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# Lund Papers in Economic History



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No. 230, 2021

## What Happened to the Incomes of the Rich during the Great Levelling? Evidence from Swedish Individual-level Data, 1909–1950

Erik Bengtsson & Jakob Molinder

# What Happened to the Incomes of the Rich during the Great Levelling? Evidence from Swedish Individual-level Data, 1909–1950\*

*Erik Bengtsson\**

*Jakob Molinder<sup>♣</sup>*

## Abstract

Much of the income equalization that took place during the first half of the twentieth century was driven by shifts in the shares of the incomes of the rich, such as the top 1 percent. But the available studies using tabulated data have not been wholly able to account for the relative decline in top earners' incomes. In this paper, we present the first evidence on the composition of the top groups from the Belle Epoque to the early post-WW2 period. Using information on 21,055 individual tax-payers in two elite areas in greater Stockholm, we show that the absolute top stratum (the richest 0.1 percent) was dominated by an economic elite of CEOs and bankers, while a remarkably large fraction of the top 1 percent consisted of professionals such as medical doctors and engineers. There was a distinction within the elite between capital-rich “rentiers” and those affluent whose income came from wages and business. The incomes of the top stratum were built on the ownership or leadership of companies producing mass consumption goods, machinery, or banking and insurance. We relate the peak of income inequality in the first quarter of the twentieth century to the

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historical circumstances of a globalized economy with growing mass markets in all the industrializing countries. These circumstances, jointly with an economic policy that was still relatively laissez faire allowed great fortunes to be accumulated. In the 1920s and 1930s policy turned away from globalization and to stronger regulation, at the same time as steeper competition and growing unionization undermined the super profits of the previous quarter-century. Increased state interventionism in the economy and an expansive education policy also undermined the high relative incomes of professionals; we document the declining advantages of professions such as medical doctors, pharmacists, and lawyers when compared with the average income throughout the period.

**Keywords:** incomes, inequality, income distribution, Sweden, élites, tax data, Stockholm

**JEL codes:** D31, N14, N34

# 1. Introduction

Income and wealth inequality in the early twentieth century were deeply marked in industrialized countries, but then declined precipitously from the First World War to the 1960s in what Williamson (2015) has labelled the “Great Leveling”. This reduction in inequality has been very well documented in the literature on top incomes. Pioneered by Piketty (2003) and Piketty and Saez (2003), this line of research has built estimates of top-income shares from tabulated income-tax data using a method which has since been applied to many countries and time periods. The current explanations for the equalization are, however, paradoxical. The analysis of Piketty (2003, 2014) is very much associated with a focus on the tax system and the rise of progressive taxation, even though the relevant literature measures incomes before taxes and transfers. In Piketty’s analysis, the focus on taxation is combined with an emphasis on the economic shocks delivered by the two world wars and the Great Depression, especially direct war-induced destruction of capital and the inflation of WW1 which hurt rentier incomes (cf. Scheve and Stasavage 2010; Piketty, Postel-Vinay and Rosenthal 2018).

The case of Sweden challenges existing explanations. Sweden took part in neither of the world wars, and it escaped the Great Depression relatively unscathed (cf. Schön 2014, pp. 304–313; Magnusson 1996, pp. 373–374, 401–406), yet it emerged in the postwar era as the industrial country with the most compressed income distribution. As Roine and Waldenström (2008) indicate in their seminal study of top income shares in Sweden since 1903, most of the decrease in the top percentile share occurred before the expansion of the welfare state in the 1950s and 1960s. Therefore, there is good reason to inspect the mechanisms of the equalization in Sweden.

The purpose of the present paper is to give a new perspective on the mechanisms of the “great leveling”, by studying the Swedish case with micro data. We use a new sample of 21,017 individual taxpayers from two affluent areas in greater Stockholm for five benchmark years from 1909 to 1950 to study the evolution of top incomes at an individual level. With the individual-level information on top income earners – their gender composition, occupations, age profile, and so on – we can open the black box of what actually happened to the income elite in the turbulent era of the two world wars and the Depression.

We show that the absolute income top group was made up of entrepreneurs and CEOs, and that below this group were the professionals. In the years before and during the First World War, the elite had truly great income advantages over the mass of the people. We

show that persons in the economic elite in those years earned around 15 times the median income, but that this advantage had shrunk to about 6 times the median in 1950; for professionals, the advantage shrank from 12 times to 4 times. From 1915 to 1935, GDP per capita doubled and a male industrial worker's hourly pay grew by 142 per cent, but the threshold for being in the top percentile of income earners in Sweden barely budged; it grew by only 16 per cent. In our analysis, in which the top 1 percent emerge as individual taxpayers, it becomes clear how closely the bulge of inequality in the early 1900s was related to the specific macroeconomic conditions of the time. We may speak of two conditions that favored an extremely high level of income inequality. The first was the combination of being in the final decades of the “first wave of globalization”, at a time when the incomes of ordinary workers in industrial countries had grown enough to create a mass market for consumption goods. Swedish entrepreneurs, not limited to the domestic market, could make great profits in these decades by selling consumption goods on several international markets.<sup>1</sup> A case in point is Ivar Kreuger, the “match king”, the most (in)famous Swedish entrepreneur of the period, who figures in our dataset with the single highest income of all our 21,000 taxpayers: his amazing stream of income – besides his many other industrial and financial interests – was drawn from controlling 250 match factories in 43 countries in the late 1920s (Thunholm 1995, p. 213): a truly global and Fordist fortune.<sup>2</sup> The second highest income earner of our dataset was also owner of a multinational manufacturing company, who had patents for, among other things, a wrench, and a portable kitchen. The other greatest incomes of the pre-Depression era in our dataset are drawn from finance, or the ownership of manufacturing companies or retail firms. All these sectors facilitated great wealth creation in this period of globalization, rapid growth, mass markets, and little public regulation. As Schumpeter famously theorized in 1911 in his *Theory of Economic Development*, the entrepreneurs, those who “employed existing means of production differently, more appropriately, more advantageously”, “carried out new combinations” of products, markets/consumers and production technologies, could harvest great entrepreneurial profits (Schumpeter 1961, p. 132).

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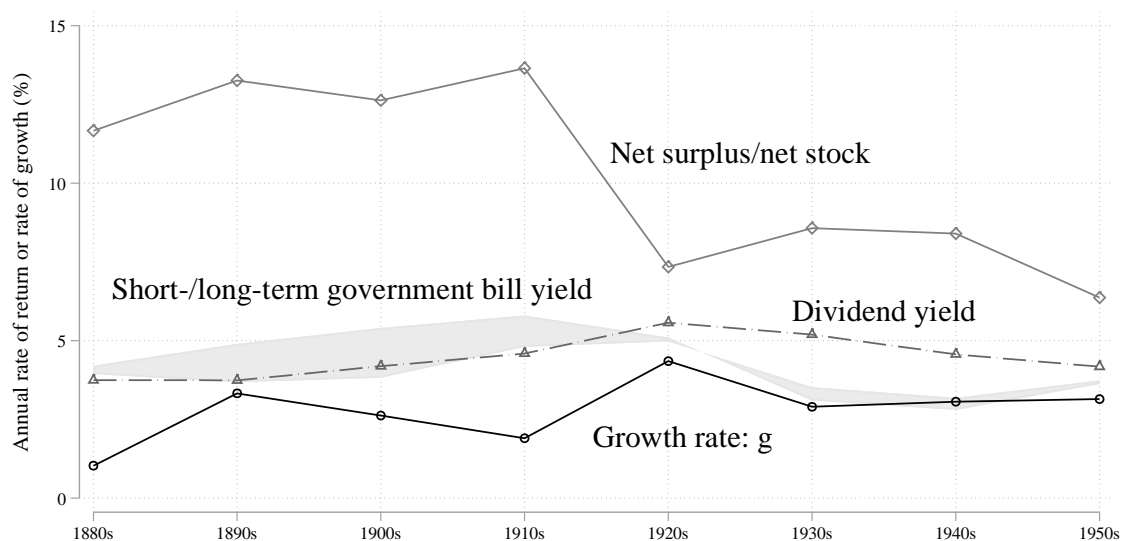
<sup>1</sup> Roine, Vlachos and Waldenström (2009) found no significant effect of trade openness on top income shares. However, with a wider conception of economic globalization it seems clear that there was a relation between deglobalization – or regulated globalization – in the 1930s and the 1940s, not least by the imposition of capital controls and the decreased top incomes.

<sup>2</sup> We use individual level data in this paper but do not name the people studied, with one exception. Ivar Kreuger is a unique figure in Swedish economic history and it is necessary to use his personal information to properly understand the possibilities to make truly great incomes in the era that we study. Kreuger has been amply studied in the business history and economic history literature (e.g. Thunholm 1991, 1995) and we add no sensitive information which is not known from the previous studies. See discussion in Appendix D.

The other macro condition that favored high inequality in this period was the great disparity between the professions and the working class. In the 1910s and 1920s, professionals like medical doctors, apothecaries and lawyers had a great income advantage vis-à-vis ordinary workers. Over the course of the 1920s, 1930s and 1940s, however, this difference in earned incomes fell rapidly, related to the growth of strong trade unions and to the expansion of the education system. Taken together, these factors indicate that there is much to explore in the determinants of pre-tax, pre-distribution inequality, just as suggested by the recent literature (e.g. Piketty 2020, p. 529; Bozio et al 2020).<sup>3</sup>

Figure 1 puts our period in macroeconomic perspective. We see that profits from the 1880s until c. 1920 were very high in Swedish enterprises, and certainly much higher than the GDP growth rate (Piketty's famous  $r > g$ ). Business opportunities were very favorable in this period.<sup>4</sup>

**Figure 1. Macroeconomic variables, 1880–1950**



*Note:* Net surplus/net capital stock from Edvinsson (2005); GDP from Schön & Krantz (2012); Government bill yield and dividend yield from Waldenström (2014).

<sup>3</sup> In emphasizing the role of economic regulation, our analysis is also related to the literature in sociology and political science on the “top one percent” which explains inequality outcomes mostly in terms of policy in. This literature has mostly looked at macro variables such as government ideology or trade union density (Jacobs and Dirlam 2016; Huber, Huo and Stephens 2019).

<sup>4</sup> That capital accumulation was rapid is also indicated by the fact that Sweden transitioned during World War I from a net importer of capital to a net exporter; cf. Lindgren 2007, p. 96.

The profit rate, net surplus/net capital stock, falls precipitously in the late 1910s and falls further in the 1940s. In a way, this is the development from Schumpeter's *Theory of Economic Development* in 1911, with its exaltation of the transformative power of the entrepreneur, to his *Capitalism, Socialism and Democracy*, published in 1942, in which the great economist emphasized that capitalism brought about improvements in the standard of living, but also acknowledged the monopolistic aspects and admitted that the social function of the entrepreneur was "already losing importance", at a rate which would accelerate in the future, in a time of routinized technological progress and a loss of the romance of commercial enterprise (Schumpeter 1942, pp. 64–66, 81–83, 131–132). Like Frydman and Molloy (2012) in their study of US executive pay in the 1940s, we show how a part of the great leveling was due to actual stagnation in the elite incomes. The sense of less freedom and romance for entrepreneurs was also well captured by Jacob Wallenberg (1892–1980), Sweden's leading banker in the interwar period, when he looked back at his career: "The twenties were probably the most interesting and happiest banking decade we have had ... With the Kreuger crash<sup>5</sup> and [Social Democratic minister of finance] Wigforss, other times came. They were never the same again. The banking of old never came back. The new was much more dull and humdrum." (quoted from Lindgren 2007, p. 9.)

In short, we believe that the micro approach of the present paper can shed new light on the evolution of income inequality in the twentieth century.<sup>6</sup> We show how the modern history of inequality is inextricably linked to business history and offer new insights not only into the role of capital incomes in reducing inequality in Sweden (as emphasized by Gustafsson and Jansson 2008; Roine and Waldenström 2008) but also the role of the professions and their relative positions in society.

## 2. Context and Research Design

Sweden is an interesting case for the wider inequality literature, since by the 1960s, 1970s, and 1980s it had achieved a markedly egalitarian distribution of income. As Piketty (2020, p. 487) remarks, Sweden became "the quintessential social democracy". But this was not always

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<sup>5</sup> The "match king" and international financier Ivar Kreuger in the autumn of 1931 faced great problems and losses in his businesses. He committed suicide in Paris in May 1932 and it was revealed that he had committed fraud in his book-keeping. This "Kreuger crash" was one of the formative events of the twentieth century in Sweden. See Thunholm (1995), pp. 219–280 and, for the broader consequences for the Swedish economy, Schön (2014), pp. 299–302.

<sup>6</sup> In the main, even the most recent contributions to the top incomes literature have been based on tabulated data: e.g. Bartels 2019; Scott and Walker 2020; Aaberge, Atkinson and Modalsli 2020.



the case. The seminal study of Roine and Waldenström (2008) indicates that Swedish income distribution in the first two decades of the twentieth century was more unequal than that of other industrial countries. This is borne out also by the distribution of wealth in the early twentieth century (Roine and Waldenström 2009; Bengtsson et al 2018). Thus, the equalization summed up as the “Great Leveling” was momentous, and analyzing its mechanisms helps also to understand the developments in other countries.

This study builds on a new sample of income taxation records, with micro data at the individual and household level. To study the income elite, we digitized the taxation lists used by the state and local governments to collect taxes and duties.<sup>7</sup> The original taxation lists for areas outside of Stockholm city proper are archived in the National Archive (*Riksarkivet*) in Stockholm, and those for Stockholm city in the Stockholm City Archive (*Stockholms Stadsarkiv*). The income tax lists mainly give us the following information: job title (and sometimes workplace), name, household structure, and income of three kinds: labor income, capital income, and business income. In Stockholm city, which includes Östermalm but not Djursholm, we also get a household identifier, birth year, and birthplace. At the beginning of our period, tax progressivity was limited to 5 percent. Thus, there was no strong incentive to evade taxes.<sup>8</sup> The obligation on individuals to file a tax return was legislated in 1902 (Malmer 2003, pp. 23–25). Previous researchers have judged the tax returns to be quite correct, with the qualification that the self-employed with good accounting skills could have paid less than they might (Järnek 1968, p. 19; cf. Kuuse 1970, pp. 35–40, Malmer 2003, p. 28).

Since we were interested in the income elite, we needed a sampling strategy that allowed us to locate the richest individuals in Sweden.<sup>9</sup> The taxation lists are organized by taxation district, which are geographical areas, so we used the fact of socio-economic

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<sup>7</sup> In the period we investigate, Sweden had both a municipal income tax, *bevillningen* (imposed in 1862) and from 1902 a state income tax which from 1908 to 1928 was a combined tax on income and on 1/60<sup>th</sup> of a person’s wealth. In 1928 the municipal *bevillning* was replaced by a new municipal tax law (*kommunalskattelagen*) (Malmer 2003), and in 1935 our data were based on the incomes for the *kommunalskattelagen*. In all years the taxation lists present taxed incomes according both to the *bevillning*, in 1935 and 1950 *kommunalskattelagen*, and according to the state tax (*inkomstskatteförordningen*). We used the *bevillning* in all the years except 1950, when we used the state tax; in this year the evaluations were precisely the same for both taxes (but the deductions, which we did not look at, were different) so our change in practice did not matter. See also Roine and Waldenström (2005), pp. 35–36. For a more detailed discussion of the taxation lists see Appendix A.

<sup>8</sup> Steinmo’s (1993, p. 25) comparison of top marginal tax rates in Sweden, the US and the UK 1929–1950 shows that the Swedish system was a great deal less redistributive than the US and UK ones until 1948–49. See further discussion in Appendix A.

<sup>9</sup> The importance of over-sampling the rich in (wealth) inequality studies, and various methods for over-sampling, is discussed in Vermeulen (2018), pp. 360–367. Bricker, Henriques and Moore (2017) discuss this issue specifically in relation to the US Survey of Consumer Finances. They advocate adding one geographical area with high incomes to increase the precision of measurement of top end wealthy households, i.e. a geographical sampling strategy akin to the one used in this paper.

segregation to construct our sample. Our sample builds on two areas: the inner-city Stockholm district of Östermalm, and the Stockholm suburb of Djursholm. In our period Stockholm played an immense role in the ownership of Swedish enterprise (cf. Glete 2018, pp. 71–72), and wealth was quite concentrated within the city and its surroundings as well. Östermalm has been the wealthiest part of Stockholm city since the locus of economic activity moved from the Old Town in the late nineteenth century (Wästberg 1962). Its elite status is indicated by the fact that in the 1950s Östermalm hosted 77 percent of the city’s millionaires, and 61 percent of its servants (Wästberg 1962, p. 110). Östermalm is fairly populous – in 1927 it had about 77,000 inhabitants (*Statistisk årsbok för Stockholm år 1928*), so we needed to specify further which areas to study. We sampled six quarters (*kvarter*) from two different but affluent neighborhoods in Östermalm, the *Villastan* and *Karlaplan* areas, to strike a balance between a large enough sample size (about 1,000 tax payers per year) and tractability. See Appendix A for further elaboration of the choice of areas to study. Djursholm is the wealthiest area of the country, and certainly a byword for wealth and privilege throughout Sweden. It is located just north of Stockholm, and was built by and for the wealthy around the turn of the twentieth century (Holmqvist 2015). Thus, we are confident that samples from Östermalm and Djursholm give an accurate picture of the Swedish income elite in these years; this assumption will also be borne out by the fact that a very large share of the taxpayers in our sample were indeed among the income elite of the country. See also the robustness checks in Appendix C where we compare our Stockholm sample with (a) a national sample in 1900 and 1950 and (b) samples for Gothenburg and Malmö, the second and third largest cities in Sweden. This assures us that our results reflect the general trajectory for the income of the Swedish elite during the period.

Our benchmark years 1909, 1915, 1927, 1935, and 1950 were selected to capture the period of the “Great Leveling”, and the events that have been viewed as especially central to this process: the two world wars and the Great Depression. Our first benchmark year is 1909, taken as a pre-WW1 yardstick. 1915 is our benchmark from the WW1 years, when the top 1 percent in Sweden reached their historical peak (Waldenström and Roine, 2008). 1927 is one of the years of the “roaring twenties”, when growth had picked up after the crisis in the early 1920s. 1935 is a post-Depression benchmark. Finally, 1950 is our post-WW2 benchmark, picking up again after the “Great Leveling” and the onset of the postwar “Golden Age”.

Table 1 shows the size of the dataset. The number of taxpayers in Djursholm rose from 993 in 1909 to 1,218 in 1915, and 3,401 in 1935. This was due both to population growth and the increasing number of individuals earning above the cut-off for paying taxes.

For Östermalm, our sample is smaller in 1909 and 1915 because two of the quarters around Karlaplan had not yet finished construction.

**Table 1. The Dataset**

	<b>Djursholm</b>	<b>Östermalm</b>	
		<i>Villastan</i>	<i>Karlalplan</i>
1909	950	524	0
1915	1,218	553	86
1927	2,939	982	1,312
1935	3,401	1,027	1,216
1950	4,414	1,230	1,207
<i>Total</i>	12,918	8,137	

*Note:* Sources are, as discussed in the text, taxation lists archived in the Swedish National Archives and the Stockholm City Archive.

Table 1 in Appendix C shows the cut-off points to be placed in the top decile, percentile, etc. of taxpayers in the country as a whole in different years. The table demonstrates that, for example, to be in the top 10 percent of income earners in Sweden in 1915, one needed to earn 1,618 *kronor*. To put our areas in the context of the country as a whole, Table 2 presents the share of taxpayers in our areas who were either in the P90–99 or the P99–100 of the national income distribution. An individual in the top 1 percent was 16–18 times as common in Djursholm and Villastan as in the country as a whole. Table 3 in Appendix C gives a more detailed picture, showing the share of taxpayers in our areas in the top income fractions for each of our benchmark years.

**Table 2. Share of Taxpayers in the Different Fractions of the National Income Distribution, 1909–1950**

	<b>Djursholm</b>	<b>Villastan</b>	<b>Karlalplan</b>
P90–99	24% (30 %)	29% (36%)	28% (36%)
P99–100	16% (25%)	18% (26%)	18% (25%)

*Note:* Numbers in parentheses exclude the working class, which in these areas was made up predominantly of live-in servants. For more details, see Appendix C, Table 3.

### 3. The Rich and Their Incomes, 1909–1950

We will now map the residents of these affluent areas over the roughly 40-year period from 1909 to 1950. To begin with, we divide the taxpayers, based on their titles, into six occupational groups: the economic elite (executives and the like), professional elite (engineers, professors), cultural elite (journalists, authors and the like), middle class (teachers, clerks and the like), working class (not least, the domestic servants and the petty bourgeoisie (shopkeepers and artisans)).<sup>10</sup> The economic elite made up about 10 percent of the population in each of the studied areas, as did the professional elite, while only about 2 percent belonged to the cultural elite (cf. Appendix C). Figure 2 shows the median income for the occupational groups in multiples of GDP per capita; it includes all sources of income and only earned income, in turn. The series suggest that around the time of the First World War the elite in our affluent areas earned many times more than the average individual. Focusing first on income from all sources, the economic elite topped the list with a median more than 14 times the average for the country. They were followed by the professional elite earning about 12 times as much and the cultural elite earning around 7 times the mean. The incomes of the middle class were lower than for the elite groups, about five times GDP per capita. The working class in these affluent areas had incomes very close to the national average.

Over the course of the following 40 years, the relative incomes of the elite groups fell dramatically. The economic elite's advantage dropped by more than half of its pre-WWI level, to roughly 6 times GDP per capita. The corresponding decline for the professional and cultural elite was even starker: their relative incomes fell by two thirds to 4 times and twice the national mean, respectively. The fall in relative income was also present among the middle class, dipping by about half to only double that of the average Swede.

The second half of Figure 2 restricts the analyses to earned income (the category of wages plus the category of entrepreneurial income). The figure indicates that the decline in the relative incomes of these privileged groups was not solely a capital income phenomenon. There was a strong leveling also when the earned income was concerned. In 1909, excluding capital income knocks roughly two points off the relative incomes of all three elite groups. By 1950, total relative income and relative earned income are almost the same, suggesting that by

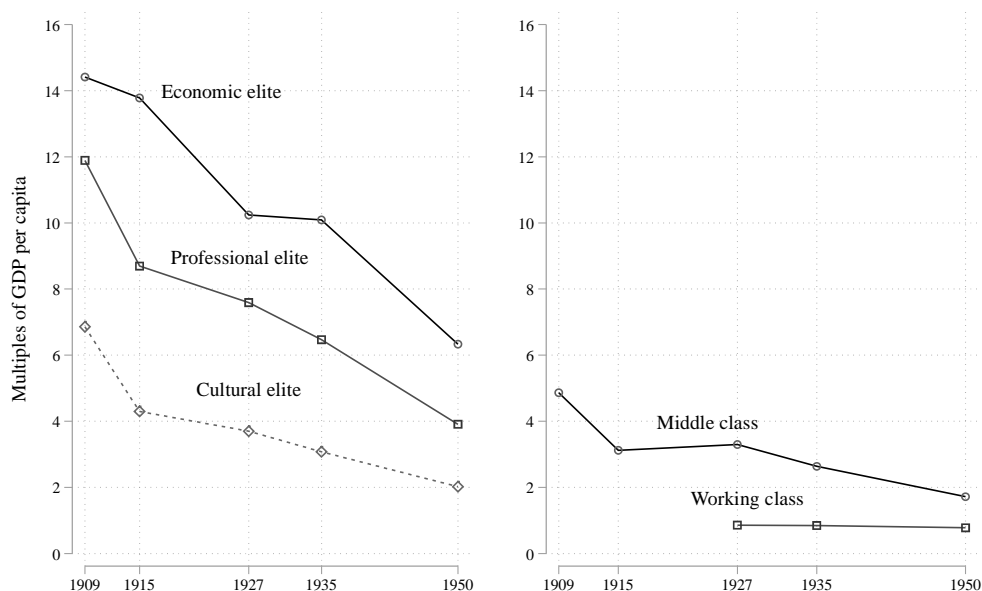
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<sup>10</sup> The classification scheme also includes groups where the title does not have a direct economic interpretation. Most importantly, it includes a “familial” category where we find those individuals, to a large extent women, who are titled according to their civil status, as wife, widow, and son/daughter. It is in most cases not possible to infer anything about the individual's economic activity from these titles. We know, the composition of these individual's total income, however, so we can tell if they made their money from labor or capital. For a discussion of the class scheme that we use, see Appendix B.

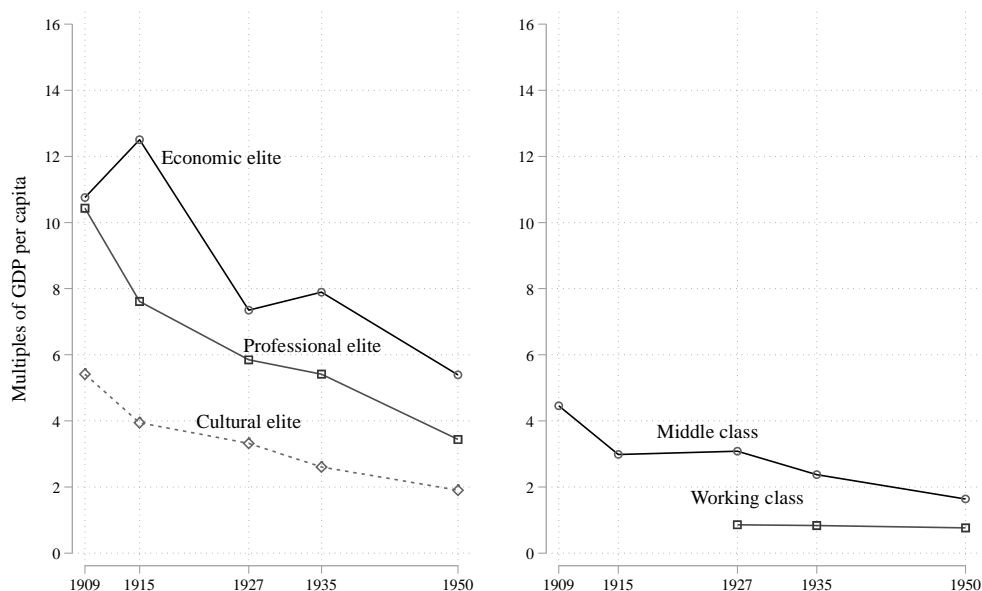
this time capital income had stopped playing an important role for the economic advantage of these groups. Not surprisingly, the relative income of the middle class and the working class is always more or less unaffected by the exclusion of capital income.

**Figure 2. Median Income by Class Relative to GDP per capita**

*Income from All Sources (Capital+Wages+Business)*



*Earned Income (Wages+Business)*



*Note:* Incomes from our dataset for Djursholm and Östermalm; GDP per capita from Lobell, Schön and Krantz (2008). We excluded the working class, which consisted before 1927 mainly of live-in servants, since few workers earned enough to be included in the tax lists at the time.

What is striking about Figure 2 is that the narrowing of the elite's income advantage over Swedes in general is taking place almost linearly. If we look at the economic elite, they lose out between 1909 and 1915, and then the decrease continues at the same pace from 1915 to 1927. The Depression does not seem to do much – the ratios are about the same in 1935 as in the pre-Depression year of 1927 – but then there is another large fall from 1935 to 1950. The rather linear character of the process indicates to us that medium-run *processes* are more important than *events* (world wars, the Depression) for explaining the reduction in income inequality.

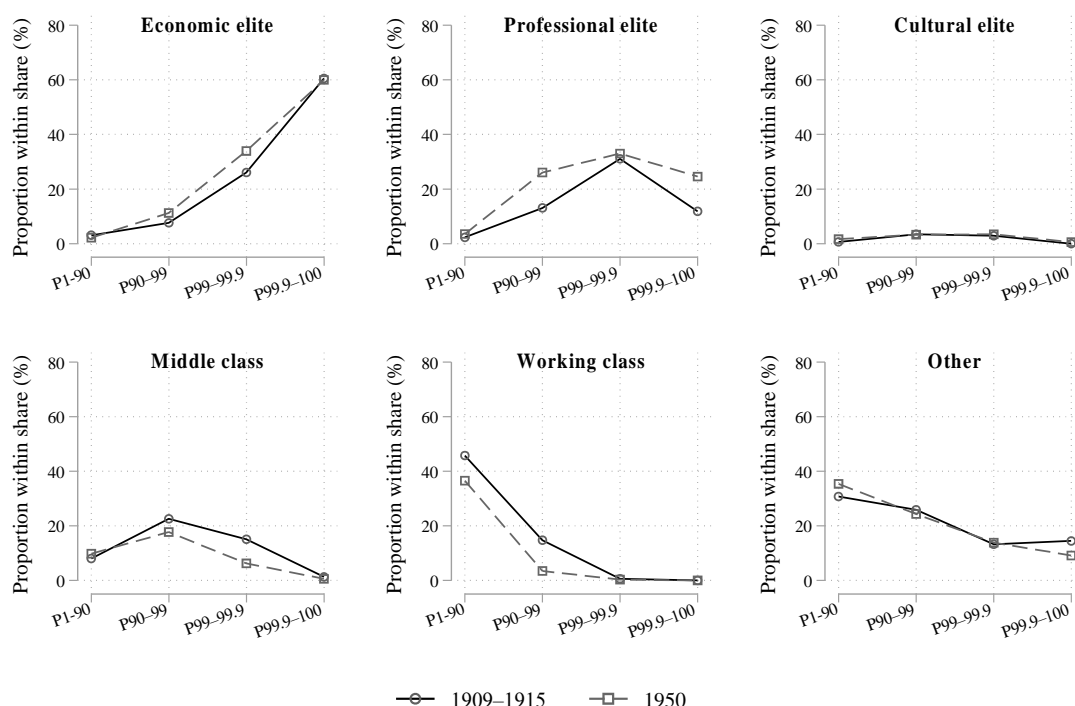
The timing of income levelling in Figure 2 is slightly different than that of the top decile's share of total incomes as calculated by Roine and Waldenström (2008). They found a very high level of income inequality around 1910 (the top decile earned about 45 per cent of total incomes), then a peak during WW1, then a rapid decline around 1920, a slight increase during the 1920s, then another decline after the Depression (to about 35 per cent), and finally, a steep drop in the second half of the 1940s. We know that WW1 in Sweden saw growing inequality and social polarization (cf. Bengtsson and Molinder 2017), but here the income advantage of the elite declines from 1909 to 1915, contrariwise to the movement in the country as a whole. This indicates that the war-time profiteers of 1915–18 were probably to some extent parvenus from outside the traditional elite areas studied here. Something similar has been shown for Denmark, where the incomes of the richest fishermen could sky-rocket during these years of food shortage (Abildgren 2019). This was also in line with the development in Malmö city, where income inequality increased between 1905 and 1920, driven in 1920 especially by merchants (Svensson and Bengtsson, 2021). But just as in Roine and Waldenström's analysis, we do see an important leveling from WW1 to the mid-1920s.

From 1915 to 1927, the nominal incomes of the elite groups in our sample grew by between 50 and 100 percent. Over the same time, the hourly wages of industrial workers grew by 135 per cent (Prado 2010), and their yearly wages by 110 per cent (HILD database), over a period when the 10-hour working day was replaced by the 8-hour day. The trade union movement made great advances in these years (cf. Lundh 2002 pp. 171–172; Bengtsson and Molinder 2017), and it seems probable that their newly-won influence over wages made a difference to the equalization of incomes, just as it did in Germany, Italy, and the United States in the same period (Bartels 2019; Gabbuti 2021; Farber et al 2021). For the period 1935 to 1950, it is more difficult to infer what happened, because the gap between the years is longer, and also encompasses WW2. Let us come back to that question later, after looking in

more detail at the roles of various social groups, professions, and capital incomes in the income elite.

Figure 3 shows, among the taxpayers in our data, the proportion that each class made up of the different fractions of the national income distribution.<sup>11</sup> The figure compares our early peak-inequality benchmarks: 1909 and 1915, to our last benchmark of 1950.

**Figure 3. Share of each Class in the Different Fractions of the National Income Distribution, 1909–1915 compared to 1950**



*Note:* Incomes and occupations from our dataset for Djursholm and Östermalm. Cutoffs for the different fractions of the national income distribution from Roine and Waldenström (2008),

The figure depicts a very strong persistence in the composition of the different income segments. Not surprisingly, the very richest were those whom we classify in the economic elite; they made up a very small proportion of the bottom 99 percent, but dominated in the absolute top. They made up about 30 percent of the P99–P99.9, and more than 60 percent of the higher fractions. The professional elite, for their part, made up a large fraction of income earners just below the absolute top. They were about 40 percent of the P99–P99.9 and about

<sup>11</sup> The cutoff points for belonging to different fractions of the national income distribution come from Roine and Waldenström (2008) and refer to tax units (husband and wife together), while our calculation is based on individual tax returns which treat husbands and wives separately. In Appendix E, we show that for our Östermalm sample, where we could compare our results for individuals to those from using tax units, this did not affect our results. This stems from the fact that very few married women had their own income.

20 percent of the richest of the rich. This group also experienced some change, increasing its share of the P90-99. The cultural elite was always a small group, but made up some portion of the P90-90 and P99-P99.9. The middle class, in turn, constituted a large share of the P90-90 and P99-P99.9, about 20 percent, but were almost absent from the absolute top. This corresponds well with Piketty's (2003) labelling of the P90-99 group as "the upper middle class" and the P99 as "the rich". The working class, predictably, made up the bulk of the population in the bottom 90 percent, but was also present in the P90-99.

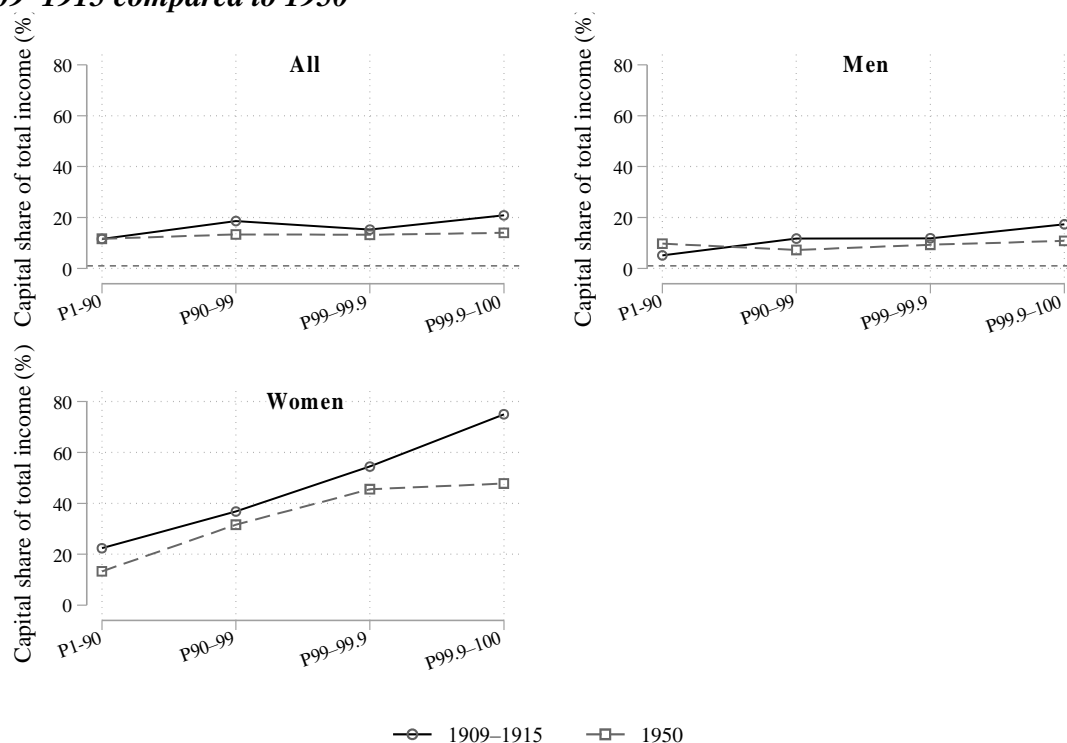
### ***The Role of Capital Incomes and Rentiers***

We know from previous research (e.g. Piketty 2003, 2014) that capital incomes made up a major share of total income for the elites. The relative fall in capital incomes has also been pointed out as a major force in the decline in top income shares in the Swedish case (Gustafsson and Jansson, 2008; Roine and Waldenström, 2008). But when information on individual taxpayers was lacking, it was not possible to discern if capital incomes were concentrated among a few individuals in the top group, or whether all income earners received similar proportions of income from capital. This was part of the question whether the elite consisted primarily of rentiers, who had inherited most of their wealth, or whether top earners used their labor incomes to invest, in which case their investments yielded capital income.

Figure 4 shows for our Östermalm and Djursholm sample the share of capital income in total income for people at different places in the income distribution, in 1909 and 1915 compared to 1950. In 1950, the curve is rather flat: capital income was about 20 per cent of total income for the top decile as well as for the top percentile and the top 0.01 per cent. In 1909-15 the curve has a distinct uptick: the top 0.01 per cent were more capital-rich than the rest. The separate panel for women shows that capital income was more important, relatively speaking, for rich women than for rich men. However, one could also say that given the restraint on women's economic autonomy at the time, it is notable that more than 40 percent of the women who made it into the P99-P99.9 in 1950 were rich from labor income.



**Figure 4. Capital Share of Total Income in Different Fractions of the Income Distribution, 1909–1915 compared to 1950**



*Note:* Incomes from our dataset for Djursholm and Östermalm.

How many in the top stratum could be defined as rentiers, living off inherited capital?<sup>12</sup> While we cannot observe directly the bequests that individuals received, we can use the contextual information that we have access to in order to make a rough assessment. A starting point is to define as possible rentiers all those who succeeded in joining the P99–100 and who were rich from capital (defined here as those deriving  $>2/3$  of their total income from capital). The next step is to attempt to estimate the share within this group that could possibly have accumulated wealth from saving its labor income. We can perform this calculation only on the data for our Östermalm sample, since the tax lists outside of Stockholm City proper do not include information on age.<sup>13</sup> To exclude all those capital rich who could possibly have accumulated

<sup>12</sup> Henning Melin in 1927 performed a fascinating analysis of whether investments in stocks or bonds were the more profitable choice. He simulated an investment of 80,000 kr in the 16 largest joint stock companies in Sweden in 1909, and calculated the profitability of this investment from 1909 to 1927. The stocks yielded about 4–6 percent in yearly dividends in nominal terms; during the inflation of 1917–20 nominal dividends were around 10 percent and in the more stable years of 1924–1926 about 7 percent. Average yields from 1909–1926 were 5.2 % for his fictive bond portfolio and 6.8 % for the stock portfolio. To invest in government bonds would have yielded less, about 4.1 %. The stock investment would have been more advantageous also because the fictive portfolio grew in value by 23 % over the period 1909–1926. Only for the very risk-averse did Melin (p. 136) recommend investing in bonds.

<sup>13</sup> In follow-up work we plan to make extensive use of the fact that it is possible to back out an individual's wealth from looking at the difference between taxable income according to the taxation system that we use in this paper, and taxable income according to the parallel system. In the later system, a fraction of wealth (1/60 or

their wealth from saving labor income, we eliminate from the rentier group everyone above age 40 with an occupational title (including those with a “former” prefix). Table 3 details the calculation. In both periods, the only capital- rich individuals above the age of 40 with occupational titles are found in the economic and professional elite. The suspicion that most of the capital rich individuals had not accumulated their wealth themselves is confirmed by the fact that most of those individuals have “familial” titles.

**Table 3. Calculation of the Share of Rentiers in Top Income Fractions, 1909–1915 compared to 1950**

	<b>1909–1915</b>		<b>1950</b>	
	<i>P99–99.9</i>	<i>P99.9–100</i>	<i>P99–99.9</i>	<i>P99.9–100</i>
Share capital rich (>2/3 of income from capital)	15 %	26 %	10 %	14 %
<b><i>Share capital rich age &gt;40 with occupational title:</i></b>				
Economic elite	1.2 %	6 %	0 %	5 %
Professional elite	1.6 %	2 %	1.7 %	1.5 %
Rentier share	12–15 %	18–26 %	8–10 %	8–14 %

*Note:* Data from our Östermalm sample which includes information on age. No capital-rich individual above age 40 are in any of the occupation classes outside the economic and professional elite.

There was a clear drop in the proportion of potential rentiers between 1909–1915 and 1950, especially among the absolute richest (P99.9–100); the share fell from 18-26 percent down to just 8–14 percent. From this we conclude the following. First, while probable rentiers made up a substantial share of the income elite, a clear majority of top income earners were rich from wages and business income. Second, the share of rentiers among top income earners continued to fall from the pre-Great Leveling period to the time directly after World War Two, in line with the “euthanasia of the rentier” discussed by Piketty (2014, p. 274). Third, most of the capital income in the top stratum was concentrated among capital rich individuals, implying that the fall in capital incomes over the period predominantly affected this group.

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1.7 percent) was added to taxable income. A preliminary analysis for Djursholm in 1909 suggests that as many as 40 percent of taxpayers in this affluent area held some wealth. The distribution of wealth was very unequal, however, with a Gini coefficient of 91. The top 10 percent of wealth owners held 85 percent of total wealth, and the top 1 percent as much as 35 percent.

## 4. Accounting for the Fall in Top Incomes

### *The Very Top and Their Income Sources*

To disentangle who the very elite were, and why their incomes evolved as they did, let us look at the very top: the 10 top incomes for each area in each benchmark year. These tables are in Appendix D, where biographical information about the top earners is presented. In this main body of the paper, we summarize the results in Table 4 which conveys the key characteristics of the very top income earners.

**Table 4. The sectoral composition of the top 30 incomes every benchmark year**

	1909	1915	1927	1935	1950
Manufacturing	33.3	42.9	39.4	57.1	58.8
Finance	19.0	11.4	30.3	22.9	8.8
Trade and retail	19.0	34.3	9.1	5.7	8.8
Other services	4.8	2.9	12.1	2.9	14.7
Real estate	4.8	0.0	0.0	0.0	2.9
Public service	14.3	5.7	3.0	0.0	2.9
Old money	4.8	2.9	6.1	11.4	2.9

*Note.* See Appendix D for the underlying data. Top 30 incomes here as top 10 incomes per sampled area. This means that in 1909 there are only 20 observations, as we have no data from the Karlaplan area in that year.

Manufacturing was the single most important sector, increasing its share over time from one third in 1909 to almost six tenths in 1950. In 1909, the top income in our sample (111,940 SEK, divided into 52,000 from capital income and 59,000 thousand from salary) was that of an CEO of a company, which he himself had founded, producing telephone cables and other products, including plastic. Other top incomes in this year went the CEO of an engineering manufacturing firm which he had founded himself, with an income of 106,259 SEK, and the CEO of a railways and mining company. Another interesting example of a manufacturing fortune is of course the top income in our 1927 sample, the engineer Ivar Kreuger, CEO of the Swedish Match Company and one of the greatest company leaders of Swedish history. His income was monumental: 2,444 860 SEK, to compare with 765,000 for the second-highest income.

While the share of manufacturing grew over time, correspondingly, the shares of public services (after 1909), trade (after 1915) and finance (after 1927) shrank. In 1909, there were still university professors with great fortunes, inherited, or appointed as consultants in business life. These disappeared over time. The shrinking share of trade is a marker of the

changing time, the loss of romance in commercial enterprise discussed by Schumpeter (1943). In 1909 and 1915 plenty of merchants were in the top group, dealers in colonial goods and importers of important consumption goods more generally, but their role dwindles over the 1930s and 1940s.

How should we understand the change at the very top, the 0.01 percent discussed here? The period of 1870–1914 has been labeled by social historians “the Gilded Age” or “la Belle Epoque”, while by economic historians it is typically referred to as the “First Globalization Era”.<sup>14</sup> The micro evidence on the super-rich presented here suggests how enmeshed the various labels are: through the global business opportunities of the day, the largest incomes were made. The manufacturing corporations of the top-income entrepreneurs were all internationally oriented and such great incomes would have been hard to attain had they been restricted to the national market. Kreuger, the highest income earner in our sample and most likely the highest income earner in Sweden in the period under investigation, is a telling case study in his internationalism: after his engineering degree in Stockholm in 1900, he spent eight “vagabond years” as, among other things, building controller in Illinois, engineer with a bridge project in Veracruz, and building engineer in New York City, followed by periods in South Africa, India and Paris, and New York again (Thunholm 1995, pp. 21–27). He brought with him the technique of reinforced concrete and his building company Kreuger and Toll, which started with a loan from a London bank (Thunholm 1991, p. 39), made a significant impact on the cityscape of Stockholm in the years after 1907. This was not enough for Kreuger, however, and Kreuger and Toll became a general holding company with interests in many sectors. From 1912 on, he also became seriously active in the match industry, for which he is remembered: at his peak in the late 1920s, Kreuger had a monopoly on match production in 25 countries (de jure or de facto) and ran 250 factories in 43 countries (Thunholm 1995, p. 213). Of course, building on his extensive ownership in the match industry as well as many others, he was also a financier of international standing; as the Chicago Tribune remarked in 1927 when Kreuger mediated a loan of 75 million US dollars from the US to France: “It’s the Medici, the Fuggers all over again” (cited in Thunholm 1995, p. 97).

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<sup>14</sup> For a social history perspective on the gilded age, see for example Fink (2015). Specifically on the gilded age and inequality research, see Winant (2020). The seminal economic history perspective on this globalization period is expressed for example in O’Rourke and Williamson (1994). These eras also overlap with what Glete (2018) calls “the great industrial breakthrough” in Sweden, 1890–1920.

The peak of inequality c. 1900–1925 can therefore be seen as a perfect storm.<sup>15</sup> The extremely high incomes of individuals like Kreuger and others had at least three preconditions. One, the growth of consumption power around Sweden and other industrializing countries, which created a Fordist market for consumption goods. Two, the globalization of the time meant that firms like Kreuger & Toll or the telephone company LM Ericsson were not confined to domestic markets alone. Three, they had a first mover advantage which facilitated monopoly rents: important patents, or politically construed monopolies, as in the case of Kreuger. As Lennart Schön (2014, pp. 266–267) has argued, inspired by Schumpeter (1961) and Dahmén (1950), Swedish industrial firms faced keener and keener competition in the 1920s and 1930s, which lowered profit margins – see again Figure 1 – and took away monopoly rents at the very top of the income distribution. In Swedish economic history, the crises of the early 1920s and early 1930s have often been analyzed in terms of their implications for winners and losers among the capitalists, for some owner groups such as the Wallenberg family could buy valuable assets at temporarily depressed prices and thus strengthen their position in the long run (e.g., Glete 2018: 86–101). But the incomes analysis here shows the consolidation of firms in the face of greater international competition and pressure to rationalize. As Schön (2014) has emphasized, this exerted a downward pressure on profit margins.

At the same time, in the 1920s and 1930s a powerful labour movement achieved ever greater influence over Swedish politics, and ushered in the new era of regulated capitalism, what might be referred to as embedded liberalism or the Keynesian era. De Geer (1978) in a classic study stressed that there were important movements – ideological and organizational – for the rationalization of Swedish industry in the interwar period, when the profit crisis of the Depression, just ten years after the deep crisis of the 1920s, showed that industry needed to increase productivity and efficiency to create satisfactory profits. However, as De Geer emphasizes, a simple Taylorist model of industrial organization, with its very hierarchical conception of firm/employee relations, could not have been imposed in Sweden, given the strength of the trade unions. In fact, the strength of the trade unions and the profit pressure after the imposition of the eight-hour working day, with a maintained daily wage (cf. Lundh 2002, p. 148; Bengtsson and Molinder 2017), was a major influence behind the “rationalization movement”. The joint effect of such changes in corporate conditions and

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<sup>15</sup> For a perspective on the high inequality of this period as a product of particular circumstances of the time and thus not easily comparable to the high inequality of our own time – the Ginis and top income shares might be similar, but the circumstances very different – see Winant (2020).

actions (“economic” factors), and trade union influence (“institutional” factors) is crucial for understanding the evolution of income inequality in Sweden in our period.

In 1950, the top income earners were dominated by people in manufacturing. The share of bankers had fallen back since the Depression, while the share of merchants had been decreasing ever since the 1910s. The highest income (639 630 kr) in our sample in this year is the same CEO who had the second-highest income in 1909, but his advantage compared to the average Swede, as defined by the per capita income, had decreased from 194 times the average in 1909 to 142 times the average in 1950, while the advantage of the top 30 incomes generally (taken as an average) decreased from 116 times GDP/c in 1909 to 51 times in 1950. The 1950 top 30 included executives from engineering companies, printing, truck making and other manufacturing sectors. Along with a few people who made their money from shipping, business law or banking, they made a good living, but their incomes, relatively speaking, were simply not as impressive as those of the top earners in 1909 or 1915. Piketty, Postel-Vinay and Rosenthal (2018, p. 7) in a recent study of Paris from 1842 to 1957, state that the “rentiers did not disappear, they just became poor.” We may say something similar about the CEO:s and the company owners: they did not disappear after 1920, but, under the new macroeconomic and political economy conditions, they simply became relatively poorer.

If the peak of inequality 1900–1925 was a perfect storm, then the equalization after c. 1920 showed several forces in play. Increased product market competition, lowering profit margins, and decreased monopoly rents lowered the incomes of the very top, the 0.01 percent or so. At the same time, trade unions became powerful in Sweden and if evidence from elsewhere is to be believed, then this also had a tempering effect on profits and on top management pay (Frydman and Molloy 2012; Collins and Niemesh 2019). In the 1940s and 1950s, the financial sector became heavily regulated, which curbed its incomes (Larsson and Söderberg 2017. ch. 2). All these factors combined to equalize incomes and keep inequality low until the 1980s, without the need for capital destruction during the war, or any massive displacements during the Great Depression, which in any case was not so great in Sweden (Schön 2014, pp. 304–313).

### ***The Evolution of Incomes for the Professions***

That top businessmen and CEOs were at the very top of the income distribution is not surprising. Yet a striking feature of the composition of the elite is the role played by professionals: doctors, apothecaries, lawyers and the like. Table 5 shows the median income

of some professional groups, relative to GDP per capita. Again, that CEOs have a massive income advantage compared to the population at large is to be expected. But it was striking to note that in 190 the median medical doctor in Östermalm and Djursholm earned on average 6 times the national average. This money came from their salaries: when capital incomes are included, the doctors' incomes are 10.5 times the average. Of course, this does not apply to all doctors, but to a selected group: high income earners within the professional group. But the income advantage of the group was still striking, especially when we look at the development over time and see that their pay advantage compared to the average decreased to 4.4 in 1950, and 5.1 in terms of total income advantage. Thus, during the 41 years of our investigation their income advantage was halved.

**Table 5: Median Income by Occupation Relative to GDP per capita**

Year	CEOs		Medical doctors		Engineers		Lawyers		Pharmacists		Banking clerks		Insurance clerks	
	Tot	Labor	Tot	Labor	Tot	Labor	Tot	Labor	Tot	Labor	Tot	Labor	Tot	Labor
1909	27.7	22.6	10.5	6.2	9.3	7.9					8.8	8.6		
1915	18.1	17.7	9	5.8	8.3	8					5.5	3.6		
1927	16.4	12.4	7.9	4.6	6.9	5.2	9.7	6.4	7.7	2.3	3.8	3.8	10.7	6.7
1935	14.5	11.5	8.3	5.5	6.4	5.3	10.4	6.2	7.7	4.7	3.2	2.5	3.8	3.8
1950	8.2	7	5.1	4.4	3.8	3.2	8.3	7	5	3.8	2.7	2.3	2.6	2.2

*Note:* Lawyers and insurance clerks excluded in 1909 and 1915 due to the low number of observations.

The development was similar for other groups. The pay ratio of engineers to the national average decreased from 9.3 to 3.8, and that of banking clerks from 8.8 to 2.7. Lawyers were the one group which did not conform to the pattern of decline. We have enough lawyers only from 1927, but in the years following, the ratios are quite stable: in 1927 the median lawyer in the sample earned 9.7 times the national average, and in 1950, 8.3 times. This confirms the finding of Gustavsson, Husz and Söderberg (2009, p. 97) that lawyers actually were not especially wealthy in 1914, but that they did well from 1914 to 1963, like elementary school teachers but the converse of higher civil servants, who were wealthy in 1914 but lost out in the decades to 1963. Corporate lawyers also contributed to the rise of “other services” in the very top stratum of the incomes discussed above in Table 4.

A conclusion from the table is that medical care and the financial and insurance sectors were very profitable ventures in Europe before the Great Leveling. We cannot prove this quantitatively, but the drastic income advantages of doctors, banking clerks and insurance clerks in 1909 and 1915 suggest that the heavy expansion of public intervention and regulation in these sectors in the period after the First World War, put a lid on the incomes of

the professionals active in these sectors. This was probably an important, and underestimated, part of the Great Leveling. The more spectacular cases of large capital owners and CEOs have been discussed previously in the literature, but in fact the top groups of income earners also contained many white-collar professionals. As Sjöblom (2016) has shown, the private insurance industry was a major player in early-twentieth century Swedish society; it appears that the business was very lucrative too, not only for CEOs but also for clerks.

In terms of the timing of the leveling, it is again striking that for medical doctors, engineers and banking clerks, we see a fall in the income ratio as early as from 1909 to 1915. The CEOs were the only group in our Östermalm and Djursholm sample who improved their relative position in these years. This supports the idea that the real “profiteers” of the WW1 goods shortage situation in Sweden were (a) capital owners and economic elites, and (b) parvenus. Beyond this fact, we see a rather linear reduction of the elite income advantage: the relative situation of the elites gets worse and worse for each benchmark year.

### ***The Role of Educational Expansion***

A factor which has received less attention in the context of top incomes and income inequality is the expansion of popular education. While educational expansion has been viewed as a powerful force in bringing down wage differentials between middle-class professions and blue-collar workers during the first half of the twentieth century (Goldin and Katz 2008; Bengtsson and Prado, 2020; Ljungberg, 2006), this framework has previously not been applied to the top income literature, since it has not been possible from the tabulated data used in previous studies to distinguish which groups made up the top earners in society. From our description of the composition of top income groups in the first half of the twentieth century, it is however, clear that professionals and individuals with middle class occupations made up a significant fraction of the top 10 percent, and even the top 1 percent. What role did the expansion of education play in reducing the income advantage of these groups relative to the rest of the population?

To assess the potential role of human capital in bringing down relative top incomes, we infer the number of years of education embedded in the different occupations represented in our dataset. We use information on the educational requirements, and complement it with evidence on educational attainment by occupation available from the 1930 population census. For example, all individuals with occupations that required a university degree, such as engineers, priests and lawyers, are coded as having 16 years of education. Some occupations

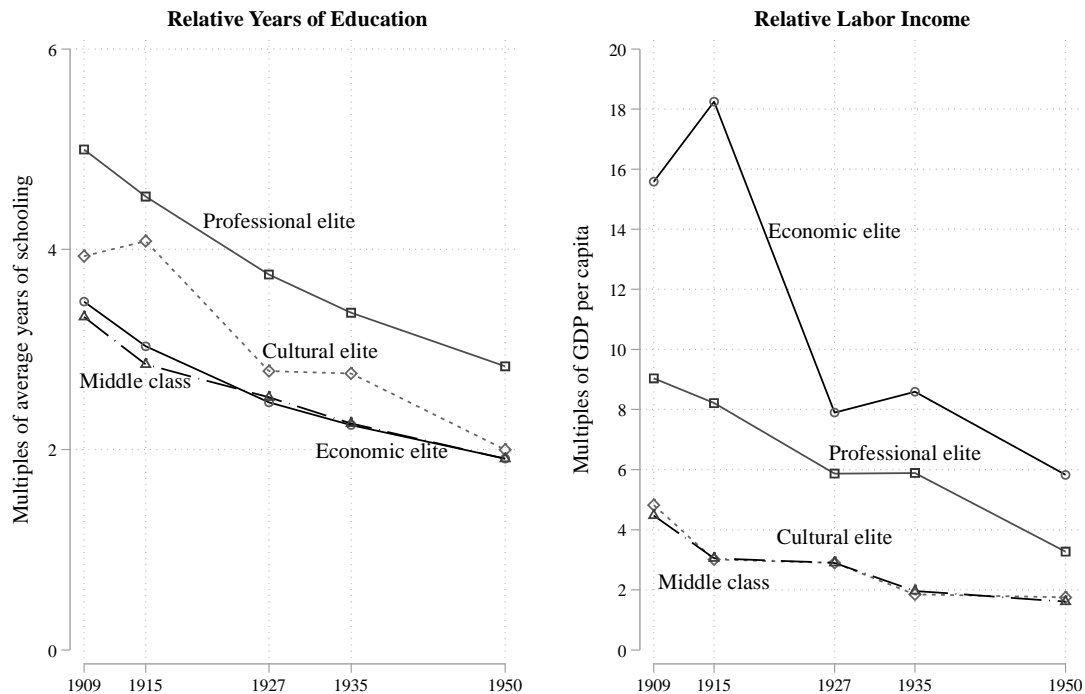


also entailed even higher levels of educational attainment, such as doctors and professors. In this case, we have coded them as having 20 years of education. Many white-collar occupations such as clerk and actuary, in contrast, were in most cases associated with a shorter secondary education (*realskola*), implying about 10 years of education. Some white-collar jobs such as teacher in secondary education, required a longer secondary education (*studentexamen*), reflecting about 13 years of education.

The difference between the amounts of education that these professionals attained deviated quite considerably from amount for the average person around the time of World War One. According to the estimates of Ljungberg and Nilsson (2009), schooling in 1909 lasted on average only 3.8 years. Over the following 40 years, popular education expanded rapidly, to 4.2 years in 1926 and further to 5.6 years by 1950. As a consequence, the relative educational advantage of white-collar professionals fell substantially.

Figure 5 details this decline in the educational advantage of our three elite classes as well as the middle class between 1909 and 1950. As can be seen from the figure, the mean years of education relative to the average in Sweden fell for all four groups.

**Figure 5. Relative Years of Schooling and Relative Labor Income by Class, 1909–1950**



*Note:* Years of education and labor income only for the active population (i.e. excluding those with a “former” prefix).

As might be expected, the professional elite had the strongest educational advantage at first.

Most individuals in this group had an occupation entailing 16 years of education, which

translated into five times as much schooling as the average individual in 1909. Second in the length of education was the cultural elite, with about four times the average in 1909.

Interestingly, the evidence from the 1930 population census suggests that most individuals with occupations in the economic elite had relatively low amounts of schooling. The most common educational background was a shorter secondary education. As a result, individuals in the economic elite had similar levels of education to members of the middle class: about 2.5 times the Swedish average in 1909.

Figure 6 also displays the relative median labor income for the individuals for whom we code the years of education (we exclude everyone with the “former” prefix, suggesting that they were retired). For the cultural elite and the middle class, their income advantage mirrored very closely their relative educational level; falling from just above four times GDP per capita in 1909 down to just two by 1950. A similar pattern was present for the professional elite, whose relative educational advantage fell from a multiple of five to just about three in 1950, their relative labor income declined from nine times GDP per capita down to below a multiple of four. However, it is also clear that a falling educational advantage is much less likely to be an explanation for the income advantage of the economic elite. Here, the processes outlined in previous sections are much more likely to have played a role.

## 5. Conclusion

The empirical contribution of this paper has been to make use of about 21,000 individual tax returns to analyze the development of incomes and income distribution in Sweden from 1909 to 1950. There are several conclusions for the literature on the development of income inequality in general, and the “Great Leveling” in particular.

The main takeaway is that the Great Leveling happened against the background of what we may rightly call Gilded Age inequality. The very top incomes in the 1910s and 1920s were made by entrepreneurs and executives active in a globalized economy with markets of mass consumption, and with extremely high returns for the leading firms, those with patents, monopolies, or simply market leadership. In relation to further research, we have confirmed the results of Gustafsson and Johansson (2008) and Roine and Waldenström (2008) that a relative decrease in capital incomes was crucial for the levelling of Swedish incomes, but we have been able to go one step further and show the entrepreneurial nature of the top incomes in the early, very unequal part of our period. We may think of this as “Schumpeterian”

inequality: entrepreneurial profits, subsequently reduced in the 1930s and 1940s under conditions of deepening competition and regulation. We would also propose, in line with contemporary studies of corporate governance, that the stronger trade union presence in major firms lowered executive compensation in Sweden in the 1930s and 1940s. Frydman and Saks (2010) have shown for the US that social norms, which are intangible and difficult to pinpoint precisely with quantitative measures, played a role in the shift from great executive-to-worker advantage in compensation in the early twentieth century to the smaller advantage mid-century; the same can be said for Sweden. We suggest that it would be fruitful for further research to integrate business history and the history of income inequality. It is telling that, while Schumpeter is universally recognized as one of the great economists of the twentieth century, he rarely crops up in studies of inequality. However, to understand the evolution of income inequality, we need to understand its constituent parts, including the top incomes which often stem from business opportunities.

Further, to understand the great inequality of the early twentieth century, like Gustavsson, Husz and Söderberg (2009), we have also pointed to the advantaged positions of the professions in the first decades of the century. Generous salary setting in the public sector for higher-level civil servants, doctors and the like, a low supply of the highly educated, and a favorable investment climate for those with saved means, all benefited professionals in the early twentieth century.

Further research on Sweden could also very well follow the interest in rentiers which has been expressed especially by French researchers (Piketty, Postel-Vinay and Rosenthal 2018). The quirk that Sweden from 1902 to 1928 had a taxation system which had separately one tax on incomes, and one tax on incomes + (an imputed return from) wealth, means that the taxation lists we have excerpted and used here could be used in further research also to disentangle the various routes for top incomes and top wealth, conjoining the two factors for the same individuals. Such a study could shed further light on behavioral responses, differential returns to capital, and investment strategies for the economic elite under the period of the great leveling.

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# Appendices for “What Happened to the Incomes of the Rich during the Great Levelling? Evidence from Swedish Individual-level Data, 1909–1950”<sup>\*</sup>

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## Appendix A. On the Geographical Sample and the Taxation Lists as Sources

To study the rich in Sweden, which areas should one choose? It is quite natural to focus on the Stockholm area, as riches and fortunes have been concentrated there for a long time. In the 1869 list of those who by virtue of high income or high wealth were eligible to be elected to the first chamber of parliament, 1,686 of the 4,626 men who had the highest income (i.e., 36 percent), lived in Stockholm.<sup>1</sup> In the 1870 to 1909 period economic activity was probably even more concentrated to Stockholm, as the urban economy evolved.<sup>2</sup> Our thinking has been along the lines of two types of areas: (a) affluent suburbs, (b) affluent inner-city districts.

### *Within-Stockholm stratification*

In terms of affluent suburbs, there are especially three options: Djursholm, Saltsjöbaden and Lidingö. The latter two – especially Saltsjöbaden, which was founded by members of the Wallenberg family explicitly as a refuge for the wealthy – would also have been good choices.<sup>3</sup> However, Djursholm just about edges the other two. The journalist Ericson (2010, pp. 29ff) in his book on the upper class of Sweden today claims that the upper class live in Djurgården and Östermalm in the inner city, and in Djursholm and Lidingö outside of the city. Some also live in the traditional workers' district of Södermalm. This also reinforces that we could have chosen Lidingö. However, Djursholm is number one in prestige and wealth (cf. Holmqvist 2015). Anders Isaksson (1990, p. 99) in his biography of the Social Democratic party leader Per Albin Hansson argues that while the Social Democratic power elite in the 20th century lived in the Stockholm suburbs of Enskede, Nacka or Tyresö, the economic elite lived in different suburbs: Djursholm and Saltsjöbaden. At the turn of the twentieth century, Djursholm had much prestige as the home of cultural, social, and political profiles – see for example Lundquist (1997, pp. 372ff) on the large share of philanthropists and social policy

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<sup>1</sup> This is built on ongoing work by Erik Bengtsson that was presented at the Swedish Economic History Meeting in October 2021. This investigation shows that 703 of the top 4,626 incomes resided in Gothenburg, 1,686 in Stockholm and 203 in Malmö.

<sup>2</sup> The role of Stockholm in the Swedish economy was at a low ebb in 1850, as extensively documented by Söderberg, Jonsson and Persson (1991). The period of industrialization from the 1850s to the early 1900s saw a resurgence of the role of Stockholm in the Swedish economy. See also Hammarström (1970).

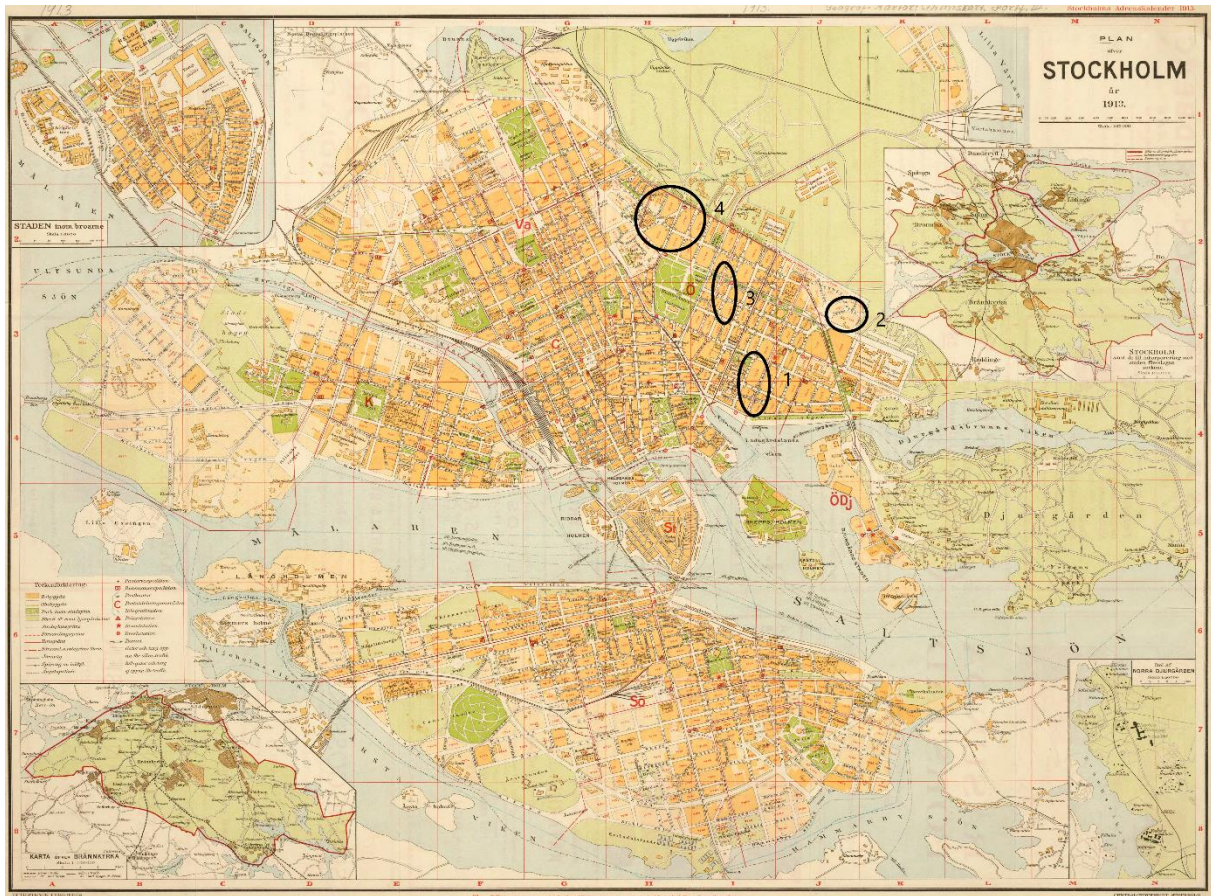
<sup>3</sup> In fact, we have photographed the taxation lists for Saltsjöbaden for the same benchmark years that are studied here. However, due to the tractability of the workload we do not study Saltsjöbaden in this paper. Preliminary inspection of the taxation lists indicates that Saltsjöbaden was more “upper middle class” and less “upper class” than Djursholm.



makers who resided there. Barton (2008) discusses Djursholm as “Stockholm’s most prosperous suburb” in the early twentieth century.

In terms of city districts, Östermalm is the obvious choice since it has been the most upper-class district since the 1880s. For a study of the seventeenth or eighteenth centuries the Old Town would have been a better choice (cf. Söderberg, Jonsson, and Persson 1991, pp. 99-102), but after the 1880s when the modern Östermalm was built, this is the obvious choice (cf. Wästberg 1962). As the prominent author Per Wästberg, who grew up in the area, remarked in his 1962 book: “Perhaps one can find Östermalm a tad tasteless and vulgar, marked by the grandiose merchant society which stood godparent at its christening” (Wästberg 1962, p 107). In the housing census of 1950, there were 157 apartments in Stockholm with 10 rooms or more; of these, 124 were in Östermalm. Of 4,579 servants in this census, 2,786 (or 59 per cent) lived in Östermalm. In 1958 there were 391 millionaires in Östermalm, but only 120 in the rest of the city. (Wästberg 1962, pp. 108-110.) From the beginning in the 1880s, the area attracted the moneyed elite of Stockholm: the prominent banker Knut Agaton Wallenberg bought a house (on Brahegatan, to be precise) here in 1882 (Olsson 2006, pp. 86–91). Several members of the Wallenberg family continued to live in Östermalm: on Villagatan, on Strandvägen and other nice addresses (cf. Lindgren 2007, pp. 115–117). Doctors with private practice by the 1910s were concentrated in the area around the Stureplan square in Östermalm (William-Olsson 1937, p. 182).

## Appendix A Map 1. Map of Stockholm in 1913 with our sampled clusters marked



Note: Map from the Stockholms Adresskalender, 1913. Source: Stockholm City Archive. Objekt-ID: SE/SSA/0234/J 2 A/170 Plan öfver Stockholm år 1913, Stockholms adresskalender 1913. Available at: <https://stockholmskallan.stockholm.se/post/24420> .

Therefore, among the inner city districts, Östermalm is the obvious choice for our study. However, we cannot sample all Östermalm; we need to sample certain neighborhoods within the district. We want to capture the elite neighborhoods within the area; there are status differences even within Östermalm. In map A1 four areas are marked: (1) the Strandvägen area close to the water, (2) the Karlaplan area, (3) the area around the square, Östermalmstorg, and (4) Villastaden. We have explored taxation lists from all four areas but have for reasons of economy chosen to study in the paper only areas (2) and (4).

At least since the 1920s there has been a distinction between “Upper Östermalm” (Övre Östermalm) and “Lower Östermalm” (Nedre). The definitions of what is “Upper” and what is “Lower” have varied slightly. The influential journalist of high society Kar de Mumma in the 1920s listed as the “good streets” of Östermalm: *Östermalmsgatan*, *Floragatan*, *Villagatan*, *Linnégatan*, *Narvavägen*, *Karlavägen*. And as the “simple streets”: *Valhallavägen*, *Jungfrugatan*, *Brahegatan* (Wästberg 1962, p. 103). Wästberg (1962, pp. 256-

7) in the 1960s defined as “Upper”: the Villastaden area, the streets between Karlavägen and Valhallavägen, Strandvägen, and the away end of Riddargatan. And as “Lower”: the simpler buildings on the cross-straits going up from Strandvägen. Ericson Wolke (2016, p. 69) describes Östermalm as a “*gräddhylla*” (roughly “top shelf”), but with some internal variation: in the houses in the yards simpler folk could also live. He names the streets above Karlavägen as “Upper” Östermalm.

### ***The stratification of the taxation lists and our chosen sample***

To locate workable clusters of quarters on Östermalm, we have explored the archive possibilities at the Stockholm City Archive. The organization of the city’s taxation lists in our period followed the *rote* system, which is strongly related to the ecclesiastical organization, i.e., the divisions of the city into parishes. Below the *rote* level (there were about 25 *rotar* in the city in this period), the taxation lists are organized on the level of quarters (*kvarter*). To facilitate our understanding of the localities, we want to sample clusters of adjacent quarters. We have chosen two clusters of adjacent quarters: one from the Karlaplan area (in Oscar parish, #2 in the map above), and one from the Villastan area (Engelbrekt parish, #4 in the map).

The three Oscar quarter *Trumslagaren*, *Musketören* and *Furiren* are from the Karlaplan area, some of the core of “Upper” Östermalm. The square Karlaplan and the boulevard Karlavägen were developed in the 1870s, inspired by the grand boulevards of Paris, and the area is filled with large apartments and is one of the most well-off parts of Östermalm. The three Engelbrekt quarters *Eken*, *Tallen*, and *Granen* are from *Villastan*, a unique area of Östermalm which consists more of one-family houses (“villa” in Swedish) than of apartment buildings. It used to be home of some of the very elite of Swedish high society, but today the buildings have mostly been converted to embassies and the like. Bedoire (2017, p. 9) describes *Villastan* as a world in itself, isolated from the outer world, without any traffic passing through.

The exact addresses for the Östermalm part of the dataset are given below. On the quarters themselves, their names and their history see Hasselblad (1979).

*Karlaplan sample (Oscar parish).*

**Trumslagaren.** Lützengatan 1, 3, 5, 7, 9. Karlaplan 14, 16, 18. Värtavägen 4, 6, 8, 10, 12, 14. Stora Bältgatan 18, 20.

**Musketören.** Lützengatan 4, 6, 8, 10, 12. Tysta gatan 3, 5, 9, 11. Karlavägen 91, 93, 95, 97. Karlaplan 12.

**Furiren.** Banérgatan 37, 39, 41, 43, 45. Karlavägen 99, 101. Tysta gatan 4, 6, 8, 10, 14, 16. Lützengatan 14. Stora Bältgatan 24, 26, 28.

*Villastan sample (Engelbrekt parish).*

**Eken.** Östermalmsgatan 57. Engelbrektsgatan 4, 6. Karlavägen 29. Villagatan 1, 3, 5, 7, 9, 11.

**Tallen.** Engelbrektsgatan 10, 12, 14, 16, 18, 20. Östermalmsgatan 56. Villagatan 13, 15, 17, 19, 21, 23. Valhallavägen 86, Lilljansplan 4, 6, 8.

**Granen.** Floragatan 13, 15, 17, 19, 21. Villagatan 10, 12, 14, 16, 18, 20, 22, 24. Östermalmsgatan 48, 50, 54. Valhallavägen 90, 92.

### ***Archival references***

For source critical discussions of the taxation lists see Järnek (1968, p. 19) and Kuuse (1970, pp. 35–40).

Table A1 presents a detailed breakdown of the contents of the taxation lists. The information which is always included is the name, marital status, total income, and deductions. The lists are as mentioned geographically structured so the location is important, but this is represented in different ways in Stockholm city and outside of it (in our case, in Djursholm). In Stockholm city both the real estate code – the quarter and the number of the building – and the actual address (street name and number) are presented, but in Djursholm only the real estate code. Marital status is presented as married, unmarried, widowed, or divorced. The number of underage children is presented in Djursholm in 1927, 1935 and 1950 (but not 1909 or 1915) since one made deductions on the tax for children, and presented in Östermalm in all years, since the Stockholm taxation lists were also the population register (*mantalslängder*).

The incomes are presented in a varying degree of detailed breakdown. The typical typology is threefold: (a) income from work or pension, (b) income from entrepreneurship (*egen rörelse*), and (c) capital income. In later years, from 1927 onwards, capital incomes are presented divided into income from agricultural property, income from other property, and other capital income. In our analysis we treat all these three types as one single type, capital income.

**Table A1. The content of the taxation lists**

		Contextual				Income sources					
		Address	Birth year	Birth place	Rent	Wealth	Agric. property	Other property	Entr.	Work	Capital
1909	Djursholm	(x)							X	X	X
	Östermalm	(x)	X		X				X	X	X
1915	Djursholm	(x)							X	X	X
	Östermalm	(x)	X	X	X				X	X	X
1927	Djursholm	(x)					X (fast egendom)		X	X	X
	Östermalm	X	X	X	X		X (fast egendom)				
1935	Djursholm	(x)					X	X	X	X	X
	Östermalm	X	X	X	X	X		X	X	X	X
1950	Djursholm	(x)	X				X	X	X	X	X
	Östermalm	X	X	X	X		X	X	X	X	X

*Note:* (x) means not the actual address but the real estate code (*fastighetsbeteckning*). The 1915 and 1927 Östermalm lists do not report wealth per se but since the lists include the state income and wealth tax (not used in this paper) as well as the *bevillning*, one can calculate wealth from the differences in taxed sum in the *bevillning* and in the state tax. The Östermalm 1935 taxation lists also present both these taxes, but also in a separate column, “Taxeringsnämndens anteckningar”, the taxable amount of wealth of the individual. The Östermalm 1935 lists present income “from other property” (*av annan fastighet*) but not income from agricultural property. These lists also include three columns for real estate values but these are only used for the building societies per se, not for the individuals who live in the buildings.

As one can note, there is more information in the taxation lists than we have used in the present analysis. The dataset will be publicly available after publication of the article, and the data can be used for further research.

The tax sources we have used are available as follows:

#### **Stockholm City Archive (Stockholms stadsarkiv, SSA).**

Överståthållarämbetets räkenskaper, various years 1910–1951. Parishes: Engelbrekt and Oscar.

Please note that up until 1915 (which are the lists stating incomes for 1914), the *Mantalslängder* from the Överståthållarämbetets räkenskaper have been digitalized by the Stockholm City Archive and are freely available online. Thus, we have used this online archive for 1909. For 1915, 1927, 1935 and 1950 we have taken our own photos. The online archive until 1915 is available at:

<https://sok.riksarkivet.se/mantalslangder-stockholms-stad>

The taxation lists are organized by rote (see above) and to localize the Östermalm taxation lists that we have used for 1909, the Villastan *kvarter* in Engelbrekt parish are in Rote number 9. See the archival file *Överståthållarämbetet för uppbördsärenden, År 1910, SE/SSA/0031/06/G 1 BA/G 1 BA:109/18 (1910)*. The *kvarter* Granen begins in photo # 524, page no. 2726; Tallen immediately follows (photo # 570) and spans the beginning of the next volume, SE/SSA/0031/06/G 1 BA/G 1 BA:109/19 (1910). The *kvarter* Eken follows after Tallen, photo # 55 in the latter volume. We have no taxpayers in the Karlaplan *kvarter* in 1909 as they had no residents at this point.

To locate the archival volumes used for 1915, 1927, 1935 and 1950, one needs to go into the *Överståthållarämbetets räkenskaper* archive at the Stockholm City Archive. More detailed references available from the authors upon request.

### **Swedish National Archives (Riksarkivet, RA).**

Income taxation lists from the series *Länsräkenskaper*, for Stockholm county. Archive codes as follows:

- SE/RA/5514 Länsräkenskaper 1918-1922
- SE/RA/55206 Inkomst-, förmögenhets- och fastighetstaxeringslängder 1923-1928
- SE/RA/55207 Inkomst- och förmögenhetstaxeringslängder 1929-1978

More precise references as follows.

1909:

- Taxeringslängder. Inkomst. Danderyds skeppslag.
- Verifikationer till Vaxholms fögderis Specialräkning för år 1910. Fol 3036 – 3668.  
Taxeringslängder för inkomst. Taxeringsuppgifter för Djurholm och Solna.

1915:

- Taxeringslängder öfver inkomstbevillningen m.m. Vaxholms fögderi 1916.

1927:

- Taxeringslängd över inkomstbevillningen, inkomst- och förmögenhetsskatten samt kommunala progressivskatten inom Djurholms stad och Stockholms län för år 1928.  
Six volumes.

1935:

- Taxeringslängd över taxeringen till kommunalinkomstskatt, statlig inkomst- och förmögenhetsskatt, kommunal progressivskatt, utjämningskatt samt utskiftningskatt: Djurholms stad och Stockholms län för år 1936.

1950:

- Stockholms län. 1951 års inkomsttaxeringslängder för Danderyds fögderi, Djursholms stad.

### *The income tax system and its progressivity*

On the municipal income tax reform of 1862 and the state income tax of 1903, see Hedlund-Nyström (1972), Lodin et al (2017, pp. 9–10) and Löwnertz (1991).

The income tax system started to become redistributive at least in the 1930s. Cf. the calculations and debate in Nordenson (1944) and Lindgren (1944). Steinmo's (1993, p. 25) comparison of top marginal tax rates in Sweden, the US, and the UK over the 1929–1950 period shows that the Swedish system was a lot less redistributive than the US and UK ones until 1948–49. See also Roine and Waldenström (2010), pp. 322–324. They point out regarding marginal taxes on top incomes: “These rates more than doubled between the mid-1930s up to 1950, and then continued to rise until 1980 when they peaked.” (p. 323) From the biography of Ivar Kreuger we have anecdotal evidence that at least the very elite evaded some taxes. Kreuger parked some profits in subsidiaries in the Netherlands, both because of advantageous taxation there, and as a means of simply hiding profits from the official book-keeping. See Thunholm (1991), p. 216. However, even for a very international (and secretive) financier like Kreuger, it was only a very small share of his income that was hidden in this way. Thus, while the taxation lists probably give a slight underestimation of top incomes and income inequality, the bias should be quite minor at least before the 1950s.

Stockholm had a higher municipal tax rate than some surrounding municipalities; Amalia and Marcus Wallenberg in 1932 moved to their summer house in Lovön municipality in protest against the Stockholm taxes (Lindgren 2007, p. 116). Djursholm advertised itself with “cheap taxes” (*billiga skatter*) in its 1914 address calendar, which has been digitalized by the Stockholm City Archive. However, the presence of many top executives and the like in our Östermalm samples shows that there was no mass movement of the moneyed out of Stockholm.

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## Appendix B. On the Class Schedule

To facilitate comparisons between different types of income earners, we use a class schedule which combines the principles for class analysis of Marx and Weber. Marx focuses on the ownership of the means of production, which distinguishes for example between the economic bourgeoisie (group 1), the petty bourgeoisie (5) and the working class (6). Weber focuses on professional qualifications and differences in market positions between different types of wage and salary earners. Thus, it is not enough to distinguish between the factory owner and the factory worker, but also between the factory worker and the research engineer. As Gustavsson and Melldahl (2017, p. 178) point out, Weber also made a distinction within the owning class, between “entrepreneurs” and “rentiers”. The distinction being that the former group work purposively to enlarge the capital while the latter live more passively on returns to existing capital.

A third aspect, associated with the French sociologist Pierre Bourdieu, is cultural capital and status associated with lifestyles. How such categories and thinking have structured elite life in twentieth-century Stockholm has for example been studied by Gustavsson (2012) in his study of customers of the high-status furniture makers Carl Malmsten and Svenskt Tenn. In our class schedule we therefore separate between three types of elites: economic, professional, and cultural. The economic elite is what we would think of as the true economic elite: CEOs, bankers, owners, and managers of large firms. The professional bourgeoisie are inhabitants of high-status, high-earning professions like doctors, lawyers, architects, and engineers. They are a Weberian elite, possessing rare levels and types of human capital, with very strong labor market situations. The cultural elite, finally, are, actors, school leaders, newspaper editors and the like. They probably do not have such a strong earnings position as the economic elite, or even the professional ditto. But they have prestigious positions in society. Cultural capital is of course also related to economic capital. The step to choosing an economically less secure but more intellectually rewarding and culturally prestigious career is easier for someone from a privileged background; this is the case for several individuals in our dataset. As Gregory Clark has remarked, just studying incomes leads us to overstating social mobility, since a sizeable share of sons and daughters of economic elites (with high earnings) choose the road of the cultural elite, thus earning less. Clark (2014, p. 108): “people trade income and wealth for other aspects of status. Someone might choose a career as a philosophy professor as opposed to a lower-status but more lucrative career selling plumbing hardware.”

Appendix B Table 1 details our class schedule. It is not entirely different from the one used by Gustavsson, Husz and Söderberg (2009) in their analysis of wealth in Stockholm in the period from 1914 to 1963.

***Appendix B Table 1: Class Schedule Used in the Analysis***

	<i>Class</i>	<i>Examples of titles in the dataset</i>
1	Economic elite	<i>Direktör, Disponent, Konsul, Grosshandlare, Överdirektör, Chef, Generaldirektör, Kommerseråd, Bankdirektör, Godsägare</i>
2	Professional elite	<i>Med. lic., Advokat, Överste, Hovrättsråd, Notarie, Apotekare, Justitieråd, Civilassessor, Ingenjör, Läkare, Arkitekt, Drabant, Riksbanksrevisor, Civilingenjör, Agronom, Teknolog, Hovrättsassessor, Länsarkitekt, Hovrättsnotarie, Farmaceut, Byråingenjör, Länsassessor, Lektor, Fil. Doktor</i>
3	Cultural elite	<i>Författare, Skådespelare, Kammarskrivare, Rektor, Konstnär, Redaktör, Amanuens, Nomadskoleinspektör, Intendent, Statsgeolog,, Fotograf, Kartograf, Statsskrivare, Kansliskrivare, Revisionssekreterare</i>
4	Middle class	<i>Lärare, Folkskolelärare, Sjuksköterska, Kontorist, Bankkamrer, Skolkökslärarinna, Gymnastikdirektör, Kanslibitråde, Kontorsskrivare, Bibliotekarie, Kandidat, Kartriserska, Postkontrollör, Handelselev, Jägmästare, Forstmästare, Kontrollör, Sekreterare, Mikroskopist, Tjänsteman, Kamrer, Pianostämmare, Registrator</i>
5	Petty bourgeoisie	<i>Handelsidkerska, Målarmästare, Föreståndarinna, Överföreståndarinna, Vedhandlare, Åkare, Lagerchef, Arrendator, Trädgårdsmästare, Konditor, Vinhandlare, Bokhandlare, Agent, Damfrisör, Specerihandlare, Urmakare, Entreprenör, Färghandlare, Handelsföreståndare</i>
6	Working class	<i>Hembiträde, Kokerska, Barnfröken, Barnsköterska, Handelsbiträde, Kassörska, Sömmerska, Expedit, Snickare, Telegrafist, Rörläsnare, Arbetare, Chaufför, Stationskarl, Banvakt, Montör, Kontorsbiträde, Vagtillsynsman, Servitris, Elektriker, Grovarbetare, Styrman, Murare, Handelsexpedit, Varubud, Trädgårdsarbetare, Konditoribitråde, Reparatör, Järnarbetare, Gårdskar, Kallskänka, Diskerska, Springpojke, Brädgårdsarbetare</i>

On class schemes, focusing on the middle classes, see Kocka (1980, 1981) and for the Swedish case Florin and Johansson (1993). For a discussion of the salaried middle class in Sweden c. 1830 to 1940 see Bengtsson and Prado (2020). For more theoretical discussions see Parkin (1979) for an argument for a Weberian analysis and Wright (2005) who argues for a Marxian analysis.

The composition of the population in the dataset is presented in Appendix B Table 2. The social character of the three areas were quite similar; The economic elite made up a slightly larger share of taxpayers in Karlaplan: 11 percent, compared to Djursholm and Villastan with 8 percent each. The share of the professional elite was about 10 percent in all three areas, while the proportion belonging to the cultural elite was around 2 percent. The middle class had a slightly stronger presence on Östermalm, about 12–13 percent of taxpayers, while the corresponding share in Djursholm was 10 percent. The petty bourgeoisie, consisting mostly of shopkeepers and artisans, were about 4 percent of taxpayers in Djursholm but almost absent in the Östermalm quarters. The working class made up a significant fraction of the taxpaying population in all three areas: almost 40 percent in Djursholm and close to 30 percent in Villastan and Karlaplan. The relatively large share of working-class individuals is driven by the presence of live-in servants; if we would limit the analysis to household heads, the working-class share would decrease significantly. The Östermalm areas also had a significant share of individuals with familial titles, including headings such as “wife”, “widow” and “son/daughter”; about 20 percent had such titles. Owing to the many families with children living in Djursholm, this area also had a sizable group of students: about 10 percent. The low share of nobles results from the fact that we only include in this category those titled as nobility, while nobles with occupational titles are incorporated in their respective class.

**Appendix B Table 2. Class Shares Among Taxpayers in the Sampled Areas, 1909–1950**

	Economic elite	Professional elite	Cultural elite	Middle class	Petty bourgeoisie	Working class	Other				
							Familial	Nobility	Army	Students	Unclassified
<b>Djursholm</b>	8 %	11 %	2 %	10 %	4 %	37 %	12 %	0 %	1 %	10 %	5 %
<b>Östermalm</b>											
Villastan	8 %	10 %	2 %	13 %	2 %	31 %	18 %	1 %	2 %	4 %	9 %
Karlaplan	11 %	10 %	3 %	12 %	1 %	29 %	20 %	0%	3 %	4 %	6 %

*Note:* The classification includes individuals with titles indicating that they are retired (“former”: *f.d.* in Swedish) in their respective class as indicated by their former profession.

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## Appendix C. Supplementary Figures and Tables

**Table C1. Income Thresholds for Different Brackets of the Income Distribution for Sweden as a Whole**

Year	Threshold, current SEK			
	p90	p99	p99.9	p99.99
1909 (1911)	1 179	5 132	23 175	94 823
1915 (1916)	1 618	7 875	48 216	268 903
1927 (1930)	3 083	10 271	39 164	136 259
1935	2 878	9 109	33 644	116 944
1950	9 733	23 529	62 136	152 172

*Source:* Roine and Waldenström, data appendix “Top incomes in Sweden, 1903-2013” to Roine and Waldenström (2008, 2010), available from <https://sites.google.com/view/danielwaldenstrom/data-programs>.  
Table A4: Total income thresholds (excluding capital gains) in Sweden, 1903-2013.

In real terms, that is adjusted for CPI (from Edvinsson and Söderberg 2010), the threshold in 1930 to get into the top decile was 2,189 kr in 1915 prices. In 1935, it was 2,135 kr. In 1950, 4,305 kr.

**Table C2: Various Macroeconomic Data of Relevance**

	GDP per capita	Male industrial worker hourly wage	Threshold to be in the top decile of incomes	Stock price index (1901=1)
1909	548	0.38 kr	1 179	1.14
1915	808	0.48	1,618	0.99
1927	1517	1.13	3,083	0.46
1935	1608	1.16	2,878	0.32
1950	4493	2.73	9,733	0.37

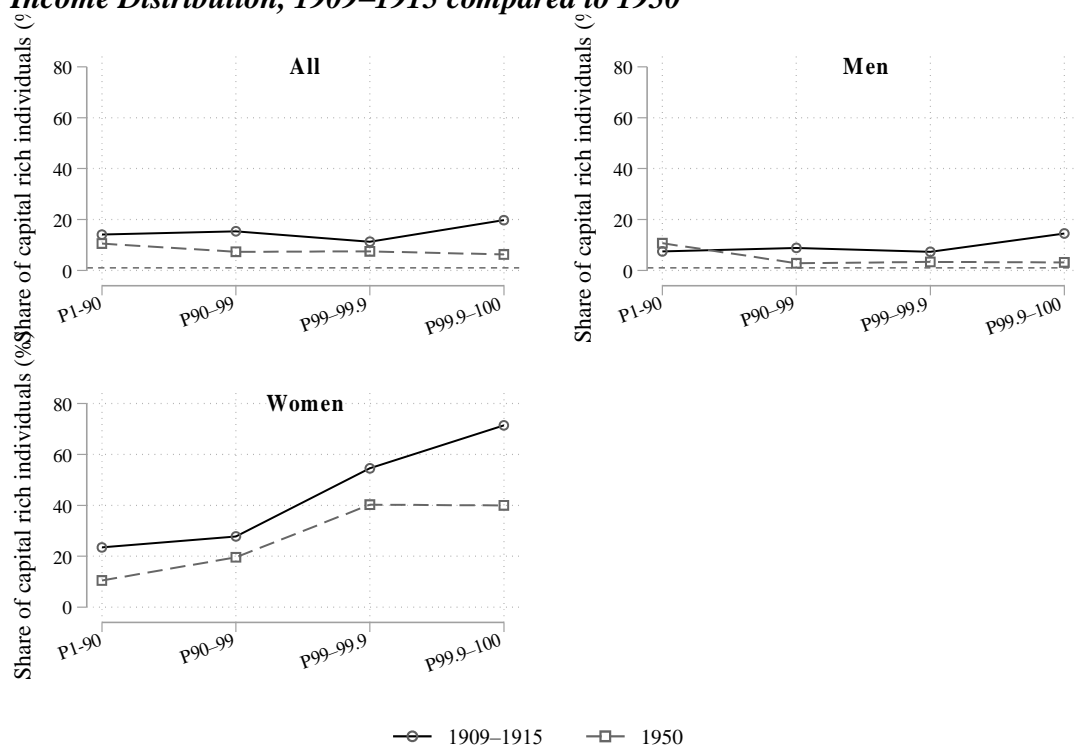
*Note:* GDP per capita from Schön and Krantz (2015). Wage from Prado (2010). Stock price index from Waldenström (2014).

**Table C3: Share of Sample in Different Fractions of the National Income Distribution**

		Top 10 %	Top 1 %	Top 0.01 %
<b>Djursholm</b>	1909	63 % (76 %)	25 % (35 %)	1.2 % (2.4 %)
	1915	51 % (65 %)	16 % (22 %)	0.8 % (1.1 %)
	1927	40 % (64 %)	16 % (31 %)	2.5 % (4.9 %)
	1935	43 % (63 %)	18 % (33 %)	3.1 % (5.6 %)
	1950	30 % (40 %)	12 % (17 %)	2.4 % (3.3 %)
<b>Karlaplan</b>	1909			
	1915	79 % (84 %)	31 % (34 %)	2.3 % (2.5 %)
	1927	51 % (75 %)	21 % (33 %)	4.0 % (6.3 %)
	1935	50% (69 %)	19 % (28 %)	3.7 % (5.4 %)
	1950	32 % (40 %)	11 % (14 %)	3.4 % (4.4 %)
<b>Villastan</b>	1909	79 % (84 %)	31 % (36 %)	5.7 % (6.8 %)
	1915	67 % (74 %)	19 % (23 %)	3.2 % (3.9 %)
	1927	43 % (67 %)	16 % (28 %)	3.9 % (6.7 %)
	1935	45 % (65 %)	21 % (34 %)	4.4 % (7.0 %)
	1950	32 % (41 %)	12 % (16 %)	2.4 % (3.2 %)

*Note:* Numbers in parenthesis excludes the working class, which in these areas was made up predominantly of live-in servants.

**Figure C1: Share of Capital Rich Individuals (>2/3 of Income) in Different Fractions of the Income Distribution, 1909–1915 compared to 1950**



*Note:* Incomes from our dataset for Djursholm and Östermalm.



## ***Appendix C References***

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## Appendix D. The top incomes in the sample for each year

We know that variations in top incomes are a very important part of overall income inequality. Piketty (2003, pp. 1011–1013) in his epoch-making article on inequality in France 1901 to 1998 showed that variations in the share of the top one percent made most of the difference over time. In his 2014 book, he argued that “in every society, even the most egalitarian, the upper decile is truly a world unto itself”, and divided it into the top 1 percent, labelled “the dominant class”, and the next 9 percent as the “wealthy class” (Piketty 2014, pp. 252, 281).

In this Appendix we will use our individual level data to look at the incomes, income composition and, most importantly, income sources of the very richest in our sample: the top 10 incomes in each of our three areas – Villastan, Karlaplan and Djursholm – for our five benchmark years, 1909, 1915, 1927, 1935 and 1950. These typically belong to the top 0.01 % or at least top 0.1 % of the income earners in the country; see discussion in Sections 2 and 3 of the paper, and Appendix C, Table C1. To locate the findings of this paper in the economic history of Sweden, we find it worthwhile to identify for these very top income earners, mostly executives and the like, from which lines of business their income streams came.

In the main body of the paper, Table 4 summarizes the sources of the very top incomes by sector. This helps us to pinpoint the nature of the top incomes in the period of the great levelling, and to discuss the mechanisms of both the very high inequality at the beginning of our period, and the subsequent equalization.

Our primary sources, the taxation lists, do report job titles, and quite often as a side note it is also explained where they work: in office so and so on street so and so, in this or that bank, and so on. However, this is not completely systematic, and the titles are not always informative enough. The title usage has some old-fashioned tendencies at some points. Some company leaders refer to themselves as grocers (*grosshandlare*) or merchants (*köpmän*) when we retrospectively would rather see them as industrialists, company leaders and executives. There is also a tradition of using titles such as captain, achieved in their youth in the army, or *häradsövding* (district judge), achieved in a rather short judicial career before going into company leadership. The most famous example of the latter is Marcus Wallenberg (1864–1943), CEO of one of the country’s most important banks, who for his life went by *häradsövdingen*, referring to the title he achieved in the public sector in 1890, at 26 years of age, before he went into the family bank. (The story of Wallenberg’s life has been told by Gårdlund 1976). Since the titles sometimes are less than informative about how the taxpayers

actually earned their money, we have researched, using other sources, how they earned the money.

We use several sources to localize the income streams. The journalist and author Ronald Fagerfjäll (1997) has mapped Swedish company owners and executives of the twentieth century in several volumes, and the historian Jan Glete (1987) has mapped the most important corporations' leaderships in the 1850 to 1950 period. We also use biographies of company leaders, such as Lindgren (2007) on Jacob Wallenberg. There are important digital sources too: the ongoing work, so far 34 volumes have been published since the start in 1919, *Svenskt Biografiskt Lexikon* (Swedish Biographical Lexicon) which is freely available online for many prominent Swedes with last names from A to Sw., as well as Project Runeberg which is an online project which digitalizes published books for which the copyright has expired. Luckily for us, this includes many Swedish publications from the first half of the century in the manner of *Vem är vem?* (Who Is Who?), address calendars, and other publications with information on prominent Swedes of that time. We have also used Stockholm specific sources like *Rotemansarkivet*, the population register for the city from 1878 to 1926, and *Stockholmskällan*, a website run by the Stockholm City Archive with plenty of digitalized materials pertaining to the history of the city and its inhabitants.

In Table 4 of the main paper we classify the income streams by sector. For transparency, in the tables here in Appendix D we signify how we have coded the income streams/sources of the top income individuals. For brevity we introduce this in short hand, as in Table D1 below. We have collected information on economic activities over the life cycle so the column "Title, income source" in tables D2–D15 reports not only current economic activity at the time of the tax list, but also previous employment, which may explain current patterns especially of capital incomes, which are important for the top income earners.

We do not report the names of the individuals, except for Ivar Kreuger who is very well known and well-studied (e.g. Thunholm 1995) and impossible to discuss without using his name, since the make-up of his business empire – match-making monopoly and international finance – was so unique. The individuals studied here were, at their youngest, 45-50 years old in 1950 and have passed away so data on their incomes does not constitute personal data in the legal sense.<sup>4</sup> The data that we use, incomes, are also not particularly sensitive, and indeed they were publicly available in the time of these individuals' own lifetimes, as taxation calendars frequently were published. However, we would rather err on

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<sup>4</sup> We have consulted the research ethics officer of Lund University as well as professor Ulf Görman's (2017) thoughtful guide to research ethics in research in the humanities.

the side of caution than publish names unnecessarily, and so we have pseudonymized the individuals with top incomes (except the exceptional case of Kreuger).

Table D1 explains the classification that we have used for income sources and the letters given in the column “Class.” in tables D2–D15. For example, an “A” in this column means that we have classified the individual’s income stream as coming from the manufacturing sector. In some cases the person was active in several sectors; then we have stated several letters. In five cases we have not been able to identify the source of the incomes, when titles were non-informative and we could not find the individual in *Svenskt Biografiskt Lexikon* and the other sources used. In one case, both the name and the title were unreadable in the taxation list; only the figures in the income columns were legible.

***Table D1. The classification of income sources***

	Short hand in the tables of Appendix D
Manufacturing	A
Finance: banking and insurance	B
Trade and retail	C
Other services	D
Real estate	E
Public service	F
Old money, nobility, royal family	G

**Table D2. Top ten incomes in Villastan 1909 sample**

Identification	Title, income source	C	W	E	Sum	Class.
Person 09-1	CEO of manufacturing company, producing telephone cables and plastic products	52 562	59 378		111 940	A
Person 09-2	CEO of manufacturing company	3 378	102 881		106 259	A
Person 09-3	CEO of railroads and mining company	19 941	77 404	4 932	102 277	A
Person 09-4	Vice admiral, count, prince	102 040			102 040	G
Person 09-5	CEO ( <i>Överdirektör</i> ) of public board	15 178	13 810	68 688	97 676	F
Person 09-6	Engineer	700		77 596	78 296	C
Person 09-7	Merchant	52 885	18 057		70 942	C
Person 09-8	Merchant, CEO of retail company		26 040	36 770	62 810	C
Person 09-9	Book publisher		1 000	61 540	62 540	A
Person 09-10	Merchant	7 454	3 510	45 423	56 487	C

Note: C = capital income. W = income from work and pensions. E = income from own firm (*egen rörelse*). Sum = total income. Class. = classification of income stream, cf. Table D1.

Note on some recurring titles for this and the following tables. We have translated *verkställande direktör* as CEO, and *direktör* as executive. We have translated *grosshandlare* as grocer. *Köpmän* has been translated as merchant. *Häradshövding* or *vice häradshövding* have been translated as judge. Other titles are fairly straight forward.

**Table D3. Top ten incomes in Djursholm, 1909**

	Title, income source	C	W	E	Sum	Class.
P09-11	Lieutenant		55349	1575	57014	B
P09-12	Professor of mathematics, also active in insurance business		10867	38972	49839	B, F
P09-13	Executive	44986	100	1200	46286	A
P09-14	Captain, real estate businessman.		5000	40625	45625	E
P09-15	Wife. Heiress of great manufacturing fortune.	37802	5270		43072	A
P09-16	Jurist		33498	3741	37239	F
P09-17	Executive. Educated engineer, career executive, entrepreneur who founded a heating pipes making company.	2604	34164		36768	A
P09-18	Bank executive		31500		31500	B
P09-19	Executive. Professor of mathematics, executive of life insurance company.		30437		30437	B
P09-20	Mister ( <i>herr</i> ). Executive of auction house.	11881	8265	9550	29696	D

*Note:* For explanation of the headlines, see note to Table D1.

P09-13 was the brother of P09-15 and so they both inherited great wealth from their father who was a very successful global entrepreneur.

**Table D4. Top ten incomes in Karlaplan 1915 sample**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P15-01	Merchant		2500	100000	102500	C
P15-02	CEO. Career executive in wood, paper and iron business.		42100	59100	101200	A
P15-03	Grocer			27210	27210	C
P15-04	Grocer	4740		19810	24550	C
P15-05	Agent			20700	20700	C
P15-06	Merchant		20000		20000	C
P15-07	Grocer		2120	17550	19670	A, C
P15-08	CEO. Educated engineer		16670	1950	18620	A
P15-09	Book keeper		18000		18000	C
P15-10	Merchant. Executive of textile manufacturing companies.	470	16250		16720	A

**Table D5. Top ten incomes in Villastan 1915 sample**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P09-2	CEO	1 560	532 640		534 200	A
P15-11	Merchant		350	309510	309 860	A, C
P09-3	CEO in mining and railways.	122 043	88 197		210 240	A
P09-8	CEO of retail company		189 570	750	190 320	C
P15-12	Banker ( <i>bankir</i> )		25 249	160111	185 360	B
P15-13	Banking CEO		163 950		163 950	B
P15-14	CEO. Career in manufacturing and banking.		124 510	19000	143 510	B, A
P09-4	Vice admiral, count, Prince	130 630			130 630	G
P15-15	Judge		97 940	6030	103 970	F, A
P09-10	Merchant	92 230	400		92 630	C



**Table D6. Top ten incomes in Djursholm in 1915**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P15-16	Executive. Manufacturing company.		171 500	1000	172 500	A
P15-17	Merchant. Interests in iron and steel and tool manufacturing.		132 280		132 280	A
P09-18	Bank executive		70 860	1540	72 400	B
P15-18	Merchant. Colonial goods' trading firm.		67 600		67 600	C
P15-19	Office manager		65 440	1500	66 940	D
P15-20	Executive. Career executive in manufacturing and then public sector.		59 290		59 290	A, F
P15-21	Executive ( <i>Disponent</i> )		54 450	1000	55 450	A
P09-17	Executive	1 120	49 240		50 360	A
P09-01	Merchant	15 340	33 990		49 330	A
P15-22	Title in tax list: <i>Disponent</i> . Actually CEO of retail company.		48 820		48 820	C

*Note:* A note on title usage: “disponent”, as used in the taxation list by P15-21 and P15-22, is a more old fashioned title for an executive, typically of a mine or manufacturing company.

**Table D7. Top ten incomes in Karlaplan 1927 sample**

	<b>Title, income source</b>	<b>C</b>		<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P27-01	CEO. Iron and steel, also several board posts.	218 020		1 7620	100	235 740	A
P27-02	Banking CEO	54 50		181 180		186 630	B
P27-03	Executive of a restaurant business	141 460		41 870		183 330	D
P27-04	Executive. Brewing company.	62 720		67 400		130 120	A
P27-05	Executive	90 050		39 500		129 550	?
P27-06	Merchant. Production of electrical goods, refrigerators.	82 510		24 700	2 150	109 360	A
P27-07	Executive. Laundry and ironing company.	34 270		73 420		107 690	D
P27-08	Merchant. Iron and steel interests.	2 750		1 000	102 430	106 180	A
P27-09	Insurance CEO	20 370		84 020	10	104 400	B
P27-10	Banking CEO	51 570		44 890	4 470	100 930	B

**Table D8. Top ten incomes in Villastan 1927 sample**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P27-11	Engineer. Match sticks, finance: Ivar Kreuger.	2 255 460	189 400		2 444 860	A, B
P09-02	CEO of manufacturing company.	690 900	74 000		764 900	A
P09-08	<i>Generalkonsul</i> . Owner of retail company.	281 300	241 310	6200	528 810	C
P27-12	Baroness. Heiress of industrial fortune.	444 970			444 970	A, G
P27-13	Merchant. Many interests in industrial companies.	243 900	39 590		283 490	A
P09-10	CEO of trading firm	240 510	2 900		243 410	C
P27-14	Newspaper editor	96 290	112 400		208 690	D
P27-15	Doctor's widow. Heiress of industrial fortune (wooden industry).	133 140	400		133 540	A
P27-16	CEO of insurance company.	5 920	123 580		129 500	B
P27-17	Banking executive.	22 350	79 990		102 340	B

*Note:* *Generalkonsul* is an honorary title indicating that the person, P09-08, facilitated trade between Sweden and the country for which he was the consul. However, the main income source was owning a retail income.

**Table D9. Top ten incomes in Djursholm in 1927**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P09-18	Bank CEO	53 120	245 370		298 490	B
P27-18	<i>Kommerseråd.</i> Executive career in mining and manufacturing.	28 900	219 250		248 150	A
P09-15	Wife	194 580	5 820		200 400	A
P27-19	Ex-consul. Engineer, career in manufacturing.	192 450			192 450	A
P27-20	Bank CEO	17 920	145 970	9740	173 630	B, G
P15-18	Merchant. Colonial goods' trading firm.	86 120	44 600		130 720	C
P27-21	<i>f. Bruksdisponent.</i> Former executive in iron industry.	98 860	24 300		123 160	A
P27-22	Judge, banking executive.	38 790	83 330		122 120	F, B
P27-23	Bank CEO. Had also been district judge ( <i>häradshövding</i> )	19 540	99 750		119 290	B
P27-24	Lawyer	14 520	7 500	95 400	117 420	D

**Table D10. Top ten incomes in Karlaplan 1936 sample**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P36-01	Executive of household goods manufacturer.	65 330	187 150		252 480	A
P36-02	Widow of an engineer	249 240			249 240	A
P36-03	Mister. Heir to manufacturing wealth.	237 890	10 110		248 000	A
P36-04	CEO in paper industry	10 580	166 410		176 990	A
P36-05	Merchant. Iron industry		146 640		146 640	A
P36-06	Unreadable	5 800	133 970		139 770	?
P27-01	CEO. Iron and steel, also several board posts.	127 630	12 000		139 630	A
P36-07	Baron, art historian. Heir of manufacturing wealth.	102 680	36 690		139 370	A, B, G
P36-08	Widow.	114 560	1 180		115 740	?
P36-09	CEO. Career executive in banking, also on manufacturing company boards.		98 720		98 720	B

**Table D11. Top ten incomes in Villastan 1936 sample**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P09-3	Executive	433 230	102230		535 460	A
P36-10	Widow. Broad ownership interests in manufacturing.	267 260	41260		308 520	A
P09-8	<i>Generalkonsul</i> , CEO of retail company	21 780	274790		296 570	C
P36-11	<i>Generalkonsul.</i> , CEO of shipping business and holding company		115120	164 080	279 200	D
P15-12	Banker ( <i>Bankir</i> ).		68740	117 910	186 650	B
P09-10	CEO	172 870	1480		174 350	C
P15-14	Ex-captain, real estate proprietor	115 950	45120		161 070	A, B
P36-12	Ex- <i>generalkonsul</i> . Career in oil in Norway and Russia.	107 260	50260		157 520	A
P36-13	Diplomat, businessman. Executive in forestry and paper mill industry, on board of a bank.	140 650	4620		145 270	A, B
P36-14	Widow of banking CEO.	127 120			127 120	B

**Table D12. Top ten incomes in Djursholm in 1936**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P27-12	Baroness. Heiress of industrial fortune.	214 730	19 800		234 530	A, G
P09-15	Wife. Heiress of great manufacturing fortune.	212 460	3 020		215 480	A
P36-15	Executive. Household goods manufacturer.	89 640	102 820		192 460	A
P36-16	Engineer. Executive in insurance and industrial companies.		162 770		162 770	A, B
P36-17	PhD. Engineer and executive in mining and iron industry.	3 610	146 000		149 610	A
P27-19	Ex-consul. Engineer, career in manufacturing.	137 670			137 670	A
P36-18	Apotekare. Executive in medicine and paint manufacturing	100 660	35 420		136 080	A
P36-19	Miss ( <i>Fröken</i> ). Heiress of manufacturing (esp. forestry) fortune.	129 780			129 780	A, G
P27-20	Bank CEO	18 740	102 500		121 240	B. G
P36-20	Major. Unclear economic activity.	104 880	9 850		114 730	?

**Table D13. Top ten incomes in Karlaplan 1950 sample**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P50-01	CEO. Career executive in manufacturing.	14 532	325 995		340 527	A
P36-03	Ex-executive. Heir to manufacturing wealth.	298 025	1 050		309 473	A
P50-02	Lawyer	18 760	380	226 205	246 924	D
P50-03	Mrs. Married to manufacturing executive; mother was countess.	234 008	1 128		237 130	A, G
P50-04	<i>Kassadirektör</i> . Bank employee; mining inheritance.	7 568	39 896	174 475	222 210	B, A
P50-05	Professor of medicine. Entrepreneur in health care.	11 671	50 429	123 027	186 118	F
P50-06	Executive. Manufacturing conglomerate including furniture and car parts.	15 894	150 806		166 700	A
P50-07	Executive. Especially in food manufacturing. Also interest in retail sector.		146 483		146 483	A, C
P50-08	Executive. Career in wooden wares, porcelain and engineering companies.	44 002	83 588		127 590	A
P50-09	CEO. Truck making company.		123 117		124 145	A

*Note:* Total can slightly exceed sum of other posts, since the original data also includes two categories of income from agricultural estates and other properties, which are not included in the table.



**Table D14. Top ten incomes in Villastan 1950 sample**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P36-11	<i>Generalkonsul.</i> , CEO of shipping business and holding company	52 045	125 788	345 612	523 445	D
P50-10	CEO. Of retail company.	15 716	288 825		304 541	C
P50-11	Book publisher	13 057	41 000	116 988	171 045	D
P50-12	Lawyer. Business law and investment banking.	5 144	62 770	99 475	167 389	D, B
P36-04	CEO in paper industry	22 799	143 061		165 860	A
P50-13	Executive. Career executive in manufacturing.	648	61 237	93 649	155 534	A
P36-13	Diplomat, businessman. Executive in forestry and paper mill industry, on board of a bank.	109 609	39 950		149 559	A, B
P50-14	<i>fd. Generalkonsul</i>	31 070	105 037		136 107	?
P50-15	Executive. Printing company.		113 986		113 986	A
P50-16	PhD. Engineer, CEO in chemical industry.	4 594	107 350		111 944	A

*Note:* Total can slightly exceed sum of other posts, since the original data also includes a category of income from agricultural estates, which is not included in the table.

**Table D15. Top ten incomes in Djursholm in 1950**

	<b>Title, income source</b>	<b>C</b>	<b>W</b>	<b>E</b>	<b>Sum</b>	<b>Class.</b>
P09-02	CEO of manufacturing company	177 130	462 500		639 630	A
P50-17	Executive. Manufacturing company.	27 880	255 120	14 060	311 820	A
P50-18	Shipowner	20 070	263 050		285 145	D
P50-19	Real estate executive	252 660	14 800		267 460	E
P50-20	Executive. Publishing business.	11 590	246 200		257 790	C
P50-21	Konsul, CEO. Manufacturing.		222 370	25 710	251 000	A
P50-22	Executive. Brewing and mining.	11 690	201 290		212 980	A
P50-23	Executive. Food manufacturing, truck making.	80 350	116 730		198 270	A
P50-24	Executive. Textile manufacturing.	1 230	166 980	16 080	184 290	A
P50-25	CEO. Engineering.	480	177 720		178 200	A

*Note:* Capital incomes are in 1950 reported in several categories. Here we have fusioned the category capital income and the category income from real estate.

## Appendix D references

### Online resources

- Svenskt biografiskt lexikon*, a personal history lexicon published in 34 volumes since 1919 and so far covering Swedes from A to Swensson. Digitalized and available on the National Archives website: <https://sok.riksarkivet.se/sbl/Start.aspx>
- Kungliga Biblioteket (Royal Library), archive of digitalized newspapers. Freely available until 1906. Available from <https://tidningar.kb.se>
- Project Runeberg. A website which makes available published Swedish books for which the copyright has expired, including many address calendars, *Vem är vem?* and similar useful sources on prominent Swedes from 70+ years back. <http://runeberg.org/>
- Rotmansarkivet. A population register of Stockholm's population from 1878 to 1926. Available from <https://stadsarkivet.stockholm/hitta-i-arkiven/i-arkiven/rotemansarkivet/>
- Stockholmskällan. This digital resource for Stockholm's history, run by the Stockholm City Archive, provides many useful documents for identifying prominent historical Stockholm residents. See for example the address calendar for Djursholm (*Djursholms villastads adressförteckning*), available [here](#). The starting point for Srockholmskällan is here: <https://stockholmskallan.stockholm.se/>

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## Appendix E. Robustness

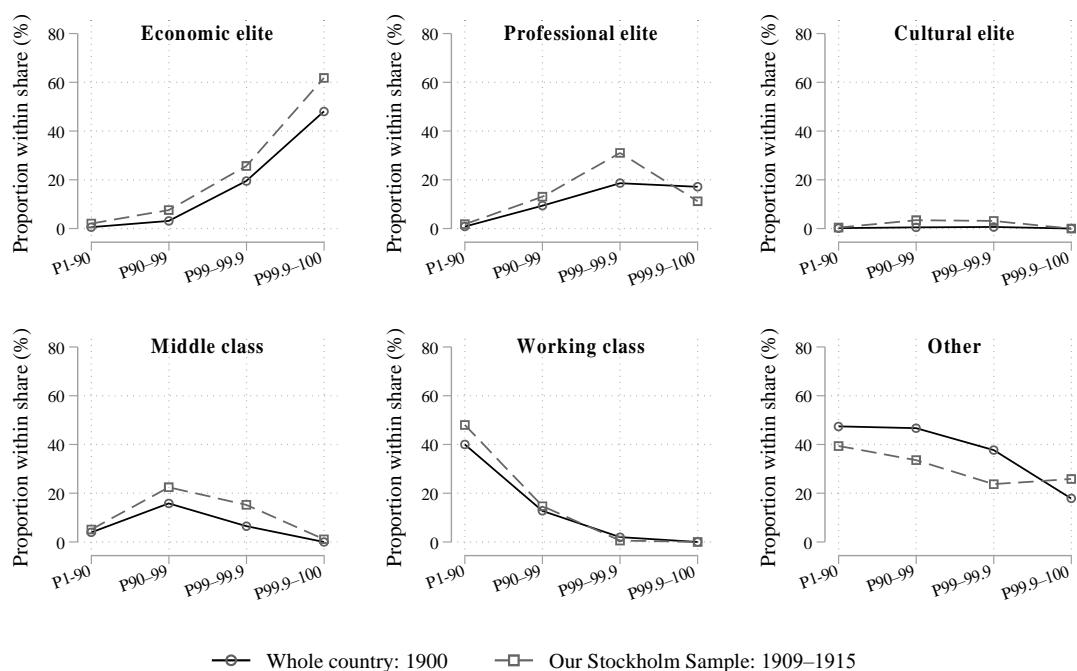
### *Geographical Sampling*

Of course, our geographic sampling strategy means that it is a particular cut of the rich that we have captured. To ascertain that our results are not misleading and to contextualize the findings, we can compare it to other samples.

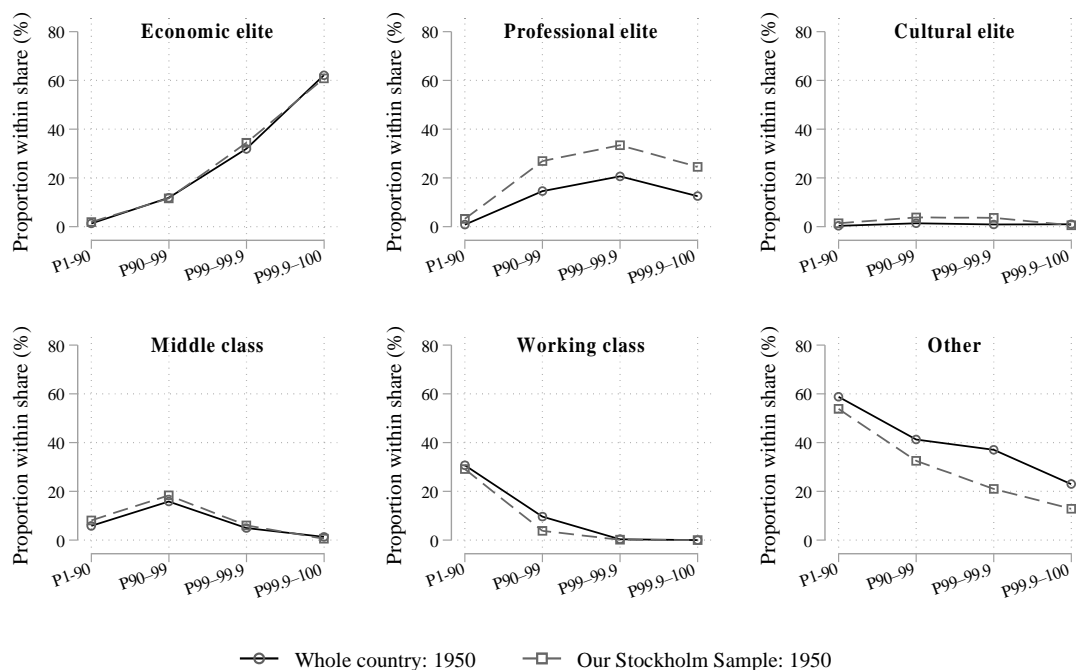
First, we compare with results from a national random sample, of 1 percent of all taxpayers in Sweden in 1900 and 0.5 percent of all taxpayers in 1950 (Bengtsson, Molinder and Prado 2021). Figure E1 provides a comparison of the results when looking at the share of each class in the different fractions of the national income distribution, comparing our sample of rich areas in Stockholm to Sweden as a whole. The figure is divided into two panels. The first shows a comparison between our national sample for 1900 and our pre-Great Levelling benchmarks for Stockholm: 1909 and 1915. The second shows the same comparison between our 1950 benchmark with the national sample for the same year. There is a very strong correspondence in the patterns that we obtain with our sample to those for Sweden as a whole.

**Figure E1. Share of Each Class in the Different Fractions of the National Income Distribution, Comparing our Stockholm Sample to the Country as a Whole**

1900 and 1909–1915



1950



*Note:* Incomes and occupations from our dataset for Djursholm and Östermalm and a sample of taxpayers in all of Sweden. Cutoffs for the different fractions of the national income distribution from Roine and Waldenström (2008).

Using the same data, we can also examine whether the relative economic position as well as the change in income for the different classes follow the same pattern in our Stockholm sample as for the country as a whole. Median income by class in the two samples in 1900/1909 and 1950 is shown in Table E1. The comparison reveals that our Stockholm sample is somewhat richer than for the same classes in all of Sweden. This is expected given the generally higher incomes in Stockholm, but also from our focus on the most affluent areas of the capital city. The basic pattern is very similar however; The economic elite has the highest incomes, followed by the professional elite, the cultural elite, and the middle class. The fall in relative incomes follow the same trajectory as well, with all three elite groups experiencing drops by between 54 and 71 percent over the period.

**Table E1. Median Income by Class Relative to GDP per capita, Comparing our Stockholm Sample to the Country as a Whole**

<b>Sweden</b>					
<b>Year</b>	Economic elite	Professional elite	Cultural elite	Middle class	Working class
1900	7.4	5.5	3.9	2.6	
1950	2.2	2.6	1.5	1.4	1.1
Change	-70%	-54%	-63%	-44%	

<b>Our Stockholm Sample</b>					
<b>Year</b>	Economic elite	Professional elite	Cultural elite	Middle class	Working class
1909	15.5	12.1	6.9	5.0	
1950	6.3	3.9	2.0	1.7	0.8
Change	-59%	-68%	-71%	-66%	

*Note.* Incomes and occupations from our dataset for Östermalm.

A further comparison is with a strategic sample for the industrial city of Malmö in 1905, 1920, 1935 and 1950. Malmö was a very different city compared to Stockholm: much smaller in size, and more industrial. Svensson and Bengtsson (2021) have sampled two wealthy areas and two poor areas in Malmö with about 550 taxpayers for every benchmark year. They find that inequality was high in 1905, with social group I (company leaders, entrepreneurs and professionals) earning on average 15.2 times those in social group III (manual workers), but that inequality increased further to 1920, when the multiple was a staggering 33.2. Working class Malmö people saw declining real incomes from 1905 to 1920 due to high inflation while merchants had good years around 1920. After 1920, however, the pattern was completely reversed, with strong income growth for social groups II (the broad middle class of white

collar employees, small business owners and farmers) and – especially – group III, while the real incomes of social group I stagnated from 1920 to 1935 and fell drastically from 1935 to 1950. The top income earners in Malmö were the local bourgeoisie – merchants, manufacturing owners and executives – and their earnings were good but much lower than those of the Östermalm and Djursholm elites studied in this paper. The cut-off to be in the top 10 persons in the Malmö sample was 26,100 SEK in 1905 and 81,740 SEK in 1920 while the cut-off to be in the top 10 of our Villastan sample in 1909 was 62,540 SEK and in the Djursholm sample 45,625, and the corresponding figures for 1915 were 92,630 SEK and 48,820.

The superiority of the Stockholm elite is also clear from a comparison with the rich list for Sweden's second largest city, Gothenburg, from a sample of taxpayers in 1927 (the GOPP database (see Karlsson and Lundh 2015)). The largest income there is for a merchant, with 290 004 kr, which would give him a sixth place in the income rank in our sample. One of the executives of one of Gothenburg's largest manufacturing companies had an income of 162 207 kr. The third person in the Gothenburg sample ranking "only" had an income of 39 915 kr. This would probably not qualify him in the top hundred in our sample for 1927.

### *Individuals Versus Tax Units*

Our analysis in the article is based on individual and not on tax units as the unit of analysis. In the case of tax units, spouses' incomes are pooled together. The income needed to be included in the different fractions of the national income distribution in various years are, however, taken from the study by Roine and Waldenström (2008) which is based on tabulated data that consistently refer to tax units and not to individuals. To make sure that our results are not driven by the use of individual tax returns, we therefore replicate Figure 3 in the paper, displaying the share of each class in the different fractions of the national income distribution, using both individual tax returns and tax units as the basis for the analysis. We can only do this with our data for the Karlaplan and Villastan areas in Stockholm city proper, since the tax lists for Djursholm does not include household identifiers.

The comparison of the two units of analysis can be seen in Figure E2. Table E2 also details the number of individual taxpayers and the number of tax units for each year in our sample for Karlaplan and Villastan. The pattern in Figure E2 reveals that the assessment is basically unaffected by this choice of unit of analysis, and Table E2 gives an indication why. Throughout the period, there were very few cases where both spouses received income. As a

result, the number of tax units are very similar to the number of taxpayers. As shown in Table E2, the number of tax units as a fraction of the number of taxpayers varied from a high of 95 percent in 1909 to a low of 88 percent in 1950.



**Figure E2. Share of Each Class in the Different Fractions of the National Income Distribution, Individual Taxpayers Compared to Tax Units**

**1909–1915**



**1950**



*Note.* Incomes and occupations from our dataset for Östermalm. Cutoffs for the different fractions of the national income distribution from Roine and Waldenström (2008),

**Table E2: Comparison of the Number of Individuals and the Number of Tax Units in the Sample for Karlaplan and Villastan**

	(1)	(2)	(3)
<b>Year</b>	<b>No. of individuals</b>	<b>No. of tax units</b>	<b>(2)/(1)</b>
1909	524	499	95 %
1915	639	607	95 %
1927	2,294	2,130	93 %
1935	2,243	2,049	92 %
1950	2,437	2,138	88 %

*Note:* Incomes and occupations from our dataset for Östermalm.

### ***Appendix E references***

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