

Land Redistributions and the Russian Peasant Commune in the Late-Imperial Period

Steven Nafziger¹

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Comments welcome and encouraged.

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Abstract

This paper investigates the motivations for, and effects of, intra-community land redistributions by Russian peasants in the 19th century. Scholars such as Alexander Gerschenkron have emphasized that such repartitions of arable land create negative investment and innovation incentives and played a major role in hampering rural development in the period after serfdom. Utilizing data from household surveys and qualitative information from archival and administrative sources, this paper first studies why peasants repartitioned their land and whether the occurrence of redistributions can be credited to a number of different theoretical and historical motivations. The qualitative evidence suggests that perceived imbalances between household labor, land resources, and outstanding state and seigniorial obligations sparked repartitions, and such imbalances were especially apparent in the wake of tax censuses and the land settlements that accompanied the end of serfdom. Econometric results from an analysis of land redistributions in Moscow province find some support for these factors. This study also finds that serfdom was powerfully interlinked with the practice of repartition. This paper then turns to the impact of repartitions on agricultural productivity. Results from an analysis of Moscow data provide no support for the claim that redistributions adversely affected yields, suggesting that such communal land practices provided similar incentives as private property.

“Perhaps Russia is the most instructive of all countries for the student of land problems.”¹

1 Introduction

Understanding the relationship between agricultural productivity and the organization of property rights in land is a major goal of development economists and economic historians. R.A Coase famously theorized that a clear delineation of property rights would lead to an efficient allocation of resources when transfers are costless, regardless of who actually held the right (1960). In this view, sharecropping, tenancy arrangements, or wage labor contracts are equally efficient. A large amount of scholarship has since introduced various information asymmetries and market frictions to account for why certain contractual forms appear at different times and in different places. An implication of many of these models is that the interaction of property ownership and contractual form may very well have serious repercussions for achieving efficient production levels.² This paper explores these issues in the historical context of a unique form land management in 19th century Russia: communally-controlled, open fields with occasional repartitions of arable plots.

This particular form of peasant property rights deserves attention because of its relevance to arguments about Russian economic “backwardness” in the half-century leading up to World War I. Contemporaries and modern scholars have argued that low Russian agricultural productivity arose from inefficiencies associated with this combination of land practices.³ These inefficiencies can be divided into three types: those of open-field system itself, those connected to aspects of the Russian system of communal governance, and those stemming from the practice of periodically repartitioning (*peredelit'sia*) the arable land amongst community members.⁴ It is the last of these possible sources of inefficiencies that is the particular subject of this paper. We attempt to address two questions: why and how did this particular variant of the open field system function, and did it carry negative implications for agricultural productivity.

In the classic case of the English open fields, peasants held their land in open fields subject to various types of community or estate managerial control but with individ-

¹Ely (1916, p. 64)

²A good summary of much of this literature is given in Hayami and Otsuka (1993).

³Examples include Robinson (1972 [1932]) and Volin (1970).

⁴This paper will utilize the words “repartition,” “redivision,” and “redistribution” interchangeably.

ualized, alienable, and perpetual control over their own plots of arable land.⁵ This allowed them to engage in small amounts of investment and soil-improvement activities that a Russian peasant, fearful of losing his plot in the next repartition, supposedly could not do. This is the key distinction noted by Alexander Gerschenkron and others who emphasize the costly implications of these periodic redistributions of arable land.⁶ In Gerschenkron's framework, this poor incentive structure limited Russian agricultural productivity, undermined rural consumption of industrial goods, and impeded the generation of surpluses for funding investment throughout the economy. Russia was backward in the 19th century because the institutional framework and practices of peasant agriculture were so backward.

This paper fills in a gap in the Russian economic history literature by delving into the details of this seemingly inefficient practice of land repartitioning as presented in contemporary and secondary accounts and statistical records.⁷ In general, most studies of Russian rural economic development in the 19th century have been carried out at the aggregate level. Recently, macroeconomic and regional evidence has cast serious doubt upon Gerschenkron's picture of a late 19th-century Russia stricken by a deepening agrarian crisis.⁸ However, relatively little attention has been focussed on the microeconomic foundations of these findings. The small literature on the mechanisms of repartitional land tenure suffers from a lack of rigor concerning the economic motivations of repartitions and has not empirically addressed the possible implications for agricultural productivity.⁹ This paper addresses these shortcomings in the literature by drawing on modern economic theories of collective resource management, risk-sharing amongst rural households, and agricultural investment under uncertain property rights to help explain why Russian peasants repartitioned. These theoretical insights, in conjunction with a large set of descriptive archival and published materials on the mechanics of repartitions, are used to motivate an econometric case study of the determinants and effects of land repartitions in

⁵Besides England, similar systems existed in many other parts of Europe. See Allen (1992, pp. 14 and 24), McCloskey (1989), Thirsk (1964), and Townsend (1993). In England, Richardson (2003, pp. 311-312) notes that there were often very active markets in strip purchases and rentals.

⁶"...the general shortcomings of the strip system were further aggravated by the temporary character of land use and the strong disincentive to improve a piece of land that sooner or later was to be transferred to another household (Gerschenkron, 1965, p. 747)."

⁷As a result, this paper answers the request for such research posed in Gregory (1992, p. 21).

⁸See especially Gregory (1994) and Wheatcroft (1991).

⁹Important works that fall into this category include Aleksandrov (1975), Kingston-Mann (1993), Kuchumova (1981), and Zyrianov (1992, Chp. 3).

Moscow province in the middle of the 19th century. This empirical work finds some connections between repartitions and demographic change, regional agricultural and economics conditions, the level of external burdens placed on the peasant community, and the institution of serfdom itself. However, little productivity effect is found from repartitions, thereby lending some micro-based support to the recent macroeconomic revisions of Gerschenkron.

The sources used in this paper all derive from the last half of the 19th century – a period impossible to study without addressing the effects of the emancipation of the serfs in 1861. Hence, this paper begins by surveying the basics of communal, open-field tenure, the nature of peasant agriculture under serfdom, and the impact of abolishment on the evolution of this institutional framework. Then we focus more narrowly on repartitions in section three. A wide range of qualitative and quantitative sources from across European Russia are used to outline the basic characteristics and variations of the practice with an eye to regional and temporal variations. Special attention is paid to information on repartitions provided in answers to a survey on peasant communal practices carried out by the Free Economic Society in the late 1870s. This section includes a comparative look at similar redistributive practices in the recent context of post-collectivization China. We then summarize and outline a general framework for understanding repartitions in light of the qualitative findings and economic theory. The fourth section then turns to the reasons for redistributions in Moscow province between 1858 to 1878. First, the choice of Moscow is motivated. We then present the data and econometric methods and test several hypotheses about repartitions drawn from the proposed framework. The penultimate section of the paper addresses the productivity implications of repartitions by appending yield information to the Moscow data set and running some simple statistical tests. The last section concludes with some general observations on the interaction between property rights and agricultural development and some thoughts on future directions for research.

2 Open Fields, Peasant Communes, and the End of Serfdom

From the 16th century until Soviet collectivization, peasants across European Russia held much of their land in open fields under the control of the village commu-

nity.¹⁰ Before moving on to discuss the specific practice of land repartitions in section three, this section outlines the evolution of the general institutional framework within which this practice took place. There are three interconnected dimensions to this historical context: the open fields, the peasant commune, and the institution of serfdom. This section does not attempt to be comprehensive, but considerable time is spent describing the context, for land repartitions closely reflected changes in the structure of rural society over a long period of time.

2.1 The Open-Field System in Russia

The open fields emerged as the dominant agricultural system in most of European Russia by the early 19th century.¹¹ In the common three-field form of the open-fields, the winter field was planted in rye or wheat, the spring in oats or millet, and the third field lay fallow. Just as with similar systems in Western Europe, plots in the Russian open fields generally took the form of long narrow strips (*polosi*) which were scattered (*vnutrinnadel'naia cherezpolositsa*) within each of the large fields of the rotation. Each household possessed a portfolio of strips in different parts of each field.¹² Following McCloskey's famous insights about scattering in English open-field communities, (summarized in McCloskey, 1989), observers of the Russian open fields often emphasize the risk-sharing motivations of the intra-field scattered strips in the absence of alternative forms of insurance (e.g. Kingston-Mann, 1991). Contemporaries were not unaware of this, as one peasant from Saratov province noted that, "At present all my land is in six places. If we have a hailstorm or a fog some grain would be destroyed, but look—you can collect it from another strip."¹³ The high vari-

¹⁰Even in 1905, 77% of peasants in European Russia held land in *obshchinnoe zemlevladienie* ("communal land ownership"), and that percentage rose after the Revolution (Atkinson, 1973, p. 774).

¹¹In northern provinces, Siberia, and other newly settled areas, the common three-field version of the open fields was passed up in favor of more extensive practices. This is discussed further in Pallot and Shaw (1990) and occurred in many of the communities of Archangel' and Vologoda described by the materials in Anfimov and Litvak (1983-1991). More advanced rotation practices and other crops such as clover or potatoes were increasingly adopted in the late 19th and early 20th centuries (Kingston-Mann, 1991; and Kovalev, 2002).

¹²A good depiction of this is provided in the appendix to Orlov (1879), which shows the lay-out of fields and strips for the village of Spas'-Temnia in Alekseevskaiia township, Serpukhovskii county, Moscow province. Due to the vagaries of settlement and land ownership under serfdom, villages often controlled land scattered amongst holdings of other communities (*vnenadel'naia cherezpolositsa*). Indeed, much of the aim and success of the Stolypin agrarian reforms of the early 20th century was not so much to enable enclosure of individual household plots as it was to consolidate the land of each village (Pallot, 1999).

¹³Quoted in Pallot (1999, p. 76).

ability of weather, low yields, and the poorly developed markets of 18th and 19th century Russia suggest that this insurance motivation for plot-scattering may have been especially important for peasants.¹⁴ Further, since households grew and shrank, divided and consolidated, repartitions may have allowed members of the commune to keep a diversified portfolio across the different types of land and microclimates. This amounts to a dynamic extension of the risk-diversification models of McCloskey (1989) and Townsend (1993), and we return to this possibility in the theoretical discussion in section three.

Poor soils and short growing seasons made manuring and the control of grazing and hay cultivation especially vital for Russian peasants.¹⁵ Considerable coordination was required for the execution and timing of various tasks to avoid certain negative externalities (grazing of standing crops, interference in neighboring strips, and the over-utilization of the community herd are some key examples).¹⁶ In England, customs underlying the operations of the open fields were enforced by some combination of informal community mechanisms and directives of the landlord enforced by the manor court (Ault, 1972, pp. 65-67). The Russian case was slightly different, with this difference hinging on the specifics of the peasants land commune both during and after serfdom.¹⁷

2.2 The Peasant Commune Under Serfdom

The Russian peasant commune has received more attention than any other aspect of Russian rural history.¹⁸ The origins and attributes of the institution are still subject

¹⁴See Pallot (1999, pp. 75-77) and Moon (1999, pp. 132-3).

¹⁵Scattering enabled this collective herding across strips to occur on the fallow field and on newly harvested fields in a way that minimized fencing and herding costs while optimizing the distribution of fertilizer (Ault, 1972, pp. 40-46; Smith, 2000; and Pallot, 1999).

¹⁶However, Shcherbina notes that in the large (more than 6000 residents) commune of Bol'she-Maiachkovskaia in the steppe province of Tavrich, individual cultivators possessed the right to grow whatever crop they preferred on their respective strips (1880, pp. 51-54). The agricultural system did not follow a strict three-field rotation as coordination for grazing purposes was less necessary due to the relative abundance of pasture and feed resources. As Shcherbina himself notes, the agricultural system of this region reflected the strong presence of separate and individualized holdings *within* the allotted holdings of the commune (p. 54).

¹⁷The Russian word for commune is *obshchina* or *mir*. The former is slightly more official, while the latter reflects more of how the peasants identified with their communities (*mir* also means "world" or "peace"). These institutions that engaged in land management decisions along with many other functions are not necessarily equivalent to a single "village" for reasons discussed below. See Grant (1973) for much more on these lexical distinctions.

¹⁸General works on the commune include Aleksandrov (1975), Bartlett (1991), Mironov (1985), and Moon (1999, Chp. 4).

to debate, but the evolving role of the commune in regulating and managing land resources in the 19th century is central to understanding why and how peasants redistributed land.¹⁹ This section looks at the land commune in the two centuries of formal serfdom.

Until the 1860s, there were two main groups of peasants: proprietary serfs and “state” peasants.²⁰ The latter group of peasants resided on lands directly possessed by the state, for which they were obligated for taxation and a type of quit-rent payment on the land.²¹ To monitor and administer these peasants (especially for taxation and military conscription purposes), the state constructed an administration system that incorporated the peasant community as a quasi-official part. As with the seigniorial obligations discussed below, taxation burdens were generally placed on the entire community under the norm of *krugovaia poruka* or collective responsibility. This collective responsibility was formalized by the tax reforms of Peter the Great from 1719-1724.²² These reforms made the number of males of working age (souls or *dushi*) the unit of taxation, and initiated the first of what was to be ten tax censuses (with the last in 1857) that counted the tax units and assigned an obligation to the entire community.

For the state peasants, the late 18th and 19th centuries saw changes in this system to ensure fulfillment of tax payments. This culminated in the reforms of P.D. Kiselev in the 1840s under the newly formed Ministry of State Domains. This pattern of reform aimed to match the total obligations (tax and a lad payment) more closely to the resources held by the community (e.g. by linking them to land quality). The state attempted to guarantee the necessary resources for each household to pay their portion of the collective obligations. Hence, state peasant settlers were supplied with extra land and were actively encouraged to organize into more collective organizations and reallocate land amongst their members to provide each with a resource base to match their portion of taxes.²³ As newly settled areas - where state peas-

¹⁹This debate is described in Dennison and Camus (2003) and Grant (1973).

²⁰There were other distinct legal and ethnic groups of peasants including “court” serfs held by the Tsars, small household settlers in border areas, the Cossacks, etc. These categories and their geographic distribution over time are discussed in Moon (1999, pp. 97-106)

²¹These were often more marginal or newly settled areas such as the North, the Urals, and Siberia where settlements often took the form of small, kin-based groups. In 1762, the state expropriated the lands of the Orthodox Church and converted millions of peasants to “state” status.

²²Collective responsibility worked through penalties and incentives placed by the state or seignior on the leadership of the community in order to extract payments or labor from each household (Moon, 1999, Chapter 6).

²³Interestingly, there was also a movement to encourage collective farming (*obshchestvennye za-*

ants predominated - became more densely settled, this collective body also took on the management duties of the emerging open field systems. Hence, many scholars have seen the state as primary mover in the formation of the repartitioning land commune among its peasants.²⁴ This system continued until 1866 when the administration for state peasants was merged into the newly created system for the former serfs.

The state peasant commune paralleled the institutional structure that emerged among the seigniorial peasantry or serfs.²⁵ Serfs were legally bound to the owner of land upon which they resided. In exchange for access to land for their own subsistence, the serfs provided either quit-rent payments (*obrok*) or labor service (*barshchina*).²⁶ The large-scale estate system (often with many separate serf villages) and landlord absenteeism that marked Russian serfdom made the governing structure of the serf community central to estate management.²⁷ In cases where seigniorial control took the form of labor service (or on very small estates with resident landlords), the communal control of obligations and resources was often directly influenced by the estate management, who made coordinated assignments to households (Hoch, 1986, Chapter 4).²⁸ On labor service estates, landlord demesne generally existed as part of the open-field structure with strips intermingled with peasant holdings. Peasants were obligated to work on landlord land with their own implements and animals. Even in these cases, the communal council (*skhod*) often remained the arbiter for land management issues.²⁹ In the case of very large estates with many villages, it was

pashki) whereby the community cultivated a piece of land as a group and utilized the proceeds to pay off obligations and supply grain stores. Some manifestations of this system persisted in some places even after serfdom (and were occasionally encouraged by the state), but in general it appears not to have been the norm. See the discussion in Figs (1989).

²⁴These processes are described in Moon (1999, pp. 107-108 and 219-220; and Pushkarev (1976, Parts II and III).

²⁵Indeed, in many areas the two groups coexisted side-by-side. Formal serfdom can be dated from the Assembly Code (*Sbornoe ulozhenie*) of 1649, which eliminated the right of peasant tenants to move between landowners. See Blum (1961) for more detail.

²⁶Legislation made seigniors responsible for taxes placed on their serfs. This was generally passed on to the commune as part of their obligations under serfdom.

²⁷This can be contrasted to the predominance of small slave owners under American slavery and the more informal nature of the slave community (Kolchin, 1987).

²⁸There was a large regional component to the type of obligations and estate structure under serfdom. In general, estates in the non black-earth provinces (including Moscow and others to the north and east) were more likely to be run on quit-rent, while those in the southern and western agricultural areas were dominated by labor service. This reflected the relative productivity (and scarcity) of labor in agriculture in contrast to other occupations, for quit-rent allowed landlords to expropriate rents from non-agricultural income (Moon, 1999, Chp. 3). Kashchenko (2002) documents that the regional differences were not complete. He provides a wealth of statistical evidence on the coexistence and mixture of quit-rent and labor service obligations in northern Petersburg province.

²⁹More aspects of communal governance and management are discussed in section three.

common to have two levels of peasant self-government with an estate-wide council made up of representatives from individual settlements' councils of member households. Estate-wide land resources and burdens (seigniorial, state, and military) were allocated from the higher level to the lower level and then parceled out to households. Inter-settlement issues were decided at the higher level while the workings of the open fields were generally carried out within the individual settlements.³⁰ The variation in estate governance and the system of obligations had persistent effects in the post-emancipation era, especially with regards to the practice of land repartitions.

Under serfdom, both types of peasants faced serious imperfections in how land and labor markets functioned. Local markets were atomized by the incredibly poor transportation system.³¹ Legal restrictions were placed on labor migration through the installation of a passport system, whereby local administrators (for state peasants) or the seignior were given control over the seasonal and yearly movement of peasants. More critical for the purposes of this paper, property rights in land for serfs and state peasants were severely circumscribed. Although property law was relatively weak and undefined, both groups of peasants held *nadel'naia* ("allotment") land only through the graces of the state or landlord. These expropriable rights were collective, as allotments were almost always made to entire communities. However, the state did engage in several reforms in the first half of the 19th century that provided mechanisms by which state peasants could acquire individualized property rights and serfs could hold land without the signatory approval of the seignior.³² Dennison (2004, Chp. 111-125) and other authors emphasize the prevalence of informal and formal buying, selling, and renting of both allotment land and fully individualized plots outside of the estate. Even if this was a common occurrence across Russia, these transactions were often costly due to either the unenforceable and possibly illegal nature of the contracts, or for obtaining the landlord, state, or community approval.³³ This system of mixed collective and individualized property rights had persistent effects and implications for the occurrences of repartitions.

³⁰This characterization of the serf estate system is drawn from Hoch (1986), Blum (1961), Robinson (1972 [1932]) and Dennison (2004).

³¹The first significant Russian railroad was completed in 1851 (Petersburg to Moscow) but construction really only took off in the late 1860s. Russian roads were famously impassable in almost all types of weather.

³²The authority on these issues is Crisp (1989). Before these reforms, serfs could engage in transactions and hold property only with the direct approval of the landlord. See the next footnote.

³³Dennison (2004, p. 123-124) notes that the serf owner on her quit-rent estate taxed land transactions. Whether her findings are generalizable to other estates, regions of Russia, or the state peasantry is uncertain.

2.3 The End of Serfdom and Evolution of the Land Commune

As famously outlined by Gerschenkron, the formulation and execution of the emancipation of the serfs and the transfer of land rights to peasant communities retained many aspects of the collective property rights system (1965).³⁴ Many authors have interpreted the reforms of the 1860s as lending legal status to the previously informal communal framework.³⁵ Shortly after the proclamation of February 19, 1861 legally freed the serfs, land settlements (*ustavnye gramoty*) were drawn-up by the landlord or peace mediator (a position created to facilitate the process). According to local norms of maximum and minimum per soul allotments, a rule allowing at least one-third of the estate to remain in landlord hands, and the pre-existing obligation levels, the settlement outlined the distribution of property between the peasants and the landlord.³⁶ In the Statutes, the landlords were given full retention rights to all non-arable resources. If, as was often the case, the peasants disapproved of the settlement, the land remained under conditions of temporary obligation (*vremmenoe-obiazatel'stvo*), whereby the peasants continued to perform labor service or quit-rent.³⁷ When approved by the peasants, pushed through against their wishes (a possibility that cost the landlords 20% of the value of the settlement), or after the state made it mandatory in the early 1880s, the process entered into the redemption stage where land was finally transferred to the peasants.³⁸

³⁴The motivations for ending serfdom are outlined in Gerschenkron's chapter.

³⁵Article 113 of the General Emancipation Statute read that the land was to be "divided or redistributed by resolution of the mir according to [tax] revision souls, *tiaglo* teams [(a labor unit generally equivalent to a husband and wife)], or some other means; and where the obligations attached to the land are met by joint responsibility" (Quoted in Eklof, 1976, p. 210).

³⁶The statutes and norms are discussed in Zaionchkovskii (1978 [1968]). The maximum allotments varied from approximately 6 to 27 acres. Hoch shows (based on work by Kashchenko) that the settlements resulted in a clustering of peasant landholdings around the maximum allotment norms (2004).

³⁷Apparently, this done to ease the transition to a functioning labor market. In the Local Statutes of the land settlement, the amount of allowable labor service under temporary obligations was related to the allotment size as outlined in the settlement. Obrok was frozen at existing levels. See Rossiiskii Gosudarstvennyi Istoricheskii Arkhiv (RGIA) [Russian State Historical Archive], fond 577, opis' 50, ed. khr. 277, listi 32-34 (an appendix table). This is a copy of the Local Statutes with other supplementary materials.

³⁸Many of the complaints filed by peasant communities in the decades following emancipation dealt with confused settlements between villages of one estate, perceived mistakes in the allocations given, or refusals to fulfill temporary obligations. For example, see Tsental'nyi Gosudarstvennyi Istoricheskii Arkhiv - Sankt Peterburg (TsGIA SPb) [Central State Historical Archive of Petersburg], fond 766, opis' 1, delo 1, listi 1-8, which gives several communal resolutions (*prigovory*) from the 1860s (from Medushinskoi township, Petergofskii county, Petersburg province) complaining about various aspects of the settlements and levels of temporary obligations. Several of these resolutions cite specific statutes of the land settlements in making their complaint and one (listi 6-6ob; March 3, 1868, village Slepina) even asks to be released from some land (and its obligations) due to deaths in the community the

In the redemption process, the State Bank paid the landlord the capitalized value of the existing level of quit-rent (converted from labor service if required) in bonds or redemption certificates. These were essentially group loans made to the peasants, who were collectively liable to repay it over a projected 49-year period.³⁹ Under the Emancipation and Redemption Statutes, land allocated to the peasants (this was formally called *nadel'naia zemlia* as earlier) could not be legally transacted with agents outside of the community. The possibility of households enclosing their holdings and opting out of the open fields was allowed but required a 2/3 majority of the communal assembly and the full payment of the redemption loan for that amount of land (Gerschenkron, 1965). State peasants received similar collective settlements after 1866. Their redemption deals were tied to their existing land allocations as the value of the loan was equal to the capitalized sum of their existing joint land holdings. However, it is generally thought that the state peasants, although they too often lost non-arable resources in the transfer of land rights, made-out considerably better than the former serfs (Druzhinin, 1978, 103-120).

In another twist to this process, the institution that received the land and the temporary or redemption obligation often did not perfectly match the existing community with the lowest level of use-rights to the land (the individual settlement with the *mirskii skhod* or communal council that managed the open fields).⁴⁰ In estates that had been essentially one village community, these two units were the same and labeled *prostye obshchiny* or simple communes.⁴¹ In areas where several such settlements were incorporated into one unit, these came to be known as territorial or composite (*sostavnye*) communes.⁴² Finally, there were settlements which held serfs

previous year.

³⁹The complicated process of redemption is outlined in Moon, 1999. Clause 190 of the Redemption Statutes, stated “This land is put at the disposal of the *obshchestvo* [rural society—see the next footnote] in order to ensure the livelihood of peasants and the punctual meeting of state, local, and village dues” (Cited in Crisp, 1989, p. 45).

⁴⁰Even further complicating things, the bottom rung of the newly formed administrative structure was officially known as the *sel'skoe obshchestvo* or rural society. These sometimes arbitrarily created units were responsible for local road maintenance, military obligations, and famine relief measures in the post-emancipation period. There were not always coterminous with the land-managing commune (Worobec, 1995, pp. 30-31).

⁴¹One such commune was the village of Skovorodka (Iabletskaia township, Luzhskii county, Petersburg province). Having entered into temporary obligations for quit-rents immediately in 1861, only in 1879 did the commune shift to redemption status. RGIA: fond 91, opis' 2, delo 782, list 1 ob. See section three for a fuller discussion of this source.

⁴²This was the general case in the northern provinces of Arkhangel' and Vologoda. For example, Liavlenskaia commune (Liavlenskaia township, Arkhangel'skii country and province) was composed of 13 state peasants villages (Anfimov and Litvak, 1984, Vol. 2, p. 3)

of multiple owners or even mixtures of serfs and state peasants. In these communities, separate land settlements often gave way to some form of collective resource management.⁴³

These redemption loans were roughly equivalent to previous quit-rent payments and were similarly collectively endowed on the peasant community. The reforms of the 1860s gave the communal authorities legal authority over the issuance of passports, allowed them more leeway in extracting redemption dues and other obligations from members (by taking property or even beating transgressors), and made them official members of the state administration. This was given some backbone by the legal initiatives of the 1860s, which formalized a system of township and county courts alongside the traditional village courts.⁴⁴ In the non black-earth region (of which Moscow Province was part), the capitalized value of the quit-rent generally included a portion that corresponded to the non-agricultural labor opportunities of the former serfs. This meant that the yearly redemption payments often exceeded the income that could be generated from the land. Hence, communal officials used these “tools” to keep households linked to a holding in the communal fields (and the associated burden) and to draw on migratory labor income (Burds, 1998). Unlike these areas of poorer agricultural productivity, in the black-earth areas south of Moscow, the income from land exceeded the burdens. This variation in the value of land relative to obligations placed on it appears to have played a key role in determining land management practices, including repartitions.

With its new legal status, there is some evidence that the commune increasing took on a role in collective credit, land, and labor agreements with outside agents.⁴⁵ For former serfs and state peasants, the loss of complementary grazing and forest resources in the land settlements often forced the commune to make a collective labor service, rental, or sharecropping deal with local and former landlords to reacquire access. From the mid-1880s onwards, the newly established Peasant Land Bank made loans to communes for the group purchase and rental of land, which reflected practices already in place with other rural banks (Robinson, 1972 [1932]). The land ob-

⁴³This was the case in the commune of Bol'she-Maiachkovskaia in the steppe province of Tavrish, where a number of different groups of peasants coexisted in one settlement (Shcherbina, 1880). See Mironov (1985) for a more detailed discussion of these categories.

⁴⁴Communal officials were subject to fines, imprisonment, and even corporal punishment for the non-fulfillment of obligations. A summary of these changes can be found in Mironov (2000, Vol. 2, Chp. 5) and Moon (1999, pp. 226-7).

⁴⁵See especially Burds (1998), Robinson (1972 [1932]), and examples in Hourwich (1898) from Riazan province.

tained through these loans was then allocated out to needy households, along with the attached portions of the loan payments. Therefore, in the post-emancipation decades there emerged a set of measures around the land commune that allowed peasants to get around imperfections and costly misallocations in the land market. Communes were apparently active in coordinating land exchanges and rentals directly with other communes, often in an effort to overcome confused boundaries from the land settlements (Bulanova, 2000, p. 176). Most prominently, the pre-1861 system of informal rental and purchase transactions among peasants continued and came to be legitimized by written communal agreements. While the official legal code prohibited the selling or renting out of allotment land, in practice, the commune not only sanctioned these practices but acted as something of a clearing-house for certifying these deals.⁴⁶ For example, the village of Lezhara (Toksovskaia township, Shlissel'burgskii county, Petersburg province) gave unanimous agreements to a long series of land deals, including a rental of community land to another village for three years at 100 rubles per year at an assembly meeting in January, 1899. Four months later, the assembly approved an internal six-year rental agreement between two members that included the transfer of redemption obligations.⁴⁷ None of these resolutions ever mention repartitions. Agreements of this type were further formalized as the township court system became increasingly involved in mediating disputes concerning such transactions, even when they involved allotment land.⁴⁸ This land "market" offers an important caveat to the view in the literature that the post-1861 environment was characterized exclusively by communal repartitions. This is important to keep in mind in thinking about the determinants and effects of plot redistributions, for the Russian version of the open fields looked a lot more like the English variant than assumed in the literature.

Over time, observers began to interpret the emancipation reforms as inadequate. They blamed them for poorly endowing the peasants with resources, reinforcing backward practices such as repartitions, and generally inducing an agricultural crisis (Grant, 1973; and Robinson, 1972 [1932]). The perception of an agricultural

⁴⁶Selina (1987) on Moscow, Alekseichenko(1981, p. 118-9) on Tver', and the authors in *Zemlevladenie* (2002) provide numerous examples of such internal and external rental agreements that were in some way mediated through the commune. A general (albeit Marxist) discussion of land rental practices at the turn of the century is provided in Anfimov (1961, Chp. 3).

⁴⁷TsGIA SPb: fond 1746, opis' 1, delo 4, listi 2-10 ob.

⁴⁸In many cases, the decisions of the township courts returned the issue to the communal councils for final resolution (See *Zemlevladenie*, 2002; especially the report by Zemtsov on pages 67-70).

crisis, culminating in the Volga famine of 1891-3, poured fuel on this growing unease about the rural sector. This culminated in sequence of reforms, including the elimination of the soul tax in 1886, the installation of powerful new rural officials (the land captains) in 1893, the elimination of collective responsibility in 1903, and the writing-off of outstanding redemption payments in 1906.⁴⁹ This last measure was part of the Stolypin reform program that aimed to shift rural Russia towards a small farmer model along the lines of the American Homestead Act. Some success of various financial, administrative, and land-grant measures in setting-up independent and consolidated farms was cut short by the onset of World War I and the Revolution in 1917 (Pallot, 1999). One of the first acts of the new Bolshevik government was the October, 1917 “Decree on Land” which gave the peasants a *chernyi peredel* (“black repartition”) or almost free-rein in taking collective action to confiscate landlord or consolidated peasant land. These seizures were often collectively organized by the commune, which was given new life until the collectivization policies of Stalin in the late 1920s (Atkinson, 1983, Chps. 1-3).

3 Land Repartitions in the Russian Open-Field Commune

In his survey article on property rights in land, Ellickson muses that, “The mir’s practice of redistributing land, instead of cash or goods, remains puzzling” (1992-3, p. 1394). According to one historian, “...land repartitions were one of the most important functions of the Russian commune, [and] this unique characteristic has had few analogs in world history” (Zyrianov, 1992, p. 39). This “uniqueness” is often noted in comparison with other open field systems, where plots remained with individual households who could freely buy, sell, and rent their property.⁵⁰ However, in our discussion above, we noted the extensive system of individual transactions of plots before, and especially after, emancipation. In addition, the rather unique institutional

⁴⁹Mironov (1985, pp. 462-3) and others have argued that these measures actually did little in undermining the communal structure of rural society. This is echoed in the statistics offered in Atkinson (1973).

⁵⁰Moreover, many historians of Russia maintain the belief that this practice was linked to a “taste” for egalitarianism among Russian peasants that was manifested in the commune: “In many villages, equality between households was [...] maintained, as it had traditionally been, by periodic redistribution of strips by the mir.” (Fitzpatrick, 1994, p. 22). Echoing this literature, Gerschenkron notes, “The pronounced egalitarian character of the Russian field commune certainly is the trait which sharply distinguishes it from the land tenure systems in western Europe” (1965, p. 745).

setting of the Russian peasant community was closely intertwined with the management of the open fields. Having described the evolution of this historical context in section two, this third section turns to the details of land repartitions. This draws on the secondary literature and contemporary qualitative descriptions of this “puzzling” practice. Following this, a similar type of collective land reallocation process in modern rural China is discussed to shed further light on some of the motivations for repartitions. Finally, this section sets forth a general framework for understanding repartitions in Russian open field communities. This incorporates a dynamic version of managing the open fields, frictions in the land and labor markets, and the burdens of externally imposed obligations and limitations on the mobility of land held by the peasant community. This set of interconnected motivations for repartitions is supplemented with insights from modern theoretical perspectives on open fields and collective land tenure systems such as the Chinese case.

3.1 Land Repartitions in Practice

Between 1858 and 1878, peasant communities in Moscow province averaged more than two “general” redistributions of their arable land (Table 6). Rather than adjustments of land holdings taking place as specific transactions between interested parties, these repartitions have traditionally been interpreted as occurring in manner that encompassed all the arable land and meadows of the community at one time.⁵¹ While not just a phenomenon of Moscow province, these practices were also not nearly so wide-spread as Gerschenkron and others considered them to be. Table 1 shows that of the communities who were held collective land rights around 1910, there was a significant number that did not actually engage in repartitions.⁵² The large variance across provinces is especially noteworthy. However, the pattern does not closely match the distinction often made between the Great Russian provinces, where communal tenure was legislated in the land settlements, and the Baltics and Western Provinces of what is now Ukraine and Byelorussia, where households retained perpetual usage of their open-field plots and redistributions supposedly did

⁵¹Hence the adjectives “general” (*obshchii*) or “fundamental” (*korennoi*) were often applied.

⁵²This table certainly provides incomplete data as the number of communes is excessively low in several provinces. The late date of this information is unfortunate. Given the mixed success of the Stolypin reforms, it is unclear whether this table under or over-represents the extent of repartitions at an earlier time.

not occur.⁵³ Open field management in these non-repartitional areas was considered to have closely resembled stereotypical Western European system.

Redivisions generally occurred in the spring before onset of the agricultural season. Typically, the practice was carried by selected members of the communal assembly in conjunction with the village *starosta* or elder. Different methods abounded, but in general, land was first divided by location and quality within each of the open fields. Depending on the size of the community, further subdivisions were sometimes undertaken. In both the pre and post-emancipation eras, repartitions were often sealed with *prigovori* (“agreements”) written by the communal clerk and commonly approved by local government or seigniorial officials.⁵⁴

Repartitions often sparked serious conflict between parties and could be quite costly to carry out.⁵⁵ Redrawing borders and enacting new distributions often took several days and required the hiring of outside surveyor work. Further, one of the hidden aspects to land repartitions had to do with the political economy of collective resource management. By definition (and as described more below), repartitions took the existing land and burden distributions and shifted resources between households, thereby creating both “winners” and “losers.” Hence, there would have been resistance to redistributions by affected groups.⁵⁶ Determining who these groups would have been depends, in part, on whether land was considered a relatively valuable asset or not. As detailed below, provinces differed in the ratio of income from land to burdens on it (both pre and post-1861). In areas where the burdens exceeded the income from the land (the quit-rent areas mentioned earlier), it was the distribution of the burden that mattered. If this was tied to a unit of land, then relatively wealthy households would prefer a more egalitarian distribution of land and poorer ones would likely wish for the status quo.⁵⁷ Where land was valuable in its own right, the situation would be reversed.⁵⁸ There was also possibility that some form of social capital or strong kinship bonds might have enabled a less costly redistribution,

⁵³This was known as household (*podvornnoe*) tenure as opposed to communal or *obshchinnoe*. These were formerly Polish and Lithuanian holdings where the granting of household property rights represented efforts by the state to undermine the rebellious landlord class (Moon, 1999).

⁵⁴Hoch (1986) argues that on the estate he studies (Petrovskoe in black-earth Tambov province), estate managers were especially active in organizing repartitions. The role of the seignior in enacting repartitions is noted in Watters (1968). A generalized view of the governing structure of the commune (which matches the contemporary descriptions) is summarized in Moon (1999, Chp. 6).

⁵⁵Dennison (2004, p. 78) notes that on the estate she studies, redivisions were quite contentious.

⁵⁶Keisler (1887) observes this.

⁵⁷This is the situation as described in Dennison (2004).

⁵⁸This more closely matches Hoch’s findings in Tambov (1986).

but is difficult to determine without more internal records of communal deliberations over the practice. Regardless of these costs, there is a considerable amount of anecdotal evidence that side-payments and compensatory rewards were passed around the commune during a repartition.⁵⁹ In an environment where there also existed a substantial amount of other informal and communally-approved land transactions, the possibility of side-payments has important implications for both the motivations of repartitions and the productivity effects. This is followed-up on in following sections.

Even in earlier periods, in regions known for the prevalence of communal repartitions, the existence and frequency of the practice varied substantially. Table 2 provides some long-run data from non-black earth Tver' province. In all of the counties, those communes that repartitioned their land more than once were in the minority. While this data are simple counts, the diversity of the practice is quite evident. Even with the period of coverage including the year following the last tax census, the year of land settlement, and the year redemption was begun, many communes never engaged in a complete repartition. Any full explanation of the practice must take this into account.⁶⁰

As evidenced by the Orlov's impressive study that is used in sections four and five, this practice drew a lot of attention from contemporary observers, who often held strong views on the origins and implications of repartitions.⁶¹ A growing interest on the effects of emancipation gave rise to a large number of qualitative descriptions of communal land management practices. Perhaps the most important of these sources was a survey of peasant communes carried out by the Imperial Free Economic Society (FES) in the years 1877-1880. This standardized survey provides a substantial amount of detail about land repartitions from a large sample of communes across European Russia.⁶² The survey was completed by correspondents of the society, which included officials at the communal, township, county and provincial levels. The re-

⁵⁹For example - RGIA: fond 91, opis' 2, delo 782, list 42.

⁶⁰It is useful to note here that this interpretation is really focussed on arable land. Much as in English open field villages, rights to meadows and hay lands were often distributed on a yearly basis. See Hourwich (1892) and Hoch (1986).

⁶¹This was an important component to the argument between "Westernizers," who saw communal tenure and Russia itself as backwards, and "Slavophiles," who argued for a uniquely Russian path of development (Grant, 1973).

⁶²In the final draft of the survey, 64 of the 155 questions were specifically on the frequency, breadth, and mechanics of land repartitions. Other parts of the responses were glanced at, but this paper does not attempt a full study of this source. The surviving responses to the questionnaire are archived in the Russian State Historical Archive (RGIA), fond 91, opis' 2. The published returns can be found in Anfimov and Litvak (1983-1991), Barykov et al (1880), and several periodicals cited in Mironov (1985, p. 439). Further information on the society and the survey is provided in Kuchumova (1978).

spondents appear to have made a serious effort to respond purely in terms of the local conditions. Phrases such as “according to the words of the peasants” or even direct quotes were applied and quantitative evidence in the form of land registers, estate records, or local research cited.⁶³ These questions referred to a broad period of time, which included events before and after 1861. In what follows, we draw heavily on this survey and the responses to it.

The FES survey and its responses have dominated the discussion of what a repartition entailed (e.g. Mironov, 1985). According to the questionnaire, land repartitions could be broken down into three categories.⁶⁴ The version that drew the most attention was the general repartition (*korennoi peredel*). This was a complete rearrangement of the land into a new layout with changes in the size and locations of the strips, with the new parcels assigned to households without consideration of prior usage. The second type noted was a reordering of existing strips among households by lot (*zhreb'evka*). The third category were partial repartitions (*pereverstka*), where only the subset of household losing and gaining strips were involved. While these categories may have been logically distinct to the contemporary writers of the survey, respondents often noted that such terms and methods were completely unknown to the peasants of their respective communities.⁶⁵ In the documentary evidence related to repartitions, the lack of detailed plot maps from before and after redivisions prohibit a definitive labeling of occurrences of repartitions. In the case of partial repartitions, the distinction between this form and individual transactions between members of the community discussed in section two remains rather unclear, especially when the latter are officially sanctioned by the commune.

The notional difference between general repartitions and repartitions by lot lay in the way the units of redivision were formulated.⁶⁶ In the case of the general repartition, the number of units could change to reflect a different number of recipients or changes in the land endowment. With repartitions by lot, the units and strips remained the same with only the distribution among households changing. Under

⁶³For example, see Barykov et al. (1880, p. 262).

⁶⁴These are distinguished in questions 30-32. The survey itself is published in Barykov et al. (1880, pp. 1-36).

⁶⁵“Repartitions by lot are completely unknown in the rural commune of Laptevsko-Popovskaia.” RGIA: fond 91, opis' 2, delo , list 37 (survey response for Laptevsko-Popovskaia commune, Kurskaia township, Iaroslav'skii county, Iaroslav' province). Some form of partial repartition was almost always mentioned in the responses, even if it occurred decades before.

⁶⁶Survey questions 27 and 33 ask about the unit of division—what was it and did it change from before or after the land settlements.

serfdom, each tax census assigned a new burden and counted out a new number of “revision souls” for each community. With this new information, communities, pressured by state and seigniorial officials, adjusted land holdings to enable each household to pay their adjusted portion of the collective burden.⁶⁷ In some cases, holdings and burdens were matched not to the official soul count of each household (based on the number of working males), but to some combination of capital and labor resources, often lumped together in husband-wife units known as *tiagla*.⁶⁸

Indirect evidence on this distinction can be found by comparing the example of Table 3 with a survey evidence from a commune in Petersburg province. Table 3 provides an undated glimpse at how the distribution and number of units changed from before to after a repartition. While houses gained and lost land units, the overall number of units rose to match the new number of male residents (known as *nalichnye dushi* or “present souls”).⁶⁹ In the example of Skovorodka village in Petersburg, a page from the survey response shows the distribution of revision souls in 1861 and 1880. Again, some households gained units (having been newly formed) and some lost, but here the number of total units remained the same.⁷⁰ Moreover, a later table documents the shift that occurred in the spring of 1880, where again the number of units remained at 78, but the distribution reflected the formation of several new households split from old ones and the deduction and addition of units in unrelated households.⁷¹

This shifting around or re-denominations of the existing set of land and obligation units was the essence of a repartition, especially after the end of serfdom. Thereafter, the number of revision souls and their distribution remained fixed at 1857 levels, while household demographics and labor resources continued to change differentially across settlements. The distortions between external obligations and land resources created by land settlements and redemption burdens emerged as causes for repartitions by either the old soul units as with the Petersburg case, or by reorganizing the strips and establishing new units. Previously, the period between tax censuses had

⁶⁷Almost all survey returns we have read mention that the communities repartitioned in the wake of tax censuses. Most scholars credit the emergence of repartitions to the tax reforms of Peter the Great (Aleksandrov, 1975).

⁶⁸Descriptions of the forms and units of repartitions are in Mironov (1985) and Moon (1999).

⁶⁹There is no mention of new households, just new souls. The numbers of units do not match the numbers of souls, either before or after (187.5 units for 209 souls before, 259 units for 276). This was likely do to some households have no land and living off other types of income.

⁷⁰RGIA: fond 91, opis' 2, delo 782, list 40

⁷¹Ibid., list 74

been approximately 15-20 years. As Kachorovskii (1906) and others have noted, once this period expired towards the end of the 1870s, there was a noticeable increase in the number of repartitions.⁷² There are several cases of responses to the FES survey that note that communities were waiting for the next tax census and currently wished and needed to redistribute the land.⁷³

Repartitions should also be interpreted in light of the inheritance practices among peasant communities.⁷⁴ In general, peasant households engaged in partible inheritance, which also had to be sanctioned by the communal assembly or council. As some of the findings in this section and section four show, it appears the period between repartitions, while at least partially due to the tax censuses, was between 10 and 20 years, which broadly matched the turnover in generations. As indicated in section four, the end of serfdom was marked by a fall in measured household size as non-agricultural work opportunities expanded. This sharp increase in the number of units bound to a commune may have played a key role in inducing some of the repartitions noted in this paper.⁷⁵

Some of these patterns can be seen in a small, rather unrepresentative, sample of returns to the FES survey in which the dates of “general” repartitions were noted.⁷⁶ Table 12 displays the provinces of the communes in the sample and dates of repartitions related to either the tenth tax census or those in later years. Glancing at Table 1, it is apparent that the repartitions undertaken by these communes occurred in three

⁷²This apparent increase in the number of repartitions in the late 1870s and 1880s fed into the growing intellectual backlash against the commune. By the end of the century, state policies shifted against communal land tenure and redivisions. In 1893, in the wake of the 1891-2 famine in the Volga region, the state attempted to mandate at least a minimum 12-year period between re-partitions and a necessary 2/3 majority of the communal assembly to carry one out (Robinson, 1972, pp. 121-122). This growing discomfort with what was increasingly seen as an anachronistic practice continued up to the Revolution.

⁷³Out the the sample described below, three communities (1 serf, 1 court (possessions of the Tsar’s family with a status similar to that of state peasants), and 1 state peasant) noted this.

⁷⁴This discussion is based on Bohac (1985), Frierson (1987), and Worobec (1995).

⁷⁵A more complete analysis of the interaction between demography and communal land practices is left for future work.

⁷⁶This is only focussed on Question 30 of the survey which asked about when the last two repartitions occurred. This informal sample was taken from the published and two archived responses to the survey. The five volumes edited by Anfimov and Litvak provide returns from the two northern provinces of Arkhangel’ and Vologoda where the vast majority of peasants lived under state administration amidst unfavorable agricultural conditions. The Barykov et al. (1880) volume provides a fuller geographic sampling of the archived returns. Responses covering more than one commune were separated into multiple observations when possible. Space concerns limited the amount of information presented in this paper. The full spreadsheet of information taken from the survey returns is currently being expanded and will be incorporated into future versions.

blocks of time. Two-thirds of the sample (60 out of the 90 observations) redivided land at the time of the tenth tax revision, and a large number also mention doing so during previous revisions.⁷⁷ Out of the 32 observations on serf communities, only 5 mention that they repartitioned at the time of the last tax census. Alternatively, while 20 serf communities mention repartitioning in either 1861 or 1862, none of the other types of communities mention these dates. 10 of the serf and 24 of the state community returns note that they redistributed land after 1863. Only one of the state peasant communities mention that they did this in response to their land settlements after 1866. Hence, the survey returns offer some evidence on the importance of the land settlements.

Out of the 35 communities that repartitioned after 1863, most returns mention that they did this because of a perception about an imbalance of resources across households due to differential demographic change. Further, a regular schedule of repartitions, varying from every three years to every ten years, was mentioned in only a few of the responses from both serf and state communes.⁷⁸ Several returns discuss a switch in units of allocation from tax revision souls to current male workers as time passed from the last tax revision. These patterns suggests that the information updates of the tax revisions and an awareness of imbalanced holdings over households by the 1870s were important factors in the repartition decision. While this sample is only suggestive, these patterns are borne out in the empirical work undertaken below.

Table 4 provides a list of reasons why state peasant communities in the Black Sea province of Taurida repartitioned. These cover almost all the justifications previously mentioned and can usefully sum-up the findings of this section. The main reason these peasants repartitioned was due to the shift to a new unit of distribution. This can be interpreted as a general concern about the *efficiency* losses of remaining under the status quo relationship between land and labor resources. This concern was also evident in the large number of repartitions in reaction to demographic changes, migration, and changes in land resources. “First Repartitions” were undertaken after the 1866 reform of state peasants. Soil conditions, mistakes and border disputes, and “mixed reasons” not only reflect concerns about efficiency, but also hint at the im-

⁷⁷Out of the 90 observations in this analysis, 42 communes were former state peasants, 32 former serfs, 5 former court peasants, and 11 were mixed. 41 of the 42 state peasant observations come from Arkhangel’ or Vologoda provinces (out of their total contribution of 59 observations), while only 3 serf observations come from these provinces. The mixed communities all come from Vologoda.

⁷⁸Compare this to the information in Table 5 on Moscow county communes.

portant role of the open field context.⁷⁹ Finally, the tax census again mattered here, although perhaps not as much as depicted in the FES returns.

3.2 Collective Land Redistributions in the Chinese Context

THIS REMAINS TO BE COMPLETED

3.3 Towards an Economics of Communal Land Repartitions

THIS REMAINS TO BE COMPLETED

This section makes an attempt to summarize the large amount of material in the previous sections and incorporate some observations from economic theory to construct a general framework for understanding repartitions.

4 Land Repartitions in Moscow Province

Among the reforms of the 1860s was the Statute on Zemstvo Institutions of January 1, 1864 authorizing the establishment of administrative bodies (*zemstvo*, plural *zemstva*) at the county and provincial levels to carry out programs for “the local economic and welfare needs of each province and district.”⁸⁰ Such efforts included public health programs, rural education, agronomic work and agricultural monitoring, credit functions, and road upkeep. In these capacities, the *zemstva* were given rights to collect taxes from the rural population. To assess the taxable resources at hand and execute their various social programs, many *zemstva* initiated statistical research programs in their constituencies (Johnson, 1982). Prominent among these programs was the one founded in Moscow province under the leadership of V. I. Orlov.⁸¹ During the late 1870s, Orlov and his colleagues carried out a survey of all the rural households of the province. As part of this research program, Orlov undertook an analysis of peasant

⁷⁹In Dergachev state peasant commune (Novouzenskii county, Samara province), the respondent to the FES survey noted that a repartition occurred in 1872 because the organization of the strips had become “confused.” RGIA: fond 91, opis 2, delo 770, listi 3-4

⁸⁰Statute 1 of *Polnoe Sobranie Zakonov Rossiiskoi Imperii*, 2nd series, vol. 39, no. 40457 (January 1, 1864) quoted in McKenzie (1982, p. 31). This decree was part of a larger set of reforms in the 1860s that attempted to construct an administrative apparatus in the countryside to replace the mixture of landlord and state controls of serfdom. The *zemstva* were meant to be representative of their respective districts, although stringent property rules for voting effectively limited the role of the peasants.

⁸¹Orlov was a key figure in the *zemstvo* statistics movement. Besides Moscow, he founded programs in Kursk, Voronezh, Samara, and Tambov provinces. According to Kingston-Mann (1991, p. 28), he died of overwork at the age of 37.

landholding practices (1879). He collected data on the prevalence and frequency of repartitions between 1858 and 1878.⁸² This section draws on the qualitative evidence on repartitions and insights from economic theory to explore the determinants of the practice in Moscow province.

Moscow province may not be the first or most obvious choice for studying peasant property rights and land management practices, especially in the latter half of the 19th-century. The province is in the heart of the Central Industrial region where rural and urban industrial production for domestic and international markets was undergoing strong growth (Bradley, 1985).⁸³ According to the statistics of the zemstvo household survey, 19.76% of the rural households were engaged in non-agricultural work in the late 1870s (Table 6). Moscow itself was emerging as a major urban center and much of the agricultural production of the countryside catered to the metropolis (Baker, 1978). The poor soils of this central region (and other provinces in the north of Russia) are often contrasted with the fertile agricultural conditions in the Central Black Earth Region and the provinces along the Volga, in the southern steppe, and in what is now Ukraine and Byelorussia.⁸⁴ With the advance of the railroad and the development of a national market for grain and food stuffs, economic change in Moscow province reflected one aspect of a process of regional specialization. In summary, it may be dangerous to generalize from the Moscow case regarding peasant agriculture, communal land practices, and plot redistributions. However, two main factors motivate the choice of Moscow for this empirical work. First, Orlov's research program is a unique empirical source for the study of repartitions, especially in that it can be matched to a household survey. Second, based on the qualitative sources discussed in the previous sections and the Moscow data itself, this province does not seem abnormal in terms of the extent or role played by repartitions. Therefore, the following empirical work should help to formulate a more complete understanding of the practice.

⁸²Orlov notes that 4442 settlements were studied, but only summary results at the township-level were published (1879, p. 135). The total number of communes was apparently larger than this (see section five), which raises the issue of sample selection addressed below. The records for the office of the Moscow provincial zemstvo are filed in the Central Historical Archive of Moscow (TsIAM) and will be the subject of future archival work.

⁸³This region is also sometimes labeled the Central Non-Black Earth Region. Besides Moscow, this region also included the provinces of Iaroslavl', Kaluga, Kostroma, Nizhnii Novgorod, Tver', and Vladimir. Moon (Chapter 2, 1999) provides a good description of the varied environments of European Russia.

⁸⁴The Central Black Earth Region is also known as the Central Agricultural Region and consists of the provinces of Kursk, Orel, Riazan, Tambov, Tula, and Voronezh.

4.1 Previous Work on Moscow Repartitions

There has been previous work on the nature and frequency of land repartitions in Moscow province. Orlov himself noted that the practice was “widely known” for harming the success of peasant agriculture and that he was investigating whether that was true (1879, p. 133). The text of Orlov, from which the data of this section was collected, is itself perhaps the most serious attempt to understand the mechanics and role played by repartitions in the rural economy. Summarizing this data on 4442 communes, Orlov noted the following frequency distribution of repartitions (Ibid., p. 154):

Repartitions, 1858-1878	Number of Communes
1	1655
2	1879
3	395
4	110
5	72
≥ 6	338

Besides discussing many of the methods of repartitions (which he describes in a way quite similar to the picture given in section four above), Orlov’s main conclusions focus on the fact that repartitions were not a yearly or by-decade phenomenon. He also notes that repartitions were becoming rarer over time and that periods between redivisions were seldom defined (ibid., 164-5). In a related study of Moscow county, Orlov detailed the frequency and customs of the practice in all 15 townships (1877). A summary of this information is presented in Table 5. It is immediately apparent that even in this relatively nonagricultural county, most communes undertook repartitions but the timing of the practice varied widely. The period of 10-20 years was often named as a customary length for repartitions, matching the information from other provinces in this period. Further, the tax censuses and “need” (it nadobnost’) also emerge as key factors. Finally, there were a large number of communes that repartitioned rather often. However, these were limited to the two townships of Durykinskaia and Marfinskaia. This suggests that there may be a local factor or custom at work.

Beyond Orlov’s work, an example from the lone Moscow province return to the FES commune survey highlights a number of the aforementioned patterns.⁸⁵ The commune of Vashutina consisted of two villages of former serfs with approximately 8

⁸⁵RGIA: fond 91, opis’ 2, delo 776, listi 1-31 (Vashutina commune, Cherkhigovskaia township, Moskovskii county)

acres of allotment land per male revision soul from the 1857 tax census. From 1857 to the time of the survey, the number of souls grew from 51 to 57 (i.e. the male working age population grew). A repartition occurred in 1860 in the wake of the tax revision, and another occurred in 1877 due to the large number of “new” souls. The survey response also mentions that the second repartition only took place when a sufficient number of new souls emerged, noting that at least three would be required.

Finally, the recent work of Kurkova analyzes repartitions in Bogorodskii county of Moscow province between 1890 and 1906 (2003). Studying communal agreements on full repartitions submitted for official approval by the county council, she finds that these commonly took place every 10-15 years with partial exchanges of land in the interim. She thinks that the law of 1893 caused communes to make more of their land allocation decisions “official” by submitting them for approval by the new land captains. Out of the 44 repartitions on which she has data, 30 redivided the land by the number of male workers, 5 by the current number of male souls, and 9 by the distribution of the revision souls of 1857. While she concludes that her county seems to have had slightly higher repartitions than other areas in this region, she notes that, overall, there were more repartitions in areas of poorer agricultural conditions.

4.2 Data and Econometric Issues

All of these studies of repartitions in Moscow and elsewhere have relied on simple tabulations, counts, and qualitative information. Here, we attempt to actually test several possible factors that may have influenced the decision to repartition. The main dependent variable in this empirical application is the number of repartitions per observed commune in a township between the years 1858 and 1878.⁸⁶ Orlov notes that this data are observations on “*obshchie peredely*” or general repartitions of crop land of all “three fields” (ibid., p. 135). Perfect data for analyzing repartitions would be at the community level. While the original materials for Orlov’s investigation may exist at the community level in the archives, the summarized version is what we currently have to work with. Hence, to help explain the variation in this variable, we append summarized data at the township level from the 1876-1877 household survey that was published in the appendices and charts of *Sbornik*, (1877-1879). This data covered four main areas: demographics, agricultural information, non-agricultural

⁸⁶Orlov also collected information on the amount of time between repartitions. As Table 6 shows, on average, communes reported that they repartitioned their land every 12.5 years. Some experimentation with this variable was attempted, but results did not show anything further on the practice.

work, and various fiscal obligations faced by each commune.⁸⁷

As emphasized earlier in section three, demographic change is a key component of any explanation of repartitions. Whether the motivation for a repartition derives from increasing the efficient allocation of land, from allocating resources to pay a changed level of external burdens, or from the loss of a diversified plot portfolio, the driving force is change in the demographic structure of the community. From the survey, limited data was available from the 1857 tax census results and the population at the time of the survey. These were used to construct the two main demographic variables: *% Change in Households* and *% Change in Population*. These are simply the percentage changes in the total number of households and in the total population.⁸⁸ The regressions below were all run with numerous permutations of these demographic variables: change in household size, percentage change in the male adult population, change in the dependency ratio (total population divided by the sum of adult males and females), and absolute values of all these. The results with other combinations of these variables were either unchanged, more unstable, or equally inconclusive. In addition, squared terms were included in all the specifications run to control for possible nonlinear relationships between demographic change and repartitions. These turned out never to matter and the regressions reported in Tables 7-10 do not include them.

This demographic data is far from optimal. We would like to have a more complete way to describe the distribution of demographic change over time, as what often drove the repartitions was a growing imbalance between household compositions and resource holdings (some households finding themselves with more land relative to their labor resources, others finding themselves with inadequate resources for all their labor). With what we have, we see that on average across the townships, there was a 30% increase in the number of households but only an 8% increase in the population. This was equivalent to a fall in average household size of almost 2 people! While this absolute change is difficult to connect directly with repartitions (how does a fall in household size impact communal land practices?), it is obvious that this must have been a period of significant demographic adjustment.⁸⁹ Hence, perhaps even our

⁸⁷Summary statistics, definitions, and citations for the data are provided in and underneath Table 6.

⁸⁸The correlation between these two variables is 0.31.

⁸⁹Several authors have emphasized the endogeneity of demographic practices, noting a possible relationship between communal practices and household formation and population fertility (Atkinson, 1983; and Gerschenkron, 1965). This is the subject of separate research but is put aside here.

weak measures of demographic change, when included together, can hint at the possible role demographic change played in the decision to repartition. One scenario would be that when holding total population size constant, as the number of households increases, the risk and efficiency losses mount under the existing land allotment and there is pressure to reallocate. Further, if we hold the number of households fixed and allow the population size to change, would the continuation of larger households help households spread risks and possibly utilize non-agricultural income sources more to overcome land market imperfections, thereby lessening the pressure for repartitions?

The second set of explanatory variables relate to the agricultural conditions of the townships. These include: *Size of Land Allotment*, *% Arable Land*, *Workhorses Per Household*, and *Land Rental Price*. Much of the discussion about repartitions has focussed on whether they were more or less prevalent in better or worse agricultural regions. Hence, these variables are meant to proxy for different aspects of the agricultural environment. The *Size of Land Allotment* variable is defined as the number of desiatina (= 2.7 acres) per household.⁹⁰ The relationship between this variable and land redivisions could go either way depending on the exact motivation for the repartition. As mentioned earlier, Moscow was a province where many have thought income from land was lower than the obligations placed on it. In this case, areas with more land would face a greater relative burden and perhaps reallocate more often to keep it equalized (although this depends on the political economy of repartitions as discussed above). If land was a relatively valuable resource, having more of it may depress the need gains through repartitions (and may increase the relative cost of a repartition). The variable *% Arable Land*, defined as the percentage of allotment land in the township designated as plowland (*pakhanaia zemlia*), may also have a mixed relationship to repartitions. Indeed, with this variable we are simply trying to control for local agricultural conditions without any causal relationship to repartitions.⁹¹ However, we subject this variable to further thought in the discussion of the results below.

The other two agricultural variables have slightly different motivations. *Workhorses Per Household* (per community or person did not matter) is indicative both of local agricultural conditions and represents a proxy for wealth more broadly. The

⁹⁰Per person and per male were also tried. The correlation with the demographic variables is low, but this does incorporate an element of population density as opposed to change. More on that below.

⁹¹One might consider the *% Arable Land* as partially endogenous to the decision to repartition. All the regressions were run without this variable and the results were generally unchanged for the other coefficients.

workhorse was a key component of the open field system (Kerans, 2001). We see in Table 6 that the average household had less than one horse, which means a large number of peasants in this part of Russia either could not farm at a very productive level or had moved completely out of agriculture. If a community was more able to support workhorses, the sign of the relationship again depends on whether land was a relative good or bad. As horses were also a form of wealth, is difficult to construct a tight mechanism linking the number of workhorses to repartitions. Worries about endogeneity drove us to run all regressions without this control and the results for other coefficients were unchanged, although some interesting results for coefficients on *Workhorses Per Household* are discussed below. *Land Rental Price* (in rubles per desiatina of peasant allotment land) is likely to be endogenous and is only included in some of the regressions.⁹² Even if structurally unsound, doing this may offer some hints about the relationship between good and bad land and repartitions. Moreover, if the external land market was more active, then this may lead to lower rental prices and less need to redistribute via communal mechanisms (assuming we are already controlling for land quality). This variable may then help get at the role the informal land market played in the decision to repartition.

The variable *% Non-Agricultural Households* is intended to explore the possibility that communes could bypass the need to repartition land, for whatever reason, by relying more on off-farm work. Given that there was a local component to the possibilities for this work (Bradley, 1985), this also focuses attention on the geographic determinants of repartitions. The % of males and females employed in non-agricultural work was also tried without perceptible differences. Unfortunately, the household survey does not contain in other information on non-agricultural opportunities.

Total External Obligations, defined again in per household terms, accounts for the possibility that the levels of impositions on peasant communes and households mattered for the decision to repartition. Hence, the hypothesis is that higher levels made other (efficiency, risk, etc.) constraints more binding, thereby correlating with higher repartitions. As the bottom of Table 6 indicates, the surveys did break this up into different types of obligations, which differed in size and amount of control the com-

⁹²This variable was taken from tables in the text of *Sbornik* (1877-1879), and there was no data for Moscow county. Further, this variable is defined in the tables as the average over all reported rental deals. While this supports the general point about the coexistence of repartitions and a somewhat functional land market, the number of sales are small and perhaps not a true average price. Since each township had a different number of rentals reported, the variance properties of this variable have likely led to a loss of efficiency in the regressions.

munes and households actually had over setting burden levels. For example, peasant representation at the lowest level (the rural societies) meant that this portion of the burden may have not been perceived as particularly burdensome. One might be concerned about redemption burdens reflecting the value of land and being endogenous to repartitions. Several different specifications of obligations were tried from different combinations of categories, and little of note was found, but this concern remains. To get an idea of size, Orlov (1879, appendix) gives a budget for a typical household in the village Spas'-Temnia. Income for this household was 225 rubles in comparison to the average total burden for Moscow province of slightly more than 25 rubles.

Insured Value of Structures was included as a measure of wealth. One of the functions of the zemstvo was fire-control. This led many of them to initiate mandatory fire insurance for peasants in their provinces (this was likely included in the zemstvo obligations listed in Table 6). Assessing the insurance burden came down to placing a value on the structures in each community. This variable is from that effort, which, although not carried out exactly contemporaneously with the other data sources used here, was comprehensive in covering the peasant structures (Orlov, 1884). As we have alluded to many times, the relationship between wealth level and repartitions is not terribly clean and depended both on whether land was a valuable asset or not, and on political economy concerns within the commune. Nevertheless, it is interesting to test for any relationship relationship as wealth data such as this is a rarity in such an underdeveloped country.

To test the hypothesis that that risk-diversification was an important motivation for repartitions, we include data from a zemstvo publication that documented the incidence of hail damage in townships over the years 1878-1882 (*Hail Damage*).⁹³ This variable is the total percentage of land in the township damaged by hail over this period. The inclusion of *Hail Damage* is an attempt to proxy for the risks faced by communes doing open-field agriculture. Hail is a commonly cited microclimate phenomenon that could completely destroy narrow sections of an open field. Hence, communes that were potentially more vulnerable to hail damage (as proxied by actual hail damage) would possibly be more concerned about holding a diversified portfolio of strips over time. Even though the period described by this variable extends beyond the general period of analysis, none of the existing literature suggests that these

⁹³This data is from "Gradobitiia" (1884), which was a chapter in the provincial yearbook put out by the Moscow zemstvo. The underlying data likely comes from local weather correspondents, which were not fully distributed over the province. This is what limited the observations.

were exceptional weather years in any way.⁹⁴ Hence, such a variable may plausibly be taken to represent some amount of risk in the agricultural environment.

Lastly, the % Serf in 1857) was included as a regressor. This was constructed by summing over the total number of temporarily obligated peasants and those described as *sobstvenniki* or property owners, the label given to those in the midst of land redemption.⁹⁵ This is then divided by the total number of peasants. Given the earlier discussion of the role played by estate owners in encouraging repartitions, and the manner by which the land settlements often resulted in a loss of property among serfs (creating more pressure on existing resources), this variable should have a negatively signed coefficient.

4.3 Econometric Methods and Issues

All the regressions run in this paper are based on the ordinary least squares model. However, there are a number of extensions we employ to enhance this simple methodology and to deal with several caveats about the data.⁹⁶

There are two concerns with the form of the dependent variable. While repartitions were something of a threshold event, the data we observe is continuous in that it represents an average over communes in a township. This “measurement error” in the dependent variable likely manifests itself as higher standard errors and lower overall explanatory power in the regressions, but the presence of any extra bias is unknown.⁹⁷ Second, the form of the dependent variable may impact consistency of estimated coefficients due to differences in the implicit variances of the commune observations underlying each township. Without ideal data at the level of the commune, the summary grouping of observations at the level of the township necessitated some extensions to ordinary least squares to improve consistency. A re-weighting of ob-

⁹⁴The number of communes affected, as opposed to the number of communities, was also tried with no differences for the results. The amount of damage as a percentage of allotment land or plowland was also run and did not matter.

⁹⁵The summing occurred over the values these communities reported for their populations in 1857. Differences in demographic change were not considered. It should be noted that the current form of this variable does not include *pol'nye sobstvenniki* or full property owners as members of the former serf group. These were a small group who had already redeemed their land and were not subject to any land obligations. In the future, this group will be added to the numerator.

⁹⁶Given data limitations, potential endogeneity issues could not be addressed in this analysis. In particular, specific soil features or customs that led to repartitions and were also correlated with the explanatory variables could lead to biased coefficients.

⁹⁷In their study of Chinese repartitions, Brandt et al. (2003) are studying single communes with counts or binary indicators of repartitions. Therefore, they can apply different limited dependent variable approaches that take into account this type of data.

servations by the square root of the number of communes was carried out under the assumption that the regression variances were inversely proportional to the number of communes.⁹⁸ Dickens (1990) suggests that this technique may actually introduce heteroscedasticity if the individual observations within groups are not independent. However, the results obtained under this method of weighting turned out to be more precise and had better explanatory power (in terms of R^2) than standard OLS, suggesting that this problem may not be serious in this application.

A last issue has to do with selection. Tables 1, 2, and 5 below and some of the qualitative information supplied in section three suggest that not all communes designated as having *peredel'noe zemlevladienie* (“repartitioning land ownership”) actually redistributed communal land. In Orlov’s data, all the communes carry out the practice at least one time. However, Orlov does note that this does not cover every commune in the province because, for those not included, the data was “not fully complete, was questionable, or was completely absent” (1879, p. 152). *Statistika* provides summarized information from 5636 communes for 1905, while counting up the number of settlements supplying summarized household survey data in *Sbornik* gives 5250 in 1877. Without knowing anything more about those settlements who did not report, it is virtually impossible to address the issue of selection. Most of the regressions run below (all from Tables 7 and 10) were run with the dependent variable defined as repartitions per *Survey Commune* (from the 1877 survey), with no discernible change in the results. This assumes that the settlements that did not report to Orlov, but which did supply data for the household survey, did not repartition.

4.4 Results

The basic set of results are contained in Table 7. Column 1 is the basis for the specifications in all the other tables. Column 2 includes *% Hail Damage*. This was done sequentially due to the large changes in the sample.⁹⁹ In the third column, *Land Rental Price* is added for the same reason, with minimal effects for the results.

Four variables (*Land Allotment*, *Obligations*, *Structures*, and *Hail Damage*) were found to be insignificant in these three regressions, a result that holds through all

⁹⁸In STATA, applying analytic weights using the number of communes operationalizes the weighted least squares by scaling the weights to sum to 1. This is statistically identical to multiplying through by the square root of the number of communes. For discussion and an example of the problems of grouped data, see Brown and Guinnane, 2003.

⁹⁹While this does change the significance of several variables, signs and order of magnitude do not change.

the tables.¹⁰⁰ These results are somewhat surprising. Although *Land Allotment* and *Structures* were posited to have complex relationships with the decision to repartition, *Obligations* and *Hail Damage* were thought to be positively related. *Obligations* incorporates a number of different burdens, so as a proxy of overall external impositions, it may be relatively weak.¹⁰¹ Sample selection may be a reason for the poor result with *Hail Damage*, and indeed for the relatively murky results from regressions with this variable in all the specifications. *Structures* may suffer from some endogeneity difficulties, as it is measured after the coverage of repartitions.

One more workhorse per household would have meant over 25% fewer repartitions, although this finding is somewhat weak statistically. Areas with more land in arable were (weakly) less likely to have repartitions, which is a somewhat puzzling result, although as we shall see below, this is likely proxying for regional variation in land characteristics (better land may lower the need for repartitions). The *Land Rental Price* variable is insignificant, but it is positively related to repartitions, which at least echoes the idea that a thicker land market may mean less need for full repartitions.

Support for the proposed framework explaining repartitions can be found with the findings for the demographic variables. The coefficients on the population variables carry the hypothesized signs. The continuation of relative larger households was negatively related to the number of repartitions, and was significant. A larger increase in the number of households also had the proposed effect, as it was positively related to repartitions (and was close to significance in columns 1 and 2). These demographic coefficients are rather large in economic terms as well, as a one standard deviation increase in either variable was related to slightly more than 0.1 fewer (more) repartitions.

The main result in this table, and one that holds throughout the rest of the regressions, is the strong and positively significant influence of former serf status on repartitions. While this might encompass a number of motivations (land settlements, larger overall obligations, etc.), it is a powerful piece of evidence for the role of the institutional context of the open fields on determining the land management practices.

Much of the framework laid out in this paper talks about the interaction of elements of demographic change with other factors and constraints. Demographic changes in communes that were more or less wealthy, faced greater or smaller ex-

¹⁰⁰This is also the case for *Non-Agricultural Households* in all but Table 9.

¹⁰¹Breaking these categories up is an obvious first-step.

ternal obligations, faced different risk environments, or were in environments with a lower opportunity cost for land may have had varied effects on repartitions. This is the idea behind Table 8.¹⁰² Only some of the combinations attempted are reported here. Even with these, it is immediate that with so many controls we lose a lot of power in these regressions. Most signs remain the same as before (with the partial exception of variables in column two, where the small sample size amplifies the problem). However, the coefficients on the demographic variables are no longer remotely significant (although this has to do with the interaction terms soaking up most of the variance due to them). *Arable* and *Workhorses* are still weakly significant and *% Serf* remains strongly positive and significant. However, looking at the interaction terms, only the combination of change in the number of households and the insurance value of structures seems to have a relationship with repartitions. While this negative sign may mean that for wealthier communities, a larger increase in the number of households has a weaker effect on repartitions. That is consistent with our framework, but this coefficient is very small in economic terms.

While these hypothesized interactions between demographic change and other factors reflect our framework for thinking about repartitions, we can find little evidence with these data and methods. However, if we look at the interaction between obligation levels and wealth indicators (*Structures*) and non-agricultural opportunities, we do find some interesting results. Specifically, Table 9 (in which we drop the unsatisfactory results with the hail sample) shows that there may be a strong element to non-agricultural work being a substitute for repartitions as a way for dealing with higher level of obligations. While this may not be the strict way to interpret the causality here, these strong results for non-agricultural household coefficients do suggest a possible set of interactions.

In addition to the basic OLS specifications, the last regression in Table 9 and all those of Table 10 were run with county-level fixed effects to control for unobserved geographic or local variation.¹⁰³ This may help control for unobserved variation in agricultural conditions as well as different types and opportunities for migratory labor and rural industrial production. The remaining impact of the other explanatory variables is then due to the variation *within* each county.

¹⁰²Interactions of *insure* with *hail* were also tried to see if the effects of risk were different in wealthier communities. The results were completely insignificant.

¹⁰³There were 13 counties in Moscow province in this period with 8-20 townships in each. All interaction regressions were also run with fixed effects with no notable results.

In all of these regressions, the coefficient on *% Serf* remains as before although slightly attenuated. In the last column of Table 9, the strong influence of non-agricultural work remains, while in this regression and every one in Table 10, all previously significant coefficients lose this when county controls are added. What this suggests is that agricultural and wealth variation may be slightly broader phenomena than at the township level. In all cases, the joint F-statistics on the county dummies are significant. What we might be able to conclude from these fixed effects regressions is that repartitions may have been responses to some elements of local conditions, but it is broader institutional context (serfdom) more aggregate socioeconomic factors (shown by the county effects) that were driving repartitions.

In general, this effort at exploring the correlates and determinants of land repartitions offers some tentative support for the proposed conceptual framework of this paper, especially as the admittedly weak demographic measures in these regressions were statistically related to repartitions. However, it is the strong regional component and influence of slavery that really stand out.

5 Land Repartitions and Agricultural Productivity

One of the possible explanations of repartitions explored in this paper was that they were efficient ways to distribute resources given frictions in land and labor markets.¹⁰⁴ However, Gerschenkron and a long line of Russian and Western scholars have more generally linked the practice to poor incentives for investment given a lack of secure private and perpetual ownership.¹⁰⁵ Contemporaries were well aware of this, and many critics of communal tenure explicitly denounced the practice for discouraging Russian peasants from applying manure in the year prior to an agreed-upon repartition.¹⁰⁶ For example, one peasant farmer in Novgorod province was reported as saying that, “You need to receive your own use/product from the land, but why work hard on my own strip if its going to be given to someone else tomorrow.”¹⁰⁷ This fed into the widely-held view, both among 19th-century observers as well as modern historians, that the persistence of repartitions after the emancipation of the serfs helped

¹⁰⁴The possibilities of serious transactions costs in these markets takes us away from a Coasian world and brings up the possibility of efficiency losses through poorly allocated property rights. This is returned to in the conclusion.

¹⁰⁵See footnote 6 and the works of Robinson (1972 [1932]) and Volin (1970).

¹⁰⁶See the views cited in Pallot, 1999, p. 72-3

¹⁰⁷This quote comes Zaozerskaia commune in a published return to the FES survey (Barykov et al., 1880, p. 262).

foster the growing “agrarian crisis” within peasant agriculture.¹⁰⁸ However, recent evidence using provincial statistics and country-wide aggregates finds little evidence that *per capita* agricultural output was declining across Russia. Regional specialization was occurring, but peasant grain production and consumption appears to have remained steady.¹⁰⁹ Based on his aggregate findings, Gregory (1992) has further argued that land repartitions and communal tenure must have been more flexible than contemporaries and later scholarship argued. This section delves into this matter by utilizing the data set from section four and information on grain yields to test whether areas with more repartitions were, *ceteris paribus*, worse-off in terms of agricultural productivity.

Some recent research has found some support for Gregory’s hypothesis about the relative flexibility of communal land tenure and repartitions.¹¹⁰ The Russian commune did not necessarily preclude some innovations, as the risks and costs of adoption of new crops and field rotations could be spread amongst member households.¹¹¹ In the course of repartitions, manured land was often excluded from the redistribution or was compensated for by exchange with some equivalent plot.¹¹² If peasants made the effort to clear waste or forested land, they often acquired long-term use rights over the plots, which were then excluded from repartitions.¹¹³ Hence, the disincentive effects of repartitions may have been muted or absent

¹⁰⁸Important works arguing that there was a crisis include Robinson (1972 [1932]), Volin (1970), and Gerschenkron (1965). The debate over this perceived depression in Russian peasant agriculture was sparked, in part, by the large famine of the early 1890s in the Volga region. This conceptualization led to a number of government policies culminating in the Stolypin reforms of the early 20th century.

¹⁰⁹The most recent writings from this perspective include Gregory (1980; and 1994, Chp. 4), Hoch (1994), and Wheatcroft (1991). According to his analysis of provincial governor reports on harvests, Nifontov finds that the per capita production of grain and potatoes (in grain equivalents) rose monotonically from 2.45 *chetverty* (1 chetvert \approx 2.375 bushels) in the 1850s to 3.08 in the 1890s (1974, pp. 200-1 and 286-7).

¹¹⁰Bideleux (1991) makes this general argument, but he seems to emphasize the aggregate (and comparative) performance of Russian agriculture and says little about repartitions or the mechanisms of communal land management.

¹¹¹The possibilities for experimentation are emphasized by Kingston-Mann (1991) and Kovalev (2002, p. 179), while Kerans (2001, pp. 149-161) argues that peasants did little experimentation. In early 20th century Tambov province, *zemstvo* agronomists often aimed to convince one household to convert to a new technology in hopes that this would lead to the entire commune switching (Esikov, 1999, p. 235-6). In the southern agricultural provinces of what is now Ukraine, Friesen (1994) argues that individual Russian and Ukrainian peasants adopted new tools and field rotations from the German Mennonite colonists, and that the communes acted as an institution that allowed for the diffusion of these innovations.

¹¹²This is noted by many authors. Specific examples of this are noted in Petrov for Kazan province (2002, pp. 196-7); and Kingston-Mann in Moscow, Tver’ and Tula (1991, p. 45).

¹¹³Petrov (2002, p. 197) and Pallot and Shaw (1990, Chp. 6)

Research into the effects of communal tenure on productivity in Africa finds mixed support for the assumption that formal private rights over plots boost output.¹¹⁴ Informal property relations within tightly-knit communities may approximate more formal rights when land markets are incomplete as alluded to above. In addition, uncertainty over rights to a plot may be more important for certain types of investments or crops (see Besley (1995) for a Ghanaian empirical study). In the case of China, there is a growing literature on the productivity effects of the move away from collectivized agriculture and the installation of the HRS system with land redistributions. Gaynor and Putterman (1993) show that the *method* of land redistribution (by household labor supply or household size) did matter for productivity, but they do not emphasize the actual occurrence of a repartition. Benjamin and Brandt (2002) utilize a unique data set that allows them to estimate the productivity effects of administrative land reallocations in China while allowing the reallocations to be endogenous. They find that the poor labor and land markets created capacity for (mostly unrealized) administrative reassignments of property rights from larger to smaller households to have positive productivity effects. These and other recent studies of the mixed productivity implications of different collective land management mechanisms make the Russian communal repartitions an interesting comparative test case.

The only empirical study that attempts to test the relationship between communal tenure and productivity in the Russian case is Toumanoff (1984). His work focuses on the effects of the Stolypin reforms by estimating provincial-level, linear grain production functions before and after the reforms, while including the percentage of land subject to repartitional tenure as a regressor.¹¹⁵ Toumanoff does get a negative (and often significant) coefficient on the percentage of land in repartitional tenure in both time periods, but he is not very clear about what his data are actually indicative of, nor does he acknowledge that many communes that nominally repartitioned did not actually do so (see Table 1 below). However, his conclusion does appear relatively robust to different crops and to some attempts to test for biases associated with unobserved land quality. The empirical test in this section focusses exclusively on the impact of repartitions that actually did occur and avoids the messy issue of the impact of communal tenure more broadly.¹¹⁶ Rather than look at aggregate production, this

¹¹⁴Brasselle, et al. (2002); and Besley, (1995)

¹¹⁵Without proving this, Toumanoff assumes that the reforms decreased the use of repartitions. Further, his work suffers from all the usual criticisms of such aggregate production estimates.

¹¹⁶Out of the 5636 peasant communes (210,570 households) in Moscow province in 1905, only 2 (14) actually held their land in household tenure (*Statistika*, 1906, p. 37). Hence, it appears safe to assume

exercise takes on productivity at a much more disaggregate level in the form of grain yields for both winter and spring crops. These attributes make this endeavor useful as a specific test of the most puzzling aspect of Russian peasant agriculture, but data incompleteness leaves unresolved several complications from the interaction between land rights and productivity.¹¹⁷

Issues of data availability necessitated the use of a simple empirical framework to test whether repartitions adversely impacted agricultural productivity. Hence, the direct test here is whether the number of repartitions in Moscow townships between 1858 and 1878 had adverse effects for the rye harvest in 1877.¹¹⁸ Rather than attempt to estimate full production functions, perhaps with the land input differentiated by being “repartitioned” or not, we simply apply OLS with and without county-level fixed effects to estimate:

$$y_i = \beta^1 X_i + \beta^2 Rep_i + u_i \quad (1)$$

where the subscript i refers to the township, X_i is a vector of controls, Rep_i is the number of repartitions in each township over this period as defined earlier, and u_i is either an idiosyncratic error term or includes the fixed effect (i.e. $u_i = county_i + e_i$ where e_i is now the idiosyncratic component). Our dependent variable y takes two forms: average township seed ratios for winter (predominantly rye) and spring (predominantly oats) crops.¹¹⁹ These averages are reported in the summary lines of the village-level tables of *Sbornik* (1877-1879), but it is not clear how the averages were computed. All the other control variables are those described in section four and summarized in Table ??.

Besides the main variable of concern (number of repartitions), the other regressors are meant to control for things that may influence peasant grain productivity. *% Arable Land* is meant to proxy for land suitability for grain, although if grain markets are poorly functioning, high percentages of land in arable may actually represent a choice by peasants operating under a subsistence constraint. Therefore, the sign on this variable is somewhat unclear. *Workhorses* is supposed to capture the capital re-

that all peasant communities in the 1870s were under some form of communal land management. Therefore, the simple empirical work of this section focusses just on the impact of repartitions of communal land.

¹¹⁷These include the possible endogeneity of land rights implied by leaving strips out of the repartition process if they received investment. Also, if efficiency concerns were a motivation for repartitions then the practice may have just stood for those market frictions that might also directly impact agricultural productivity (e.g. through labor inputs).

¹¹⁸The issue of repartitions in the final year is ignored.

¹¹⁹The seed ratio is the yield per unit of seed planted.

sources available for peasant farmers, as animal motive power was a key element of the open field system. Since more horsepower allowed for deeper and more frequent plowing, we can hypothesize that this variable should have a positive sign. The variable *Desiatiny per Household* should have a negative sign following the general inverse farm size result in the development literature (especially in this simple technological environment with imperfect factor markets). *% Serf in 1857* is included because of the specific nature of reforms that ended serfdom. As discussed above and noted for Moscow province in Litvak (1958), the emancipation statutes allowed for a significant amount of dispossession of peasant land by the landlord who also has a lot of leeway to choose what kind of land to provide to his former serfs. As a result, areas with more serfs previously may have on average possessed relatively worse land in the late 1870s. Hence, this variable acts as a partial proxy for (negative) land quality and should therefore have a negative sign. The *Land Rental Price* is obviously endogenous to the productivity of the land (although as we saw in section four, it is not correlated with repartitions). However, including it and seeing whether results change substantially allows us to check the validity of the other coefficient estimates. Lastly, the county-level fixed effects are meant to take into account other unobserved heterogeneity in land quality and agricultural conditions more broadly. According to these data, winter crop yields varied from 1.86 in Mozhaiskii county to 4.35 in Moskovskii.¹²⁰ While Moscow is sometimes pointed to as one of the most agriculturally advanced provinces in the late 19th century, these yields are low relative to other regions (Kovalev, 2002; and Nifontov, 1974, p. 276). Other variables (labor supplies, education of the population, etc.) could plausibly be included, but as they were generally orthogonal to the number of repartitions (not shown), a more complete analysis of yield determinants is left for future analysis.

5.1 Results

The specifications do show some other interesting results. The coefficients that are significant in the first-column regressions for both crops loses this when the fixed effects are added (column 3). Hence, there is definitely a regional element to agricultural productivity in Moscow province.¹²¹ The percent of the township who were formerly serfs, while negatively signed, does retain some marginal significance. This

¹²⁰County-level information is available from the author.

¹²¹The joint F-statistics on the county effects are always significant.

suggests that the former serfs did face a grimmer situation in terms of agricultural productivity, where ever they resided. It is comforting that *Land Rental Price* appears significant (at least at the 10% level) and is properly signed in all the regressions. This gives a general indication that this simple exercise can shed some light on the determinants of land productivity.

In both specifications (with and without county effects and *Land Rental Price*), and for both crops, the number of repartitions had no effect on yields. Even though the sign was consistently negative, the magnitude of the coefficient is minuscule in real world terms. Hence, based on this simple framework, we find no evidence that repartitions had a direct, negative effect on yields in the manner proposed by Gerschekron and others. This provides some evidence for the flexibility of the communal land tenure system suggested by Gregory (1992).

6 Conclusions and Future Work

TO BE COMPLETED

Table 1: Communal Repartitions in European Russia, c. 1910

Province	Communes With Data	Those <i>Not</i> Repartitioning	%
Astrakhan	175	**	**
Bessarabia	1371	31	2.3
Chernigov	4079	1950	47.8
Ekaterinoslav	1696	1092	64.4
Iaroslavl'	10814	9410	87
Kaluga	4697	4154	88.4
Kazan	7683	1873	24.4
Khar'kov	2461	1736	70.5
Kherson	2162	1555	71.9
Kiev	2	2	100
Kostroma	12796	9768	76.3
Kursk	3879	2754	70.7
Mogilev	4880	1656	33.9
Moscow	5105	2019	39.5
Nizhnii Novgorod	4145	987	23.8
Novgorod	11096	9223	83.1
Olonets	3554	2084	58.6
Orenburg	600	280	46.7
Orlov	5508	3317	60.2
Penza	2735	765	28.0
Perm	4062	2627	64.7
Poltava	1463	52	3.6
Pskov	14139	10942	77.4
Riazan	5362	3468	64.7
Samara	2299	785	34.1
Saratov	2733	667	24.4
Simbirsk	2240	1067	47.6
Smolensk	10868	9281	85.4
St. Petersburg	4682	3579	76.4
Tambov	4481	2686	59.9
Tavrich	496	113	22.8
Tula	5092	3808	74.8
Tver	10320	7973	77.3
Ufa	2076	954	46.0
Viatka	22170	8353	37.7
Vitebsk	6478	4916	75.9
Vladimir	8535	2797	32.8
Vologoda	14320	5421	37.9
Voronezh	2374	802	33.8

Note: ** means that the data is missing.

Source: Anfimov and Korelin (1995, pp. 67-68). This table is taken from an archival document: State Archive of the Russian Federation (GARF), fond 1291, opis' 120, 1910 g., delo 53, listi 1-1 ob.

Table 2: Repartitions of Plowed Land in Tver' Province, 1858-1890

County	Total Communes	Those With Data	Without Repartitions	With Partial Repartitions	With Full Repartitions	Communes with x Repartitions						
						1	2	3	4	5	6	
Bezhet'skii	1328	925	580	60	285	189	59	18	**	**	1	18
Ves'egonskii	**	**	**	**	**	**	**	**	**	**	**	**
Vyshnevolotskii	1007	714	170	39	505	249	115	52	9	25	55	
Zubtsovskii	665	546	30	63	453	346	79	19	3	4	2	
Kaliazinskii	764	658	35	235	388	235	48	23	8	3	15	
Kashinskii	793	743	60	14	669	528	127	14	**	**	**	
Korchevskoi	724	656	91	255	310	173	52	18	4	17	46	
Novotorzhskii	707	578	**	**	441	202	90	43	12	9	85	
Ostashkovskii	1219	1107	391	**	716	270	33	106	2	10	71	
Rzhevskii	1123	722	102	18	602	290	45	28	13	13	213	
Staritskii	676	390	86	**	304	160	48	37	23	12	24	
Tverskoi	707	467	104	35	328	255	30	18	6	6	13	

Note: ** means that the data is missing. Tver' is located directly to the north of Moscow province. The two provinces possess many economic and environmental similarities.

Source: Rozov and Vinogradov (1974, p. 28)

Table 3: An Example of a Repartition, Voronezh Province, 1890s

Total Households	Before Repartition		Allotment Distribution After Repartition									Changes by Household		
	Allotments Per Household		1	2	3	4	5	6	7	8	9	Lower	Equal	Higher
25	1	6	6	6	11	1	1					6		19
1	1.5		1										1	
25	2	3	3	5	7	6		1	1	1		8	4	17
14	3	2	2	6		4	2					8		2
8	4				1	3	2	1	1			6		2
5	5			1	1		1	1		1		4		1
2	6					1	1					2		

Note: This example of a repartition is undated, but it comes from the village of Nikonovo (Orlovskaya township, Voronezhskii county) and occurred before 1897. Voronezh is located in the fertile black earth region to the south of Moscow province. According to the information provided, the village had 80 households and 209 revision souls at the time of the 10th tax revision, 276 male souls present at the time of the repartition, and 2.8 desiatina (7.67 acres) of arable land per revision soul. The middle nine columns give the distributions of households in each row who received x allotments by present male souls. Note that the total number of allotments is different, before and after the repartition. It is not clear whether this is due to now-smaller allotments or the incorporation of additional land. The last three columns tell whether each household increased, decreased, or kept the same *number* of allotment units.

Source: Shcherbina (1897, appendix)

Table 4: Repartitions in Melitopol'skii County, Taurida Province, 1858-1878

61	Total state peasant communities with information
175	Total repartitions from 1858 to 1878
Reasons for Repartitions	
33	“First Repartitions”
59	Changing to a new unit of distribution
18	As a result of the 1857 tax revision
24	Growth in population (unequally between households)
2	Acquisition of new lands
6	Arrival of new settlers
2	Outmigration of community members
2	Land needed for church
9	Indefinite borders between plots, arguments about borders
2	Theft/damage to land
1	Mistakes in previous repartitions
1	Dividing garden land away from arable
3	Special nature of the soil
13	Mixed reasons

Note: Taurida province is located on the Black Sea and includes the Crimea.

Source: Vorontsov (1892, p. 148)

Table 5: Repartitions in Moscow Country, 1850s-late 1870s

Townships	N	Frequency, Timing, and Customs of Repartitions
Nogatinskaia	14	12 - repartitioned in 1870-1 and after 10th tax census (customary 12 years), 2 - repartitioned in 1863 with the intended period of 15 and 16 years
Ziuzinskaia	26	13 - every 12 years, 5 - every 15 years, 7 - every ten years, 1 - no repartitions since last tax census
Troitsko-Golenishchevskaia	24	1 - only after tax censuses, 3 - every 12 years, 21 - every 15 years
Tsaritsynskaia	18	1 - only after tax censuses, 5 - every 12 years, 12 - every 10 years
Khoroshovskaia	16	2 - only "when needed" (no set period: one in 1870 and one in 1866) 2 - only after tax censuses, 1 - every 20 years, 11 - every 15 years
Vykhinskaia	**	Repartitions occur every 10-15 years in all settlements
Vsekhsviatskaia and Rostokinskaia	**	26 settlements repartition every 10-15 years, others - only after tax censuses
Pekhorskaiskaia	20	13 - every 8-10 years, 2 - only "when needed", 1 - two repartitions since 1869 1 - one in 1873 and members wish to do another, 1 - one in 1867 and one in 1875 1 - repartitioned with redemption agreement in 1864 and then 5 more times up to 1876
Troitskaia and Ozeretskaia	**	Only "when needed" or after tax censuses
Durykinskaia	**	6 - every 2-5 years, 1 - yearly up to 1872 but none "needed" since, 7 - only "when needed" (generally 2-4 years but period has lengthened in several) 1 - every 10 years, others - have not repartitioned since the tax census
Marfinskaia	22	15 - only "when needed" (generally 3, 5 or 10 years), 1 - every 2 or 3 years 1 - every 4 or 5 years, 2 - only after tax censuses, 1 - repartitioned in 1868 for 20 years 2 - no set length, 6 - no repartitions since last tax census, others - every 10-15 years
Cherkizovskaia and Mytishchenskaia	**	

Note: ** means that the information was not given. Observations (N) were either described as *selenia* ("settlements") or *obshchestva* ("societies"). These may or may not correspond to the same units (see the text). This information likely covers the same period of time as the rest of the Moscow province data on repartitions.

Source: Orlov (1877, pp. 31-33)

Table 6: Summary Statistics for Moscow Province Data

Variable Description	Mean	SD	N
Communes Sampled by Orlov Per Township	27.66	13.21	160
Repartitions per Sampled Commune, 1858-1878	2.13	0.77	160
Percentage of Township Population Serf in 1857	58.52%	31.45%	165
% Change in Total Households in the Township, 1857-1877	30.08%	11.49%	165
% Change in the Township's Population, 1857-1877	8.01%	10.35%	165
Total Arable Land per Household in the Township, 1877	3.88	1.41	165
Percentage of Allotment Land Classified as Arable, 1877	50.58%	14.47%	165
Total External Obligations per Household, 1877 (Rubles)	25.31	4.47	165
Value of Township Structures per Household, approx. 1880	258.66	126.53	165
Total Workhorses per Household, 1877	0.86	0.25	165
% Households Classified as Non-Agricultural, 1877	19.76%	16.67%	165
% of Township Area Affected by Hail Damage, 1878-1882	2.23%	2.84%	101
Rental Price, 1 Desiatina of Peasant Land, 1877 (Rubles)	1.35	0.65	145
Seed Ratio, Winter Crops (Primarily Rye)	2.70	0.80	163
Seed Ratio, Spring Crops (Oats, Wheat, etc.)	2.69	0.62	165
Total Peasant Allotment Land	9622.85	3779.22	164
Total Number of Sel'skie Obshchestva (Rural Societies)	22.97	12.42	163
Total Number of Settlements	31.82	15.19	165
Repartitions per Settlement, 1857-1877	1.88	0.83	160
Time Between Last Two Repartitions, 1857-1877 (Years)	12.53	2.92	160
Total Peasant Population in 1857 (10th Tax Census)	6265.48	1861.57	165
Total Peasant Population in 1857 (Household Survey)	6750.87	2043.14	165
Number of Peasant Households in 1857	844.43	263.78	165
Number of Peasant Household in 1877	1222.63	371.61	165
Number of Landless Households in 1877	124.14	61.91	157
Number of Men Engaged in Migratory Labor, 1877	1211.67	571.98	163
Number of Women Engaged in Migratory Labor, 1877	340.58	216.76	148
Total Redemption or Quitrent Payments Due, 1877 (Rubles)	16735.17	5758.41	165
Total Soul and Land Tax Payments Due, 1877 (Rubles)	8446.86	2619.14	165
Total Zemstvo Obligations, 1877 (Rubles)	1422.83	684.64	165
Total Township Government Obligations, 1877 (Rubles)	1905.28	732.07	165
Total Rural Society Obligations, 1877 (Rubles)	2433.75	1444.79	165

Notes on Sources: Descriptions of sources and further information about the data are provided in the text. Means and standard deviations use weights when necessary. Information on repartitions comes from Orlov (1879). The number of rural societies comes from *Mirskie* (1886). Hail incidence is taken from "Grado-bitia" (1886). The value of structures in the township is derived from insurance appraisal data in Orlov (1884). All other data is from the tables in volumes 1-3 of *Sbornik* (1877-1879).

Table 7: Repartitions in Moscow Province, 1858-1878 (I)

% Former Serfs	0.957	0.948	0.943
By 1857 Tax Census	3.47***	2.22**	2.79***
% Change in Households	1.047	1.74	1.219
	1.59	2.25**	1.63
% Change in Population	-1.268	-1.295	-1.196
	2.46**	1.74*	2.33**
Size of Land Allotment	-0.022	0.071	0.013
Desiatiny per Household	0.3	0.57	0.16
% Arable Land	-1.139	-1.563	-1.202
Of Total Peasant Allotment	1.88*	1.4	1.78*
Total External Obligations	-0.001	-0.01	0.002
Rubles per household	0.07	0.27	0.08
Insured Value of Structures	-0.001	-0.001	0
Rubles per household	0.76	0.87	0.37
Workhorses Per Household	-0.569	-0.601	-0.499
	2.47**	1.65	1.57
% Non-agricultural households	0.103	0.123	0.79
	0.26	0.22	0.66
Hail Damage		-3.039	
% Township Land, 1878-1882		1.11	
Land Rental Price			0.027
Rubles per Desiatina			0.61
Observations	160	98	144
Adjusted R²	0.16	0.1	0.14

Note: All regressions are OLS and use weights to control for grouping of the data as described in the text. The dependent variable is the number of land repartitions per commune in a given township. Constant terms are not reported. Absolute t-statistics are given below the coefficient estimates and * means significant at 10%; ** significant at 5%; and *** significant at 1%. Further information and the sources of the data are provided in the text and in Table 6.

Table 8: Repartitions in Moscow Province, 1858-1878 (II)

% Former Serfs	0.854	0.954	0.774
By 1857 Tax Census	3.38***	2.14**	2.29**
% Change in Households	3.848	1.112	3.242
	1.36	0.12	1.03
% Change in Population	-4.549	2.598	-6.795
	0.9	0.29	1.27
Size of Land Allotment	-0.013	0.09	0.015
Desiatiny per Household	0.18	0.7	0.19
% Arable Land	-1.155	-1.386	-1.276
Of Total Peasant Allotment	1.89*	1.18	2.02**
Total External Obligations	-0.01	-0.033	-0.01
Rubles per household	0.4	0.4	0.38
Insured Value of Structures	0.004	0.002	0.004
Rubles per household	1.29	0.36	1.22
Workhorses Per Household	-0.486	-0.709	-0.396
	1.90*	1.43	1.04
% Non-agricultural households	0.409	0.186	1.335
	1.01	0.29	0.94
Hail Damage		-4.961	
% Township Land, 1878-1882		0.44	
Land Rental Price			0.028
Rubles per Desiatina			0.1
% Change in Households x Obligations	0.031	0.068	0.057
	0.59	0.28	0.96
% Change in Households x Structure Value	-0.015	-0.006	-0.014
	1.82*	0.42	1.63
% Change in Population x Obligations	0.057	-0.074	0.089
	0.4	0.29	0.62
% Change in Population x Structure Value	0.007	-0.002	0.013
	0.9	0.1	1.36
% Change in Households x Hail Damage		21.607	
		0.44	
% Change in Population x Hail Damage		-64.433	
		0.93	
% Change in Households x Rental Price			-0.019
			0.02
% Change in Population x Rental Price			0.129
			0.14
Observations	160	98	144
Adjusted R ²	0.18	0.06	0.14

Note: These regressions include interactions of demographic change and other variables. See the text for a further discussion. Otherwise these regressions are identical to those of Table 7, and the same information applies.

Table 9: Repartitions in Moscow Province, 1858-1878 (III)

% Former Serfs	0.965	0.945	0.967	0.711
By 1857 Tax Census	3.34***	3.45***	3.36***	2.87***
% Change in Households	1.043	0.959	0.948	-0.029
	1.57	1.44	1.4	0.04
% Change in Population	-1.271	-1.239	-1.247	-0.604
	2.47**	2.37**	2.39**	1.26
Size of Land Allotment	-0.02	-0.026	-0.018	-0.045
Desiatiny per Household	0.26	0.34	0.24	0.59
% Arable Land	-1.15	-1.082	-1.113	-0.214
Of Total Peasant Allotment	1.88*	1.73*	1.77*	0.33
Total External Obligations	-0.005	0.037	0.029	0.03
Rubles per household	0.16	1.47	0.92	0.89
Insured Value of Structures	-0.001	0	-0.001	-0.002
Rubles per household	0.42	0.56	0.79	1.19
Workhorses Per Household	-0.572	-0.489	-0.497	-0.216
	2.47**	2.06**	2.07**	0.64
% Non-agricultural households	0.1	6.683	6.805	6.025
	0.25	2.54**	2.59**	2.50**
Structure Value x Obligations	0		0	0
	0.15		0.58	0.98
Non-Ag Work x Obligations		-0.26	-0.265	-0.244
		2.47**	2.51**	2.32**
County Effects	No	No	No	Yes
Observations	160	160	160	160
Adjusted R ²	0.16	0.18	0.17	
Unadjusted R ²				0.38

Note: These regressions include interactions of external obligations with indicators of wealth and non-agricultural work. See the text for a further discussion. Otherwise these regressions are identical to those of Table 7 and 8, and the same information applies.

Table 10: Repartitions in Moscow Province, 1858-1878 (IV)

% Former Serfs	0.676	0.975	0.637
By 1857 Tax Census	3.04***	2.66***	2.34**
% Change in Households	0.047	0.443	0.077
	0.07	0.6	0.11
% Change in Population	-0.655	-0.56	-0.47
	1.33	0.83	0.97
Size of Land Allotment	-0.046	0.074	-0.038
Desiatiny per Household	0.65	0.64	0.5
% Arable Land	-0.257	-0.848	-0.131
Of Total Peasant Allotment	0.41	0.76	0.21
Total External Obligations	0.01	-0.012	0.014
Rubles per household	0.58	0.4	0.65
Insured Value of Structures	-0.001	-0.001	0
Rubles per household	0.98	0.75	0.5
Workhorses Per Household	-0.213	-0.554	-0.086
	0.63	0.97	0.21
% Non-agricultural households	0.161	-1.188	0.851
	0.22	0.98	0.61
Hail Damage		-2.093	
% Township Land, 1878-1882		0.82	
Land Rental Price			0.034
Rubles per Desiatina			0.49
Observations	160	98	144
R² (Unadjusted)	0.37	0.38	0.37

Note: These regressions include county-level fixed effects (joint F-statistics are not reported but always significant and are available from the author). Variables and methods are as in Tables 7, 8, and 9.

Table 11: Yield Effects of Repartitions, Moscow Province

Winter Grains				
Repartitions per Commune	-0.068	-0.002	-0.036	-0.039
	0.82	0.02	0.59	0.76
% Serf in 1857	-0.476	-0.035	-0.21	-0.064
	2.10**	0.24	1.43	0.53
% Arable Land (Of Total)	1.271	-0.887	0.324	-0.571
	1.3	2.05**	0.41	1.3
Desiatiny per Household	-0.379	-0.069	-0.1	0
	3.22***	1.39	1.33	0.01
Workhorses per Household	0.503	-0.34	0.609	0.108
	1.37	1.82*	1.79*	0.58
Land Rental Price per Desiatina		0.227		0.108
		4.71***		1.77*
County Fixed Effects	No	No	Yes	Yes
Observations	158	144	158	144
Adjusted R ²	0.25	0.35		
R ²			0.6	0.6
Spring Grains				
Repartitions per Commune	-0.043	-0.022	-0.029	-0.023
	0.74	0.4	0.49	0.47
% Serf in 1857	-0.552	-0.207	-0.331	-0.178
	2.56**	1.19	1.92*	1.18
% Arable Land (Of Total Peasant Land)	1.83	-0.015	1.073	-0.084
	2.35**	0.04	1.64	0.19
Desiatiny per Household	-0.284	-0.047	-0.111	-0.01
	3.21***	1.16	1.62	0.23
Workhorses per Household	0.194	-0.522	0.461	-0.021
	0.64	2.44**	1.64	0.1
Land Rental Price per Desiatina		0.161		0.148
		3.92***		2.15**
County Fixed Effects	No	No	Yes	Yes
Observations	160	144	160	144
Adjusted R ²	0.22	0.21		
R ²			0.54	0.46

Note: Dependent variables are seed ratios for the two types of crops. Constant terms are not reported. Absolute t-statistics are given below the coefficient estimates and * indicates significance at the 10% level; ** significant at 5%; and *** significant at 1%. The sources and further information on the data are provided in the text.

Table 12: FES Survey Communes

Province	Revision	ReAllot2			
			Khar'kov	.	1874
			Khar'kov	.	1877
			Kostroma	.	1864
Arkhangel'	1858	1877	Moskva	1860	1877
Arkhangel'	1858	.	Novgorod	.	1870
Arkhangel'	1859	1876	Petersburg	1861	.
Arkhangel'	1858	.	Riazan	.	1862
Arkhangel'	1858	.	Riazan	.	1862
Arkhangel'	1858	1877	Riazan	.	1862
Arkhangel'	1859	.	Riazan	.	1862
Arkhangel'	1858	.	Riazan	.	1862
Arkhangel'	1858	.	Riazan	.	1862
Arkhangel'	1858	.	Riazan	.	1862
Arkhangel'	1858	1878	Riazan	.	1862
Arkhangel'	1859	.	Riazan	.	1862
Arkhangel'	1858	1877	Riazan	.	1862
Arkhangel'	1858	1877	Riazan	.	1862
Arkhangel'	1858	1876	Riazan	.	1862
Arkhangel'	1858	1849	Riazan	.	1862
Arkhangel'	1858	1879	Riazan	.	1862
Arkhangel'	1858	1877	Riazan	1857	1879
Arkhangel'	1858	1878	Riazan	.	1862
Arkhangel'	1858	.	Riazan	.	1862
Arkhangel'	1859	1876	Riazan	.	1862
Arkhangel'	1858	.	Simbirsk	.	.
Arkhangel'	.	.	Tula	.	1861
Arkhangel'	1858	1877	Tula	.	1861
Arkhangel'	1859	1876	Tver	.	1877
Arkhangel'	1858	1877	Tver	.	1877
Arkhangel'	1858	1877	Tver	.	1877
Arkhangel'	1858	1868	Tver	.	1877
Arkhangel'	1859	1851	Tver	.	1877
Arkhangel'	1858	1876	Vologoda	1858	.
Arkhangel'	1858	1878	Vologoda	1858	.
Arkhangel'	1858	.	Vologoda	1858	.
Arkhangel'	1858	.	Vologoda	1858	.
Arkhangel'	1858	.	Vologoda	1858	1861
Arkhangel'	1858	1876	Vologoda	1858	.
Arkhangel'	1858	.	Vologoda	1858	.
Arkhangel'	.	1874	Vologoda	1857	.
Arkhangel'	1858	1849	Vologoda	1858	.
Arkhangel'	1858	1878	Vologoda	1858	1878
Arkhangel'	1858	.	Vologoda	1858	.
Arkhangel'	1858	1878	Vologoda	1858	.
Arkhangel'	.	1850	Vologoda	1858	.
Arkhangel'	1858	1850	Vologoda	1858	.
Arkhangel'	1858	1879	Vologoda	1858	.
Arkhangel'	1858	1875			
Arkhangel'	1858	1850			

Note: "Revision" are years of revision repartitions. "ReAllot2" is other mentioned

years with redivisions. Peterburg and Moskva observations are from RGIA (fond 91, opis' 2, dela 782 and 776), while the rest can be found in Barykov et al. (1880) and Anfimov and Litvak (eds., 1983-1991). See the text for further discussion.

Archival Holdings Consulted

- Russian State Historical Archive (RGIA)
Fond 91 The Imperial Free Economic Society
Fond 577 Main Redemption Administration
- Central State Historical Archive - St. Petersburg (TsGIA SPb)
Fond 766 Office of Peasant Affairs, Petergofskii County
Fond 1746 Poksovskoe Township Administration, Shlissel'burgskii County

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