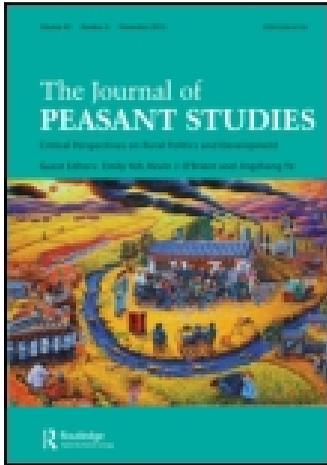


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Where is the backward Russian peasant? Evidence against the superiority of private farming, 1883–1913

Michael Kopsidis, Katja Bruisch and Daniel W. Bromley

This contribution deals with agricultural dynamics in late-Imperial Russia. Based upon a comprehensive micro-level data set on annual yields between 1883 and 1913, we provide insight into regional differences of agricultural growth and the development prospects of Russian agriculture before WWI. Making use of the fact that contemporary Russian statistics distinguished between mostly communally governed open fields and privately owned land, we are able to test the implications of different land tenure systems for agricultural yield growth. In a broader sense, we seek to challenge the common narrative of Russia as an exception to the pan-European picture of economic development during the era of industrialization.

Keywords: Russia; land productivity; peasant communal agriculture; land tenure

JEL Codes: N53; O13; Q15

1. Introduction

There is a long tradition of locating Russia outside the experience of Western modernity. Since the Enlightenment, the historical development of Western Europe has served as a benchmark for evaluating the Tsarist Empire's economic performance. The resulting grand narrative depicted Russia as a backward country aspiring to catch up with economically more advanced regions (Hildermeier 1987). In the twentieth century, this idea became the foundation for a macro-historical model which situated the country as an economic late-comer compensating for its developmental delay by enforced state-driven modernization (Gerschenkron 1962). While it has been criticized due to lacking heuristic value, backwardness serves as an analytical category for understanding Russian history even today (Hildermeier 2013).

Compared to other European powers, as well as the United States, the Russian Empire's economic take-off was both delayed and more gradual. In 1883, agriculture contributed about 57% to national income. By 1913, its share was still 51% (Gregory 1994, 27–29). Social structure mirrored the slow pace of economic change. According to the population census of 1897, 85.2 percent of the population inhabiting European Russia belonged to the social estate of the peasantry which included many non-agricultural migrant workers of peasant origin. Indeed, 74.9 percent of the population was occupied in agriculture, forestry, fishing and hunting (Moritsch 1986, 249). By comparison, as early as 1870, only 50 percent of the population in 15 European countries (including England, Germany and France as well as less developed countries such as Spain and Italy) worked in the primary sector (Van Zanden 1991, 219).

Agriculture in late Tsarist Russia was largely characterized by peasant household production, limited mechanization and simple cultivation methods (Melton 1998; Moon 1999; Kerans 2001). The legal framework of the rural order was established during a series of emancipation reforms beginning in the Baltic provinces Livland, Estland and Kurland in 1816–1819 (Blum 1961, 542–44). These were followed by the ‘inventory reform’ in the right-bank Ukraine in 1847–1848 (Moon 2001), and culminated in Tsar Alexander II’s famous emancipation manifesto of 1861. This latter reform, apart from giving personal independence, granted peasants a consolidated homestead and additional land for permanent use in return for redemption fees. Following long-established patterns of land tenure, post-emancipation tenure regimes varied in the different regions. While the land was entitled to individual peasant households in the Baltic and to hereditary communes in the Ukrainian provinces (Moon 2001),¹ it fell under communal tenure within so-called ‘rural societies’ (*sel’skie obshchestva*) in the Russian provinces. These ‘rural societies’ were organs of peasant self-government consisting of all peasants who had formerly belonged to one estate. Since they were often congruent with the much older institution of the land commune in which peasants had organized local affairs (including the distribution and redistribution of land among households), the emancipation reforms codified a century-long custom of communal land tenure in the Russian provinces (Atkinson 1983; Moon 1999, chap. 6). At the turn of the twentieth century, redistributive communes were prevalent in the majority of Russian provinces, while land tenure was hereditary in Western and Southwestern communes (Chernina, Dower, and Markevich 2013, Figure 2).

The emancipation reform in the Russian provinces of the Empire was based on a conservative outlook. In order to constrain peasant mobility, the new legislation conditioned peasants’ exit from a commune on the approval of the village assembly. The reform also prohibited commercial transactions of peasant lands. However, despite these restrictions, the Russian countryside was affected by fundamental social and economic developments in the post-emancipation period. A slow but accelerating process of industrialization and urbanization encouraged geographical mobility among rural residents (Burds 1998). Additionally, there were regions in which redistributions became rather exceptional in the late Imperial period (Zyrianov 1992, 172–88). Based on local customs, peasants did not necessarily perceive communal land tenure as a source of insecurity. At the same time, land-tenure relations were subject to far-reaching changes. Due to the rapid growth of rural population at this time, peasant households and land communes started renting or buying additional plots of land. By 1917, the gentry possessed less than one half of the land it had controlled in 1861 (Gatrell 1986, 105–18; Löwe 1987, 95–110; Muntin 1978).

After the severe famine of 1891/1892, the post-emancipatory rural order came under criticism. Searching for ways to release rural regions from alleged enduring crises and economic decline, political and intellectual elites blamed the land commune and the division of arable fields into numerous strips among the main reasons for the Russian Empire’s lag behind Western Europe and the US. While conservative politicians adhered to the paternalistic idea of the commune as protection for a helpless and awkward peasantry against capitalist dynamics, a growing number of officials and intellectuals insisted that communal land tenure and open fields blocked economic initiative and tied peasants to irrational and

¹Initially, the Baltic peasants were released from serfdom without receiving any land. This was changed in the aftermath of peasant uprisings. During the 1830s, peasant households were granted hereditary use-rights to their individual holdings (Moon 2001, 657).

inefficient farming methods. A series of decrees issued by Prime Minister P. A. Stolypin between 1906 and 1911 supported critics of the commune and open-field agriculture. Aiming to consolidate privatized parcels, Stolypin's reforms were expected to induce market-based agricultural growth and accelerate economic development on a national scale (Yaney 1982; Pallot 1999; Litzinger 2007).

Stolypin's approach can be compared with other state-driven attempts to establish an agricultural system based on private property and enclosed farms in the modern era (Pallot 1999, 4). Underlying the political promotion of enclosure and private farming was the notion that individual ownership of land and the existence of a land market are crucial and necessary preconditions for agricultural development. According to liberal market theory, land ownership can stimulate private initiative, subsequently leading to economic growth.² In an attempt to reverse the Soviet system of collective agriculture, Russian policy makers and foreign economic advisors enthusiastically embraced these ideas. The alleged positive correlation between private land ownership and agricultural growth served to legitimize the privatization of land and the gradual establishment of a land market in post-Soviet Russia (Wegren 1998, chap. 1; Dobrokhotov 2002).³ Similar arguments were recently used to demonstrate the 'progressiveness' of Stolypin's reform (Medushevskii 2005).

The belief in the superiority of private ownership as compared to other property regimes, which was inherent in many land reforms in the past, has not gone unchallenged (Atwood 1990; Brasselle, Gaspart, and Platteau 2002; Lund 2000; Migot-Adholla et al. 1993; Ouedraogo et al. 1996; Place and Hazell 1993; Sjaastad and Bromley 1997, 2000). Evidence comes from developing countries where the absence of formalized individual property cannot satisfactorily explain low levels of productivity and investments. Moreover, in many cases, attempts to formalize property relations by issuing individual land titles have shown limited results – and have produced unintended effects (Bromley 2008a). Doubts about the positive effects of land titling have gone along with a more general skepticism about the implementation of institutions 'from above' without considering customary rights (Easterly 2008). Moreover, some basic notions of liberal theories of ownership have been proven less robust than had been assumed. It has been common to discuss land tenure issues within the dichotomous framework of 'tradition' versus 'modernity'. This framework associates communal tenure with irrationality and backwardness, while relating individual private tenure to rationality and modern economic relations (Deininger and Feder 2009). However, labeling certain tenure regimes as 'backward' or 'progressive' has no analytical value. Evidence from some of the economically and technologically most advanced parts of the world suggests that communal tenure of natural resources and their productive and sustainable management are potentially compatible (Bromley 1992; Schlager and Ostrom 1992).

Historians have likewise questioned the assumed notion of a direct link between tenure regimes and development. Research on eighteenth-century Ireland, Northern France and England has shown that yields were not significantly higher on enclosed (private) land as compared with open (communal) fields (Allen and Ó Gráda 1988). It also cannot be shown that there was a direct correlation between productivity growth and private tenure (Allen 1992). Case studies in England and Germany suggest that communal tenure did

²A cause recently taken up by de Soto (2000).

³Macey (1993, 1994) provides an insightful discussion of Stolypin's fame during the early post-Soviet years.

not impede the implementation of advanced technologies or agricultural methods (Kopsidis 2006, Pfister and Kopsidis 2013). The case of China provides further evidence. De-collectivization and the introduction of the Household Responsibility System (HRS) with communal land tenure and with regular land reallocations have triggered impressive agricultural growth since the late 1970s. While a lack of long-term tenure security can negatively affect sustainable investments (Brandt et al. 2002), there is empirical evidence that communal tenure does not constrain farmers in their ability to adjust to market opportunities (de Brauw et al. 2000).

We approach late-Imperial Russia by making use of recent trends in development theory. With agriculture largely organized around a communal tenure system, the new paradigm in development studies provides a theoretical framework to examine the agricultural performance of the late Tsarist Empire. Following insights from mainly qualitative regional case studies on the adaptability of peasant communal farming (Worobec 1991, 33–34; Bidelieu 1990; Zyrianov 1992, 60–62, 217–23; Kingston-Mann 1991; Moon 1999, 130–31, 223), we reassess classical assumptions on communal land tenure as an obstacle to development from a quantitative perspective. Did tenure regimes significantly affect agricultural output and growth in late-Imperial Russia, or has the relevance of property titles – and hence the Stolypin reforms – been overrated? Addressing this question promises valuable insights into Russia’s agrarian history, as well as the opportunity to resituate the country on a pan-European map of agrarian development in the nineteenth and twentieth centuries. In addition, it can contribute to recent discussions about the meaning of official land titles for human welfare and economic growth in rural regions.

2. State of the art

For many decades, quantitative research on pre-revolutionary Russian agriculture was dominated by the grand narrative of Imperial crisis and decline. Soviet authors created a picture of impoverishment and class struggle in the late-Imperial village, thereby justifying the revolutionary destruction of the *ancien régime* as the logical and inevitable result of a deepening systemic crisis. Influenced by arguments of prerevolutionary intellectuals and the idea of a Russian *sonderweg* (special-way, or exceptionalism), Western historiography established a similar interpretive theme. Focusing on the assumption that at the turn of the twentieth century rural poverty and the exploitation of the peasantry by the Imperial government were increasing, historians attributed the revolution to an autocratic political system which hindered economic development ‘from below’ (Gerschenkron 1962).⁴

Since the late 1970s, scholars have paid increasing attention to regional differences in yields and expanding agricultural commodity production in the late Russian Empire (Simms 1977; Gregory 1980; Wilbur 1983; Gatrell 1986; Löwe 1987). Rising levels of peasant consumption and steadily declining mortality, as well as significantly enhanced trade of agricultural products on national and international markets, combine to support arguments against the assumption of generally deteriorating living standards and deepening rural crisis in late-Imperial Russia (Wheatcroft 1991; Hoch 1994; Davydov 2010; Mironov 2010, 545–62). Recent calculations of Russian agricultural performance between 1861 and 1911 indicate a constant increase of agricultural output with a significant contribution of

⁴See Mironov (2012, 36–52) for a comprehensive account of Soviet and Western literature on that issue.

total factor productivity growth during the 1870s – and then again from the 1890s (Leonard 2011, 241–43; Appendix 1).

Qualitative research has also provided arguments against the narrative of agricultural stagnation and rural decline in prerevolutionary Russia. In studying the peasantry as an object of pre-revolutionary elite discourse, scholars have shown that the idea of peasant backwardness arose as a product of contemporary debates about the fate of Russia in general (Frierson 1993; Kingston-Mann 1999; Kotsonis 1999). As a result, the stereotypical image of an irrational and ignorant peasantry, a product of late-Imperial debates that prevailed in historiography for decades, fell under serious challenge. It has been argued, convincingly in our view, that peasants did not reject technical progress and advice, nor were they silent objects of elitist discourses. Rather, they consciously used local institutions for their private purposes or for the regulation of local affairs (Schedewie 2006; Gaudin 2007). Moreover, they participated in public negotiations over the modernization of rural Russia, exploring newly evolving communication platforms, as well as personal ties to intellectuals or experts, in order to articulate their own interests to a broader public (Gerasimov 2009; Herzberg 2013).

3. Late-Imperial harvest statistics and their explanatory range

Scholars of agricultural history regard crop yields as the most reliable statistical source to analyze dynamics of agricultural growth prior to WWI. Time series of crop yields have been used as a key indicator to identify periods of development, decline or stagnation (exemplified for Britain by: Turner, Beckett, and Afton 2001; Allen 1992, 130–49, 191–210; Allen 1999, 222–27; Campbell and Overton 1993). Cross-country comparisons seeking to distinguish leading and lagging European regions in farming generally rely on yields and the growth rates of yields (Van Zanden 1999).

In that tradition, our analysis draws on annual crop yields as a major indicator for agricultural dynamics in late-Imperial Russia. Systematic and regular yield surveys had been conducted by the Statistical Committee of the Tsarist Ministry of Interior since 1883. Initially covering only the 50 provinces (*guberniia*) of European Russia, harvest statistics were gradually expanded with records from the Polish provinces, the Caucasian region, Central Asia and Siberia. Since 1908, yield statistics covered the whole Empire (except Finland). Records on yields focused on the main grain cultures as well as potatoes and hay. Yields of fruits and vegetables were largely missing.

The reliability of harvest statistics has been a matter of debate since Imperial times. Since agricultural producers and local administrators had strong incentives to report lower yields in order to avoid taxation – or to attract governmental support – contemporaries have questioned whether the data could be used for calculating total agricultural output. Following their example, Soviet and Western scholars concluded that pre-revolutionary agricultural output was actually much higher than indicated in official records.⁵ While there can be little doubt that official harvest statistics do not express actual yields, it has been argued that homogeneity and constant methodology enables researchers to consider yield data a reliable source on development trends of agricultural yields over time (Löwe 1987, 97; Koval'chenko 2004, 44–46; Kuznetsov 2012).

⁵See Davydov (2010, 67–76) and Daydov (2012) for a detailed overview of the literature.

Our analysis is based on annual yields in the 50 provinces of European Russia between 1883 and 1913.⁶ We selected a sample of eight cultures, containing wheat (winter, spring), rye (winter, spring), oats and barley, as well as potatoes and flax. Parts of our study rely on a sample of the eight above-mentioned crops, plus five additional cultures – hemp, corn, millet, peas and buckwheat. This selection reflects major vectors and development trends of late-Imperial agriculture. Wheat, rye and barley were food cultures accounting for a high share of human consumption in the countryside, while oats was mainly used for animal fodder (Gregory 1980). In the post-emancipation period, wheat cultivation steadily increased. By the end of the nineteenth century, wheat was the most important export commodity of the Russian Empire which, second only to the USA, was the world's largest wheat exporter. At the same time, demand on domestic markets consistently increased as wheat began to replace rye as a major component of grain consumption. At the beginning of the twentieth century, Russia was the world's leader in rye production, although the share of sown area for rye cultivation in overall sown area noticeably decreased. Rye marketing also underwent significant changes. The share of rye exports in overall rye trading was in decline. Moreover, rye trade also fell on domestic markets. Oats was the third major grain culture in Russian agriculture. In the decade before WWI, the export share of total oats production had been in decline, suggesting a sustained growth in domestic demand. Barley was a food and fodder crop as well as an important export commodity, with Russia being the world's leading producer at the beginning of the twentieth century. In contrast to wheat, rye and oats – for which domestic markets became more important in the late-Imperial period – the share of barley exports in overall barley trade increased up until WWI (Davydov 2010, Gatrell 1986, 122–23).

The labor-intense cultures of potatoes, hemp and flax are indicators both of shifting consumption patterns and of Russia's changing position in world markets. Potatoes became an important part of the Russian diet in the second half of the nineteenth century (Moon 1999, 288 et passim; Mironov 2010, 454), with increased potato cultivation in the Western parts of the Russian Empire, and in the densely populated regions of St. Petersburg and Moscow. Flax was widely used in industrial manufacturing. When the American Civil War interrupted European raw-cotton imports from North America, Russia gained a monopoly-like position on international flax-fiber markets (Pavlovsky 1968, 289–92).

Relying on the legal classification of land in the post-emancipation period, late-Imperial Russian harvest statistics distinguished 'privately owned lands' (*vladel'cheskie*) and 'peasant allotments' (*krest'ianskie nadel'nye*). While the category of 'peasant land' referred to those allotments which were transferred to former serfs, 'privately owned land' encompassed holdings that remained unaffected by the emancipation reforms (Löwe 1987, 96–97; Koval'chenko 2004, 41). Referring to the legal status of the land, yield statistics neither reflected the variety of land tenure systems in late-Imperial Russia, nor did they account for social and economic change in the countryside. Lands falling under the category of 'peasant allotments' could be owned by repartitional or hereditary peasant communes or, as in the case of the Baltic provinces, by individual households. Moreover, the ostensive correlation between a certain category of land and the social status of its cultivator is misleading. After the abolition of serfdom, the gentry increasingly sold or rented land holdings. As a result, the category of 'privately owned land' encompassed land rented or owned by

⁶Between 1883 and 1893, statistics measured yields in *chetvert* (a measure of volume); from 1894 in *pud* (a measure of weight: 1 Pud = 16.38 kg) per *desiatina* (a measure of area: 1 desiatina = 1.09 ha). In order to receive comparable data on yields, we converted yields of the earlier period in *pud* per *desiatina* using annual conversion tables given in the harvest statistics.

members of the gentry, the peasantry and other social classes (Munting 1978, 26). Although some attempts were made to adapt statistics to changing social realities, the Central Statistical Committee up until WWI continued to distinguish ‘peasant allotments’ and ‘privately owned lands’ (Koval’chenko 2004, 41).

The distinction between ‘peasant allotments’ and ‘privately owned land’ has been regarded as unhelpful, because it precludes a true understanding of agricultural relations by associating certain types of agricultural land with certain social classes in a simplistic way. Indeed, peasants farmed much more land than encompassed in the category of ‘peasant allotments’ (Löwe 1987, 96). However, late-Imperial harvest statistics allow approaching the question of whether there is a noticeable relation between tenure regimes and agricultural performance. With the exception of the Baltic provinces, where no peasant communes were established during the emancipation reform, repartitional communes dominated in the majority of Russian provinces. Agriculture in the Western provinces was organized in hereditary communes, where the scattering of fields was as common as in the Russian provinces with communal land tenure (Yaney 1964, 281). In the global history of agriculture, such arrangements were not exceptional. The category of ‘peasant allotments’ resembles what are considered, in early-modern agrarian societies, ‘open fields’ (Pallot 1999, 75): a communal system of scattered land strips which served as a strategy to lower crop-failure risks for individual peasant households. A similar phenomenon in recent China has been called ‘responsibility land’: plots which individual households receive for temporary use, while the local commune retains the authority to allocate and reallocate parcels among households (Brandt et al. 2002, 73).

Although Russian agriculture was characterized by a variety of land tenure institutions, which were not fully depicted in the harvest surveys, the statistical categories of ‘peasant allotments’ and ‘privately owned land’ help to operationalize different systems of land tenure. Given that at least in the Russian provinces peasant lands were administered mainly by repartitional land communes, the category ‘peasant allotments’ can be used as a proxy for communal land tenure. In the text we will refer to this land as ‘peasant land’ or ‘open fields’.⁷ Hence, allowing for a comparison between communal land tenure and all other tenure systems, late-Imperial Russian harvest statistics can be regarded as a source for answering the key question of whether the absence of land titles and legal restrictions of land transactions affected trends in yield development. In other words, was private farming superior?

4. Open fields and private land: a comparison

4.1. Tenure regimes and cropping patterns

Throughout the period under consideration, open fields clearly dominated Russian agriculture. On the eve of WWI, such lands accounted for around 69 percent of the cultivated area (Tables 1 and 2).⁸ However, there were significant regional differences in the extent of peasant land. While in the Ukrainian regions (New Russia, Malorossia and the Southwest

⁷The literature on ‘commons’ and ‘communal land’ (or common land) is so convoluted and unreliable that we have little hope of sorting it out here. Nor is it necessary to do so. Land that was not privately owned was used under a variety of specific local arrangements, and what matters for our purposes is that none of these arrangements resembled what Russian scholars or economic historians would understand as ‘private’.

⁸This refers to both crop samples under consideration. Moreover, for all 13 crops except winter wheat, the share of peasant allotments in the cultivated area was significantly higher than that of privately owned plots.

Table 1. Sown area per year in European Russia (hectares), 1892–1913.

	All land			Share of peasant allotments (%)		
	1892–1898	1899–1906	1907–1913	1892–1898	1899–1906	1907–1913
Winter wheat	3,042,124	3,424,629	3,521,682	42.4	36.3	41.1
Spring wheat	10,648,658	14,228,690	16,310,602	69.4	64.2	63.1
Winter rye	25,074,109	26,291,924	25,904,774	75.7	73.7	74.4
Spring rye	295,297	237,941	201,788	77.7	75.9	76.9
Barley	6,621,495	7,626,766	9,105,888	71.4	68.2	66.1
Oats	13,960,214	15,251,459	15,200,093	70.8	68.7	69.5
Potatoes	2,409,647	2,880,505	3,239,326	74.9	73.8	74.1
Corn	879,193	1,101,500	1,256,360	60.0	57.5	56.1
Millet	2,623,199	2,676,710	2,691,040	75.8	73.3	70.0
Buckwheat	2,443,937	2,199,037	2,044,498	74.0	74.7	75.8
Peas	950,804	903,688	827,819	70.8	68.3	64.0
Flax	1,528,555	1,467,203	1,312,677	69.8	73.7	79.3
Hemp	699,400	722,555	633,133	89.4	89.7	90.1
All crops	71,176,632	79,012,606	82,249,679	71.4	68.8	68.6

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Table 2. Regional shares of peasant allotments in sown area, 1892–1913 (eight crops^a).

Macro-economic region ^b	Sown area in hectares, 1892–1896			Share of peasant allotments (%)	
	All land	Peasant allotments	Private land	1892–1896	1909–1913
New Russia	12,623,221	8,087,836	4,535,384	64.1	57.2
Southwest Region	4,369,029	2,601,493	1,767,536	59.5	60.9
Malorossia	4,671,715	2,861,339	1,810,377	61.2	67.6
Central Agricultural Region	9,255,052	6,247,202	3,007,848	67.5	66.5
Middle Volga	6,707,723	4,926,348	1,781,374	73.4	65.6
Lower Volga	4,159,338	3,283,261	876,077	78.9	68.1
Central Industrial Region	4,371,482	3,859,219	512,263	88.3	90.5
Belorus	3,701,102	2,640,245	1,060,856	71.3	70.1
Lake Region	1,832,752	1,506,882	325,867	82.2	85.9
Lithuania	2,684,675	1,792,704	891,972	66.8	69.3
Baltic Region	1,331,711	819,683	512,026	61.6	71.6
Urals	6,261,059	5,800,537	460,522	92.6	86.0
Far North	706,258	645,972	60,287	91.5	93.8
European Russia	62,675,117	45,072,721	17,602,391	71.9	68.5

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Notes: ^a Winter rye, spring rye, winter wheat, spring wheat, barley, oats, potatoes, flax.

^b The 13 macro-regions of European Russia are taken from the contemporary statistics. They never served as administrative units but were developed in order to describe economic regions.

Region), whose full integration into the Tsarist Empire had taken place only at the end of the eighteenth century, the share of peasant land never exceeded 65 percent, it approached 80–95 percent in the heartland of the Empire ([Figure 1](#)). Hence, while private farming was most widespread in the highly fertile Southern black earth region, an area perfectly suited for grain farming, peasant (communal) farming prevailed in the less fertile, densely populated, but economically more diversified and advanced industrial regions.



Figure 1. Provinces and macro-regions in European Russia around 1900.
 Source: map adapted from Pallot and Shaw (1990, XVI–XVII).

This pronounced spatial differentiation changed little over time. There was no general trend towards a more dynamic increase of privately owned sown areas. Indeed, in 23 out of 50 provinces, the sown area of peasant allotments either grew faster or decreased slower than that of privately owned land. These provinces formed a somewhat compact belt stretching through the northern half of European Russia from Poltava to Vologda, encompassing the entire Central Industrial Region, as well as the Russian Northwest around St. Petersburg. On the contrary, sown areas under private tenure grew much faster than on peasant lands in the South (New Russia, Malorossia and Southwest Region), and to a

Table 3. Ranking list (all land) of annual growth rates of sown area (%) for all 50 provinces 1892–1913 (13 crops).^{a,b}

	All land	Peasant allotments	Private land		All land	Peasant allotments	Private land
Astrakhan	3.35	2.78	7.76	<i>Vologda</i>	0.41	0.57	−1.75
Orenburg	3.30	2.27	7.15	Smolensk	0.39	0.34	0.66
Samara	3.25	2.34	5.43	Estland	0.38	−0.01	0.52
Don	2.68	1.93	4.61	<i>Olonets</i>	0.20	0.22	−1.07
Ufa	2.52	1.40	5.38	<i>Vitebsk</i>	0.19	0.47	−0.54
Bessarabia	2.34	1.40	3.85	Kurland	0.18	0.09	0.32
Saratov	1.65	0.09	4.24	<i>Vilno</i>	0.16	0.38	−0.33
Ekaterinoslav	1.60	0.97	2.55	<i>Pskov</i>	0.13	0.51	−1.38
Perm	1.54	1.17	5.77	<i>Tula</i>	0.07	0.26	−0.32
Kherson	1.18	0.71	1.57	Viatka	0.03	−0.05	2.42
Tauride	1.07	−0.02	2.93	<i>Archangelsk</i>	0.00	0.17	−2.02
Penza	0.94	0.40	1.91	<i>Orel</i>	−0.03	0.24	−0.75
Khar'kov	0.89	0.79	1.12	<i>Novgorod</i>	−0.08	0.13	−1.70
Mogilev	0.83	0.24	2.13	<i>Riazan</i>	−0.09	−0.06	−0.14
Kovno	0.72	0.66	0.91	<i>Kostroma</i>	−0.09	−0.12	−0.20
Voronezh	0.72	0.04	3.06	<i>Vladimir</i>	−0.13	−0.08	−0.95
<i>Poltava</i>	0.71	1.53	−0.37	<i>Grodno</i>	−0.16	0.43	−0.75
Kazan	0.70	0.40	2.65	<i>Chernigov</i>	−0.18	0.95	−2.79
Simbirsk	0.66	0.19	1.42	<i>Kaluga</i>	−0.21	−0.01	−1.89
Podolsk	0.59	0.50	0.70	<i>Kursk</i>	−0.31	−0.18	−0.89
Tambov	0.57	0.11	1.48	<i>Tver</i>	−0.37	−0.12	−3.01
Minsk	0.57	0.54	0.66	<i>Livland</i>	−0.44	1.17	−4.10
<i>Volhynia</i>	0.50	0.60	0.37	<i>Moscow</i>	−0.66	−0.62	−1.59
Nizhni Novgorod	0.46	0.29	1.15	<i>St. Petersburg</i>	−0.69	−0.38	−2.21
Kiev	0.41	0.27	0.65	<i>Yaroslavl</i>	−0.71	−0.63	−1.97

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Notes: ^a Winter rye, spring rye, winter wheat, spring wheat, barley, oats, potatoes, flax, hemp, corn, millet, peas, buckwheat.

^b Provinces with higher growth rates on peasant allotments are italicized.

limited extent in the Central Agricultural Region (Table 3). This finding contradicts the modernization paradigm predicting the disappearance of communal land in favor of 'capitalist agriculture' based on private property during the industrialization that emerged first in the urban-industrial regions (Bloch 1930; Weber 1952).

Cropping patterns were very similar on both types of land. Over the period 1892–1913, wheat and rye, the major bread grains, covered around 55 percent of the cultivated area. An additional 30 percent of the land was sown with oats and barley, which were mainly used for animal feed. Around 13 percent of the area was planted with other feed and food crops – potatoes, corn, millet, buckwheat and peas. The data reveal no explicit labor division along lines suggested by the land tenure system. However, the cultivation of labor-intensive industrial crops such as hemp and flax, which accounted for 3.1 percent (1892–1898) and 2.4 percent (1907–1913) respectively of the cultivated area (Table 4), took place mainly on open fields.

Neither was there a clearly pronounced relation between growth in area sown and the two types of land indicated in the harvest statistics. Although annual growth rates of sown area for spring wheat, barley and oats were twice as high on private land than on open fields, the expansion of sown areas for cash crops, most importantly spring wheat,

Table 4. Share of crops in sown area (%) for European Russia.

	All land			Peasant allotments			Private land		
	1892–1898	1899–1906	1907–1913	1892–1898	1899–1906	1907–1913	1892–1898	1899–1906	1907–1913
Winter wheat	4.3	4.3	4.3	2.5	2.3	2.6	8.7	8.8	8.0
Spring wheat	15.0	18.0	19.8	14.5	16.8	18.2	16.1	20.6	23.3
Winter rye	35.2	33.3	31.5	37.2	35.7	34.2	30.2	28.0	25.7
Spring rye	0.4	0.3	0.2	0.5	0.3	0.3	0.3	0.2	0.2
Barley	9.3	9.7	11.1	9.3	9.6	10.7	9.4	9.8	12.0
Oats	19.6	19.3	18.5	19.4	19.3	18.7	20.2	19.3	18.0
Potatoes	3.4	3.6	3.9	3.5	3.9	4.3	3.0	3.0	3.3
Corn	1.2	1.4	1.5	1.0	1.2	1.2	1.7	1.9	2.1
Millet	3.7	3.4	3.3	3.9	3.6	3.3	3.1	2.9	3.1
Buckwheat	3.4	2.8	2.5	3.5	3.0	2.7	3.1	2.3	1.9
Peas	1.3	1.1	1.0	1.3	1.1	0.9	1.4	1.2	1.2
Flax	2.1	1.9	1.6	2.1	2.0	1.8	2.3	1.6	1.1
Hemp	1.0	0.9	0.8	1.2	1.2	1.0	0.4	0.3	0.2
All crops	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Note: Original data has been corrected for minor discrepancies.

was not concentrated on private land. The same is true for strongly expanding non-tradable cultures like potatoes, with sown areas growing at an annual rate of 1.9 percent on peasant land and 2.3 percent on private land over the entire period. Only some minor crops (millet, peas and flax) showed an opposite trend for the two categories of land ([Table 5](#)). These results imply that economic and social change was influencing agriculture in a similar fashion quite irrespective of the legal status of the land holdings.

Table 5. Annual growth of sown area, 1892–1913 (exponential trends; %).

	All land	Peasant allotments	Private land
Winter wheat	1.11	0.89	1.27
Spring wheat	2.85	2.21	4.10
Winter rye	0.22	0.01	0.60
Spring rye	-2.40	-2.50	-2.10
Barley	2.15	1.61	3.34
Oats	0.59	0.43	0.98
Potatoes	2.01	1.91	2.30
Corn	2.28	1.82	2.95
Millet	0.00	-0.60	1.25
Buckwheat	-1.30	-1.20	-1.70
Peas	-0.70	-1.30	0.73
Flax	-0.60	0.00	-2.40
Hemp	-0.60	-0.60	-1.00
All crops	0.99	0.71	1.79

Source: Authors' own calculations; for data sources see [Appendix 1](#).

4.2. Crop yields on open fields and private land: the regional dimension

Tsarist agriculture was a regional phenomenon with respect to average crop yields.⁹ At the end of the period under study (1909–1913), yields in the Lower Volga Region ranged between a quarter and a third below the national average. In the Baltic Region and the Ukraine (Southwest Region and Malorossia), yields approached up to 150 percent of the European Russian average. Except for barley, yields were clearly above average in the Central Agricultural Region. The remaining regions achieved yields slightly below average. Our calculations reveal strongly pronounced regional differentiation in land productivity as a key indicator of agricultural productivity. Low-yield agriculture prevailed in the vast steppes of the Volga, while high yields were mainly concentrated in the Southwest and certain Western regions (Table 6).

These results imply that the interplay of natural and infrastructural factors in late-Imperial Russia most strongly affected yields in Malorossia and the Southwestern Region. Due to favorable precipitation, these areas had better natural conditions than the two Volga regions.¹⁰ With the railway system expanding in the late nineteenth century, the agrarian potential of Malorossia and the Southwest Region could profitably be exploited. Although not located close to large ports on the Black Sea (the most important outlets for grain exports), they became involved in agricultural trade networks. Due to railway expansion, they had a considerable spatial advantage for supplying the growing domestic urban-industrial agglomerations in European Russia. Hence, in many parts of interior Russia, transport costs ceased to be the limiting factor for extending farming beyond local needs (Leonard 2011, 195–96; Frieson 1994, 415).¹¹

In light of the pronounced impact of infrastructure on regional specialization and agricultural trade, it is worth analyzing whether changing access to transportation networks altered the geography of agricultural performance. From the perspective of a von Thünen model, an expanding infrastructure is assumed to cause the highest yield increases in newly integrated ‘virgin’ areas.¹² This would be all the more true if formerly isolated areas were more fertile than regions located next to agricultural product markets, as was the case in Russia. Hence, one would expect a convergence of yields of previously isolated regions with traditional leading regions. To test this hypothesis, we used the variation coefficient as a measure of dispersion – with a decreasing or negative trend indicating a convergence of yields over time and thus a successful catch-up growth of lagging regions.¹³ For nine out of 13 crops, the linear trend of the variation coefficient was negative. Trends were

⁹Since crop yields in the Russian Empire were highly volatile (Moon 1999, 135–37), we calculated average yields of two 5-year periods (1892–1896 and 1909–1913).

¹⁰Except for the Western parts of the Southwest Region, both Ukrainian regions belonged to the black earth zone, where soil and climatic conditions for arable farming were the best within the European part of the Tsarist Empire. This refers especially to the Southwest Region (Moritsch 1986, 138).

¹¹It is worth noting that, due to expanding railways, domestic markets became more important for the trade of grain than exports in the late Imperial period (Davydov 2010).

¹²Von Thünen’s famous land use model of the ‘isolated state’ also explains spatial differences in agricultural intensity. Expanding infrastructure and decreasing transport costs extend the area where intensive farming is profitable. Studies on nineteenth-century Northwest Germany have shown that the more extensive a region’s land use was before railway construction, the higher were the agricultural productivity gains resulting from new, more productive and more intensive farming systems (Kopsidis and Hockmann 2010).

¹³This does not necessarily imply that before market integration, absolute yields were lower in Southern grain belts compared to Central regions. Rather, Southern regions did not exploit their vast agrarian potential to the same degree as more densely populated but less fertile central regions.

Table 6. Regional crop yields in Russia, 1909–1913 (%; European Russia = 100).

	Winter wheat	Spring wheat	Winter rye	Spring rye	Barley	Oats	Potatoes	Flax
New Russia	86	100	78	103	102	105	69	151
Southwest Region	122	119	141	109	119	132	108	157
Malorossia	120	135	120	145	107	123	124	159
Central Agricultural Region	115	115	110	123	82	116	110	146
Middle Volga	89	95	96	107	92	91	92	117
Lower Volga	–	85	72	65	63	62	72	78
Central Industrial Region	97	104	85	95	91	97	96	98
Belorus	91	119	94	99	83	92	97	98
Lake Region	72	112	91	123	86	90	94	63
Lithuania	100	121	102	111	93	92	91	126
Baltic Region	124	139	146	138	117	114	137	103
Urals	–	123	95	111	93	87	80	82
Far North	–	114	92	–	98	92	84	93
European Russia	100	100	100	100	100	100	100	100

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Table 7. Linear trend of crop yields' variation coefficient, 1883–1913.

	All land	Peasant allotments	Private land	N*
Winter wheat	–0.0032	–0.0025	–0.0034	36
Spring wheat	–0.0022	–0.0016	–0.0027	48
Winter rye	0.0003	0.0010	–0.0012	50
Spring rye	0.0011	0.0023	0.0003	43
Barley	–0.0018	–0.0013	–0.0022	50
Oats	0.0003	0.0001	–0.0005	50
Potatoes	–0.0044	–0.0032	–0.0049	50
Corn	–0.0063	–0.0068	–0.0077	8
Millet	–0.0005	–0.0009	0.0002	33
Buckwheat	0.0012	0.0013	0.0000	44
Peas	–0.0013	–0.0004	–0.0008	49
Flax	–0.0026	–0.0038	–0.0017	49
Hemp	–0.0038	–0.0040	–0.0044	45

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Note: * N = number of provinces (maximum = 50).

almost identical for yields on peasant allotments and private land ([Table 7](#)). Hence, we have strong grounds to conclude that market integration through railroad expansion led not only to regional specialization. Integration also triggered the convergence of agricultural yields between different regions regardless of the tenure regimes.

4.3. Average yield growth and cropping patterns

Studies in economic history have long adhered to the assumption that Imperial Russia's agriculture was inherently backward, with communal farming and the absence of full

private property rights impeding agricultural adjustment and growth. If analysis considers only the trajectory of grain yields, this view retains some support. In the two periods of 1892–1896 and 1909–1913, the average grain yield¹⁴ on open fields ranged between 78 percent and 86 percent of the average grain yield on privately owned land. With the exception of spring wheat and oats, the gap between the two tenures increased over time (Table 8). Regional exponential growth trends for annual grain yields reveal a clear correlation between the two categories of land and the development of grain production. Between 1892 and 1913, the average grain yield increased annually by 0.54 percent on peasant allotments and by 0.93 percent on private land. On average, the former realized only 58.3 percent of the annual growth achieved on private land. In some quite important regions, these differences were especially pronounced. In the Central Industrial Region, open fields realized only 49.9 percent of the growth in grain yield shown on privately owned land. In the Central Agricultural Region, growth gains on peasant lands approached 62.4 percent of that on private holdings. In a noted contrast to this, in two of the most dynamic agricultural regions, the Southwest and the Baltic Region, growth rates of grain yields on peasant allotments outstripped those on private land (Table 9).

However, when we look at average crop yields based on 13 crops – which in 1916 accounted for almost 95 percent of the cultivated area (Moritsch 1986, Table 25) – alleged ‘peasant backwardness’ nearly disappears. We constructed an average crop yield which, in addition to the six grains, takes into account potatoes, corn, millet, buckwheat, peas, flax and hemp.¹⁵ Between 1892 and 1913, peasant lands realized, on average, 91.4 percent of the yield growth shown on private land – not 58.3 percent as shown by the grain-based indicator. Again, these results have a strong spatial component. In the less fertile, climatically disadvantaged and above-average industrialized heartland with a clear domination of communal land tenure, yield growth was significantly higher on the communal land. This was especially true for the Central Industrial Region, the Far North and the Lake Region around St. Petersburg. A highly dynamic growth of crop yields on peasant land versus privately owned land occurred also in the Baltic Region (Table 10).

A closer look at different crop cultures confirms that poor performance of communal agriculture in grain farming is no proof of a general economic inferiority of communal land tenure. Yield dynamics on communally governed peasant land mirrored the general trend towards rising yields in European Russia. With the exception of winter rye, spring wheat and oats, annual yield growth on open fields reached at least 85 percent of yield growth on private land. Regarding labor-intensive crops, communal farming was competitive if not superior to private farming. For potatoes, growth rates were equal, while yields of corn, flax and hemp grew even faster on peasant allotments (Table 11). Drawing on this observation, we offer two conclusions: (1) communal farming did not preclude or block dynamic agricultural growth, and (2) private farming was not necessarily superior.

These findings allow us to integrate Russia into the larger story of agricultural development during the era of industrialization – a period over which expanding livestock husbandry, including dairy farming, stabilized peasant farming on small and medium farms all

¹⁴This indicator refers to the main food and fodder grains: wheat (winter and spring), rye (winter and spring), barley, and oats. In 1916 these grain cultures accounted for 80.4 percent of the cultivated area in European Russia (Moritsch 1986, Table 25). The calculation method of this indicator is explained in the note to Table 9.

¹⁵The annual growth rate of this average crop yield corresponds to the sum of the weighted growth yields of every single crop. The weights are the share of every crop’s sown area in the total sown area of all 13 crops.

Table 8. Yields on peasant allotments as a percentage of yields on private land.

	Winter wheat		Spring wheat		Winter rye		Spring rye		Barley		Oats	
	1892–1896	1909–1913	1892–1896	1909–1913	1892–1896	1909–1913	1892–1896	1909–1913	1892–1896	1909–1913	1892–1896	1909–1913
New Russia	72	70	78	75	71	64	67	56	82	80	82	75
Southwest Region	89	89	74	84	95	98	76	74	90	93	86	88
Malorossia	84	86	77	79	87	80	72	73	86	76	88	81
Central Agricultural Region	87	73	71	78	82	75	80	81	82	69	79	76
Middle Volga	89	96	78	76	83	77	74	89	96	99	78	79
Lower Volga	–	–	87	78	79	75	85	82	95	84	83	78
Central Industrial Region	91	85	87	83	85	83	63	78	88	91	87	87
Belorus	91	78	100	97	85	82	76	95	87	87	96	90
Lake Region	75	71	92	98	81	81	83	105	95	89	86	87
Lithuania	90	82	83	90	90	84	74	91	91	86	93	88
Baltic Region	88	92	81	80	76	89	86	79	80	91	75	89
Urals	–	–	102	91	87	75	81	83	96	91	86	81
Far North	–	–	84	85	93	91	–	–	–	–	91	95
European Russia	81	80	80	78	85	79	82	86	82	81	85	78
Range	72–91	70–96	71–102	75–98	71–95	64–98	63–86	56–105	80–96	69–99	75–96	75–95

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Table 9. Annual growth rates of an average grain yield, 1892–1913^a (in %; 1.0 = 1%).

	All land	Peasant allotments	Private land	Yield growth on peasant allotments/ yield growth on private land ^b
New Russia	1.15	0.88	1.19	74.0
Southwest Region	1.98	2.03	1.95	104.0
Malorossia	1.63	1.51	1.98	76.3
Central Agricultural Region	1.20	0.98	1.57	62.4
Middle Volga	-0.08	-0.29	0.21	-
Lower Volga	-0.97	-1.31	-0.68	-
Central Industrial Region	0.24	0.24	0.48	49.8
Belorus	0.71	0.66	0.85	78.3
Lake Region	0.71	0.74	0.78	94.7
Lithuania	1.48	1.38	1.73	79.6
Baltic Region	0.59	0.96	0.26	364.8
Urals	-0.01	-0.09	0.14	-
Far North	0.45	0.43	0.41	104.7
European Russia	0.72	0.54	0.93	58.3

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Notes: ^a The average grain yield is calculated by dividing the annual combined total yield of winter wheat, spring wheat, winter rye, spring rye, barley and oats by the total sown area of these six crops (total harvest of six grains/sown area of six grains).

^b Yield growth on private land = 100.0.

Table 10. Annual growth rates of an average crop yield, 1892–1913^a (in %; 1.0 = 1%).

	All land	Peasant allotments	Private land	Yield growth on peasant allotments/ yield growth on private land ^b
New Russia	1.17	0.94	1.26	74.4
Southwest Region	2.10	2.09	2.12	99.0
Malorossia	2.23	2.10	2.54	82.8
Central Agricultural Region	1.47	1.38	1.64	84.2
Middle Volga	0.56	0.45	0.71	63.6
Lower Volga	-0.68	-0.92	-0.42	-
Central Industrial Region	1.08	1.10	1.02	107.9
Belorus	1.54	1.37	1.83	74.9
Lake Region	1.33	1.43	1.01	141.0
Lithuania	2.03	1.81	2.40	75.5
Baltic Region	1.36	1.69	1.16	145.0
Urals	0.13	0.01	0.41	1.8
Far North	0.77	0.74	0.71	103.8
European Russia	1.06	1.00	1.09	91.4

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Notes: ^a The average crop yield is calculated by dividing the annual combined total yield of winter wheat, spring wheat, winter rye, spring rye, barley, and oats, potatoes, corn, millet, buckwheat, peas, flax and hemp by the total sown area of all 13 crops (total harvest of 13 crops/sown area of 13 crops).

^b Yield growth on private land = 100.0.

Table 11. Annual crop yield growth in European Russia, 1892–1913 (1.0 = 1%).

	Winter wheat	Spring wheat	Winter rye	Spring rye	Barley	Oats	Potatoes	Corn	Millet	Buckwheat	Peas	Flax	Hemp
All land	1.70	0.34	0.52	0.28	0.94	1.19	0.71	2.01	1.11	2.55	0.94	0.82	1.98
Peasant allotments	1.62	0.15	0.37	0.38	0.84	1.00	0.68	2.02	1.02	2.49	0.81	0.95	1.99
Private land	1.80	0.36	0.87	-0.12	0.97	1.50	0.68	1.93	1.09	2.79	0.94	0.93	1.78
Yield growth ^a	90	42	43	-	87	67	100	105	94	89	86	102	112

Source: Authors' own calculations; for data sources see [Appendix 1](#).

Note: ^a Yield growth on peasant allotments/yield growth on private land.

over Western, Northern and Central Europe. We submit that Russia was no exception. The empirical evidence reveals that peasants consciously redirected resources away from grain farming and toward the cultivation of more profitable crops. Indeed, regions with prosperous peasant farming, such as the Central Industrial Region, the Far North, the Lake Region around St. Petersburg and the Baltic Region ([Table 10](#)), had a comparative advantage in intense livestock and pasture farming, but were definitely not favorable for grain cultivation. Regarding the strong traditions of communal farming in these regions (with the exception of the Baltic provinces), one can assume that communal farming substantially contributed to the minimizing of the enormous risks peasants faced when switching to more intensive livestock farming. Perhaps more precisely, communal farming provided necessary flexibility that allowed for feasible enterprise switching.

5. Conclusions

Agricultural development in the late Tsarist Empire contradicts the idea of a Russian *sonderweg* rooted in long-lasting peculiarities of its rural institutions – but especially the communal tenure regime. Our results confirm that peasant agriculture developed dynamically during the late Tsarist period and that communal tenure was not an obstacle to adjustment and growth (Gregory 1994, 37–54; Leonard 2011, 137–40). We have shown that on average, crop yields on peasant allotments evolved similarly to those on private land during the years 1892–1913. Slightly more than 90 percent of the observed yield growth on private land was realized on open fields. This evidence corresponds to findings about yield growth on common fields and enclosures in early modern England. Moreover, our results are consistent with a pan-European picture of agricultural change during the era of early industrialization. Due to demand patterns of urban population, nineteenth-century industrialization was a golden age of labor-intensive family farming which outcompeted more extensive large-scale capitalist farming based on wage labor.

These findings make a further case for the recent paradigm shift in development economics. Instead of considering peasants to be ignorant of economic incentives and technological change, they are now regarded as potential agents of market-oriented, dynamic agricultural adjustment and development. The late-Imperial Russian case is of interest especially in the context of recent debates on the conditions of effectively working commons (Ostrom 1990; Bromley 1992, 2008a). There is a growing consensus about 'community' and 'market' being potentially compatible with each other. Moreover, it is conceivable that their successful combination (integration) allows for solutions in accordance with sound economic principles, especially in early stages of economic development with weak or dysfunctional institutions (Bromley, 2006; Bromley and Anderson 2012). In many developing societies, effective and flexible village communities may often be the only successful institutional framework to lower costs of market transactions, and to take risks of

large investments in agriculture (Bromley 2008b). Thus, communal management of resources can contribute to the establishment of functional markets (Aoki and Hayami 2001; Hayami 1998a, 1998b).

Yield growth in late-Imperial Russia confirms that the standard narrative about a clear-cut advantage for free-hold private tenure is less robust than the evidence can support. Although there was a wide range of organizational patterns in which Russian peasants regulated their affairs, our results allow tentative insights regarding development perspectives of peasant households within a setting of communal land tenure in late-Imperial Russia. Our approach transcends the neoclassical view that Russian peasants circumvented inefficient rules inherent to all kinds of communal farming, and grudgingly adapted the 'inferior institution' of the peasant commune to their needs (Gregory 1994, 49–52; North 1990). Bypassing inefficient rules normally goes along with high transaction costs which, inevitably, hinder growth. In showing high and/or above-average yield growth on peasant land located in provinces with predominantly communal tenure, our findings suggest that standard apologies for textbook models are suspect. In some Russian regions, peasant communes represented effective and adaptive institutional arrangements that offered peasant households a comparative advantage compared to other institutional settings available at the time.

To bolster the explanatory range of our findings, future research should include livestock farming, which in Russia, as elsewhere in nineteenth-century Europe, was generally a peasant domain. Between 1890 and 1913, prices of livestock and dairy products increased much more rapidly than grain prices, thereby increasing incentives for peasant farmers to switch from grain cultivation to intensive animal farming. Especially in regions close to urban markets, expanding demand by the urban-industrial classes for high value-added livestock and dairy products tended to stabilize commercially active peasant communities (Gatrell 1986, 134–35; Koval'chenko 2004, 284; Löwe 1987, 70–82; Worobec 1991, 33). The generally modest development in livestock production during the post-emancipation decades had a strong regional component. In the industrial regions around Moscow and St. Petersburg – as well as in the Baltic provinces – there was a relative increase of cattle breeding as compared to arable farming (Wheatcroft 1991, 142–44). Considering that livestock farming accounted for around one third of the agricultural output (Leonard 2011, 239), we suggest that further research will shift results even more in favor of communal land tenure. Although this hypothesis must still be tested, we have grounds to state that the dynamics of peasant farming in late-Imperial Russia were not much different from those in Western, Northern and Central Europe where peasant farming out-competed large estate farming on the basis of high and rising domestic demand.

In addition, our study demonstrates how agricultural history and development theory can mutually enrich each other in assessing state attempts to issue official land titles. We have demonstrated that yields developed similarly on different types of land (communally governed vs. privately owned) and in regions with different land-tenure regimes, such as the Baltic provinces, with long-established traditions of private farming, and the Central Industrial Region, where the land commune remained an important institution up until the revolution. This implies that official land titles are not the decisive factor for fostering welfare and growth in the countryside. Indeed, after the launch of the Stolypin reform, peasant communes often used the new legislation in ways unintended by the reform's designers. Moreover, perceiving the reform as a threat to their social and economic security, many peasants were hostile to the state's attempt to change the rural order (Pallot 1999; Macey 1990). While rapid agricultural development in the years prior to WWI is unquestioned (Leonard 2011, 242), it remains unclear whether these developments resulted from the

promotion of private land titles. The Stolypin reform went along with measures to improve access to credit, input and outlet markets through cooperatives, and to enhance the provision of agronomic aid (Macey 1998; Gerasimov 2009). Considering that institutional change played a minor role even in Prussia (Kopsidis and Wolf 2012), whose famous agrarian reforms served as a model for late-Imperial Russian policy makers, we suggest that the state-driven attempt to establish a private farming system had less effect on yield growth and agricultural development in Imperial Russia than ‘liberal ownership’ theory would predict.

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Appendix 1

Data sources

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