew faster than for directly owned SOEs. From 2006 to 2014, the proportion of the number of employees for directly owned SOEs changed only slightly, from 4.4% in 2006 to 4.5% in 2014. However, for the sample of organizations that were indirectly owned by the state, employment grew from 0.9% to 1.4%, or by 55.6%. Therefore, SOEs that were indirectly owned by the state grew faster than all other companies in the sample in terms of creating new jobs with relatively high labor productivity.

5. Indicator comparison between SOEs and private firms

Based on Table 10 data, we tentatively conclude that, in terms of labor productivity (revenue per employee), private companies in our sample significantly surpassed both SOEs combined and SOEs directly and indirectly owned by the state. The labor productivity of SOEs that were indirectly owned by the state noticeably exceeded that of directly owned SOEs. In 2014, revenues for fully

Table 9

Number of employees of sampled companies compared to total employment across the economy, 2006–2014.

Year	Employment across the economy, total, thousands of people	Specific proportion of employees in sampled companies with state-owned shares, %		
		D&IO	DO	IO
2006	69 169	4.6	4.4	0.9
2007	70 770	4.5	4.2	1.0
2008	71 003	4.6	4.2	1.1
2009	69 410	4.3	4.0	1.2
2010	69 934	4.6	4.2	1.2
2011	70 857	4.8	4.5	1.4
2012	71 545	4.8	4.4	1.7
2013	71 391	4.9	4.4	1.6
2014	71 539	5.1	4.5	1.4

Source: Authors' calculations.

Table 10
Labor productivity for sampled companies, 2006–2014.

Year	Labor productivity							
	RUB million per employee				% (private company (PC) indicator = 100%)			
	PC	IO	DO	Total	PC	IO	DO	Total
2006	4.91	3.98	1.39	2.07	100.0	81.1	28.3	42.2
2007	4.73	4.98	1.85	2.76	100.0	105.3	39.1	58.4
2008	7.16	6.07	2.31	3.47	100.0	84.8	32.3	48.5
2009	6.04	5.82	2.63	3.60	100.0	96.4	43.5	59.6
2010	7.51	7.13	3.03	4.39	100.0	94.9	40.3	58.5
2011	9.29	7.96	3.42	5.12	100.0	85.7	36.8	55.1
2012	10.28	7.72	3.82	5.70	100.0	75.1	37.2	55.4
2013	10.79	9.74	4.19	6.25	100.0	90.3	38.8	57.9
2014	12.53	11.79	4.64	6.92	100.0	94.1	37.0	52.2

Note: PC refers to private companies (state-owned share = 0).

Source: Authors' calculations.

private companies reached RUB 12.5 million per employee on average, compared to RUB 4.6 million for directly owned SOEs and RUB 11.8 million for SOEs that were indirectly owned by the state. Over time, the labor productivity gap between private companies and mixed-ownership organizations narrowed, primarily occurred because of growth in labor productivity among companies that were indirectly owned by the state. This may be because following the 2008 crisis, SOEs enjoyed more favorable conditions in terms of business financing from centralized sources.

This is evidenced, in particular, by a higher level of long-term debt for state-owned companies when compared to private firms, which we will review in detail in an upcoming article. In 2006, the ratio of revenue per employee between PC and IO was 100 : 81, in 2014 this ratio was 100 : 94. The gap for companies directly owned by the state decreased from 100 : 28 to 100 : 37.

6. Conclusions

We will now summarize the results. Numerous studies have noted the increased participation of the state in the Russian economy beginning in the mid-2000s (see, e.g., Kudrin and Gurvich, 2014; Vyugin, 2016). We agree with this point, but should note that this phenomenon was not accompanied by a strengthening in the positions of major state-owned enterprises in total Russian market capitalization, sales, and employment.

Based on the results of our study, we can identify two key trends in public sector development as it relates to SOEs. From 2000 to 2008, there was a specific trend towards a quantitative expansion of the public sector, which was clearly manifested by its capitalization trends. However, this trend later changed and the share of SOEs among key economic indicators stabilized or decreased somewhat (although we should note that to a certain extent, the cyclical nature of these indicators is subject to macroeconomic conditions).

In 2007, the trend in SOE market capitalization changed; from 2006 to 2014, the share of SOEs in total capitalization dropped substantially from 52.6% to 39.3%. From 2006 to 2014, the share of revenues and total employment by major

SOEs increased moderately from 9.5% to 11.1% and from 4.3% to 5.0%, respectively (based on the sample according to Methodology 1 which included 61 major public SOEs).

According to our calculations, the contribution of SOEs to the total Russian GDP is slightly lower than the IMF estimates (Hughes et al., 2014). We determined that the share of 61 major SOEs in the GDP was approximately 30% in 2014; the IMF estimated nearly the same share of GDP (28%) for only 26 major state-owned companies.

It should be noted that in Russia, the number of companies that operated in the public sector decreased from 2010 to 2016, but the level of direct and indirect involvement of the state in the economy, particularly in specific sectors (through major state-owned banks and state corporations), remained high. This implies that the strengthening of the state's role in the economy entered a new, qualitative, stage. This new role is characterized by the following forms: an increased role of state-owned organizations (including those not directly involved in economic transactions) in the distribution of financial resources and in control over economic agents; the activation and acquired regulatory functions for newly created vertically integrated organizations in a number of industries, state corporations and other development institutions; the transfer of non-public state-owned company property into capital, "pseudo-privatization" processes; and the expansion of spheres (control areas) of government regulation rather than a simple increase in the shareholdings owned by the state in the capital of major public companies.

The scale of these processes is not clearly evident. However, the informal nationalization of the private sector of the economy and the emergence of "private state-owned companies" are significant consequences (see Radygin et al., 2015).

Increased involvement of the state in the economy did not have a positive impact on the market price of public SOE shares that were directly or indirectly owned by the state. The market value of shareholdings that were directly owned by the state decreased from RUB 4.7 trillion in 2006 to RUB 3.5 trillion in 2014 and shareholdings that were indirectly owned by the state decreased from RUB 2.9 trillion to RUB 2.2 trillion. The trend towards reduced capitalization in the Russian stock market, observed between 2008 and 2014, has affected both state-owned and private companies. However, the capitalization of SOEs decreased faster than the capitalization of private joint-stock companies, although major state-owned companies received more government support during the period under review. The share of total Russian stock market capitalization for SOEs is nearly 40% and remains one of the highest in comparison with OECD countries, which averages slightly more than 2%.

In terms of labor productivity per employee, the SOEs analyzed in this study lagged far behind private companies within the sample, although from 2006 to 2014, this gap was slightly reduced. In terms of this criterion, the SOE indicator was slightly higher than the 50% demonstrated by private companies, while major public SOEs in our sample far surpassed non-public SOEs considered to be state-owned and mixed-ownership companies by Rosstat. It is necessary to increase efforts to turn non-public SOEs into public joint-stock companies and affect their entrance to the public capital market.

SOEs are not a homogeneous group and include companies that are directly and indirectly owned by the state and differ significantly in terms of performance

efficiency. In terms of labor productivity, SOEs indirectly owned by the state lagged behind private companies, but noticeably surpassed SOEs that were directly owned by the state. Concurrently, indirect state ownership, to a certain extent, acts as an alternative to privatization; it can be created by transferring shareholdings owned by the state to independent commercial entities, such as Rosneftgaz, state corporations, and other development institutions, or by state-owned entities that acquire SOEs shareholdings in the market. From this perspective, the higher performance efficiency of SOEs that were indirectly owned by the state may indicate that the state acquires the shareholdings of more efficient SOEs, which ultimately limits their privatization opportunities, i.e., their transition to a private business. In addition, our calculations demonstrated that from 2006 to 2014, the capitalization of SOEs indirectly owned by the state decreased faster than for companies that were directly owned by the state.

Our empirical analysis suggests more general conclusions and recommendations that are relevant for long-term economic policy goals, particularly for privatization.

We should improve the statistical accounting practices of state-owned and mixed-ownership companies and separate state-owned enterprises as independent statistical entities that meet the criteria used by the OECD (in our study, we sampled SOEs according to Methodology 1 by using these criteria).

To overcome the performance efficiency gap between private companies and SOEs, it is advisable to increase privatization of shareholdings that are directly and indirectly owned by the state. This problem can be solved in a number of ways, including the following: by increasing the level of corporate governance in SOEs by applying corporate governance principles (2014 Code) to state corporations; by enhancing monitoring of the operations of government owned companies by government agencies; by establishing target indicators for management teams to reduce costs and improve the efficiency of companies; and by providing 100% coverage and monitoring of SOEs development strategies according to which their operating plans should be approved on an annual basis.

Significant reserves for improving labor productivity and capitalization growth of the Russian stock market require a reduction in the state's involvement in non-public companies and incentives for SOEs to enter the public stock market. These companies account for a significant share of employment in the Russian economy and their contribution to the goods and services sales and capitalization remains low.

Monitoring shareholdings (stakes) that are directly and indirectly owned by the state is becoming increasingly relevant. In a number of cases, the growth of indirect state ownership may indicate increased risks associated with a problem in managing shareholdings (stakes) that are owned by the state, which requires a thorough analysis of such transactions in terms of their impact on improving the efficiency of controlling state-owned property.

It is important to identify the “core” of the public sector and its target functions and set optimal levels for the state's direct involvement in companies related to the public sector.

Restrictions (independent expert review and public discussion) should be established on the creation of new public sector entities, new SOEs, and integrated entities including a ban on SOEs asset increases through privatized property.

It is advisable to develop alternative methods to secure public interests other than the direct involvement of the state in a given company's capital.

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