

## **Pre-revolution living standards: Russia 1888-1917**

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# **Title: Pre-revolution living standards: Russia 1888-1917**

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## **Abstract**

After 1917 Russia underwent extraordinary transformations. Its capitalist based economy was reshaped to centrally-planned economic system.

Recent studies rest upon the shared assumption that the effect of adverse social, geographical, political or historical conditions persisted over that time, keeping pre-revolution Russian economy behind and stimulating workers to fight. Many samples of previous research drawn by economists of Soviet era, which were reflected on the results. However was it really so bad? Our reconstruction of Russian living standards scrutinizes real wages structure distribution per capita, income levels divided between the two main cities (Moscow and St.Petersburg) and groups of workers. We adopt Robert C. Allen subsistence basket methodology. This study has shown the that the annual wages earned by male adult workers sufficed to sustain a household at subsistence level for the entire pre-revolution period, with the exception of the years 1916-1917. International comparisons with some developed European cities have shown that the picture of Russian labour-class living standards is much wider and needs historical and economical revision.

Key words: Russian revolution, living standards, labour wages, food price, welfare levels.

## **Inrtoduction**

After 1917 Russia underwent extraordinary transformations. Its capitalist based economy was reshaped to centrally-planned economic system.

Even on the threshold of a hundred year anniversary of Russian revolution many issues remain unresolved. Economic historians of 20<sup>th</sup> century Russia focused their attention on pre-revolutionary economic problems and in many classical books Russia looks a lot like lugging part of Europe. Over recent years some Russian historians increasingly analyzed and reviewed this part of Russian economic history.

Some scientists assume that due to a number of unfavorable social, geographical, political or historical conditions which remained over that time, the economy of pre-revolutionary Russia was left behind and labour class was encouraged to fight. Others believe that economic failure and weakness were the main reasons of Russian revolution 1917. Others have attributed Russian revolution 1917 to economic failure and weakness.

Russia's bad set of financial institutions has often been cited as a possible cause of revolution too. There are lots of complications on the way to the study of this aspect.

Perhaps the most discussed problem is that the unfavorable conditions impacted the results of previous research drawn by economists of Soviet era. Their main conclusion is that labour class was affected by horrible poverty. Perhaps not the most surprising is that this conclusion is based on limited evidence. Were workers affected by poverty or were economical and political change "on the air" and easily changed mood of people? Much has been written on the importance of fast change for economic development. However was it really so bad?

Meanwhile, if we look on the situation impartially, we can see much more than a common view of that period of time.

### **Historical background**

If history matters for what we truly believe in, we need to make some historical review. At the end of 19<sup>th</sup> century Russia was in the first place in population growth. For the 100 years before, Russian population has increased by 111 million, 637 thousand, or 3.55 times, and the increase was caused by country residents. Absolute increase in population and its rate was in the period between 1863 and 1913. There were also significant differences between the rates of population growth of 50 provinces of European Russia. Russian population from 1863 to 1913 (without Poland and Finland) grew at 122,2% , in particular from 1897 to 1913 – at 33,7% . Highest population growth was in the Caucasus and Siberia, mainly because of internal migration.<sup>1</sup>

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1. See Rashin "Russian population for 100 years".

Between 1861 and the Revolution of 1905, rural Russia experienced significant social and economic change. Emancipation of the serfs began a sequence of reforms designed to improve the civil rights of the rural population. The land reforms that accompanied emancipation transferred property rights from the gentry and the state to the peasantry. The expansion of the railway network and growing integration with global markets led to increased regional specialization as grain exports boomed in the south and substantial industrial growth took place in the north-central provinces.<sup>2</sup>

In the late XIX — early XX century the Russian government took a number of measures to strengthen the role of Russia in the world economy, namely: stimulation of economic growth through industrial development, improvement of public finances, stabilization of the ruble by the introduction of the gold standard, protectionism, and expansion of transport infrastructure. This study assesses the impact of the above mentioned measures on the formation of investment climate in Russia in 1885–1913.

The years 1885–1913 are considered as an integral period from the point of view of the conducted economic policy, and, consequently, its impact on the investment climate. It should be noted that success in the development of Russia in the late XIX — early XX century is traditionally associated with the policies of Sergei Witte.<sup>3</sup>

There was a rapid growth of cities and urban population, however urban population grew slower than total population. The rising demand for labour in Russian cities is unquestionable.

W. Rostow believed that at the end of XIX — early XX century Russia has entered a stage of take-off with self-sustained growth<sup>4</sup>. According to P. Gregory during 1885-1913 the growth rate accounted for 3.25% per year, and per capita — 1.75% per year<sup>5</sup>. In comparison with the developed countries of the time Russia was one of the fastest growing economies.

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2. Micro-Perspectives on 19<sup>th</sup> –century Russian Living Standards. Tracy Dennison & Steven Nafziger

3. Government Economic Policy and the Formation of Investment Climate: The Experience of Russia in the Late Nineteenth — Early Twentieth Century Natalia P. Drozdova ,Irina G. Kormilitsyna.

4. Rostow, 1990, p. xviii

5. see Gregory, 1982, p. 192

Industrial growth rates were significantly higher than the average for the national economy and for the years of industrial expansion (1885–1913) reached 5.72%, and in 1890-ies — even 8.03%.

During the period the average annual growth rate of industrial production in the U.S. amounted to 5.26%, in the UK — 2.11%, in Germany — 4.49%, in Sweden — 6.17%<sup>6</sup>. Thus at the turn of the XIX–XX century Russia held one of the first places in the world for the pace of industrial development.

A characteristic feature of the reform era was growth of the urban population. High taxes and redemption payments for land made peasants flock to cities and industrial towns, factories, mining industries and to railway construction in order to earn money to survive. The influx of cheap labour was one of the most important factors in capitalization of the country.

From the second half of nineteenth century manufacturing begins to develop rapidly. In the European part of Russia, especially in Moscow and Moscow region, Donbas, Volga region and St. Petersburg region numerous factories were built. The most intensively developed branch of industry was metallurgy, textile industry and construction.

By the early 80's of nineteenth century, along with continued development of handicrafts, the role of factory production was increasing. An important feature of its formation was gradual transition from manual labour to mechanization. The greatest development of machine technology was in the manufacturing sector. Metallurgy industry, which contained 24.8% of all engines and concentrated 77.5% of all workers, gave 86.3% of total production industry.

Rising demand for manufactured goods caused innovation and production increase during the nineteenth century and the beginning of twentieth century.

Large investments have ensured rapid railway development. If in 1860 the construction length of the railway network in Russia was 1626 km, then in 1870 it increased to 10,731 km, in 1880 this figure reached 22,865 km.

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6. see Gerschenkron, 1947, p. 156

During the industrial boom of the 90s over 2.5 thousand km of railways were built annually.

From 1893 to 1902 - 27 thousand km of railways were put in operation, and their total length exceeded 55 thousand km. In 1891, the construction of the Trans-Siberian Railway began, and it was largely completed in the beginning of the XX century.<sup>7</sup>

A breakthrough in the country's railway construction has given a powerful fillip to the growth of production in other industries. The demand of the railway industry for metal, coal and rolling stock stimulated the development of mechanical engineering, mining, metallurgy, power industry.

The rapid development of industry and railways in the late XIX century led to rapid growth of the number of workers in the country.

If in 1865 there were 706 thousand people working on factories and railroads (European part), by 1879 the number of employees rose to 1179000, in 1890 it amounted to 1432000, and finally in 1900 - 2208000. Over the period between the years 1865 and 1900 the number of workers in European Russia more than tripled.<sup>8</sup>

In the period between 1909 and 1913 average annual increase in industrial output was 8.9%. Industries producing capital goods increased by 83%, and those producing consumer goods - by 35%. The bulk of industrial capacity was concentrated in the Russian Central part ,North West, Baltic, Southern Poland and Ural regions. They produced over 75% of gross production and concentrated up to 79% of all factory workers. Other areas were less developed.<sup>9</sup>

The number of industrial establishments decreased from 33.618 in 1888 to 27.914 in 1913 due to financial crisis in the beginning of twentieth century and also because of consolidation.

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7. SSSR Ensiklopedicheskii spravochnik. M.:Sovetskaya ensiklopediya, 1982. str 117.

8. Gerschenkron A. 1947 The Rate of Growth in Russia: The Rate of Industrial Growth in Russia, Since 1885 // Journal of economic history. Vol. 7. Supplement. P. 144-147

9. Statisticheskii ezegodnik Rossii za 1900-1916. SPb

The proof is increase in number of employees from 1.231500 in 1888 to 2.897969 in 1913.<sup>10</sup> Much attention was drawn to the working issue. On the 2<sup>nd</sup> of June 1897 the law on limitation of working day was issued. It set the maximum limit of working day at no more than 11.5 hours on weekdays and 10 hours on Saturdays and days before holidays, or if the working hours at least partly fell on night time.

At factories with more than 100 workers free medical care was constituted, and it covered 70% of all factory workers (1898). In June 1903 Regulations on compensation for industrial accidents were established, obliging the employer to pay benefit and pension to the person affected or their family ranging from 50 to 66% of the person's allowance.<sup>11</sup> In 1906 labor unions were created in the country. The law of 23th of June 1912 set forth compulsory accident and health insurance for workers.

### **Wage development**

For study of Russian economy a real wage approach offers a more vital and accurate picture of actual purchasing power and economic development of Tsarist Russia. In the paper we are analyzing wage and commodity price data for the two main Russian cities. St Petersburg and Moscow were (and still are) the two biggest cities in Russia, they were the heart of revolutionary movement and centers of industrialization.

Due to 2 wars (Russo - Japanese war (1904-1905) and World War 1)) it is difficult to make continuous solid wage series. During that time Russian social structure was reshaped. In the period of First World War the statistics was scrappy, lots of sources were destroyed during the "dark period of Russian Revolution". However, we have collected this fragmented data as much as possible.

There are three main sources for these scattered data: Factory inspection reports 1900-1917, Statistical and documentary handbook (Russia 1913), History of the national economy. Also some administration reports that are available in the archives.

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10. See Strumilin, S.G. Ocherki Ekonomicheskoi Istorii Rossii, 1960

11. See Kirianov, U.I., 1989

The most systematic and detailed source of data are accounting books of textile factory(1888 to 1916), they contain very detailed information written before Soviet time.<sup>12</sup> These reports contain very personalized information with the name of a person, date of birth, job title, start time and so on.

Of course these sources have some drawbacks as well. First of all some indicators were said to be inaccurate. In point of fact it is an evidence of high degree of Russian State bureaucracy. In some provinces wages were probably lower, than in these reports (at least Soviet classical authors always refer to this). But on another hand we make wage and price series of St.Petersburg and Moscow (two capitals). The importance of these cities for Tsarist Russia makes us sure that the information in the statistical books we used is close to the truth, because these cities were full of inspectors and auditors.

We focused on urban skilled and unskilled adult male wages. By focusing on both groups of labours we are trying to get a broad picture of real wage situation, also because the variation in wage levels of unskilled workers is usually smaller than that of skilled workers. We want to emphasize that adult male wages were not equal to total household income. Labour wives usually worked, so did children. (There are lots of evidences of that in statistical documents of pre-revolution time).<sup>13</sup>

In Moscow we have the data for real wages of textile factory skilled and unskilled labours from 1888 to 1916. Our information on St.Petersburg labours is less comprehensive. Data availability determines the number of observations in our dataset. We use real wage data of skilled and unskilled constructing workers.<sup>14</sup> Our real wage series are presented in **Table 1** and **Table 2**. All wage series are stated in Russian Rubles on average per year.(before 1914 ruble was freely convertible)<sup>15</sup>

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12. main sources were published in Soviet period and that affected results and conclusion, due to negative attitude of the Soviet government to the Tsarist regime.

13. See *Statisticheskii ezegodnik Rossiya 1900-1916*. SPb

14. due to the reason of data availability we have to use data Rikachev A. *Tseni na xleb i tryd za 58 let*, *Vestnik finansov*. № 31. 1911 for unskilled workers in St.Petersburg from 1888 to 1910....We do not have same data after 1910, so we consider that these variables have missing values for these years when we construct annual averages of these variables for the period after 1910.

15. Borodkin L.I. (ed.) 2005. *Russian Ruble in the European Currencies: The Rate of Exchange*

Here we can make some conclusions. First, despite the fact that St.Petersburg was the capital of Tsarist Russia and an industrial city, skilled workers in Moscow earned more in most cases. With unskilled workers we got a different picture. Unskilled workers earned more in St.Petersburg than in Moscow, and the difference is pretty much obvious. Second, the gap between skilled and unskilled workers wages was large.

**Figure 1** and **Figure 2** insert here.

### **Commodity prices and consumption patterns**

*One important measure of economic performance is the extent to which an economy meets the material need of its population with a given productive capacity , and in this respect the Soviet planning system often fell short in terms of the lack of consumer goods for purchase with the wages the were earned.* <sup>16</sup>

As a framework for our research we are using Allen's concept (Robert C.Allen) He defines two baskets of goods. The more expensive one is a "European respectability basket". The respectability budget provided 2,500 calories and whopping 112 grams of protein per day.<sup>17</sup>

Because the respectability budget was not the kind of diet that many workers can afford – Allen suggests 'bare-bones subsistence basket'. In this paper we will use both baskets to compare the purchasing power of wages over time and compare it with Europe.

Bare bones subsistence basket keeps an average working family alive, but offers nothing more than that. It contains 1,940 calories per day and 66 grams of protein, which is barely suffice to replenish a male adult body after a day of physical work without losing muscular strength in the long run.

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16. P.Gregory, R.C. Stuart, Soviet and Post-Soviet Economic Structure and Performance (5<sup>th</sup> edition, New York: Harper Collins, 1994), p.253ff.

17. see Allen The British industrial Revolution in global perspective 2009, p 35. This was about the level of calories available in many poor countries.<sup>18</sup>

We define price series on a basis of price indices. Moscow – Strymilin S.G. Essays on Russian economic history. M., 1960. p. 115 For St. Petersburg Korelin A.P. Statistical and documentary handbook 1995, p. 317-318. Also price booklet 1913. These sources provide detailed information on retail prices recorded in Moscow and St. Petersburg which allowed us to construct price series of major products, such as rye bread and white bread, potatoes, buckwheat, meat, butter, sugar etc.

Using Allen's concept, we substitute some food products, making basket more appropriate for Russian diet. The diet was determined by using source (Petrogradskie statisticheskie dannie. S. Petersburg 1916, pp. 34-35.) with description of soldier daily ration.

Because beans and peas were not widely used on Russian territory, we substitute it with bread. Rye bread offers more nutritional value per unit of land and labor than any other staple crop and is widely found in any part of Russia. T. Dennison and S. Nafziger argue in their paper that rye bread did not determine spikes in mortality, but some other research show the importance of correlation between rye prices and fertility.<sup>19</sup>

Potatoes became a major food crop in Russia in Catherine the Great time.<sup>20</sup> Soil conditions were suitable for successful cultivation and potatoes were cheap. Also potatoes basket provide high nutritional and caloric value. Buckwheat is another important and traditional staple crop. Nowadays used in Western Europe mostly by vegans, buckwheat is still a major crop in Russia. In subsistence basket Allen used 5 or even 3 kg of meat (depends on the region). We put 5 kg, however, due to the cold climate and traditionally high consumption of meat this amount is absolute possible minimum. (meat is beef.)

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18. E. Frankema, M. Waijenburg Structural impediments to African growth? New evidence from real wages in British Africa, 1880-1965

19. Micro-Perspectives on 19<sup>th</sup>- century Russian Living standards Tracy Dennison and Steven Nafziger, p. 35. 2007

Pokrovskii (1897, pp. 237-238) does find some evidence of a negative correlation between grain prices and fertility rates and a positive correlation between grain prices and mortality rates. However, he only calculates rough correlations without any controls of age structure or other socio-economic conditions.

20. The potato was introduced to Russia by Peter the Great, but until Catherine II potatoes were not widely used by people. In 1765, by order of Empress Catherine II, throughout the empire were sent to the tubers and gives instructions for its cultivation.

We substitute beer/wine with vodka. It was another source of calories. In Allen's subsistence basket there is no alcohol, but for our geographical region and (which is even more important) due traditions, we put alcohol even to subsistence basket.<sup>21</sup>

For non food products we used Allen's assumptions for northern Europe (Allen 2001) but made them more appropriate for our geographical region and observed period. So for that we substituted lamp oil and candles (Allen) with kerosene (it was widely used in all Russian territory at that time) and measuring fuel 4,0 M BTU instead of 2.0 M BTU (Allen) because Russia's average temperature is lower than that of northern Europe. The rental price is 5% of spending, according to Allen.

**Table 4** present the contents of this basket.

To determine expensive respectable basket of goods we used source with explanation of soldier daily ration.<sup>22</sup> According to Soviet classical assumption, which prevails in many sources, the average number of calories for labor per day is around 3.500 cal. This basket is too expensive even compare to "European respectability" basket. So regarding consumed products we are using this source but for consumption volume we are combining it with Allen's basket (2500 calories).

In respectable basket of goods we divide bread into rye bread and white bread. We put cheese and eggs in a same proportions as Allen, add fish, increase amount of meat, oil, soap, linen, kerosene and fuel. **Table 5** insert here.

Of course we understand that not many workers can afford respectable basket, on another hand subsistence basket was absolute minimum and workers who ate like this must have been hungry all the time. That is why we assume that a more realistic picture is between minimum and maximum baskets.

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21. vodka was expensive and in most cases could be substituted with cheap home moonshine (alky)

22. Petrogradskie statisticheskie dannie. S.Petersburg 1916, pp.34-35.

## Comparison of living standards

In order to convert nominal wages to real wages we follow Allen's assumptions that a man worked 250 days per year – roughly full time work excluding holidays, illness and slack periods. We also assume that an average family, including a husband, a wife and two or three children, requires three subsistence baskets to survive, so we multiply the cost of the budget by three to represent the annual budget of a family and refer to this as the “family subsistence basket”. The number of such family subsistence baskets that can be obtained from an adult male wage (controlled for non-working days) is referred to as welfare ratio. A welfare ratio of one is considered to be the absolute subsistence income level<sup>23</sup>

**Table 6** shows welfare ratios in St.Petersburg and Moscow for skilled and unskilled workers.

As we see, welfare ratios rose over time for the observed period. Of course skilled workers earned more than unskilled ones. However skilled workers earned more in Moscow, which is unexpected and is probably the evidence of employers competition.<sup>24</sup> As for unskilled workers, here we see that unskilled workers in St.Petersburg earned more than those in Moscow. Some workers in Moscow did not earn enough to reach specified level of consumption – one subsistence basket. These workers needed additional sources of family income in order to survive. That could be payments in kind, female and children wages.<sup>25</sup>

The difference in levels and trends in these two cities was large. The gap between skilled and unskilled workers was much smaller in St.Petersburg. In Moscow we see a big gap, which may probably have caused riots.

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23. E.Frankema, M. Waijenburg Structural impediments to African growth? New evidence from real wages in British Africa, 1880-1965

24. St.Petersburg was the capital of Tsarist Russia. As always were and will be, internal migration from other regions of country was high and lots of people were willing to work

25. During the survey work, it was found out that people, who have relatives in province often send money to help them and receive natural product in return. But of course not everyone has this opportunity

This gap persisted over all the observed period. In this case we are not considering the data after 1914, because it is simply absent in most cases due to devastating impact of World War 1.

To compare main Russian cities with European ones we use Allen's data for the observed period for London, Amsterdam and Milan. We have a good reason for doing so: comparing these cities allows us to estimate the complete picture. London workers enjoyed highest living standards and welfare ratio in Europe, Milan had the lowest standards of living among European cities and Amsterdam by the beginning of twentieth century had the middle place. The welfare ratios of these cities were made for unskilled workers and "subsistence basket". **Figure 3** shows welfare ratios from 1888 to 1914.

1. We see that welfare ratios for unskilled workers in Moscow and St.Petersburg were higher than in Milan (unskilled) Italian cities had the lowest standard of living in Europe. (Allen). However Soviet classical view blames Tsarist Russia's living standards to be much lower than at any European country.<sup>26</sup> Here is the evidence that the assumption was wrong.
2. We see some declines and rises of welfare ratios, but the trend in the standard of living was generally upward for the observed period.
3. Petersburg unskilled welfare ratio is comparable (and in some cases close) to the level of Amsterdam. It may indicate the quickening economy in Russia. But in case of Moscow unskilled workers situation is not that encouraging.
4. The standard of living of workers in London was always much higher than that of workers in Russia. After the middle of the nineteenth century, London living standards began an upward trajectory and increased. (Allen) But here we need to emphasize that industrialization just recently reached Russia, while in Brittan it has lasted.

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26. See Kirianov, Rashin, ect.

People living at bare bones subsistence were usually hungry, so the usual response to rising incomes was increased food consumption.<sup>27</sup>

**Figure 4** presents welfare ratio for respectable basket.

Of course the respectable basket was expensive and not many workers could afford it on a regular basis, however we can assume that unskilled workers in St.Petersburg (in most cases) could buy one. That makes us suggest that the Soviet scientists were largely wrong when they claimed Tsarist era had extremely small incomes and low consumption pattern.

Of course we are aware of the fact that not every worker consumes bare bone's subsistence basket, as that not any worker can afford respectable lifestyle, alone with they families. So we assume some average basket on the basis of average wages data and analysis we have made before. We compare this average welfare ratio with the same European cities (London, Amsterdam, Milan).

**Figure 5** shows our main result

This Figure tests generality of all conclusions which we made before. So here we can argue that in the beginning of 20<sup>th</sup> century Russia was looking more like lugging part of Europe. Of course workers in Amsterdam and London enjoyed higher living standards in the early twentieth century, but from the last quarter of nineteenth century Russian wages started to grow and in the beginning of twentieth century the positive trend in Russian welfare ratios was obvious. In particular, there was a rapid surge following Tsarist industrialization at least in St.Petersburg and Moscow. The industrialization (that came to Russia in second half of nineteenth century) made wage levels rise. At least Russian welfare ratios can be simply compared and they don't look very lugging in comparison to industrial European cities.

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27. Robert C. Allen. The British Industrial Revolution In Global Perspective. 2009., p.46

As we have already mentioned, the lowest welfare ratio doesn't mean family income. Except any payments in kind or utility subsistence farming, wife's wages, men can increase their work time. Also they can cheapen the consumption basket. (for instance workers can simply consume cheap pork instead of comparably expensive beef). Due to traditional consumption we put alcohol even to subsistence basket. Alcohol gives calories, but not protein and it makes subsistence basket costly. If workers had given up alcohol (at least a half) they could have saved. As Allen proposed, reducing number of kids – the fertility option was not the case of Russia, because by the beginning of twentieth century fertility in industrial cities was already reduced. That mostly happened because both family members needed to work full time. Industrial cities were overpopulated and medical services were in short supply. Lots of workers had one or two children, some workers stayed single.<sup>28</sup>

### **Varying labour regimes.**

In our paper we focused on skilled and unskilled workers in St. Petersburg and Moscow. Of course we understand that Russia is a big country and St.Petersburg and Moscow are unable to show us a broad picture of living standards, however in most cases the general trend is clear. Moscow and S. Petersburg reveal great industrial progress and also greatest social activity among all country.

In the last decade of Tsarist regime there were lots of efforts to improve living standards of urban and rural population. In the last quarter of nineteenth century working hours were 12-14 hours per day. For 1885 we have continuous data from Factory surveys reports, that 8 working hours were at 2,2 % of factories, 9 hours -2,1 %, 10 hours – 18,1% , 11 hours -20,8 % , 12 hours -36,8%, more than 12 hours – 20%.<sup>29</sup>

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28. See Rashin. Russian population for 100 years. (1813-1913)

29. O deyatelnosti fabrichnoi inspektzii. Otchet za 1885 god glavnogo fabrichnogo inspektora, pp.34, 52.

By 1913 working hours decreased to 9-10 hours after revolution movements for better living standards (1905-1907). But the actual time was stretched to working hours plus lunch time and sometimes breakfast (1,5-3 hours, depends on factory) In 1913 2/5 workers had less than 10 hours working day, 8 hours -7,9 % of workers, 3/5 – 10 hours and more, 15,5% - more than 11 hours. This data is for males working hours. As for women – their working hours for 75,7% were 9-10 hours. Teenagers and kids were working 8 hours and less. Here we should say that working day in Russia was longer than in foreign countries. Meanwhile in 1900 working day in Australia was 8 hours, in Britain – 9 hours, USA -9, Norway – 10 hours, Sweden, France and Switzerland – 10.5 hours, Germany around 10.5 hours etc.<sup>30</sup> . In 1899-1902 working day in Russia was 11-11.4 hours a day.<sup>31</sup>

We are aware that decrease in working hours was unequal, it depends on the branch of industry and from 1885 to 1912 it was: in paper industry - 2.5 hours (21%), in printing industry - 2.5 hours (22%), in manufacture of wood processing - 2.5 hours (20%) in mechanical engineering - 2 hours (17% ) in porcelain industry - 1.5 hours (13%) in brick industry - 3 - 3.5 hours (20 - 23%) in the production of processing livestock products - by 2.5 hours (20%) , in milling industry - 0.5 hours (4.2%) in sugar refining industry - 1 hour (8.3%) in chemical industry - 1.5 hours (13%).

In general, most production scale reduction of working hours was similar (17 - 23%), the weakest one affected only the production of food processing industry, which, however, was characterized by seasonal work.<sup>32</sup>

Comparison of the data for the two approximately equal time stages - from 1885 to 1898 and from 1898 to 1912 - leads to the conclusion that most significant changes date back to the beginning of XX century. Just then 8 hours instead of two shifts, three shifts in paper, porcelain, brick and ceramic industries.

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30. Promishlennost i zdorovie, SPb.,1903, kn.4, pp.141; Mizev P.G. Vosmichasovoi rabochii den. SPb., 1907, pp.7-8.

31. Strymilin S.G. Izbranniye proizvedeniya., t.3, pp.363.

32. O deyatelnosti fabrichnoi inspeksii. Otchet za 1885 god glavnogo fabrichnogo inspektora, pp.34, 52.

Reduction in working hours in the second stage was primarily due to agreements (collective bargaining agreements) concluded by workers and employers in 1905 and 1906.<sup>33</sup>, ie, occurred under direct pressure of the proletarian struggle in the years of the people's revolution.

The rising demand for labor in Russian cities was uncontested. Since the last half of nineteenth century urban population starts to grow. In direct proportion to working class population the trade union and strike movement starts to grow rapidly. The pooled data from Factory inspection surveys shows that trend. Summary data is "reduced reports of factory inspectors" in which the proportion of strikers on working time in the 1895 - 1914 years by five-year periods is as follows: from 1895 - to 1899 - 35,4% strikers, from 1900 - to 1904 - 30,1%, in 1905 - to 1909 - 18,6%, from 1910 – to 1914 yrs. - 11,3% strikers.<sup>34</sup>

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33. See Groman V. Prodolzitalnost rabocheho vremeni v predpriyatiyax po obrabotke xlopka – Vestnik finansov I promishlennoi trgovli, SPb.№ 40.,pp.11.

Statisticheskii sbornik za 1913-1917. Trydi CSU, t.7, M.,1921, pp. 92-93, 107.

O deyatelnosti fabrichnoi inspektсии. Otchet za 1885 god glavnogo fabrichnogo inspektora, pp.34, 52.

34. See Statisticheskii ezegodnik Rossii za 1900-1916. SPb

## **Concluding thoughts**

Russian Revolution of 1917 leads to huge political, social and economical change in the whole region. Lots of efforts were made to investigate the reasons and explain the causation of this event. Conclusions made depend on the time when the research was done. All Soviet sources suggest pre-revolution poverty and weakness of Tsarist economy. Recent studies mainly show that the situation was stable and favorable. In this paper we were trying to look at the observed period impartially, without giving any preferences to any point of view.

Our investigation of wages earned by workers in St. Petersburg and Moscow shows that classical Soviet assumption was not well-grounded and much more complicated than they suggested. On the one hand we should admit that workers' wages were not high enough to benefit everyone but on the other hand we see that in comparison with different European cities the welfare in Moscow and St.Petersburg was surprisingly high. From the last quarter of nineteenth century Tsarist industrialization has began and urban population started to grow rapidly. In industrial cities real wages raised during all the observed period. From the historical point of view, real wage growth rates were respectable, because in Russia industrialization recently began, meanwhile in Europe it has lasted already (at least) a century.

Devastating impact of World War 1 lead to economic hardship after 1914. That made political and economical situation unstable.

However the evidence that we presented here is based on a very preliminary examination. Moscow and St. Petersburg (even though capitals they are) can't show us a broad Russian pre-revolutionary live standards reality. This subject requires much deeper study than we can offer here. Therefore the two main Russian cities and regions don't look like a lugging part of Europe at all. So here we need to admit that the picture of Russian labor-class living standards is much wider and needs historical and economical revision.

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**Table 1. Real wages series, St.-Petersburg, RUB, average per year**

Year	St.-Petersburg					CoVar
	Construction workers (1)		St.- Petersburg, average (2)	Russia, average (2)	Annual earnings, textile, average (3)	
	Unskilled	Skilled				
1888	183	286				0,22
1889	188	317				0,26
1890	198	318				0,23
1891	203	322				0,23
1892	193	327				0,26
1893	193	328				0,26
1894	193	323				0,25
1895	193	326				0,26
1896	193	333				0,27
1897	193	327				0,26
1898	193	374				0,32
1899	200	393				0,32
1900	203	347	265			0,22
1901	233	375	273	201		0,24
1902	218	387	288	202		0,27
1903	230	382	288	208		0,24
1904	223	380	301	213		0,24
1905	218	398	263	205		0,28
1906	238	395	314	231		0,23
1907	233	423	321	241		0,25
1908	223	402	323	242		0,24
1909	238	423	303	236		0,25
1910	223	400		243		0,27
1911				251		-
1912				255		-
1913				264	277	0,02
1914				271	308	0,06
1915					354	-
1916						
<b>Average annual growth</b>	0,95%	1,73%	1,40%	2,49%	9,27%	

**Table 2. Real wages series, Moscow, RUB, average per year**

Year	Moscow								CoVar
	Textile t-va N.N.Konshin (4)		Machine- Building Factory, average. (5)	Moscow, average (2)	Annual earnings, average (6)		Annual earnings, average (3)		
	Unskiled	Skilled			Metall.	Textile	Textile	Moscow	
1888	111	410	224						0,50
1889	123	395	234						0,45
1890	131	390	239						0,42
1891			240						-
1892	127	385	249						0,42
1893			245						-
1894			257						-
1895	108	370	262						0,43
1896			268						-
1897	118	378	274						0,42
1898	124	375	272						0,40
1899	127	387	295						0,40
1900	132	410	320	169					0,44
1901	139	413	323	175					0,42
1902	143	410		172					0,49
1903	150	437		195					0,48
1904				178					-
1905	171	450		177					0,49
1906	189	475		198					0,46
1907	201	500		248					0,41
1908	205	520		210					0,47
1909	209	547		202					0,51
1910	212	573							0,46
1911	213	584							0,47
1912	217	603							0,47
1913	212	581			384	210	219	255	0,44
1914	214	601			324	202	223	256	0,46
1915	225	671			445	221	236	273	0,48
1916	239	606			761	320			0,44
<b>Average annual growth</b>	4,78%	1,99%	3,14%	1,89%	24,54%	13,10%	2,59%	2,35%	

Sources:

1. Rikachev A. Tseni na xleb i tryd za 58 let, Vestnik finansov. № 31. 1911
2. Svod otchetov fabrichnix inspektorov za 1900-1914 god. Spb.,1902-1915
3. Statisticheskii zbornik za 1913-1917 (Vipysk pervii)
4. Tekstilshiki tov-va N.Konshina v 1888-1916 (Serpyxov, Moskva)
5. Strymilin S., Ocherki ekonomicheskoi istorii Rossii, M.,1960, str 111.
6. Istoriya narodnogo xozyaistva SSSR, Leningrad 1952, str.652.

**Table 3. The price of subsistence Moscow and St.-Petersburg**

Year	Minimum Basket				Co Var	Resp. Basket				Co Var	Average basket				Co Var
	St.- Petersburg	%	Moscow	%		St.- Petersburg	%	Moscow	%		St.- Petersburg	%	Moscow	%	
1888	39,7		39,6		0,00	71,6		80,6		0,06	55,6		60,1		0,04
1889	40,5	2%	40,4	2%	0,00	71,4	0%	82,2	2%	0,07	56,0	1%	61,3	2%	0,05
1890	40,1	-1%	39,1	-3%	0,01	70,3	-2%	79,5	-3%	0,06	55,2	-1%	59,3	-3%	0,04
1891	44,3	10%	40,5	4%	0,04	76,4	9%	82,4	4%	0,04	60,4	9%	61,5	4%	0,01
1892	46,8	6%	41,6	3%	0,06	81,5	7%	84,5	3%	0,02	64,1	6%	63,0	3%	0,01
1893	45,9	-2%	39,6	-5%	0,07	80,2	-2%	80,6	-5%	0,00	63,1	-2%	60,1	-5%	0,02
1894	40,9	-11%	38,3	-3%	0,03	72,4	-10%	77,9	-3%	0,04	56,6	-10%	58,1	-3%	0,01
1895	38,5	-6%	36,7	-4%	0,02	68,2	-6%	74,6	-4%	0,04	53,3	-6%	55,6	-4%	0,02
1896	37,4	-3%	35,7	-3%	0,02	66,6	-2%	72,6	-3%	0,04	52,0	-2%	54,1	-3%	0,02
1897	39,7	6%	36,5	2%	0,04	69,7	5%	74,3	2%	0,03	54,7	5%	55,4	2%	0,01
1898	42,7	8%	37,5	3%	0,07	75,4	8%	76,2	3%	0,01	59,1	8%	56,9	3%	0,02
1899	41,0	-4%	37,0	-1%	0,05	74,3	-2%	75,3	-1%	0,01	57,6	-2%	56,2	-1%	0,01
1900	40,5	-1%	37,9	2%	0,03	74,4	0%	77,1	2%	0,02	57,4	0%	57,5	2%	0,00
1901	42,3	4%	38,7	2%	0,04	75,2	1%	78,7	2%	0,02	58,7	2%	58,7	2%	0,00
1902	41,9	-1%	39,2	1%	0,03	75,4	0%	79,6	1%	0,03	58,7	0%	59,4	1%	0,01
1903	39,7	-5%	38,7	-1%	0,01	72,9	-3%	78,6	-1%	0,04	56,3	-4%	58,7	-1%	0,02
1904	40,5	2%	40,0	4%	0,01	74,6	2%	81,4	4%	0,04	57,6	2%	60,7	4%	0,03
1905	42,1	4%	42,3	6%	0,00	75,8	2%	86,0	6%	0,06	58,9	2%	64,2	6%	0,04
1906	43,5	3%	45,3	7%	0,02	78,9	4%	92,1	7%	0,08	61,2	4%	68,7	7%	0,06
1907	45,8	5%	47,2	4%	0,01	84,5	7%	96,0	4%	0,06	65,2	7%	71,6	4%	0,05
1908	49,1	7%	49,4	5%	0,00	91,3	8%	100,5	5%	0,05	70,2	8%	74,9	5%	0,03
1909	48,3	-2%	48,3	-2%	0,00	90,2	-1%	98,2	-2%	0,04	69,3	-1%	73,2	-2%	0,03
1910	45,6	-6%	47,4	-2%	0,02	85,8	-5%	96,4	-2%	0,06	65,7	-5%	71,9	-2%	0,04
1911	45,5	0%	47,2	0%	0,02	85,9	0%	96,1	0%	0,06	65,7	0%	71,7	0%	0,04
1912	47,3	4%	49,3	4%	0,02	90,1	5%	100,4	4%	0,05	68,7	5%	74,9	4%	0,04
1913	48,5	2%	49,0	-1%	0,01	92,3	2%	99,7	-1%	0,04	70,4	2%	74,3	-1%	0,03
1914	49,4	2%			-	95,5	3%			-	72,5	3%			-
1915	59,3	20%			-	112,4	18%			-	85,8	18%			-
<b>Average annual growth</b>	1,76%		0,91%			2,04%		0,91%			1,94%		0,91%		

1.Индекси розничних тєн по г.Петербургу з 1867 до 1916 р. ( по 19 товарам) (1913 р. = 100), Sources: Strymilin S., Oчерки економическої історії Росії. М.,1960. Стр 116-117 М.Р.Кохн (15 товарів) по Москві

**Table 4. Subsistence lifestyle: basket of goods**

	Quantity per person per year	St.-Petersburg		Moscow		Nutrients/day	
		Price (1913), RUB, per unit per year	Spending share (1913)	Price (1913), RUB, per unit per year	Spending share (1913)	Calories	Protein
<b>Rye Bread</b>	180 kg	13,19	27,2%	13,74	28,0%	814 cal	33 g
<b>Potatoes</b>	140 kg	5,13	10,6%	3,08	6,3%	307 cal	8 g
<b>Buckwheat</b>	70 kg	6,47	13,3%	7,35	15,0%	600 cal	24 g
<b>Meat</b>	5 kg	2,5	5,2%	2,81	5,7%	26 cal	2 g
<b>Butter (oil)</b>	3 kg	2,79	5,8%	3,66	7,5%	61 cal	0 g
<b>Vodka</b>	20,475 l	12,29	25,4%	12,29	25,1%	132 cal	0 g
<b>Soap</b>	1,3 kg	0,32	0,7%	0,41	0,8%		
<b>Linen</b>	3 m	0,63	1,3%	0,54	1,1%		
<b>Kerosene</b>	2,6 l	0,31	0,6%	0,26	0,5%		
<b>Fuel</b>	4,0 M BTU	2,42	5,0%	2,42	4,9%		
<b>Rent</b>		2,42	5,0%	2,45	5,0%		
<b>Total:</b>		<b>48,47</b>	<b>100,0%</b>	<b>49,01</b>	<b>100,0%</b>	<b>1940</b>	<b>66</b>

Note: For comparison of this basket with European Subsistence lifestyle basket of goods see Allen, The British Industrial Revolution in global Perspective, pp.33-41.

All prices are in Russian Rubles.

Sources: Short statistical survey for St.Petersburg 1913-1914, pp.38-40 (Kratkii svod statisticheskix dannix po gorody Petrogrady 1913-1914. str. 38-40 Russia 1913. Statistical-documentary survey, Korelin, 1995. pp.317-318. (Rossia 1913 god. Statistico-dokumentalnii spravochnik, Korelin, 1995, str. 317-318.)

Price for meat is based on surveys data for beef.

**Table 5. The respectable lifestyle: basket of goods**

	Quantity per person per year	St.-Petersburg		Moscow		Nutrients/day	
		Price (1913), RUB, per unit per year	Spending share (1913)	Price (1913), RUB, per unit per year	Spending share (1913)	Calories	Protein
<b>Rye Bread</b>	143 kg	10,48	12,4%	10,91	12,0%	646 cal	26 g
<b>White Bread</b>	71,5 kg	8,73	10,3%	11,35	12,5%	474 cal	16 g
<b>Potatoes</b>	140 kg	5,13	6,1%	3,08	3,4%	307 cal	8 g
<b>Buckwheat</b>	70 kg	6,47	7,7%	7,35	8,1%	600 cal	24 g
<b>Meat</b>	26 kg	12,98	15,4%	14,6	16,1%	133 cal	9 g
<b>Butter (oil)</b>	5,2 kg	4,84	5,7%	6,35	7,0%	107 cal	1 g
<b>Cheese</b>	5,2 kg	5,08	6,0%	5,08	5,6%	53 cal	3 g
<b>Eggs</b>	52 p.	1,56	1,8%	1,67	1,8%	11 cal	1 g
<b>Fish</b>	13 kg	6,73	8,0%	7,62	8,4%	37 cal	6 g
<b>Vodka</b>	20,475 l	12,29	14,6%	12,29	13,5%	132 cal	0 g
<b>Soap</b>	2,6 kg	0,63	0,7%	0,83	0,9%		
<b>Linen</b>	5 m	1,05	1,2%	0,91	1,0%		
<b>Kerosene</b>	5,2 l	0,62	0,7%	0,52	0,6%		
<b>Fuel</b>	6,0 M BTU	3,63	4,3%	3,63	4,0%		
<b>Rent</b>		4,22	5,0%	4,54	5,0%		
<b>Total:</b>		<b>84,44</b>	<b>100,0%</b>	<b>90,73</b>	<b>100,0%</b>	<b>2501</b>	<b>93</b>

Note: For comparison of this basket with European Respectable lifestyle basket of goods see Allen, The British Industrial Revolution in global Perspective, pp.33-41.

Fish: for St Petersburg it is frozen carp (cheapest and most common fish), for Moscow – fresh bream.

Meat is beef.

Prices are in Russian rubles. M BTU=millions of BTUs

Table 6. Welfare ratios

Year	Minimum Basket								Resp. Basket							
	St.-Petersburg				Moscow				St.-Petersburg				Moscow			
	Unskilled	%	Skilled	%	Unskilled	%	Skilled	%	Unskilled	%	Skilled	%	Unskilled	%	Skilled	%
1888	1,5		2,4		0,9		3,4		0,9		1,4		0,5		1,9	
1889	1,5	1%	2,6	9%	1,0	8%	3,3	-6%	0,9	3%	1,6	11%	0,5	8%	1,8	-6%
1890	1,6	6%	2,6	1%	1,1	10%	3,3	2%	1,0	7%	1,6	2%	0,6	10%	1,8	2%
1891	1,5	-7%	2,4	-8%					0,95	-6%	1,5	-7%				
1892	1,4	-10%	2,3	-4%	1,0		3,1		0,9	-11%	1,4	-4%	0,6		1,7	
1893	1,4	2%	2,4	2%					0,86	2%	1,5	2%				
1894	1,6	12%	2,6	11%					0,96	11%	1,6	9%				
1895	1,7	6%	2,8	7%	1,0		3,4		1,0	6%	1,7	7%	0,5		1,8	
1896	1,7	3%	3,0	5%					1,04	3%	1,8	5%				
1897	1,6	-6%	2,7	-7%	1,1		3,4		1,0	-5%	1,7	-6%	0,6		1,9	
1898	1,5	-7%	2,9	6%	1,1	3%	3,3	-3%	0,9	-7%	1,8	6%	0,6	3%	1,8	-3%
1899	1,6	8%	3,2	9%	1,1	3%	3,5	4%	1,0	6%	1,9	7%	0,6	3%	1,9	4%
1900	1,7	3%	2,9	-11%	1,2	2%	3,6	3%	1,0	1%	1,7	-12%	0,6	2%	1,9	3%
1901	1,8	10%	3,0	4%	1,2	3%	3,6	-1%	1,1	13%	1,8	7%	0,6	3%	1,9	-1%
1902	1,7	-6%	3,1	4%	1,2	2%	3,5	-2%	1,0	-7%	1,9	3%	0,7	2%	1,9	-2%
1903	1,9	12%	3,2	4%	1,3	6%	3,8	8%	1,1	10%	1,9	3%	0,7	6%	2,0	8%
1904	1,8	-5%	3,1	-2%					1,08	-6%	1,8	-3%				
1905	1,7	-6%	3,2	1%	1,3		3,5		1,0	-4%	1,9	3%	0,7		1,9	
1906	1,8	6%	3,0	-4%	1,4	3%	3,5	-1%	1,1	5%	1,8	-5%	0,8	3%	1,9	-1%
1907	1,7	-7%	3,1	2%	1,4	2%	3,5	1%	1,0	-8%	1,8	0%	0,8	2%	1,9	1%
1908	1,5	-11%	2,7	-11%	1,4	-3%	3,5	-1%	0,9	-11%	1,6	-12%	0,7	-3%	1,9	-1%
1909	1,6	8%	2,9	7%	1,4	5%	3,8	8%	1,0	8%	1,7	7%	0,8	5%	2,0	8%
1910	1,6	-1%	2,9	0%	1,5	3%	4,0	7%	0,9	-2%	1,7	-1%	0,8	3%	2,2	7%
1911	1,8	13%			1,5	1%	4,1	2%	1,1	13%			0,8	1%	2,2	2%
1912	1,8	-2%			1,5	-3%	4,1	-1%	1,0	-3%			0,8	-3%	2,2	-1%
1913	1,8	1%			1,4	-1%	3,9	-3%	1,0	1%			0,8	-1%	2,1	-3%
1914	1,8	1%							1,0	-1%						
1915																
1916																
<b>Average annual growth</b>	0,72%		0,94%		2,59%		0,69%		0,46%		0,74%		2,59%		0,69%	

**Table 7. Nutrients composition. Caloric and Protein Contents**

	<b>Calories</b>	<b>Protein</b>
<b>Rye Bread</b>	1650 cal	66 g
<b>White Bread</b>	2420 cal	81 g
<b>Potatoes</b>	800 cal	20 g
<b>Buckwheat</b>	3130 cal	126 g
<b>Meat</b>	1870 cal	123 g
<b>Butter (oil)</b>	7480 cal	50 g
<b>Cheese</b>	3750 cal	214 g
<b>Eggs</b>	79 cal	6 g
<b>Fish</b>	1050 cal	171 g
<b>Vodka</b>	2350 cal	0 g

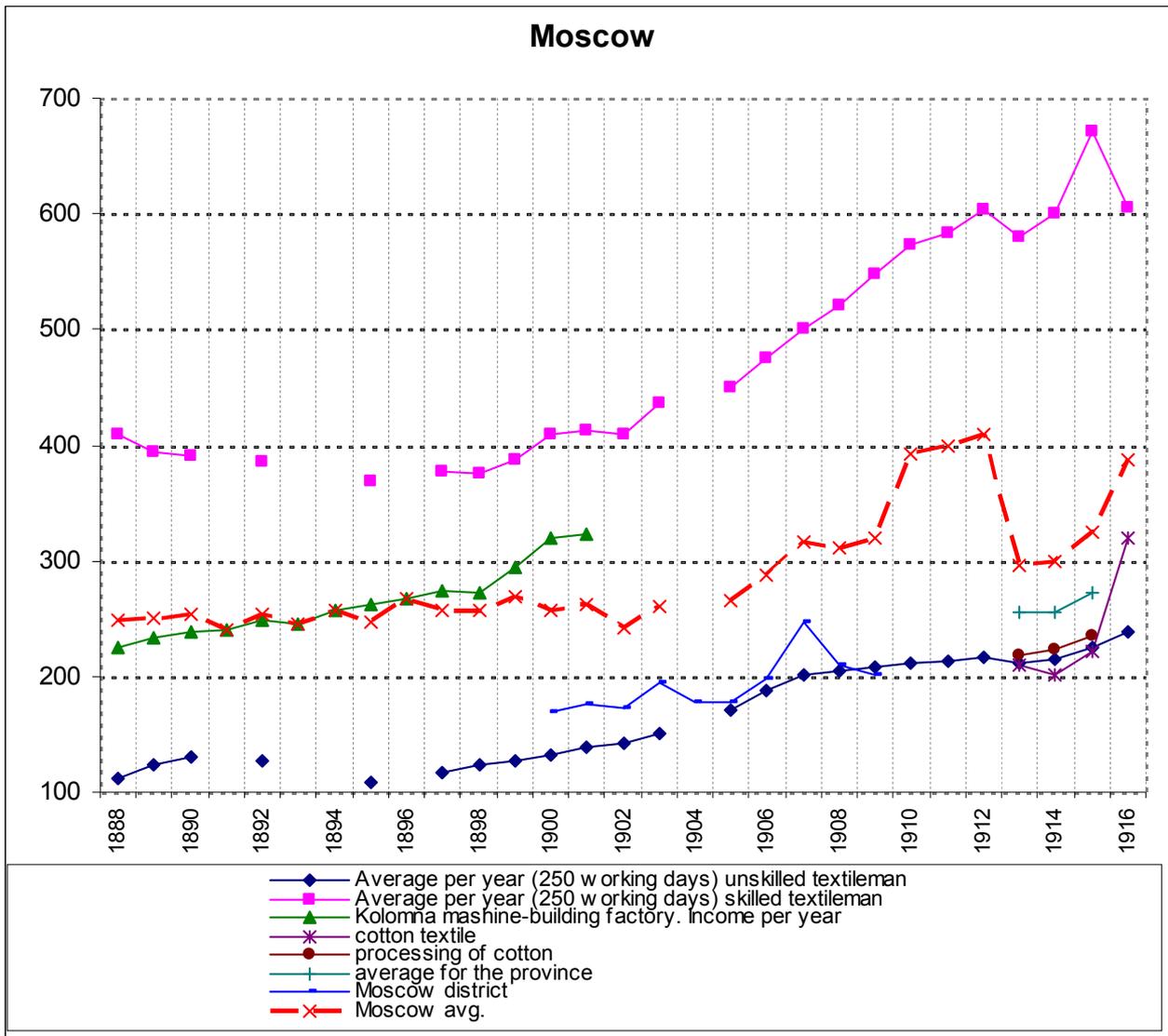
Note:

Caloric and protein content for cheese, eggs and butter is based on Allen (2001)

Rye bread and white bread, potatoes and buckwheat are based on statistical surveys 1913

Meat is beef (can be substituted with cheaper pork)

**Figure 1. Daily wage for workers in Moscow**



Note: Average per year (skilled and unskilled) textileman – data from account books textile company N.Konshina (1888-1916) Serpuhov, Moscow.

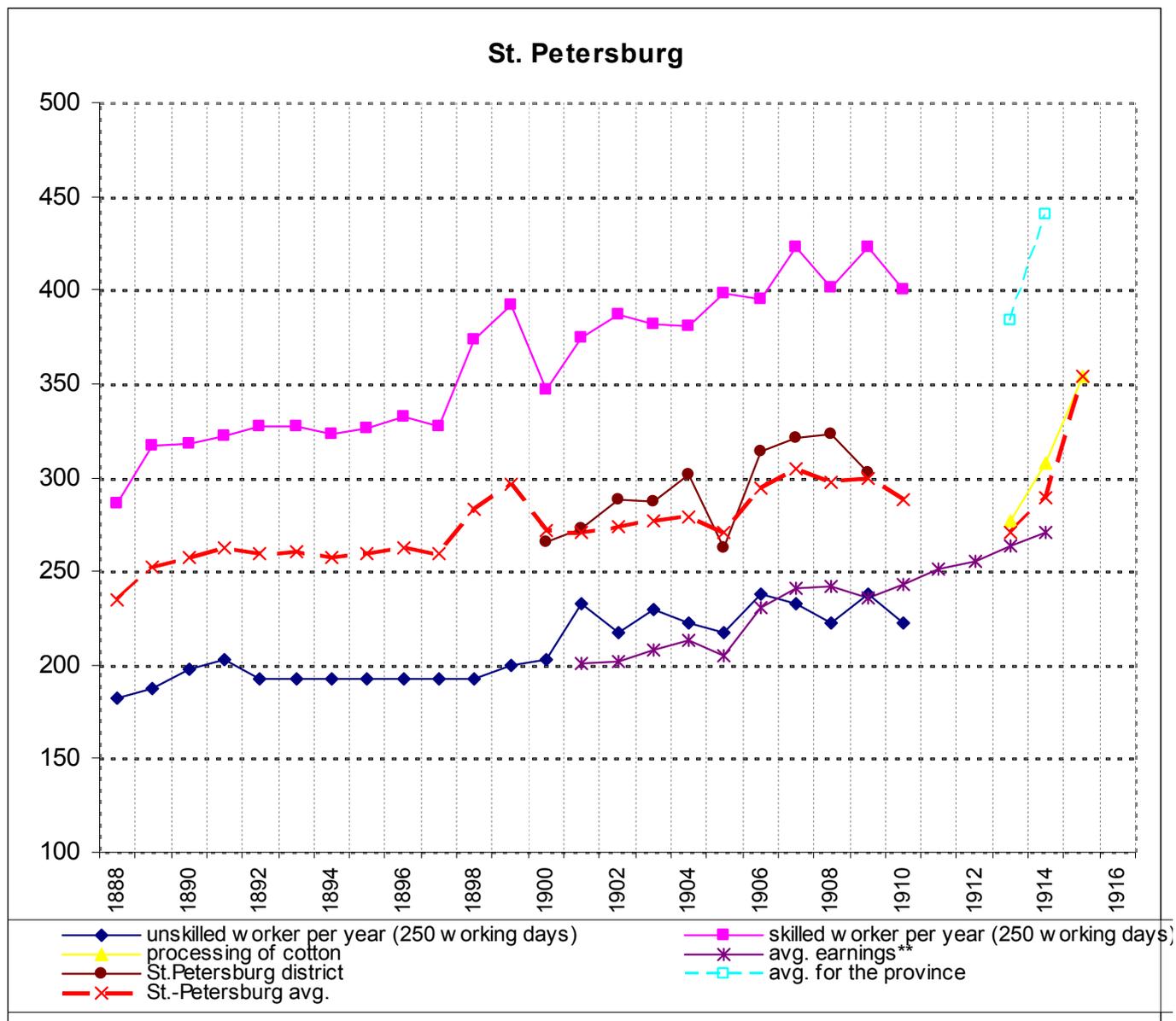
Kolomna machine-building factory – source: Strymilin S., Ocherki ekonomicheskoi istorii Rossii, M.,1960, str 111

Cotton textile – source: Lyashenko P.I., Istoriya narodnogo khozyaistva SSSR. Leningrad 1952., p. 652

Processing of cotton and average for the province – source: Statisticheskii zbornik za 1913-1917 (Vipysk pervii)

Moscow district – source: Svod otchetov fabrichnix inspektorov 1900-1914.

Figure 2. Daily wage for workers in St. Petersburg



Note: Unskilled and skilled worker per year – source: Rikachev A. Tseni na xleb i tryd za 58 let, Vestnik finansov. № 31. 1911

Processing of cotton - source: Statisticheskii zbornik za 1913-1917 (Vipysk pervii)

St. Petersburg district – source: Svod otchetov fabrichnix inspektorov 1900-1914.

\*\*Average earnings –average earnings for Russia, for accuracy comparisons of earnings we except Caucasus provinces (number of factories changed significantly in 1902 and 1907) With Caucasus provinces average earnings per year in 1909-around 239, for 1910- 244 rubles,– source: Svod otchetov fabrichnix inspektorov 1900-1914.

Average for the province- source: Statisticheskii sbornik za 1913-1917 (Vipysk pervii)

Figure 3. Welfare Ratios (Minimum basket of goods)

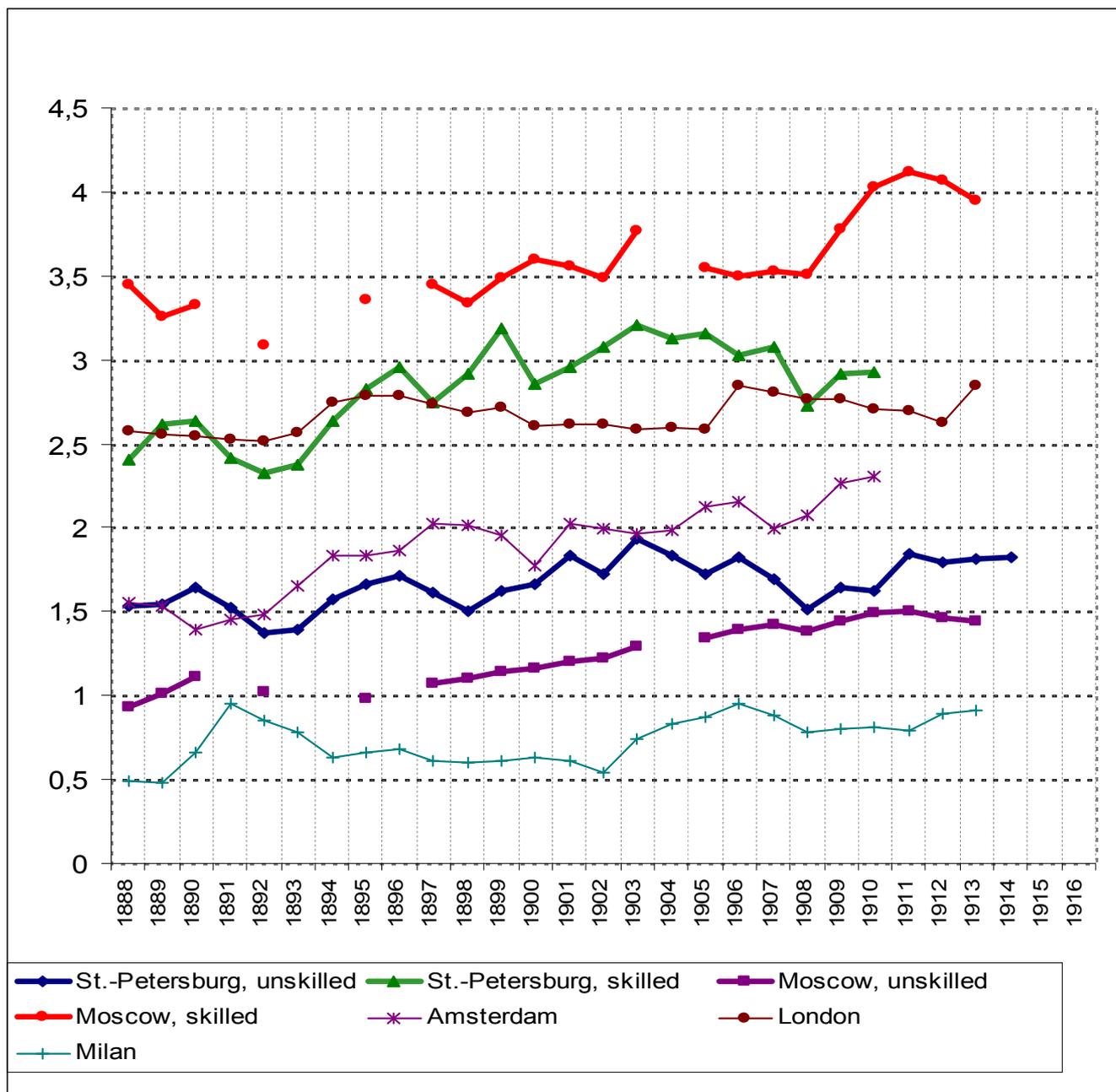


Figure 4. Welfare Ratios (Respectable basket of goods)

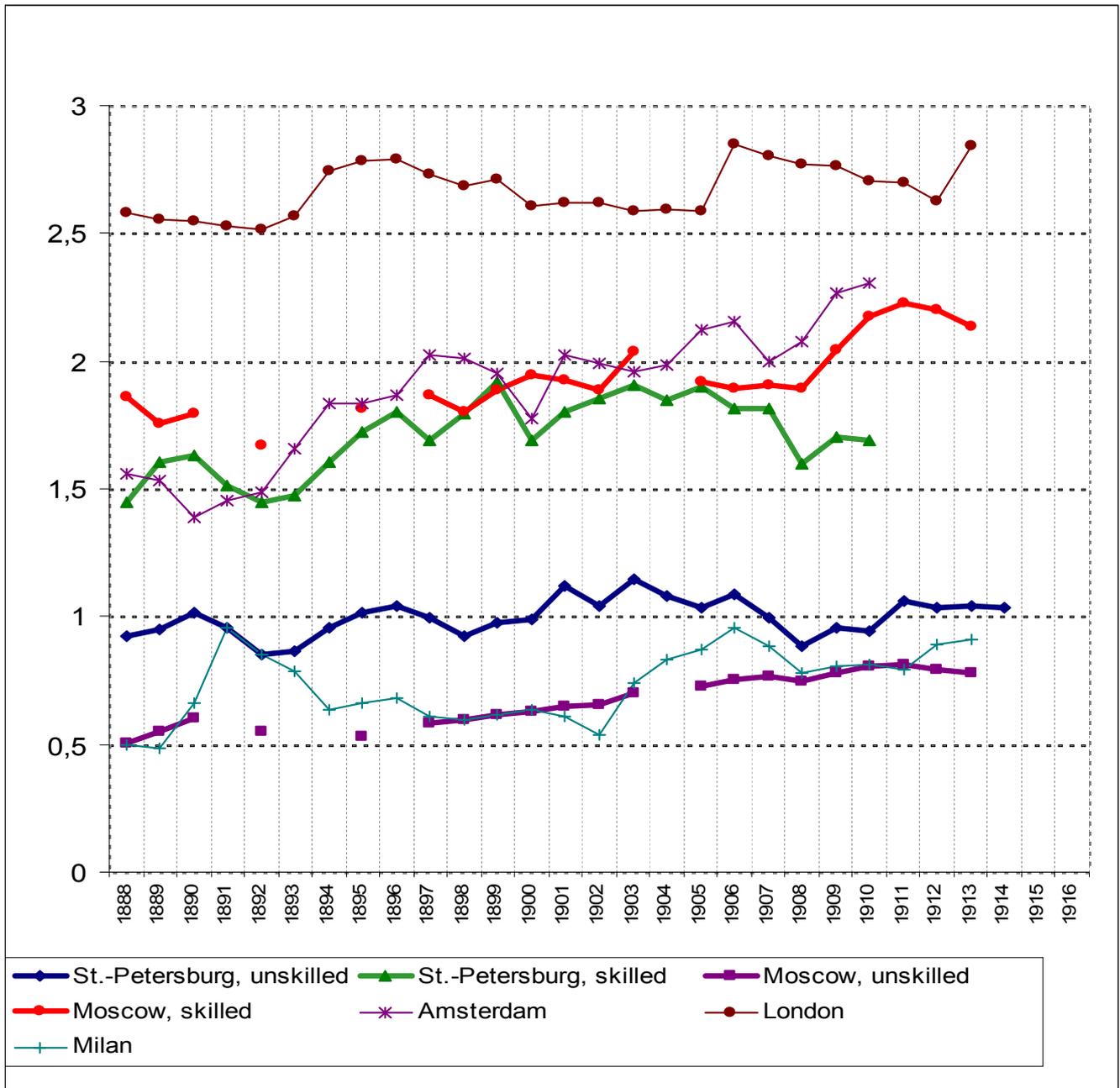


Figure 5. Welfare Ratios (avg./ avg.)

