Income inequality in Finland, 1865–2019

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ABSTRACT
This study contributes to long-run inequality discussions by presenting a new series of Finnish income inequality statistics for the years 1865–2019. It shows that income inequality rose and peaked during the industrialisation phase at the turn of the nineteenth and twentieth centuries. Overall, top income shares decreased during the first part of the twentieth century, mainly as a result of shocks to capital (e.g. civil war, WWI & WWII) and rising taxation. After 1948, income inequality rebounded slightly until the advent of the welfare state in the mid-1960s. The role of redistribution through taxes and transfers strengthened and inequality decreased considerably until the late 1980s. During the 1990s, however, income inequality significantly increased, which was driven by capital incomes in the top income groups. Moreover, top income taxes started to diminish already in the late 1970s, and a great taxation reform was enacted in the 1990s, which partly explains the growing income inequality. In contrast, income inequality has remained at relatively similar levels in the twenty-first century.

1. Introduction
During recent decades, research on the long-term developments of income inequality has received growing attention and has certainly moved to the centre of economic debates (e.g. Acemoglu & Robinson, 2015; Boushey, DeLong, & Steinbaum, 2017; Piketty, 2014, 2015). Even though prior studies have evaluated a variety of sources (e.g. Milanovic, 2016; Milanovic, Lindert, & Williamson, 2011; Scheidel, 2017), studies using long-term series of income tax statistics from the nineteenth century are relatively scarce. This study aims to contribute to this discussion by exploring the case of Finland from 1865 to 2019.

The case of Finland provides a historically interesting context on the development of income inequality. Most of the existing long-term studies have focused on countries that had surpassed Finland’s income level in the 1860s already several centuries previously (Roikonen & Heikkinen, 2018). Furthermore, the research period is rather remarkable because it contains the development process from a period of extreme famine to that of a high-income welfare state. This period consists of several shocks and periods of growth, namely famine (1867–1868), the threshold of modern economic growth and industrialisation (from the 1870s onwards) and times of crises (WWI, the bloody Finnish Civil War of 1918, the Great Depression, WWII), followed by the ‘golden years’ of economic growth as well as the economic crisis of the 1990s and its aftermath. Existing theories on the determinants of inequality are discussed here in this light. Thus, the Finnish case makes an
interesting contribution to discussions on the Kuznets curve and development (Kuznets, 1955; Milanovic et al., 2011), the role of economic and political shocks (Alfani & Gráda, 2017; Scheidel, 2017), the connection between capital and income inequality (Bengtsson & Waldenström, 2018; Piketty, 2014), the role of institutions (Atkinson, 2015; Lindert, 2004) as well as globalisation and technological change (e.g. Acemoglu, 2002).

Finnish research on income inequality has thus far focused on the period from the 1960s to the present. Several studies, however, have been done on pre-1960s developments: for instance, Jäntti (2006) and Jäntti, Riihelä, Sullström, and Tuomala (2010) have described the developments in Finnish income inequality starting from 1920, and Hjerpe and Lefgren (1974) have in their pioneering historical study examined income inequality from as far back as 1881. In addition, Roine and Waldenström (2015) have provided rough estimates of the top income shares in the 1860s–1880s. Furthermore, Roikonen and Heikkinen (2018) have studied income inequality between 1865 and 1934. However, previous estimates are not methodologically consistent throughout the studied period and discussions on the long-run determinants of inequality are scarce. Therefore, as the long-run development of income inequality remains unclear, the aims of this study are as follows: (1) to construct income inequality series during the research period using a novel dataset and present cross-country comparisons; and (2) to explore the factors behind the development of income inequality.

This study shows that income inequality rose and peaked during the industrialisation phase at the turn of the nineteenth and twentieth centuries. During times of shocks and crises, however, income inequality decreased; such crises included WWI, the civil war of 1918, high inflation during the early 1920s and WWII. Finland caught up with other Western economies quite rapidly during the second half of the twentieth century and inequality rebounded from the post-war levels; however, this development exhibited a reverse trend in the period from the mid-1960s until the late 1980s, a time when the welfare state were established and expanded. After the recession of the 1990s, inequality increased until around the year 2000 due to the increasing capital incomes of the top income groups and to a lesser degree the changes made to taxation rates. On the other hand, income inequality has remained at relatively similar levels in the twenty-first century.

This paper is organised as follows. First, I introduce the data and methods utilised. Next, I present the main results, conduct robustness tests and make comparisons with the previous studies. In Section 5, I discuss possible factors behind the developments. Moreover, I make international comparisons with other supposedly ‘egalitarian’ Nordic countries, Central European countries as well as the USA, Canada, Japan and Russia (WID.world, 2021). Finally, I conclude the paper by discussing several future research possibilities.

2. Data and methodology

The main sources utilised in this study are national state income tax (1865, 1871, 1876 and 1880), municipal income tax (1898–1899) and state income tax (1920–2004). In addition, Statistics Finland’s modern data are also utilised, which are based on household budget surveys (1966–1981), income distribution statistics sample data (1986–1994) and income distribution survey data (1995–2019). Income taxes or surveys were not collected every year. Since previous studies has introduced the tax statistics and discussed the changes in the tax legislation in detail, the present study identifies the central issues at play when constructing such time series (see more details in Jäntti, 2006; Jäntti et al., 2010; Roikonen & Heikkinen, 2018).

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2Several other studies have concentrated on certain regions or other types of inequalities (see e.g. Nummela & Laitinen, 1987).
3See World Inequality Database (WID): https://wid.world/. Received: 02/01/2021.
4Hjelt & Broms, 1904, 1905; OSF, 1869–85; OSF, 1926–2004; OSF, 2021. The data from 1966 to 2019 can be downloaded here: http://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__tul__tjt__henkiloiden/statfin_tjt_pxt_11×3.px/ (10/01/2021). See further details about the data: https://www.stat.fi/til/tjt/meta_en.html (10/01/2021).
A good starting point is to note that there are numerous reasons to believe that Finnish tax data is more reliable than that of many other countries. First, taxes were matters of public record at the municipal level in the nineteenth century as well as in present times at the national level. Second, the number of votes in municipal elections were determined by wealth and the amount of income taxes paid in the nineteenth century. Third, tax rates were low throughout the nineteenth century. Furthermore, the legislation obliged employers, banks, foundations and other institutions as well as other public officials (including guardianship boards) to deliver any relevant data to the tax officials. These documents were compared to the tax returns, and the tax officials increased a person’s taxes quite dramatically if they noticed instances of deception. Thus, we can assume that the problem of tax evasion was more limited (see more details in Roikonen & Heikkinen, 2018). However, the data suffer from problems found in other countries as well, e.g. the changing notion of what constituted taxable income, the composition of the tax units and those for whom information on incomes is lacking.

The income concept, income subject to taxation/taxable income, was relatively close to that of factor income until the early 1980s. During the 1980s, the income concept became closer to that of gross income because officials began to include certain social transfers when determining taxation rates (i.e. national pensions in 1983). In addition, persons could claim a broad range of deductions from income subject to taxation. For example, taxpayers could claim deductions for having children, which meant that many lower income level families were thus exempted from paying any taxes. On the other hand, the addition of child deductions have made it easier to compare larger families with smaller families since the deductions take into account the differences in living expenses. In addition, tax exemptions could be claimed for capital income, which benefited the wealthiest. Due to the widespread usage and complexity of such deductions, it is almost impossible to estimate how deductions affect the inequality metrics over the long run. Fortunately, it is possible to estimate the inequality metrics with or without deductions after 1945: inequality metrics are quite close to each other in 1945 and the trends are highly similar (see the series in Jäntti et al., 2010). Due to the complexity and non-transparent characteristics of claiming deductions, however, I decided to use incomes before deductions when possible, that is from 1945 onwards. In sum, the income concept refers to taxable income before 1945 and later to income subject to taxation.

The notion of a tax unit is not at all clear either, as the tax legislation allowed for variation. For example, although the tax legislation mentioned that the income of children and wives should be taxed collectively together with a husband’s income, if a wife had the legislative right to control her wealth or income, then she could be taxed separately before the year 1934 (OSF, 1926, p. 4). Of taxed individuals, the share of women being taxed increased from roughly 12.3% in 1920 to 35.6% in 1952, to 41.5% in 1968, while practically all married couples have been included in the tax statistics separately from 1989 onwards. This means that if a tax unit supposedly represents an individual, it leaves a great part of the population (spouses) without any income, which is not entirely correct. To correct the oversight, either household income or equal incomes between spouses should be used (this is also the international standard; see WID.world, 2021). The problem is that, in many cases, it is not possible to connect spouses’ incomes when they are separately taxed. Therefore, to make the series more homogenous and historically more realistic, I chose the following parameters for a tax unit: household (1865–1900) (obtained from Roikonen & Heikkinen, 2018), married couples and singles (over 17 years old) (1920–1989). The parameters, though,

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5 It is still a yearly job for journalists to go through tax records and discover any irregularities in taxation or investigate the taxes paid by the wealthiest individuals in society.
6 Tax returns have been obligatory since 1920 (OSF, 1926).
7 The tax officials made, in some cases, somewhat subjective decisions regarding the incomes of and taxes to be paid by individuals. Capturing the incomes of the rural population was tricky, especially agricultural and forest incomes (OSF, 1926–1940). See further details in Roikonen and Heikkinen (2018) and Jäntti et al. (2010). See also Atkinson, Piketty, and Saez (2011) for more on the limitations of international tax data.
8 This is taken into account in modern household surveys through the use of equivalence scales (OSF, 2019).
gradually changed in favour of individual taxation until 1989. In practice, the total number of tax units are calculated as follows: individuals (over 17 years old) – married women + taxed wives. Thus, it is good to bear in mind that at first the tax unit can be applied to the whole household, whereas it gradually becomes more akin to individual taxation until roughly 1989.

Due to the changes made to the tax statistics, the share of the taxed population varied greatly: it ranged from below 20% in 1865 to more than 90% in the mid-1960s (Figure 1). Although, for example, the share of taxed persons was over 70% in the late 1890s, it is crucial to establish a good proxy for the incomes of the untaxed population. There are two possible approaches to capturing the missing population (see, e.g. Bartels). The first is a top-down approach, where the total household income is set as a fixed share of private household income or GDP. The second approach is a bottom-up approach, where non-taxed households are added by making use of other relevant data. I decided to use the bottom-up approach since total household income is difficult to capture from the national accounts, especially during the whole research period.

Previous studies have typically utilised the lowest tax threshold when assessing the incomes of non-taxed persons. The first period, from 1865 to the year 1900, has previously been comprehensively assessed by Roikonen and Heikkinen (2018), who found that authorities at the time set average non-taxed incomes at 72% of the lowest income bracket. The assumption is based on supplementary material from the income surveys, wages as well as approximations made by the tax officials. However, Roikonen and Heikkinen (2018) and Jäntti et al. (2010) set the average incomes for those lacking income data at 50% of the lowest income bracket in later years. However, it is quite difficult to assign a percentage that is both quite reliable and precise for the entire research period in question. Therefore, I decided to estimate the inequality metrics using three different assumptions: the average income of non-taxed persons was set at 40%, 60% and 80% of the lowest income bracket.

3. Estimation methods

The main data consists of the tax records, which are in income bracket form. This paper utilises the improved version of a methodology that has been commonly used with this type of data since Kuznets (1955), and more recently by Alvaredo, Atkinson, Piketty, and Saez (2013). This approach utilises inverted Pareto coefficients \( b(p) \), where \( b(p) \) is the ratio between average income above rank \( p \) and the \( p \)-th quantile, \( Q(p) \). The method has been greatly improved recently by Blanchet, Fournier, and Piketty (2017) (‘the Generalized Pareto interpolation method’), which utilises non-parametrical methods (i.e. changing Pareto coefficients) to accommodate the entire distribution. Equation (1) is as follows:

\[
b(p) = \frac{E[X|X > Q(p)]}{Q(p)}, \quad 0 < p < 1.
\]

If there are enough data points, it is possible to recover the entire distribution and generate synthesised samples when the income inequality indicators can be straightforwardly calculated. Moreover, this approach is surprisingly accurate when compared with estimations from real micro data and superior to other estimation methods (see the comparisons in Blanchet et al.,

\[9\]In some years, the number of taxed wives are interpolated/estimated by using other sources, such as the number of women taxed. The total number of tax units can be estimated using the following external sources: Vattula (1983, p. 32), Statistical Yearbook of Finland (SYF) (1987, p. 70), SYF (1990, p. 68), SYF (1991, p. 68), and Statistics Finland (2018). In addition, undistributed estates are included in the tax units in the years 1948–1968.

\[10\]Primarily, the tax officials made the tabulations based on the entire population; however, the tabulations are based on the representative sample for the years 1945–1969. These samples were relatively large and included all top income earners. Tax officials ensured that the tabulations matched the entire population (see further details in Jäntti et al., 2010).

\[11\]The programme is available at the World Inequality Database webpage (http://wid.world/gpinter), and R programmes are available using the command gpinter. See also further details about income inequality measures in, e.g. Fellman (2018).
According to Blanchet et al. (2017, p. 3), the precision rate of the method is so high that it is often preferable to use tabulations instead of subsamples. For example, the mean relative error is often approximately 3% in the top 5% income share for even very large subsamples of 100,000 individuals; however, the corresponding error is 0.5% when only four income brackets are used ($p = 0.1, 0.5, 0.9$ and $0.99$).

### 4. Results

#### 4.1. Main results and robustness tests

Three time series are presented for each income inequality metric in Figure 2, with the average income of non-taxed persons set at 40% for the min, 60% for the default and 80% for the max when compared with the lowest tax threshold.
late nineteenth century, whereas they decreased during the twentieth century. The top income shares suggest much a stronger decline compared with the Gini coefficients. This may well have been caused by the shocks to capital between 1914 and 1945, since, as Bengtsson and Waldenström (2018) have noted, shock is stronger for those at the top end of income distribution, where capital incomes play a major role (see Section 5.2 for further details). However, the Gini coefficients’ maximum and minimum values vary somewhat before 1950 due to the high percentages of persons not being taxed. Thus, the metrics for income distribution as a whole should be taken with some reservation before the late 1940s. Therefore, the top income shares should preferably be used when characterising income inequality trends in the very long run due to its greater precision. Lastly, it is good to note that the estimated time series quite closely mirror disposable income inequality before the 1920s, whereas disposable (conclusive) income inequalities were much lower than the estimated series in the later periods due to increasing redistribution (see Figures 5 and 6).

The starting point for the study was the great famine of 1867–1868, when Finland can be characterised as an agrarian society. This period was followed by decades of economic growth and diversification, which accelerated from the 1890s onwards. The results show that income inequality rose and peaked during the early stages of industrialisation in the late nineteenth and beginning of the twentieth centuries. This phase ended with the economic and political shock of WWI, independence in 1917 and the brutal civil war of 1918, when income inequality also dropped drastically (see the estimate for the year 1916 in Roikonen & Heikkinen, 2018). The level of income inequality slightly recovered only after the mid-1920s, whereas it remained relatively stable or slightly diminished during the 1930s. The top income shares dropped drastically again during and after WWII. On the other hand, Finland experienced ‘golden decades’ of economic growth after WWII when the income gaps widened until the establishment and expansion of the welfare state during the mid-1960s. From the mid-1960s onwards, income inequality decreased along with the establishment and development of the welfare state, and inequality reached its lowest point during the late 1980s and the early 1990s. In the early 1990s, Finland suffered a severe recession, followed by a period of tremendous economic recovery, with income inequality growing until the bursting of the IT bubble in 2000.

4.2. Comparison with previous studies

Figure 3 compares the estimates from this study to the results from previous studies. While the results are in line with the estimations presented by Roikonen and Heikkinen (2018), their estimations for the years 1898–1899 are somewhat higher. The difference has to do with separate tabulations having been made for urban and rural areas, which must be united. I decided to combine the rural and urban tabulations before utilising non-parametrical methods, whereas Roikonen and Heikkinen (2018) connected the created synthesised samples. There is no preferable method since the fewer number of top-level tabulations for rural areas may have skewed Roikonen and Heikkinen (2018) estimates somewhat, whereas my assessment suffers from problems in connecting the tabulations from different tax bracket thresholds between rural and urban areas.

For the years 1920 to roughly 1950, no significant differences emerged between the findings presented in this study and estimates presented in previous studies. Although the trends are similar for the research period, Jäntti et al. (2010, as well as updated) estimates are slightly higher from roughly 1950 to the early 1970s and lower during the 1980s. In addition, there are higher fluctuations and some odd peaks in Jäntti et al. (2010, see also Ginis in p. 387) estimations. The differences in estimations emerged for the following reasons. First, I added taxed spouses to the total number of tax units, with the result being that the number of total tax units is more stable and realistic compared to the jump from spouse to individual taxation between the years 1969 and 1970. Second, I focused

12It is possible that officials reduced the tax burden somewhat during the Great Depression; however, it is not clear how it could affect the results (OSF, 1937).
on individuals over 17 years of age in the data, whereas Jäntti et al. (2010) focused on individuals over 15 years of age. Third, as noted earlier, the present study utilises non-parametrical methods that are superior compared with the split histogram method and the standard Pareto methods utilised by Jäntti et al. (2010) (see Blanchet et al., 2017, pp. 19–22). Lastly, Jäntti et al. (2010) utilised surveys as well as tax data from 1990 onwards.

5. The determinants of inequality

5.1. The Kuznetsian process

The explanations for the rise and fall of income inequality in general, and for the period under study here in particular, are numerous, but they can be summarised based on the five following factors: (I) the development phase, for example the level of income (Kuznets, 1955; Milanovic et al., 2011); (II) shocks and crises (Alfani & Gráda, 2017; Scheidel, 2017); (III) capital (Bengtsson & Waldenström, 2018; Piketty, 2014); (IV) institutions, for instance redistribution policies (Atkinson, 2015; Lindert, 2004); and (V) globalisation and skill-biased technological change (e.g. Acemoglu, 2002). In the

![Figure 3. Comparison with previous studies on the top one per cent’s share of income in Finland, 1865–2004. Sources: author’s calculations, see text; Roikonen and Heikkinen (2018); data from the years 2005–2017 are based on the author’s interpolations from Jäntti et al. (2010), updated in 2020; Jäntti et al. (2010) have also recently updated the information (WID.world, 2021). Note: The average income of the non-taxed population was set at 40% for the min, 60% for the default and 80% for the max when compared with the lowest tax threshold.](image-url)
following sections, I discuss these drivers of income inequality in Finland during the past 150 years or so.

According to Roikonen and Heikkinen (2018), Finland experienced the first part of the Kuznets curve during the latter part of the nineteenth century, which partially resulted in higher levels of income inequality (see more details about the curve, Kuznets, 1955). This view is valid with respect to the idea of maximum possible inequality, which offers one explanation for increasing inequality during the early stages of growth. In a very poor country, the average income is quite close to subsistence level, which constrains income inequality; any surplus above the subsistence level is small and extreme concentration of income would mean that the poorest would starve to death (Milanovic, 2016; Milanovic et al., 2011). Therefore, it is possible to estimate the theoretical maximum of income inequality (the inequality possibility frontier, or IPF curve) (see further details in Roikonen & Heikkinen, 2018).

It is notable that Finland was a latecomer in terms of economic growth, which constrained income inequality to the lower levels until roughly the turn of the nineteenth and the twentieth centuries. As noted by Roikonen and Heikkinen (2018), Finland was quite close to the IPF curve during the latter part of the nineteenth century. However, industrialisation and rising economic growth gradually gave rise to greater income inequalities. Moreover, the last peace famine in Western Europe occurred in Finland during the years 1867–1868, which is quite solid proof of the proximity of a subsistence minimum (further details about the famine see Häkkinen & Forsberg, 2015; Voutilainen, 2016). The contrast between the haves (high-ranking state officials, owners of industry, grand merchants and landowners) and the have-nots (landless) strengthened, while there was an overabundance of unskilled agricultural workers, which limited their wage growth (Roikonen & Heikkinen, 2018).

Thus, there is evidence that the most important determinant of growing inequality during the latter part of the nineteenth century was the development process. However, it is notable that international evidence is mixed regarding the Kuznetsian process: for example, the case of the Low Countries from the fourteenth to the nineteenth centuries supports the hypothesis (Ryckbosch, 2016), while on the other hand Rossi, Toniolo, and Vecchi (2001) have demonstrated that the case of Italy during the late nineteenth and the early twentieth centuries does not support the hypothesis. Thus, it seems that backwardness and the fact that Finland was a latecomer in terms of economic growth are the key factors here.

5.2. Shocks and capital

One fruitful way of characterising the possible factors behind the development of inequality is to make comparisons between countries (Figure 4). In general, top income shares were high during the late nineteenth and early twentieth centuries. Although the timing and strength of the decline varied between countries, it is clear that diminishing top income shares occurred during times of shock and turbulence, especially during the two world wars and their aftermath (see Alvaredo et al., 2013). In addition, many empirical studies have shown that the decline in income inequality in the first part of the twentieth century was predominantly caused by the shocks to wealth and capital incomes (Bengtsson & Waldenström, 2018; Piketty, 2014; Piketty & Saez, 2006; Scheidel, 2017).

In Finland, the period between 1914 and 1945 was turbulent economically as well as politically: WWI, independence in 1917, the brutal civil war of 1918, high inflation periods in the 1920s, harsh depression in the 1930s, and WWII. This turbulence clearly affected the gross capital shares, which

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13It is noteworthy that significant differences exist between the levels of top income shares between countries and periods. Thus, the approach involves looking more for the general trends than the exact levels. Moreover, despite the fact that the studies employ a quite similar methodology, the tax legislation varies greatly between countries, which might cause major differences (see more about the international comparison in Atkinson et al., 2011).
Figure 4. Top one per cent’s share of income in Nordic (a), Central Europe (b), and several countries around the globe (c). Sources: Finland 1865–2004 (author’s calculations, see text); Finland 2005–2017 (author’s interpolations based on Jäntti et al., 2010, updated in 2020), Sweden (Roine & Waldenström, 2010, updated), Norway (Aaberge & Atkinson, 2010; Aaberge, Atkinson, & Modalsli, 2013, updated), Denmark (Atkinson & Sagaard, 2016), the USA 1870–1910 (Lindert & Williamson, 2016, p. 173); the USA 1911–1962 (Fisher-Post, 2020a, updated by Zucman, 2020; Saez & Zucman, 2020), USA 1962–2019 (Piketty, Saez, & Zucman, 2016, 2018), Netherlands (Blanchet, Chancel, & Gethin, 2020; Morgan & Neef, 2020; Salverda, 2013; Salverda & Atkinson, 2010), France – 2014 (Garbinti, Goupille-Lebret, & Piketty, 2018), France 2014– (Bozio, Garbinti, Goupille-Lebret, Guillot, & Piketty, 2018), Germany (Bartels, 2019; Blanchet et al., 2020; Morgan & Neef, 2020), United Kingdom (Alvaredo, 2017; Atkinson, 2007, 2012a, 2012b, 2013, 2014; Atkinson & Ooms, 2015; Blanchet et al., 2020; Morgan & Neef, 2020), Canada (Fisher-Post, 2020b), Russia (Neef, 2020; Novokmet, Piketty, & Zucman, 2018), Japan (Jenmana, Moshtir, & Yang, 2020; Moriguchi & Saez, 2010, updated by Alvaredo, Moriguchi, & Saez, 2012).
declined by 28% between 1915 and 1918 (39.2%–28.2%) and by a staggering 62.4% between 1938 and 1948 (37.2%–14.0%). In other words, the gross labour share of total household incomes rose from 60.8% in 1915 to as high as 86.0% in 1948 (Bengtsson & Waldenström, 2018). Therefore, it is quite reasonable to assume that income inequality would fall as more equititarian sources of income (labour) became a more dominant factor in household incomes. In addition, the decline in income inequality as well as the decline in capital shares are closely connected with the rapid decline in wealth inequality during the first half of the twentieth century in Finland (Bengtsson, Missiaia, Nummela, & Olsson, 2018).

The interwar period has provided mixed evidence since top shares in some countries rebounded (Nazi Germany), while in others they remained relatively stable (Norway, Denmark, USA) or even fell (Finland, France, Sweden). In Finland, the major decrease in income inequality occurred in the years 1920–1924 (Figure 4). Income inequality recovered slightly before the Great depression, whereas it again diminished slightly in 1929–1935; however, as noted earlier, it is difficult to grasp these relatively small changes in reality. The war years and their aftermath were a time of economic turmoil since, for instance, the price level increased more than eleven-fold between 1913 and 1925 (see also wages in Heikkinen, 2017). Overall, the Great depression in the 1930s hit the Finnish economy quite harshly, however it was relatively short and mild in international comparisons (Roikonen & Heikkinen, 2018). The per capita GDP dropped by 6.3% between 1929 and 1932, whereas it exceeded the pre-crisis level in 1934 (Hjerppe, 1989).

In Finland, the top income shares increased first in 1948–1964 when gross capital shares also increased by 80.6% (14.0%–25.2%). The next period when top income shares rose significantly was not until the 1990s. Again, during 1991–2001 gross capital shares rose by roughly 57.8% (26.0%–41.0%) (Bengtsson & Waldenström, 2018). Moreover, the share of capital incomes for those in the top one per cent increased from 24% to 62% between 1993 and 2007 (Riihelä & Suoniemi, 2017). Indeed, based on Riihelä and Suoniemi’s (2017, p. 212) decompositions of the Gini coefficients from household survey data, capital incomes principally contributed to the increase in factor income inequality between the years 1990 and 2015 (see more details about the methodology in Suoniemi, 2000). Therefore, this fits well with the Bengtsson and Waldenström (2018) findings that there is a strong and strengthening positive link between capital and top income shares.

From an international perspective, top income shares continued to decline further until approximately the year 1980, whereas since the early 1980s top shares have risen substantially in all countries (Figure 4). Remarkably, major differences have emerged in this development in the twenty-first century, as, for instance, most Nordic countries, France and the Netherlands have witnessed relatively stagnant or only a mild increase in the top one per cent’s share of income. On the other hand, top income shares have significantly increased starting roughly from the year 1980 in the USA, Canada and Japan and skyrocketed in Russia during the 1990s. These observations highlight the importance of forces at work other than market forces, which are going to be discussed in the next section.

5.3. The role of redistribution

Capital accumulation has suffered from a further ‘shock’ in addition to wars and economic turmoil during the twentieth century: taxes. Figure 5 shows the average tax rates (AT) as well as the average tax rates in the top tax bracket (TT) for state income taxation. While tax rates added up to only a few percentage points before the early twentieth century, in the 1920s TTs climbed by more than 15 percentage points. To pay for the war expenditures and reparations, TTs skyrocketed during and after WWII. In 1950–1964, tax rates started gradually to decline. Again, the establishment of the welfare state stands out as another period of increasing ATs and TTs beginning in the mid-1960s, whereas tax rates peaked and started to decline from the late 1970s onwards. Interestingly,
the peak in top tax rates occurred at the same time as income inequality diminished: roughly in the years 1940–1950 as well as 1964–1985.

From the year 1966 onwards, it is possible to separate income inequality by factor income, gross income and disposable income (Figure 6). Overall, the metrics presented in this study followed factor income inequality relatively closely until the early 1980s, after which estimations followed gross income inequality more closely. From the years 1966 to 1976, inequality decreased across all different income types. On the other hand, from 1976 to 1990 gross and disposable income inequalities continued to decrease, but factor income inequalities recovered to their mid-1960s levels. Therefore, the redistributive role of taxes and social transfers increased massively between the years 1964–1985.

Before and during WWII, officials levied many taxes in addition to state income tax: extra tax for defence purchases (1937), an additional wealth tax (1941–1944), wealth transfer taxes (1937–39) and an excess profits tax (1937–1944) (OSF, 1940–1949). In addition, municipal taxes were added.

Figure 5. Average tax percentages in the state income taxation, 1865–2004. Sources: author’s calculations, see text.

Figure 6. Gini coefficients for factor, gross and disposable incomes in Finland, 1966–2019 (household, OECD-equivalence scale, including capital gains). Source: OSF, 2021. Note: Household Budget Surveys 1966–1981, income distribution statistics sample data 1986–1994, income distribution survey 1995–2019 (the entire dwelling population). Factor income = entrepreneurial income + capital income + labour income; gross income = factor income + social transfers; disposable income = gross income – paid taxes and transfers.
1966 and 1990. As a consequence, remarkably low disposable income inequalities resulted in the late 1980s; however, the redistribution policies affected factor inequality as well through, i.e. capital accumulation.15

From 1991 to 1994, Finland suffered a severe recession and unemployment rose significantly, causing factor income inequality to peak, but the state’s high redistribution policies kept gross and disposable inequalities at a relatively similar level. In the years 1994–2000, however, gross and disposable income inequalities rose drastically. In other words, the redistributive role of taxes and transfers declined. The obvious reason is that the high number of long-term unemployed stopped receiving earnings-related unemployment benefits in place of the labour market subsidy, but also the level of social benefits fell behind the overall increase in incomes (Riihelä & Suoniemi, 2017). This change was also partly due to the introduction of a separate income tax for capital and labour incomes in 1993, setting proportional tax rates for capital incomes and progressive tax rates for labour incomes. This decreased the tax burden for the top income groups and increased their ability to convert incomes from labour income into capital income (Jäntti et al., 2010; Riihelä & Suoniemi, 2017; Tuomala, 2019).16

In contrast, although income inequality increased slightly before the recession in 2008, inequality has remained at relatively similar levels in the twenty-first century (see also other inequality metrics in Törmälehto, 2019). Finally, the estimates made by Riihelä and Suoniemi (2017) when accounting for the decompositions of the Gini coefficients show that the rise in disposable income inequality between 1990 and 2015 occurred for two important reasons: it increased by roughly 21% due to changes in tax rates and social transfers but remarkably by roughly 79% due to changes in capital incomes.

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15For more on the establishment of the Finnish welfare state, see, (i.e. Kettunen, 2001, 2018; Niemelä & Salminen, 2006).
16The tax rate for the top one per cent declined from 44% to 34% during the years 1987–2004, whereas the tax rates for median incomes decreased only slightly from 22% to 21% (Jäntti et al., 2010; Riihelä, Sullström, & Suoniemi, 2008).
5.4. Seeking possible drivers of inequality

Next, I discuss potential explanations for the fall and rise in top income shares during the twentieth century since, unfortunately, data offering explanatory variables is scarce for the nineteenth century. The division of periods respects the trends for top income shares: decreasing 1899–1948; increasing 1948–1964; decreasing 1964–1987; increasing 1987–2004. I investigated the drivers that have been associated with income inequality in prior studies using the following variables: income (GDP growth per capita), functional distribution of incomes (gross capital share), development (share of agriculture in GDP), technological change (number of patent applications per 1000 persons, aged 15–64), globalisation (the share of exports in GDP), taxation (the average tax rate for those in the top tax bracket), government spending (the share of government spending in GDP) and unions (the share of the union members out of total adult population).

Studies that characterise the possible determinants of inequality have utilised simple OLS or GLS regression frameworks (Bartels, 2019; Roine, Vlachos, & Waldenström, 2009). However, I opted not to use the first-difference Generalized Least Squares (GLS) regression framework due to the limited amount of data: there are no possibilities to control for regional or country effects. Furthermore, there are several possible concerns regarding endogeneity problems when using this particular regression framework (see Roine et al., 2009). The first has to do with probable omitted variable bias, where a variable might have been omitted that affects the top income shares as well as explanatory variables. The second concern is possible direct reverse causality from the inequality variable to the explanatory variable. This occurs, for instance, if the increasing top income shares directly affect economic growth or capital shares. In addition, the timing of the impact is not always clear; for example, government spending could cause changes in inequality after as much as a decade. Therefore, the regression results do not enable us to make causal interpretations, and the following correlations should be taken as possible drivers instead of causal reasoning.

The simple correlations are shown in Table 1, which illustrates how each determinant had a different level of importance in various periods. The capital shares had a significant positive correlation with the top income shares during the periods 1948–1964 and 1987–2004 (see also Bengtsson & Waldenström, 2018; Jäntti et al., 2010). These were times of recovery from WWII and the ‘glory years’ of Nokia, followed by the IT bubble of the early 2000s (Jäntti, 2006). However, the correlations in Table 1 as well as the findings presented in recent studies are inconclusive regarding globalisation and development as significant determinants of inequality (see Milanovic, 2016; Roine & Waldenström, 2015; Rossi et al., 2001). The push factor is that trade benefits more highly skilled workers in advanced economies, which leads to an increase in their wages relative to those of lower skilled workers. On the other hand, more open economies cause problems for local monopolies, which seemingly reduces top incomes (Bartels, 2019; Roine et al., 2009). Lastly, economic growth did not have significant correlations with top income shares, with prior studies also providing mixed results (Bartels, 2019; Kuznets, 1955; Roine & Waldenström, 2015).

In contrast, all proxies for institutional settings (taxes, government spending and unions) correlated with lower income inequality. The Finnish case differs from the international framework since taxation began to play an important role much earlier; taxation only began to play a significant role in many other countries in the latter part of the twentieth century (Bartels, 2019). Although taxation has a strong negative correlation with top income shares during almost the entire research period, it lost some of its significance in 1987–2004. This pattern occurred in Anglo-Saxon countries as well: Atkinson and Leigh (2013) estimate that roughly one-third to one-half of the increases in the top one per cent’s share of income are due to decreasing tax rates. In addition, the effect of taxation is stronger when accounting for lagging or cumulative effects (Jäntti et al., 2010; Roine & Waldenström, 2015).

Union membership correlates negatively with the top income shares for all periods except the years 1948–1964. Also, the literature suggests that wage dispersion is lower when union membership is higher (Fürster & Tóth, 2015). This fits quite well with the findings for Finland since wage
dispersion is relatively small in comparison to other countries and it has not increased significantly in recent decades (see wage dispersion in Riihelä & Suoniemi, 2017). Moreover, union membership is quite high in other Nordic countries as well, seemingly one of the main reasons for the diverging inequality patterns between countries (for more on trade union data, see Visser, 2019). Indeed, despite the fact that the labour movement lost the civil war in 1918, many breakthroughs occurred with respect to worker rights in the labour market in the twentieth century, including the eight-hour workday (1917–1920) and 40-hour work week (1965) (Heikkinen, 2017; Working Hours Act 713/1965).

It is notable that government spending has a significant and highly negative correlation with top income shares only after the establishment and expansion of the welfare state from the mid-1960s onwards (see Section 5.3 for further details on redistribution). Remarkably, technological change also correlates quite negatively with the top one per cent’s share of income after the mid-1960s. Evidence that technological progress in Finland has benefitted poor people contrasts with international evidence, especially evidence suggesting that recent technological changes are primarily skill-biased, meaning that they benefit skilled workers more than unskilled workers (Acemoglu, 2002; Atkinson & Bourguignon, 2015). One possible explanation may have to do with the ‘race’ between technology/globalisation and education, as noted by Atkinson and Bourguignon (2015), which can be characterised as a simple supply (education) and demand (technology/globalisation) analysis. In other words, it seems that the expansion of education after WWII, but especially from the 1970s onwards, translated into sufficiently high-skilled labour, which narrowed the skill premium between skilled and unskilled workers in the subsequent decades (see also Asplund & Maliranta, 2006; Goldin & Katz, 2009; OECD, 2021).

Overall, the results are somewhat similar when utilising separate OLS regressions for each growth-controlled variable (with or without robust standard errors), although some changes do emerge, for instance trade is significant when observing the whole period and taxation has a mildly significant negative correlation in the last period. Nevertheless, greater changes can be detected when utilising two or three year/observation moving averages. The greatest change occurred with respect to agriculture’s share of GDP, where the coefficients’ sign changes in many periods. In addition, the coefficient for taxation becomes positive in the last period and similarly for unions in 1964–1987. Thus, these observations highlight the importance of new studies on the role of institutions as well as the development process on income inequality.

6. Concluding remarks

This study has presented a new data series on income inequality in Finland for the years 1865–2019 and discussed the factors behind the trends. During the research period, Finland experienced remarkable structural change, transitioning from an undeveloped country with one of the lowest income levels in Europe to one of the most developed countries in the world.

During the latter part of the nineteenth century, economic growth gave rise to higher levels of inequality. Overall, top income shares decreased during the first part of the twentieth century, which was mainly the result of shocks to capital (e.g. civil war, high inflation, WWI and WWII) as well as rising taxation. Income inequality increased after WWII until the establishment and expansion of the welfare state in the mid-1960s. From the mid-1960s to the late 1980s, the role of redistribution (taxes and transfers) strengthened, which diminished income inequality significantly. During the 1990s, on the other hand, income inequality increased drastically, which can be explained by the capital incomes of those in the top income groups as well as, to a lesser extent, reforms that diminished the distributive effect of taxation. In contrast, income inequality has remained at relatively similar levels in the twenty-first century. In sum, the twentieth century

17It is far from clear, however, that all technological change is biased in favour of skilled workers (e.g. Caselli, 1999).
can be characterised as a century of ‘equalisation’ and development, as Finland caught up with and surpassed other western economies on many economic and social levels.

Recent studies have provided a rather pessimistic view on capitalism, suggesting that without significant shocks to capital we are going to see unparalleled future inequality levels (Piketty, 2014; Scheidel, 2017). The Finnish case proves, however, that shocks are not the only path to a more equal society, in contrast to recent debates. Moreover, the trends in income inequality in Finland as well as other Nordic countries show that rising inequalities are far from inevitable. Although we saw that capital incomes greatly influenced income inequality in the research period, at the same time the institutions that establish the rules for market forces and influence their outcomes are quite essential too. Therefore, this paper supports the fact that income inequality does not follow ‘strict’ patterns or deterministic rules over the long run, but instead does so by episodic shifts (see also Acemoglu & Robinson, 2015; Lindert & Williamson, 2016; Modalsli, Aaberge, & Atkinson, 2016).

This study is the first comprehensive exploration of income inequality in Finland from the 1860s to the 2010s. Thus, it leaves many topics for future researchers to study. To broaden our understanding of inequality, additional studies will be needed that, for instance, explore regional-level inequality or inequality between and within social groups. Lastly, the extent to which institutions contribute to or mitigate income inequality is for the most part beyond the scope of this paper. Therefore, interdisciplinary research is needed to investigate the effect of complex systems and institutions on inequality.

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