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Factors of social tension in the provinces of the Russian Empire in the late 19th and early 20th centuries

Popov, Vladimir and Konchakov, Roman and Didenko, Dmitry

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ABSTRACT

The key question of the economic and social post-reform history of Russia (after the agrarian reform of 1861) is what exactly led to the revolutions of the early 20th century. Were these revolutions a natural result of the growth of social tensions due to the flawed "Prussian path" of the development of capitalism in agriculture (a combination of large landlords' estates and small land ownership of the bulk of the peasants) or did Russian capitalism develop successfully on the whole, and the revolutions were by no means inevitable, but rather caused by random, transient factors (war, political mistakes of the authorities and the opposition, etc.) – brief overview of these discussions is in Nefedov and Ellman (2016).

This paper aims to contribute to this discussion by analyzing the patterns and causes of social protest (peasants' unrests, strikes at industrial enterprises, crimes against persons). We compute the index of inequality of land distribution for the Russian provinces, and find that the dynamics of social protest before the First Russian Revolution of 1905-07, from the 1890s to the early 1900s, occurred in provinces with the most uneven land distribution. These were mostly regions in the periphery of the empire (Lithuania, Poland, Belarus', Ukraine, Novorossiya, Volga, Urals, Siberia, Far East, Caucuses, Central Asia) that were colonized in the 16th-19th centuries and did not have many serfs to begin with, and where the crown gave huge land areas to the nobility usually as a reward for service.

We speculate that this could have constituted one of the unique features of Russian development – it was the only state that experienced such a rapid territorial expansion in the era of serfdom with the result of developing extremely high land distribution inequalities in the new provinces, higher than in other European countries at the same time. These unique inequalities in land distribution could help explain the greater revolutionary activity in Russia even though the income (not land) inequalities seem to have been lower than in other countries in the early 20th century and lower than in Russia today (Lindert, Nafziger, 2014).

We also show that the increase in domestic violence was positively affected by illiteracy and alcohol consumption, whereas for social unrest alcohol consumption did not matter (insignificant) and literacy had either significant positive impact (increase in strikes) or was insignificant (increase in peasants' unrest). Success rate of strikes, though, was linked positively with education (literacy rate and the average number of years of schooling) in 1895-99, but in 1900-04 the relationship was negative. In the late 19th century strikes were successful mostly in educated regions, whereas in 1900-04 less educated regions became successful in their strikes' activity as well.

Keywords: Inequality, land distribution, Russian revolutions, human capital

JEL: D63, D74, I24, N13, N53, O15, O52, Q15.

Factors of social tension in the provinces of the Russian Empire in the late 19th and early 20th centuries

Vladimir Popov, Roman Konchakov, Dmitry Didenko[1]

Introduction and hypotheses

The key question of the economic and social post-reform history of Russia (after the agrarian reform of 1861) is what exactly led to the revolutions of the early 20th century. Were these revolutions a natural result of the growth of social tension due to the flawed "Prussian path" of the development of capitalism in agriculture (a combination of large landlords' estates and small land ownership of the bulk of the peasants) or did Russian capitalism develop successfully on the whole, and the revolutions were by no means inevitable, but rather caused by random, transient factors (war, political mistakes of the authorities and the opposition, etc.) – brief overview of these discussions is in Nefedov and Ellman (2016).

Lindert and Nafziger (2014) argue that income inequality in pre-revolutionary Russia was not that high by international standards, and that Marxist explanation of the Russian revolutions by high inequality may be not that persuasive.[2]

Gregory (1980, table 1) estimates that the top one percent of earners received about 15 percent of national income around 1904. Other estimates (Novokmet, Piketty, Zucman, 2017, fig. 11 b, c) put the share of top 1% earners at 18% of total income, which is still lower than in the USA, France, Czech Republic and Poland in the early 20th century.

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[1] RANEPA (Russian Presidential Academy of National Economy and Public Administration), corresponding author – Vladimir Popov, vpopov@nes.ru

[2] "To Lenin and subsequent authors, the perception that there was growing rural and national inequality could be directly linked to the revolutions of 1905 and 1917… Additional research on the dynamics of inequality is necessary before more definitive accounts of the role played by economic processes in the two revolutionary surges can be drawn" (Lindert, Nafziger, 2014). To be precise, Lenin considered inequality in land distribution as the primary cause of Russian revolutions. "…The crux of the Russian revolution is agrarian question" (Lenin, 1906).

This paper aims to contribute to these discussions by analyzing a new body of data on the social tensions – peasants' unrest, strikes at industrial enterprises and outcomes of these strikes, murder rate, crimes against persons. To the best of our knowledge these data have not been analyzed previously econometrically.

The main hypothesis to be tested is that inequality in the distribution of land contributed to the undermining of the perceptions of social justice and lead to an increase in social tension – peasant unrest, strike activity, crime. We also look at an array of other variables that could have determined the growth of social unrest – population density and urbanization, industrial structure, rural and urban incomes, harvest yields, density of railway network, expenditure of local governments (zemstvo), literacy rates and years of schooling, alcohol consumption.

Before and during the revolution of 1905-07 there was a clear increase in protest activity, including in violent forms (fig. 1). And in general, crime rates at the beginning of the 20th century, even excluding the period of the First Russian Revolution, were higher than at the end of the 19th century.

Fig. 1. The number of peasant disturbances and the number of crimes per 100,000 inhabitants per year in 1800-1920
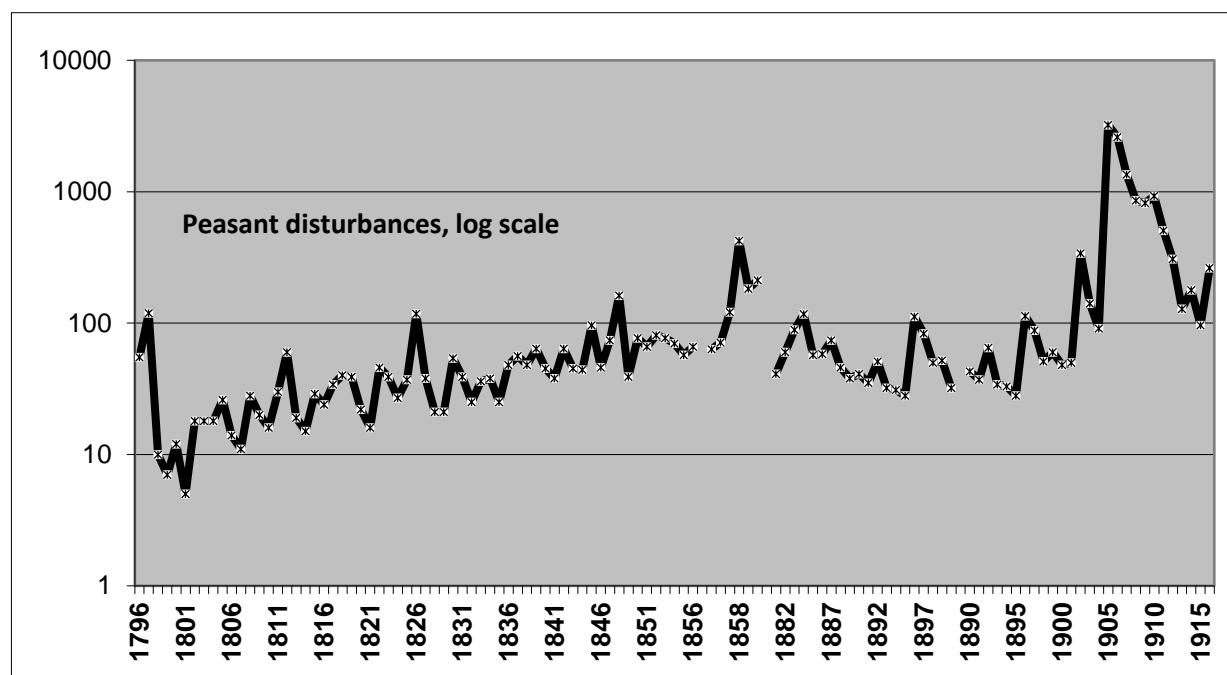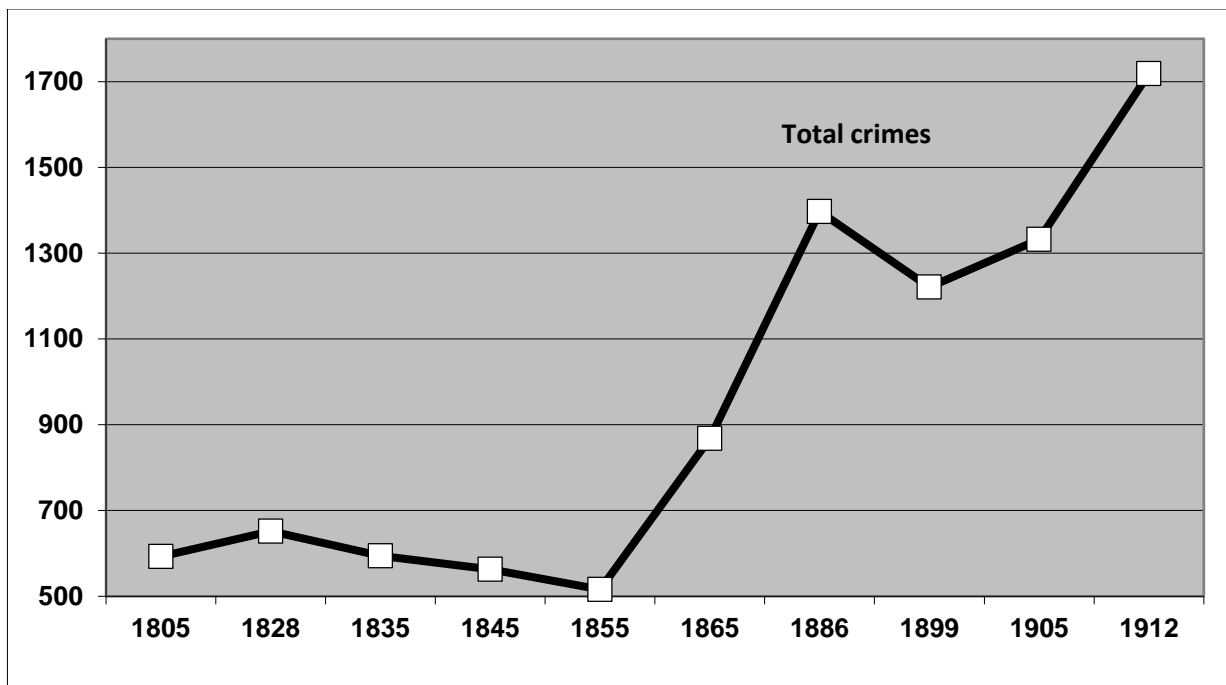
Source: Popov, 2014, citing Turchin, Nefedov (2009).

Abolition of serfdom had a positive effect on productivity – before the Emancipation, provinces where serfs constituted the majority of agricultural laborers lagged behind provinces that primarily relied on free labor, whereas after the 1861 reform they experienced a significant, even though partial catch up (Markevich, Zhuravskaya, 2018). But the Emancipation Act and Land Reform of 1861 led to the growth of inequalities in land and income distribution, and to the increase in the number of peasants' unrest and total crimes (fig. 1).

The number of strikes at industrial enterprises and man-days lost due to strikes has also increased in most provinces (fig. 2), even though here the picture is not that obvious – the increase occurred in 31 provinces out of 55 on which data are available. More important may be the magnitude of the increase – in 23 provinces the number of man-days lost due to strikes increase 2 and more times.

There was also an increase in the number of violent crimes – crimes against persons and murders (fig. 3). Statistics here is not totally comparable (number of people died through violence; number of cases

of murders – fig. 3), but the trends can hardly be misinterpreted – from the late 19th century the number of murders and murder cases increased 2-3 times by 1906-07 and remained high until 1913.
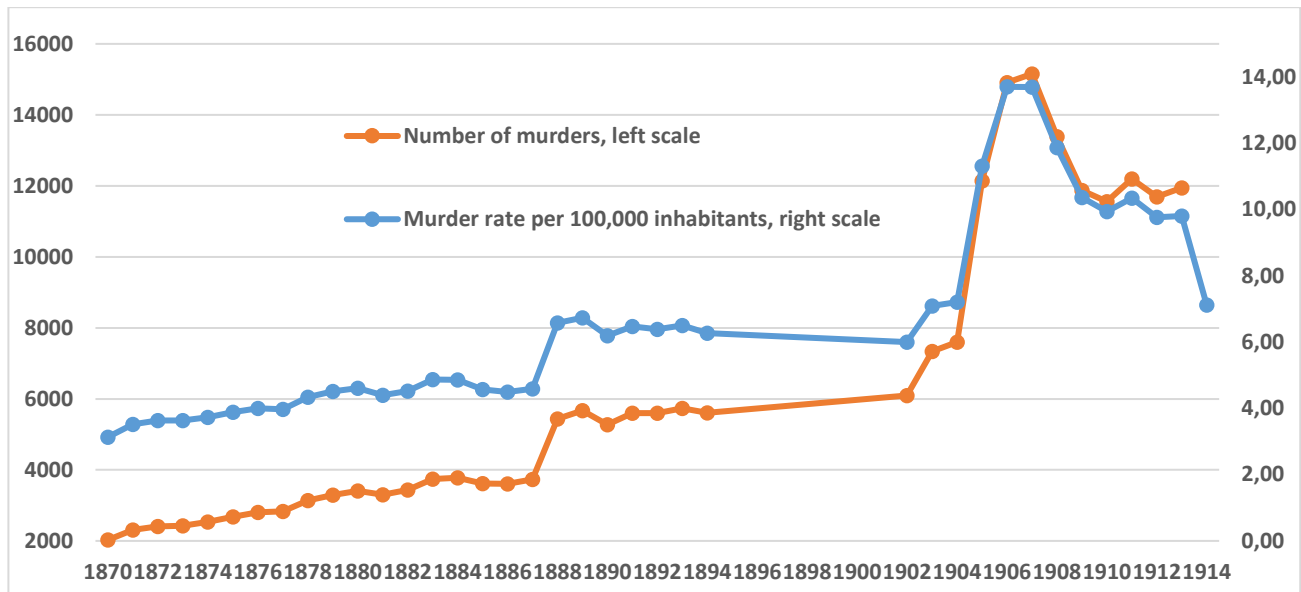
Fig. 2. Man-days lost due to strikes as a % of total working days in 1895-99 and 1900-04

Source: Borodkin, Shilnikova, 2020, based on the Collection of Reports by Factory Supervisors.

The comparable statistics that we use later – the increase in the number of convicts for crimes against persons from 1896 to 1912 is presented at fig. 4 – the number of such convictions in 1896 is shown on a horizontal axis, whereas the number of convictions in 1912 – on the vertical axis. Virtually all the provinces lie above the 45-degree line, i.e. in virtually all provinces (except 3) there was an increase in crimes against persons.

Fig. 3. Murders and murder rate per 100, 000 inhabitants in the Russian Empire in 1870-1914


Source: Stickley, Andrew (2006). Https://cjrc.osu.edu/sites/cjrc.osu.edu/files/Russia-and-theEuropean-nations-of-the-formerUSSR5-2010.XLS. TsSK(1894); TsSK MVD, 1897. Population statistics from: Novosel'skii (1916) cited in Borodkin (2011).

The main hypothesis that emerges from "the birds' view" of the data and stylized facts is that the growth of peasants' unrest and the growth of strikes was driven by inequality in land distribution that was the highest in the periphery of the Empire, not in central regions. In the Central Russia, where the share of serfs in 1858 was the highest, unrest and strike activity before the First Russian Revolution of 1905-07 was limited.

The reason why the highest inequality in land distribution was in the periphery provinces is historical. *Votchinas* were inherited land holdings of the princes, *boyars,* monasteries that could be traced back to the first centralized state (*Kievan Rus*) in the 9th-13th century. Since the 16th century, however, land holdings were given to the new nobility class (*dvoryane*) on the condition that they serve in military or civil administration (*pomest'ya).* Peter the Great in 1714 issued a decree establishing uniform inheritance for all types of land holding of nobility that *de facto* eliminated the difference between *votchinas* and *pomest'yas* (turning both into *imeniye*). In 1730 the decree was abolished, but in 1762 Peter III totally relieved *dvoryane* from public duties, so the crucial differences within the Russian

noble class with regards to land ownership were eliminated (Catherine the Great in 1785 confirmed and extended these rights).

Fig. 4. Number of convicts for crimes against persons in the provinces of the Russian Empire 1896 and 1912 according to *Svod*
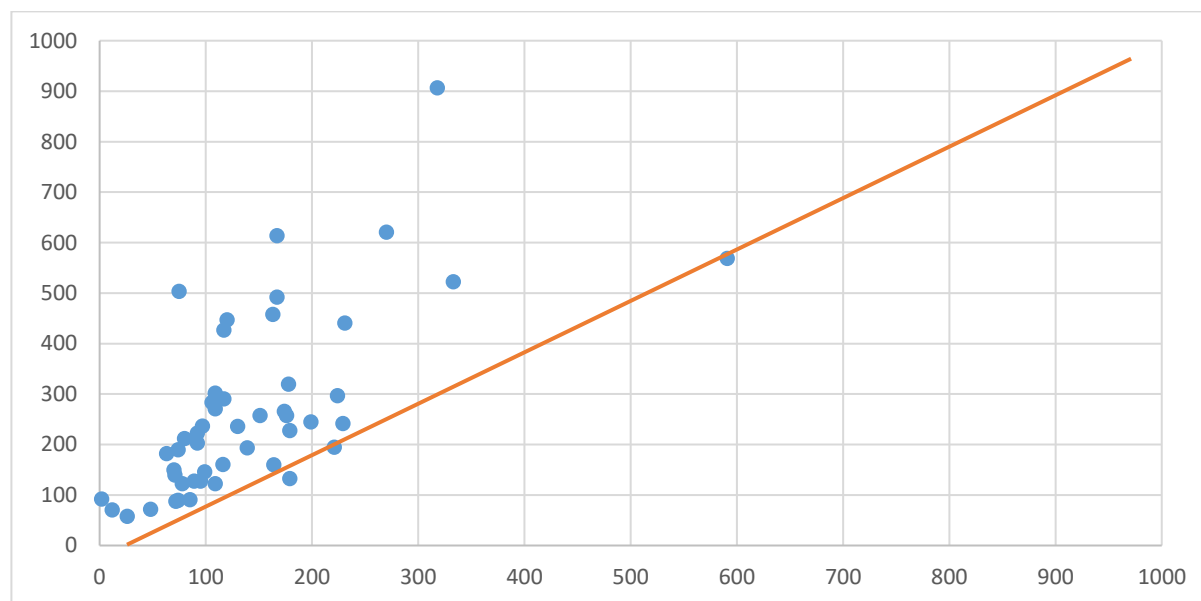
Source: Oleinikova (2021)[3].

Votchinas were divided between the heirs of *boyars* and princes in the historical proper of Russia (Central Region today), so that the size of the land holdings was getting smaller and the concentration of land, as well as inequality in land distribution, declined. On the contrary, because *dvoryane* since the 16thcentury were getting land holdings mostly in the new and sparsely populated regions of expanding

[3] Oleinikova (2021) uses two types of sources: *Obzor* – Ведомости о числе и роде преступлений из 46 Обзоров [...] губернии за 1896 г. [...], 1897 и 3 Обзоров […] губернии за 1895 г. [...], 1896. (Бессарабская, Владимирская, Оренбургская); and *Svod (*Miniust, 1900, 1915). – Свод статистических сведений по делам уголовным, проводившимся в 1896 году в судебных учреждениях, действующих на основании уставов Императора Александра II. СПб., 1900; Свод статистических сведений о подсудимых, оправданных и осужденных по приговорам общих судебных мест, судебно-мировых установлений и учреждений, образованных по законоположениям 12 июля 1889 года … за 1912 год. Петроград, 1873-1912.

Russian state (Volga, Urals, Siberia, Ukraine and Novorossiya), the large and even huge land estates in these regions became the norm, so the concentration of land and inequality in land distribution became the highest.

The Orlov brothers, for instance, after helping Catherine the Great to take the throne in 1762, were given in 1768 the huge estate on the Volga river (instead of several smaller estates in Central region) with an area of over 100,000 *dessiatines* and nearly 10, 000 serfs.

In the late 19th and early 20th centuries, only 4.7 percent of households owned private land other than the plots under urban buildings. This ownership share was smaller than that of other data-supplying countries with the possible exception of Mexico (Lindert, Nafziger, 2014, Table 3). The Gini coefficient of land distribution inequality for all European Russia was 88% for purely individual holdings and 60%, if we add peasants' communal land holdings per household (peasants' allotments – *nadel'naya zemlya*). But in some periphery regions of the Empire it was as high as 85-96% for private land and 69-84% for all land[4] (Lindert, Nafziger, 2014). Gini coefficients for land inequality in other countries for 17-19th centuries are mostly lower – from 57% in Japan to 70-90% in England, France, Northern Spain (Kumon, 2021).

As Lenin described it in 1912, **"a**bout 70 million *dessiatines* of land owned by 30,000 of the biggest landlords, and about as much owned by 10 million peasant households—such is the main background of the picture. What are the economic relations to which this picture testifies?
The 30,000 big landlords represent chiefly the old landed nobility and the old feudal economy. Of the 27,833 owners of estates exceeding 500 *dessiatines* each, 18,102, or *nearly two-thirds*, are members of the nobility. The huge latifundia in their possession—each of these big landlords owns an average of more than 2,000 *dessiatines*! — cannot be cultivated with the implements, livestock and hired labour at the disposal of the owners. That being so, the old corvée system is largely inevitable, and this means small-scale cultivation, small-scale farming, on the big latifundia, the cultivation of the landlords' land with the implements and livestock of the small peasants" (Lenin, 1912).

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[4] Lindert and Nafziger (2014) that estimated income inequalities in 1904 in the Russian regions also found that in the periphery regions of the European part, especially in the Southern regions, the Gini coefficients of income distribution were higher.

To add insult to injury, the average size of the peasants' households declined due to the growth of the population and fragmentation of peasants' allotments – from 3.5 *dessiatines* per capita in the late 19th century to 2.6 *dessiatines* in 1906. Out of 85 million peasants 70 million were having plots of less than 1.75 *dessiatines* per capita[5].

It is noteworthy that anecdotal evidence suggests that the major peasants' uprisings took place in the periphery of the Empire, not in the Central regions. In 1902 in Kharkov and Poltava governorates up to 40,000 peasants took part in the peasant uprising (from March 7 to April 3, 105 landlords' estates were destroyed, 836 participants sentenced to prison terms)[6].

In 1902-03 Saratov governorate became the leader in peasants' protests (Pyotr Stolypin, that later became a prime minister and carried out agricultural reform, was appointed a governor of the Saratov province in February 1903). There were 163 peasants protests and 270 cases of arson[7]. The total damage was estimated at 9.5 million rubles (out of 31 million rubles in 20 provinces, where the protests were most intense). The number two protest damage province was Kursk – Russian southern black soil province[8].

The increase in strikes at industrial enterprises happened mostly in provinces with the greatest increase in peasants' protests – the correlation coefficient between the two growth indices (strikes – from 1894-99 to 1900-04; peasants protests' – from 1891-1900 to 1901-04) is 0.6.

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[5] TsSK MVD (1880-1885; 1907).

[6] Https://www.booksite.ru/fulltext/1/001/008/066/223.htm

[7] Https://xn--h1aagokeh.xn--p1ai/journal/post/6393

[8] Https://xn--h1aagokeh.xn--p1ai/journal/post/6393

Literature

The key question of the post-reform economic and social history of Russia (1861-1917) – what exactly led to the revolutions of the early 20th century – is well discussed in the literature.[9] Whether they were a natural result of the growth of social tensions due to the flawed institutional trajectory of Russian capitalism[10] or whether the latter developed basically successfully, and the revolutions were caused rather by random, transient factors (wars, political errors of the authorities and the opposition, etc.).[11]

The processes of the transition to "modern economic growth" (Kuznets, 1966) occurred in post-Emancipation Russia at the end of the 19th century and was interpreted in the literature in the framework of development economics and post-Marxist institutionalism (Shmelev, Popov, 1989; Nureev, Latov, 2013; Popov, 2014). Two streams of interpretations of the prevailing trend in the dynamics of Russia's economic development in the period under review stand out.

1) A pessimistic position: Marxist historiography (Lenin, 1971 [1899] that emphasized the level of income and social stratification of the peasantry; Strumilin, 1966 [1930], who found a lack of positive dynamics in real wages, classical modernization theory (Gerschenkron, 1962, 1968) – an unsuccessful attempt to overcome backwardness – just to name a few examples.
2) An optimistic position is based on the estimates in Prokopovich (1918) and Vainshtein (1960), Gregory (1980, 1982, 1994), Davydov (2016), Cheremukhin et al. (2017), Mironov (2018). They recognize the unequal pattern of the dynamics of social indicators, but provide evidence confirming the improvement of macroeconomic indicators.

Petrov (2018, 2020) and Shelokhaev, Solovyov (2019) argue that large-scale transformations in such a large multinational and multi-confessional country as Russia had led to an asynchronous development of its individual regions, as well as various social strata. These dynamic changes generated tensions that undermined the stability of the system.

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[9] In the latest historical literature this phenomenon has been defined as the "Great Russian Revolution of 1917-1922" (Petrov, 2018, 2020).

[10] Lenin (1977 [1908], 1974 [1917]) defined it as the "Prussian path" of development and Gerschenkron (1962, 1970) regarded it from the perspective of development economics as one of the foundations of the modernization theory.

[11] For a brief overview of these discussions in Russian and foreign literature, see Nefedov, Ellman (2016).

In recent years, the focus in investigating the issue was shifting from the national to sub-national level of analysis, as can be traced in the articles by Baten, Hippe (2018), Markevich, Zhuravskaya (2018). This later article shows that before 1861, provinces where serfs constituted the majority of agricultural laborers lagged behind provinces that primarily relied on free labor. The Emancipation led to a significant but partial catch up.

In the literature of recent years, the pessimistic view has been developed within the framework of structural-demographic theory and theory of political revolutions (Goldstone, 1991; Goldstone et al., 2015; Goldstone, Grinin, Korotayev, eds., 2022). They emphasize the continuity of the Malthusian mode of growth, with its intrinsic secular cycles (Turchin, Nefedov 2009; Nefedov, 2011) and consider the "Great Russian Revolution" as just another version of the "Time of Troubles" of the early 17th century.

Also, attempts to link revolutionary activities with education level were made applying these theories. Ustyuzhanin, Korotaev (2023) analyzed a cross-section of countries from 1950 to 2019 (10,350 observations with 387 revolutionary events) and concluded that there was a positive relationship in the early stages of modernization, while in the most developed countries the relationship was negative. The negative impact of increased concentration of land on the level of quantitative literacy was found in Baten, Hippe (2018) based on the evidence from the regions of Western Europe and European Russia.

The present study aims to contribute to these discussions by analyzing a new data set that, to the best of our knowledge, has not been employed in its entirety to explain social tensions before and after the First Russian Revolution – indicators of peasants' unrest, strikes at industrial enterprises, crime. There is a history literature with data and discussion of these data on social tensions, for instance Borodkin et al. (2011), Oleinikova (2021), Stickley (2006), Bogdanov (2013), Volkov (2016). We use the same data – mostly from official government publications of the late 19th- early 20th century (TsSK MVD, Minzeml, Minust, Minfin) – to link the revealed trends in the intensity of the social protest with the land distribution and other explanatory variables.

Data

Statistical data are used mainly from published sources, as well as from electronic data sets created by researchers in recent years (Anfimov, 1998; Borodkin et al., 2011; Borodkin, Shilnikova, 2020;; Kessler, Markevich, 2020; Konchakov, Didenko, 2022; Markevich, Zhuravskaya, 2018; Zhukov et al., 2017). We employ data from Bovykin (1986) for international comparison.

We consider 3 indicators of social tension in the provinces of the Russian Empire in 1890-1914.

‒ The number of peasants' unrests per 1 million rural population (the results of the processing mass, including archival, sources in Anfimov, ed., 1998 (for 1901-1904); Zhukov et al., 2017 (for 1891-1900)).

Mironov (2019) has argued that this statistics may be misleading (the numbers before the Emancipation may be exaggerated). However, we use not the absolute level of the unrests, but the **increase** in the relative (per capita) levels in different provinces from 1890-99 (annual average) to 1900-04 (also annual average) – this indicator arguably allows to accurately capture the dynamics of the unrests.

‒ Indicators of the strike movement, namely the share of working time lost[12] and effectiveness index[13] (Borodkin, Shilnikova, 2020, based on the Collection of Reports by Factory Supervisors).

‒ The number of people convicted of crimes against persons per 100,000 population ("*Obzor*" and "*Svod*" – see footnote 3).

Data on peasants' unrest for 1891-1900 come from Zhukov (2017) and for 1901-04 – from Anfimov, 1998) and strictly speaking are not comparable. Data for 1891-1900 (Zhukov, 2017) were processed in

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[12] Working days lost because of strikes in per cent of the total number of working days for 5-year periods (1895-1899 and 1900-1904).

[13] Assigning codified outcome to each strike: 1 – if successful for strikers, 0 – if unsuccessful, 0.5 – if neutral; then taking average of all of the outcomes.

such a way that they consider not only the number of peasants' unrests, but also the length and geographical spread. Unrests that occurred in one province and lasted less than a month is counted as 1 event, but if unrest lasted 2 months, it is counted as 2 events, and if it was going on in 2 provinces, the final result was multiplied by 2 (2*2= 4). Data for 1990-04 were not processed in a similar way, so our indicator of the increase in peasants uprisings from 1891-1900 to 1900-04 understates the actual increase (and we hope that these differences in the registration of the peasants' unrests in different periods are similar, if not the same, from province to province).

These indicators (growth of peasants' unrest and growth of strikes– table 1) are strongly correlated[14], and the highest growth rates were observed not in Central Russia[15], but in Lithuania and Poland, in Ukraine and Novorossiya, Caucuses, Volga, Urals, Central Asia, Siberia, Far East.

Table 1. Growth of peasants' unrest per 1 million of rural population (increase in annual averages from 1890-99 to 1900-04) and growth of man-days lost due to strikes as a percentage of total man-days worked on the eve of Revolution of 1905-07 (from 1895-99 to 1900-04) – increases of over 50% and over 100% respectively are highlighted in red)[16]

Region	Growth of peasants' unrest, times	Growth man-days lost due to strikes, times
Akmola region		2,24
Amur region		16,53
Arkhangelsk province		0,39
Astrakhan province		
Baku province		31,13
Batumi district		
Bessarabian Governorate		
Warsaw Governorate		2,95

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[14] Growth of strikes activity is very much correlated with the increase in the intensity of peasants' unrest (r= 0.6), but increase in crimes against persons is not correlated with either strikes or peasants' unrest.

[15] According to today's classification, Central Region of Russia includes 13 subjects – Moscow city and 12 oblast – Bryansk, Vladimir, Ivanovo, Kaluga, Kostroma, Moscow (oblast, not city), Oryol, Ryazan, Smolensk, Tver, Tula, Yaroslavl. These are all non-black soil regions. But non-black soil area includes not only Central region, but also North, North-West, Volga, and part of Ural regions.

[16] There were about 100 governates and provinces (*oblasts/districts*) in the Russian Empire in the late 19th – early 20th century, but the data exist mostly (even though not always) on about 50 provinces in the European part (i.e. not on Siberia, Far East, Central Asia and the Caucasus).

Vilna province		5,20
Vitebsk province		1,20
Vladimir province	0.331858	0,31
Vologda province	1	0,01
Volyn province		
Voronezh province	1.292323	0,43
Vyborg Governorate		
Vyatka province	1.147059	3,21
Grodno province		1,31
Dagestan region		
Ekaterinoslav Governorate	3,65	
Elisavetpol Governorate		
Yenisei province		0,64
Transbaikal region		0,60
Transcaspian region		0,55
Irkutsk province		0,45
Kazan province	1.445916	4,69
Kalisz Governorate		3,30
Kaluga province	1.248705	0,02
Kara Governorate		
Kielce Governorate		2,67
Kyiv province		4,43
Kovno province		18,25
Kostroma province	0.399225	0,52
Kuban region		
Courland Governorate		0,97
Kursk province	1.798283	
Kutaisi province		
Livland Governorate		0,98
Lomzhinsky province		
Lublin Governorate		
Minsk province		0,68
Mogilev province		2,43
Moscow province	0.857407	1,88
Nizhny Novgorod province	3.256318	0,37
Novgorod province	1.166667	2,79
Region of the Don Army	3,19	
Olonets province		
Orenburg province	6	

Oryol province	0.166998	0,55
Sakhalin island		
Penza province	0.333333	1,88
Perm province	3.83568	1,15
Petrokovskaya province	0,20	
Plock Governorate		
Podolsk province		0,22
Poltava province		3,79
Primorsky region		4,00
Pskov province	0.666472	
Radom Governorate		1,31
Ryazan province		2,22
Samarkand region		
Samara province	0.400778	
St. Petersburg Governorate	3	0,47
Saratov province	4.671329	186,50
Sedlec Governorate		0,67
Semipalatinsk region		
Semirechensk region		
Simbirsk province	4.028572	
Smolensk province	2.747369	
Stavropol province	1.501976	
Suwalki Governorate		
Syrdarya region		
Tauride province		
Tambov province	2.129231	1,77
Tver province	1	2,06
Terek region		
Tiflis Governorate		2,89
Tobolsk province		
Tomsk province		
Tula province	1	0,36
Turgai region		
Ural region		
Ufa province	0.334495	1,35
Fergana region		
Kharkov province		2,87
Kherson province		1,74
Chernigov province		311,25

Black Sea Governorate		
Erivan Governorate		
Estland province		0,37
Yakutsk region		0,70
Yaroslavl province	0.090833	0,17

Source: Borodkin et al., 2011; Bovykin, 1986; Zhukov, 2017; Anfimov, 1998.

A twofold and greater increase in strikes (man-days lost due to strikes as a % of total man-days worked) occurred in 23 provinces out of 55, and only 2 of these provinces were in Central Russia (Ryazan, Tver), not in the capital cities, like people often think, i.e. not in St. Petersburg and not in Moscow.

A 50% and more increase in the number of cases of peasants' unrest per 1 million of rural inhabitants occurred in 10 cases out of 26 and only in 2 cases it was in Central Russia (Smolensk, Tambov), whereas in 10 Central Russia regions the increase was lower than 50%. In fact, in 7 cases (Vladimir, Kaluga, Kostroma, Moscow, Orel, Tver, Yaroslavl) there was no increase at all.

The data on crimes against persons come from two sources – *Svods* and *Obzors* (see footnote 3). They are not very different (see fig. 5), but from *Svods* they are available not only for 1896, but also for 1912, so we calculate the increase in the rate of offences for the period (fig. 4).

The increase in the number of violent crimes (against persons) occurred mostly in the periphery (i.e. not in Central Russia), but also not in the ethnic, non-Russian regions (not in the Baltics, Poland, Belarus, Ukraine). The increase of 2 times and more in 1896-1912 happened in Archangelsk, Astrakhan, Vologda, Voronezh, Ekaterinoslav, Kursk, Novgorod, Penza, Perm, Pskov, St. Petersburg governorates, whereas increase by 50 to 100% – in Kazan, Kostroma, Moscow, Olonets, Orenburg, Ryazan, Saratov, Smolensk, Tver, Ufa, Kherson governorates. The decrease was observed in Vilna, Grodno, Kiev, Kovno, Minsk, Simbirsk, Tambov, Kharkov, Chernigov provinces.

Fig. 5. Total number of sentenced for crimes against persons in provinces of the Russian Empire in 1896 according to *Obzor* and *Svod*
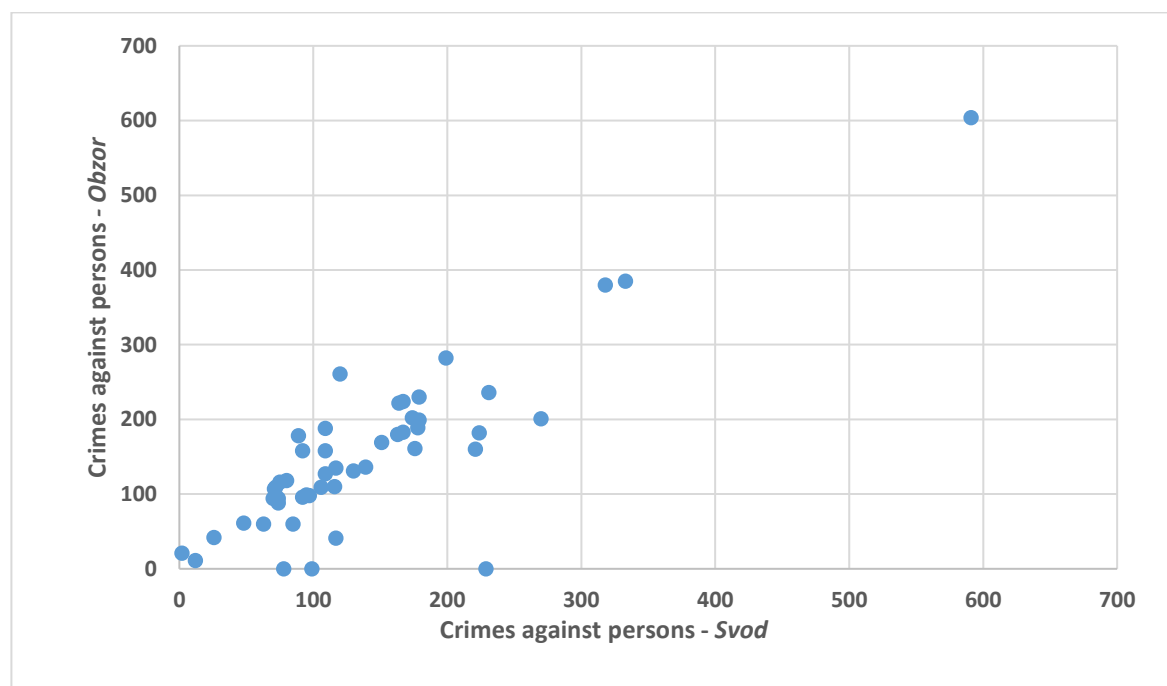
Source: Oleinikova (2021); Miniust (1900, 1915).   See footnote 3.

As explanatory variables, we use data on the distribution of the land (share of landowners' land in total and private land, concentration of land and average size of allotments per capita), on economic and demographic conditions (density of the population, share of rural population and employment in industry, density of railways, agricultural yields), income (wages and bread sufficiency of agricultural workers, urban income) and income inequality (gap in wages of agricultural and factory workers), the level of education in the province (literacy rate, average years of schooling), consumption of alcohol.

Below is the list of variables with explanations.

Distribution of land property:

Distribution of land possessions (surveys conducted in 1877 and 1905 by the Central Statistical Committee of the Ministry of Internal Affairs published in TsSK MVD, 1880-1885, 1907) provide the

data on the distribution of private land (excluding peasants allotments owned by their agricultural communities) and all land (including these peasants allotments).

We used different indicators in the regressions (not all are reported, only the ones with the best results), including:

- Share of the landlords' estates of over 500 *dessiatines* in total land area in 1877 and 1905,
- Share of peasants' land holding of over and less than 5 and 10 *dessiatines* in total peasants' land holdings in 1887,
- Allotment size of land per capita of the male population in 1860, 1880, and 1900, averages for the province.

In provinces of the Central Region, the share of large peasants' land allotments was low in 1877 (49-78%) as compared to the regions of periphery (often over 80 and even 90%), even though initially, in 1861, the land plots given to peasants in the non-black soil regions were larger than in the black soil regions. In 1880 the average size of allotment per 1 male in the Central Region was 3-4 *dessiatines*, i.e. more often than not – less than in the other regions.

We also computed the land distribution inequality index (similar to the decile or Palma ratio) as the ratio of the area of all land holdings over 500 *dessiatines* divided by the area of landholding of less than 10 *dessiatines* for private land and for all land (table 2)[17].

The highest private land distribution inequality coefficient (over 500) in 1877 was in ethnic provinces of the Empire (Baltics – Courland, Lifland and Estland, Kovno governorates – and in Bessarabia, Minsk, Vitebsk, Kiev governorates; no data on Caucuses and Central Asia), and in the non-ethnic, mostly Russian newly colonized regions in the outskirts of the Empire – in the North, Volga, Urals, Novorossiya regions (Olonets, Astrakhan, Samara, Saratov Ufa, Perm, Orenburg, Ekaterinoslav, Kherson; no data on Siberia and Far East) – see table 2 (highlighted in yellow). And the lowest (below 100) index of the inequality of private land distribution was observed mostly in the Central and close to Central regions of the Empire (highlighted in red in the table 2) – Archangelsk, Vladimir, Vologda,

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[17] For **private land** the numerator includes private lands of the nobility, whereas the denominator does not include allotments held by peasants, normally in communal ownership. For **all land** the index includes all land holdings.

Vyatka, Grodno, Kaluga, Kostroma, Kursk, Mogilev, Moscow, Nizhny Novgorod, Novgorod, Oryol, Poltava, Pskov, Ryazan, Smolensk, Tver, Tula, Kharkov, Yaroslavl.

Index of inequality of distribution for all land is way lower than the same index for private land, but the natural logs of two indicators are very much correlated (fig. 6) and both work in regression reported in the next section.

Table 2. Inequalities in the distribution of private land and all land in the regions of the Russian Empire in 1877 (highlighted in yellow – provinces with highest (above 200) private land inequality index, highlighted in red – provinces with lowest (below 100) private land inequality index)

Region	Allotment size in *dessiatines* per capita of the male population, average for the province, 1880	Inequality index for all land	Inequality index for private land	Share of allotments land in total land, %
Akmola region				
Amur region				
Arkhangelsk province	2,8	0,0	0,0	96,6
Astrakhan province	11	0,3	3545,7	79,1
Baku province				
Batumi district				
Bessarabian Governorate	4,1	0,8	221,4	53,0
Warsaw Governorate				
Vilna province	2,7	0,8	101,8	46,9
Vitebsk province	3,2	1,2	220,1	41,2
Vladimir province	3,3	0,5	30,1	58,9
Vologda province	6,2	0,3	20,9	70,0
Volyn province	2,6	1,1	100,7	45,5
Voronezh province	3,3	0,4	156,4	69,6
Vyborg Governorate				
Vyatka province	6,1	0,1	71,8	89,5
Grodno province	3,1	0,7	23,0	52,0
Dagestan region				
Ekaterinoslav Governorate	3,6	1,0	1668,5	
Elisavetpol Governorate				
Yenisei province				
Transbaikal region				

Region				
Transcaspian region				
Irkutsk province				
Kazan province	3,6	0,2	146,3	81,6
Kalisz Governorate				
Kaluga province	2,7	0,5	28,6	57,0
Kara Governorate				
Kielce Governorate				
Kyiv province	1,9	0,9	434,3	50,1
Kovno province	3,7	0,7	210,1	48,2
Kostroma province	4	1,0	42,7	42,8
Kuban region				
Courland Governorate	3,1	2567,4	2567,4	0,0
Kursk province	2,2	0,3	15,8	63,7
Kutaisi province				
Livland Governorate	3	61628,0	61628,0	0,0
Lomzhinsky province				
Lublin Governorate				
Minsk province	3,8	2,5	242,1	30,0
Mogilev province	3,1	1,2	76,0	40,7
Moscow province	2,9	0,4	28,8	59,7
Nizhny Novgorod province	2,9	0,6	41,1	58,3
Novgorod province	5,6	1,2	63,5	39,4
Region of the Don Army	2			
Olonets province	18,7	0,4	285,0	70,6
Orenburg province	16,2	0,2	15570,8	81,9
Oryol province	2,4	0,9	39,6	41,3
Sakhalin island				
Penza province	2,7	0,6	136,1	58,4
Perm province	6,4	1,5	20769,9	41,0
Petrokovskaya province				
Plock Governorate				
Podolsk province	1,8	0,9	176,8	50,5
Poltava province	2,2	0,6	23,9	49,4
Primorsky region				
Pskov province	3,5	0,8	36,5	43,9
Radom Governorate				
Ryazan province	2,2	0,4	23,9	
Samarkand region				
Samara province	6,2	0,4	1109,0	67,3
St. Petersburg Governorate	5,1	1,5	168,6	36,5
Saratov province	3,5	0,7	288,1	54,5

Sedlec Governorate				
Semipalatinsk region				
Semirechensk region				
Simbirsk province	2,6	0,6	139,6	56,6
Smolensk province	3,5	0,9	70,0	44,4
Stavropol province				
Suwalki Governorate				
Syrdarya region				
Tauride province	6,5	1,2	104,2	43,2
Tambov province	2,7	0,5	116,6	59,5
Tver province	3,4	0,4	12,4	58,3
Terek region				
Tiflis Governorate				
Tobolsk province				
Tomsk province				
Tula province	2	0,5	37,8	50,8
Turgai region				
Ural region				
Ufa province	8,4	0,3	820,2	73,1
Fergana region				
Kharkov province	2,6	0,4	50,6	61,3
Kherson province	3,4	1,3	2429,1	39,9
Chernigov province	2,9	0,5	33,1	54,2
Black Sea Governorate				
Erivan Governorate				
Estland province	2,1	950,2	950,2	
Yakutsk region				
Yaroslavl province	3,2	0,4	8,6	54,5

Source: Surveys conducted in 1877 and 1905 by the Central Statistical Committee of the Ministry of Internal Affairs published in TsSK MVD, 1880-1885, 1907.

The share of large estates (over 500 *dessiatines*) fell in all but 3 provinces and distribution of land in 1905 became slightly more even as compared to 1877, but huge inequalities persisted. The land distribution inequality index (ratio of the area of holdings over 500 *dessiatines* to the area of holdings below 10 d*essiatines*) increased in 1877-1905 in 9 provinces (Archangelsk, Vladimir, Vyatka, Kostroma, Moscow, Olonets, Saratov, Tauride, Estland) out of 48 (fig. 7).

Inequality of land distribution is negatively linked to the population density and the share of the peasants' allotments in total land[18].

Fig. 6. Index of inequality in the distribution of all land and private land in 1877
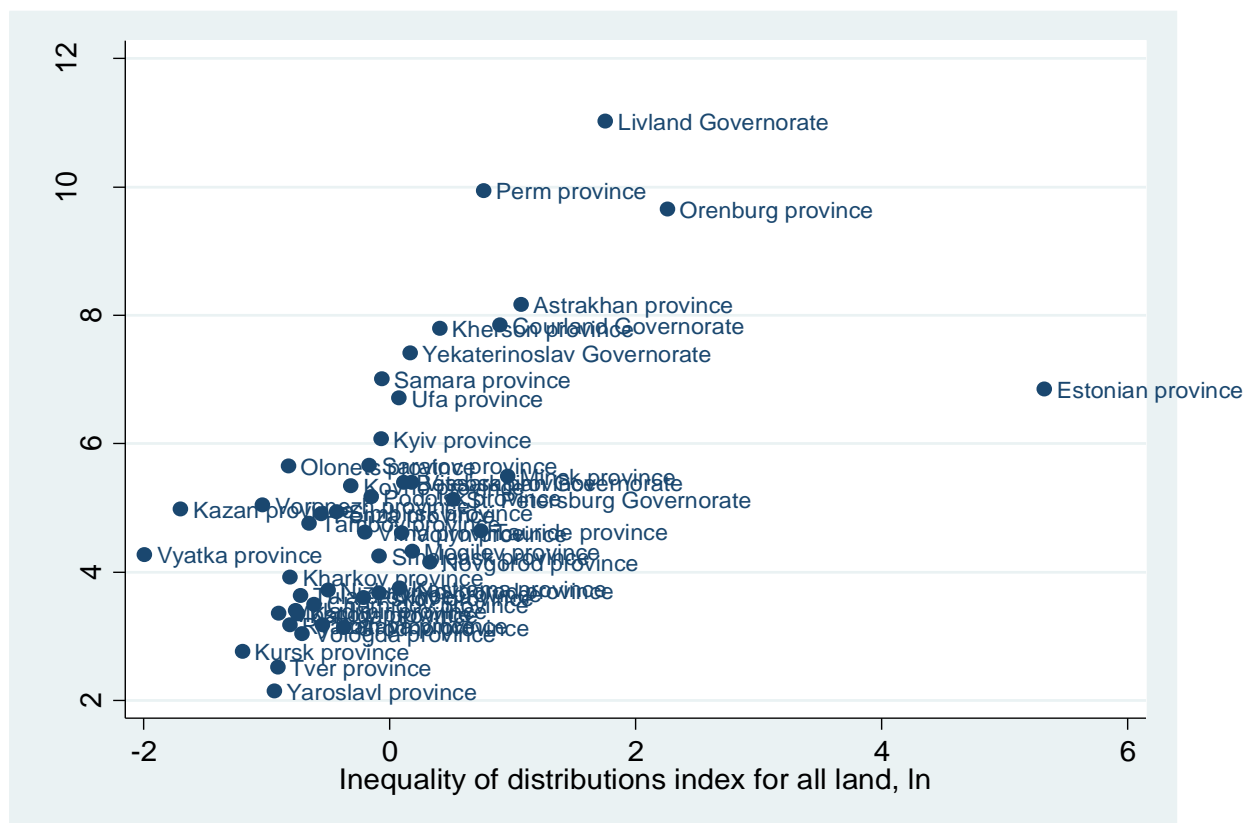
Source: Computed from Table 2.

Level of development, structure of the economy, incomes and well-being:

− Land productivity (grain yields), reported by the Central Statistical Committee of the Ministry of Internal Affairs (processed in Obukhov, 1927)[19].

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[18] **LnINEQindex1877** $= 3.2*** - 0.02*POPDENS*** - 0.05*ALLOTshare***$, robust standard errors, N=48, $R^2 = 0.53$. Here and later – standard notations: *** - significant at 1%, **- 5%, *- 10%.

LnINEQindex1877 – natural logarithm of the index of inequality of distribution of all land in 1877,
POPDENS – density of the population in 1904, number of people per 1 sq. km,
ALLOTshare - Share of allotment land in total land in 1877, %.

[19] Reliability of this kind of data is discussed in Kuznetsov (2012).

Fig. 7. The inequality index of private land distribution (ratio of the area of holdings over 500 *dessiatines* to the area of holdings below 10 *dessiatines*) in 1877and 1905
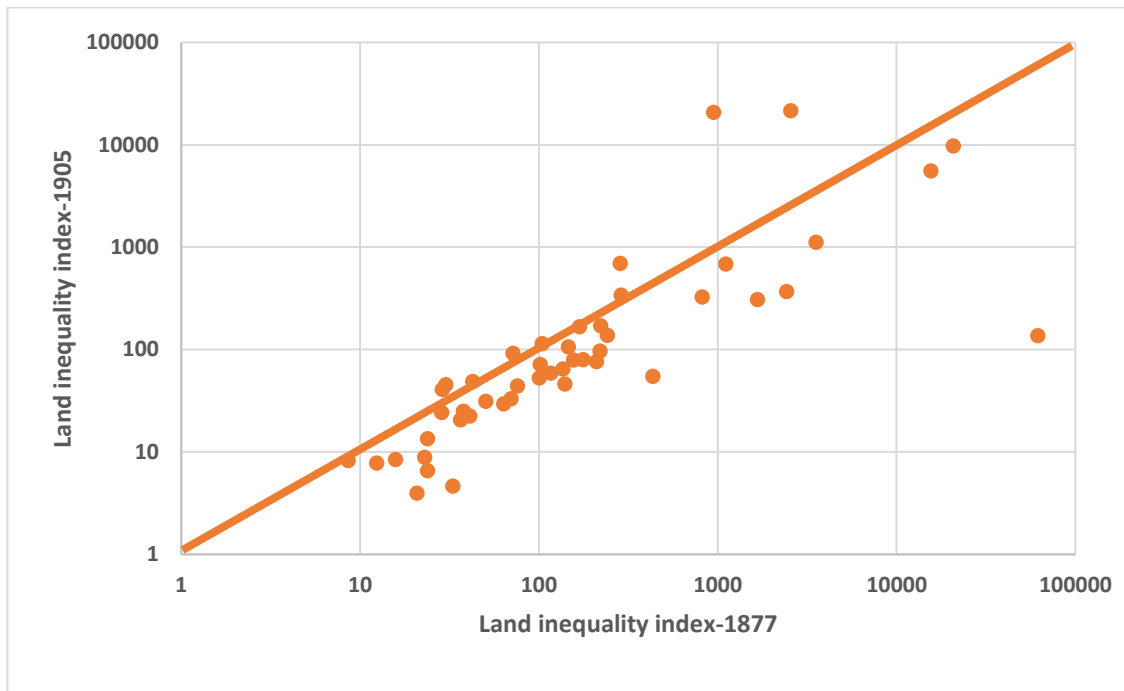
Source: Computed from Surveys conducted in 1877 and 1905 by the Central Statistical Committee of the Ministry of Internal Affairs published in TsSK MVD, 1880-1885, 1907.

− Total grain harvest per capita for the period 1883-1892 and the level of self-sufficiency in bread with the average typical and lowest harvest (in fractions of 1), reported by the Central Statistical Committee of the Ministry of Internal Affairs.

− The share of the labor force in industry (reported in the publications of the First General Census of the Russian Empire in 1897, and processed into the data set in Kessler, Markevich, 2020).

− Nominal wages of factory workers in relation to the price of the food consumer basket in 1913 (Volkov, 2016, based on the Collection of Reports by Factory Supervisors).

− Average daily wage of agricultural male employee in summer time, 1871-1880, 1881-1890, and 1891-1900 (Minfin, 1903).

- The wage gap between industrial and agricultural workers in 1903 and 1913. This gap encourages temporary and permanent migration from the countryside to urban areas, while simultaneously leads to generating social tension in both areas (industrial: Volkov, 2016, based on the Collection of Reports by Factory Supervisors; agricultural: official statistics of the Ministry of Agriculture and State Property in Minzeml, 1907, 1916).

- Length of railways in 1900, km per 1 million population (Markevich, Zhuravskaya, 2018),

- Engel coefficient[20] in 1910 (density of the railway network).

- Railway stations per 1 km in 1910 (TsSK MVD, 1915, 1916; Konchakov and Didenko, 2022).

- Average duration of operation of the railway transport infrastructure since the time from the opening of the first station to 1910 (Afonina, comp., 1995).

Institutional environment:

- The share of serfs in the population in 1858. This is viewed as an obstacle to the accumulation of human capital and industrial development (Markevich, Zhuravskaya, 2018). It was the highest in the regions of Central Russia and in Lithuania, Ukraine and Belarus.

- The ratio of temporarily liable peasants on rent and corvée accounts for the flexibility of forms of obligations that hinder mobility (Markevich, Zhuravskaya, 2018). When peasants were freed in 1861, they were given a choice of buying out land allotments (with redemption payments that were abolished only in 1907) or continuing with rent or corvée contract (abolished in 1881[21]). This indicator (rent to corvée ratio of temporary liable peasants) can be treated as a proxy for number of peasants leaving the

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[20] Engel coefficient, $E,$ is equal to the length of railways in the region divided by the square root of a multiple of area and population of the region: $E = l/\sqrt{S*N}$, where l is the length of the transport network, km; S is the area of region, thousand km^2; N is the total population, thousands of people.

[21] By 1881 the share of temporary liable peasants on rent and corvée was 15% (in some provinces though it was much higher: Kursk – 44%, Nizhniy Novgorod – 35%, Tula – 31%, Kostroma – 31%). – (Wikipedia, Отмена_крепостного_права_в_России#Местные_положения).

village and earning money elsewhere to pay the rent). It was high in non-black soil region, especially in Central Russia, where peasants were often freed under the condition of continuing their obligations to the landlord of quitrent and corvée (mostly it was quitrent in Central Russia – rent/corvée indicator depended negatively on the harvest yield and population density, but positively – on the share of labor force in industry, see regression below[22]). In Astrakhan', Vladimir, Vologda, Voronezh, Vyatka, Kaluga, Kostroma, Moscow, Nizhniy Novgorod, Novgorod, Olonets, St.Petersburg, Tver', Yaroslavl provinces it was over 40%; elsewhere – less than 40%.

− The existence of a community with redistribution of allotted land in 1900. The community was an equalization institution, hindering the migration of labor from the agricultural sector to the industrial sector (Markevich, Zhuravskaya, 2018). This could moderate or stimulate social tensions.

− The average annual expenditures of local self-government bodies (*zemstvo*) per capita in 1868-1903, in rubles. The measure captures the level of development of local self-government institutions that moderate social tensions and promote economic development (urban: Konchakov and Didenko, 2022; rural: Markevich, Zhuravskaya, 2018).

Demographics, human capital and alcohol consumption:

− Total number of people in the region.
− The number of those with literacy skills[23] and certain education attainment in the provinces of Russia in "*urban vs rural*" aspect.
− Population density.
− Share of urban population.

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[22] $RENT\_CORVÉE = 0.64*** – 0.007*POPDENS*** – 0.01*HARVcap\_1887*** + 0.03*INDshare1897***$
$N = 44$, $R^2 = 0.44$, robust standard errors.
Here and later – standard notations: *** - significant at 1%, **- 5%, *- 10%.

$RENT\_CORVÉE$ – ratio of temporary liable peasants paying rent to the number of corvée peasants,
$POPDENS$ – density of the population in 1904, number of people per 1 sq. km,
$HARVcap\_1887$ – net harvest of grain per capita, average for 5 years, 1887 -middle of the period, *puds* (*pud* = 16 kg),
$INDshare1897$ – share of the labor force in industry, %.

[23] Only reading skills in the native language were considered.

These are reported in the publications of the First General Census of the Russian Empire in 1897 (Troinitskii, ed., 1898-1905), and structured into the data set in Kessler, Markevich, 2020). The data on provinces were borrowed from the official data of the time and on the basis of processing of the original maps in Strel'bitskii, 1915; GSh, 1884, 1921, into digital GIS systems).

‒ Pure alcohol consumed per capita (average per year) by urban and rural population in the 1870s, 1880s, and 1890s (Minfin, 1903).

Regression results

Unfortunately, data for various indicators pertain to different years and even periods and for many years the data are missing, so we have chosen to compute averages for social tensions indicators for the periods and the increases from one period to the other (from the late 1890s to the early 1900s), and to run cross-regions regressions. Overall there were about 100 provinces in Russia on the eve of the First Russian Revolution of 1905-07, but data for many non-European regions are usually missing, so for most regression we are limited to the data on 40-50 provinces of the European part of Russia.

The general conclusions are summarized below and the tables with exact regression results follow.

Increase in peasants' unrest was driven by (table 3):

= high share of land estates (over 500) in total land area,
= high index of inequality of land distribution,
= high agricultural wages and bread sufficiency,
= poor railway net,
= low quitrent versus corvée (i.e. mostly in the periphery region, where peasants did not leave to seek temporary employment in the cities),
= high increase in the intensity of strikes at industrial enterprises,
= low expenditure of municipalities (*zemstvo*) per capita.

Table 3. Factors of the increase in the rate of peasants' unrests
*Dependent variable: Increase in peasants' unrest per 1 million rural population from 1890-99 (average) to 1900-04 (average), robust estimates (*standard notations: ***, **, * – significant at 1%, 5%, and 10% respectively)

Equation, N // Indicator	1, N= 26	2, N=26	3, N=25	4, N =26	5, N=26	6, N=25	7, N=19	8, N=19
Index of inequality of **all** land distribution in 1877, times		.55 ***			.27 ***			
Index of inequality of private land distribution in 1877, times	.0002 ***		.0002 ***	.0001 *				.0005 *
Share of large land holdings of over 500 *dessiatines* in total private land in 1877, %				5.9 ***	8.3 **	7.6 ***	5.7 ***	4.8 ***
Share of urban population, 1877, %			.03 ***					
The average annual expenditures of local self-government bodies (*zemstvo*) per capita in 1868-1903, rubles			-2.4 ***					
Average agricultural wage in the 1890s, rubles a day				9.7 ***		15.9 ***	8.7 ***	7.8 ***
Ratio of industrial to agricultural wages in 1903, %				1.1*	1.1*			
Level of self-sufficiency in bread, at the lowest harvest for the 1880s, fraction of 1				1.8 ***	1.6 **	1.6 ***		
Railways length in 1900, km per capita						-.003*	-.002*	-.002*
Ratio of quitrent to corvée peasants after 1861, %						-4.5 ***	-3.4 **	-2.9**
Increase in man-days lost due to strikes, times							.02 ***	.02 ***
Constant	1.4 ***	1.1 ***	3.6 ***	12.0 ***	-10.9 ***	-11.8 ***	5.3 ***	-4.5 ***
R^2, %	32	38	44	57	58	67	79	81

Even though the indicators of inequality of distribution of **all** land and **private** land were correlated (r = 0.6 for natural logarithms of both indicators), the index of inequality of distribution of private land (not all land) performed in most cases better in multiple regressions explaining the increase in peasants' unrest (and later - in explaining the increases in crimes against persons) – the coefficients were a bit more significant and the R^2 was slightly higher.

Private land was mostly the land of nobility before the 1861 land reform (not counting lands of monasteries, state and tsar family), whereas peasants normally did not own any land working on the land of the nobles. After the reform peasants, merchants and petty bourgeois started to purchase the land of nobility as private property, so by the beginning of the 20th century about half of the arable land was in private hands. Stolypin reform of 1906 abolished the redemption (buyout) payments, so peasants' land allotments became the property of the agricultural community, but peasants were allowed to claim part of the communal land as a private property (*khutors* and *otrubs*) [24].

Inequality in the distribution of private lands was thus the indicator of the inequality among mostly non-peasant owners (or peasants that purchased the land becoming *kulaks* – large wealthy owners of land), the privileged class that had full property rights over their land holdings (including marketing and mortgaging). As it turns out, this inequality among the members of the proprietors' class – new and old proprietors of land – proved to be more important for generating social tension and peasants' unrest than the inequality between the proprieties of land and peasants that were just using land of the community.

Interestingly enough, the Bolsheviks after confiscating the land of nobility and distributing it among peasants immediately after coming to power in October 1917, in spring-summer of the 1918 carried out another land reform – *cherniy peredel*, that involved an egalitarian distribution of land from large to smaller private land holders.

To summarize, the typical province, where peasant's protests were high was **not** the Central Russian province, where incomes were low, the share of landlords' land was high in 1877 and remained high in 1905. It was a periphery province, where agricultural wages and bread self-sufficiency were high, industrial wages as compared to agricultural wages were also high, where large land ownership (large estates – over 500 *dessiatines*) was high in 1877 and in 1905 (even though it fell slightly by 1905).

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[24] In European Russia in 1905 peasants' allotments had an area of 119 million *dessiatines* (mostly arable land), private owners – 94 million *dessiatines* (arable land + some pastures and forests), the state owned 154 million *dessiatines* (mostly forests). By 1916, as a result of Stolypin's reform, out of these 119 million *dessiatines* in 47 governorates of the European part of Russia 25 million (21%) were given to peasants, partnerships and rural societies, and another 9 million (8%) were in the process of transfer (Markevich, Dower, 2019 https://doi.org/10.1093/ereh/hey015; Кузнецов, 2021 https://doi.org/10.22394/2500-1809-2021-6-3-42-78).

Growth of strike rate was driven by (table 4):

= land distribution inequality,

= low strike rate in the 1890s (the lower was the base level in the late 19th century, the larger was the increase by 1900-04),

= low industrial wages relative to agricultural,

= low harvest yields,

= low quitrent was versus corvée,

= high literacy rate.

Table 4. Factors of the increase in strike activity on the eve of 1905-07 revolution
*Dependent variable: Man-days lost due to strikes as a percentage of total man-days worked from 1895-99 to 1900-04, robust estimates (*standard notations: ***, **, * – significant at 1%, 5%, and 10% respectively)

Equation, N // Indicator	1, N= 37	2, N=36	3, N=37	4, N =19
Man-days lost due to strikes as a percentage of total man-days worked in 1895-99	-23.1 **	-26.3 **	-25.5 **	
Index of inequality of private land distribution in 1877, times		.0007*		
Literacy rate in 1887, %	.67*			
Average number of peasants' unrests in 1900-04 per 1 million rural population	7.0**	6.8**	6.5 **	
Increase in peasants' unrest rate from 1890-99 to 1900-04, times				16.8 **
Average harvest yield for 10 years, c/ha (year 1907 - the middle of the period)	-20.4 **	-23.7 **	-20.3 **	-24.2 *
Railways length in 1900, km per capita				.06*
Density of railways, Engel's index in 1910		-265.3*	-254.1*	
Constant	121.6 *	178.3 **	155.6 **	127.0 *
R^2, %	35	39	37	64

Strikes increases in most cases were not linked directly to the indicators of inequality of land distribution, but they were strongly linked to peasants' unrest growth. Low quitrent versus corvée meant that peasants were not leaving villages for work in the cities, contributing to the rural

overpopulation (more peasants' unrest) and to the scarcity of labor in the cities (more favorable conditions for the workers strikes).

Success rate of strikes was driven by (table 5):

= literacy rate (positively in 1895-99, negatively in 1909-04),

= low share of urban population,

= low density of railway network,

= high inequality in the distribution of private land.

Table 5. Success rate of strikes
Dependent variable – index of acceptance of workers' demands – see footnote 13), robust estimates (standard notations: ***, **, * – significant at 1%, 5%, and 10% respectively)

Equation, N // Indicator	Index of acceptance of workers' demands in 1895-99			Index of acceptance of workers' demands in 1900-04	
	1, N = 53	2, N = 53	3, N = 37	4, N = 67	5, N = 66
Index of inequality of private land distribution in 1877, times			-.00007 ***		
Literacy rate in 1887, %	.04 (signifi cant at 12%)	.06*	.08**	-.01**	-.02***
Share of urban population in 1897, %		-.06**	-.07*		
Density of railways, Engel's index in 1910					-3.2**
Constant	0.98*	1.23**	1.23**	1.37***	1.6***
R^2, %	8	13	22	3	6

For both periods considered – the late 1890s and the early 1900s success of strikes was higher in the non-urbanized provinces with low density of railway network, i.e. periphery provinces. In addition, in 1895-99, industrial strikes' success rate was higher in provinces with low land inequality and high literacy rate (mostly central regions). But in 1900-04 the impact of literacy on the strikes' success rate

was negative. In late 19th century strikes were successful mostly in educated regions, whereas in 1900-04 less educated regions became successful in their strikes' activity as well.

The **level** of murders in 1888-93 was positively affected by:

= land inequality,

= low agricultural wage,

= community redistribution of land in 1900.

The dependent variable here is the average **level** of murder rate for 6 years – 1888-93, provided by TsSK MVD (1897)[25].

Increase in offences against persons was driven by (table 6):

= land inequality,

= low share of serfs in 1858 (these are regions of periphery, where serfdom was less prevalent),

= high quitrent versus corvée (also periphery regions),

= low length of railways per 1 resident (periphery provinces),

= high alcohol consumption growth,

= low literacy rate.

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[25] The best equation is:

MurderRate1883-93 = 31.7*** – 21.8****AGRwage1890*** *** + 19.3****LAND>10_1877*** ***,

N = 48, R2 = 21, robust standard errors, usual notations (***-, ** -, * - significant at 1%, 5%, 10% respectively), where:

MurderRate1883-93 – murder rates (per 100,000 inhabitants), averages for 6 years – 1888-93,

LAND>10_1877 – the share of large peasants' land holdings (more than 10 *dessiatines*) in the total land area in 1877,

AGRwage1890 – average daily salary of agricultural employee (male laborers at their own subsistence) in summers of 1891-1900, rubles.

Table 6. Factors of the increase in crimes against persons
Dependent variable – increase in the rate (per 100,000 inhabitants) of crimes against persons from 1896 to 1912, robust estimates (standard notations: ***, **, * – significant at 1%, 5%, and 10% respectively)

Equation, N // Indicator	1, N= 43	2, N=44	3, N=43	4, N =49	5, N=48	6, N=44	7, N=48	8, N=48	9, N=48
Arable land per capita in 1900, *dessitines*				.08*					
Index of inequality of private land distribution in 1877, times					9.1 e-06*	9.4 e-06*			1 e-05 *
Share of large peasant land holdings (more than 10 *dessiatines*) in the total land	1.5 ***	1.5 ***		.98 *			1.1**	1.3*	
Share of large peasant land holdings (more than 5 *dessiatines*) in the total land			1.6 ***						
Share of urban population, 1877, %	.05 ***		.04 ***						
Share of serfs in rural population in 1858, %					-.01 ***	-.01 ***	-.01**	-.01**	-.01 ***
Ratio of quitrent to corvée peasants after 1861, %	1.1**		1.1 ***						
Dummy variable for the community redistribution of land in 1900					.3**		.4**	.3*	
Average harvest yield for 10 years, c/ha (1907 year - the middle of the period)						-.22 ***			-0.2 ***
Railways length in 1900, km per capita		-.0008 *				-.0006 *			
Growth of alcohol consumption per capita from the 1870s to the 1890s, times		2.8 ***		3.3 ***	3.0 ***	3.0 ***	3.2 ***	3.0 ***	3.4 ***
Literacy rate in 1887, %	-.08**	-.03 ***	-.06 ***	-.03 ***	-.03 ***	-.03 ***	-.03 ***	-.02 ***	-.02 ***
Constant	1.7 ***	.08	1.4 ***	-.06*	0.7	2.5 ***	-.3 ***	.08	2.0 ***
R^2, %	38	39	45	49	51	53	57	58	61

Offences against persons are mostly domestic violence (not social unrest, like strikes and peasants' protest). It is noteworthy that quitrent versus corvée indicator is significant in determining both domestic violence and social unrest, but has a different sign. Whereas increase in crimes against

persons is higher in regions with greater proliferation on rent payments as opposed to corvée (Central Russia regions that had high share of serfs before the reform), social unrest (increase in strikes and peasants' uprisings) is greater in regions that were not moving to quitrent.

This is probably due to the fact that quitrent peasants leaving for the more or less temporary work in the cities alleviated social pressure in both villages (because they earn money elsewhere) and in cities (because they provide additional supply of labor for industry and deteriorate bargaining positions of the workers). But crimes against persons in the provinces with unstable and unrooted active male population migrating from villages to the cities (mostly Central Russian non-black soil regions) increased.

The other difference in determinants of domestic violence and social unrest is that the former is positively affected by illiteracy and alcohol consumption, whereas for social unrest alcohol does not matter (insignificant) and literacy has either significant positive impact (increase in strikes) or is insignificant.

Theoretically, the role of human capital in the protest movement can be twofold: on the one hand, the higher the level of education, the less social tension can take the extreme forms (violence against persons). On the other hand, literacy could lead to an increase in social protest activity, such as peasants' unrest and strikes.

In our regressions it turns out that human capital was not significant in determining the peasant' protests, had a positive impact of industrial strike intensity (just in one regression) and on the strike success rate (just in the 1890s, not in the early 1900s), but had a very significant negative effect on crimes against persons.

Conclusions

The goal of the paper was to contribute to the debate about Russian revolutions of the early 20th century by analyzing the patterns and determinants of the social tensions and protest (peasants' unrest, strikes, crimes against persons) in the provinces of the Russian Empire.

Abolition of serfdom had a positive effect on productivity – before the Emancipation, provinces where serfs constituted the majority of agricultural laborers lagged behind provinces that primarily relied on free labor, whereas after the 1861 reform they experienced a significant, even though partial catch up (Markevich, Zhiravskaya, 2018). But the inequality in the distribution of land fueled the social protest.

First, we find that the single most important factor driving the protest activity was inequality in the land distribution. This conclusion passes the most rigid robustness test of all – no other variables included into the right-hand side of the equation can eliminate the significance of the indicators of inequality of land distribution. These inequalities in land distribution were higher in Russia than in other countries and could help explain the greater revolutionary activity in Russia even though the income (not land) inequalities seem to have been lower than in other countries in the early 20th century and lower than in Russia today (Lindert, Nafziger, 2014).

Because of the variations in the inequality in land distribution, the dynamics of social protest had different patterns in different provinces of Russia. The highest increases in peasants' unrest, strikes and offences against persons from the 1890s to the early 1900s happened in provinces with low population density, low share of serfs in total population before the Emancipation Act, high productivity, high wages and high share of large landlord estates in total land area and especially high share of large private and peasants' land holdings.

These were mostly regions in the periphery of the empire – partly with the large ethnic population (Lithuania, Poland, Belarus', Ukraine, Caucuses, Central Asia), but also with the predominantly ethnic Russian population (Novorossiya, Volga, Urals, Siberia, Far East), that did not have many serfs left by 1861 to begin with. We speculate that this was due to the one of the unique features of Russian development – Russia was the only state that experienced such a rapid territorial expansion in the era of serfdom with the result of developing extremely high land distribution inequalities in the new provinces, higher than in other European countries at the same time.

Second, we find that offences against persons (mostly domestic violence) and social unrest (strikes and peasants' protest) were driven by similar factors. Economic conditions – inequality in land distribution,

income/productivity levels (industrial and agricultural wages, harvest yields), urbanization and density of railway network are crucial for explaining the dynamics of all indicators of violence and protest before the First Russian Revolution of 1905-07 (from the 1890s to the 1900s). Increases in the strike rate sometimes were not linked directly to the indicators of inequality of land distribution, but they were strongly influenced by peasants' unrest growth.

The typical province, where peasant's protests and industrial strikes increased before the First Russian Revolution of 1905-07 was not the Central Russian province, where the share of serfs before Emancipation was high, agricultural yields and incomes were low, the share of large land estates, and especially the share of large private and large peasants' land holdings, was lower than in the outskirts of the Empire. On the contrary, it was a periphery province, where agricultural wages and bread sufficiency were high, industrial wages as compared to agricultural wages were also high, and where inequalities in the land distribution were extremely pronounced; large land ownership (large estates – over 500 *dessiatines*) was high in 1877 (even though was falling by 1905), and the share of large private and peasants' land holding (over 10 and over 5 *dessiatines*) was much higher than in the Central Region.

Such a finding (concentration of social protest in the periphery) contradicts the conventional wisdom that in the periphery of the Russian Empire, where serfdom was eliminated before 1861 or even never existed, capitalist transformation and reforms in agriculture were more successful. On the contrary, the social protest was most intense in the periphery regions, where it was driven by inequalities in land distribution that were higher than in the Central Region. This is line with the Marxist view that the agrarian question was at the very heart of the Russian revolutions in the early 20th century with an important caveat – this land inequality was more pronounced in the outskirts of the Empire, not in the central non-black soil regions, where redemption payments and semi-feudal rent relationships were most spread.

This inequality was not so much between the nobles and the peasants – by 1916 most of the land of the nobility was sold to the new private owners, including wealthy peasants. This was the inequality among the new owners of land, wealthy peasants, merchants, petty bourgeois and industrialists, and it is exactly this inequality that was driving the social protest. To put it differently, it was not so much the

heritage of feudalism, serfdom and large land ownership by nobility, but mostly new inequalities that emerged during capitalist development in the new frontier regions of the expanding Russian Empire.

Third, success rate of strikes was higher in less urbanized regions with lower density of the railways network (once again these were remote regions of the Empire). It was linked positively to education level (literacy rate and the average number of years of schooling) in 1895-99, but in 1900-04 the relationship was negative. In the late 19th century strikes were successful mostly in educated regions, whereas in 1900-04 less educated regions became successful in their strike activity as well.

Fourth, there is a difference in determinants of domestic violence and social unrest: the former is positively affected by illiteracy and alcohol consumption, whereas for social unrest alcohol consumption does not matter (insignificant) and literacy has either significant positive impact (increase in strikes) or is insignificant (increase in peasants' unrest).

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