Unequal poverty and equal industrialization: Finnish wealth, 1750–1900

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Abstract

This paper presents for the first time estimates of wealth and its distribution for Finland from 1750 to 1900. Finland is a highly interesting case for historical inequality studies, as a poor and backward European country which embarked on industrialization only in the late nineteenth century. This gives us the opportunity to re-consider common theories and arguments about the relationships between economic growth and inequality. Using wealth data from probate inventories, we show that Finland was very unequal between 1750 and 1850, with the top decile owning about 85 per cent of total wealth. This means that Finland was more unequal than much more advanced economies such as Britain, France and the US, which goes against the common assumption of poorer economies being more equal. It was also more unequal than its most immediate term of comparison, Sweden. Moreover, when industrialization took off in Finland and *contra* the commonplace assumption of industrialization increasing inequality (see the Kuznets Curve and its later developments), inequality started a downward trajectory where the share of the top decile decreased from 87 per cent in 1850 to 77 per cent in 1900, 71 per cent in 1910 and 64 per cent in 1920. We show that the high inequality from 1750 to 1850 is driven from the bottom, by a large share of the population owning nothing or close to nothing of value, while economic development after 1850 is pro-equality since the ownership of forests, since long in the hands of the peasantry, provided new export opportunities as pulp and paper became very valuable. Our findings thus contradict commonplace assumptions that economic growth and industrialization always are associated with more inequality (Kuznets, etc.), as well as recent arguments (Alfani, Scheidel) that very few factors beyond catastrophes can decrease inequality. We instead argue for a more inductive and open approach to the determinants of long-run inequality.

Keywords: inequality, wealth, Finland, probate inventories, social structure

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What causes variations in economic inequality? Growing inequality today has led to growing interest in historical inequality studies. History offers a variety of cases and scenarios for studying how inequality varies in all kinds of settings. In societies where subsistence was the rule, owning (some) property was the most important determinant of one's living standards, and therefore wealth is the key variable of interest. Thanks to a series of studies building on probate inventories and taxation data, we now have long-run series of wealth inequality before 1900 for Britain, the United States, France and Sweden, as well as several cities and regions elsewhere (Hanson Jones 1980, Lindert 1986, Shammas 1993, Piketty et al 2006, Alfani 2015, Ryckbosch 2015, Bengtsson et al 2017).

We add here another case to the literature by presenting new estimates for wealth and its distribution in Finland from 1750 to 1900 based on information from probate inventories. Finland's peculiarities make this study an important contribution to the historical inequality literature. While countries like Britain, the US and France belonged to the economic core of Europe and were relatively early industrializers, Finland was a much more peripheral, poor and backward economy. First a Swedish province and then, from 1809 to 1917, a Russian province, in many ways Finland was somewhere in-between a "Western European" and an "Eastern European pattern" (Alapuro 1988, p. 4). While Finland was a part of the Swedish state from the mid-twelfth century until 1809 and its class structure with free peasant farmers were formed by Swedish rule, it resembled more a peripheral, Eastern economy with a low degree of urbanization and monetization. In 1700, Finnish GDP per capita only corresponded to 43 per cent of the British one and 78 per cent of the Swedish; in 1900 its level had further declined to 37 and 76 per cent, respectively (Maddison dataset). The Finnish case thus offers a new perspective on the much-debated issues of the relationship between economic growth, industrialization, structural change, and inequality.

I. Perspectives on historical inequality

Recently, a series of related ideas on the causes of variation in long-run inequality have been put forward. The common core is that economic growth and higher levels of living standards are correlated with more inequality, and that there are few if any factors that can decrease it. A strong focus on economic growth in the inequality debate goes back at least to Kuznets' (1955) argument, based on data for the US, Britain and Germany from the 1870s to the 1940s, that industrialization increased inequality, as incomes were higher in industry than in agriculture, and so agricultural workers were left behind. This argument has been immensely

influential (cf. also the "Super Kuznets Curve" of van Zanden 1995), which cannot be said about the second part of the Kuznets Curve, Kuznets' political economy argument that eventually, as urban lower-income groups organized for protective legislation, legislative interference and political decisions counteracted and decreased inequality.

More recently, Milanovic, Lindert and Williamson (2011) in a very influential paper on historical inequality have argued that at very low levels of GDP per capita, inequality cannot be very high, since with low GDP and high inequality the poorer part of the population would starve to death. With rising GDP per capita, inequality can grow without such catastrophe ensuing. They label this threshold the "inequality possibility frontier". They use 28 social tables from societies from Rome in 14 CE to India in 1947, and show that there is a positive correlation between average income and inequality, at least at low and medium income levels. For high incomes, the relationship levels off. Thus, in their model the relationship between GDP and inequality is not deterministic. In fact, they coin the term "inequality extraction ratio" for the relationship between the maximum possible inequality for a given level of GDP per capita, and the actually observed inequality. So for example, famously unequal Brazil is much closer to the IER maximum than the Netherlands or Japan.

Recently, several researchers have claimed that there are, at least in pre-industrial economies, few or no other factors than catastrophes (diseases, wars) that decrease inequality. Alfani (2015) in his study of Piedmont in the north-west of Italy from 1300 to 1800 finds that inequality grew at all times, regardless of the pace of economic growth. According to Alfani, inequality in Europe since 1300 only had two episodes of decline: the first after the Black Death when lack of labour drove up wages and increased mortality fragmented large properties, the second during the twentieth century. Scheidel (2017) makes a similar argument. Milanovic (2016) in his recent book, *Global Inequality* on the other hand claims that in societies that had not yet experienced modern economic growth, there were no benign forces – only malign ones – which decreased inequality: war, disasters, epidemics. (p. 55). In industrialized societies, on the other hand, inequality can be decreased by education, social transfers, and progressive taxation (Milanovic 2016, pp. 4–5); Milanovic is thus less strict than Alfani and Scheidel on the determinants of inequality.

Lindert and Williamson (2016) in their recent study of inequality in the United States since 1774 conceptualize the determinants of inequality in a very different way. They oppose Piketty's (2014) somewhat singular emphasis on capital accumulation, but their view might as well be read against the death and disasters as being the sole cause of decreasing

inequality. In essence, they claim that "there is no fundamental law driving the history of income inequality" (Lindert and Williamson 2016, p. 12). Instead, in their view inequality is driven by "episodic shifts" in six fundamental factors: politics, demography, education, trade, finance, and labour-saving technological change. So this is a much more inductive, broader approach to the determinants of pre-industrial inequality than that proposed by Milanovic (2016), Alfani (2015) and Scheidel (2017).

It should also be said that the view that economic growth and industrialization always is positively correlated with increases in inequality has been contradicted by at least two historical studies. Malinowski and van Zanden (2017) show that in Poland, due to serfdom and its legacy, the rural sector was more unequal than the industrial sector, contra Kuznets. (Cf. Lindert 1986 on Britain's extremely unequal land holding.) Reis (2017) on Portugal from 1565 to 1770 is another study with falling inequality, "at a time of mostly positive macroeconomic performance".[1]

Bengtsson et al (2017) in a recent study of wealth inequality in Sweden in 1750, 1800, 1850 and 1900 argue against the strong focus on economic growth and industrialization as drivers of inequality. They show that inequality grew from 1750 to 1800, from 1800 to 1850, and from 1850 to 1900, but in different ways: a bottom-driven increase (an increase in the number of very poor from 1750 to 1850 as proletarianization reduced the farming share of the population); a top-driven increase (polarization within the elite from 1850 to 1900); and polarization driven by rural real estate as well as claims and investments. The Swedish case shows the need to not only consider Kuznetsian inter-sector effects, but also the distribution and class structure within economic sectors.

This review of the literature motivates the interest in studying inequality dynamics in Finland, a poor and backward European economy before 1900. Because of its special features, it offers a new perspective on inequality compared to those from previous studies of wealthier core economies. The next section provides an historical overview on Finland.

[1] Turner (2010)'s study of Northern Ireland is an outlier in that he doesn't find increasing wealth inequality between 1850 and 1900. Turner argues that this had to do with the lack of industrialization in Northern Ireland during the period.

II. The Finnish Case

Finland was only created as an independent state in 1917, in response to the collapse of the Russian empire. Before that, since the twelfth century the areas that today are Finland had oscillated between Swedish and Russian influence (Alapuro 1988, p. 19). Sweden started expanding in Finnish territory in the mid of the 12th century gradually establishing its hegemony (Jussila, p. 3). The eastern border between Sweden and Novgorod was fixed in 1323, but Sweden expanded eastward in several occasions. Sweden and the emerging Russian state clashed several times, not the last during the eighteenth century, until Sweden lost Finland to Russia in 1809. Finland remained a Great Duchy of Russia from 1809 until 1917, when the Russian Revolution made independence possible. The Russian Tsar Alexander let Finland keep many of its institutions, including the four-estate Diet which was modelled on the Swedish one. However, the Diet was not officially called until 1863. For this reason, Finland in the nineteenth century was to a high degree ruled by the bureaucracy, which in turn was dominated by the nobility. The Baltic regions, also under Russian rule, were dominated by noble estate owners, who had no interest in strengthening a regional (proto-national) state apparatus or ally with the local peasant farmers. Finland was very different in that its elite identified with the "state", the Grand Duchy within the Russian empire (Meinander 2006, p. 100).

Alapuro (2004) sees Finland in the nineteenth century as a combination of Western and Eastern European pattern: it was Eastern in that it was an ethnic minority ruled by an empire while it remained Western in its social structure. "In the capitalist transformation of the epoch, Finland became a raw material producer for the Western countries and an exporter of processed products to Russia. Its relative overdevelopment vis-à-vis Russia was coupled with the comparatively egalitarian (Scandinavian) class structure, dominated by the landowning peasants who profited from commercialization."[2] (p. 86) Finnish agriculture was less developed than that in the other Nordic countries (Alestalo et al 1988, p. 10). This is related to the very Northern geography, with following cold climate, of Finland.

Finnish industrialization in the nineteenth century was quite rural, described as taking place "in the middle of the forest" (Haapala 1987, Alapuro 1988). The forest was indeed central to Finnish industrialization because of the leading timber and wood industry

[2] Similarily, Eloranta et al (n.d., pp. 18-19) find that unlike Sweden, Finnish wages in the eighteenth and nineteenth centuries stagnated, as other Eastern European cities and in contrast to Stockholm and other Western European ones.

that led the way. As late as 1860, exports only represented about 10 per cent of GDP. However, they grew rapidly in the 1860s and 1870s, reaching a level of 25 per cent of GDP in 1880, and staying around that level until World War One (Hjerppe 1989, p. 151). Exports were again heavily dominated by Finland's most abundant natural resource: the forests. Lumber was 44 per cent of exports in 1900 and together with paper and pulp industries, products based on wood constituted 69 per cent of exports (Alapuro 1988, p. 32). The use of steam as power source in the forest industry was forbidden until 1857, but after deregulation, this industry grew very rapidly. From the 1870s on, paper industry grew rapidly, as new techniques were introduced. Exports of paper to Russia were toll free from 1859 to 1885, and relatively privileged compared to Western European producers also after 1885. For these reasons as well as geography, the Russian market was important for Finnish paper producers (Meinander 2006, pp. 129-130). In understanding the social aspect of Finnish industrialization, it is important to notice that forests were to a high degree owned by farmers. Incomes from these exports facilitated the transition to stock-raising for the farmers themselves, increased purchasing power in the countryside, and thereby increased demand for domestic industry products (Alapuro 1988, pp. 34, 43, 262). This gave timber, paper and pulp exports special inter-sectoral linkages in Finland. In Norway and Sweden, which also had large forest-based industries, it was more common that merchants and companies owed the forests and exploited them. The transition to stock-raising was important for Finnish farmers after 1870 because of the large supply on the international markets in this period of cheap Russian grains. Like all grain producers, the Finnish farmers here faced stiff competition, but their transition was successful both because of the forest-based incomes and because of the very rapid growth of St Petersburg which, together with the building of railroads in the 1870s and 1880s, offered a large market for Finnish butter and other animal products.

Finland's experience of proletarianization during the nineteenth century was intense, among other things because of lower rates of emigration to the United States and "nowhere else in Scandinavia did the problems of the landless rural proletariat become as pressing as in Finland" (Alestalo et al 1987, p. 14). From 1801 to 1900, the Finnish population increased by 153 per cent, which is a similar rate to Denmark's 159 per cent and Norway's 154 per cent, but higher than 119 per cent in Sweden (Jörberg 1970, p. 14). However, in some respects industrialization was more peaceful in Finland than in Sweden. There were fewer large companies, and the national elite, as noted above was dominated by bureaucrats. This meant that the opposition to the new popular movements – the free churches

and the absolutists, but especially the labour movement – was less fierce in Finland than in the other Nordic countries (Alapuro 1988, pp. 101–105).

In terms of historical inequality, Jutikkala (1953) and Soltow (1981) provide the only existing studies of wealth distribution in Finland before 1900. They both use a wealth tax from 1800, with a sample of 2000 male household heads. While this tax is very interesting for inequality researchers as it covered the entire population, estimates built on it are likely to underestimate inequality as the tax allowed people to choose to have their property assessed "silently", whereby the details and values of one's individual property were excluded from the tax statistics and official publications built on it. This option is likely to have been used the most by people with a lot of wealth, which means that studies built on the 1800 tax underestimate the true level of inequality. The next estimates after that are Statistics Finland's estimates, which begin in 1909 and are built on tax data. These estimates are more reliable. (Roine and Waldenström 2014, p.149.) We will get back to the estimates in relation to our results.

III. The dataset

Our estimates for wealth and its inequality 1750-1900 are built on probate inventories. Probate inventories were mandatory by law in Finland from 1734 on (Markkanen 1978, p. 67). They were made at the time of death to settle the division of inheritances, for re-paying debts, and for paying a small (0.25 per cent) tax which funded poor relief. The Swedish-Finnish probate inventories were very comprehensive in their coverage of asset types, as they included real estate and land as well as movables and cash, and all debts. They are thus a very good resource for studying historical wealth and its distribution (cf. Kuuse 1974; Bengtsson et al 2017). Unlike the 1800 wealth tax used by Soltow (1981), they include movables, and unlike for example the British probate inventories, they include real estate (cf. Lindert 1986).[3] The Finnish probate records have been used for example by Laurikkala (1947) in his study of the dwellings and household appliances of farmers in one southwestern region in the eighteenth century, and Markkanen (1977) in a study of wealth and credit relationships in the rural population of central Finland 1850-1914. Most recently, Tiina Hemminki (2014) compared farmers in a district in the west of Finland (southern Ostrobothnia) and a district on

[3] A marginal exception is that for the nobility, books, clothes and small things could be excluded from the inventories (Ilmakunnas 2004, p. 133). This means that we slightly underestimate the wealth of the nobility and therefore also inequality.

the east coast of Sweden (Nordmaling in Ångermanland) 1796–1830 in terms of their wealth and, especially, their credit relationships.

The content of the probate inventory of the lower to middle classes could be as follows. The middle classes, such as farmers, would have clothes of wool, extensive bedding, a good selection of crockery, furniture such as clocks, several sets of clothing, books, and in the case of farmers, animals. The very poor would have very little furniture, little clothing beyond what they wore at the time, and very meagre household goods (see Moring 2007, pp. 241-242 who presents four actual individuals from the mid-nineteenth century). As Moring (2007, p. 246) remarks, "Inventories are fascinating sources that make us feel as if we come closer to the past." However, here we will abstract from the individual cases to focus on the aggregates.

The analysis in the paper builds on a great number of probate inventories collected by Ilkka Nummela between 1985 and 1989 (cf. Heikkinen et al 1987 for an early report). As a whole, the dataset includes 27,100 probate inventories from 1653 to 1915. The inventories come from six towns and 28 rural judicial districts. It must be stressed that the dataset hasn't been created by a random sampling strategy; rather, the inventories have been collected over a longer time and for different purposes. This is a problem for the generalizability, but we believe that the dataset should still be used, given how large it is, that it encompasses so many different parts of Finland, and, simply, that it is the only comprehensive dataset of historical wealth which exists for Finland. The towns in the dataset are Oulu/Uleåborg[4] on the northwest coast in the province of Ostrobothnia, Kokkola/Gamlakarleby on the west coast (also in Ostrobothnia), Hämeenlinna/Tavastehus in the southern central part of the country (Tavastia Proper), Kuopio in eastern central Finland (Savolax), Porvoo/Borgå on the south coast, and Käkisalmi/Kexholm in Viipuri Province, since 1944 transferred to Russia.[5] See Figure 1 for an illustrative map. They constitute a healthy mix of towns in that they include towns from different parts of the country and with different histories – for example, Porvoo is a medieval city which at the beginning of the nineteenth century was the country's second largest, while Käkisalmi was a small peripheral town which grew especially with the arrival of railways and paper mills around 1900. The rural parishes are drawn especially from three parts of the country.[6] One is the southwestern

[4] As Finland is bilingual, we state the town names both in Finnish (first) and Swedish (second).
[5] In Russian, the city's name is Priozersk.
[6] The precise districts included are Sääksmäki, Laukaa, Hattula, Saarijärvi, Rautalampi, Tammela, Akaa, Viitasaari, Karstula, Somero, Längelmäki, Pihtipudas,Hausjärvi, Pirkkula, Multia, Keuruu, Jokioinen, Pieksämäki, Mäntyharju, Muhos, Haukivuori, Korpilahti, Leppävirta, Pälkäne, Jämsä, Sahalahti, Mikkelin, and

region, southeast of Tampere and northwest of Helsinki. This is the region where industrialization – and industrial agriculture – began in Finland (Klinge 1996, pp. 108–110). The second region well-represented is around Jyväskylä in central Finland, slightly to the north. The third region is the eastern province of Savolax, which in the nineteenth century was known as an economically backward region within Finland (Alapuro 1988, p. 58). This diversity, that the sample is drawn from the northwest and southwest of Finland, regions which had strong trade ties to Sweden, and from the east, which on the contrary traded more intensely with St Petersburg after 1809, is a strength of the dataset.[7]

Figure 1. Map of Finland with historical regions

Note. The map is in the public domain, published in Topelius' *Finlands krönika 1860-1878*, and taken from Wikipedia.

Vilppula. The number of probate inventories per district varies from 52 in Pihtipudas and 63 in Karstula to 1851 in Pieksämäki and 1901 in Rautalampi.

[7] Cf. Klinge 1996, pp. 187–192 on the effects on eastern Finland of the 1856 Saima canal and the 1870 S:t Petersburg railroad. Alapuro (1988, pp. 57, 74–77) stresses that Ostrobothnia was strongly integrated with the Swedish economy, not the least Stockholm, before 1809 and that it lagged the rest of Finland after the integration in the Russian empire.

We construct four benchmarks estimates (1750, 1800, 1850 and 1900), for which we cluster enough inventories to be able to produce nationally representative estimates. In order to compile our benchmarks, we use a 20-year window, considering all observations recorded 10 years before and 10 years after each benchmark year. Because of the width of our windows, we have deflated all series using 1900 prices.

The dataset has two major shortcomings. The first is that it does not include information on the age at death of the probated individuals (Markkanen 1978, p. 68, remarks on this difference between Swedish and Finnish practice.). This is problematic as the probated population is on average older than the living one and therefore the sample has to be adjusted for age to be able to represent the living population (Lindgren 2003, Piketty et al 2006). We solve this problem by relying on the age distribution from the Swedish dataset in Bengtsson et al (2017). We basically order the individuals in the two samples according to their wealth attach to each individual a percentile and match Swedish and Finnish individuals based on the percentile they occupy in their distribution. Finally, we assign for each match the age of the Swedish individual to the Finnish one.

The second shortcoming is that except for the years 1820–1865, we do not have information on the wealth of the nobles. The reason is that an important part of the noble court archives of Finland went up in smoke in the Great Fire of Turku in 1827. We adjust for this problem by first compiling an all Finnish benchmark for the nobles in 1850. We then assume that the development of the size of Finnish nobles' wealth mirrors that of the Swedish nobles from Bengtsson et al (2017) that were located outside of Scania and Stockholm; Scanian and Stockholm nobles were especially wealthy, and thus not comparable to Finnish ones. We then extrapolate to 1750, 1800 and 1900 by applying this growth rate to the 1850 Finnish nobility. Moreover, as the relative size of the nobility with respect to the other groups in the other years might not be correctly assessed through time, we assumed that the relationship between the nobility and the bourgeoisie in 1850 in Finland was the same in all years, rescaling accordingly.

Our methodology can be justified as an assumption given that the Finnish nobles – in fact, they were often Swedish-speaking – had a similar position before 1809 as other regional nobility within the country, and that the Russians did not interfere with the composition of the nobility after 1809. The Finnish elites, in return, allied with the new Russian lords without much fuss (Meinander 2006, p. 100). We must remember that the Tsar had very low ambitions in terms of "Russification" of Finland, at least until 1899; Swedish

and Finnish remained the main languages of the province, and much of the administration, army etc. were separated from the main Russian state (cf. Meinander 2006, pp. 143–145). However, this still means that our estimate for 1850 is more complete and more reliable than the estimates for 1750, 1800 and 1900. We will get back to the reasons why we still believe that the results are defensible also for these years.

We follow Bengtsson et al. (2017) in classifying the population in four social groups: nobility, bourgeoisie, farmers, and a residual category of "others"/workers and lower middle classes. The reasons for using a nobility category are rather self-evident, given their privileges, including their group representation in the parliament until 1906. They have been studied as a group by for example Wirilander (1982). The bourgeoisie captures the mostly urban merchants, traders and entrepreneurs who ran businesses. They play an important role in Finnish historiography (e.g. Rosenlund Eriksson 2010). The farmers were a very large share of the population. The final category could be spliced up in more categories but we use the broad category of workers and lower middle classes to get enough probate inventories in each group. Thus, this category is quite heterogeneous.[8]

Tables 1 and 2 describe the dataset after ages have been assigned and the 1850 nobles have been used to in the other years. Table 1 shows the four social groups that we use in the analysis and Table 2 shows the sample in the seven age classes. The columns "True" indicate the share of each social and age group in the living population.

Table 1. Probate inventories in the sample by socio-economic group (number and share) compared to actual social distribution.

	1750			1800			1850			1900		
	No.	Share	True	No.	Share	True	No.	Share	True	No.	Share	True
Nobility	610	0.47	0.01	610	0.11	0.02	610	0.09	0.02	610	0.17	0.02
Bourgeoisie	211	0.16	0.04	356	0.07	0.04	371	0.05	0.05	755	0.21	0.05
Farmers	238	0.18	0.50	2333	0.44	0.29	2882	0.41	0.27	313	0.09	0.26
Others	235	0.18	0.44	2063	0.38	0.65	3095	0.44	0.66	1987	0.54	0.67
Total	1294	1.00	1.00	5362	1.00	1.00	6958	1.00	1.00	3665	1.00	1.00

Note: No. is the number of probate inventories in the unadjusted sample. Share is the share of each social group in the sample. True is the actual social group share of the total living population estimated from Kilpi (1913, 1915), Fougstedt (1953) and SVT (1905).

[8] Bengtsson et al (2017) in their study of Sweden 1750-1900 use four social groups, and show in an Appendix that using a more fine-grained classification, with 11 or 16 social groups, does not change the results.

Table 2. Probate inventories in the sample by age (number and share) compared to actual age distribution.

	1750			1800			1850			1900		
Age	No.	Share	True	No.	Share	True	No.	Share	True	No.	Share	True
20–29	58	0,045	0,310	113	0,021	0,309	431	0,062	0,305	132	0,036	0,299
30–39	143	0,111	0,213	503	0,094	0,253	730	0,105	0,241	329	0,090	0,219
40–49	299	0,231	0,167	1010	0,188	0,195	1322	0,190	0,180	471	0,129	0,187
50–59	352	0,272	0,141	1466	0,273	0,127	1694	0,244	0,149	613	0,167	0,148
60–64	120	0,093	0,056	863	0,161	0,044	701	0,101	0,047	396	0,108	0,053
65–69	94	0,073	0,041	571	0,107	0,033	754	0,108	0,035	497	0,136	0,039
70+	228	0,176	0,071	836	0,156	0,038	1326	0,191	0,042	1227	0,335	0,055
Total	1294	1	1	5362	1	1	6958	1	1	3665	1	1

Note: No. is the number of probate inventories in the unadjusted sample. Share is the share of each age-group in the sample. True are the actual age shares of the total living population, from Koskinen (2007).

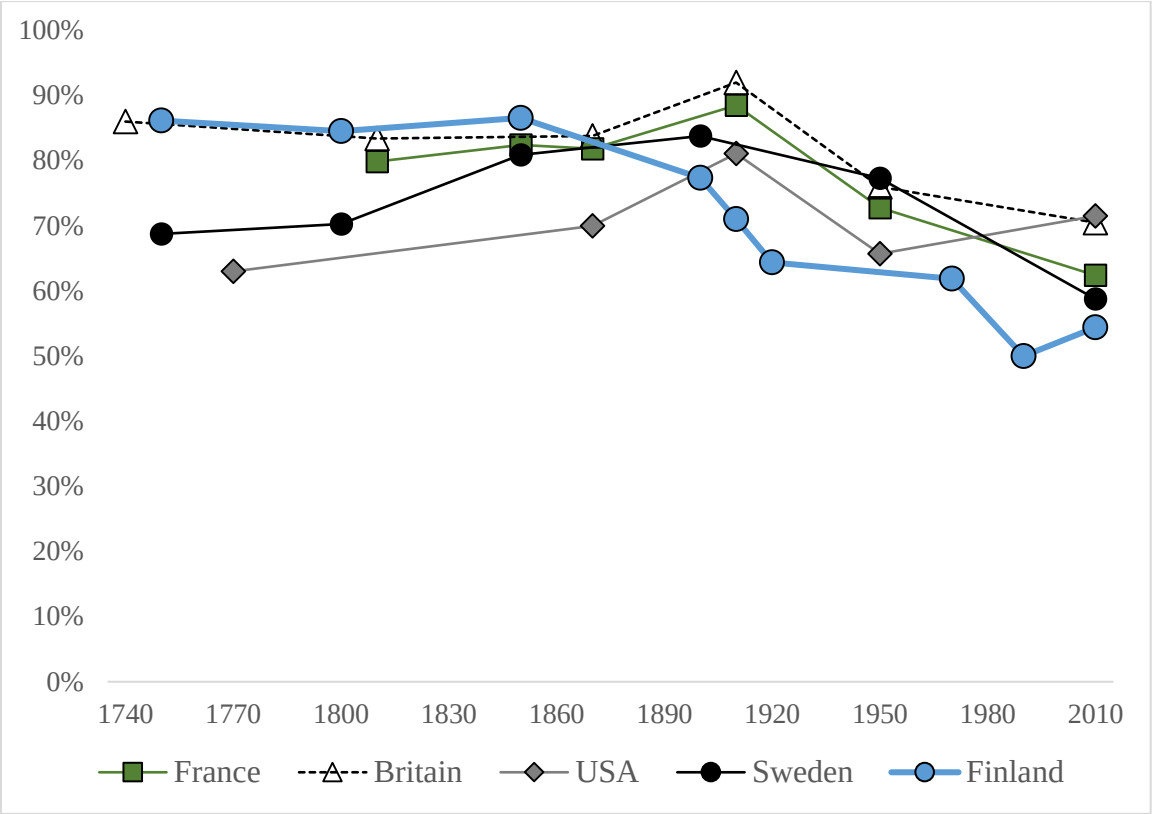
As is clear from the two tables, the distribution of both social and age groups in the sample is very unbalanced. In particular, nobles and older individuals are overrepresented. We adjust for these two dimensions. To adjust for age we use the inverse mortality multiplier approach, simply multiplying each wealth observation in each age group for the inverse of the mortality rate by age group.[9] Doing so, the observations for the younger groups have a larger weight in the calculation of inequality measures. For social groups, we keep the size of the most overrepresented group fixed and they replicate individuals in the other groups so that they match the living population shares (following Bengtsson et al 2017).

IV. Finnish inequality 1750–1900

Let us begin by considering a key indicator of economic inequality: the share of private wealth held by the richest decile of the population. Figure 2 shows this indicator for Finland in 1750, 1800, 1850 and 1900, compared to four other economies for which long-run estimates exist: Britain, France, Sweden, and the United States.

[9] In the lack of mortality rates for Finland we used the ones for Sweden from Bengtsson et al. (2017).

Figure 2. Finnish wealth inequality in international perspective, 1750–2010. The richest decile's share of total wealth



Note. Sources are USA 1774 and 1870 from Shammas (1993, p. 424) and Piketty (2014) for 1910–2010, Britain 1740–1870 from Lindert (1986, Table 4) and from Piketty (2014) for 1910–2010, France from Piketty et al (2006), Sweden from Bengtsson et al (2017) for 1750–1900 and from Piketty (2014) for 1910–2010. Finland 1910–2010 from Roine and Waldenström (2014).

There are two striking and surprising facts about Finnish inequality from 1750 to 1900. One is that the level is extremely high in 1750, 1800 and 1850. Given how poor the economy was in these years[10], and how little industrialization there was going on, from the literature on the Kuznets Curve (Kuznets 1955) and the "inequality possibility frontier" (Milanovic et al 2011), we would expect inequality to be lower. Finland, whose GDP per capita is about half of British and French levels in these years, has roughly the same level of inequality in 1750 and 1800, with the top decile holding around 85 per cent of total wealth. With these levels, Finland is clearly more unequal than Sweden and the US. The second surprising fact is that precisely when we from the Kuznets Curve would expect inequality to increase, meaning

[10] Hemminki (2014, p. 228) in her comparison of a district in southern Ostrobothnia in Finland and a district on the coast of the north of Sweden 1796-1830 finds that average wealth was about twice as high in the Swedish district. However we do not know how representative these districts are.

when industrialization gets going in the mid-nineteenth century, it actually decreases. Table 3 provides both the top 1% and 10% shares as well as the Gini coefficients for the four benchmark years, with a comparison with Sweden.[11]

Table 3. Wealth inequality in Finland and Sweden, 1750–1900.

		1750		1800		1850		1900	
		Level	*95% CI*	Level	*95% conf.*	Level	*95% conf.*	Level	*95% conf.*
	Top 1%	53.66%	*52.4–54.8*	55.19%	*53.4–57.0*	55.68%	*53.3-58.0*	32.74%	*31.6–34.0*
Finland	Top 10%	86.18%	*85.7–86.7*	84.52%	*83.8–85.2*	86.57%	*85.8-87.3*	77.37%	*76.9–77.9*
	Gini coefficient	0.89	*0.883–0.890*	0.90	*0.896–0.904*	0.92	*0.911-0.920*	0.86	*0.86–0.865*
	Top 1%	43.0%	*37.3–48.7*	39.7%	*37.8–41.7*	41.5%	*38.4–44.6*	57.6%	*54.1–61.0*
Sweden	Top 10%	68.7%	*65.4–71.9*	73.6%	*72.6–74.7*	78.9%	*77.6–80.1*	86.2%	*85.0–87.3*
	Gini coefficient	0.79	*0.765–0.809*	0.84	*0.831–0.844*	0.87	*0.863–0.878*	0.91	*0.904–0.919*

Note. Swedish estimates from Bengtsson et al (2017, Table 3). Finnish estimates built on the dataset described in section III.

From 1850 to 1900, inequality does not decrease as much when we look at the Gini coefficient as when we look at the top decile's share. The Gini coefficient only falls by 7.3 per cent (6 points out of 92), while the top decile's share falls by 10.7 per cent (7.15 points out of 86.6). This indicates that inequality decreased especially by the middle of the distribution catching up on the top: the top shares decreased very heavily, but without, perhaps, an all-over flattening of the distribution. The pattern is even more marked when we look at the richest percent's share of total wealth. Its share decreases by a third from 1850 to 1900. This indicates that when Finland industrialized, the wealth of the elite did not at all grow at the same pace as the wealth of the population at large – unlike Sweden, where inequality increased during these years.

We now turn to explaining these surprising facts, which challenge some of the established theories of long-run inequality.

[11] The results are quite compatible with previous estimates for 1800 and 1907, which are the only existing estimates for our period. Our estimate that the top decile held 84.5 per cent of private wealth in 1800 indicates slightly higher inequality than Soltow's (1981) tax-based estimate of 76 per cent. (Soltow finds that the top per cent held 34 per cent of total wealth.) Our 1900 estimate of 77 per cent on the other hand confirms quite well to Statistics Finland's estimate of 71 per cent in 1909 (reported in Roine and Waldenström 2014, p. 149). Regarding income inequality, Roine and Waldenström (2014, p. 111) find that the top decile's share of incomes decreased from a level of 50-55 per cent around 1870 to a level around 40 per cent between 1890 and 1910.

Social structure

Finland saw rapid expansion of the non-landowning class during the nineteenth century. 75 per cent of the rural population were landowning in 1820 and only 50 per cent in 1870. It can thus be assumed that rural inequality grew during this period (Voutilainen 2016, pp. 80, 83; cf. Alapuro 1988, p. 47). The change of social structure in both Finland and Sweden is shown in Table 4.

Table 4. Social structure in Finland and Sweden, 1750–1900.

		1750	1800	1850	1900
Finland	Nobility	0.50	0.40	0.30	0.30
	Bourgeoisie	4.17	4.19	4.82	5.44
	Farmers	50.80	29.31	27.77	26.19
	Workers and lower middle class	44.53	66.10	67.12	68.07
Sweden					
	Nobility	0.5	0.4	0.3	0.3
	Bourgeoisie	6.5	7.0	7.8	11.2
	Farmers	49.6	45.5	38.1	27.4
	Workers and lower middle class	43.4	47.2	53.8	61.1

Note. Swedish data from Bengtsson et al (2017). Finnish from Kilpi (1913, 1915), Fougstedt (1953) and SVT (1905).

The Finnish bourgeoisie grew slower than the Swedish, which reflects the lower rate of industrialization. The end-to-end decrease of farmer and the increase of workers is similar in the two countries.

Another important difference is that Finland urbanised later than Sweden. Sweden was a very rural country in the nineteenth century, with only around 10 per cent of the population in cities in 1800 and 1850. Between 1850 and 1900 however, this proportion more than doubled. The Finnish experience, as we see in Table 5, was similar but from a lower level. Here, only 5 to 6 per cent of the population lived in cities 1750–1850. The proportion did about double from 1850 to 1900, but still only reached 12.6 per cent in 1900. Given that cities typically were more unequal than the countryside, this could imply lower inequality in Finland.

Table 5. Urbanisation (share of population in urban areas) and industrialization (share of value added in industry) in Finland and Sweden.

	1750	1800	1850	1900
Finland	5.1	5.5	6.4	12.6
Sweden	10	9.8	10.1	21.5
Industrialisation: share of value added				
Finland			7.5*	16.7
Sweden		11	13.9	23.9

*1860. Source for urbanization in Sweden is Bengtsson et al (2017), Table 5. Industrialization in Sweden from Schön and Krantz (2012). Source for industrialization in Finland is Hjerppe (1989). Source for urbanization in Finland is Kilpi (1913, 1915), Fougstedt (1953) and SVT (1905).

Finland industrialized and urbanized later than Sweden did. One could point out that Finnish urbanization is underestimated since new towns still were counted as countryside in the official statistics; one historian claims that if the new industrial towns are counted as urban, then 35 per cent of the population was urban in 1910 rather than the 15 per cent in the official statistics (Meinander 2006, p. 134). However, there are similar issues in Sweden, and the general picture of later urbanization would hold also with amended data.

Table 6 shows the Gini coefficients for urban and rural areas. As in most other countries, urban inequality is higher than rural inequality. Urban inequality is high, with the Gini coefficient around 0.9 as in Sweden (Bengtsson et al. 2017) and it is quite stable, with little change from 1750 to 1900.

Table 6. Urban and rural wealth inequality in Finland 1750–1900, Gini coefficients.

	1750		1800		1850		1900	
	Level	*95% conf.*	Level	*95% conf.*	Level	*95% conf.*	Level	*95% conf.*
Urban	0.90	0.896-0.902	0.91	0.902-0.913	0.93	0.925-0.934	0.88	0.873-0.880
Rural	0.71	0.692- 0.724	0.87	0.866-0.881	0.89	0.878-0.898	0.84	0.841-0.849

Rural inequality on the other hand increases markedly from 1750 to 1800. There is a slight further increase from 1800 to 1850, and then a distinct decrease from 1850 to 1900. Given that most Finns lived in the countryside, these changes are of great importance to overall inequality.

Social groups

To further investigate how inequality changed, we now turn to a social groups perspective. Which groups were wealthier than others, and how did the differences change over time? Table 7 shows wealth per social group for our four benchmark years, with the average wealth of each group represented in multiples of the wealth of the average Finn. The "share" column shows the group's share of total private wealth.

Table 7. Wealth by social group, 1750–1900 (average Finn=1).

	1750		1800		1850		1900	
	Average	Share	Average	Share	Average	Share	Average	Share
Nobility	44,40	22%	42,12	17%	66,06	20%	11,36	3%
Bourgeoisie	4,17	17%	9,10	38%	2,44	12%	3,11	17%
Farmers	0,18	9%	0,79	23%	0,98	27%	1,79	47%
Workers and lower middle class	1,16	52%	0,33	22%	0,61	41%	0,48	33%
Total	1,00	100%	1,00	100%	1,00	100%	1,00	100%

The farmers' relative position improved drastically over time. In 1800 their average wealth was 79 per cent of the average person, in 1850 they were very average with 98 per cent, and in 1900 they were clearly wealthier than the average, with a wealth level at 179 per cent of the national average. This accords with Heikkinen et al's (1987, p. 82) finding of a very rapid increase in gross wealth of probated farmers in Sääksmäki judicial district in south-central Finland from 1870 to about 1890. While they find little increase in wealth from 1750 to 1830,

they find an increase after that and a very rapid rising trend 1870-1890.[12] One possible explanation is the rapid expansion of the wood, sawn goods and paper industries.[13] Since most of the Finnish forests were owned by farmers, they benefitted from the very rapid expansion of these sectors, which increased the price of their forest land (Alapuro 1988, p. 34). Alapuro (pp. 44–45) claims that "differences between manors and wealthy peasant farms nearly disappeared" during the industrialization period after 1860, when the peasants grew rich on basis of their forestry, and could afford a re-orientation of agriculture towards husbandry and exports of butter to the rapidly growing Russian capital of St Petersburg, which with 524 000 inhabitants in 1863 was one of the largest cities in Europe (Alapuro, p. 59). Peltonen (1992, pp. 365–366) presents estimates that in 1900, 36 per cent of peasant households produced enough timber so that they could sell it in the market. He presents this as a low number and rather puts more weight on the role of butter for farmers' cash flows, but nevertheless forest incomes seem important. Furthermore, taxes on agriculture were fixed and thus regressive, so farmers got to keep all of their expanded surplus, and the peasants were also politically strengthened as the Diet started convening regularly again after 1863. Finland was connected to St Petersburg by railroad in 1870; this was preceded by a canal in 1856 (Alapuro 1988, pp. 59–61).

Regarding the effect on wealth and its distribution of the expansion of forest-based industries, it is important to note the difference between Finland and Sweden in the ownership of the forest. In northern Sweden (Dalarna and Norrland), which was the most important location for wood, paper and pulp industry in the country, corporations owned about 20 per cent of the forest according to Sundbärg (1913), and furthermore they had long-run usage contracts for a large share. According to the 1868 forest committee, corporations had bought the right to fell the forest on among one third of Jämtland and one fourth of Gävleborg County. The corporations bought more land and in 1900 they owned about 4.7 million hectares in the north of the country, while farmers owned about 9 million hectares. Between 1900 and 1906 the corporations' land grew by another 20 per cent (Enander 2007, pp. 18, 20).

[12] They explain the stagnation in wealth from 1750 to about 1830 with that Sääksmäki was a relatively peripheral area. Laurikkala (1947) found rising living standard among farmers in the southwestern region of Finland Proper in the eighteenth century; this was the economic core of the country at the time, which can explain the differences between Sääksmäki and Finland Proper.

[13] An indicator of the growing weight of the Finnish timber industry is that *The Economist* of London first started publishing the prices of timber and planks from Finland in 1856 (Klinge 1996, p. 184). The Nordic countries' share of British timber imports grew rapidly in this period. See also Åström (1988).

We move forward with a breakdown of inequality per social group. Table 8 shows wealth distribution within each of our four social groups. The nobility shows a high and stable inequality. The stability is not surprising given that the 1850 benchmark is the base for all the others and only the mortality multiplier adjustment is responsible for the slight differences in the other years. The bourgeoisie does not show much change, and neither do the workers. Normally, less wealthy groups such as workers should display little inequality, but since we have for economy used only four social groups, the "workers and lower middle class" group is quite diverse. For the farmers, we find an increase in within-class inequality from 1750 to 1800, and then stability.

Table 8. Within-inequality for social groups in Finland, 1750–1900 (Gini coefficients).

	1750		1800		1850		1900	
	Level	*95% conf.*	Level	*95% conf.*	Level	*95% conf.*	Level	*95% conf.*
Nobility	0.81	.786-.841	0.81	.786- .841	0.84	.810-.874	0.85	.819-.885
Bourgeoisie	0.83	.825- .838	0.90	.895-.903	0.84	.836-.849	0.88	.871-.890
Farmers	0.58	.579-.587	0.80	.788-.808	0.79	.788- .799	0.76	.759-.766
Workers and lower middle class	0.90	.897-.903	0.83	.826-.831	0.92	.917-.925	0.87	.871-.874
Total	0.89	0.883-0.890	0.90	0.896-0.904	0.92	0.911-0.920	0.86	0.860-0.865

Table 9 shows with the Theil index Finnish inequality decomposed into the within-class factor and the between-class factor. This allows us to ask: were differences between the four social groups or within them more important for total inequality?

Table 9. Within-inequality for social groups in Finland, 1750–1900 (Theil index).

	1750	**1800**	**1850**	**1900**
Nobility	1.48	1.48	1.71	1.79
Bourgeoisie	1.56	2.08	1.65	2.20
Farmers	0.69	1.68	1.52	1.23
Workers and lower middle class	2.40	1.65	3.10	1.91
Between	0.75	0.96	0.83	0.29
Within	1.80	1.87	2.09	1.65
Total	2.56	2.83	2.92	1.95

The within component is generally more important, but it does not change much over time, bar a small decrease from 1850 to 1900. The between factor on the other hand shows much more change, increasing from 1750 to 1800 and from 1800 to 1850, then decreasing from 1850 to 1900. This information together with the wealth catch-up by the farmers shown in Table 7 supports our interpretation that the decrease in inequality from 1850 to 1900 was driven by the growing wealth of the farmers in relation to the upper-class groups, the nobility and the bourgeoisie.

In the recent literature on inequality (Milanovic 2016, p. 55; Scheidel 2017; Alfani 2017) the argument has repeatedly been made that inequality does not ever decrease in pre-industrial society bar following disasters (such as the Black Death) and wars. The Finnish development from 1850 to 1900 shows the limits of this argument. Finland in this period experienced pro-equality economic growth, because of the equal ownership of land and forest which increased in value because of developments in technology and trade.

The comparison with Sweden is striking. In Sweden, inequality increased drastically from 1850 to 1900. This increase was driven especially by new industrial fortunes being concentrated in the hands of the bourgeoisie elite (Bengtsson et al 2017). In Finland, the development in these years is very different. Industry was less dominant in the economy, and the ownership of peasant farmers was more important as a share of the economy. In Sweden, wealth inequality only started to decrease after 1930, with strong trade unions driving up wages and decreasing profits, and taxation reducing the great fortunes. Sweden never had a land reform, and despite the country's egalitarian reputation, the role of great noble landowners was quite important in 1900 and still is today (Olsson 2016). Finland on the other hand seems to have had a stronger farmer class in 1900. In this country unlike in Sweden, in the 1920s a string of land reforms was put through, decreasing the right of companies to buy forest, and strengthening crofters' right to the soil. These reforms have been put forward as an explanation of rapid and equal economic growth in the 1920s and 1930s (Meinander 2006, p. 164), in arguments parallel to those stressing the positive impact of land reforms in East Asia after 1945. Maybe we can see the Finnish route to equality, compared to the Swedish, as a more whole-heartedly agrarian one. We should remember that in Finland in 1950 still about half of the labour force was in agriculture, while the same figure was only 23 per cent in Sweden (calculated from Edvinsson 2005). Thus, although it would appear easy to bunch together Sweden and Finland as two similar, Nordic countries, there routes to equality were marked by differences as well as similarities. The important role of big capital in Swedish

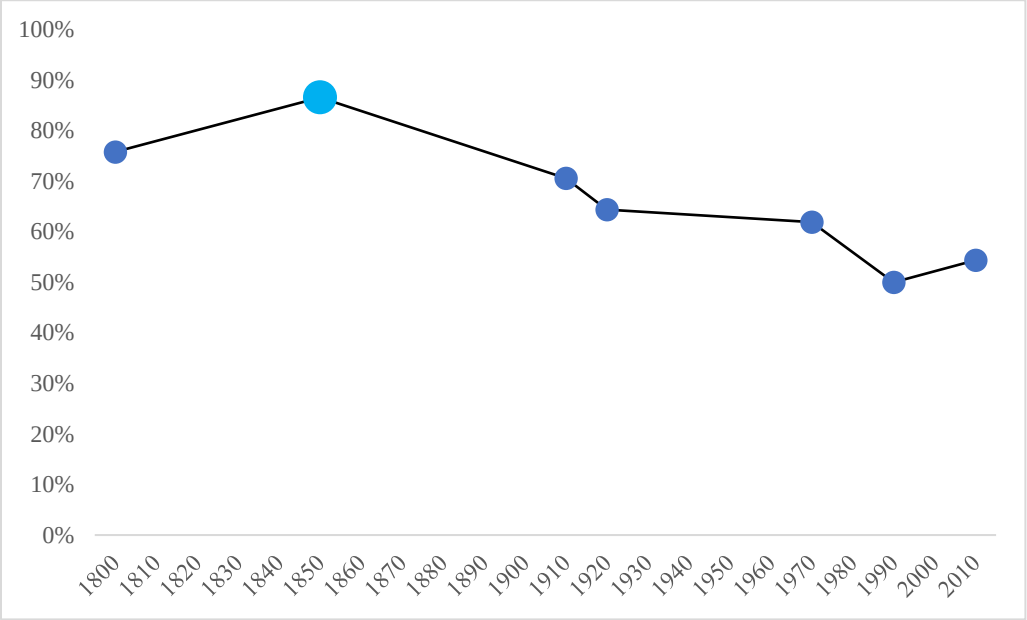
modernization has been pointed out in the comparison with Norway, which lacked a "Wallenberg" family and where instead the petite bourgeoisie and state bureaucrats were more important (Sejersted 1993). A similar point can be made in the comparison with Finland.

Lindert (1986) once pointed out that since land was so incredibly unequally held in Britain, the growth of industry and cities actually had an equalizing effect, *ceteris paribus*, on wealth inequality. The growth of other asset classes than land equalized asset holding since they were not as unequally held as the arable land of which in 1873 80 per cent was held by 7,000 individuals (cf. Thompson 1963, p. 27). Forested land was not a new asset class in Finland after 1850, but the use of steam power after 1857, new paper processing techniques from the 1870s on, and the transport possibilities offered by railways, gave it a new value (cf. Klinge 1996, pp. 184–187). Since farmers held so much of it, they benefitted tremendously. The Finnish case was in a sense opposite to the Britain analysed by Lindert, but also parallel. Because Finland lacked a dominant upper class of large landowners corresponding to the nobles and gentry in Britain. Instead, the dominance of the upper class in nineteenth century Finland was foundered on control of the bureaucracy and the state (Alapuro 1988, p. 91). Thus, the growth and intensification of capitalism may in Finland unusually enough have had egalitarian implications.

Robustness checks

One may doubt our argument on the evolution of Finnish wealth inequality, on the basis that we only have a complete dataset in 1850, and that we use proxies for nobles' wealth in 1750, 1800 and 1900. However, the inverted U from 1800 to 1900/1909 holds up also if we instead use our own data only for 1850, when we have the full dataset, and combine this with Soltow's (1981) tax-based estimate for 1800 and the official tax-based estimate for 1909. This is demonstrated in Figure 3.

Figure 2. Top decile's share of total wealth 1800–2010, using our data only for 1850



Note. Sources: Soltow's (1981) tax data analysis for 1800, official estimates presented by Roine and Waldenström (2014) for 1909–2010. Our estimate for 1850.

The peculiar development of Finland holds up also when using tax-based estimates for 1800 and 1909. Furthermore, we should keep in mind that Soltow's estimate for 1800 underestimates inequality, as some wealthy people opted for "silent" taxation and thus are excluded from the preserved tax data.[14] When this is taken into account, our story holds up here too: Finland was quite unequal in 1800 and 1850, on par with Britain and France in terms of the top decile's share of total wealth, and then, uniquely, inequality dramatically decreased from 1850 to the early twentieth century, during Finland's most intense industrialization period.

Finally, Table 10 shows the pattern of inequality if we remove the nobility from the sample, considering that we only have full data for them in 1850. Beyond the expected drop in inequality, a similar pattern through time is observed, confirming the overall picture. Panel B in Table 10 provides a robustness check for the changing geographical composition of the dataset. Since the dataset was not created to be nationally representative, the geographical representation varies over time. Especially, there are very few observations from Eastern Finland (more specifically the Savolax region) in the 1750 and 1800 benchmarks, but

[14] That it was especially the very rich who opted for the silent taxation is shown by the fact that the divergence in estimate of the top percentile's share between our estimate of 55 per cent and Soltow's of 34 per cent is very large.

many in the 1850 and 1900 benchmarks. Since Savolax is perceived as poorer and probably less unequal than other parts of the country, especially the southwest, this might bias the results (cf. Åström 1993, p. 33). Panel B tests for this effect.

Table 10. Robustness checks: wealth inequality excluding nobility or excluding Savolax, 1750–1900.

	1750		1800		1850		1900	
	Level	***95% conf.***	**Level**	***95% conf.***	**Level**	***95% conf.***	**Level**	***95% conf.***
Panel A. Excluding the nobility								
Top 1%	53.92	52.7-55.1	55.42	53.6-57.2	48.07	47.0-49.1	31.01	30.0-32.0
Top 10%	86.04	85.5-86.5	84.53	83.8-85.2	83.74	83.3-84.2	76.62	76.2-77.0
Gini coeff.	0.89	.882-.889	0.90	.896-.904	0.90	.897-.902	0.86	.856-.861
Panel B. Excluding Savolax								
Top 1%	53.66%	52.5-54.8	55.14%	53.3-56.9	56.08%	53.8-58.3	32.19%	31.0-33.4
Top 10%	86.18%	85.7-86.7	84.49%	83.8- 85.2	87.22%	86.5-87.9	79.03%	78.6-79.5
Gini coeff.	0.89	0.883-0.890	0.90	0.895-0.904	0.92	.915-.924	0.87	.866-.871

Panel B in Table 10 shows that our results hold up when we exclude Savolax parishes and the Savolax town Kuopio from the sample.

V. Conclusions

Finland is the poorest economy for which we now have consistent long-run inequality estimates before 1900. As such, our study provides peculiar insights into the dynamics of inequality. The Finnish case provides evidence against three influential arguments in the extant literature. One, the relationship between average incomes and inequality. As argued by Milanovic et al (2011), we would expect poorer economies to have lower inequality. However, Finland in 1800 was as unequal as the much wealthier countries Britain and France, and more unequal than the wealthier United States. Two, the even more influential argument that inequality grows with industrialization and urbanization (the Kuznets Curve). On the contrary, in Finland inequality grew before industrialization from 1800 to 1850, and decreased heavily from 1850 to 1900, during industrialization. Three, the decrease in

inequality from 1850 also questions the argument made by Scheidel (2017) and Alfani (2017) that inequality only decreases in connection to disasters and wars. There was no plague and no war in Finland between 1850 to 1900; inequality instead decreased because of a kind of inclusive growth, built on widespread property rights in a large share of the population, when the forest became more valuable as timber industry and other forest-based industries grew.[15] (Not dissimilar to Lindert's analysis of how inequality decreased in Britain when land – extremely concentrated in the hands of a small elite of landlords – became less dominant as a type of wealth.) Together, these three points highlight that our study shows that the historical inequality literature must consider the influence of property rights and their distributions, class, and institutions as well as economic development and external factors such as wars and disasters, if we shall understand long-run inequality (cf. Acemoglu and Robinson 2015; Lindert and Williamson 2016).

In response to the current fashion of generalizations that inequality before 1900 never decreased other than because of wars and disasters, we should remember that our stock of actual good measurements of pre-1900 inequality actually is quite limited. For example, there are no long-run estimates of inequality in such an important state as Prussia. In an economy allegedly so dominated by nobles (the famous Junkers), how did inequality develop during the nineteenth century as international market integration increased and industry spread? On the other end of the spectrum, there is no study of the peasant farmer-dominated economy of Norway. On the more unequal spectrum, the Baltic states with their large estates and long duration of feudalism, and of course Russia with a similar model, would be fascinating cases for inequality analysis. As long as so much of the factual history of inequality is un-researched, it seems untoward to draw too strong theoretical conclusions on the determinants of inequality in the long run. A more inductive approach such as that favoured by Lindert and Williamson (2016) is the better way forward for historical inequality research. Our paper also opens up for further investigation of how the poor country of Finland could be so unequal 1750-1850. This paper has focused on the wealth estimates themselves and situating the Finnish case in an international context, but we have not developed the analysis of the Finnish context. Such a development would be highly interesting to further advance our understanding of long-run inequality.

[15] There was a famine in the 1860s (see Voutilainen 2016 for a complete treatment).

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