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Swedish income inequality in 1613

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Abstract

In this paper we present the first estimate of the full income distribution in pre-industrial Sweden (including present-day Finland). We draw on the schedule and the individual assessments devised by the authorities to distribute the 1613 Älvsborg ransom taxation to estimate income inequality, as well as the income shares of the top quantiles and of various social groups. We find that Sweden was relatively equal compared with other early modern European societies, for two main reasons: first, because the nobility, the clergy, the burghers, and other middle-rank social groups all held relatively small shares of the total income, and second, because the landless groups were less numerous in Sweden than in other societies. This resulted in a large share of the total income going to the relatively homogeneous group of landed peasants, who made up the majority of the population. Our study thus speaks to the political historiography of early modern Sweden, within which negotiation and collaboration between the landed peasantry and the state has been seen as pivotal to the state formation process.

KEYWORDS
early modern period, income distribution, inequality, Sweden, top incomes

JEL CLASSIFICATION
D31, N13, N33

I | INTRODUCTION

Over the last decade, inequality has become a key area of interest within the field of economic history, producing a wealth of new data on the distribution of assets or incomes in various societies throughout history.[1] The aim of this article is to present the first estimate of the income distribution, and hence to measure the level of economic inequality, in pre-industrial Sweden. The Swedish case is interesting , as political historians have long argued that early modern Sweden had a more equal political system than most other European countries. The parliament included peasants as a fourth political estate (in addition to the nobility, the clergy, and the burghers), which at least in theory gave the peasantry political influence in matters such as taxation.[2] Historians, most notably Eva Österberg, have also studied the political culture of local arenas in terms of the interaction between state and subjects in early modern Sweden, arguing for their fundamental importance for the state formation process, although also admitting that they were generally only open to the wealthiest of the landed peasants.[3] Yet, despite the consensus on early modern Sweden as being relatively politically inclusive, the evidence presented so far regarding its income distribution remains at best fragmentary, as previous studies either deal with wealth, with only one particular social group, or focus on a smaller region.[4]

The aim of this paper is to remedy this by providing the first estimate of the full income distribution in Sweden for the pre-industrial period. The study is based on the Älvsborg ransom taxation of 1613, which included two types of information on incomes: a social table, drawn up by the authorities to distribute the tax burden justly, and individual assessments of the incomes of the richest groups in society, including, for example, the royal family, the nobility, the clergy, and the burghers.[5] Whilst the social table thus gives us the amount to be paid by most individuals on the basis on their social standing, and the numbers of taxpayers in each social group have been gathered from the taxation lists themselves, the individual assessments give us a rich source for the distribution of incomes among the top income earners.

In what follows, we present evidence not only on income inequality in Sweden in 1613, but also on the top income shares and on the composition of the rich, and compare the total incomes of the main socio-political groups that made up early modern society. Our results show that in 1613, the top 1 per cent earned 13.2 per cent of incomes, whilst the top 0.1 and top 0.01 per cent earned 4.8 per cent and 2.2 per cent, respectively. This means that the income shares of the richest in Sweden were of the same magnitude as in other contemporary European societies.[6]

[1] For a recent discussion, see Jackson, 'The new history'.

[2] On the role of parliaments in early modern Europe, see, for example, Myers, *Parliaments and estates*; van Zanden et al., 'The rise and decline'; North and Weingast, 'Constitutions and commitment'; Piketty, *Capital and ideology*. On the early modern Swedish parliament: Schück et al., eds., *Riksdagen*.

[3] Österberg, 'Bönder och centralmakt'. Recent studies of the local political arenas in early modern Sweden are Hallenberg and Holm, *Man ur huse*; Dørum, Hallenberg and Katajala, *Bringing the people back in*.

[4] We discuss previous research on Swedish early modern inequality in sect. 2. The material basis for the political influence of the peasant estate has often been noted in previous research, although it has not previously been quantified. See, for example, Odén, *Rikets uppbörd och utgift*; Lindegren, 'The Swedish "military state"'; Glete, *War and the state*. For a (hypothetical) model of how the relative size of various social groups changed over the sixteenth century in Sweden, see Myrdal and Söderberg, *The agrarian economy*, ch. 1.

[5] The social groups are further presented in app. I, the sources used in app. II, and the bases for the individual assessments in app. III.

[6] This is in line with the findings in a recent working paper by B. Milanovic, 'How rich were the rich? An empirically-based taxonomy of pre-industrial bases of wealth', *Stone canter on socio-economic inequality working paper*, 69 (2023),

The rich were mainly made up of the landed nobility, who supplemented their incomes by state service, and only to a little degree of merchants making their fortunes through trade. Sweden does, however, stand out in the income share of the bottom 90 per cent of the population, which was substantially larger in Sweden than in other early modern societies, and this for two main reasons. On the one hand, this was because Sweden lacked a substantial bourgeoise, bureaucratic, or noble middle class, whilst on the other hand, the landless and other poor social groups were also small in Sweden compared with other early modern societies.[7] Their places in the income distribution were instead taken up by a relatively equal mass of landed peasant households.[8] The political influence exerted by the peasantry thus had a potential economic foundation.

In addition to the new evidence on the Swedish early modern income distribution, our study also shows how individual assessments for the rich can be combined with social table data to provide a rich description of the structure of inequality, including within the very top, that goes beyond simple summary metrics such as the Gini coefficient. As pointed out by Milanovic,[9] for researchers of social and political institutions, societal dynamics are not determined simply by levels of inequality, but rather by who earns what and how income is distributed among different classes.

The rest of the article proceeds as follows. Section 2 provides a short overview of the research on pre-industrial inequality in general and income inequality in particular, followed by a more in-depth presentation of previous studies of inequality in early modern Sweden. Section 3 presents the main source used for the study, that is, the material from the 1613 Älvsborg ransom taxation, and the methods we use to study the income distribution.[10] Here we also present the social table. Section 4 presents results on top incomes. We not only study the income shares going to the richest individuals, but also the social composition of the rich by giving an overview of their social status. We further discuss the nature of their income-generating activities by presenting some of the top-income earners in more detail. In section 5 we instead focus on the whole income distribution by studying the social composition of all income quantiles. We also compare the total income shares of larger socio-political groups. Section 6 contains a comparison between the Swedish income distribution in 1613 and existing studies of four other pre-industrial European societies, and discuss some explanations for premodern economic inequality previously suggested. In the final section, we sum up the main findings of the paper.

p. 11, which classifies Sweden as having '[m]oderate income concentration' compared with other premodern societies. Milanovic's working paper came out during the revision of this manuscript.

[7] That the landless share of the population in Sweden was relatively small has also recently been indicated by Lindström, 'Labouring poor'; Miettinen and Lindström, 'Survival in a hostile agrarian regime'.

[8] For the relative equality among the landed peasant households, see Harnesk, 'Rika bönder'; Lindström, *Distribution and differences*; as well as app. VII. It should be noted that those who are often included in the peasantry in historical research on other early modern European societies are here found not only under the label 'peasants', since both the more affluent landed peasants (e.g. peasant-miners, county sheriffs) and the less fortunate (e.g. cottagers, soldiers, married servants) were listed in separate categories. The social table thus captures the major inequalities within the peasantry.

[9] Milanovic, 'How rich were the rich?'.

[10] More in-depth information regarding the sources (both regarding the individual incomes and the social table) can be found in apps. I–V, together with a discussion of the translation of the Swedish social categories, a presentation of the methods used for creating the socio-political groups, and a discussion of the robustness of some assumptions made in the calculations.

II | PREVIOUS RESEARCH

Research on pre-industrial inequality has traditionally focussed on the distribution of wealth. The main reason for this is that capital was more often subject to taxation and, consequently, there are many more sources for pre-industrial wealth than income. This wealth approach has been used by Alfani and co-authors when studying inequality across Europe during the centuries, from the Black Death up to 1800. Estimates have been provided for several Italian city states, the Low Countries, the German lands, and England.[11] The general conclusion from this research is that inequality tended to grow across these diverse polities throughout the early modern period. There are some important drawbacks of using wealth as a measure of economic inequality, however. The most important is that, historically, most individuals held very little or no wealth at all. Since wealth only tallies physical capital but disregards human capital, historical records as a consequence are tacit regarding the incomes of the propertyless, since the incomes accruing to an individual from their unskilled labour and human capital are not considered.

Another approach follows a methodology set out by Piketty, which measures or estimates the income shares that went to the top income earners.[12] These estimates, which are available for an increasing number of countries, typically begin with the year when a personal income tax was introduced. This means that in only a few cases the series goes back to the nineteenth century, and to a time before a country began to industrialize. In terms of top income shares, most countries studied exhibit a pattern of high inequality prior to the First World War, followed by falling inequality during the interwar period resulting from capital destruction, inflation, and increases in progressive taxation. The drawback of this method is that it only pertains to the top of the income distribution and therefore remains silent regarding the distribution of income among the majority of the population.

A third approach, introduced by Milanovic, Lindert, and Williamson, uses so-called social tables to reconstruct income inequality in pre-industrial societies.[13] The method consists of combining information on the size of different social groups or classes within a society with estimations of the average income of the same groups, which results in an estimate of income inequality that takes into consideration the full population. Using this methodology, the authors have produced inequality estimates for pre-industrial economies ranging from the Roman Empire under Augustus to nineteenth-century colonial India. A disadvantage of the approach, however, is that it runs the risk of underestimating inequality, since incomes tend to be very skewed near the top of the income distribution.[14] Research on modern top incomes has found that major changes in inequality are, in fact, often the result of the fortunes of the richest in society.[15]

Our approach is a combination of methods taken from the social tables and the top income literature. We start by constructing a social table consisting of about 50 groups, using the taxation amount of each group together with the number of taxation units for the same categories.[16] To

[11] See, for example, the survey in Alfani, 'Economic inequality'.

[12] See, for example, the edited volume by Atkinson and Piketty, *Top incomes*, and Atkinson, Piketty, and Saez, 'Top incomes in the long run'.

[13] Milanovic, Lindert, and Williamson, 'Pre-industrial inequality'. See also Milanovic, 'How rich were the rich?', which presents a preliminary comparison of income inequalities from 50 social tables for premodern societies.

[14] Modalsli, 'Inequality in the very long run'.

[15] See, for example, Roine and Waldenström, 'Long-run trends'.

[16] This can be compared with the median of 13 social groups in the 50 social tables used by Milanovic, 'How rich were the rich?'.

this social table we then add data gathered from individual taxation assessments for the richest individuals in society (e.g. the royal family, the nobility, the burghers, and the clergy). This allows us to precisely calculate the income share going to the top 1, top 0.1, and even top 0.01 per cent, which means that we avoid the problem otherwise present in the social tables method of missing individual variation at the top of the distribution. In addition, since all income data are classified according to social group, we are not only able to analyse the social composition of the rich in the top of the income distribution as well as the different quantiles, but also to compare the relative economic standing of larger socio-political groups. Our definitions of income and population closely follow the methodology set out by Piketty and co-authors when studying modern inequality, which means that the income shares we present are comparable to those found in previous research regarding the twentieth century.[17]

Previous research on distributions of income and wealth in early modern Sweden prior to the late seventeenth century mainly consists of studies focussing on one particular social group, and is, in addition to this, often also limited to studying a single small region or town. This still leaves unanswered questions on how large regional variations in wealth or income were, and how the economic affluence of members of different social groups compared with each other.

The income and wealth of the Swedish nobility has been studied by Samuelson for the 1560s and for 1607.[18] He finds that the main source of income of the nobility was land rents from their inherited estates, although some members of the high aristocracy also benefitted from royal donations, whilst lesser noblemen could complement their modest rent incomes by salaries from state service.[19] Samuelson's general conclusion is that the nobility as a group was divided between a small group of aristocrats with very large fortunes and incomes and a larger group of petty nobles, who often owned little or nothing more than a single manor house.[20]

Regarding burghers, the income distribution in Stockholm during the early years of the seventeenth century has been studied by Sandberg.[21] His analysis was based on taxation lists created for the so called *örestal* tax, in which it was stressed that the procedure sought to be 'fair' in the sense that the taxation should be proportional to individually assessed incomes. Sandberg found a substantial difference between the richest burghers and the rest, in which in 1607 the bottom 80 per cent paid 41 per cent of the tax, compared with the 34 per cent paid by the top 7 per cent of

[17] It should be noted, however, that in terms of geography, the Swedish territory has undergone some changes since 1613 (although they may be regarded as small when put in a long-term European perspective). Our data cover all of the Swedish realm in 1613, which includes most of modern-day Sweden but not regions that were conquered from Denmark in the middle of the seventeenth century (e.g. Scania), not the region around the Älvsborg fortress, which was occupied by Denmark at the time, and not Lapland (as the Saami were not included in the taxation). Furthermore, it does include most of what today is Finland, as well as a part of modern Russia. A map of the included territory may be found in Andersson, *Migration*, p. 50.

[18] Samuelson, *Aristokrat eller förädlad bonde?*, pp. 56–113.

[19] Land rents in early modern Sweden would include payments in cash, payments in kind, and labour services, which were mainly used to work the demesne land. For a general overview, see Myrdal, *Det svenska jordbrukets historia*, pp. 323–33.

[20] Numerically, this division may be exemplified by the distribution of the feudal rent income in 1607. Of a total of 320 noblemen in Sweden (excluding Finland), 69% had an income of 100 *daler* or less, whilst only 12 individuals had an income of more than 500 *daler* and the top percentage had an income of more than 800 *daler*, according to Samuelson, *Aristokrat eller förädlad bonde?*, p. 70.

[21] Sandberg, *I slottets skugga*, pp. 294–302.

the burghers.[22] Similar patterns have been found in studies of smaller towns such as Uppsala or Enköping, but there the *örestal* was more equally distributed as a result of the richest burghers in these smaller towns being much less affluent than their counterparts in Stockholm.[23]

Most attention in previous Swedish research on pre-industrial inequality has, however, been given to the wealth distribution within the peasant group. Several studies concerning the seventeenth century have used proxies for wealth, such as the number of cattle or sown acres. In one such study, Lindström found that the bottom 50 per cent of peasant households (in two parishes in central Sweden in 1641) owned about a third of the livestock, whilst the top decile owned close to a fifth.[24] Other studies have found similar results, or perhaps a somewhat more unequal distribution, as in one northern parish studied by Lindegren, where in 1621 the bottom half of the population owned only 25 per cent of the livestock, whilst the top decile owned 23 per cent.[25] Perhaps most illuminating is a study by Harnesk of six rural parishes (all located in a region in northern Sweden), which is based on records from wealth taxations that not only included livestock, but also money, precious metals, and crops.[26] Harnesk found that the peasant wealth distribution was quite homogeneous over the different parishes, as well as stable during the last decades of the sixteenth century. The top decile of the peasantry owned between 19 per cent and 24 per cent of the total local assets, whilst the bottom decile only owned some 3 or 4 per cent – a dispersion of wealth that Harnesk described as 'considerable' and as 'hardly an, in an economic sense, equal peasant society'.[27] However, since we are interested in incomes rather than in wealth distribution, it should be noted that a substantial portion of the inequality found by Harnesk was due to the fact that precious metals (mainly silver in the form of status objects such as spoons) were unevenly distributed in the peasant population. If silver is disregarded, the wealth distribution found by Harnesk would instead resemble the ones found in studies relying only on livestock or grain.[28] Total peasant wealth was thus much more unevenly distributed than their productive capital, the livestock, and the grain, which we believe more strongly reflect peasant incomes.

To sum up, previous research on Swedish inequality during the late sixteenth and early seventeenth centuries has mainly concerned wealth distributions within certain social groups and local communities. For noblemen as well as for the burghers in Stockholm, research has found that a large share of the total incomes went to a small portion of the population, although exact quantifications are rarely given. Small-town burghers and peasants were markedly less unequal, and despite peasant wealth inequality having been described as substantial by one researcher, what the figures in fact show is a large but economically quite homogenous group, especially when only

[22] In the central parts of Stockholm, where the rich burghers preferred to live. The differences were consequently smaller in suburban areas, where the top 7% of the burghers only paid 14% of the tax. Sandberg, *I slottets skugga*, p. 299.

[23] Ljung, *Enköpings stads historia*, pp. 403–8.

[24] Lindström, *Distribution and differences*, pp. 71–3.

[25] Lindegren, *Utskrivning och utsugning*, pp. 95–6 (calculations based on figure 13). The wealth shares owned by the respective groups were almost identical two decades later, in 1641 (24% and 23% , respectively), although they had not been constant during the interval period (in 1630, the top decile was down to 21% and the bottom-half up to 31%). The taxation year chosen for studying local peasant inequality may thus significantly affect the results, if a measure such as the number of animals is used.

[26] Harnesk, 'Rika bönder och fattiga', pp. 191–213.

[27] '[…] olikheterna i förmögenhet varit betydande. Det är knappast ett i ekonomiskt avseende jämlikt bondesamhälle som framträder […]', Harnesk, 'Rika bönder och fattiga', pp. 196–7.

[28] Harnesk, 'Rika bönder och fattiga', p. 195, only gives the wealth-sine-silver data in a figure for one of the parishes and does not further comment on its distribution.

productive assets are considered, and certainly relative to the rest of society. As noted above, one crucial question regarding Swedish economic inequality is, however, left unanswered by the previous research: how did individuals of different social groups, such as the wealthiest burghers or noblemen, compare with each other? Our study contributes to the existing research by providing the first estimate of the full distribution of income in pre-industrial Sweden in which individuals from different social groups can be directly compared with each other.

III | SOURCES AND METHODOLOGY

Our study is based on records from the *Älvsborgs lösen* taxation, which was levied during six consecutive years, 1613–8, to gather funds for repurchasing the fortress of Älvsborg, which had been lost to Denmark during a previous war.[29] When developing the elaborate taxation scheme used for this purpose, state officials faced several challenges. Not only was individual taxation still a relatively new phenomenon in Sweden, but the king and his counsellors also had to take into consideration that most Swedes had little or no direct interest in the ransom of the particular fortress. As a response, a novel taxation scheme was developed that sought to be regarded as as legitimate and 'fair' as possible. To achieve this, the scheme relied on two basic principles. The first was that everyone living in Sweden, regardless of social standing, should contribute to the tax, and this included (at least publicly) even the members of the royal family. The second principle was that each and every individual (or family, as taxation units were made up either of adult singles or of married couples) should pay an amount that was proportional to their economic standing.[30]

However, the seventeenth-century Swedish state did not have any detailed information on individual incomes. Instead, state officials created a taxation scheme that consisted of 55 different social categories, and decided the respective sum they had to pay. Exactly how the scheme was drawn up is not known, but it appears to have been based on assumptions regarding the mean or typical incomes within each respective category. The taxation amount was then defined as a fixed proportion of this amount. On top of this, the state officials also realized that such a schematic model was not very well suited for the taxation of the rich, whose incomes were much more varied than for members of the poorer social groups. This problem was instead solved by gathering information on individual incomes for members of the most affluent social groups, and for those individuals we can see how the officials calculated the individual taxation amounts.

This ambitious taxation scheme still left a couple of groups exempt from taxation. One of these was peasants who lived and worked the demesne lands closest to the noble manors (as a concession to the privileges of the nobility). Such peasants were nevertheless often included in the taxation lists, albeit with no sum ascribed to their names, and we have thus chosen to include them in our calculations under the assumption that they would have paid the same amount as other peasants, had they been taxed.[31] Another exempt group were personal servants of the nobility. As

[29] Hence its name, Sw. *lösen* (i.e. *lösensumma*) = ransom. The total ransom sum was 1 million *riksdaler*, which may be compared with the fact that the state's 'central disposable means' from regular taxation at the beginning of the 1620s was about 1.3 million *riksdaler*, or that the total value of Sweden's annual export in 1613 was 1/3 of a million *riksdaler* (according to Lindegren, 'Men, money, and means', figures 7 and 8).

[30] Andersson, 'Det finns 55 sorters människor'.

[31] For a later part of the seventeenth century, Kurt Ågren found that differences in taxation pressure were much more pronounced depending on the size of holdings than on whether farms were owned by the nobility or not. Ågren, *Adelns bönder och kronans*.

we have not been able to estimate either the size or the economic standing of this group, it has been left out of the study, under the assumption that it was numerically small, relatively poor, and thus also economically negligible on the societal scale. It may further be noted that all children under the age of 15 years were exempt, regardless of social class or if they were living at home or working as servants. As this is also common practice in most other premodern and modern taxation schemes, this omission is of little or no importance to the comparability of our results.

The omission of a couple of social groups was in fact counterbalanced by the addition of a few more categories than the original 55 to the taxation scheme, once implemented in practice. This meant that both rural and urban households came to be further differentiated according to their tax-paying capacity, so that groups such as widows, beggars, or peasants regarded as 'poor' were assigned lower amounts.[32]

The social table that forms the basis of our analysis is presented in table 1. The table presents the number of taxation units (adult single individuals or married couples), the annual amount to be paid in tax per unit, and the aggregated amount for the social group as a whole, also in annual terms.[33] The total number of taxation units is close to 207 000, who together paid a total annual tax of more than 365 000 *riksdaler*, an average of about 1.77 *riksdaler* per taxation unit. The number of categories presented in the table is 36, as a consequence of the fact that some similar groups from the original 55 of the taxation scheme were taxed the same amount, they were often not clearly separated in the taxation records. However, the social table also includes some additional groups that were either missing in the original scheme (e.g. group 26, a mining engineer), or else are shown separately for source technical purposes (for example, group 22, burghers with individual taxation but no surviving records). A full presentation of what each of the 36 groups in the social table contains may be found in appendix I, whilst further information on the individually assessed groups is found in appendix III.

Since the main sources of income differed between the top social groups, tax officials had to use different methods to gather information on individual incomes. In short (full information is given in appendix III), the nobles and the royal family were taxed on the basis of the rent incomes from their landed estates, with an amount (taken from the social table) added for those noblemen who had incomes from a state office such as bishop or officer. Due to the loss of some records, individual data are missing for 17 per cent of the nobility, the majority of which, however, we have been able to amend using records for the preceding or following years. The urban and rural parish clergy were taxed on the basis of assessments made by their respective bishop, who presumably relied on records on individual parish sizes and incomes. The individual taxation of burghers relied on the above-mentioned *örestal* assessments, which were used to distribute the annual urban taxes. Although the precise details of the system are unknown, it is known that these assessments were renewed annually by local town officials and that they corresponded to each individual burgher's tax-paying capacity. The last social group that was individually assessed were the peasant miners, in their case on the basis of their shares in iron forges and copper mines, respectively. As a result of engaging in this activity, they were somewhat more prosperous than the average peasant.

Our dataset is built up from a social table for the categories that were not individually assessed, where the number of taxation units within each group has been gathered from the regional taxation lists.[34] This was then combined with the individual information regarding the taxes paid by

[32] Some other additional social groups were only used regionally. For details, see app. I.

[33] The number of taxation units are taken from the taxation registers, see app. II.

[34] All data have been collected from the archives for this article. For information on sources, see app. II.

TABLE 1 Social table for Sweden in 1613, with number of taxation units and total taxation amounts

(1)	(2)	(3)	(4)	(5)	(6)	(7)
No.	**Social group**	**Number of tax units**	**Share of total in (3) (%)**	**Tax per tax unit (*riksdaler*)**	**Total taxes paid (*riksdaler*)**	**Share of total in (6) (%)**
(1)	The king	1	0.00	[a](2115)	2115	0.58
(2)	The queen widows	2	0.00	[a](207)	413	0.11
(3)	The dukes	2	0.00	[a](1525)	3049	0.83
(4)	Nobles: men, widows and orphans	600	0.29	[a](28)	16 832	4.61
(5)	Bishops	6	0.00	40	240	0.07
(6)	Schoolmasters, professors	36	0.02	8	288	0.08
(7)	Rural and urban clergy, superintendents	898	0.43	[a](15.6)	13 967	3.82
(8)	Urban chaplains	34	0.02	4	136	0.04
(9)	Rural chaplains	329	0.16	2	658	0.18
(10)	Royal secretaries and chamberlains	12	0.01	40	480	0.13
(11)	Chief accountants, masters of the mint	4	0.00	50	200	0.05
(12)	Customs officials	19	0.01	50	950	0.26
(13)	Bailiffs, scribes	201	0.10	16	3216	0.88
(14)	Bailiffs of forges, of the Sami, of manors etc.	13	0.01	4	52	0.01
(15)	Scribes of castles, towns, military etc.	10	0.00	4	40	0.01
(16)	Vice bailiffs, vice scribes	85	0.04	3	255	0.07
(17)	Vice judges	33	0.02	12	396	0.11
(18)	Higher cavalry officers	19	0.01	20	380	0.10
(19)	Higher infantry officers	69	0.03	12	828	0.23
(20)	Lower officers	237	0.11	3	711	0.19
(21)	Burghers	5118	2.48	[a](4.2)	21 645	5.92
(22)	Burghers (with individual taxation, but no surviving records)	167	0.08	[b](3.9)	648	0.18

(Continues)

TABLE 1 (Continued)

(1) No.	(2) Social group	(3) Number of tax units	(4) Share of total in (3) (%)	(5) Tax per tax unit (*riksdaler*)	(6) Total taxes paid (*riksdaler*)	(7) Share of total in (6) (%)
(23)	Other townspeople (non-burghers)	6581	3.18	2	13 162	3.60
(24)	County sheriffs	404	0.20	8	3232	0.88
(25)	Peasant-miners	459	0.22	[a](3.1)	1426.5	0.39
(26)	Mining engineer	1	0.00	5.5	5.5	0.00
(27)	Landed peasants	100 347	48.54	2	200 694	54.92
(28)	Rural craftsmen	900	0.44	4	3600	0.99
(29)	Soldiers and cavalrymen	3219	1.56	2	6438	1.76
(30)	Married cottagers	6281	3.04	1.5	9421.5	2.58
(31)	Unmarried cottagers, male servants, widowers	32 473	15.17	1	32 473	8.89
(32)	Widowers (in Uppland)	59	0.03	0.67	39.5	0.01
(33)	Poor households (in Uppland)	2	0.00	0.33 and 0.5	0.83	0.00
(34)	Widows	6810	3.29	1	6810	1.86
(35)	Widows (in Uppland)	201	0.10	0.33	66.33	0.02
(36)	Female servants, female cottagers	41 101	19.88	0.5	20 550.5	5.62
	Grand total	206 733		1.77	365 418.7	

Note: The table includes social groups not only from the taxation scheme but also the groups found in the taxation lists, such as a differentiation of the poor used only locally in rural Uppland.
Source: See app. II.

[a]Groups that were taxed on the basis of individual assessments; the average tax amount is given in parenthesis.

[b]The burghers for which taxation was individual, but where no surviving records exists. The details on the calculations for this group can be found in app. III. Some social groups were more heterogeneous than the table presents and also included other categories of taxation units. For details, see app. I.

the rich. It should thus be noted that all data concern taxation payments, and that we regard these as a better proxy for income than for wealth. This was explicitly the case for some of the individually assessed groups, such as the royal family and the nobility, and the fact that all peasants were taxed the same amount fits well with what is known from previous research (see above) about the more equal distribution of productive assets (and hence, the production and consequently the income) than the distribution of peasant total wealth.[35] Further, the fact that the tax was levied during six consecutive years to ensure that as many as possible should be able to afford to make their full taxation payments, is also an indication that the assessments should rather be seen as reflecting annual incomes closer than wealth.

Even though there is good reason to assume that the tax was proportional to the capacity to pay, the exact relation between tax and income remains unknown. This also means that we are not able to make a direct assessment of comparative living standards on the basis of an estimate of nominal income. We can, however, compare the share of income paid as tax by comparing the tax total to estimates of nominal gross domestic product (GDP) from the production side made by Schön and Krantz.[36] They put Swedish GDP in 1613 at 3 283 125 Swedish krona (SEK), which, compared with our tax total of 365 418.7 SEK, means a tax share of 11.1 per cent. This implies that the nominal income that the average tax amount of 1.77 *riksdaler* represents is 15.9 *riksdaler*.[37]

We can then use the purchasing power parity (PPP) conversion from the Maddison project to arrive at the value in 1990 dollars. This conversion suggests that a 15.9 *riksdaler* income in 1613 would amount to 4039 in 1990 dollars. This figure can be compared with the estimate of a subsistence minimum by Milanovic, Lindert, and Williamson of 300 1990 dollars per person or to Swedish GDP per capita in 2010 estimated at 25 306 1990 dollars.[38] It should be noted, however, that both these figures are in per capita terms, whilst our estimate is per tax unit.[39] Appendix VI describes the conversion in greater detail.

IV | TOP INCOMES

We start with the top income earners: how far removed were they from the rest of the population, and where did their incomes come from? Most of the information on the incomes of the rich comes

[35] In app. VII, we consider the effect on the income distribution if we allow for differentiation within the peasant farmer group. We model a log-normal distribution that is allowed to span the range from 1.5 *riksdaler*, the amount paid by married cottagers, and 8 *riksdaler*, the amount paid by the affluent group of county sheriff farmers, but retains a mean of 2 *riksdaler*. The result shows that our estimate of inequality is not very sensitive to the uniformity within the peasant farmer group. Our baseline Gini coefficient is 0.335 whilst the alternative calculation suggests a Gini of 0.348.

[36] Schön and Krantz, *New Swedish historical national accounts*.

[37] By calculating $1.77 \times (1/0.111)$.

[38] Milanovic, Lindert, and Williamson, 'Pre-industrial inequality'.

[39] We use the 2013 release of the Maddison data to make it comparable to the estimates in Milanovic, 'Towards an explanation'. In the 2013 release, GDP per capita figures are only given for Sweden for the benchmark years of 1600 and 1650. To get an estimate of GDP per capita in 1613, we follow the approach in Milanovic, Lindert, and Williamson, 'Pre-industrial inequality', of interpolating between the two benchmarks. This may be compared with the latest 2020 release of the Maddison database, in which yearly GDP per capita figures are given for Sweden back to 1300. The 2020 release suggests a 24% growth of GDP per capita between 1600 and 1613, whilst our interpolation results in an increase of 7%. For Finland, the latest release includes estimates for 1600 and 1650. These suggest that Finland had a GDP per capita level 95% of the Swedish in 1600 and 90% in 1650.

TABLE 2 Income shares and income thresholds for the top quantiles in Sweden in 1613

Quantile	P98.5–100	P99–100	P99.5–100	P99.9–100	P99.99–100	Richest: the king
Share of income (per cent)	15.00	13.00	10.00	4.80	2.20	0.58
Tax threshold (*riksdaler*)	4	8	16	28	106	2115
Multiples of the average tax amount	2.30	4.50	9.00	15.80	60.00	1196.00
Estimated income threshold (1613 *riksdaler*)	36	72	144	251	952	18 993
Estimated income threshold in 1990 PPP $	9161	18 323	36 645	63 874	242 265	4 833 339

Note: Tax as share of income is estimated at 11.1 per cent. GDP per capita in 1990 PPP dollars for Sweden in 2010 was 25 306.
Source: See app. II.

from individual assessments (the details of which are given in appendix III), although a few of the rich (such as e.g. bishops, bailiffs, and higher officers) were taxed on the basis of the social table. Table 2 presents the income share held by the top 1.5 per cent, etc., as well as the income share held by the king Gustavus Adolphus, who was the richest individual living in Sweden in 1613, reflected by his 2115 *riksdaler* tax payment. The income of the super-rich (i.e. the richest 0.01 per cent of the population, or 20 tax units) amounted to 2.2 per cent of total income, which meant that they paid at least 106 *riksdaler*, 60 times the amount paid by an average taxpayer (which was somewhat less than the amount paid by a peasant household).

For illustrative purposes, table V1 in appendix V presents the corresponding results, excluding the royal family from the calculation. As expected, this leads to a reduction in the top income shares, especially for the very highest quantiles, as this means removing some of the top income earners from the calculation.

Moving slightly down the top of the income distribution in table 2, we find that most of the civil servants and officers fell into the top 1 per cent group, where we also find most of the individually assessed clergy. In fact, at 8 *riksdaler*, we even find the richest of the peasants – the county sheriffs (*länsmän*).

The table also provides an estimate of the income in *riksdaler* that the different tax thresholds represented, as well as a conversion of the *riksdaler* amount to 1990 PPP dollars. This comparison shows that only those above the 99th percentile of the Swedish 1613 income distribution had an income greater than the average Swede in 2010.

We now turn our attention to the individuals that made up the economic elite in Sweden in 1613.[40] Figure 1 shows details regarding the richest 200 tax units, with their relative ranking on the *x*-axis and their respective taxation (in *riksdaler*) on the *y*-axis (on a logarithmic scale), the symbol denoting their respective social group. In the case of the royals and the collectively assessed, the name of the individual or the group is provided next to the marker.

The figure illustrates the dominance of the royal family in the absolute top of the income distribution, with the king Gustavus Adolphus followed by the two dukes, his cousin Johan and brother Karl Filip at 1780 and 1269 *riksdaler*, respectively, in their turn (more distantly) followed by the king's mother, queen widow Christina, at more than 300 *riksdaler*.

[40] For a study of the composition of the rich in premodern Italy, see Alfani, *As gods among men*.

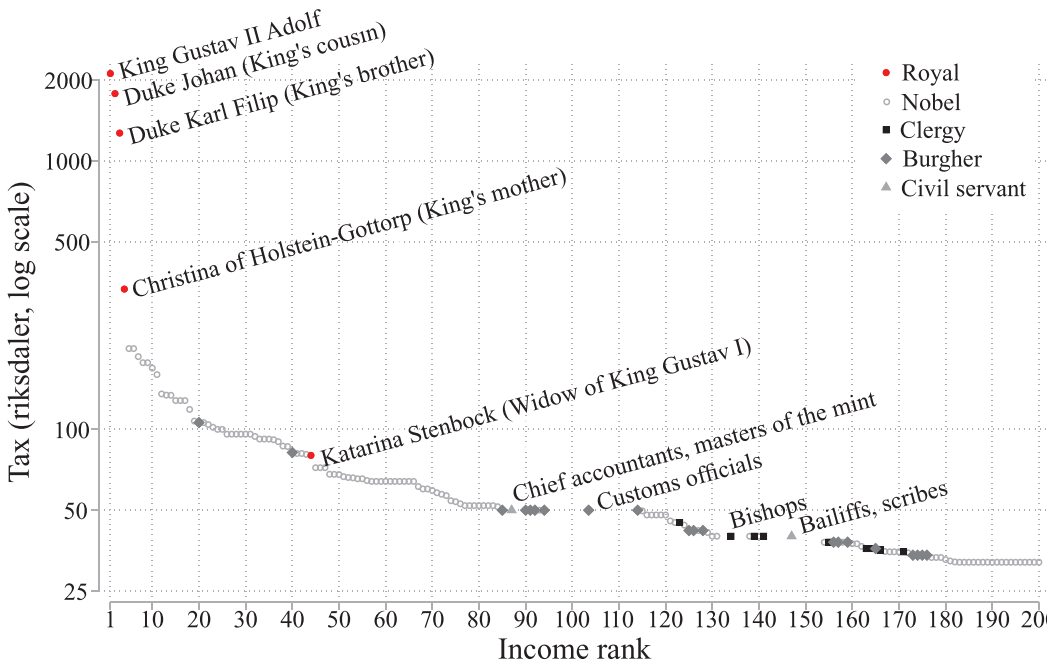

FIGURE 1 Taxation amounts of the top 200 tax units and their social classification (royal, noble, clergy, burgher, civil servant) in Sweden in 1613. *Note*: The figure shows the taxation amounts of the 200 richest tax units in Sweden in 1613. The *y*-axis has a log scale. Symbols mark the respective social group. In the case of the royals and the collectively assessed, the name of the individual or the group is provided next to the marker. *Source*: The Älvsborg ransom taxation. See app. III for further details.
[Colour figure can be viewed at wileyonlinelibrary.com]

The 15 tax units that followed below the three royals in the income distribution all belonged to the aristocracy, the richest of these being Jöran Gyllenstierna and Bengt Sparre, at taxation sums of 200 *riksdaler* each. The richest burgher, the Stockholm merchant Mårten Trotzig, paid a little more than half of that sum, which placed him as Sweden's twentieth richest. Burghers otherwise become more common from place 90 downwards at sums of about 50 *riksdaler*, where we also begin to find the richest of the non-noble civil servants, such as customs officials and chief accountants. As we approach the 150th richest, noblemen and burghers still dominate the distribution, although here also a few of the richest of the clergy (e.g. the bishops and a couple of very affluent parish priests) may be found at 40 *riksdaler*.

Where did the incomes of the rich come from? Leaving the royal family aside, the individuals with the highest incomes were all members of the landed nobility. Of the top ten nobles (of which seven were men and three widows) all but one had inherited the noble status, as well as in most cases of the title of count (*greve*) or baron (*friherre*). These men and women had typically not only inherited their nobility titles, but also their estates, as their fathers or fathers-in-law are found in the published lists of Sweden's richest nobles in 1563 or 1607.[41] Yet these were not idle landlords, since all the men in the top ten group were also active as servants of the state. Most were members of the council of the realm, in addition to serving either in the military as admirals or colonels, or else within the royal administration as county governors or as judges of the high court.

[41] Samuelson, *Aristokrat eller förädlad bonde?*, pp. 72–4, 78–9.

Of the 19 burghers whose incomes placed them among the top 200 taxation units, 13 were at home in Stockholm, whilst 4 lived in Gävle and 2 in Uppsala. Several of these had German origins, having either immigrated to Sweden themselves or else being sons of German immigrants (although, without further research into their family history, for some this is only inferred from their names). At least for the richest of these, their incomes to a large extent came from the exports of iron and copper, as well as from investments in mines and ironworks. Many of them were also active as town magistrates or as servants of the king.

Among the individuals within the top group, we also find some state servants whose incomes were not individually assessed, such as the master of the mint in Stockholm, Antonius Grooth.[42] He was born a nobleman, son of a governor of Brabant who had immigrated to Sweden for religious reasons, but made a living through his work as a goldsmith and a burgher before he succeeded his father-in-law (another Dutch immigrant goldsmith) as master of the Stockholm mint. Another example of a person with mixed income sources was the bishop of Turku, Ericus Erici, who was not only taxed 40 *riksdaler* for his position as bishop, but also a further 32 *riksdaler* for the incomes from the landed estate inherited from his grandfather, a military nobleman who had immigrated to Finland from Germany half a century before.[43]

For the richest of the rich, the majority of the income thus consisted of land rents from inherited estates, although for many the rent income could be supplemented by state service in various leading positions.[44] For the somewhat less affluent among the richest, it was, on the contrary, the revenue generated by involvement in state service that was their main source of income, which to an extent instead could be supplemented by land rents (as for bishop Ericus) or by trade (as for mint master Grooth). Finally, only a few individuals qualified among the richest solely through trade incomes, generated by their involvement in the Swedish export of iron and copper. It may however be noted that also these men, for example, Grönenberg and Trotzig, eventually came to supplement their trade incomes through land rents and revenues from state service, although it is perhaps less likely that this ever became as an important source of income for them as their business ventures were.

V | CLASS COMPOSITION

Moving beyond the sole focus on the absolute top incomes, table 3 presents the population shares of aggregated estate groups in three different quantiles of the income distribution, as well as the share of total income earned by each group. The first four aggregated estate groups shown in the table, the compositions of which are further detailed in appendix IV, correspond to the four parliamentary estates: nobility, clergy, burghers, and peasants. In addition, the table also includes the royal family, the (non-noble) civil and military officials, and the (semi-)landless, that is, social groups that lacked formal political representation.[45]

[42] *Svenskt biografiskt lexikon*, band 17 p. 337, Grooth, von, släkt.

[43] *Svenskt biografiskt lexikon*, band 14 p. 197, Ericus Erici.

[44] Although early modern state officials did not always receive the salaries they were due, and at times instead even had to assist the state with their private resources, this does not mean that state service on the whole was not profitable. The 1613 social classification scheme clearly thought that state officials had substantial incomes, regardless of this being through actual salaries or through lucrative by-services, including, for example, bribes. For examples, see Björklund, 'Officers as creditors'; Droste, 'The terms of royal service'.

[45] By using this social classification, we are able to compare the relative economic strengths of the political estates, as well as the relative economic standing of the social groups formally excluded from political influence.

TABLE 3 Each estate group's share of total income and of the number of taxation units in different quantiles

No. of tax units	Estate/group	Share of total tax	Estate's/group's share of tax units in quantile				Per tax unit est. inc. in 1990 PPP $
			All	P1–99	P99–99.9	P99.9–100	
5	Royal	2%	<1%	0%	0%	3%	254 980
600	Nobility	5%	<1%	0%	18%	60%	6435
1303	Clergy	4%	1%	0%	48%	8%	2682
11 885	Burghers	10%	6%	6%	16%	21%	2717
102 111	Landed peasants	57%	49%	50%	0%	0%	468
358	Civil servants	1%	<1%	0%	14%	9%	2962
325	Officers	1%	<1%	0%	5%	0%	1350
90 146	(Semi-)landless	21%	44%	44%	0%	0%	192
	No. of tax un. in quantile		206 733	204 842	1709	182	

Source: See app. II.

The table shows that all groups except the landless had income shares that were larger than their population share, so that the members of all other groups were more well-off than they would have been if there was a completely equal income distribution. This was true even for the landed peasant group, which was the largest social group, making up almost half the population.

The clergy, the nobility, and the royals all held much larger shares of the total income than their share of the population. This may also be seen from the composition of the three quantiles presented in the table. The bottom 99 per cent of the income distribution, P1–99, was made up of all of the landless, most of the landed peasants, and some of the burghers. Since it is known from the design of the social table that peasants and burghers were considered to have higher incomes than the landless, this means that most peasants in fact fell in the upper half of the income distribution, and that the vast majority of the top 10 per cent were, in fact, either peasants or burghers. Further, the peasant group not only held above half of total income. As they also dominated the rural landless groups by monopolizing political representation, they in fact represented about three-quarters of total national income. The representatives of the peasant estate had a solid economic basis to back up their demands for political influence.[46]

The social composition of the quantile just above the bottom 99 per cent, P99–99.9, was more mixed. It was numerically dominated by the clergy, although burghers and nobility each made up close to a fifth of the group, and state and military officials together about another fifth. As we reach the absolute top income group, P99.9–100, or the richest 182 tax units, the nobility dominates numerically. In addition to the richest nobles, this quantile also includes the five royals.

[46] There is a rich literature on the political influence of landed peasants in early modern Sweden, which only rarely discusses the position of the landless groups. See for example, Österberg, 'Bönder och centralmakt', pp. 90–1; Hallenberg and Holm, *Man ur huse*; Andersson, 'Lönekamp'.

The numbers from the table thus demonstrate that, although the royal family and the nobility were rich enough to be placed exclusively within the top 1 per cent, their total numbers were minuscule and their share of the total national income quite small. What is striking is the size of the income share of the landed peasants, 57 per cent of all incomes, which was much larger than the shares held by the members of the three other political estates taken together. As a consequence of the reformation, most church property and incomes had been confiscated by the state, leaving the clergy decimated both numerically and financially.[47] In 1613, the clergy made up about 1 per cent of the population, and held 4 per cent of total incomes. The nobility may have been the richest in society, but they were even fewer than the clergy, as the state bureaucracy in 1613 was still small compared with what it would later become during institutional reforms and extensive warfare, meaning that few officers and civil servants were yet ennobled.[48] This resulted in the nobility only earning about 5 per cent of total incomes. Likewise, the urban population in Sweden in 1613 was small compared with what it would soon become: during the following 50 years, the total value of Swedish exports (most importantly of copper, iron, and tar) would more than quintuple.[49] In 1613, however, the burgher estate only made up about 6 per cent of the kingdom's population, whilst its share of income was about the same as that of the nobility and the clergy combined, about 10 per cent. The income share of the landed peasantry was consequently larger than those of all the other three socio-political groups together. In other words, the strong standing of the Swedish peasantry was thus due both to the lack of a numerically or economically significant premodern middle class, and to the fact that the landless social groups were relatively small in Sweden compared with other early modern societies.

VI | SWEDISH PRE-INDUSTRIAL INEQUALITY IN COMPARATIVE PERSPECTIVE

How did the Swedish income distribution compare with other early modern European societies? Thanks to the efforts of Milanovic, Lindert, and Williamson in collecting and systematizing published social tables, we can compare our Swedish data with those for England and Wales in 1688, the Voivodeship of Krakow in 1578, France in 1788, and Old Castile in 1752.[50] Although the time gap between our data and the latter two estimates is quite substantial, the paucity of studies of early modern income distributions renders these comparisons useful.

Figure 2 displays Lorenz curves for Sweden, and the first set of comparators: England and Wales, and the Voivodeship of Krakow in Poland. England and Wales were a forerunner in

[47] Larsson, 'Kyrkans tionde och kronans' (on the confiscation of tithes); Larsson, 'Jordägofördelningen i Sverige' (on the confiscation of church lands).

[48] Englund, *Det hotade huset*, for example, pp. 11–4 (on the expansion of the nobility and of the state bureaucracy); Nilsson, *På väg mot militärstaten* (on the number of the nobility compared with the numbers of officers and civil servants).

[49] Sandberg, *I slottets skugga*, p. 35: Lilja, *Tjuvehål*, p. 76 (on the degree of urbanization); Lindegren, 'Men, money, and means', pp. 144–6 (on the exports).

[50] Milanovic, Lindert, and Williamson, 'Pre-industrial inequality'. See Milanovic, 'Towards an explanation', for an updated collection of social tables. The original data published in the following publications: England and Wales 1688: Lindert and Williamson, 'Revising England's social tables'; Voivodeship of Krakow 1578: Malinowski and van Zanden, 'Income and its distribution'; France 1788: Morrisson and Snyder, 'The income inequality'; Old Castile 1752: Yun Casalilla, 'Sobre la transición'; Ramos Palencia, 'Pautas de consume familiar'; Álvares-Nogal and Prados de la Escosura, 'Searching for the roots'.

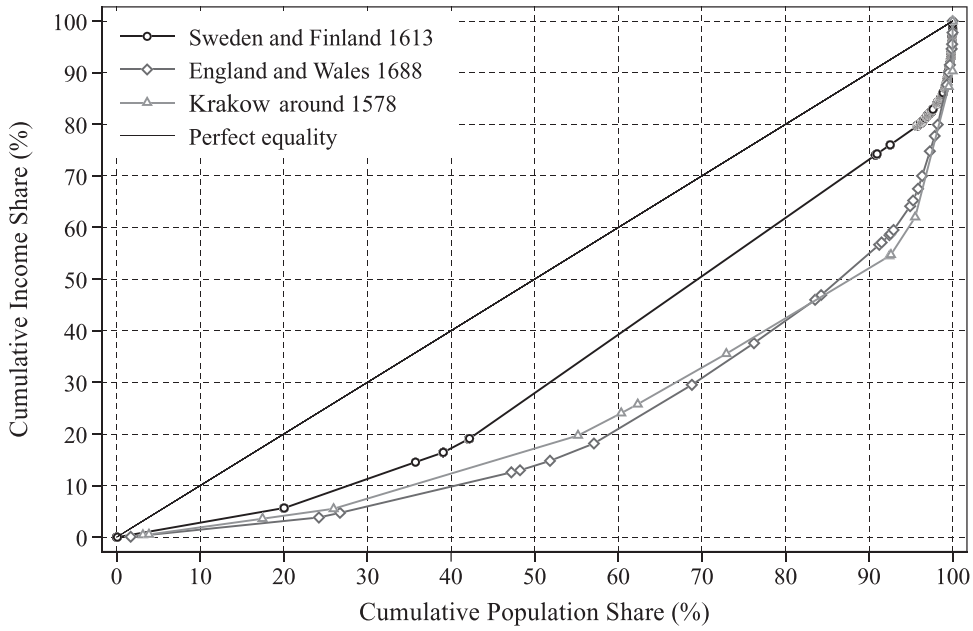

FIGURE 2 Lorenz curves showing the income distribution in Sweden in 1613 compared with England and Wales in 1688 and the Voivodeship of Krakow around 1578. *Sources*: Sweden, see app. II; England and Wales 1688: Lindert and Williamson, 'Revising England's social tables'; Voivodeship of Krakow 1578: Malinowski and van Zanden, 'Income and its distribution'.

pre-industrial capitalist economic development. The distribution of land at the end of the seventeenth century was extremely unequal: the bottom 50 per cent of the population held less than 20 per cent of all incomes, a fact which is reflected in the shape of the income distribution in 1688. This group included the numerous landless and semi-landless labourers, out-servants, cottagers, and paupers. The self-owning peasant class was small compared with Sweden, as English and Welsh farmers and freeholders together constituted only about 17 per cent of the population.

The Voivodeship of Krakow was the main province of Poland and the seat of the Polish parliament, which since the late fifteenth century was controlled by the nobility. During the sixteenth century, this political power was used to subject the Polish peasantry to seignorial courts and tie them to the land of the nobility or the crown as serfs.[51] The region consequently lacked a group of self-owning peasants altogether. The bottom half of the population, consisting of servants, beggars, agricultural workers, and small-scale tenant farmers, only received about 20 per cent of incomes, slightly more than their British counterparts.

Although the economic structures were fundamentally different in the two countries, the shape of the income distribution in Krakow was, in fact, quite similar to the one in England and Wales. The Swedish curve, in contrast, represents a very different pattern. Whilst the groups that were poorer than landed peasants (e.g. servants, soldiers, and cottagers) in Sweden constituted a smaller share of the population compared with Poland and England and Wales, they still held a similar share of the total income. As a result, the Lorenz curve for Sweden is steeper at the lower end,

[51] Myers, *Parliaments and estates*, p. 124.

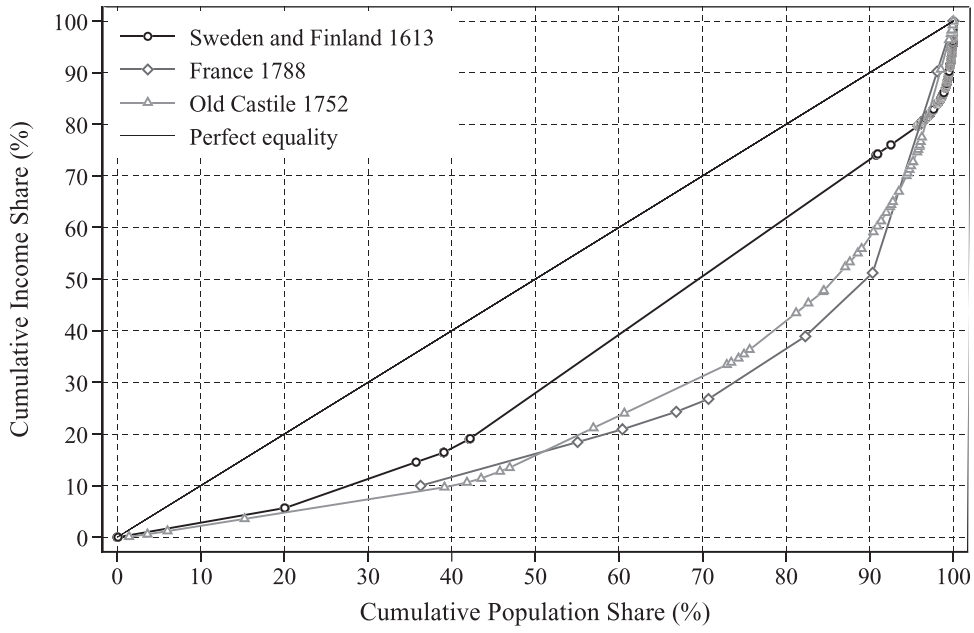

FIGURE 3 Lorenz curves showing the income distribution in Sweden in 1613 compared with France in 1788 and Old Castile in 1752. *Sources*: Sweden, see app. II; France 1788: Morrisson and Snyder, 'The income inequality'; Old Castile 1752: Yun Casalilla, 'Sobre la transición'; Ramos Palencia, 'Pautas de consume familiar'; Álvares-Nogal and Prados de la Escosura, 'Searching for the roots'.

reflecting a significantly lower level of total inequality. This can also be shown by the Gini coefficients, which for England and Wales was 45 and Krakow 53, whilst the Swedish figure was as low as 33.5.[52]

A comparison with the other two premodern political entities, France and Old Castile, can be seen in figure 3. In France on the eve of the revolution, the bottom half of the population was made up of agricultural day labourers, servants, and small-scale farmers, who together received less than 20 per cent of all incomes, whilst self-owning farmers made up about 27 per cent of the population and held 21 per cent of incomes.[53] The income distribution in Old Castile in the middle of the eighteenth century resembled that in France in 1788.[54] In comparison, the income distribution in Sweden was markedly less unequal, largely due to the greater income share held by the bottom half of the population, that is, the landless groups and the peasants. The corresponding Gini coefficient in France was 55.9 and in Old Castile 52.5.

To what extent can the lower level of inequality in Sweden be explained by a correspondingly lower share of incomes accruing to top income earners? Table 4 presents the share of income going to the top 1 per cent and the bottom 90 per cent of earners, respectively, in the five societies for which comparable data exist. Whilst the top 1 per cent in Sweden in 1613 had a similar income

[52] The Gini coefficient if we exclude the royal family is similar: 32.4.

[53] This combines the numbers for small- and large-scale farmers. The group of small-scale farmers alone constituted 18% of the population and received only 8% of incomes.

[54] However, the Castilian social table is not based on social groups, but rather on the distribution of family income in five locations, and can therefore not be broken down into different classes' shares.

TABLE 4 Income shares of the top 1 and the bottom 90 per cent in Sweden in 1613, compared with four other European pre-industrial societies

	Sweden and Finland 1613	England and Wales 1688	Voivodeship of Krakow circa 1578	France 1788	Old Castile 1752
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Top 1%	13.21	14.40	15.99	5.05	6.47
Bottom 90%	73.18	54.97	52.14	49.29	58.14

Sources: Sweden, see app. II. Other countries: See note to figures 2 and 3.

share as the top in England and Wales and in the Voivodeship of Krakow, that is, between 13 per cent and 15 per cent, the top shares in France and in Old Castile were actually significantly lower: just between 5 and 6.5 per cent, respectively.

What is remarkable about the Swedish income distribution when compared with four other premodern European societies is hence not the position of the absolute top, but instead the income earned by the mass of the population, that is, the income share going to the bottom 90 per cent. Whilst Swedish peasants, which together with the rural landless groups below them made up the bottom 90 per cent of the population, earned 73 per cent of all incomes, the corresponding shares were only 55 per cent in England and Wales and at similar levels in the three other societies.

Applying the method developed by Milanovic, Lindert, and Williamson, we can also compare the inequality found in Sweden and in the other pre-industrial societies with what would have been the theoretical maximum given their economic standard as measured by GDP per capita. Milanovic, Lindert, and Williamson argue that richer societies are able to 'afford' higher levels of inequality since, in a very poor society, most people's incomes keep them just above subsistence minimum (estimated to 300 1990 USD), which leaves very little room for exploitation by the rich.[55] This results in a theoretical inequality frontier, above which inequality cannot rise without causing unsustainable mass starvation due to the incomes of the poor being pushed below the subsistence minimum.

The GDP per capita figures for the four comparison societies are reported in Milanovic et al. and Milanovic,[56] whilst we use the 2013 release of the Maddison dataset to calculate the GDP per capita in 1990 USD for Sweden in 1613. The reason we use the 2013 release is to make it comparable to these pre-existing figures. This results in a Swedish GDP per capita in 1613 of 814 in 1990 USD, which can be compared with the corresponding values for England and Wales in 1688 of 1418 USD, the Voivodeship of Krakow in 1578 of 810 USD, France in 1788 of 1135 USD, and Old Castile in 1752 of 745 USD. Figure 4 shows the comparison along with the inequality possibility frontier.

While Sweden was more equal than all four early modern European comparison societies, the GDP per capita figures of England and Wales and France clearly show that these countries were richer, which means that they had the scope for a higher level of inequality than Sweden. This was, however, not the case in Krakow or Old Castile. Those two economies were at similar or lower levels of GDP per capita than Sweden, yet their levels of inequality were still substantially higher. It can also be noted that the GDP per capita in Sweden in 1613 was quite far removed from the subsistence minimum. Theoretically, if the elites in Sweden had been able politically to exploit all economic surplus in society above the subsistence level, inequality could have been much higher: as much as 62.5 Gini points as compared with the 33.5 Gini points actually observed. This picture

[55] Milanovic, Lindert, and Williamson, 'Pre-industrial inequality'.

[56] Milanovic, Lindert, and Williamson, 'Pre-industrial inequality'; Milanovic, 'Towards an explanation'.

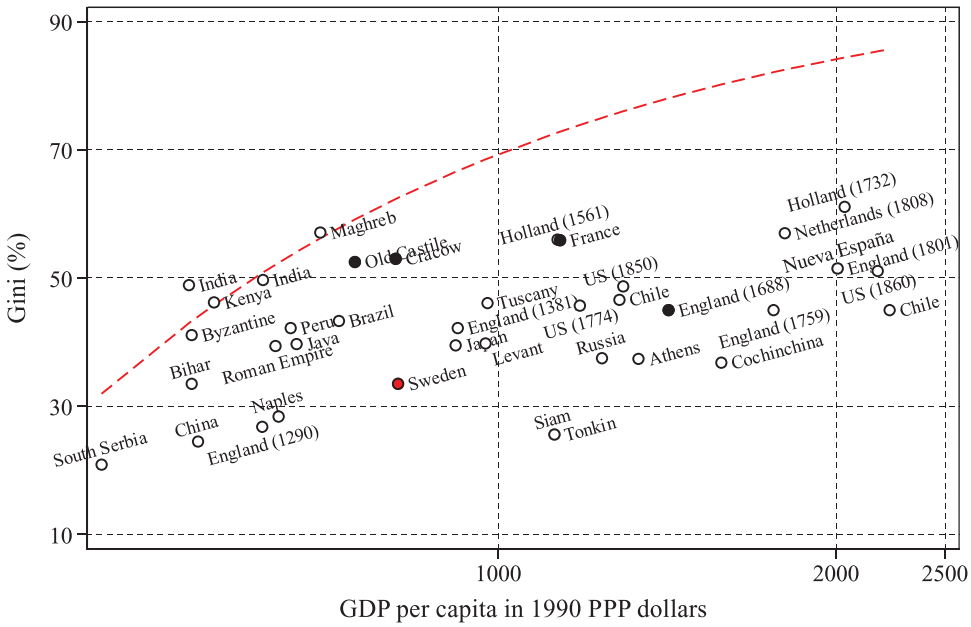

FIGURE 4 GDP per capita (*x*-axis) and inequality (Gini, *y*-axis) in Sweden in 1613 and in a number of other societies. *Note*: The red line marks the theoretical inequality frontier, given a substance minimum of 300 1990 USD. For political entities where more than one social table exists, the year of the estimate is given in parenthesis. For the remaining entities the estimate refer to the following years: Athens, 330 BCE; Roman Empire, 14; Byzantine Empire, 1000; Tuscany, 1427; South Serbia, 1455; Krakow voivodship, 1578; Levant (Syria, Lebanon, Israel), 1596; Sweden, 1613; Moghul India, 1750; Old Castile, 1752; France, 1788; Nueva España (Mexico), 1801; Bihar (India), 1807; Kingdom of Naples, 1811; Chile, 1860; Brazil, 1872; Peru, 1876; Java (Indonesia), 1880; China, 1880; Maghreb, 1880; Japan, 1886; Chile, 1900; European Russia, 1904; Kenya, 1927; Siam (Thailand), 1929; Tonkin (North Vietnam), 1929; Cochinchina (South Vietnam), 1929; India, 1938. *Source*: Sweden, see app. II. Other countries: See table 1 in Milanovic, 'Towards an explanation'.
[Colour figure can be viewed at wileyonlinelibrary.com]

is confirmed in figure 5, which displays the relationship between the inequality extraction ratio (IER) and GDP per capita in the same sample of historical societies. The Gini in Sweden was just 54 per cent of the theoretical maximum at this level of income. Among the other early modern European societies, the IER was greater.

What could account for the low inequality and extraction ratio in Sweden? The existing literature provides a number of theories to explain patterns of inequality during the early modern period. Using the same collection of social table estimates for premodern societies in the comparison in figures 4 and 5, Milanovic tests the impact of a number of economic factors on inequality.[57] Since the work of Kuznets, economic growth has been seen as a key driver that pushes inequality up during the early stages of development.[58] Van Zanden has extended the reasoning, arguing for the existence of a 'super Kuznets curve' that applies to economies of the early modern period.[59]

[57] Milanovic, 'Towards an explanation'.

[58] Kuznets, 'Economic growth and income inequality'.

[59] van Zanden, 'Tracing the beginning of the Kuznets curve'.

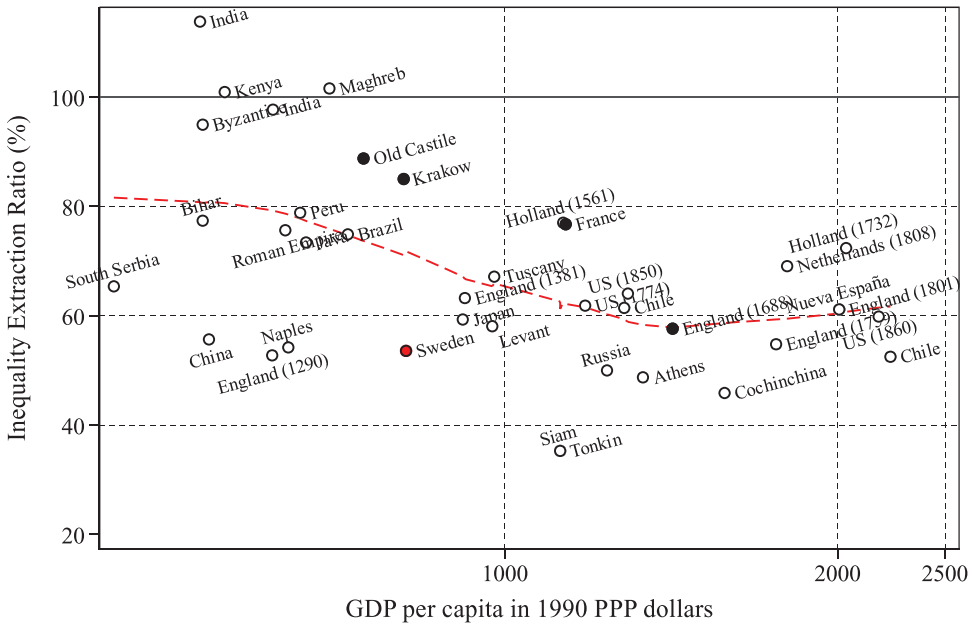

FIGURE 5 GDP per capita (*x*-axis) and the inequality extraction ratio (IER, *y*-axis) in Sweden in 1613 and in a number of other societies. *Note*: The horizontal line marks the theoretical inequality frontier, given a substance minimum of 300 1990 USD. The red line is a Lowess curve of the relationship between the IER and GDP per capita in the sample of societies. *Source*: Sweden, see app. II. Other countries: See table 1 in Milanovic, 'Towards an explanation'.
[Colour figure can be viewed at wileyonlinelibrary.com]

Milanovic finds some support for this conclusion, in that economic growth is weakly associated with more inequality. The extraction ratio, however, is unaffected.

Milanovic also tests for the impact of population structure by taking into account urbanization levels and population density. He finds that urbanization is associated with more inequality, whilst more populous societies were more equal and less extractive. He posits two possible mechanisms for the negative link between inequality and population density. The first is that it could result from Malthusian forces, leading more egalitarian societies to experience more population growth. Furthermore, the mechanism could also work through the effect on the political system, where a ruler in a more populous country is subject to an implicit popular veto as the population had more military strength compared with the armed forces of the ruler. This result, however, runs against the conventional narrative of the impact of demographic shocks such as the Black Death, on inequality, where the decline in the ratio of population to land pushed up wages. Milanovic argues that in any case, the impact was mediated by political institutions, such as in the increase in coercion associated with the 'second serfdom' in Eastern Europe. According to Milanovic, the positive impact of urbanization on inequality might result from the fact that it better reflects structural changes in the economy in premodern societies than does GDP per capita.

Alfani also discusses the several theories that have been put forward to explain early modern inequality trajectories.[60] He concurs with Milanovic that economic growth in itself cannot

[60] Alfani, 'Economic inequality in preindustrial times'.

account for comparative patterns, as inequality grew both in societies that experienced early economic growth, such as the Netherlands, as well as in places that were stagnating, such as the Italian city states. Alfani puts greater emphasis on institutions, in particular the growth of fiscal military states, arguing that in the early modern period, political power and access to state institutions was an important pathway towards personal enrichment. The expansion of states in the early modern period had important implications for the distribution of economic resources, since most taxes were regressive, whilst the benefits of public expenditures typically did not lead to reductions in inequality.

Whilst we cannot formally test for what factors account for the level of Swedish inequality, the conjectures in the literature provide a basis to discuss the forces that might have been at play. In terms of the economic structural features highlighted by Milanovic, Sweden in 1613 was both very sparsely populated and had very low levels of urbanization. Thus, the two forces, if they applied to Sweden, would have tended to work against each other. As we could see already in the comparisons of figures 4 and 5, differences in GDP per capita, highlighted by both Milanovic and Alfani, can likewise not account for the difference between Sweden, England, France, Krakow, and Old Castile.

The mechanism emphasized by Alfani, which highlights the role of institutions, seems to be more appropriate. The kind of inequality-raising factors associated with the growth of fiscal military states had not yet started to play out in Sweden in 1613. The state bureaucracy was still small compared with what it would later become during institutional reforms and extensive warfare, meaning that few officers and civil servants were yet ennobled. At the same time, the reformation had left the clergy decimated. In this way, the Swedish case illustrates an additional mechanism potentially linking the growth of fiscal military states to inequality: its direct effect on the social structure.

VII | CONCLUSIONS

In this paper we have given a first full estimate of the income distribution of premodern Sweden. Sweden in 1613 turns out to have been a relatively equal society compared with other early modern European countries such as proto-capitalist England or feudal Poland. Although we find similar income shares going to the richest as in the other countries (who in the Swedish case were the royal family and the nobility), the income distribution below those few was markedly more equal. This was due both to the fact that Sweden lacked a pre-industrial middle class of any significance, and because the share of (semi-)landless rural labourers was relatively small. What was remarkable about the Swedish income distribution, then, was thus the size of the income share held by the rather homogenous landed peasantry.

The fact that this income share was in fact larger than the income shares of the other three estates represented in parliament combined provides an important perspective to the political history of early modern Sweden, with its culture of negotiation between peasant communities and state officials, and with the peasant estate being an integral part of the Swedish parliament.[61] Although the links between the economy and the political history needs further study, a comparison with the development in Sweden's southern neighbour provides an instructive contrast. In Denmark, as in Sweden, landed peasants were included as a separate estate in the

[61] Schück, 'Riksdagens framväxt', pp. 36–57; Myers, *Parliaments and estates*; Österberg, 'Bönder och centralmakt'; Hallenberg and Holm, *Man ur huse*.

parliament during the late Middle Ages. Although we lack data on the Danish early modern income distribution, we know that most land was owned by the nobility, which meant that the economic situation of the peasants was less favourable for political inclusion. In fact, at the end of the fifteenth century, there was no longer a peasant estate in the Danish parliament, and as a consequence formerly free Danish peasants came to be transformed into serfs.[62] It would thus seem as if the unequal Danish landholding regime, which presumably resulted in incomes being much more unequally distributed than in contemporary Sweden, also had grim political consequences.

Although it has been remarked in previous scholarship that the degree of urbanization in early modern Sweden was low compared with other European countries, or that its nobility was far less numerous than in, for example, Poland or France, the effects this social structure had on Sweden's income distribution have not previously been further explored.[63] As data are lacking for what happened to the income distribution in early modern Sweden after 1613, we can only hypothesize about how it changed during the following decades. In the seventeenth century, Sweden saw an expansive phase of urbanization, with Stockholm expanding from 8000 to 60 000 inhabitants, and other cities following suit.[64] In line with our argument about the effects of the absence of a substantial urban population in 1613, as well as with the general argument proposed by Milanovic, this likely resulted in rising income inequality. In addition, as part of the rapid expansion of the early modern Swedish state, the following decades also saw the number of state officials expand drastically, not least military officers during and after the Thirty Years' War, who aligned their interests with that of the expanding military state.[65] As a reward for their services, many of these were consequently ennobled and given landed estates, which meant that public incomes decreased whilst private incomes increased. This would be a Swedish example of Alfani's thesis of the importance of the early modern state formation process for increasing economic inequality.[66] Although the Swedish military expansion had already begun some decades before 1613, the rapid acceleration of the state formation process during seventeenth century, together with significant urbanization and increase in metal industrial production and exports, would together lead to an increase in members of what we have called the early modern middle classes. Although this development is in need of further study, it would seem as if the situation in 1613, when the size of the landless groups were still moderate and there was not yet a deep gulf separating the landed peasants from the top decile (as the most well-off among the peasants had incomes that placed them just below Sweden's top 1 per cent) was soon to become a thing of the past.

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[62] Myers, *Parliaments and estates*, p. 88; Jespersen and Svane-Knudsen, *Stænder og magtstat*; Jespersen, *A revolution from above?*.

[63] For example, Samuelson, *Aristokrat eller förädlad bonde?*; Lilja, *Tjuvehål*; Glete, *War and the state*.

[64] Lilja, *Tjuvehål*.

[65] Englund, *Det hotade huset*; Glete, *War and the state*.

[66] Alfani and Di Tullio, *The lion's share*.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study can be accessed at: https://www.openicpsr.org/openicpsr/project/197001/version/V1/view

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