

# **Serfdom, Emancipation, and Off-Farm Labor Mobility in Tsarist Russia**

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Preliminary – All comments and suggestions are welcome.

## **Abstract**

Serfdom is the best-known institutional feature of Russia under the Tsars, but its implications for growth and development have rarely been empirically explored. This paper investigates whether the legacy of serfdom affected labor mobility in the Russian countryside after Emancipation in 1861. I detail the structure of the reforms that ended serfdom and transferred property to the former serfs and show that these measures did result in smaller land endowments, higher obligation levels, and possibly stronger communal restrictions than other groups of peasants faced in the post-Emancipation period. Drawing on a unique panel dataset of representative villages in Moscow province, I show how these differences were related to the scope of mobility out of agriculture between former serf and non-serf villages after 1861. Although the results suggest some persistence of constraints on labor mobility among former serfs, the observable differences in off-farm labor market activity largely disappear by 1900, despite persistent differences in land endowments between former serfs and non-serf peasants.

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Alexander II's manifesto of February 19, 1861 initiated emancipation of the serfs and began a sequence of complimentary rural reforms. These measures not only granted new legal freedoms to the rural population, but they also transferred formal land rights to the peasantry in a mortgage-like process referred to as "redemption."<sup>2</sup> In comparison to other cases of rural reform in 19th-century Europe or to slave emancipation in much of the Americas, Russian peasants received substantial land rights, albeit in the form of communal allotments with associated collective liabilities. Rather than simply expropriating the peasants or the landlords, the state constructed the reforms as a series of steps that slowly transferred land rights to the peasants while compensating the nobility for their losses. Peasants repaid the state's financing in a process that was only projected to conclude in the 1910s. Moreover, there was substantial heterogeneity built into this process: the price and amount of land allowed to each community was locally differentiated; leeway was left to bargaining between peasants and landowners; and different reforms were initiated for very small estates, for peasants that resided on state or Tsar-owned land, and for serfs employed as domestics. Indeed, the fact that only a minority of peasants was formally serfs in the sense of being tied to privately owned property creates an important source of heterogeneity in how the institution of serfdom may have affected later development. Overall, these reforms led to hopes that the Russian economy would begin to modernize and catch up with the industrializing nations of Western Europe.

Almost immediately, however, contemporaries identified a growing economic crisis in the countryside and attributed this to particular features of the emancipation reforms (*Doklad*, 1873). The unique way that peasant reform occurred in Tsarist Russia generated a long-running debate over its implications for economic development. According to Alexander Gerschenkron (1965), the collective liability of households in the commune effectively tied labor to the land and restricted the flow of resources into industry. This institutional framework had antecedents under serfdom, but the strengthening of the commune in the reforms continued these restrictions into the 20th century. Soviet scholars emphasized that the reforms fixed land endowments too

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<sup>2</sup> Emancipation redefined the peasantry's legal status by allowing them to freely enter into contracts and ending the nobility's control over local justice. The General Statute and four Local Statutes governed this process. The General Emancipation Statute was issued as PSZ, Ser. 2, No. 36657. The four Local Statutes were Nos. 36662-36665 (No. 36662 pertains to the Greater Russian provinces that are the focus here). The Main Redemption Statute was issued as PSZ, Ser. 2, No. 36659. Emancipation and Redemption were part of a sequence of measures known collectively as the *Velikii reformy*, or Great Reforms, which also included changes in the judicial system, the military, local administration, and the state's financial organization (Eklof et al., 1994; and Zakharova, 2005).

low and set their “price” too high, which led directly to growing poverty and other economic difficulties in the countryside (e.g. Khromov, 1967).

More recently, some scholars have begun to question whether the reforms had much of an impact at all. Hoch (2004), Gatrell (1994), Mironov (1999), and others argue that the reforms had minimal effect, either because the institutional constraints of the commune were not enforced, or because the land settlements did not significantly change the amount or the “price” of peasant land-holdings. According to this interpretation, industrial development after 1861 built upon pre-Emancipation conditions in the form of seasonal migration, relationships between factory and proto-industrial production, and the rural location of manufacturing establishments. Given these different stories, it is remarkable that relatively little empirical work has been done on precisely what serfdom and emancipation meant for long-run economic development in Russia.

In this paper, I explore several channels through which the emancipation and accompanying land reforms may have generated long-run differences between formerly serf and non-serf villages. The reforms of the 1860s affected all members of the peasant *soslovie*, or social class, and not just those who were obligated to the nobility as serfs. According to the 10th tax census of 1857-58, approximately 38-42% of peasant male souls (*dushi* – the primary tax unit) were serfs, while around 53% resided on state land and were administered by the Ministry of State Domains (Kabuzan, 1971, p. 176).<sup>3</sup> In contrast to the former serfs, the 1866 reform of the state peasants endowed them with essentially the same property rights as they held before 1861 at a lower cost. Although they also resided in communal villages, several studies have argued that even before 1861, state peasant households had more secure individual property rights and were able to allocate their labor with less outside interference (Crisp, 1959; Deal, 1978; and Ivanov, 1945). Thus, the experience of these peasants offers a potential baseline upon which the long-run economic development of the former serf villages may be gauged.

After briefly outlining the structure of emancipation and later land reforms, I explore how the resulting variation in endowments and the institutional backgrounds of a random sample of former serf and state peasant villages in Moscow province translated into longer-term differences

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<sup>3</sup> The Tsar held the remaining 5% as “court” (*udel'nye*) peasants. Their reform experience fell somewhere between that of the former serfs and the former state peasants. The breakdown between types of peasants did vary substantially by province and district: only 35.6% of peasant males in Moscow province resided in state villages in 1858 (Kabuzan, 1971, 167-168). See the discussion below.

in factor usage and labor market outcomes. I observe these villages twice: once in 1876-77 and again in 1899. The period of time covered by the data prevents an explicit test of how the land settlements affected the labor decisions of village members, but I focus on whether the level of involvement off-the-farm activity varied systematically with factor endowments, obligation levels, or institutional differences.<sup>4</sup> Cross-tabulations show that former serf communities faced persistently higher tax and land obligations, worked less land, and had less productive agriculture than did former state peasant villages. However, the two groups showed only small differences in the prevalence of non-agricultural activity – a surprising findings given the large endowment differences. I then analyze the determinants of changes in off-farm work between 1876 and 1899. The results indicate that members of former serf communities were less inclined to shift away from working in the village in response to high obligation levels, improved market access, or population growth. Former serfs were slightly more likely to respond to these factors by moving into local non-farm employment, but there are signs of some residual restrictions in accessing opportunities outside of the village, especially for women. These findings are consistent with the persistence of some remnants of serfdom well after 1861, but the small differences I identify suggest that the direct legacy of serfdom for labor mobility was limited by 1900.

## 1 A Brief Account of Serf Emancipation and Redemption

The Emancipation Statutes – the Main statutes and subsequent legislation – called for the formulation of *ustavnye gramoty*, or regulatory charters, between the former serf communities and their previous landlords. These documents described the population of the community involved, the seigniorial obligations, and precisely which and how much land the peasants had previously worked or had access to. These charters were to be completed by 1863, with hundreds of newly named *mirovye posredniki* (peace mediators) aiding in their writing and ratification. Based on rules laid out in Local Statutes, the charters translated the previous rights and obligations of the serfs into a new collective land endowment and set of labor duties or cash payments. The number of obligated souls (*dushi* – a tax unit roughly equivalent to one working-

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<sup>4</sup> This takes advantage of two types of quasi-treatments. One is the variation in land endowments and cash obligations that derived from pre-1861 differences across villages. The second “treatment” is the different experiences of former serfs and state peasants wrought by the reform settlements.

age male) was set on the basis of the tax census of 1857-58.<sup>5</sup> If the amount of land per soul (a soul “allotment,” or *nadel*) exceeded a local maximum norm defined in the Local Statute, the excess could be “cut-off” and retained by the landlord. If soul allotments fell below one-third of this maximum norm, land was to be added to the new endowment.<sup>6</sup> At a minimum, landlords also had the right to keep at least one-third of their arable land, and until 1870 they could reduce peasant allotments to one-third of the maximum norm at will.

These rules pertained only to the arable land on the serf estate. Distinct conditions held for garden plots within the village and for other types of land. Significantly, the former serf-owner also retained all rights to forests and meadows. These were vital inputs into livestock production. Gaining access to these resources after the charters were drawn up often required additional communal payments or labor service on the landlord’s fields (e.g. Hourwich, 1892). Even in the case of arable land, the landlords had the right to pick and choose the land they retained as long as the amount available to the peasants followed the statutes.

By the end of 1864, almost all of the regulatory charters were signed by both parties and communities entered into “temporary obligations.” During this stage, the households assigned to a commune were collectively liable for the revised cash or labor obligations outlined by the charters. The local maximum allotment norm corresponded to either an amount of labor (in days per year) or a fixed payment.<sup>7</sup> Households assigned to the commune could only exit with the unanimous approval of the rest of the members. Those wishing to leave had to give up all rights to a share of the commune’s land, and the commune had to agree to take up their outstanding debts and shares of obligations.

Temporary obligations were intended to last until the financial arrangements were made to legally transfer the land to the peasant commune. This involved the formulation of a *vykupnaia sdelka*, or a redemption deal, where the state agreed to finance the purchase of the land from the former serf-owner. These deals, which resembled mortgage transactions, documented the boundaries and value of the land to be formally transferred. The yearly

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<sup>5</sup> There were allowances for members to opt out of the settlements at this point, but few appear to have done so. Those serfs who previously served as domestic servants, rather than in the fields, were generally excluded from the settlements. This group likely formed the core of the landless population in those villages where they resided.

<sup>6</sup> For example, the 13 districts of Moscow province were split into three regions with maximum allotments defined as 3, 3.25, or 3.5 *desiatiny* per soul (1 *desiatina* = 2.7 acres). The 1/3 rule differed slightly in peripheral areas.

<sup>7</sup> For example, in Moscow province, obligations were capped at 40 days of labor or 10 rubles per soul. It was possible for villages to accept so-called “gift allotments” (*darstvennye nadely*) of one quarter of the maximum norm, free of any obligations. There were very few of these villages in Moscow province, but they were significant elsewhere (Burdina, 1996).

payments (or the monetary equivalent of any labor services) to former serf-owners under temporary obligations were capitalized at a 6% interest rate to establish the aggregate redemption value of each land allotment to be transferred.<sup>8</sup> According to the Redemption Statutes, deals could be initiated through mutual agreement between the community and the former serf-owner (requiring a 2/3 vote in the communal assembly) or, more commonly, at the demand of the former seignior.<sup>9</sup> The process of formulating these redemption deals was drawn out. A substantial number of communities were still engaged in temporary obligations in 1880.<sup>10</sup> Regardless of whether deals were mutually agreed upon or not, the newly reconstituted State Bank financed the purchase of land through 49-year loans made to the communes. The conditions of these loans depended on whether or not the deal was mutual, and on the amount of existing debt owed by the estate (Gerschenkron, 1965; and Zaionchkovskii, 1960).<sup>11</sup>

A key feature of the redemption program was that the commune was collectively responsible for making payments on the outstanding redemption debt. To enforce household contributions under this joint liability, the communal assembly was granted legal authority over the immovable property and labor allocation decisions of those in arrears. The statutes stated that renewals of passports for work outside the village were only possible if arrears were paid off. If a commune failed to make one of the twice-yearly redemption payments, local officials could sell non-essential assets or punish communal officers. After a community entered into redemption, households could only legally alienate their share of communal land by paying off their portion of the loan in its entirety. These legal restrictions lasted into the 20th century and have led many historians – most prominently Alexander Gerschenkron – to see the emancipation and

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<sup>8</sup> This was the case for allotments set at the maximum norm from the Local Emancipation Statutes. For allotments smaller than the maximum, the outstanding redemption value fell less than proportionally, so that the first *desiatina* of allotment per soul corresponded to one half of the yearly payment, the second to a third, and so on.

<sup>9</sup> Mutual agreements were relatively infrequent in the region around Moscow province. By 1883, less than 14% of redemption deals in the province were entered into in this way. They were prominent in more agricultural areas because landlords often received supplementary labor as part of these settlements (Zaionchkovskii, 1958, especially p. 363). A few deals were also initiated on the insistence of the credit institution to which the estate was indebted.

<sup>10</sup> By 1876, over 16% of the communities in Moscow province with regulatory charters had not completed a redemption deal with their former lords (*Otmena*, 1950, p. 286; and Zaionchkovskii, 1958, p. 363).

<sup>11</sup> If the landlord chose to force redemption, the state would only finance 80% of the land's redemption value (75% if the redemption allotment was smaller than stated on the original regulatory charters). Existing estate debt was subtracted from this percentage and from the remaining 20%. This latter portion of the redemption value was to be forgiven entirely if the deal was carried out against the peasants' wishes. The financed portions of the redemption value was paid to the former serf-owners in 5% State Bank notes and "redemption certificates," which were non-circulating securities intended for eventual conversion to bank notes. Communities paid their liabilities to the State Bank in the form of yearly redemption payments equal to 6% of the total loan. This included the 5% interest payments, 0.5% for a reserve fund, and 0.5% on the outstanding capital. There were numerous variations in these formulations, depending on the exact nature of the land being redeemed and whether the settlement was mutual.

redemption reforms as re-imposing many of the same constraints on mobility as existed under serfdom, thereby generating a “considerable obstacle” for economic growth that lasted until the Stolypin reforms of the 1900s (1962, p. 121).

A central element of Gerschenkron’s argument is that assigning households to communes and to collective responsibility for taxes, land payments, and other obligations reduced the mobility of labor out of the relatively backward agricultural sector.<sup>12</sup> Since communal members were jointly liable for external obligations, it was in the interest of those with shares of the aggregate burden to limit household exits. The reforms allocated the communal authorities control over the issuance of documents to work outside the village, the property of households in arrears, and the allocation of land itself. Communal authorities could call on police or local officials to return wayward migrants or punish the members that failed to contribute their share (see Nafziger, 2010). According to Gerschenkron (1965), since households were forced to retain ties to the commune and its property endowment, this effectively tied labor to the land. This lowered the supply of labor into industry, forced manufacturing to be overly capital-intensive, and slowed industrial growth.

While Gerschenkron emphasized the negative implications of collective property rights and obligations, Soviet and other scholars saw the first-order effects of the reforms for later development as stemming from a worsening of peasant endowments. As a result of the reforms, land “cut-offs” (*otrezki*) from peasant holdings often reached significant levels. The former serfs of Simbirsk province lost over 30% of the land they previously utilized (Kanatov, 1964). In Moscow province, they lost 14.2% of their land (Zaionchkovskii, 1958, p. 182). This change in endowments often forced the former serfs into rental contracts, whereby communes and households rented land from their former landlords for cash payments (or labor services) that typically exceeded the agricultural value of the property (Anfimov, 1980; and Filippova, 1959, p. 378). Moreover, Soviet scholars argued that the loss in allotment land was matched by a rise in its “price” under temporary obligation or redemption. Considering data from 9 of the 13 districts of Moscow province, Litvak found that average payments per soul actually decreased from 9.36 to 8.44 rubles. However, the average per *desiatina* increased by 8.3%.<sup>13</sup>

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<sup>12</sup> Gerschenkron also notes that collective property rights and land reallocations slowed productivity growth in agriculture.

<sup>13</sup> These numbers are taken from Zaionchkovskii’s (1958, pp. 182-191) summary of Boris Litvak’s dissertation research, which was based on the regulatory charters currently archived in the Central Historical Archive of

Many scholars – both Soviet and Western – have also emphasized that serf obligation levels were set relatively high to begin with. Before emancipation, seigniorial obligations were not exclusively based on the productivity of the land but were extracted from the total income of serf labor in both agricultural and non-agricultural activities. As a result, post-1861 payments in provinces such as Moscow, where seasonal non-agricultural employment was prevalent before Emancipation, greatly exceeded the agricultural (rental) value of the land (Hourwich, 1891; and Ianson, 1881).<sup>14</sup> Furthermore, Soviet scholars specifically argued that these cash demands caused previously autarkic agricultural households to look off the farm for income to pay their obligations.<sup>15</sup>

However, recent research by Sergei Kashchenko and his colleagues on regulatory charters from the northwestern provinces of Novgorod, Pskov, and Petersburg has somewhat refined the earlier Soviet findings (Degtiarev et al., 1989; and Kashchenko, 1996 and 2002). They document the entire distributions of land and obligations (for formerly quit-rent estates), both before and after the formulation of the land charters. Their research establishes that the two distributions narrowed around the norms prescribed in the Emancipation Statutes, with little change in the median size of land holdings. Hoch (2004) considers this research and asserts that the equalization of allotments benefited the rural economy by increasing the size and security of endowments for households previously undersupplied with land. He also argues that the prices peasants paid for these allotments were actually quite close to the fair market prices for the land. Hoch goes on to conclude that the settlements were not as exploitative as Soviet scholars thought, nor did they introduce new prohibitive institutional restrictions on labor mobility and economic development as Gerschenkron argued (*ibid.*, p. 274).<sup>16</sup>

However, this recent scholarship focuses less on the final redemption deals than on the intermediate step of the emancipation charters and temporary obligations. Moreover, it does not really confront the possibility that the regime of collective property rights and obligations gained

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Moscow. They relate to the 70% of the serf estates in Moscow province that utilized quit-rents rather than labor service.

<sup>14</sup> Although Domar himself pointed out numerous problems with these attempts to value land, but he still asserted that peasants probably were overcharged for the property they received (1989, p. 437).

<sup>15</sup> “The emancipation reform...strengthened outwork and forced land rentals” (Filippova, 1959, p. 390). Zakharova argues that the high obligation levels installed in the land settlements “hindered the development of the peasant economy” (2005, pp. 159-160).

<sup>16</sup> Similarly, Gatrell (1994) and Mironov (1985 and 1996) assert that the statutes really just continued old limitations on mobility and development under a new institutional guise. For example, communal powers over the issuance of work passports continued the legal restrictions on peasant movement that existed under serfdom.

official state sanction and strength after 1861. The price/endowment effect of emancipation and redemption for former serfs was accompanied by numerous other changes. Therefore, to help identify whether the institution of serfdom or its reform mattered for long-run development in Russia, I identify a comparison group – the state peasants – who experienced a different institutional regime and reform process.

## 2 What about the Non-Seigniorial Peasants?

Peasants residing on privately owned land were not the only ones affected by the reforms of the 1860s. Serf emancipation was followed by similar acts for the former court (*udel'nye*) and state peasants.<sup>17</sup> Under an 1866 measure, communal land allotments of the state peasants were described in “ownership notes” (*vladennye zapiski*), which were compiled in a similar manner to the regulatory charters but based on cadasters of state property from the 1840s and 1850s, rather than any mediated bargaining process.<sup>18</sup> These settlements typically granted state peasant communes all the land they currently held.<sup>19</sup> In return for this property, communities were made collectively liable for quit-rent payments (*obrochnye podati*) at the level that they were already paying (PSZ, Ser. 2, No. 43888). Initially, these endowments did not entail full ownership rights, as the property was only intended for the “perpetual use” of the communities (Zaionchkovskii, 1960, p. 274). However, after legislation in 1886, these payments were converted into redemption obligations, and the former state peasant communities gained the same type of property rights that the former serfs held over their allotment land (PSZ, Ser. 3, No. 3807).

Overall, the land and cash obligations received by the former state peasants have commonly been thought to be virtually identical to what they previously held. Furthermore,

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<sup>17</sup> The court peasant reform was legislated in PSZ (Ser. 2, No. 39792), while the state peasant statutes were Nos. 43888 and 44590. I discuss only the state peasants here. The court peasant reform followed a middle path between those experienced by the former serfs and state peasants. Immediately after serf emancipation, the administration of the state peasants was integrated with the new system of local government based on the *sel'skie obshchestva*, which was the official form of the peasant commune that received land rights under the redemption process for former serfs (PSZ, Ser. 2, No. 42899).

<sup>18</sup> By the end of 1868 all the state peasant villages in Moscow province received ownership notes (Zaionchkovskii, 1960, p. 278). The mandated transfer of small serf estates (less than 20 souls) from private ownership to state stewardship in the 1860s and 1870s complicated the state peasant reform. Moreover, the ownership notes were supposed to be presented to communal assemblies so that any outstanding complaints could be registered.

<sup>19</sup> An exception was any forested land, which reverted to state control. If the borders of their community's land endowment were not well documented – often the case in border areas – state peasants were to receive no more than 15 *desiatina* per male soul (8 in more populated areas).

reforms enacted by P.D. Kiselev (the Minister of State Domains) in the 1840s had already formally established the communal basis for the land rights and collective obligations of state peasant villages (Adams, 1985; and Ivanov, 1945). As a result, the land settlements may have had little impact on both the institutional structure of the state peasant villages, or the land endowments and obligation levels they faced.

However, limited evidence on the ownership notes and redemption deals does suggest that the state peasants experienced some changes in their land endowments during their reform process. State peasants in Moscow province lost some arable land and access rights to a substantial amount of forested area (Druzhinin, 1978, p. 108). In Simbirsk, state peasants lost 14.8% of their land, although this was less than half of the percentage lost by the former serfs (Kanatov, 1964). Even with these losses, the relationship of land to obligations was likely more favorable than that faced by the former serfs. Land statistics collected by the Central Statistical Agency in 1877-78 show that on average, the former state peasants continued to hold substantially larger holdings than did the former serfs (Ershov, 1886). Moreover, it appears that the total obligations of the state peasant were substantially lower than the payments made by the former serfs and were very close to what they paid before the reforms (Ianson, 1881; and Ivanov, 1945, pp. 112-121).<sup>20</sup>

In provinces such as Moscow, the two types of peasant communities often lived alongside each other. The agricultural techniques of the serf and state peasants were remarkably similar, despite some efforts by the Ministry of State Domains to improve the techniques of the state peasants before 1861 (Deal, 1981; and Ivanov, 1945, p. 128). This suggests that the two groups were similar in many ways, but economic conditions of state peasant villages did differ from those of the serfs before the reforms.<sup>21</sup> According to Mironov, serfs had 6-7% higher output per acre than state peasants in the 1850s (1996, p. 324). Deal (1981, p. 111) compares a random sample of serf estates and state peasant villages in Kharkov province and finds that serfs had higher per capita output on their allotment land in the 1850s. These numbers reflect an important

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<sup>20</sup> Similarly, Hourwich notes that for Riazan province, just to the south of Moscow, the effective taxation rate from redemption and other payments was higher for former serfs than for state peasants (1892, pp. 54-55). Deal (1981) finds similar differences between state peasants and serfs in pre-reform Khar'kov province.

<sup>21</sup> The origins of the state peasantry varied across the Empire. In Moscow province, the former state peasants were primarily descendants of serfs who passed to state stewardship when Catherine the Great expropriated church lands in 1764 (Kabuzan, 1988, p. 76). In southern provinces, many state peasants were initially independent soldier-farmers. In more peripheral areas, the state peasants simply resided on land that was never allocated to state servitors.

pre-reform difference between serfs and state peasants: serfs were relatively specialized in agriculture and allocated more labor to grain cultivation, resulting in higher output per acre.

The relative diversification of the state peasant economy was at least partially due to more liberal property rights and policies regarding labor mobility, before and after 1861. State peasants were granted the possibility of owning land in their own name far earlier than the seigniorial peasants (1801 versus 1848). They could enter contracts, own and inherit land, and freely engage in non-agricultural work without the approval of seigniorial officials (Blum, 1961, pp. 485-488).<sup>22</sup> By the 1850s, over 90% of state peasant males in Moscow province were involved in some type of non-agricultural activity (Ivanov, 1945, p. 103). This was higher than the percentage of serf males, although there is less quantitative evidence on the pre-1861 allocation of labor by seigniorial peasants.<sup>23</sup> Crisp notes that, “The better opportunities for earning and the relatively low rents of the state peasants gave them greater possibilities of accumulating capital” (1976, p. 93). According to Moon (2002, p. 355), former state peasants remained more geographically mobile in the period after 1861, in part, because their greater wealth allowed them to take on the risks associated with volatile non-agricultural opportunities. He offers little empirical support to prove this hypothesis over an alternative one, where former serfs were more readily drawn into off-farm work due to the costly settlements they received.

After 1866, state peasants apparently retained most of the land they previously cultivated at a relatively low payment level. Serfs lost more land and remained responsible for larger obligations. Contemporaries and modern scholars argue that the economic and institutional conditions of the state peasants were substantially better before the reforms, and these translated into better outcomes afterwards.<sup>24</sup> Some of the differences between the two types of villages – endowments and obligation levels – are measureable, while others – the amount of communal restrictions – are unobservable. Moreover, Gerschenkron and others go on to argue that the two types of peasants really faced identical institutional conditions when it came to land rights and

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<sup>22</sup> The granting of migration passports by the Ministry of State Domains was relatively standardized, and the number increased substantially before 1861 in Moscow province (Ivanov, 1945, p. 108).

<sup>23</sup> See Crisp (1976, p. 92). Ivanov (1945) provides qualitative evidence on this point for Moscow province. According to an 1851 newspaper article commenting on Zvenigorod and Dmitrov districts, “grain cultivation is primarily practiced by serfs...[state peasants] primarily live and work as hired labor in factories in cities or have some kind of craft production in the home” (p. 104).

<sup>24</sup> The governor of Perm province in the 1830s, M.M. Speranskii, noted that every serf wished to become a state peasant (cited in Crisp, 1976, p. 76).

collective obligations at least after 1866.<sup>25</sup> Statutes in 1886 and 1893 reiterated state and communal control over inheritance practices, land allocation, and the possibility of household exit from the burdens of redemption for both state peasants and former serfs.<sup>26</sup> Reforms in the 1880s and 1890s began to reduce former serf redemption payments, bringing them more in line with those of state peasants by 1900.<sup>27</sup> In this way, obligations and the rural institutional framework initiated in the 1860s may have converged over time.

Soviet scholars did not test their arguments regarding the economic effects of the serf reforms. Rather, they juxtaposed the immediate changes of the land settlements alongside various measures of landlessness, poverty, migration, and non-farm work. Early Western writers emphasized that the reforms reinforced communal restrictions on labor mobility. Both groups of scholars considered the reforms to have dramatically and negatively altered the path of Russian economic development. However, they took opposing sides on whether the reforms restricted or encouraged labor mobility.<sup>28</sup> Recent research tends to view the reforms in a more positive light, emphasizing that post-1861 growth was relatively high and that the land settlement process had little effect on the rural economy. Implicit in the work of these scholars is the notion that the reforms had little additional effect on the mobility of labor out of agriculture.

To distinguish between these theories and better understand the long run implications of serfdom and emancipation, I compare former state peasant and serf villages in terms of the

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<sup>25</sup> In Gerschenkron's interpretation, communal restrictions on peasant mobility only eased after 1900. Collective responsibility for taxes and land payments was formally ended in 1903. Redemption payment arrears were forgiven after 1905. Administrative and financial measures were passed that made it easier for households to consolidate their land and exit the commune. These Stolypin reforms were intended to improve rural conditions by abrogating many aspects of the institutional regime set up in the 1860s. However, the commune survived the Bolshevik Revolution and grew in relevance with the collective seizures of land from the former nobility. Only the establishment of collective farms in the late 1920s and 1930s formally ended the institution of the land commune, although these new units did retain elements of the old regime (Allen, 2003; and Male, 1971).

<sup>26</sup> See PSZ, 3rd Ser., Nos. 5578, 9754, and 10151. The latter legislation made an individual household's redemption of their portion of the outstanding loan subject to the approval of a two-thirds majority of the communal assembly. It also forbade any sales of allotment land to non-peasants.

<sup>27</sup> In reaction to the slow transition of former serf villages to redemption, and to the perception that tax and land payment arrears were increasing, legislation in 1881 lowered payment levels and made redemption mandatory (PSZ, 3rd Ser., Nos. 577 and 585). The reduction in payments was substantial: one ruble from every soul allotment. This was approximately 13% of the per-year obligations in the central provinces. This was calculated from village-level data on reductions made in Petersburg province (RGIA: 577.50.1071.2). On the lowering of payments, see Zaionchkovskii (1960, p. 318). All former serf-owners that were forced to enter redemption at this time received 88% of the property's valuation.

<sup>28</sup> There was some overlap between these two perspectives. For example, the Soviet scholar Ryndziunskii (1983, pp. 99-100) emphasized the restrictive role of the commune when it came to the issuance of passports for migration outside the village. Studies that explicitly focus on the existence of an "agrarian crisis" tend to discuss the period 1890-1900, while ignoring earlier decades (e.g. Rogalina, 2004).

changes in non-agricultural activity that they experienced in the post-reform period. By focusing on changes over time, I am able to difference away fixed, unobservable determinants of off-farm activity that may pollute cross-sectional comparisons. This is not a true “difference-in-differences,” as I compare changes between the two types of villages where the “treatment” – serf or state peasant – was non-randomly assigned.<sup>29</sup> Moreover, little information is available from before 1861, and so the analysis is restricted to changes in off-farm involvement well after 1861. I cannot tell when or exactly how differences between former serf and state peasant villages might have arisen or disappeared. Despite these difficulties, evidence of any differential labor market flexibility does shed some light on which story about the post-reform rural economy contains more truth: Gerschenkron’s argument about communal restrictions (especially in former serf villages) or the Soviet view that the settlements received by the former serfs predisposed them to work more off the land than did those granted to the former state peasants.

### 3 Comparing State Peasant and Serf Villages: A Case Study from Moscow Province

As noted above, there are a number of reasons to think that formerly serf villages may have seen worse outcomes than formerly state peasant villages along a number of different dimensions, and that this gap may have persisted until the abrogation of redemption debt and collective responsibility in the early 1900s. In particular, higher obligation levels for worse land constituted worse endowments, and the constraints of communal property and obligations may have translated these endowments into efficiency losses and sub-optimal labor decisions. Little empirical work has been done to investigate whether these possibilities actually held. Deal’s (1978) important study is limited to simple comparisons of means between different types of villages in Riazan province, but it is not clear that his sample is representative and his focus is on the pre-1861 period. In contrast, I constructed a representative sample of villages from Moscow province and pulled together data on a variety of characteristics from three points in time: 1858, the late 1870s, and 1899. I use these data to directly examine whether formerly serf villages did were different, and if so, did these differences persist.

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<sup>29</sup> In other words, the “treatment” itself is correlated with characteristics of the group to which the treatment is assigned.

The dataset employed here was primarily constructed from the output of two different *zemstvo* research programs carried out in Moscow province between 1870 and 1900.<sup>30</sup> The first program was a village-level survey conducted in 1876-77 that documented every one of the more than 5000 rural settlements in the province. This survey was enumerated at communal assembly meetings, where members jointly answered questions about conditions in the village. The output produced during this research was published in the volumes of *Sbornik* (1877-1882). This study collected information on each communal village's population, land holdings, livestock, grain yields, obligations, and involvement in nonagricultural activities. The second research program was a survey of every village of Moscow province in 1899-1900 (*Moskovskaia*, 1903-1908). This household-level survey solicited responses from over 130000 peasant households, which were published in a summary format at the village level. The data collected in this study are similar to that from the 1876-77 survey but with more detail regarding agriculture, land, and communal practices. As a result of this effort, village-level observations can be linked across the two surveys.<sup>31</sup>

I focus on Moscow province for a variety of reasons, not the least of which was the richness of the source materials produced by the *zemstvo* and published or retained in the archives.<sup>32</sup> The substantial secondary literature on the growth of Moscow and the development of the regional economy describes an especially diverse and dynamic agrarian economy, with a large number of rural factories and significant protoindustrial employment, local labor migration, and agricultural production for industrial purposes and urban markets (Baker, 1978; Burds, 1998; and Johnson, 1979). Although Moscow resembled the other provinces in the Central Industrial Region (CIR), it may have been the case that serfdom took a somewhat different form in this especially dynamic province. The short agricultural season and poor soil productivity of Moscow province lowered agricultural returns, and the few former serf-owners that continued to farm tended to complain about their inability to hire labor away from non-farm work (see the

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<sup>30</sup> The *zemstvo* was a new institution of local self-government created across much of European Russia in 1864. As part of its responsibility to monitor taxable resources, *zemstvo* often engaged in substantial research programs, including the two drawn on here.

<sup>31</sup> I utilize the village-level totals of the 1899 survey that were published in Volume 1 of *Moskovskaia*. For the earlier survey, some of the original returns are held in township-level volumes in TsIAM: 184.10. Data from some communities may have been gathered as early as 1874, although most archived responses are dated from 1876.

<sup>32</sup> The statistical office of the Moscow *zemstvo* was one of the first and one of the most active (Johnson, 1982).

examples in Zvenigorodskii, 1902).<sup>33</sup> Labor mobility may have reduced the role of the commune, with formerly serf villages facing a relatively more flexible institutional environment as a result.

### 3a Constructing the Village Sample

Moscow province contained over 5000 communal villages at the time of the reforms and included in the *zemstvo* surveys. Both of these surveys provide information on community demographics, asset holdings, and agricultural production. Each survey gives a detailed breakdown of village allotment land and the level of involvement in non-agricultural activities (described below). Importantly, the surveys both specify whether village residents were former state peasants or serfs. But there are aspects of the two surveys that differ in important ways. The 1876 survey breaks out obligations into several different categories, including redemption and state peasant quit-rent duties, local taxes, and *zemstvo* payments. The later survey only provides the total obligations per acre of allotment land. Furthermore, the 1899 survey gives more detailed information on off-farm work and even provides data on things such as literacy and housing. Although data on all Moscow province settlements are available, I chose a sample-based approach due to the costs of data collection and because this strategy can easily be scaled up in other provinces with available *zemstvo* surveys.

The target size of the sample was set at 150 villages. I began with the 1876 survey. In the published volumes of the 1876 survey, townships are listed alphabetically by district. Each township's data is then divided into rows corresponding to individual communities. On average, the 160 townships in the province contained roughly 32 settlements. In some cases, multiple villages were combined with only one summary line of data provided. I treat this as one "village." Villages were not listed alphabetically but were sub-divided into categories depending on their status: temporarily obligated, in redemption, court peasants, state peasants, or full property owners with gift allotments or having fully redeemed their land. This necessitated a two-stage sampling approach. I first chose a 10% (N = 16) random sample of townships. Noting the number of observations in each township, I assigned probability weights to villages from each township and selected the final sample based on these.<sup>34</sup> The resulting dataset includes

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<sup>33</sup> However, the presence of Moscow did create demand for some agricultural goods such as vegetables and dairy products that peasants produced on their allotment land and carted into the city (Baker, 1978).

<sup>34</sup> I refer to the observations as "villages" or "communities" in the remainder of the paper. One of the townships (Nogatinskaia in Moscow district) turned out to be missing most of its data. The initial 16 townships supplied 442

villages randomly sampled from across the entire province and over the different peasant categories.

I then moved on to the 1899 survey and matched the 1876 sample to the corresponding observations. In approximately 25 cases, the 1876 “villages” were divided into more than one observation in the 1899 data. I consolidated these observations into single ones by either taking averages or summing, depending on the variable.<sup>35</sup> Controlling for these consolidated villages in the empirical work below had no effect on the results. Of the 151 observations on villages in the 1876 survey, this procedure matched 149 in the 1899 data. These 149 villages comprise a 2.5-3% sample of the settlements in Moscow province.<sup>36</sup>

### 3.1b Documenting Economic Change in the Moscow Province

Table 1 documents the size of the sample villages, the communal land endowments, and the size of yearly payment obligations.<sup>37</sup> This land is specifically denoted as *nadel'naia zemlia*, or allotment land, in the two surveys. This was the property that was transferred to both groups of peasants in their respective land settlements. Within the “serf” village category, I include the former seigniorial peasants and the small number of “full property owners.” This latter group had either already redeemed their land or had received their property as gift (*darstvennye*) allotments from their former seigniors. The category of “state peasants” includes the former court peasants, but the results are unchanged if this latter group is excluded. This classification was made from information in the 1876 survey.

As Table 1 indicates, the former state peasant villages were considerably larger than the former serf villages in terms of population and land holdings. However, average household size in the two types of villages was similar in both years, falling from about 7 individuals in 1876 to just over 5.5 in 1899. For both types of villages, the average size of a household’s land allotment fell between the surveys. This was due to an increase in the number of households, rather than

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observations, with each township supplying  $t_i$  of them. Originally, I chose  $t_i/442 \times 150$  (rounded up) villages from each township. After discovering data issues with Nogatinskaia, I revised this procedure to select 156 villages and dropped the five observations from this township.

<sup>35</sup> For example, I simply added the total number of allotment acres across the villages to arrive at the final value. For variables such as seed ratios and average payments per soul, I took averages across the communities, using the number of adult males in 1899 as the weights. This closely corresponded to weighting by acreage planted or other variables.

<sup>36</sup> The 1876 data were also published in summary format by type of village. A comparison between my data and these provincial averages suggests that that the sample was representative.

<sup>37</sup> The Appendix Table summarizes additional data from the sample that are not discussed in the text.

any change in the total amount of allotment land.<sup>38</sup> At the same time, Table 4 also shows that there were large differences in per person and per acre obligations between the two groups of villages. Former state peasant communities had substantially lower tax and land obligations, a finding that is consistent with previous scholarship. However, this difference shrinks over time – the overall per acre burden for former serf villages dropped from 1.44 rubles to 0.85 in 1899, while for former state peasants, the drop was only 0.86 to 0.77 rubles. Land payments comprised a larger percentage (59% versus 44%) of total payments among former serf communities in 1876. The larger relative decline in obligations among the former serfs may, in part, reflect reductions in land payments that occurred in the early 1880s.<sup>39</sup>

It is useful to check whether the information on land obligations in the 1876 survey is indicative of what peasants actually paid in their land settlements. Documentation of the redemption loans made to former serf communities in Moscow province is available in the archival materials of the Main Redemption Administration, which are held in RGIA in St. Petersburg. I draw on lists of the redemption loans made in Moscow province that were compiled upon the special lowering of payments in 1881. These lists provide the total allotment acreage and loan amount for villages that financed redemption through the state.<sup>40</sup> I was able to locate 62 former serf villages of the linked sample in these records.

To compare the samples, I took the portion of the yearly obligations attributed to redemption payments in 1876 and capitalized this amount at a 6% interest rate to arrive at the total redemption loan per allotment acre made to these villages (see Zaionchkovskii, 1958, pp. 304-305). Table 2 compares the results with the equivalent loan data provided in the archival documents. Although the correlation is not perfect, the means are quite close despite the roughness of this calculation.<sup>41</sup> Thus, the payment information in the 1876 survey does a good job of describing the “price” of land in the former serf settlements. There is little reason to think

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<sup>38</sup> A small increase in total allotment acres from 910 to 940 per community may reflect the aggregation necessary to match the two surveys. Any small amount of land purchased by communities would have been labeled separately. The demographic characteristics of former serf and state peasant communities were similar, except for the number of households. The percentage of working-age individuals, average household size, and sex-ratios were statistically indistinguishable across the two peasant groups. Females outnumbered males by 10% in both years.

<sup>39</sup> Since the 1899 data only provides information on the total payments due, the specific amount tied to the land allotments cannot be separated out from overall tax payments.

<sup>40</sup> These documents are RGIA: 577.50.1331-1333. For some villages, one settlement corresponded to more communities than just the village observed in the 1876 *zemstvo* survey. In these cases, I took the share of the settlement’s redemption loan and allotment land to be the particular village’s share of the total allotment souls.

<sup>41</sup> The correlation is not perfect because of the division of settlements when multiple villages were involved.

that the same is not true for the information on former state peasant villages. Since both groups of peasants were equally affected by changes in non-redemption tax policies over the period, the closing of the gap in obligation levels was most likely driven by the relative decline in the redemption component of total payments among former serfs.

State peasant communities had higher yields of the major food crop, rye. As Table 3 indicates, there was some catch-up between the two surveys, but agricultural output per acre remained lower in the former serf communities.<sup>42</sup> State peasant villages had a higher percentage of allotment land in hay meadows, forested areas, and other non-arable property. According to the data in Tables 1 and 3, both types of community possessed approximately 12 acres of arable land per household. The extra non-arable land held by state peasant villages presumably allowed them to support more cattle and horses per household (Table 3).<sup>43</sup> As a result, livestock inputs (manure and motive power) on cultivated land were likely higher among the former state peasants. This perhaps explains the higher grain yields in former state peasant villages.

The information in Tables 1 and 3 confirms that the former serf communities held smaller land endowments that were likely to have been less productive. At the same time, they were obligated for higher obligations per acre than the former state peasants. Of course, these conditions may have reflected pre-existing differences between serf and state peasant villages (in terms of the amount and productivity of land) that were then fixed by the land settlements. Rather than build on their tradition of relative mobility off the farm, former state peasants may have been less inclined to engage in non-agricultural occupations for precisely this reason.

Table 4 summarizes information on the allocation of labor to non-agricultural pursuits, both in and outside the village.<sup>44</sup> Specific information on occupations in the villages is unavailable, but the two surveys both indicate how many individuals worked *na otkhod*, or outside the village. These occupations were typically temporary or seasonal and required travel documents. The 1899 survey also gives the number of individuals occupied in any type of non-

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<sup>42</sup> The story is similar for spring grains, which were primarily oats. The 1876 survey supplied the average seed ratios and amount planted per allotment acre. I translated this into bushels by assuming one-third of the arable allotment was planted in rye under the prevailing three-field cropping system. The 1899 survey gave the seed ratio and the total amount of seed planted. Similar assumptions were made to arrive at the per acre yields.

<sup>43</sup> However, former serf communities were more likely to rent in these complementary types of land (Table 3). In the regressions below, I experimented with controlling for the renting of land by communities (not reported), but without specific information on the amount and type of land rented, I could not establish total land-labor ratios.

<sup>44</sup> Several of the variables in Table 4 have a small number of observations with values over 1. This likely reflects the inclusion of households or individuals in the denominators that were not “present and assigned to the commune,” as the variables were nominally defined in the survey. I do not correct these outliers here.

agricultural trade (*promysly*), regardless of the location. The 1876 survey provides the total number of households not occupied in agriculture. I derive an equivalent measure for 1899 by subtracting the number of households farming their land from the total number of present and absent households.

Former serfs were slightly more likely than state peasants to be involved in non-agricultural activities in 1876.<sup>45</sup> However, these small differences disappeared by 1899, with none of the gaps between the groups remaining statistically significant. Over 50% of males from both groups of peasants were engaged in some form of non-farm work in 1899 (0.43 or 0.44 ÷ 0.83), predominantly outside the village. This percentage includes underage males in the denominator. Females were far less likely to be involved in non-agricultural activities (only 12-15% were in 1899), but they were slightly more likely to remain in the village when they did work off the farm. There is some evidence of an increase in the number of households specializing away from agriculture: the overall percentage of landless households increased from approximately 10 to 20%. This is consistent with the Soviet view that there was a growing pool of potential recruits for non-agricultural employment. However, the increase in the share of landless households, regardless of how they are classified, does not fully account for the apparent decline in agricultural employment between the surveys.<sup>46</sup>

To summarize, former serf communities had smaller land holdings and paid a higher price for them than did the former state peasants after 1861. Previous scholarship suggests that serfs were more specialized in agriculture before 1861. However, I observe former serfs with a slightly greater level of involvement in non-agricultural activities outside the village in 1876. The disappearance of this small difference by 1899 may reflect the relative decline in the amount of the former serfs' land payments (i.e. their need for cash). But there may be other explanations for this finding. The higher share of former serfs working outside the village in 1876 may simply indicate a different mix of non-agricultural work inside and outside the village than what the former state peasants engaged in, although, there are no apparent differences in the location of

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<sup>45</sup> The gaps are significantly different from zero for males, females, and households at the 10% level (5% for females and households).

<sup>46</sup> In the Soviet / Marxist parlance, the landless households formed the basis for a rural 'proletariat.' There is some remaining uncertainty due to differences between the surveys in how the variables were defined. The 1876 definition appears to include landless households in the denominator ("total households") and explicitly labels the numerator to be the number of households not occupied in grain cultivation. In contrast, the 1899 survey offers several different possibilities for classifying landless households. Without more explicit information on the occupations of these households, I offer the two measures in Table 4 as bounds.

non-agricultural activities between the two groups by 1899. Alternatively, the small initial difference in off-farm activity may be evidence that former state peasants were simply continuing to take advantage of better agricultural endowments. The reduction of this gap may be evidence of the inability of former serfs to take advantage of non-farm opportunities in the presence of institutional rigidities (i.e. a stronger communal system of land control and obligations). The next section takes a stab at untangling these explanations by focusing on the determinants of changes in off-farm involvement between the two surveys.

### 3c Evaluating Peasant Off-Farm Labor Allocations

The former state peasants received different “treatments” in their land settlements than did the former serfs, but their initial conditions were different as well. Such pre-existing differences in endowments make it difficult to infer a causal relationship between the harsher reforms of the former serfs and their adoption of non-farm occupations. This is especially the case in the cross section, where unobservable factors such as soil quality or other characteristics of the seigniorial estates likely affected both initial conditions and the severity of the land settlements themselves. For these reasons, and given the available data, I focus on changes in the level of involvement in non-agricultural activities between 1876 and 1899. Thus, I consider the effects of changes in obligations and population (which drove the decline in mean land endowments) on the extent of off-farm work, and how these relationships differed between former serfs and state peasants. This approach helps to distinguish the role played by endowments and prices from that of any persistent institutional differences between the two types of communities.

An important empirical issue is the dearth of information on conditions before the land settlements. The evidence presented above suggests that the 1876 data do capture the essential features of the land settlements. But the land settlements themselves likely reflected pre-existing differences. Unlike Kashchenko’s work, I only observe villages for the first time 15 years after Emancipation. If any changes wrought by the reforms led to adjustments by 1876, these will not show up in my data, and any responses to the settlements that I observe will be muted.<sup>47</sup>

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<sup>47</sup> Moreover, many former serf villages, and all state peasant villages, were yet to fully enter the redemption stage by the time of the first survey. The former remained in temporary obligations, while the latter were making quit-rent payments. There has been little study of how things changed once redemption was initiated.

Given that communal land endowments remained fixed over the entire period, I focus on whether changes in obligations and the availability of labor between 1876 and 1899 were handled differently by the two groups of peasants. This tests whether involvement in nonagricultural activities was a product of population growth, demands for cash payments, or institutional differences between the two types of villages.<sup>48</sup> Understanding how community characteristics were related to off-farm activity is an important step towards evaluating different interpretations of the reforms or the long-run effects of serfdom.

To study the determinants of changes in off-farm activity, I begin with specifications of the form:

$$\Delta Y_i = b_0 + b_1 \Delta \text{Obligations}_i + b_2 \Delta \text{Population}_i + b_3 \Delta X_i + e_i \quad (1)$$

Here,  $\Delta Y_i$  indicates changes in measures of participation in non-agricultural activities by the residents of village  $i$  between the two surveys. The right-hand-side variables include changes in the level of obligations, village population, and other possible determinants of off-farm activity, specifically the proximity of the village to a railroad station. I denote  $\Delta \text{Population}$  by two variables – the percentage change in the total village population and the percentage change in the number of member households between the surveys. I divide demographic change in this way to capture two distinct effects.<sup>49</sup> Larger population changes should be positively correlated with involvement off the farm if households with fixed land allotments allocated excess labor to non-agricultural activities. At the same time, more households (holding population fixed) may have affected the prevalence of off-farm work if labor markets were imperfect or returns to scale in household production were not constant. Furthermore, the literature on the Russian peasant household in this period emphasizes that there was a sharp increase in household divisions after 1861. Younger households were more likely to spilt off from the larger, patriarchal household that had long characterized rural Russia. This was possible because of growing non-agricultural opportunities for young men and women, who no longer had to wait for a share of the commune's land to start an independent household (Moon, 1999; and Worobec, 1995). I control for this possibility by including the change in the number of households as an independent

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<sup>48</sup> To my knowledge, this is the first empirical exploration of the long-term economic differences between former serf and state peasant communities.

<sup>49</sup> Although the mean percentage population change for the 149 communities was close to zero, there was substantial variation around this (the standard deviation is 0.24). Household size declined due to an increase in the number of households rather than any decline in population.

variable. The other regressors are defined as the percentage change in their values between the two surveys.

The 1899 survey only provides information on total community obligations per acre. I use the equivalent measure from the 1876 survey to derive the percentage change in the “price” of allotments over the period. If high obligation levels were critical determinants of off-farm activity, then greater values of (percentage)  $\Delta$ Obligations – which means a smaller decline over the period – should be associated with greater increases in off-farm involvement.<sup>50</sup>

In the tables presented below, the  $X_i$  vector only includes  $\Delta$ DistanceToRRStation. This variable is intended as a proxy for any increase in the integration of a village with more distant markets. The more negative this variable, the closer a village found itself to off-farm opportunities by the end of the period. By reducing the costs of accessing non-agricultural employment, this should positively affect the decision to allocate labor off the farm. Other variables such as the change in the percentage of working-age villagers, the change in the percentage of land that was arable, and changes in the number of households were considered and found to be unrelated to off-farm activity (or suffer from serious endogeneity concerns). These results are available upon request.

I extend the basic model by interacting the explanatory variables with an indicator variable that equals one if the village was comprised of former serfs.<sup>51</sup> I also include the indicator variable on its own to allow for different trends in the two types of village. This makes it possible to run a comparison of what drove village-level differences in off-farm employment: different institutional backgrounds (the direct effect of serfdom) or differential responses to the changes in population or land “prices” (serfdom interacted with other variables). I present estimates of Equation 1 without controls for the type of the village in Table 5 and those that control for the former status of the village in Table 6.

The measures of non-agricultural work in these two tables were determined by their comparability across surveys. I focus on three: changes in the share of males working in non-agricultural occupations outside the village, the equivalent share for females, and the share of households not engaged in agriculture. This last measure is taken with landless households

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<sup>50</sup> Given the way the obligation levels were set in the land settlements, the causality might run in the other direction (more off farm income resulting in higher obligations), leading to biased estimates in the cross section. This is one of the critical reasons for considering the determinants of changes in non-agricultural activity.

<sup>51</sup> Controlling for the precise status of the communities (court, state, temporarily obligated, etc.) had little effect.

defined to be non-agricultural.<sup>52</sup> Since the 1876 data lacked information about non-farm work within the village, I only consider changes in the amount of labor allocated to non-agricultural occupations outside the village. Thus, my individual measures should be interpreted as changes in the prevalence of migrant labor among villagers. Below, I use the 1899 survey to analyze the different correlates of non-agricultural work that took place inside versus outside the village.

These three dependent variables are all defined as changes in percentage points. However, their form differs from that of the regressors, which are defined as percentage (point) changes. A cross-sectional version of Equation 1 would have the dependent variables in percentages and the right-hand-side variables as levels. Formulating a dynamic version of such a regression required slightly different transformations on each side. A one-percentage point increase in a regressor is relative to the 1876 level. An estimated coefficient then translates this increase into changes in the dependent variables that are not relative to any baseline level. It was necessary to define the dependent variables in this way since there were a substantial number of villages where men, women, or households were fully occupied in agriculture in 1876. Thus, a measure of off-farm work in percentage changes could not be constructed.<sup>53</sup> Running these regressions with different transformations of the variables led to results very similar to those presented here.<sup>54</sup>

### 3d Econometric Results

Table 5 displays the results from estimating Equation 1 for the three different outcome measures. All the models in this and the following tables control for clustering of the standard errors at the township level. Including township-level fixed effects weakened the results slightly but had little impact on the size or signs of the coefficients. Since estimating Equation 1 should already difference away unobserved heterogeneity that was fixed (and entered linearly), I do not present the fixed-effect results here to conserve space. Table 5 provides evidence that changes in

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<sup>52</sup> Similar results hold if the landless households are treated as agricultural. Regressions run with  $\Delta$ LandlessHouseholds on the left-hand side explained very little of the variation in this variable. This suggests that the actual granting of an allotment was orthogonal to many of the possible determinants of off-farm activity

<sup>53</sup> This amounts to introducing a small non-linearity into these specifications. Unfortunately, this approach also makes it difficult to interpret any constructed elasticities. Hence, I focus on the estimated coefficients and describe the net effects of direct and interaction terms.

<sup>54</sup> Specifically, I ran regressions over only those observations of villages that showed involvement in nonagricultural activities in 1876. I used percentage changes on the left-hand side and arrived at very similar results to those in Tables 5 and 6. I also ran specifications with different versions of the right-hand-side variables (using 1876 level and linear differences between the two surveys) with little effect.

non-agricultural work outside the village were associated less with a reduction in obligations than with changes in village demographics.

The persistence of higher payment requirements was unrelated to all three measures of non-farm work. However, all three dependent variables were associated with population growth. For individual males and females, an increase in population was strongly associated with more workers leaving the village to find work. An increase in population of two percent from 1876 levels (the mean amount) was associated with 0.25 (women) to 0.5 (men) percentage points more individuals who were occupied outside the village. The effect is small and not statistically significant for households. Growth in the number of households had opposite effects.

$\Delta$ Households was associated with a reduction in the shares of males and females working outside the village and an increase in the number of households not working the land, although the latter two effects were not significant. Overall, the two demographic variables were jointly significant for males and females (p-values under 0.05) but not for households. Finally, households and individuals in those villages that were closer to markets by 1899 (more negative values of  $\Delta$ DistancetoRailroad) showed no differences in the prevalence of non-agricultural work. One explanation for this could be that long-distance market integration was less important as a source of non-farm employment than local factories, artisan work, and proto-industrial production.

Table 6 shows that much of the variation in how labor was allocated outside the village and away from agriculture stems from differences between former serf and state peasant communities. The first line of Table 6 captures the different growth trends in non-agricultural activity in the two types of villages. Changes in individual employment outside the village were smaller for the former serf villages (significant for females). The first coefficient in the third model indicates that former serf households were more likely to leave agriculture over time. This effect is not significant, but one explanation for the conflicting trends of individual work outside the village and household specialization away from agriculture is that the two types of villages offered different local non-agricultural opportunities. I explore this in more detail below.

In Table 6,  $\Delta$ Households proved to have little relationship to measures of off-farm work.<sup>55</sup> For males and females, the point estimates on  $\Delta$ Population and the interaction term suggest that the former state peasants were much more likely to shift labor off the land in

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<sup>55</sup> The arguments of scholars like Worobec and Moon that an increase in the number of households was related to growing non-agricultural employment does imply joint causality for this variable. This could explain the negligible relationship found in Table 6.

response to increases in population than were former serfs.<sup>56</sup> For the share of households not working the land, members of former serf villages displayed a different response to closer market access than did former state peasants. If a railroad station was 40% closer to a former state peasant village in 1899 than in 1876 (one standard deviation of  $\Delta\text{DistanceToRRStation}$ ), then approximately 10% more households were likely to shift out of agriculture (than if the railroad was no closer). However, in former serf villages, households were less likely. Finally, former serf households were less likely to shift into non-agricultural occupations when payment demands remained high. The point estimates for males suggests that larger declines in obligations between 1876 and 1899 led to increases in the shares occupied outside the village (implying an easing of communal obligations?). However,  $\Delta\text{Obligations}$  and its interaction term were not jointly significant for either males or females.

Conditional on these variables, individuals in former serf villages were less likely to shift to work outside the village, while former serf households were more likely to give up farming their own land. Individuals in former serf communities showed less willingness to shift to non-agricultural work beyond the village in the face of population growth. Similarly, increased access to off-farm opportunities and the persistence of high obligation levels did not induce any further growth in the share of households who quit farming their allotment. By 1899, the slightly higher prevalence of non-agricultural work among former serfs that was evident in 1876 had disappeared. These results are surprising given the apparent comparative disadvantage of former serf villages in agriculture, as well as their higher cash obligations.

These results are sympathetic to interpretations of the peasant reforms that emphasize the persistence of significant institutional restrictions on labor mobility in former serf villages relative to former state peasant communities. Even though former serfs were more likely to participate in the labor market outside of their villages in 1876, something prevented these peasants from building on this over the ensuing decades. The better agricultural endowments of former state peasants may have led them to remain more involved in agriculture in 1876. But these endowment differences do not help explain the *relative* decline in off-farm activity by the former serfs.

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<sup>56</sup> A Wald test supports the joint significance of  $\Delta\text{Population}$  and its serf interaction in the first two models but not for households.

There is another possible, albeit related, explanation for these findings. Tables 5 and 6 do not take into account the possibility that there were differences in the location of possible nonagricultural activities between former serf and state peasant villages. Former serfs may have been able to turn to a relatively larger number of local opportunities when they left agriculture. Indeed, if there were institutional constraints keeping former serfs within the village, this may have reinforced conditions (cheap labor, entrepreneurial finances from former serf owners, etc.) that were conducive to locating production there as well. This would explain the apparent contradiction between the falling shares of individuals working outside the village and the increasing number of households not working their land in former serf communities. This possibility can be explored with the 1899 data.

### 3e Extension: Migration vs. Local Non-Farm Work in 1899

The first two columns of Tables 5 and 6 focus on an individual's decision to work outside the village. Such occupations included factory employment, work in the transport sector, or various urban service jobs. They required extra passport documentation that was costly to obtain and renew and involved some greater amount of separation from the household. Alternatively, households and individuals could undertake non-agricultural activities in the home (such as textile weaving or handicrafts) or in local putting-out establishments that produced intermediate goods for finishing in larger factories (Rudolph, 1985; Tugan-Baranovsky, 1907 [1972]). Indeed, if entrepreneurs took advantage of (possibly) cheaper labor in former serf communities by locating production there, these peasants may not have turned to opportunities outside of the village. Alternatively, former serf-owners may have provided relatively cheap finance for former serf businessmen or initiated and managed local production of manufactured goods themselves.

The 1899 data offer additional information on where non-agricultural work took place. This survey indicates the total number of individuals occupied in non-agricultural activities and whether these men or women worked inside or outside the village (but not their exact occupations). Women worked in non-agricultural occupations in approximately equal shares inside (10%) and outside (9%) the village, while the equivalent percentages for men were 9% and 42%. Thus, men were much more likely to migrate to find employment. I use this information to investigate the differences between participation in migratory labor and involvement in non-agricultural activities that took place in the village.

I do this by estimating cross-sectional regressions of the shares of men and women occupied in the two types of locations. (I do not estimate these regressions in terms of percentage points, but the conversion simply requires multiplying the coefficients by a factor of 100.) These specifications closely follow those of the previous section. However, with only one time period, unobservable heterogeneity may be a significant problem. The inclusion of township-level fixed effects weakens but did not fundamentally change the results (I do not report these results here to conserve space).<sup>57</sup>

As in Tables 5 and 6, I focus on the correlations between off-farm activity and factors such as total obligations per acre, population density, and proximity to markets. I chose population density rather than overall population because it more exactly captures the average land-labor ratio in the village (and avoids multi-collinearity from including separate population and land-holding measures). I define this as the total population of the village divided by the acreage of allotment land, and I also control for the portion of a community's land that was suitable for grain cultivation.<sup>58</sup> Obligation levels and distance to railroads are measured as 1899 cross-sectional versions of the variables used in Tables 5 and 6.

The 1899 survey also provides a measure of human capital in the form of the share of a village's male population that was literate. I include this variable in both male and female regressions to test whether higher returns to human capital were found off the farm, and whether these opportunities were more prominent through migration.<sup>59</sup> For the female regressions, the variable may be considered a proxy for female human capital. Other evidence suggests that female literacy was quite low, and so this variable may be capturing some wealth effects if education and literacy are normal goods. I interact all of these variables with whether the village was populated by former serfs to see if the patterns differed between the two types of communities.

Consistent with the cross-tabulations presented earlier, the results here show little evidence that, *ceteris paribus*, former serfs were more involved non-agricultural activities in 1899 than were former state peasants. This is true for both types of non-agricultural work.

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<sup>57</sup> I experimented with including the independent variables in changes since 1876, as in Tables 9 and 10. I also compared the results obtained from using the overall share of individuals employed in all non-agricultural activities, regardless of location. All of these results were broadly consistent with those presented here.

<sup>58</sup> The mean population density was 0.35 people per allotment acre. In the earlier models, the percent arable was considered constant and swept out by differencing.

<sup>59</sup> Female literacy rates were not available.

However, several factors did have a differential impact between the two types of villages and the two potential locations of non-agricultural work. An increase in the share of literate males was associated with a lower share of non-agricultural workers in the village and a higher share of migratory workers. This relationship was only significant for males and differed little between former serf and state peasants villages. This finding is consistent with better rewards for human capital outside the village, although it could simply reflect the relative ease with which educated peasants found such opportunities.

Distance to the nearest railroad does not seem to be an important factor for where or whether males worked off the land. However, it was negatively related to the share of female former serfs employed outside the village. The sign of this (interaction) effect with regards to employment within the village is positive but insignificant. These results support the possible presence of some sort of institutional constraint that kept females in former serf villages from fully accessing external employment opportunities.

The estimated coefficients on population density and its interaction with former serf status indicate that this variable was positively associated with non-agricultural work in the village for males in former state peasant communities. However, this effect was muted or even reversed for former serf villages, where population density had approximately zero net-effect on the share working in either location. The results are similar for women, although their decisions to work outside the village were only slightly related to population density.<sup>60</sup> It appears that even by 1899, former state peasants continued to be more diversified among local farm and non-farm activities. This lends support to the idea that former serfs exhibited less flexibility in their allocation of labor off the farm. However, these results are not entirely consistent with less external non-agricultural opportunities for former serfs.

Higher levels of obligations were uncorrelated with the share of males working in nonagricultural occupations in 1899, both inside and outside the village. But obligation levels had a (weak) negative association with non-agricultural work for females, and this was offset in former serf villages, especially for work inside the village (the coefficients are not jointly significant for work outside the village). This implies that higher obligations were more likely to push women into non-agricultural occupations within former serf villages.

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<sup>60</sup> These two variables are jointly significant in all but Column 3.

In combination with the findings for railroad distance and population density, these results imply that there were differences in the location of non-agricultural activity between the two types of communities. By drawing on local employment opportunities, women in former serf villages did offer their households a margin for dealing with higher obligation levels, but they were less able to access opportunities outside of the village. These findings appear consistent with the existence of factors that restrained members of former serf villages from freely engaging in non-agricultural employment outside of the village. However, the differences were fairly small, which, along with the results in Tables 5 and 6, suggests that by the end of the century the legacy of serfdom was limited when defined in terms of labor mobility.

#### 4 Conclusion

Economists have increasingly emphasized the persistent effect of historical institutions on long-run economic growth and development. Serfdom is the most well known institutional feature of Russia under the Tsars, but whether it continued to impact the Russian economy after Emancipation in 1861 has rarely been explored. This paper investigates whether the legacy of serfdom affected labor mobility in the Russian countryside after Emancipation in 1861. I detail the structure of the reforms that ended serfdom and transferred property to the former serfs and show that these measures did result in smaller land endowments, higher obligation levels, and possibly stronger communal restrictions than other groups of peasants faced in the post-Emancipation period. I identify a possible comparison group – the state peasantry – who saw little change in their endowments or institutions across the emancipation reforms. Drawing on a unique panel dataset of representative villages in Moscow province, I show how factor endowment, demographic, and institutional differences were associated with variation in the scope of mobility out of agriculture between former serf and non-serf villages after 1861. The results suggest some persistence of constraints on labor mobility among former serfs, especially among women. However, the identified effects are small, with most observable differences in off-farm labor market activity disappearing by 1900, despite persistent differences in land endowments between former serfs and state peasants.

The results from this case study suggest several directions for future research. The scalability of the sampling approach pursued in this paper means that it could be replicated in

more agricultural provinces or for larger samples to see if the identified effects are robust. In some locations, the existing *zemstvo* surveys may offer more dimensions of economic change to be explored, such as wealth, agricultural productivity, or entrepreneurial activities. In some provinces, additional information on geographic or pre-1861 conditions are available for both state peasant and serf settlements, which would allow for a richer set of controls and better identification of the post-1861 trends. Finally, the estate and district-level variation in what serfdom actually was can be documented, at least for the late 1850s. In ongoing research that complements this case study, I am investigating how such variation was correlated to a variety of outcomes in the post-1861 period, including education, political rights, and even wage levels. In considering the possible persistent consequences of serfdom, this research constitutes a significant contribution to the literature on how historical institutions impact long-run patterns of economic development.

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Table 1: Obligations and Land Allotments, 1876 and 1899 – Matched Moscow Village Sample

Variable	Village Type		Both
	State	Serf	
Households, 1876	46.38	35.56	40.52
<i>Total in the village</i>	(29.47)	(24.99)	(27.22)
Households, 1899	53.50	46.65	49.41
<i>Assigned to the village</i>	(30.62)	(34.40)	(32.99)
Total Population, 1876	316.75	251.64	277.86
	(189.38)	(187.46)	(190.31)
Total Population, 1899	307.92	263.43	281.34
	(181.35)	(210.82)	(200.04)
Allotment Acres Per Household, 1876	27.78	21.18	23.84
	(8.74)	(6.42)	(8.09)
Allotment Acres Per Household, 1899	25.16	18.38	21.11
	(12.51)	(10.60)	(11.84)
1876 Land Obligations Per 1858 Tax Revision Male	4.15	7.03	5.87
<i>In rubles; only redemption/quit-rent payments</i>	(1.11)	(2.08)	(2.25)
Total Obligations Per Allotment Acre, 1876	0.86	1.44	1.21
<i>In rubles; includes land payments and taxes</i>	(0.24)	(0.36)	(0.43)
Total Obligations Per Allotment Acre, 1899	0.77	0.85	0.82
<i>In rubles; includes land payments and taxes</i>	(0.2)	(0.3)	(0.27)
<b>Observations</b>	60	89	149

**Note:** These data are village averages for the matched sample (N = 149). This excludes two observations from 1876 that were not matched in 1899. Standard deviations are provided in parentheses.

Table 2: Comparing Actual Redemption Loans to the 1876 *Zemstvo* Data

N = 62	Mean	SD	Correlation
Amount of Redemption Loan Per Allotted Acre	14.32	2.85	
<i>Archival Information (In Rubles)</i>			
Land Obligations Per Allotment Acre	14.41	3.56	0.59 (N = 62)
<i>1876 Zemstvo Data (In Rubles)</i>			

**Note:** These data compare the original land settlement “prices” indicated in the archival records of the Main Redemption Administration to equivalent values from the 1876 *zemstvo* survey. In the former case, the total redemption loan was divided by the indicated allotment acreage. In the latter, the yearly land payments were capitalized at 6% (multiplied by  $100 \div 6$ ) and divided by the acres of allotment land.

Table 3: Agricultural Indicators, 1876 and 1899 – Matched Sample

Variable	Village Type		Both
	State	Serf	
Winter Crop (Rye) Yields (Bushels Per Acre), 1876 <i>Rye planted in almost all winter fields</i>	11.43 (4.88)	8.12 (3.67)	9.45 (4.49)
Rye Yields (Bushels Per Acre), 1899	11.21 (4.08)	9.93* (6.65)	10.45 (5.77)
Percent of Allotment Land in Arable, 1876	43 (1)	57 (17)	51 (16)
Percent of Allotment Land in Arable, 1899	41 (11)	54 (19)	49 (17)
Percent of Communities Renting Land, 1899 <i>Equals 1 if the community rented any land</i>	33 –	49 –	43 –
Percent of Households Individually Renting Land, 1899 <i>Any type of land</i>	28 (23)	29 (23)	28 (23)
Horses Per Household, 1876	1.07 (0.35)	0.91 (0.43)	0.97 (0.40)
Horses Per Household, 1899	0.85** (0.32)	0.76*** (0.43)	0.80 (0.39)
Cattle Per Household, 1876	1.19 (0.41)	0.99 (0.49)	1.07 (0.47)
Cattle Per Household, 1899	1.45 (0.62)	1.40 (0.62)	1.42 (0.62)
<b>Observations</b>	60	89	149

\* One missing observation, \*\* Missing six observations, \*\*\* Missing eight observations

**Note** These data are village averages for the matched sample (N = 149). This excludes two observations from 1876 that were not matched in 1899. Standard deviations are provided in parentheses. The livestock information includes all types of horses and cattle mentioned in the two surveys.

Table 4: Working On and Off the Farm, 1876 and 1899 – Matched Village Sample

Variable	Village Type		Both
	State	Serf	
Males in Non-Agricultural Work Outside the Village, 1876 <i>Otkhodniki [those leaving the village]</i>	0.37 (0.16)	0.42 (0.21)	0.4 (0.19)
Males in Non-Agricultural Work Outside the Village, 1899 (A) <i>Working in promysly [craft and industrial work] outside the village</i>	0.44 (0.12)	0.43 (0.12)	0.43 (0.12)
Males in (A) as Share of Males with Non-Ag. Work, 1899 <i>Of the total engaged in promysly</i>	0.83 (0.18)	0.83 (0.21)	0.83 (0.2)
Females in Non-Agricultural Work Outside the Village, 1876 <i>Otkhodniki</i>	0.08 (0.06)	0.12 (0.10)	0.10 (0.09)
Females in Non-Agricultural Work Outside the Village, 1899 (B) <i>Working in promysly outside the village</i>	0.10 (0.08)	0.08 (0.07)	0.09 (0.07)
Females in (B) as Share of Women with Non-Ag. Work, 1899 <i>Of the total engaged in promysly</i>	0.63 (0.36)	0.68 (0.38)	0.66 (0.38)
Households <b>Not</b> Engaged in Farming, 1876 <i>Of all households</i>	0.12 (0.08)	0.16 (0.14)	0.14 (0.12)
Households <b>Not</b> Engaged in Farming, 1899 <i>Of present and absent households; some landless counted as farming **</i>	0.30 (0.25)	0.31 (0.24)	0.31 (0.24)
Households <b>Not</b> Engaged in Farming, 1899 <i>Of present and absent households; landless not counted in agriculture</i>	0.41 (0.27)	0.44 (0.28)	0.43 (0.28)
<b>Observations</b>	60	89	149

\*\* This “some” is defined as the number of households with a land allotment who rented it out, assuming that they each rented to a landless household.

**Note:** These data are average *shares* of the total number of males, females, or households across the villages of the matched sample (N = 149). This excludes two observations from 1876 that were not matched in 1899. Standard deviations are provided in parentheses. For individuals, the percentages are out of all males or females, regardless of age. This was done in this way because it was impossible to distinguish the age of those with non-agricultural employment. A few observations had values exceeding one in the 1899 data. In most cases, it is apparent that the denominators were not actually just those “present and assigned,” as the variable was defined in the survey. Since I do not correct these data here, the numbers presented slightly overstate the true values.

Table 5: Determinants of Non-Agricultural Activities in Moscow Province, Basic Results

<b>Dependent Variables</b>	<b><math>\Delta</math> % Males Working Outside the Village</b>	<b><math>\Delta</math> % Females</b>	<b><math>\Delta</math> % HHs <i>Not</i> Working Land</b>
$\Delta$ Obligations Per Acre <i>% change, total payments</i>	-0.019 (0.283)	0.062 (1.439)	0.014 (0.222)
$\Delta$ Population <i>% change</i>	0.238*** (3.110)	0.129** (2.294)	-0.214 (1.659)
$\Delta$ Households <i>% change, total number</i>	-0.229*** (4.109)	-0.068 (1.710)	0.062 (0.758)
$\Delta$ Distance to Railroad <i>% change, verst': 1 <math>\approx</math> 1.07 km</i>	0.034 (0.697)	0.003 (0.104)	0.012 (0.215)
Observations	149	149	149
$R^2$	0.13	0.12	0.03

**Note:** Observations are at the village level. Coefficients should be interpreted as changes in percentages (in percentage points) implied by one-percentage point increases in the regressors relative to their 1876 levels. The independent variables are defined as changes in the percentages between the *zemstvo* surveys. The regressors are defined as percentage changes between the two surveys. All variables are discussed further in the text. Absolute t-statistics are in parentheses (\*  $p < 0.1$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ ). The regressions are OLS with clustering of the standard errors at the township level. Constant terms are suppressed.

Table 7: Non-Agricultural Activities in Moscow Province, Results by Village Type

<b>Dependent Variables</b>	<b><math>\Delta</math> % Males Working Outside the Village</b>	<b><math>\Delta</math> % Females</b>	<b><math>\Delta</math> % HHs <i>Not</i> Working Land</b>
Serf <i>Equals 1 if a former serf village</i>	-11.009 (1.629)	-6.435* (1.909)	11.842 (1.433)
Serf $\times$ $\Delta$ Obligations Per Acre	-0.245 (1.507)	0.061 (0.718)	0.547* (2.092)
Serf $\times$ $\Delta$ Population	-0.254** (2.838)	-0.157 (1.324)	-0.486 (0.825)
Serf $\times$ $\Delta$ Households	-0.100 (0.863)	0.076 (1.173)	0.207 (0.974)
Serf $\times$ $\Delta$ Distance to Railroad	0.049 (0.621)	-0.038 (1.231)	0.238*** (3.651)
$\Delta$ Obligations Per Acre	0.028 (0.419)	-0.037 (0.532)	-0.372 (1.750)
$\Delta$ Population	0.441*** (5.156)	0.248* (2.131)	0.173 (0.511)
$\Delta$ Households	-0.109 (1.037)	-0.118 (1.678)	-0.104 (0.685)
$\Delta$ Distance to Railroad	0.006 (0.130)	0.020 (0.679)	-0.116* (1.804)
Observations	149	149	149
$R^2$	0.22	0.19	0.10

**Note:** Observations are at the village level. Coefficients should be interpreted as changes in percentages (in percentage points) implied by one-percentage point increases in the regressors relative to their 1876 levels. The independent variables are defined as changes in the percentages between the *zemstvo* surveys. The regressors are defined as percentage changes between the two surveys. All variables are discussed further in the text. Absolute t-statistics are in parentheses (\*  $p < 0.1$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ ). The regressions are OLS with clustering of the standard errors at the township level. Constant terms are suppressed.

Table 7: Migration vs. Working in the Village, 1899

<b>Dependent Variables:</b>	<b>% Males in</b>		<b>% Females in</b>	
	<b><u>Non-Farm Work</u></b>		<b><u>Non-Farm Work</u></b>	
<b>Location:</b>	<b>Migration</b>	<b>Village</b>	<b>Migration</b>	<b>Village</b>
Serf	-0.132 (0.923)	0.160 (1.233)	0.064 (0.751)	-0.250 (0.804)
Total Obligations Per Acre <i>Rubles per allotment acre</i>	0.001 (0.011)	0.002 (0.026)	-0.137 (1.713)	-0.189 (1.225)
Serf × Obligations	0.014 (0.176)	0.076 (1.022)	0.108 (1.267)	0.304** (2.326)
Population Density <i>Population per allotment acre</i>	-0.384*** (3.652)	0.223* (1.970)	0.177 (1.441)	0.447* (2.076)
Serf × Population Density	0.186 (1.337)	-0.255** (2.248)	-0.225 (1.497)	-0.360* (1.976)
Distance to Railroad Station <i>Versti; 1 verst' ≈ 1.07 km</i>	0.002 (0.595)	-0.002 (0.685)	0.002 (0.815)	-0.013 (1.690)
Serf × Distance to Railroad	-0.001 (0.290)	-0.002 (0.465)	-0.005** (2.460)	0.008 (1.162)
Literacy <i>Share of male population</i>	0.091 (0.599)	-0.283* (2.070)	0.106 (1.160)	-0.545 (1.728)
Serf × Literacy	0.155 (0.738)	-0.048 (0.181)	-0.119 (0.780)	0.164 (0.485)
% of Allotment Land in Arable <i>Out of village total</i>	0.167 (1.612)	-0.008 (0.057)	-0.075 (0.975)	0.004 (0.020)
Serf × % Arable	-0.001 (0.015)	-0.194 (0.884)	0.054 (0.659)	-0.180 (0.848)
Observations	149	149	149	149
$R^2$	0.27	0.27	0.13	0.34

**Note:** The data are village-level observations from the 1899 *zemstvo* survey. The variables are similar to those in Tables 2.6 and 2.7 and are described further in the text. Absolute t-statistics are in parentheses (\*  $p < 0.1$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.001$ ). The regressions are OLS with clustering of the standard errors at the township level. Constant terms are suppressed. The dependent variables are the shares of males or females with non-agricultural occupations either in the village (Columns 2 and 4) or outside of the village (1 or 3).

## Appendix Table: Additional Information on the Village Sample

The Appendix Table provides additional summary statistics on former serf and state peasant villages from the two *zemstvo* surveys. In most dimensions, the two types of villages differed little. Demographics, literacy, housing (indicated by floor space), and communal expenditures per person were quite similar. The extension of the railway network was less prominent near former serf villages. Former state peasant communities had more trading or production establishments, but this simply reflected their larger size. The former serfs did not have access to as many sources of fuel (either wood or manure) and had to turn to markets to obtain this. These numbers reinforce a key finding of this paper – the former serfs and state peasants in Moscow province differed primarily in terms of community size and the types of land endowments and obligations they held.

Village Type:	State	Serf	Both
Household Size, 1858	7.9*	7.76**	7.82
	1.59	3.11	2.59
Household Size, 1876	7	7.05	7.03
	1.56	1.9	1.77
Household Size, 1899	5.75	5.62	5.67
	0.72	0.87	0.81
Sex Ratio, 1858	0.9*	0.94**	0.92
<i>Total Males ÷ Total Females</i>	0.14	0.16	0.15
Sex Ratio, 1876	0.91	0.93	0.92
<i>Total Males ÷ Total Females</i>	0.14	0.16	0.15
Sex Ratio, 1899	0.92	0.92	0.92
<i>Total Males ÷ Total Females</i>	0.12	0.11	0.12
Portion of the Population of Working Age, 1876	0.55	0.56	0.55
<i>Men: 18-60, Women: 16-55</i>	0.06	0.08	0.07
Portion of the Population of Working Age, 1899	0.51	0.5	0.5
<i>Men: 18-60, Women: 16-55</i>	0.05	0.05	0.05
Distance to Nearest RR Station, 1876	21.02	22.29	21.78
<i>In versti; 1 verst' ≈ 1.07 km</i>	12.99	13.34	13.17
Distance to Nearest RR Station, 1899	10.33	13.59	12.28
<i>In versti; 1 verst' ≈ 1.07 km</i>	5.8	7.63	7.11
Portion of Males Literate, 1899	0.48	0.46	0.47
<i>Out of all present males</i>	0.11	0.13	0.12
Floor Area of Main Housing Structure, 1899	51.78	49.38	50.34
<i>Square arshen; 1 arshen ≈ 28 inches</i>	5.91	11.53	9.71
Total Number of Retail and Production Establishments, 1899	2.12	1.43	1.7
	3.55	2.65	3.05
Communal Expenditures Per Household Present, 1899	3.8	3.73	3.76
<i>In rubles</i>	1.52	1.79	1.68
100 × Portion of Households Buying Fuel, 1899	40.42	66.65**	55.87
	40.45	38.14	41.06
<b>Observations</b>	60	89	149

\* Missing one observation, \*\* Missing three observations