

Russia: a mercantilist economy

Nadia Vanteeva, University of the West of England, UK

Charles Hickson, Queen's University Belfast, UK

Abstract

The rapid Russian industrialization at the end of the 19th century took place behind high tariffs and state-imposed entry restrictions, in order to protect nascent domestic firms. Furthermore, firms enjoyed state-subsidized capital loans, state-supported cartel pricing and wage controls. This led to the characterization that Tsarist industrialization policy was a classic example of List's infant industry hypothesis. However, the new industries at the time were concentrated first in railroad construction, followed by the iron and steel, coal mining and machine tools. All of the above industries were chosen by the state for development and were also under its close governance. Under a comparative advantage hypothesis, none of the above capital-intensive industries were likely candidates for success, given Russia's then economic and technological backwardness. Gerschenkron hypothesized that the motivation for the Tsarist industrialization plan was to provide industrial support to develop a modern military. If Gerschenkron's hypothesis is correct, then direct state involvement in industrialization is not a temporary phenomenon as the case in many countries, but a more permanent feature of Russian economic model. By comparing industrializing Russia with the current Putin regime, which promoted government-led long-term growth, we use firm-level data during the 2000-2010 period to try to explain why not only the peculiar emphasis in Russia is on the capital goods rather than consumer goods industry, but also where such industries are located, and why some regions are more favoured for industrial development over others. We argue that Russia's economic development may be a better example of a mercantilist economy spanning Russia's large contiguous empire area in much the way described by Heckscher's continental system.

1. The dirigiste economy: Russia's initial industrialization of the late seventeenth and eighteenth centuries

Since the time of Peter the Great, the Russian government traditionally applied mercantilist policies, including the high import tariff protection to discourage consumption and to protect domestic producers of strategic industries. Restrictive trade policy also earned the Russian economy perennial annual trade surpluses. Throughout the late seventeenth- early eighteenth-century, many consumer durable goods popular with the wealthy were prohibited, including sugar, textiles and copper, glass and earth ware and under the Tsar Paul at the end of the century, all English manufacturing products were prohibited. But since high tariff rates were also levied on imports of cast iron and other metals. In the case of cast iron, even higher levies were assessed if imported over land. Since Russia's comparative trade advantage was in the export of agricultural products, prohibitively high import taxes on cast iron and other metals can only be explained by the desire of the government to promote domestic production (Smith, 1776).

Interestingly, immediately after Russia's victory over Napoleon, import tariffs for a short period were considerably relaxed. Imports of all classes of goods were assessed at a relatively low tariff rate of 15 percent. At the time, the ideas of western economists such as Adam Smith, J.B Say, Jeremy Bentham and Jean Charles Leonard Sismondi found great favor among elements of the Russian educated elite, with the economist Heinrich Storch and the writer Ivan Turgenev being the most notable. However, due to the fact that Russian factories proved unable to compete against western European competitors, which resulted in many failing, tariffs returned to being highly protective. The Tariff of 1822 restored the old system, but with no goods actually being outright prohibited. The latter proviso is believed to be because of the interest of the treasury,

which had desired more revenue. This tariff system in its general aspects persisted up to 1914 (Mavor, 1925).

During the same early period, large scale strategic industries enjoyed monopolistic privileges due to legal entry restrictions created through the need to obtain a license in order to operate a factory. Through the issuing of factory licenses the government could also determine where to strategically concentrate the nation's industrial production. The impetus for large scale industry is solely attributed to the need of the government to protect country's extensive territorial area and boundary, both of which had been greatly expanded after Peter the Great's victories (Gerschenkron, 1962). Specifically, the new iron foundries, munition and textile manufacturing industries were created to meet the needs of the new large standing army, which was organized into distinct regiments.

The first industrial establishment is recorded to be an iron foundry, which was established in the Moscow province of Kashirsky District to Dutch merchants as early as 1630s. However, it was under the reign of Peter the Great that factory production really got going, beginning with several new large iron works and textile works being established during the 1720s also in Moscow Province (Kahan, 1965; Daniel, 1995; Hughes, 1998). However, the mining of iron ore and iron foundries eventually became concentrated in four regions, viz. the Moscow Province, the Ural Mountains, Poland and Southern Russia. But more generally, by the end of the reign of Katherine II at the end of the eighteenth-century, exclusive of the mountain works, there were reported to be 3,161 factories in Russia with a total value of three and one half million rubles.

Up until the first few decades of the nineteenth-century, factories under lease were required to sell exclusively to the government, and were not permitted to vary the production level either up or down at a fixed price as specified in their lease. Thus the system from this standpoint alone

was highly inefficient and when government demand fell dramatically after European-wide peace established at the Congress of Vienna, many factories became idle and worthless. In response, the government began to gradually permit factory owners to seek out other customers by way of exports for the product, but with little effect as the Russian factory system was inefficient when compared to its more technological and capital intensive European competitors (Falkus, 1972).

Russian industry during this period is characterized as being both technologically backward and of operating with low capital intensity. Both of these characteristics were the direct consequence of reliance on bonded labor in the industrial production process (Waldron, 1997). Agricultural labor in Russia had lost its freedom under Ivan the Terrible. While labor had always been scarce in Russia, it had become even more so in the mid-sixteenth-century after Ivan's acquisition of vast tract of former Khanate land. To limit migration to the new empty lands, and thereby undermining the ability of the traditional estates to meet their military obligations, the Tsar imposed debt obligations on the peasants that worked to tie them their former estates. Within a short time, peasants and their communities were thought of as chattel to be bought and sold as desired by landlords.

Peculiarly from an efficiency standpoint, this bonded labor system was extended from the start to large scale factory production (Zelnik, 1971). With the awarding of a license, factory owners were often assigned the use of peasant labor from nearby villages on possessional land. The use of peasant labor was incorporated into the cost of the lease. Often the factory owner was also responsible to the government for any customary taxes due from the peasants, but in many cases the peasants were held responsible for their own tax liabilities. Generally, the leases specified the number of workers the peasant community had to supply the factory (Gorschkov, 2012).

Furthermore, the quotas varied with the seasons as the villages still had to sustain themselves. The system imposed great hardship on the ascribed communities, with many reported instances of villages' living standards falling below subsistence. The wages of the peasants were highly regulated and were standard across the nation, but the system encouraged factory managers to exploit their advantage as factory owners and pay workers below the rates specified by the state.

At first, factory owners could purchase peasant labor from private landlords, but in the mid-eighteenth-century this was prohibited with the consequence that many factories changed hands from business entrepreneurs to landowners having their own serf labor supply, but who did not have much business sense. This fact combined with being favored by the court resulted in traditional landowners owning the major factories.

It is obvious that this labor system discouraged workers from learning new skills necessary for any industrial production process. Workers received no incentive in terms of wages, and the peasants were also required to return to their villages for plowing and to harvest their crops. The lack of a skilled workforce and the lack of industrial enterprise by the owners combined to produce a factory system with low capital intensity and backward technology against capital intensive production (Falkus, 1972). The system also perversely worked against the factories becoming profitable, as the owners were unable to vary labor supply to suit changing market conditions as this was rigidly set in the terms of their lease. Consequently, by the beginning of the nineteenth century many factories became bankrupt. Unsurprisingly, factory owners themselves made demands that the factory labor system should convert to the employment of free labor. This conversion slowly evolved over the subsequent decades and was further advanced with the emancipation of the serfs in 1861.

2. Industrialization under Vyshnegradsky and Witte

As mentioned above, the early stages of Russia's industrialization can be traced back to Peter the Great's authoritarian policies, which offered solid foundations for the Russian industry (Anisimov, 1993; Pipes, 2004). It is widely believed that government-induced rapid economic growth stemmed from military pressures (Gerschenkron, 1962) and while Peter the Great's aim to achieve military self-sufficiency was not inconsistent of that of the previous rulers, Russia's expanding territory demanded a more aggressive approach (Esper, 1969). Moreover, Pintner (1984) adds that although Russia's tradition of a large army was due to its long-standing legacy and great frontiers, the size of the army could have been attributed to the country's economic backwardness, where it was believed that peasants required significantly more training relative to their better-skilled western conscripts. Gerschenkron argues that during the period, the key focus was on metallurgy and mining (iron mills, armaments works, etc.), and these heavy industries supported military hardware and transportation equipment, having established large-scale enterprises, requiring capital-intensive factor share, thus substituting for relative economic backwardness. In addition, the army also required the development of a textile industry, in order to meet its demands for coarse cloth and sufficiently warm uniforms (Pintner, 1984).

In general, it is difficult to overlook the achievements of Peter's policies, as many large industrial complexes, that employed hundreds of workers were developed (Blackwell, 1968). However, the social system did not undergo any major changes and serfdom was even extended in order to offer further support to the industrializing economy, which ultimately contributed to unevenness of the early industrialization process (Crisp, 1976). Over the next several decades Russia maintained its support for the heavy industry; however, even though it became the biggest producer of iron in the world by 1800, it lacked new technologies and soon fell behind quickly-

industrializing western economies. In addition, the country's railway transportation system was inadequate and failed to connect major economic regions.

Gerschenkron (1962) pointed out that towards the end of the 19th century, tsarist Russia was exhibiting a higher degree of economic backwardness compared to its European counterparts. He stressed that the country did not have the necessary prerequisites, such as advanced technology, skilled labor and availability of domestic savings. On the other hand, Gerschenkron argued that Russia as able to successfully 'catch up' to its more advanced neighbors through intensive state intervention (Drummond, 1976; Gatrell, 1994). Kahan (1967) identifies a 'blueprint' adopted by the finance ministers, Ivan Vyshnegradsky and Sergei Witte, of that time, which included the stabilization of the exchange rate and making it possible for the Russian government to borrow abroad, the development of an advanced transportation network, and further development and protection of heavy industry. From this paper's perspective, it is important to focus on the latter two aspects.

In the absence of domestic demand for industrial goods, the Russian government conducted a vigorous policy of industrialization through state loans, foreign investment and protective tariffs. The newly established tariff policy protected manufacturing goods as well as tools and machinery, and tariffs placed on capital goods imports contributed to the expansion of domestic output. Furthermore, formation of monopolies and cartels was particularly encouraged in industries such as iron and steel. The finance ministers were also keen to attract foreign investment and demonstrated that Russian industrializing economy could guarantee manufacturing orders, accompanied by large profits (Skocpol, 1979). Investors, in turn, either provided the much needed financial capital directly, or established subsidiaries of foreign enterprises, as the state granted licenses to such firms (Hogan, 1993). At the same time, while

there is supporting evidence of private corporations being established in industrializing Russia, it is also argued that the state's active role in providing the initial subsidized loans to enterprises was crucial to Russia's industrialization process, as 'even when initiative and some private capital were forthcoming, a major part of the bill had to be footed by the government in one way or another' (Crisp, 1973:590).

Vyshnegradsky's and Witte's rapid industrialization policy achieved remarkable results. Figure 1 below demonstrates that the country witnessed a relatively sharp increase in GDP and GDP per capita in the early 1890s.

[insert Figure 1 here]

With a special emphasis placed on the heavy industry, we note that new companies were formed in the metallurgy and mining sector, which consisted of coal, turf and oil firms, as well as precious metals such as gold and silver lead, and iron, manganese, pyrites, chromium, copper, zinc and asbestos. It can be seen from Figure 2 that this sector's output has been consistently increasing since the early 1890s and reached its highest level by 1913. The number of mining and metallurgy firms increased from 2,738 in 1887 to just under 3,800 in 1894 and 1900. These findings are consistent with Geyer (1987), who shows that iron and coal output augmented by approximately four times during the 1887-1899 period and an industrial boom also prompted a surge in construction. However, this was matched by only a slight rise in the workforce in this industry (from just over 135,000 in 1887 to over 180,000 in 1900).¹

[insert Figure 2 here]

¹ Based on authors' own calculations from 'Dinamika ekonomicheskogo i socialnogo razvitiya Rossii v XIX-nachale XXvv.' database, <http://www.hist.msu.ru/Dynamics/index.html>.

Since the development of railroads was one of the key prerequisites for successful industrialization process, it is unsurprising to witness a rapid expansion of railways over the period, where growth rates exceeded that of more developed economies. Between 1880 and 1900, Russian railways reported growth of 133 percent.² Overall, between 1859 and 1914, more than 72,000 kilometers of railways track were built, with the new Trans-Siberian track covering 5,500 kilometers. At the beginning of industrialization era in 1887 Russian railways added 859 miles to their tracks, while 4,914 track miles were added in the peak period of 1899.³ Table 1 shows the significance of railways to industrializing Russia, where the government was particularly focused on coal, oil and iron industries, all of which supported the development of railways.

[insert Table 1 here]

As noted previously, the government offered generous subsidies to heavy industries (Willis, 1897; Tompkins, 1933; Drummond, 1976; Gatrell, 1994). For example, when we examined figures for fixed assets, retained earnings and raised capital for manufacturing companies, we were able to conclude that firms had little retained earnings and primarily relied on government loans as well as some foreign capital, which increased by 6.5 over the period, to support their growing asset base (see Figure 3). Similarly, Figure 4 shows that during the same period rapidly expanding railway track was initially financed mostly by private capital. However, the government became a principal provider of funds from the mid-1890s, when private investment has permanently decreased, while state investment has been steadily increasing.

² See Fordham University Modern History Sourcebook: Tables Illustrating the Spread of Industrialization, Historical Statistics of the United States: Colonial Times to 1970, and Encyclopaedia of World History: Age of Revolution and Empire, 1750 to 1900).

³ Source: 'Dinamika ekonomicheskogo i socialnogo razvitiya Rossii v XIX-nachale XXvv.' database, <http://www.hist.msu.ru/Dynamics/index.html>.

[insert Figures 3 and 4 here]

However, consistent with its past prevailing trend, Figure 5 demonstrates that while labor productivity increased sharply in the early 1980s, it has been exhibiting spurts rather than maintaining a constant upward movement. Previously, Crisp (1976) argued that Russia's reluctance to significantly change labor laws after emancipation contributed to the unevenness of the early industrialization process, and we can see that it also continued to be the case at the later stages.

[insert Figure 5 here]

In order to calculate Russia's overall heavy industry output, investment and labor productivity, we primarily rely on the Dynamics of Economic and Social Development of Russia during 19th – beginning of 20th Century database. However, the database does not offer regional perspective, and since we are also interested where new heavy industry was located, we refer to Markevich (2014) paper, which documents regional variation in GDP and labor productivity across various industries in the late 19th century Russia (Markevich's study is also the only paper to offer this type of analysis). The author finds that the distribution of GDP and large industry across the Russian empire was uneven, and while the 'rich core' was absent, there was substantial evidence of a 'rich periphery'. For example, while 50 European provinces accounted for the largest share of national output, they did not belong to a single economic core. Saint-Petersburg, Moscow and Kherson provinces represented the three most developed regions of the empire: the Central Industrial region, the North-West and the South. In addition, Ural and Tomsk provinces (West Siberia) also represented regions that heavily contributed to national output (see Figure 6). Similarly, Saint-Petersburg province had by far the highest Gross Regional Product per capita, while the North-West region, Central Industrial region, South provinces and several Polish

provinces were also relatively wealthy. Markevich attributes the wealth of Baku, Chernomorsk and Fergana provinces, as well as Siberian provinces and Far East provinces to the abundance of natural resources and significant government spending.

[insert Figure 6 here]

More importantly, the author identifies the location of the most industrialized provinces of the time, which represented industrial centers. These were the Central Industrial region, Donbass (Southern province), Saint-Petersburg and Polish provinces (regions that were also considered to be the most productive during the period). In addition, Amur, Baku, Chernomorsk and Fergana provinces also had a developed industrial sector. These findings were mirrored by high labor productivity. When presented on a map in Figure 7 below, it can be seen that large, modern industry at the end of the 19th century in Russia was located on the periphery of the empire.

[insert Figure 7 here]

3. Economic growth under Putin

In contrast to the privatization period of the 1990s, early 2000s era witnessed increased levels of economic activity. This recovery occurred soon after the deep financial crisis of August 1998. It is in large attributed to the rapid rise in world oil prices that had the immediate effect of improved Russia's foreign trade earnings, which the Putin regime in part applied to subsidize strategic industries in order to re-build infrastructure, create employment and increase consumer demand (Tabata, 2002; Butt et al., 2008; Peshkova, 2008).

However, while the abundance of natural resources has undoubtedly improved Russia's trading fortunes, we focus on other policies implemented under the Putin regime, the most significant of which was the re-establishment of the role of the state into the economy. The initial period of Russian commercial restructuring was unsuccessful and it is widely believed that in large part this was due to the absence of a legal system, which is deemed to have been incapable of imposing well-defined property rights (Stiglitz, 2002; Hoff and Stiglitz, 2004). Even at present, the Russian property rights system still cannot offer the same degree of investor protection as its western counterpart. This impedes the accumulation of private capital, which is a crucial component of Russia's economic revival (Gaddy and Ickes, 2005; Reynolds and Kolodziej, 2007). Consequently, the Putin regime reverted back to Russia's long-standing tradition of authoritarian rule and made the central state a major player in directing the economy (Vanteeva and Hickson, 2015).

We thus compare Russia's industrialization era with the newly implemented Putin regime. Our rationale is based on the fact that both periods witnessed a strong emergence of the state in the country's economic development, as well as partially relying on private investment funds to support economic growth. We examine the 2000-2010 period, which not only corresponds to Putin's first tenure, but also allows us to examine the longer-term effect of economic policies instituted in the early 2000s and assess the immediate impact of the 2008 financial crisis on the Russian economy, as well as government's response to deteriorating economic conditions.

First, it is unsurprising to find that a major consequence of the improved Russian foreign trade prospects led to a GDP growth of approximately eight percent in 2000, and a strong upward trend, exhibiting an average of seven percent, persisted over several years (Russia recorded a negative GDP growth of approximately 8 percent only in 2009, which changed to a positive

figure of 4 percent in 2010). GDP per capita followed a similar pattern, where it increased by almost three times between 2000 and 2008 and fell only slightly in 2009 and 2010.⁴

Significantly, we were also able to obtain regional statistical data for the 2000-2010 period. Under the new regime in 2000, Russian territory was divided into seven federal districts, namely Central, North West, South, Volga, Ural, Siberia and Far East.⁵ When comparing these regions in terms of their GDP, we note that Central region significantly outperforms others (its GDP is almost three times that of Ural and Volga regions, which come second and third). However, the role of the Central region as Russia's economic engine is, to some extent, diminished once we account for population density (the region is home to over a quarter of Russia's total population). It can be seen from Figure 8 that the Ural region has overtaken the Central region in GDP per capita, while the North West region generates the third highest GDP per capita. We also note a steady increase in GDP per capita in the Far East district – this is particularly evident in the post financial crisis period, where it overtakes the Central region.

[insert Figure 8 here]

Consistent with its past industrial strategy, Russia's metallurgy and mining sector grew substantially over the period, where output increased from just under 1,200 million tonnes in 2000 to over 1,530 million tonnes during its peak in 2008. More importantly, Figure 9 displays the percentage of metallurgy, mining and manufacturing output relative to the overall output across the seven regions. One can clearly see that heavy industry continues to play a significant role in Russia's economic development, where it comprises between 20 percent (in the Central region) and more than 50 percent (in the Ural region) of country's GDP. The Ural region, which

⁴ See OECD and Russian Federal State Statistics Service.

⁵ Northern Caucasus, which was previously a part of the South region, was formed in January 2010.

is Russia's largest mineral base, accounted for 45.1 to 54.6 percent of the overall GDP, while Volga and Siberia regions show a smaller percentage of heavy-industry related GDP (between 32 and 43 percent). North West and Far East regions' share, although having declined in the second part of the decade, still remains relatively high at just under 30 percent. Central and South regions have the lowest amount of output produced by heavy industry firms.

[insert Figure 9 here]

Apart from focusing on metallurgy, mining, and manufacturing firms (which are reported as 'heavy' industry in the database), we also analyze transport and telecommunications companies (reported as one industry), which, in present day, have a somewhat similar role as railway companies during the industrialization era. We can see from Figure 10 that the spread of GDP contribution of transport and telecommunications industry appears to be more even. Far East, North West, South and Siberia regions contribute between 11 and 15 percent to the overall GDP, Volga region contributes approximately 10 percent, and both Central and Ural regions' share is between 7 and 10 percent over the period.

[insert Figure 10 here]

Russian company assets grew approximately from 17 trillion roubles in 2000 to over 90 trillion roubles in 2010, while investment into fixed assets has increased by eight times. Figures 11 and 12 show the percentage of assets that are employed in metallurgy, mining and manufacturing industry, as well as transport and communications industry, respectively, over the 2002-2010 period.⁶ We note that the Central and South regions are the only regions that have less than 20 percent of assets attributed to metallurgy, mining and manufacturing, while the Ural region has

⁶Russian Federal State Statistics Service asset database includes utility firms in the mining, metallurgy and manufacturing sector.

an average of 42 percent of assets in this sector. We also note that all regions invest heavily into transport and communications firms, with the Ural region maintaining the highest average of 36 percent. In addition, when we closely examine investment trends across regions, we determine that the Ural region receives most of metallurgy and mining funds, while the Central and Volga regions attract substantial funds for their manufacturing sector. It is not surprising to find that the Central region receives the highest proportion of utility investment funds, as this region has (by far) the largest population. Finally, the Central and the North West regions both attract significant investment funds for transport and communications industry, although it can be noted that the Far East region was able to catch up with both regions in 2009 and 2010.

[insert Figures 11 and 12 here]

Labor productivity across mining, metallurgy and manufacturing sector exhibited a sharp upward trend over the period (Figure 13), where it increased from 194 roubles per hour in 2000 to 1,115 roubles per hour in 2008, before experiencing a slight fall due the global financial crisis.⁷ Transport and communication industry also saw an upward labor productivity trend, although the increase recorded was less than that of the former industry. This trend suggests that, unlike during the industrialization process one hundred years ago, Russian firms were able to transform state-channeled funds into higher productivity.

[insert Figure 13 here]

Lastly, we are interested in the changes in Russian corporate ownership type between 2000 and 2010. We can see from Figure 14 that in 2000, firm ownership was almost equally represented by three groups, namely state, private and mixed (domestic private and government ownership).

⁷ Regional data for labor productivity was not available.

However, we note that mixed ownership has been steadily decreasing (from approximately 30 percent in 2000 down to 8 percent in 2010), while private ownership has significantly increased (from approximately 30 percent in 2000 to 55 percent in 2010). Government ownership declined by approximately ten percent over the period. Once we examine regional differences in ownership types, we find that the Ural region had the lowest percentage of state ownership between 2000 and 2010, and subsequently, the highest percentage of private ownership. In contrast, North West and Far East regions recorded the highest percentage of state ownership. Apart from the Ural region, we find that the South region also had a high percentage of privately owned companies until 2006, followed by the Siberia region. Volga and Central regions had the highest percentage of mixed ownership, however, as mentioned above, mixed ownership declined steadily across all regions over the period.

Findings outlined above suggest that in the beginning of the regime, the state acted as a major shareholder in over half of Russian corporations. Over the latter period, government ownership declined. It is also important to note that Figure 14 does not account for foreign ownership, however, it can be deduced that it was consistently below 20 percent between 2000 and 2010. Low percentage of foreign ownership can be attributed to the country's weak property rights, which often fail to protect investors, as well as restrictive measures on foreign ownership (Gaddy and Ickes, 2005, 2009; Sagers, 2006). When we study foreign investment across regions, we find that while the overall investment increased by ten times, almost two thirds of it was concentrated in the Central region, which contains a very limited number of heavy industry firms and long-term investment projects. This mirrors Crisp (1973) argument, where the author concludes that industrializing Russia relied on heavy state intervention in order to jump-start its economic development.

[insert Figure 14 here]

Given the apparent dominance of heavy industry over other economic sectors in Russia, we analyze its development and performance over the recent period. First, we determine that heavy manufacturing industry accounts for the largest share of the country's output, which is consistent with our previous findings for regional-level GDP. Nevertheless, metallurgy and mining sector's output lags behind that of trade, social and personal services, finance and transport and communications firms. When we examine gross value added data for all industries between 2000 and 2009, we can see from Figure 15 that, with the exception of the tourist industry, gross value added increased significantly for all sectors.⁸ However, best-performing sectors were trade, finance and services as well as social and personal services. The graph also shows manufacturing as the second best-performing industry; however, these figures include light manufacturing, and once adjusted, fall below transport sector's performance. Similarly, when we focus on gross value added per hours worked data, we conclude that finance, trade, construction and tourism industries outperformed other remaining economic sectors.

[insert Figure 15 here]

We are also interested in comparing factors of production, such as capital and labor, across all industries over the same period. We note in Figure 16 that manufacturing, mining and quarrying and trade sectors attract the greatest proportion of capital, followed by the transport and communications sector (capital compensation in heavy manufacturing industries decline by only a small amount relative to the whole manufacturing sector). Once again, these findings are consistent with the earlier indication that such capital intensive industries receive significant support from the state. Figure 17 shows the number of persons engaged in each industry. It can

⁸ KLEMS database does not provide figures for 2010.

be seen that the largest proportion of Russian population are employed in agriculture and social and personal services, followed by trade and manufacturing sectors, while mining and quarrying industry employs the smallest percentage of workers. More interestingly, the graph indicates that labor did not migrate across industries, signaling of the presence of significant barriers in the labor market. It can be argued that although the structure of the labor market changed significantly over the last one hundred years, it did not catch up to its western counterparts.

[insert Figures 16 and 17 here]

Preliminary evidence above suggests that although metallurgy and mining and heavy manufacturing firms were the key focus of the Putin administration, they were not necessarily the most productive or profitable ones. As shown previously, heavy industry is mostly located in the Ural, Siberia and Volga (followed by Far East and North West) regions. Figure 18 (WORK IN PROGRESS) offers precise locations of metallurgy and mining and manufacturing enterprises – it shows that such firms are mostly positioned on the periphery of all five regions. The results are also extremely similar to those reported by Markevich (2014) for industrializing Russia, when adjusted for the country's larger territory of the late 19th century time period. At the outset, this seems unsurprising, as territories above represent Russia's largest mineral bases. For instance, iron, copper and other precious metals were first discovered in the Ural Mountains region in the 17th century, and first iron and copper works emerged under Peter the Great. Such enterprises substantially reduce their costs by being within a close proximity to iron and metal ores and oil and gas deposits. However, it is also interesting to note that while production in these areas has intensified during the recent period of economic growth, no attempt was made to diversify production to neighboring areas, signaling that firms sought to increase efficiency through economies of scale and scope. More importantly, no attempt was made to diversify

production into other sectors generating greater value added. Table 2 below offers regression analysis results from a Cobb-Douglas production function, which captures the technological relationship between the amounts of capital and labor and output produced by these two inputs. It can be seen that while the production function has increasing returns to scale for metallurgy, mining and manufacturing firms, several other industries exhibit even better performance.

[TABLE 2 IS WORK IN PROGRESS]

To summarize, findings above are consistent with a view that during the first tenure of the Putin administration, Russia's economy has experienced a fourfold increase in its GDP, while industries have registered growth of 75 percent, and investment has increased by 125 percent.⁹ However, more importantly, we argue that Russian economic development tends to exhibit certain persistent traits that become evident during each economic spurt. Russian economic policies do not tend to follow extant economic development theories, such as a comparative advantage argument, when at the end of the 19th century the country had a comparative advantage in agriculture and during the early 2000s in energy resources. On both occasions, Russia pursued an expansion of its industrial base, as well as its supporting sectors, such as transport; and in both cases, the state played a crucial role in directing and subsidizing economic growth. Gerschenkron (1962) draws attention to Russian 'historical continuity' or 'periodicity of events', when economic spurts were a result of military pressures and defence strategies. If Gerschenkron's hypothesis is correct, then direct state involvement in industrialization is not a temporary phenomenon as the case in many countries, but a more permanent feature of Russian economic model.

⁹ See Semenova (2007) and The World Bank database and Russian News and Information Agency.

Bibliography

Anisimov, E.V., 1993. *The Reforms of Peter the Great: Progress through Coercion in Russia*. Armonk, New York and London, England: M.E. Sharpe.

Blackwell, W.L., 1968. *Beginnings of Russian Industrialization, 1800-1860*. Princeton University Press.

Butt, S., Shivdasani, A., Stendevad, C. and Wyman, A., 2008. Sovereign wealth funds: a growing global force in corporate finance. *Journal of Applied Corporate Finance*, 20 (1), pp. 73-83.

Crisp, O., 1973. Review: the Economic History of Pre-Reform Russia. *The Slavonic and East European Review*, 51 (125), pp. 582-593.

Crisp, O., 1976. *Studies in the Russian Economy before 1914*. London: Macmillan.

Daniel, W., 1995. Entrepreneurship and the Russian textile industry: from Peter the Great to Catherine the Great. *The Russian Review*, 54(1), pp. 1-25.

Drummond, I.M., 1976. The Russian gold standard, 1897-1914. *The Journal of Economic History*, 36 (4), pp. 663-688.

Esper, T., 1969. Military self-sufficiency and weapons technology in Muscovite Russia. *Slavic Review*, 28(2), pp. 185-208.

Falkus, M.E., 1972. Economic development after Peter the Great. In: *The Industrialization of Russia, 1700-1914*. Studies in Economics and Social History. McMillan. pp 26-30.

Gaddy, C.G. and Ickes, B.W., 2005. Resource rents and the Russian economy. *Eurasian Geography and Economics*, 46 (8), pp. 59-583.

Gaddy, C.G. and Ickes, B.W., 2009. Russia's declining oil production: managing price risk and rent addiction. *Eurasian Geography and Economics*, 50 (1), pp. 1-13.

Gatrell, P., 1994. *Government, Industry and Rearmament in Russia, 1900-1914*. Cambridge: Cambridge University Press.

Gerschenkron, A., 1962. *Economic Backwardness in Historical Perspective*. Cambridge, Massachusetts: Harvard University Press.

Gerschenkron, A., 1962. On the concept of continuity in history. *Proceedings of the American Philosophical Society*, 106(3), pp. 195-209.

Geyer, D., 1987. *Russian Imperialism: The Interaction of Domestic and Foreign Policy 1860-1914*. Leamington Spa: Berg Publishers Ltd.

Gorshkov, B.B., 2012. Bonded labor and migration, Russia. *The Encyclopaedia of Global Human Migration*. In: Ness, E. (ed.), Oxford, UK: Blackwell Publishing.

Hoff, K. and Stiglitz, J.E., 2004. After the big bang? Obstacles to the emergence of the rule of law in post-communist societies. *The American Economic Review*, 94(3), pp. 753-763.

Hogan, H., 1993: *Forging Revolution: Metalworkers, Managers, and the State in St. Petersburg 1890-1914*. Bloomington and Indianapolis: Indiana University Press.

Hughes, L., 1998. *Russia in the Age of Peter the Great*. New Haven & London: Yale University Press.

Kahan, A., 1965. Continuity in economic activity and policy during the post-Petrine period in Russia. *The Journal of Economic History*, 25(1), pp. 61-85.

Kahan, A., 1967. Government policies and the industrialization of Russia. *The Journal of Economic History*, 27(4), pp. 460-477.

Mavor, J., 1925. *An Economic History of Russia*. Vol.1., second edition. London: J.M. Dent & Sons.

Peshkova, A., 2008. The effects of higher oil prices on the Russian economy”, *Cognita*, 17, pp. 5-9.

Pintner, W.M., 1984. The burden of defense in Imperial Russia, 1725- 1914. *Russian Review*, 43(3), pp. 231-259.

Reynolds, D.B. and Kolodziej, M. 2007. Institutions and the supply of oil: a case study of Russia. *Energy Policy*, 35 (2), pp. 939-949.

Sagers, M.J., 2006. The regional dimension of Russian oil production: is sustained recovery in prospect? *Eurasian Geography and Economics*, 47(5), pp. 505-545.

Semenova, M., 2007. The role of the Russian state in the globalisation of the Russian economy. [online] Reuters Fellowship Paper, Oxford University. Available at: <<https://reutersinstitute.politics.ox.ac.uk/sites/default/files/The%20Role%20of%20the%20Russian%20State%20in%20the%20Globalisation%20of%20the%20Russian%20Economy.pdf>> [Accessed 12 May 2016].

Skocpol, T., 1979. *States and Social Evolutions: A Comparative Analysis of France, Russia, and China*. Cambridge: Cambridge University Press.

Smith, A., 1776. *The Wealth of Nations*. Edited by Edwin Cannan, 1904. Reprint edition 1937. New York: Modern Library.

Stiglitz, J.E., (2002). *Globalisation and its Discontents*. New York: W.W. Norton.

Tabata, S., 2002. Russian revenues from oil and gas exports: flow and taxation. *Eurasian Geography and Economics*, 43 (8), pp. 610-627.

Tompkins, S.R., 1933. Witte as minister of finance, 1892-1903. *The Slavonic and East European Review*, 11, pp. 590-606.

Waldron, P., 1997. Field and factory: the Russian economy. In: *The End of Imperial Russia, 1855-1917*. European History in Perspective, pp. 38-68.

Willis, H.P., 1897. Monetary reform in Russia. *The Journal of Political Economy*, 5, pp. 277-315.

Zelnik, R.E., 1971. *Labour and Society in Tsarist Russia: the Factory Workers of St. Petersburg, 1855-1870*. Stanford University Press.

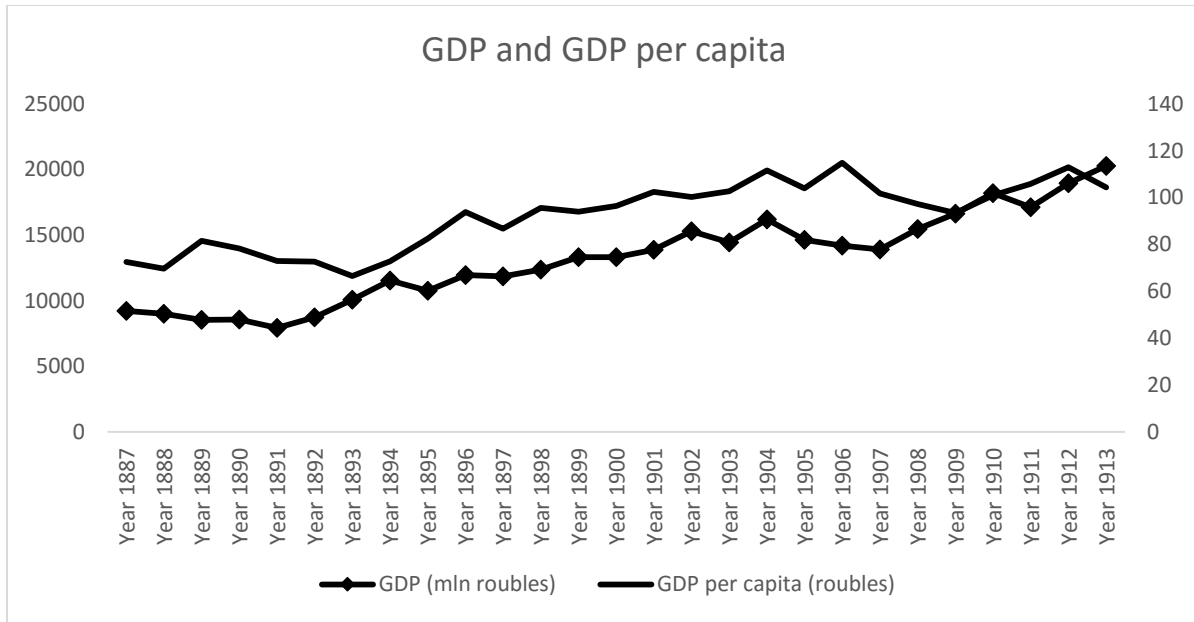


Figure 1. GDP and GDP per capita during the end of the 19th-benning of the 20th century industrialization.

Source: Authors' own calculations based on the 'Dinamika ekonomicheskogo i socialnogo razvitiya Rossii v XIX-nachale XXvv.' database, <http://www.hist.msu.ru/Dynamics/index.html>

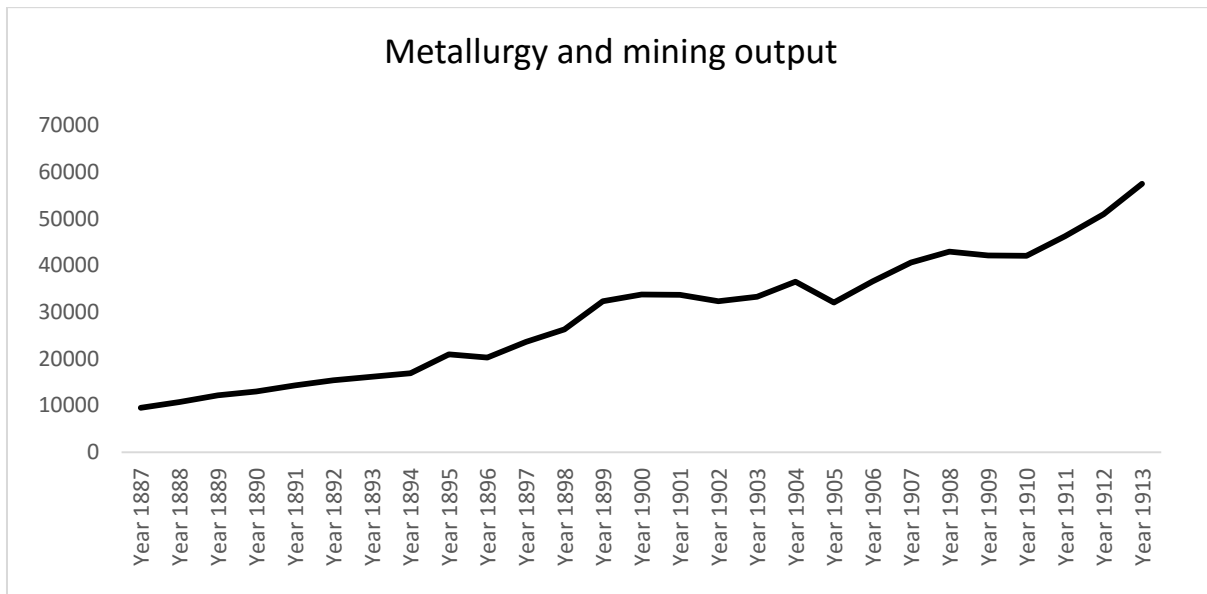


Figure 2. Metallurgy and mining output (in thousands of tonnes) during the end of the 19th-benning of the 20th century industrialization.

Source: Authors' own calculations based on the 'Dinamika ekonomicheskogo i socialnogo razvitiya Rossii v XIX-nachale XXvv.' database, <http://www.hist.msu.ru/Dynamics/index.html>.

Table 1. Overall output for each metallurgy and mining industry¹⁰

Industry	Output
Coal	432,976.9
Oil	207,920.2
Turf	10,043.9
Gold	1.32
Iron	116,144.2
Manganese	12,680.8
Pyrites	866.3
Chromium	414.5
Copper	8673.2
Silver lead	798.0
Asbestos	162.5
Zinc	1,782.3

Source: Authors' own calculations based on the 'Dinamika ekonomicheskogo i socialnogo razvitiya Rossii v XIX-nachale XXvv.' database, <http://www.hist.msu.ru/Dynamics/index.html>.

¹⁰ Output is measured in thousands of tonnes (except for copper and asbestos output, which was measured in tonnes, and gold, which was measured in kilograms. However, they were converted to the common measure for consistency purposes).

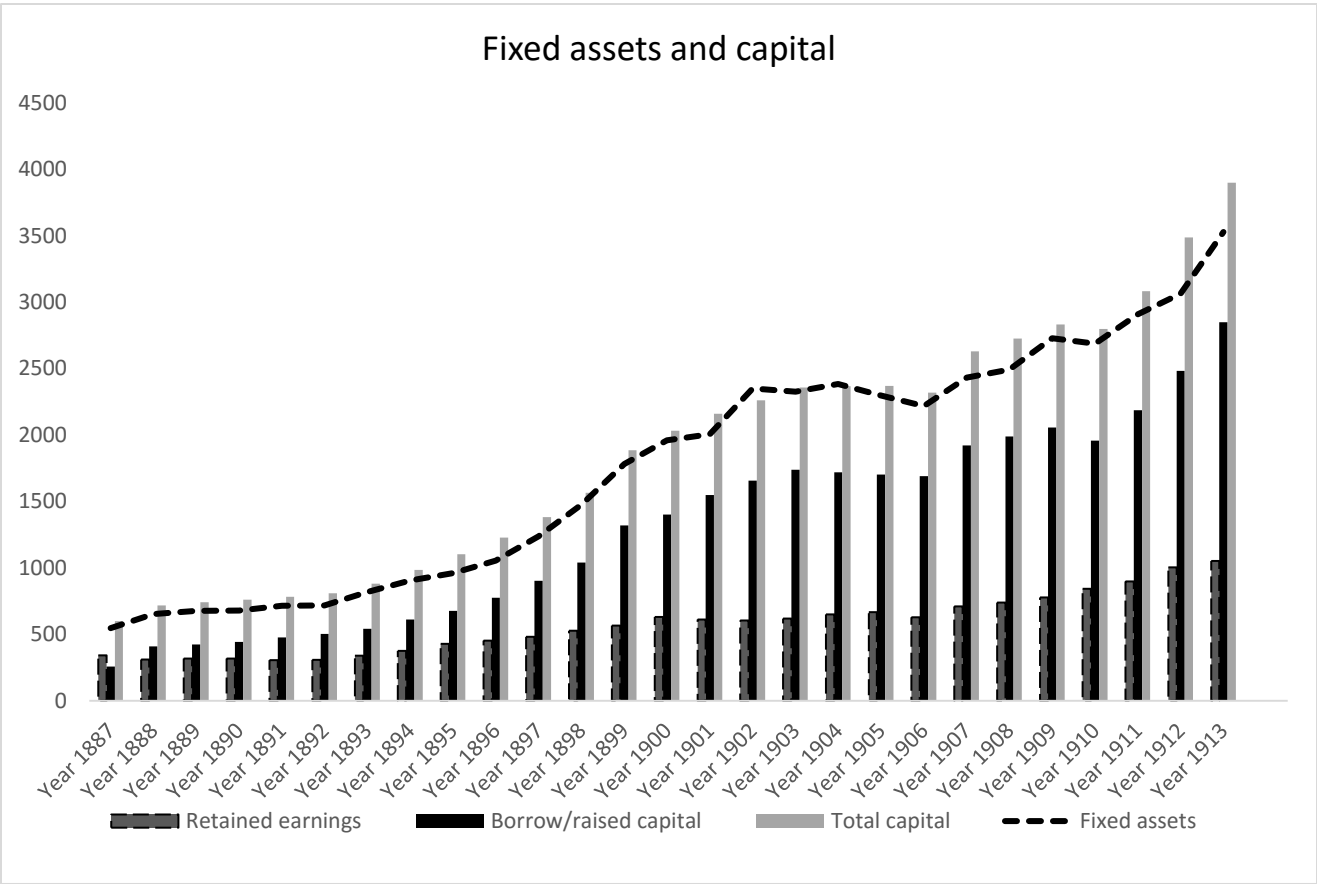


Figure 3. Fixed assets and capital of manufacturing firms (millions of roubles) during the end of the 19th-beginning of the 20th century industrialization.

Source: Authors' own calculations based on the 'Dinamika ekonomicheskogo i socialnogo razvitiya Rossii v XIX-nachale XXvv.' database, <http://www.hist.msu.ru/Dynamics/index.html>.

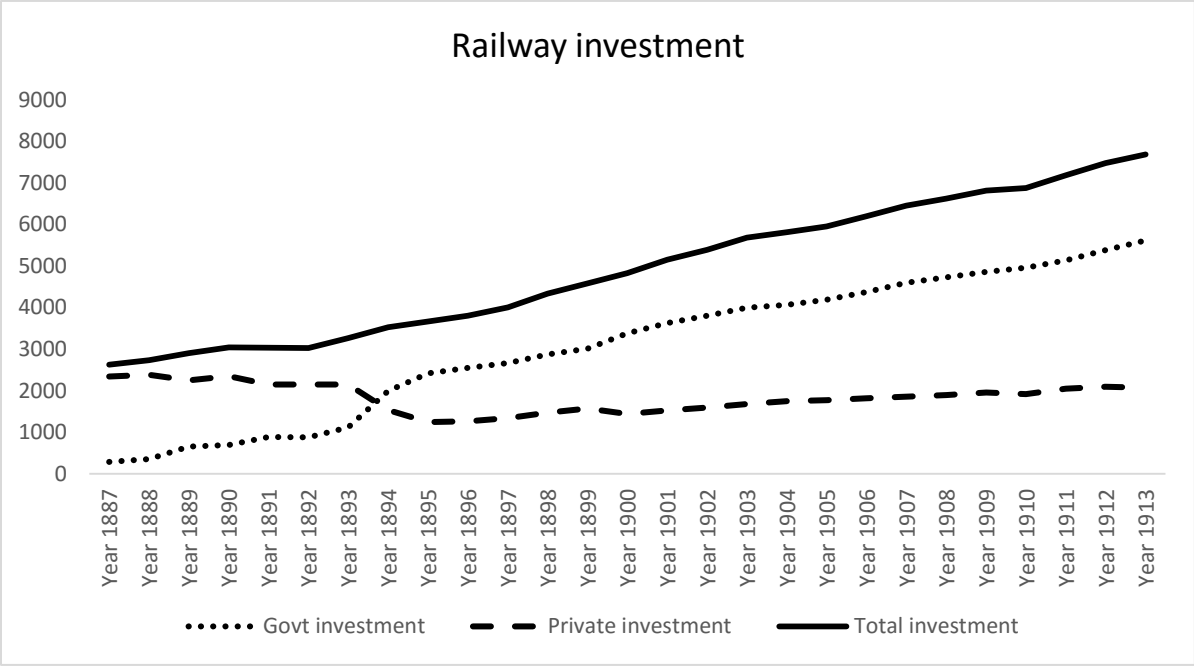


Figure 4. Investment into railways (in millions of gold roubles) during the end of the 19th-benning of the 20th century industrialization.

Source: Authors' own calculations based on the 'Dinamika ekonomicheskogo i socialnogo razvitiya Rossii v XIX-nachale XXvv.' database, <http://www.hist.msu.ru/Dynamics/index.html>.

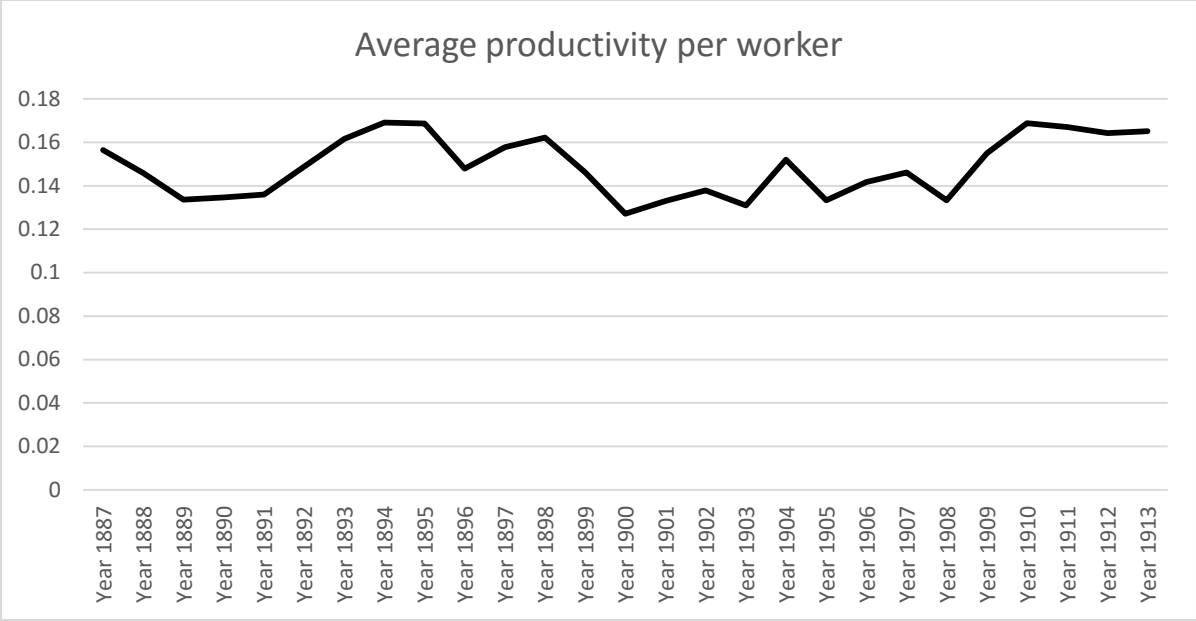


Figure 5. Average productivity per worker in metallurgy and mining sector (thousands of tonnes)

Source: Authors' own calculations based on the 'Dinamika ekonomicheskogo i socialnogo razvitiya Rossii v XIX-nachale XXvv.' database, <http://www.hist.msu.ru/Dynamics/index.html>.

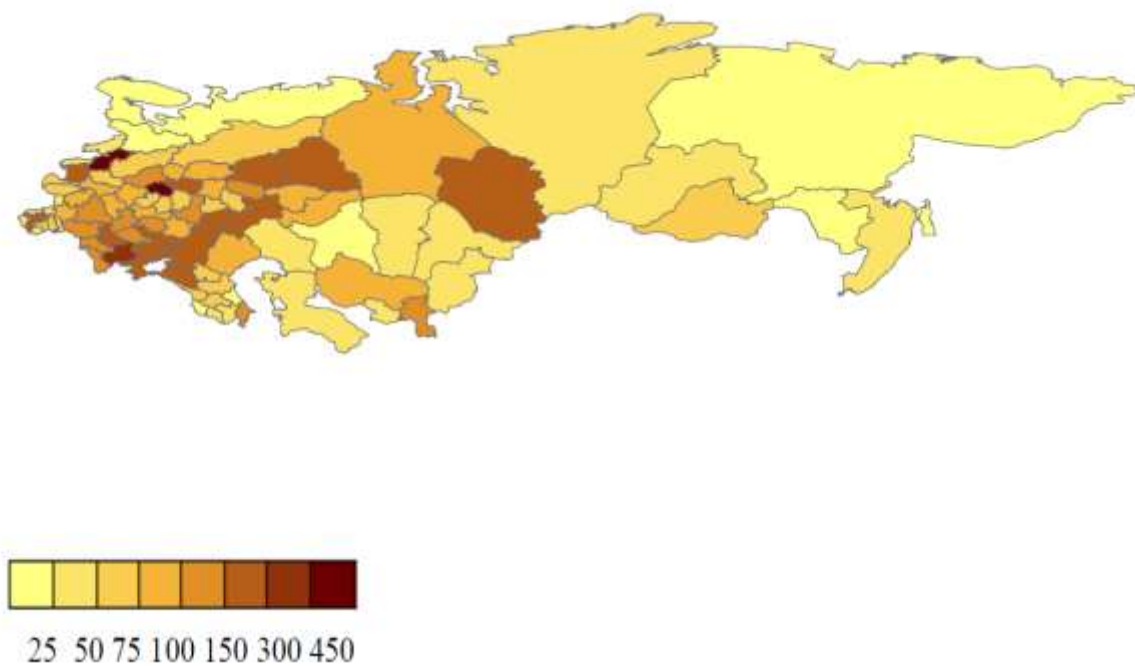


Figure 6. Gross regional products in 1897 (roubles).

Source: Markevich (2014).

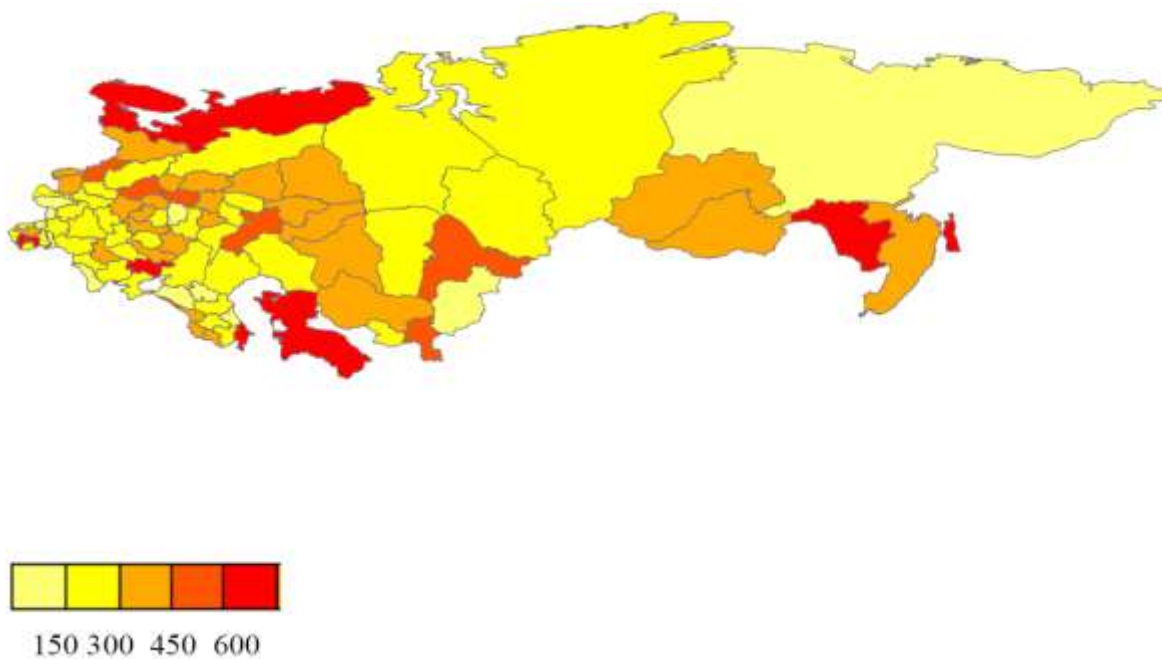


Figure 7. Value added per worker in industry in 1897 (roubles).

Source: Markevich (2014).

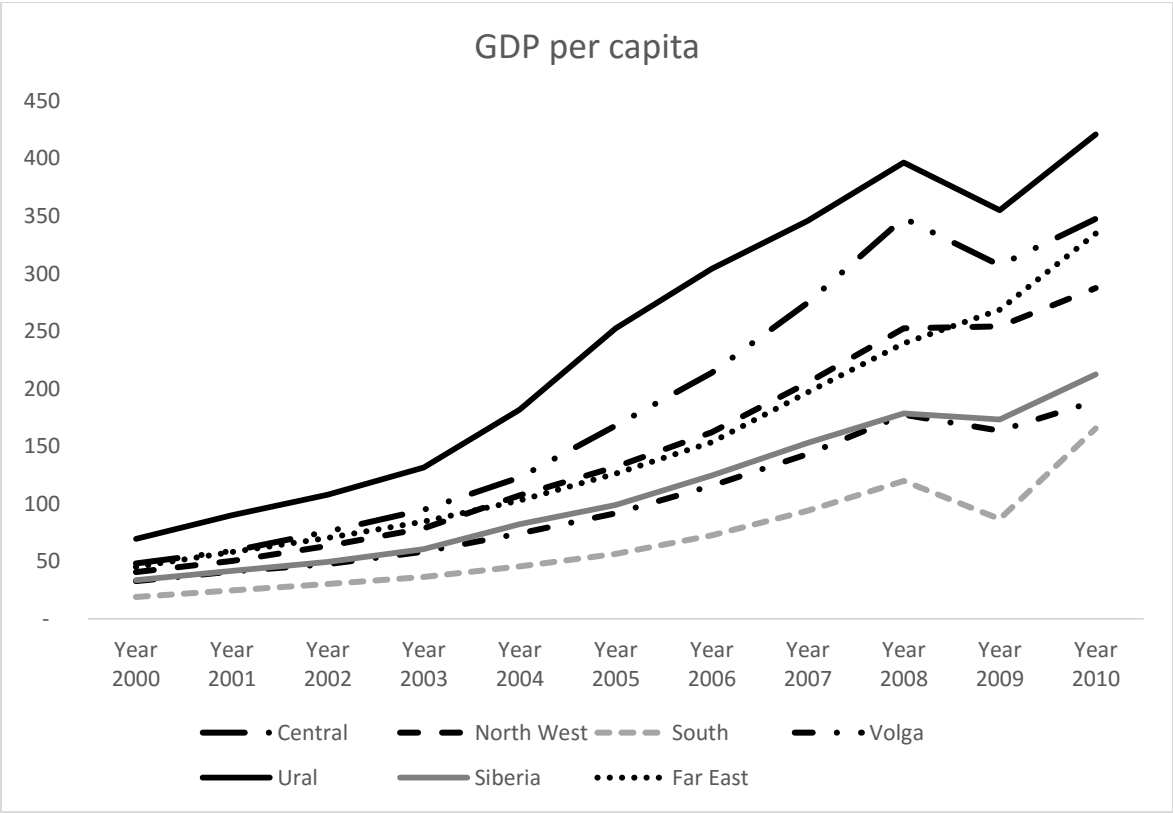


Figure 8. GDP per capita (in thousands of roubles).

Source: Russian Federal State Statistics Service.

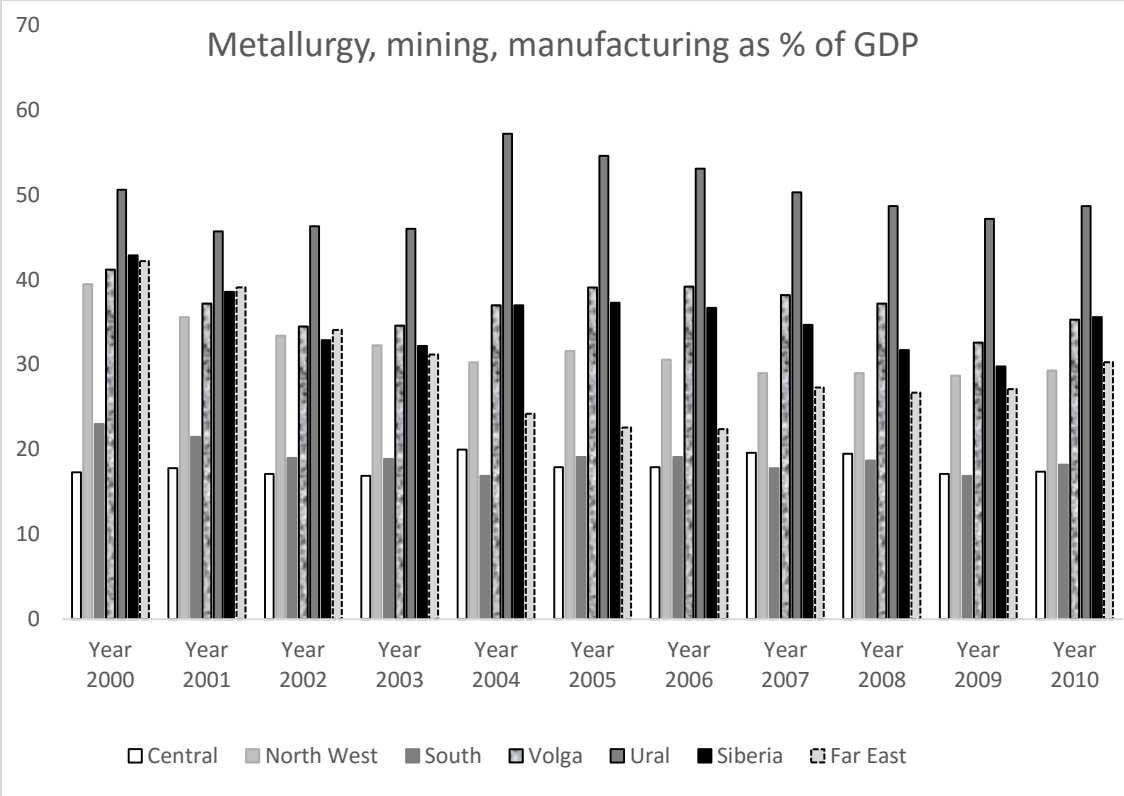


Figure 9. Metallurgy, mining and manufacturing sector's output as % of overall output.

Source: Russian Federal State Statistics Service.

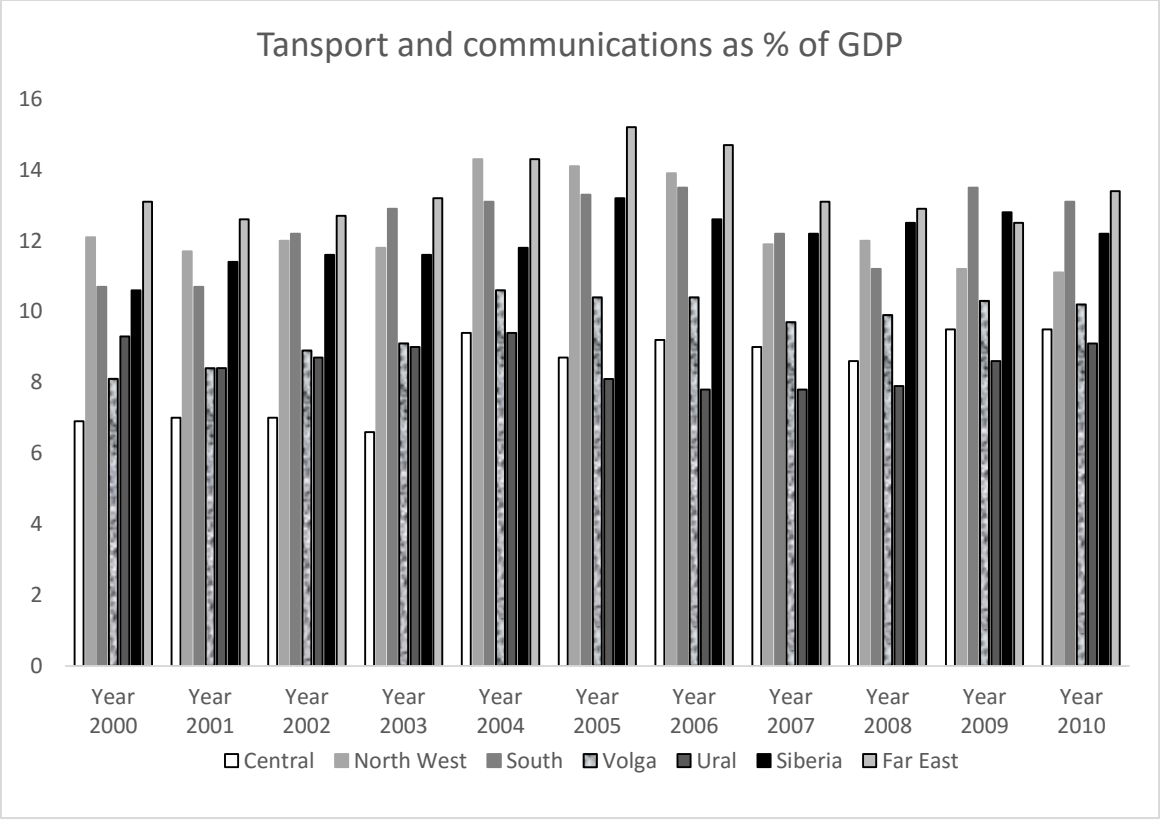


Figure 10. Tansport and communications sector’s output as % of overall output.

Source: Russian Federal State Statistics Service.

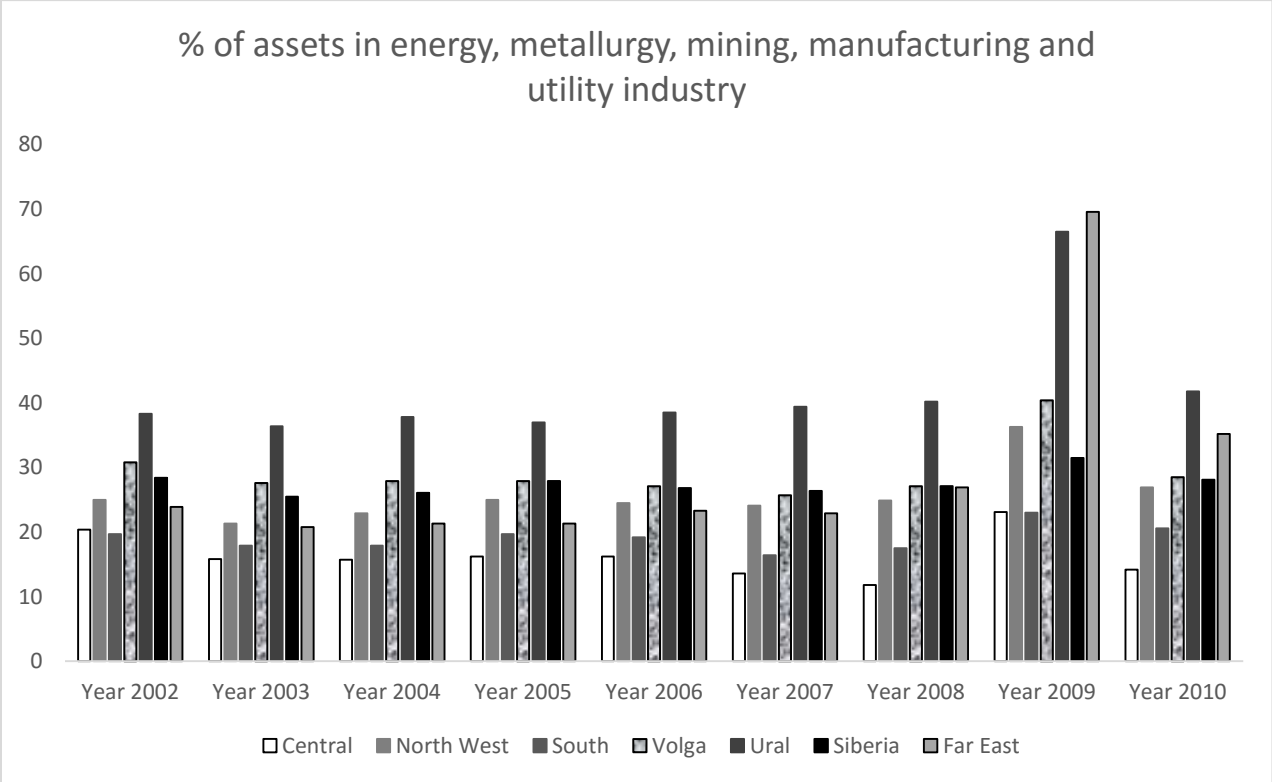


Figure 11. % of assets employed in energy, metallurgy, mining, manufacturing and utility industry.

Source: Russian Federal State Statistics Service.

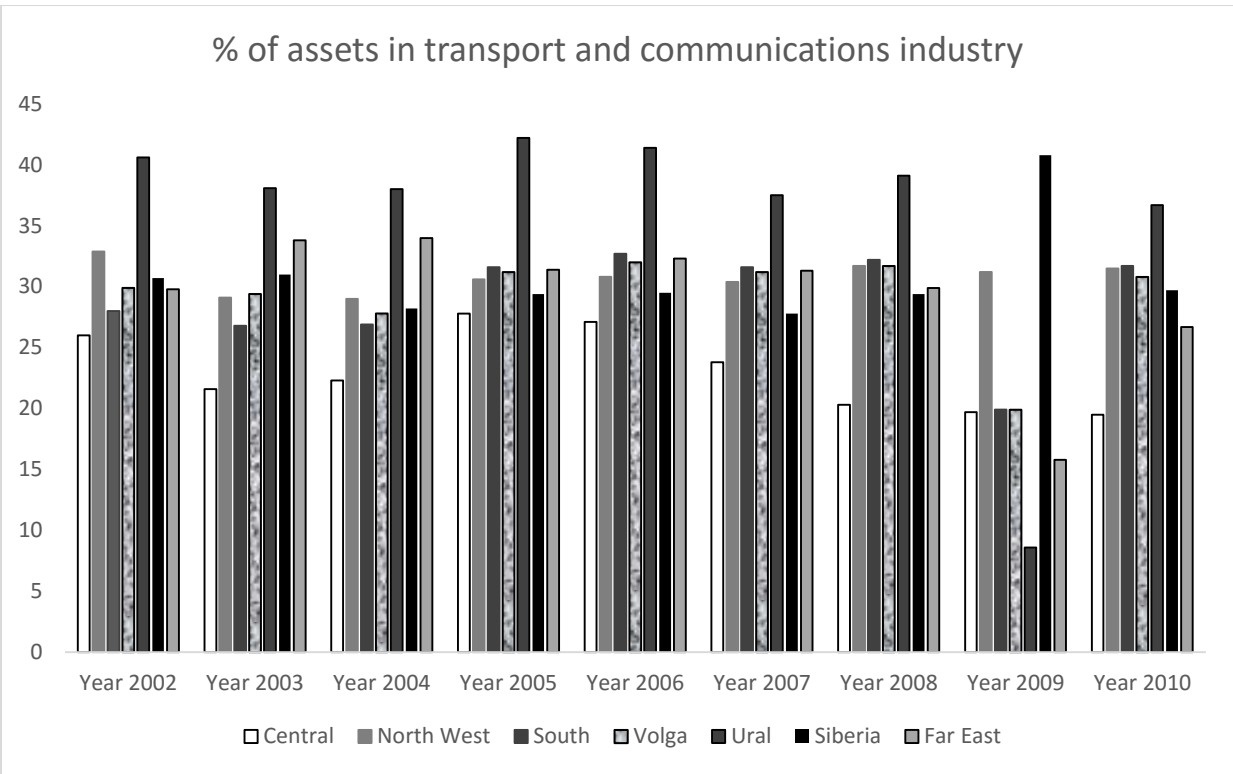


Figure 12. % of assets employed in transport and communications industry.

Source: Russian Federal State Statistics Service.

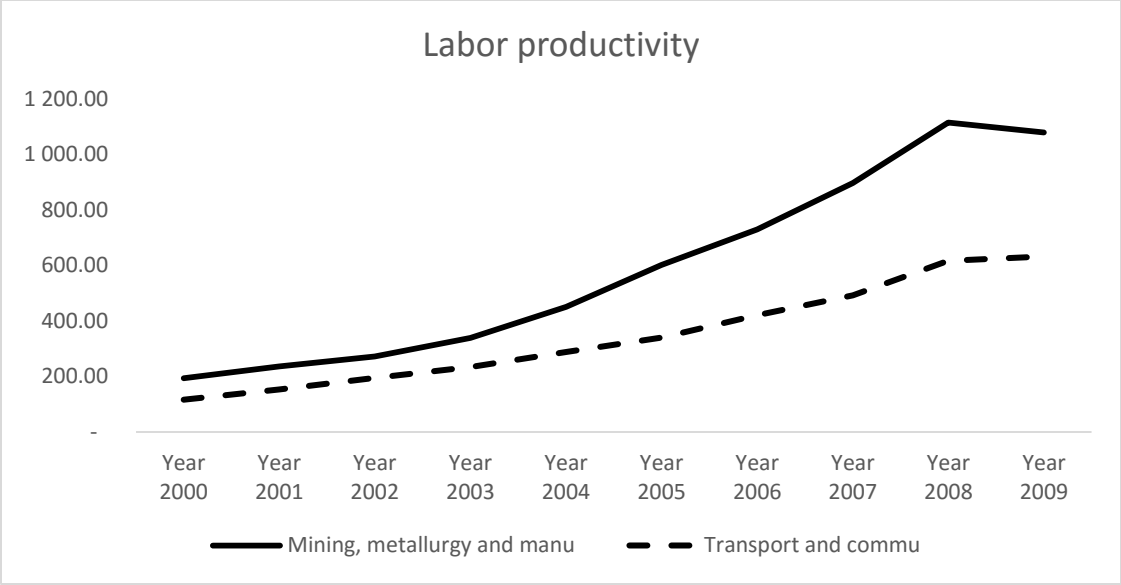


Figure 13. Labour productivity across metallurgy, mining and manufacturing sector and transport and communications sector (roubles per hour).

Source: Russia, WOLRD KLEMS database, <http://www.worldklems.net/data.htm>.

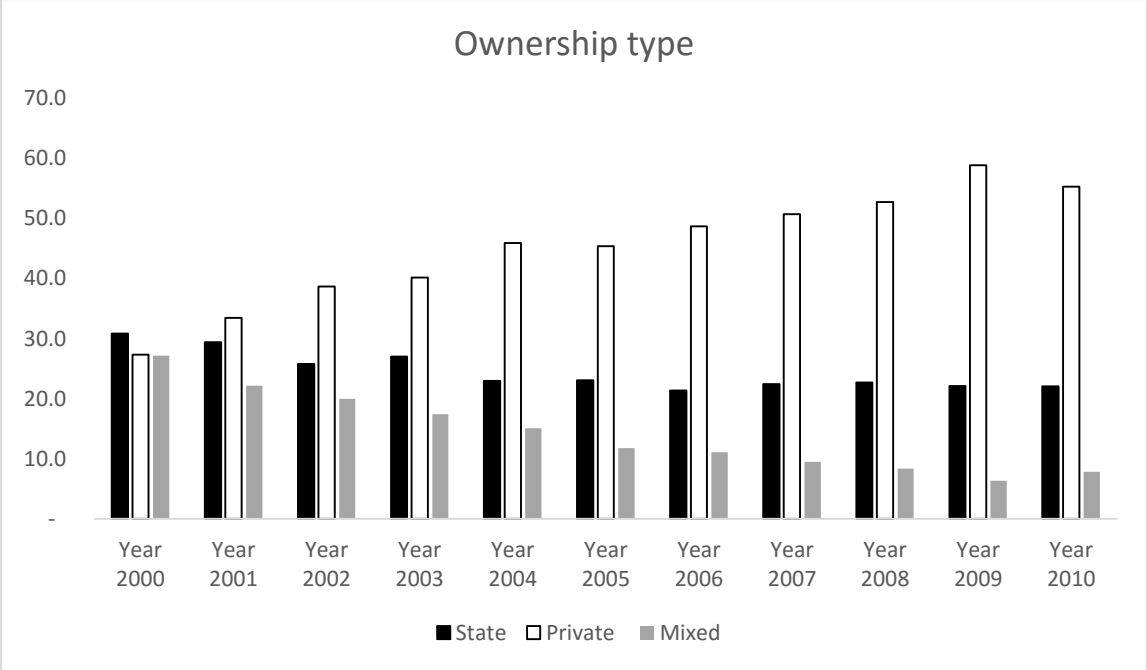


Figure 14. Ownership type, % (does not include foreign ownership).

Source: Russian Federal State Statistics Service.

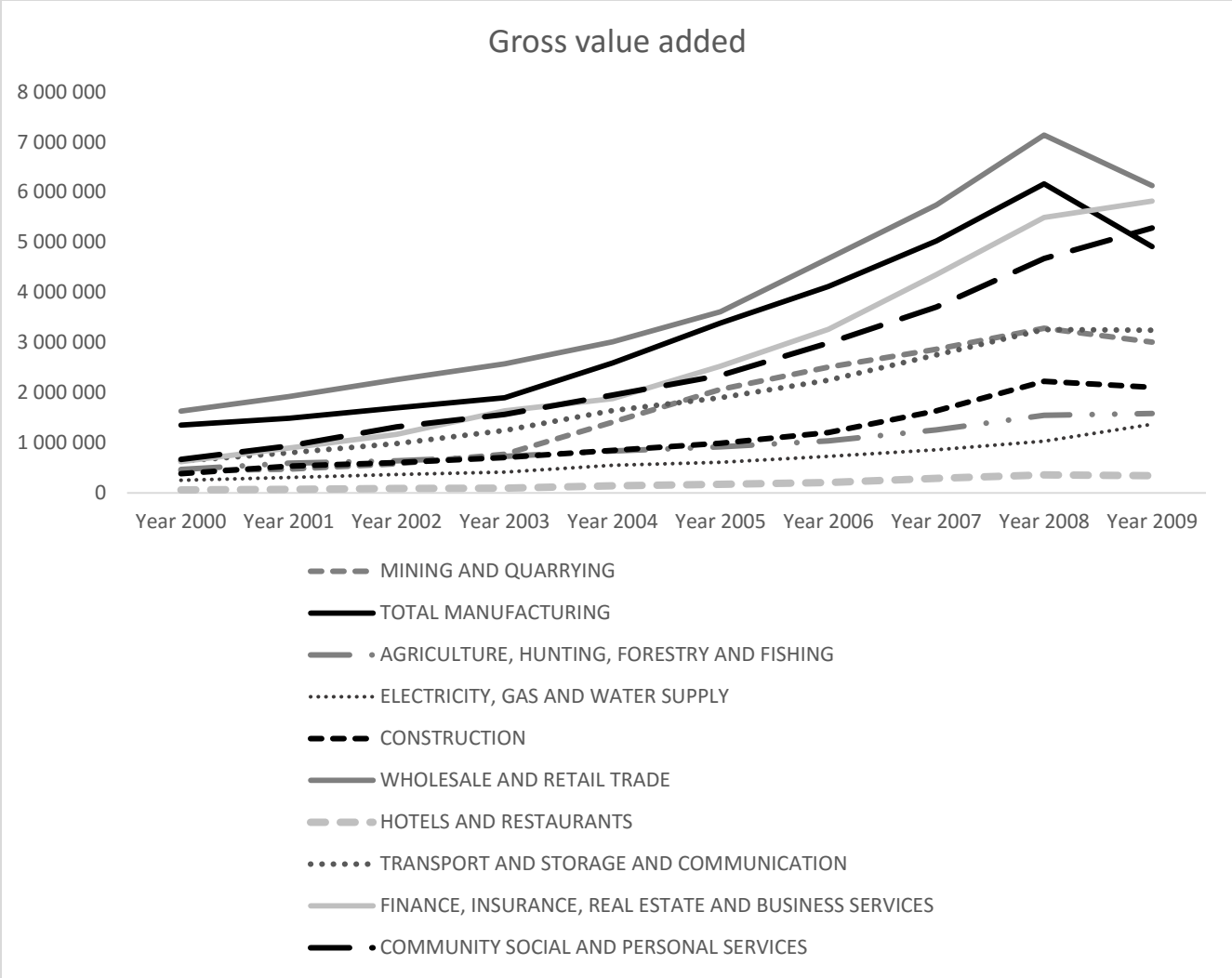


Figure 15. Gross Value Added across all industrial sectors (millions of roubles).

Source: Russia, WOLRD KLEMS database, <http://www.worldklems.net/data.htm>.

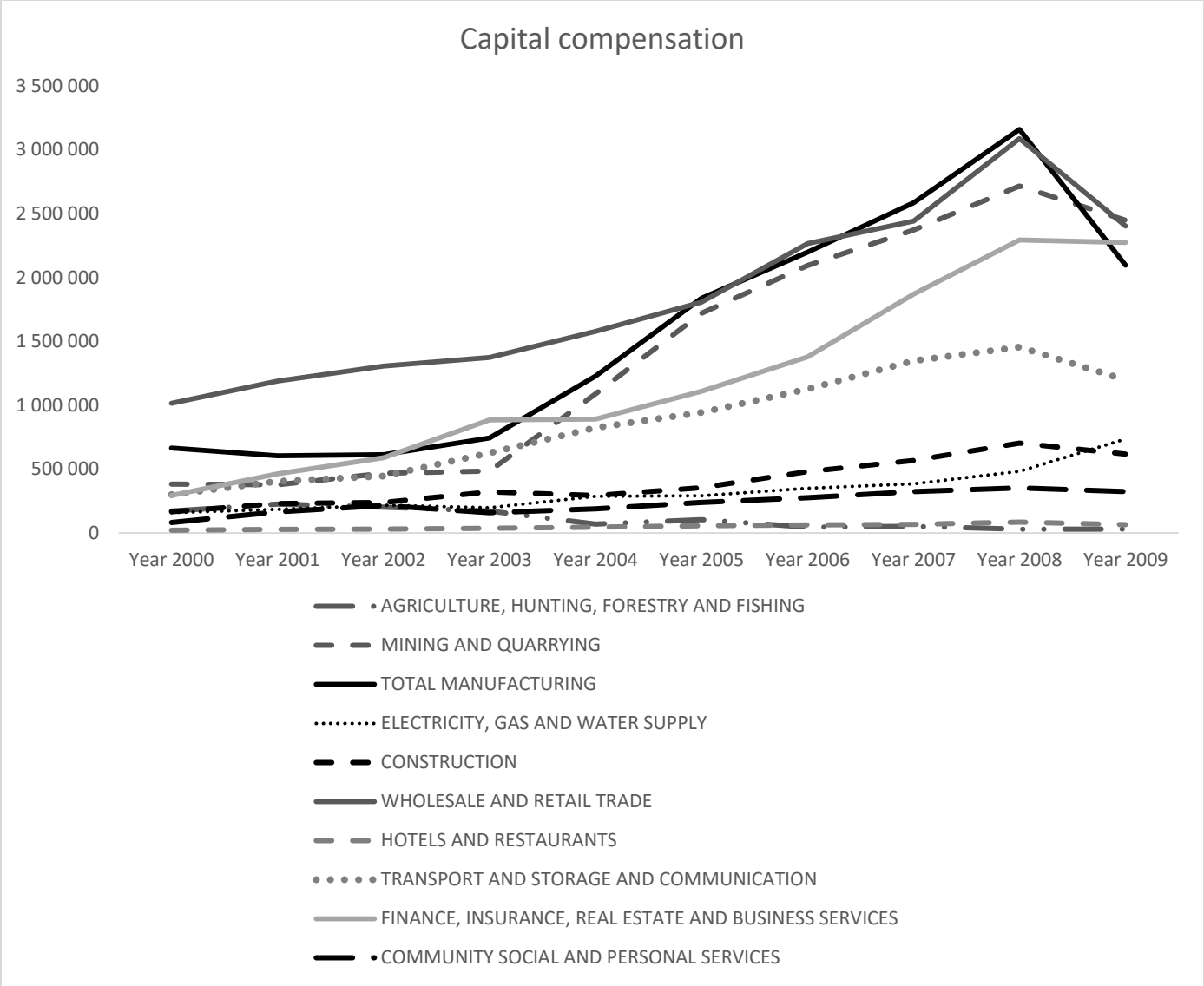


Figure 16. Capital compensation across all industrial sectors (millions of roubles).

Source: Russia, WOLRD KLEMS database, <http://www.worldklems.net/data.htm>.

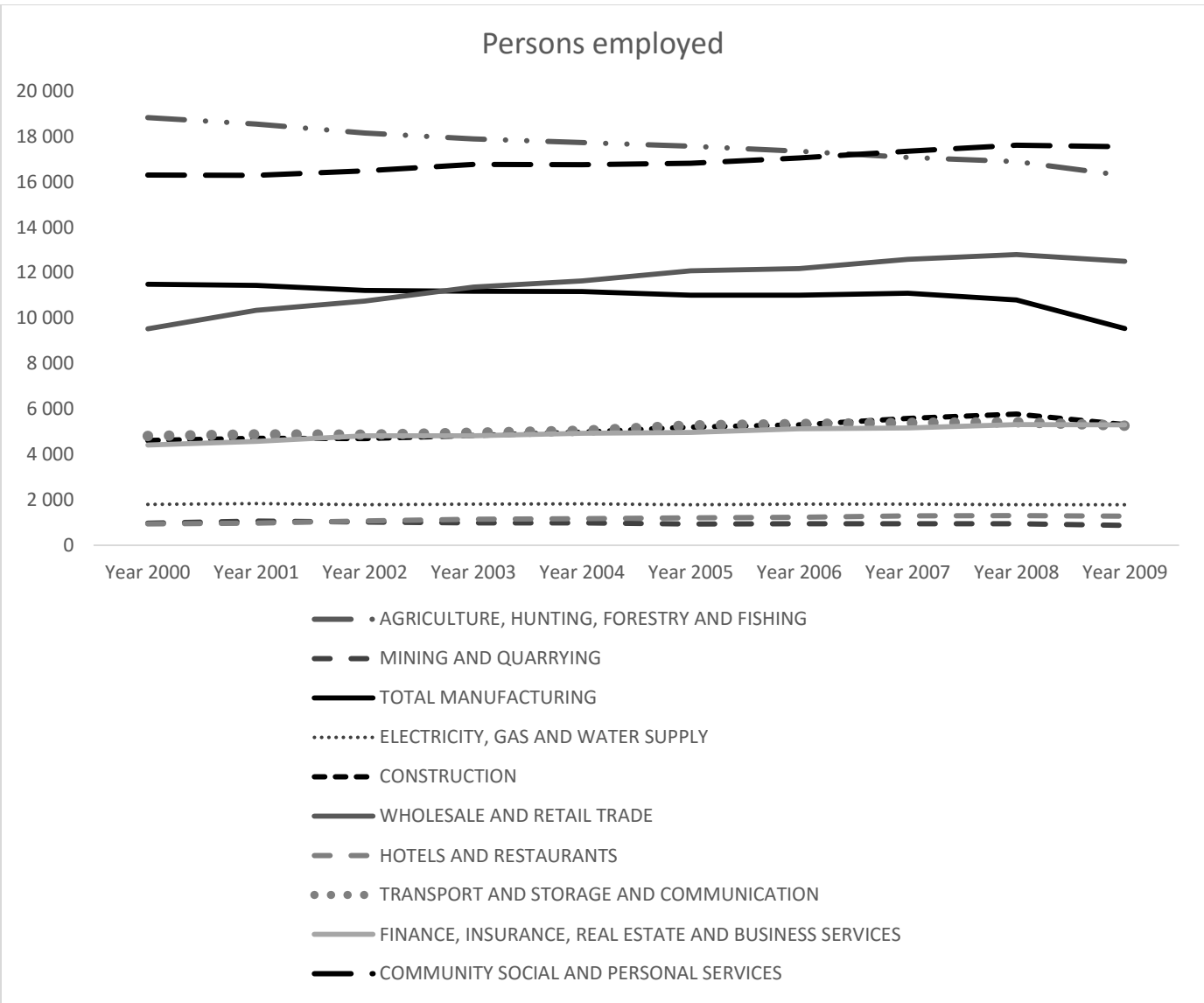


Figure 17. Persons employed across all industrial sectors (thousands).

Source: Russia, WOLRD KLEMS database, <http://www.worldklems.net/data.htm>.