*Online Appendix\**

Appendix Table 1

PREVIOUS PARTIAL ESTIMATES OF RUSSIAN / SOVIET INCOME OR WEALTH DISTRIBUTIONS, 1880–1981

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Data  Year | Type of  Inequality | Inequality of  What? | Inequality  Where? | Measure | Source |
| 1894 | Gini | Horse ownership, peasant households | Orel d., Orel province | 0.497 | Field (1989), from *zemstvo* studies |
| 1897 | Gini | Horse ownership, peasant households | Murom d., Vladimir province | 0.572 | Field (1989), from *zemstvo* studies |
| 1900 | Gini | Horse ownership, peasant households | Zadonsk d., Voronezh province | 0.473 | Field (1989), from *zemstvo* studies |
| 1900 | Gini | Arable land holdings, peasant households | Poltava province | 0.608 | Field (1989), from *zemstvo* studies |
| 1888 | Gini | Arable land holdings, peasant households | Konstantinograd d., Poltava p. | 0.484 | Field (1989), from *zemstvo* studies |
| 1900 | Gini | Arable land holdings, peasant households | Konstantinograd d., Poltava p. | 0.576 | Field (1989), from *zemstvo* studies |
| 1910 | Gini | Arable land holdings,  peasant households | Konstantinograd d., Poltava p. | 0.606 | Field (1989), from *zemstvo* studies |
| 1888 | Gini | Draft animals, peasant households | Konstantinograd d., Poltava p. | 0.434 | Field (1989), from *zemstvo* studies |
| 1900 | Gini | Draft animals, peasant households | Konstantinograd d., Poltava p. | 0.467 | Field (1989), from *zemstvo* studies |
| 1910 | Gini | Draft animals, peasant households | Konstantinograd d., Poltava p. | 0.390 | Field (1989), from *zemstvo* studies |
| 1967 | Gini | Incomes, nonfarm households, pre-tax | USSR | 0.229 | McAuley (1979) |
| 1905 | Top income | Income share of top 1 percent of households | Russian Empire | 0.15 | Gregory (1982) |
| 1914 | P90 / P10 | Wages, industrial sectors | USSR | 5.55 | Bergson (1944) |
| 1928 | P90 / P10 | Wages, industrial sectors | USSR | 3.49 | Bergson (1944) |
| 1946 | P90 / P10 | Wage and salary earnings, all sectors | USSR | 7.24 | Bergson (1984, from Soviet source) |
| 1956 | P90 / P10 | Wage and salary earnings, all sectors | USSR | 4.44 | Bergson (1984, from Soviet source) |
| 1961 | P90 / P10 | Wage and salary earnings, all sectors | USSR | 4.00 | Bergson (1984, from Soviet source) |
| 1981 | P90 / P10 | Wage and salary earnings, all sectors | USSR | 3.00 | Bergson (1984, from Soviet source) |

*Note*: These measures represent a select sample of inequality indicators collected from the English-language secondary literature.

COMBINING ESTATES AND SECTORS

As noted in the text, the available clues can be combined more efficiently if we recognize that the output sectors (agriculture, mining, domestic service, government, etc.) yielding average wage or salary data tended to interplay with a household’s estate (*soslovie*) status, which shaped household non-human wealth. The likely combinations that resulted also differed between cities and the countryside.

Here, we lay out the assumptions we have made about these estate-sector combinations, so that other scholars can judge whether or not our assumptions need to be changed for a more accurate view of Imperial Russia’s levels and distributions of income. We give a few illustrative assumptions here, and relegate the fuller details to an Excel file, “Households by Estate (*soslovie*), Sector (*zanyatie*), and Province 1904 …,” that is posted at http://gpih.ucdavis.edu, under Russia in the main data list.

Appendix Table 2 lays out the results of our assumptions, aggregated up to the fifty-province level. Our accounting system proceeded through the output (economic) sectors, beginning with agriculture, and ending with industry-commerce as a residual. For each output sector in turn, we undertook to document the social estates of the households employed in it based on a number of sources and judicious assumptions. The residual numbers of households in each estate were then carried over to the next estate, where further assumptions were made, and so forth. To illustrate our method, we provide a briefly summarize our assignment of estate members into agriculture and non-agriculture, leaving brief notes on other sectors for below.

It is not difficult to establish which estates were involved in the agricultural sector (in the 1897 Census). They were overwhelmingly peasants, with some nobility and miscellaneous (e.g., military) estates sprinkled on the side. The sum of households in these three estates exceeded the number of agricultural households by a margin that generates residual shares of these estates that were devoted to the nonagricultural   
labor force. Granted, the allocation of time is not the same as the allocation of responses to the “what do you do” question. But the shares should be similar.   
We assume that the share of persons in these estates not declaring themselves as agriculturalists equal the respective shares of these estates’ labor spent outside of agriculture.

Here, we expand on our assignment of estates to economic sectors from the text   
and above by summarizing our assumptions regarding sectors other than agriculture. Again, the results are available in the file, “Households by Estate (*soslovie*), Sector (*zanyatie*), and Province 1904 …,” that is posted at http://gpih.ucdavis.edu, under Russia in the main data list.

*Clergy.* The census gives more clergy as an occupation than it gives clergy   
as a social estate. This is presumably because the occupational-sector question on   
the census allowed the non-Russian-orthodox more leeway to declare clergy as their profession than did the question on estate.

*Free Professions.* These were presumably divided among households in many different social estates. We were guided by the inter-province correlations between estates’ percentage shares of all estates with free-profession shares of total household employment.

*Government.* The Russia, Ministerstvo Finantsov (1906) study offered a breakdown of the higher-paid strata of government between state, municipal-provincial, and *zemstvo* administrators.

Appendix Table 2

HOUSEHOLD NUMBERS BY OUTPUT SECTOR AND SOCIAL ESTATE, C. 1904

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Output Sector  (*zanyatie*) | Social Estate  (*soslovie*) | Numbers of Households | | |
| Urban | Rural | Total |
| Agriculture | Peasants | 192,451 | 13,070,931 | 13,263,381 |
| ( " ) | Nobility | 2,541 | 112,721 | 115,261 |
| ( " ) | Misc. estates | 1,663 | 330,235 | 331,899 |
| ( " ) | Meshchane | 2,267 | 8,604 | 10,871 |
| Servants | Peasants | 300,077 | 399,159 | 699,236 |
| ( " ) | Misc. estates | 9,642 | 1,992 | 11,633 |
| ( " ) | Meshchane | 11,473 | 51,957 | 63,430 |
| Clergy zanyatie | Clergy | 24,965 | 72,432 | 97,397 |
| ( " ) | Misc. estates | 5,033 | 5,331 | 10,364 |
| ( " ) | Meshchane | 881 | 17,325 | 18,205 |
| Free professions | Nobility | 46,039 | 8,005 | 54,044 |
| ( " ) | Merchants | 0 | 13,240 | 13,240 |
| ( " ) | Meshchane | 21,429 | 33,581 | 55,010 |
| Government admin. | Nobility | 11,325 | 582 | 11,907 |
| ( " ) | Merchants | 9,232 | 5,317 | 14,549 |
| ( " ) | Peasants | 24,221 | 20,087 | 44,308 |
| ( " ) | Meshchane | 36,179 | 31,758 | 67,937 |
| Industry and commerce | Nobility | 80,889 | 2,717 | 83,605 |
| ( " ) | Clergy | 1,023 | 258 | 1,281 |
| ( " ) | Merchants | 54,183 | 23,981 | 78,164 |
| ( " ) | Meshchane | 909,016 | 825,911 | 1,734,926 |
| ( " ) | Peasants | 403,940 | 1,024,381 | 1,428,321 |
| ( " ) | Misc. estates | 46,228 | 29,711 | 75,939 |
|  | Totals | 2,194,696 | 16,090,213 | 18,284,909 |

*Notes*: The main sources of these data are from the 1897 Census as published in Troinitskii,   
ed. (1905), inflated to 1904 by population growth rates in from Russia, Tsentral’nyi (1905).   
For additional details of the assumptions and estimates, see below and the file, “Households by Estate and Sector 1904” at http://gpih.ucdavis.edu, under Russia in the main data list.

STRATIFYING PEASANT INCOMES

A key contribution of our article is to go beyond *Opyt’* (Russia, Ministerstvo   
 (1906) to include the vast majority of households making less than 1,000 rubles in 1904. Since these were primarily peasants (roughly 85 percent of all households), constructing a plausible estimate of Russian inequality requires grappling with the distribution of incomes within this social estate. We outline our basic methodology here and report the result of this exercise in Table 4 in the article. A complete accounting of the assumptions underlying the distribution of incomes among the peasantry may be found in the file, “Peasant Incomes 1904” at http://gpih.ucdavis.edu. That file contains citations to the relevant sources on wage data, earnings by sector, and land holdings.

Peasant households derived much of their income from land, which, by 1904,   
they accessed via their membership in rural societies (*sel’skie obshchestva* – with the associated “allotment land”) or through private ownership (either individually or as members of quasi-corporate bodies). At the same time, peasant households also earned income from a variety of other sources, especially in the Central Industrial Region surrounding Moscow and St. Petersburg. We rely on a variety of *zemstvo* budget surveys (starting with Shcherbina, 1900; on Voronezh province; with other, lower quality, studies used as robustness checks) to document the contributions of these other types of earnings to overall household incomes by the type and amount of landownership. We vary the relative size of these contributions across provinces based on provincial level industrial and agricultural wage data. Based on their primary source of income, these peasant households can be allocated to different sectors as in Appendix Table 2 (the sum of peasant households in this table equals the sum in Table 4).

To arrive at the distribution of peasant households in Table 4, we first draw on   
our decomposition of *private* land ownership by social class (summarized in Table 3). We complement this with the high agricultural earnings assigned to peasantry from Russia, Ministerstvo (1906), in order to allocate non-communal peasant households to different income strata. For households who receive land through their communal memberships, we take into account the provincial-level variation in the size of these allotments (and their rental values) in assigning households to different strata in the upper part of Table 4. This assumes that land was allocated equally within a given commune. Alexander Chaianov (1986) and others have argued that Russian peasants’ communal allotment holdings were closely related to household size and structure—i.e., absolute equalization across households was rarely observed. Although this would suggest some additional within-commune inequality, our estimates of the distribution of allotment land across households closely resemble available (micro) *zemstvo* accounts. The amount of allotment and non-allotment land held by peasant households is taken from Russia, Tsentral’nyi (1906). Finally, based on *zemstvo* data (primarily from Voronezh), we assume that 4.5 percent of peasant households were landless.

CONSTRAINING THE IMPORTANCE OF INTER-PROVINCE LAND OWNERSHIP FOR INCOME INEQUALITY

Here, we address the possibility that the available data may have understated income inequality by counting as distinct landowners the separately recorded properties of one landowner in different provinces. One should begin by making an assumption about how people answered the 1905 Land Census question about how much land they owned privately. Did they respond by stating the land area only of the one property on which they resided, or by stating the area they owned within their uezd or gubernia, or by stating the area they owned throughout European Russia (or even the whole empire)? Our tentative assumption is that they answered by giving their holdings at the province (*gubernia*) level. That is, we assume that the data collectors managed to consolidate most of each owner’s (nonurban-realty) land values *within* the same province into a single land total for him. We need to worry only about inter-province mergers.

One might easily imagine that adding multi-province lands at the top of the distribution might widen the inequality of income a great deal. Yet on close inspection, the 1905 land census data place severe limits on how much greater the land inequality could have been for the fifty-province distribution of income as a whole.   
We document several reasons for this below. The main take-away from this effort   
is that the amount of a district’s land, or rental income from owning land, that could,   
at most, be reallocated to owners from *other* provinces (remember, all of our estimates are originally undertaken at the provincial level) was actually quite limited and   
would have only marginal implications for the inequality of landed income. This is because hypothetically “adding” additional land to one large landowner’s holdings would entail taking it away from another, likely equally large, owner. We are also aided by our knowledge of the social estate of landownership, which prevents us   
from misattributing ownership across estates within a province. The Online Appendix provides additional hypothetical robustness exercises regarding the implications of inter-district mergers of large holdings.

Here, we outline several other specific constraining facts and hypothetical exercises about the data on landholdings from 1905:

(a) The amount of land rental income is already fixed by the data sources, so that giving more land to somebody at the top must take the same amount of land income from others who are already landowners.

(b) We already know how many properties there were in each *rental value range*(e.g., those over 50,000 rubles, or 20,000–50,000, and so on down to landless), and their total value. So consolidating them across classes means that every ruble we give to a smaller number of owners has to be taken from other owners we have been putting in the same ownership value range. In the over-50,000 range, giving extra lands from other provinces to one owner reduces the other over-50,000 owners’ properties down toward 50,000 rubles each near the top of the income spectrum. While such a merger will definitely raise inequality at the top, it does so only among rich landowners who are within the top 0.0036 percent of the overall distribution.

(c) Further, for each province and each rental value range, we know the   
social estate of the owner. A merger of reported nobility-owned properties can only give extra land to nobility at the expense of other top-landowning nobility in other provinces. For properties of nobles in the over-50,000-ruble range, concentrating lands from different provinces into the hands of a few super-wealthy nobles, and driving other nobles’ landownership down toward 50,000 rubles would raise income inequality only among the top 0.0030 percent of households.

(d) Within each rental value range (again, over 50,000 rubles, or 20,000–50,000, and so on down to landless), the fewest number of landowners there could be for European Russia is the number of reported owners in the province having the largest number of separately identified landowning households in that rental value range and that social estate. The numbers of such *minimum landowners* (maximum separate owners in a single province, for this value range and social estate = minimum possible number of true owners for all 50 provinces) are as follows (drawn from the 1905 Land Statistics):

|  |  |  |  |
| --- | --- | --- | --- |
| Rental Value Range | Numbers of Minimum Landowners | Hypothetically Based  in Which Province? | Merging How Many Total Properties? |
| 50k–up | 51 | Kherson | 545 |
| 20k–50k | 116 | Podol’sk | 1,411 |
| 10k–20k | 222 | Podol’sk | 2,560 |
| 5k–10k | 316 | Podol’sk | 4,978 |
| 2k–5k | 545 | Tula | 11,283 |
| 1k–2k | 1,383 | Donskogo B. oblast’ | 12,011 |
| under 1K, > 0 | 3,911 | Minsk | 49,086 |

Consider this implausible exercise, one overstating the inequality effect of an imagined merger of lands across provinces. Suppose that, as much as possible, all rental properties owned by nobles in the over-50,000-ruble class in each province were merged into the hands of a single owner. Now the number of owners in any given class cannot be reduced to zero, since we know there are at least as many owners   
in any province as the data report. So for the over-50,000-ruble range there must   
have been at least as many as 51 owners of those 545 total properties, given that a maximum of 51 separate owners were recorded for a single province, here Kherson. Giving as much of European Russia’s properties worth over 50,000 rubles to one great owner must still leave at least 50,000 rubles of rental value for each of the others. Thus the hypothetically richest noble landowner would have had 60.1 million rubles of land rents each year. If we did the same for each other rental-value class, we would again create outstandingly rich individuals receiving amounts of rents ranging from 15.3 million rubles (merging properties in the 1,000-2,000-ruble range) up to that value of 60.1million rubles.

Such a hypothetical merger of properties, however, would only redistribute 9.4 million rubles, or 0.084 percent of the 11,199 million rubles of national household income. It would raise the gini coefficient only negligibly, from 0.362 to 0.363.

Furthermore, these hypothetical top rental estates of up to 60.1 million for the   
most landed individual, would greatly exceed the total all-Russia incomes recorded in the literature for any extended family. For example, scholars have estimated ruble incomes of the following high income individuals and families (the underlying sources are available from the authors upon request):

1,302,000 for Prince Iusupov 1900, at 6 percent income return;

1,244,013 for Abamalek-Lazarev family 1904;

1,050,000 for Bobrinskii, Graf, 1897, at 6 percent income return;

954,000 for Orlov-Davydov, 1900, at 6 percent income return;

695,568 for Meklenburg-Stremlitskii, and

350,000 for N. D. Anushkin.

Thus even this clearly implausible extreme redistribution among landowners of the same social estates would have had only negligible impact on overall income inequality.

ROBUSTNESS TO THE OWNERSHIP OF DIFFERENT TYPES OF INCOMES OVER 1,000 RUBLES

Using the same logic that applied for landholdings across districts, we can also put bounds on the amount of income inequality we might have missed in assuming that all over-1,000 ruble incomes listed in Ministersvo Finansov, *Opyt’* (1906) were incomes of separate households. Again, we find that a data source, despite its not exactly fitting the purpose of mapping the size distribution of income, does constraint the possible shape of that distribution, leaving it close to our preferred estimates.

Among the 369,655 household incomes in *Opyt’* that were estimated to exceed 1,000 rubles (in Table 5), at least 148,343 were certainly incomes of separate persons, namely those in state service, urban government officials, *zemstvo* officials, personal private entrepreneurs, and those in the free professions. Suppose, unrealistically, that all of the non-human property incomes, or the 1,645.7 million rubles in Table 5, were concentrated into the hands of just these 148,343 households, instead of being spread over 369,655 separate households, as our main estimates assumed. These 148,343 would have an average income of 11,095 rubles instead of the 4,452 rubles reported in Table 5. That would be more than a doubling of their average incomes, but by assumption it now applies to a smaller group, only 0.81 percent of all households. For the rest of society, having none of this 1,645.8 million rubles would imply a limited percentage loss. The rest of society would be 18,136,628 households (the total 18,284,971 households minus those 148,343). Its average income would be 526.76 rubles per household, instead of the 597.62[[1]](#footnote-1)\* it would have had if all the non-human property incomes over 1,000 rubles had been kept separate from those 148,343 top salaried persons. That is an average loss of 11.9 percent if it is spread over the whole bottom 99.19 percent (100 minus that 0.81 percent). This would raise the Gini coefficient from .362 to about .400, still below England-Wales at the time, though now a bit over the 1997 Russian Federal Gini of 0.393.

Yet even this limited upward adjustment would still overstate inequality. Even in the implausibly extreme case of our giving all over-1,000-ruble property incomes to   
a tiny 0.81 percent at the top, that concentration of incomes would not have cut incomes by 11.9 percent for everybody else, right down to the poorest peasant. This hypothetical concentration of top incomes redistributed only from incomes that were individually over 1,000 in our preferred estimates. That is, the hypothetical gain for the top 0.81 percent could have come only from taking income away from others already known to be in the top 20 percent of households ranked by income (see the average incomes in Table 6). The result: even an implausibly narrow concentration of incomes within the over-1,000 ruble group could only have been churning within   
the top 20 percent of households, with substantially more limited effect on overall inequality.

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1. \* This equals the national income of 11,199.453 million rubles minus the 342.566 million rubles already assigned to the 148,343 top officials, entrepreneurs, and professionals by the Opyt’ estimates, now divided by 18,136,628 households. [↑](#footnote-ref-1)