

Women in Top Incomes – Evidence from Sweden 1971-2017^a

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Abstract

Using yearly register data on the full population of Sweden we study gender differences in top incomes, down to the top 0.01 percentile group, over the period 1971-2017. We find that, while women are still a minority of the top decile, and typically make up a smaller share the higher up in the distribution we move, their presence has steadily increased in all top groups over the past half-century. At the beginning of the period, top income women relied more on capital incomes, but the rise in the share of top women is not due to the growing importance of capital. Instead, women have increased their presence in the top by gains in the top of labour incomes, while top income men have captured most of the growth in capital incomes. Studying gender differences in observable characteristics we find small gender differences in some respects, convergence in others, but also some important remaining differences. Overall, our results suggest that many findings in the top income literature have a clear gender component and that understanding gender equality in the top of the distribution requires studying not only earnings and labour market outcomes but also incomes from other sources, as well as family circumstances.

Keywords: Income inequality, wealth inequality, income distribution, gender inequality, top incomes, capital incomes, realized capital gains

JEL: D13; D31; H20; J16; J31

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1. Introduction

In recent years the importance of top incomes has become apparent in the study of economic inequality. Following the seminal work by Piketty (2001, 2003) and Piketty and Saez (2003), a large number of studies have shown the centrality of developments in the top of the income distribution, both for the recent increase in inequality observed in many countries, as well as for its long-run evolution.¹ This literature has studied many aspects of top incomes in great detail. It has, for example, shown the importance of distinguishing between different sources of income, in particular to consider incomes from capital, and also to study the diverse developments across different groups within the top of the income distribution.

However, as recently noted by Roine and Waldenström (2015) and, in particular, by Atkinson et al. (2018) one dimension that has not received attention in the top income literature is that of gender. In view of the enormous interest in the rise of top income shares in many countries, it seems natural to ask: What is the share of women across different top income groups? How has this changed over time? Are there differences in the composition of income between men and women in the top of the distribution and in particular concerning capital incomes? Are top income women different from men along observable characteristics such as age, education, marital status, and wealth?

In this paper, we study these questions for the case of Sweden over almost half a century. Using individual micro-level data on the full Swedish population, starting in 1971 – the year when independent taxation also for married couples became compulsory in Sweden – we are able to analyse how the share of women in the top of the income distribution, and also how the composition of their total incomes, has changed over time. Having access to the full population allows us to study income shares down to the top 0.01 group and detailed register data allows us to analyse how top income men and women differ concerning age, education, their wealth, and also to link married top earners to their partners' education and income. Using longitudinal information, we can also study gender differences in top income mobility.

The start of our period corresponds to when female labour force participation took off in Sweden and (as we will discuss in more detail below) when several reforms aimed at equalizing opportunities for men and women were put in place. Our overarching question is how the process of gradually increased opportunities for women since the early 1970s, that ever since has placed Sweden at the top of various rankings of gender equality, has played out in terms of women in the top of the income distribution. In line with the top income literature, we will pay special attention to the importance of capital incomes (known to be important especially for top income groups), how their importance has changed over time, and in particular the gender dimension of these.

In relation to previous work our study bridges two literatures; on the one hand, that on top incomes, and on the other hand, the vast literature on gender inequality and its many facets (see e.g. Bertrand, 2011; Ponthieux and Meurs, 2015; Blau and Kahn, 2017; and Azmat and Petrongolo, 2014, for excellent overviews). Of particular interest is the substantial part of the latter literature that has also focused on gender differences in the top of the distribution. However, these papers mostly deal with labour market outcomes and the top of the labour earnings distribution. Some papers, for example, study the so-called “glass ceiling” in executive compensation and the under-representation of women in top executive positions (Bertrand et al., 2010; Smith et al., 2013; Keloharju et al., 2019) and some study the “glass-ceiling” in the sense of a higher gender wage gap in the upper tail of the wage

¹ The collected volumes by Atkinson and Piketty (2007, 2010) contain much of this work and Leigh (2009), Atkinson et al. (2011), Alvaredo et al. (2013), and Roine and Waldenström (2015) provide overviews of the literature. Data are available from the World Wealth and Income Database at <http://www.wid.world>.

distribution compared to the rest of the distribution (Albrecht et al., 2003; Arulamplam et al., 2006; Albrecht et al., 2015). Kleven and Landais (2017) document the evolution of gender inequality in labour market outcomes for 58 countries since the late 1960s also focusing on earnings, labour supply and wage rates. Recent work by Fortin et al. (2017) studies the gender dimension of top earnings in Sweden between 1990-2013 together with developments in Canada and United Kingdom, finding that women have increased their presence, but remain underrepresented, in the earnings top and also that this under-representation is larger higher up in the distribution (in line with the “glass-ceiling” results). Guvenen et al. (2014) study the gender structure of top earnings in the U.S. since the early 1980s and find similar trends. They also use longitudinal information to study mobility in and out of the top.

Our work is closely related to these papers in the sense that we also study the top of the distribution, but an important difference is that we – like the top income literature – are concerned with the top of the total income distribution. This has been shown to be of great importance, especially when studying the top 1 group and changes within the top 1 in general (e.g. Atkinson and Piketty, 2007, and 2010, and Alvaredo et al., 2013) and especially in the case of Sweden (e.g. Roine and Waldenström, 2010, and also Roine and Waldenström, 2012, on the particular role of realized capital gains in Sweden). As we will show, studying total incomes turns out to be important also for the gender dimension of top incomes.

Given this focus, the one existing paper that is closest to ours is Atkinson et al. (2018). They report women’s share of different top groups in the distribution of total income in eight countries with independent taxation for men and women and also study the composition of these incomes.² In relation to their study, ours is on the one hand more limited in terms of geographical scope, but on the other hand we have much more detailed micro panel data (on the full Swedish population) for almost a 50-year period, which allows us to look much more closely at the evolution of gender balance across top income groups.³ Our data, for example, allows us to address several questions regarding who the top income men and women are in terms of individual and family characteristics, which turns out to be important. Having access to individual wealth data we can also relate directly to questions regarding potential gender differences in wealth as a source of income, a potentially important determinant for gender differences in the top studied already by Atkinson and Harrison (1978) and more recently by Edlund and Kopczuk (2009).

Finally, in relation to much (but not all) of the work on gender differences, it is important to note that we in this paper study actual total (pre-tax) incomes, not hypothetical gender differences in case men and women worked equal hours. The latter approach, typically taken when studying the glass ceiling in wages, is obviously right for some questions, but we would argue that studying the sum of all incomes going to an individual, and the gender differences in this, is more relevant for assessing actual top income inequality outcomes.

Our study results in five main findings. First, the share of women in the top decile has increased steadily since the beginning of the 1970s. In the distribution of total income (ranked excluding realized capital gains), the share of women in the top 10 group more than doubled from about 12 per cent in 1971 to about 29 per cent in 2017. Within the top decile, the share of women is typically smaller the higher up we move in the distribution, but the growth rate of the women’s share has been higher in the very top. While the share of women in the lower half of the top decile (P90-95) has approximately

² Recent work by Piketty et al. (2018) on the US makes great progress in dealing with gender inequality in countries where married couples file taxes jointly, making it difficult to observe individual incomes. They use information on individual labour earnings, available on W2 forms after 1999 and from IRS tabulations of how wage income is split among couples in the top 5%, available for some years before that, to individualize incomes. Similar work is being done for France by Garbinti et al. (2018).

³ We will relate our findings directly to theirs in Section 6 on international comparisons.

doubled, from around 15 per cent in 1971 to about 32 per cent in 2017, it has more than tripled in the top percentile group (P99-100) from around 6 per cent in 1971 to 19 per cent in 2017, and gone from 5 to around 15 per cent in the top 0.1 group (P99.9-100).

A second finding is that, in terms of income composition, women have relied more on capital incomes than men. Over time this difference has decreased at the same time as the overall importance of capital incomes has increased. In the 1970s, capital played a much more important role for top income women compared to men. Since then, the role of capital has increased overall but more so for top income men. When formally decomposing the contribution from different income sources and the balance between these in overall incomes a clear gender asymmetry in the evolution of top incomes becomes evident. To illustrate; if capital would be the only source of income, women as a group would have had 18 per cent of top 1 incomes in the 1970s, but their share would have decreased to 17 per cent today.⁴ If, on the other hand, labour income would be the only source, women would have earned less than 5 per cent of all top 1 incomes in 1971, but they would have increased their share to about 18 per cent today. This illustrates the importance of understanding the joint dynamics of capital and labour incomes also for understanding the gender balance in top income shares.

A third, related, finding is that realized capital gains are different for men and women. Previous work by Roine and Waldenström (2012) has shown that realized capital gains are important for top earners in Sweden and that this importance persists when top groups are defined excluding capital gains as well as when the top is defined based on incomes over multiple years. The interpretation is that realized capital gains to a large extent top-up incomes for individuals with already high incomes. We find that there is a strong gender component to this finding. While realized capital gains, mainly from financial assets, top-up already high incomes for men (and hence for most individuals in the top one group) women in the top without capital gains are not much affected by adding them. Most of the realized capital gains earned by top income women come from sales of real assets and go to women who do not qualify in the top group without them.

Fourth, when examining gender differences in the role of wealth, we find that even though women are underrepresented in the top of the wealth distribution, they make up a much larger share of it compared to the income distribution. Over the whole period, the share of women in the top 1 is around 30-40 per cent (slightly less in the very top) and interestingly displays no clear time trend (if anything an increase before 1990 and a decrease thereafter). Looking at average wealth of top income earners we find that women are richer than men, but the difference has decreased over time. Overall, these findings, together with income decomposition results, suggest that even if wealth is, on average, more important for top income women, the rise of the share of women in the top income groups is not related wealth as a source of income becoming more important.

Fifth, we find that women in the top are increasingly similar to men, not only in terms of income composition, but also in terms of individual characteristics such as age education, and marital status. But despite the convergence, family situations are still markedly different. A little more than half of women in the top 1 group are married while the other half is divided between non-married, divorced and widows, with widows being the smallest group and the one that has decreased the most over time. Especially in the top 0.1 percentile group the share of widows has fallen from being almost 40 per cent in the 1970s to well below 10 per cent today. Top income men, on the other hand, are typically married, even though the share has gone down from about 95 per cent in the 1970s to around 70 per cent today. Those not married are either singles or divorced in roughly equal proportions, while top

⁴ If capital incomes were the only incomes in the economy the top 1 group's income share would have grown from about 16 per cent to 35.5 per cent over the period as the concentration of capital incomes has increased significantly. But the relative share to the group of men and women respectively has remained relatively constant.

income widowers hardly exist. We also find a stark gender difference in terms of couple composition of married top earners. About three out of four married top 1 men have a wife outside the top 10 (and many of these are in the P0-60 group). For women, the opposite is true; about three in four top 1 women have a husband also in at least the top 10 (and one in four has a husband who is also in the top 1). Taken together these findings suggests that attempts to explain income differences based on individual characteristics only, are likely to miss important aspects.

The rest of the paper is organized as follows. Section 2 presents our data and some descriptive statistics. Section 3 gives an overview of the basic trends for the share of women in and within the top 10 group (focusing on the top 1 group) as well as for gender differences in the composition of income, the gender differences in the role of realized capital gains, the differences top income mobility, and also differences in the role of wealth. In Section 4 we develop a formal decomposition of the relative importance of changes in the top of the labour income distribution, the top of the capital income distribution, and of the changing importance of labour relative to capital for top earners. In section 5 we examine gender differences in observable characteristics, such as age, education, marital status as well as partner composition in terms of education and income. We also examine married top income men's and women's average contribution to joint total income and wealth. In Section 6 we put our main findings in international perspective, and, finally, Section 7 contains some concluding remarks.

2. Background, our data and descriptive statistics

Sweden is well known for its gender equality, topping several international rankings together with the other Nordic countries.⁵ The reasons for Sweden's relative gender equality are, of course, many and have long historic roots (see, e.g., Lundqvist, 2010) but some of the most important steps were taken in the early 1970s, that is around the start of the period we study. First, a change in tax legislation in 1971 made it compulsory also for married couples to file individual tax returns.⁶ A few years later, in 1974, legislation was passed that entitled mothers and fathers to share parental allowances upon childbirth. In the early 1970s, the public childcare system was also extended with the explicit objective to enable women to work.

These policy reforms were instrumental for the observed increase in female labour force participation in the 1970s (see, e.g., Selin, 2014). The group that responded most to the policy changes was married women, whose labour force participation increased from 47.2% in 1965 to 82% in 1985. Women's overall labour force participation – independent of marital status – went from 53.8% to 79.2% over the same period, so that women in 1985 had only a few percentage points lower labour force participation than men (see Gustafsson, 1992). Though most of the rapid expansion was in the form of part-time work, the share of women in full-time employment has also increased steadily since the early 1970s (see e.g. SOU 2005:73 for details). As a share of all income earners in the tax population, women today constitute about 50 per cent.

Our overarching aim is to study details of women in the top of the total income distribution over this period, starting when independent taxation became compulsory, over the period when female labour force participation grew rapidly, until present day when Sweden, on average, is one of the most gender equal countries in the world.

⁵ For example, Sweden ranks third in the 2018 Global Gender Gap presented at the World Economic Forum, and first in the Economist's Glass-ceiling index 2019.

⁶ The change was preceded by a period since the mid-1960s when married couples could choose whether to file individually or jointly and this, in turn, was preceded by a period starting in the early 1950s when various changes were made in the taxation of married couples; see Appendix A for a brief overview.

2.1. Data

Our data comes from various Swedish registers containing individual information on a yearly basis starting in 1968 for our key variables. The most important ones are the *Register for the Total Population (Registret för Totalbefolkningen, RTB)* containing basic information (age, marital status, etc.) on all Swedish citizens and the *Income and Taxation Register (Inkomst och Taxeringsregistret, IoT)* which contains information from tax returns for all Swedish taxpayers. Together these give us yearly observations of total individual incomes (before taxes and transfers) and the different income sources (as observed on tax returns) for the close to the full adult population between 1968-2017.⁷ Up until 1990, total income consisted of six income sources: labour income, capital income, entrepreneurial income, farm income, real estate income and capital gains. In addition, incomes were labelled A- or B-income depending on if the source was the primary source of income, or not, and the tax treatment depended also on these labels. In 1990-1991 a major tax reform resulted in a number of changes in the Swedish tax system, one of them being a change to three income sources instead of six; earned income (mainly wages), capital income, and business income.⁸ While realized capital gains after the reform count as capital income (and are taxed at the same flat rate as capital income) after 1991, it is possible to separate them throughout the period. To make income sources comparable over time, we have constructed three categories of income sources for the full period: labour income, capital income and business income (see Appendix B for details on how).

Even though individual data is available starting in 1968, we choose to start our analysis in 1971.⁹ The reason is that before 1971 it is not possible to completely separate incomes for men and women since filing taxes on individual bases was optional for married couples. The system had formerly been household-based and a gradual move toward individual taxation started in the 1960s, but it was not until 1971 that individual taxation of (almost) all incomes became compulsory (see Appendix A for details).¹⁰

In addition to total income and its components, we use a number of other variables coming from various individual level registers managed by Statistics Sweden. These vary in coverage with some variables being available for the full period while others start later and in some cases are available only for limited periods. The most important additional registers we use are the Wealth Register (*Förmögenhetsregistret*), which exists for the years 1999-2007, the Register over Capital Gains and Capital Losses (*Registret över kapitalvinster och kapitalförluster*), which exists from 2005 and onwards, and the LISA database, that collects information on income, education, and social insurance variables from various official Swedish registers from 1990 and onwards.

The Wealth Register complements the wealth information from wealth tax data which exists for the period up until 2007 (the end year being when the wealth tax was abolished and so wealth data is no longer collected), but which is known to be problematic for a number of reasons (see Roine and

⁷ In 1971 the number of tax returns (from adults) in relation to the full adult population was about 85 per cent, but increased rapidly in the 70s and after 1978 (when it became mandatory for employers to send income statements for all employees directly to the tax authority) it was well above 95 per cent, and after the tax reform in 1991 it has been virtually 100 per cent. The impact of the gradual change of the reference population in the 70s on top income shares is very small; see Roine and Waldenström (2010) for details.

⁸ For a more comprehensive description of the income concepts over time in Sweden, see Roine and Waldenström (2010).

⁹ There are also good arguments for not starting until 1974 since this marks the year when many important transfers such as unemployment and sick-leave insurance became part of taxable income (see Roine and Waldenström, 2010, for details on this and other reforms and their impact on the income concept). This choice does not have any effect on the results in this paper.

¹⁰ Between 1971 and 1986 some incomes, in particular capital incomes, remained jointly taxed. However, the way they were taxed – by being added to the spouse with the highest non-capital income – meant that there were no simple ways of transferring capital incomes to the spouse with the lower income to lower joint tax liability. See Appendix A for details.

Waldenström, 2009). In particular, the Wealth Register is much more ambitious in its coverage and importantly it aims at measuring market valued wealth (also distinguishing between real and financial wealth). The Register over Capital Gains and Capital Losses enables us to distinguish real and financial capital gains. Together these registers (and the wealth tax data) makes it possible to explicitly study gender differences in the relationship between wealth and top incomes. From the LISA database, we use information about top individuals' and their partners' education.¹¹

Finally, to be precise about our definition of top income groups, we study the top income decile of the full adult population (aged 20 and above), and their share of total incomes from all sources (before taxes and transfers).¹² In the case of Sweden, this is, for the period we study, very close to studying the top of the individual tax population and their share of total incomes according to tax returns. Within this top decile group, we then focus on income shares by gender of the top percentile group, the top 0.1 group, and down to the income shares of men and women in the top 0.01 group of the population.¹³ Mostly, we divide the top 1 into two subgroups (P99-99.9 and P99.9-100 groups) to capture differential trends as we move higher up in the total income distribution. Even if it is possible to analyse even smaller groups, such as the P99.99-100 group, we refrain from doing so when we break down this group by income composition, wealth, etc.¹⁴ In most cases the ranking is done according to total incomes excluding realized capital gains, but with realized capital gains added to the total incomes of individuals in the respective groups.¹⁵ This means that, unless we explicitly state otherwise, our top groups consist of individuals that make up the top without realized capital gains, avoiding the risk of mixing these individuals with those who make “one-off” realizations but who would not be top income earners without them.¹⁶

2.2. Descriptive statistics and top income shares

As in many other countries, top income shares in Sweden have gone up over the past decades. This increase has been relatively large, in percentage terms, but starting from an internationally very low level. Globally speaking, Sweden remains among the most equal countries.

Over the period we study here, 1971-2017, the top decile income share, however, first fell from around 30 per cent per cent in 1971, down to a low around 23 per cent in the mid 1980s, and has since

¹¹ We use the LISA database from 1991 in order to have a homogenous educational classification until 2016 (the last year for which we have LISA data).

¹² Choosing 16 or 18 or 20 as the cut-off for being included in the adult population has a small impact on top income shares but virtually no impact on our questions regarding the gender composition of top groups. Also, it should be noted that in the Swedish income concept (after 1974) incomes from unemployment insurance and sick leave and parental leave, etc. count as “taxable labour income” and are consequently included in our total income concept (in line with previous top income studies on Swedish data). This choice also has virtually no impact on the questions studied here. See Appendix B for details.

¹³ Our focus on the top 1 group is due to the fact that most of the inequality changes over the period is due to changes in this group, and also (which turns out to be related) that it is within this group that income from other sources than labour income start to really matter for the overall development. Clearly, all divisions of this type are arbitrary, but our aim is to display results which capture the gradual changes as we move over the top of the distribution.

¹⁴ Given that the Swedish population most of the years in our analysis consisted of approximately 7 million (growing between 6 and 8 over the period), the P99.99-100 group contains only 700 people. Out of these, less than 20 per cent are women (and for much of the period it is less than 10 per cent). Thus, we clearly have small-sample problems even though we have the entire Swedish tax population.

¹⁵ This way of dealing with realized capital gains was advocated already in Piketty and Saez (2003) and has been used in many top income studies since.

¹⁶ In a previous version of this paper (Boschini et al., 2017) we analyse the gender aspect of such re-rankings in more detail and find that, especially for some periods, the share of women in top groups is clearly higher when ranking incomes including realized capital gains. We will return to this in section 3.2 and 3.3 below.

gradually increased to around 29 per cent in 2017. The corresponding figures for the top percentile group are 6.4 per cent in 1971, 4.3 per cent in 1985 and 8.5 per cent in 2017.¹⁷

To get a sense of the income levels we deal with when talking about the top 10, top 1, or top 0.1 groups, and also how they have evolved, *Figure 1* illustrates the income thresholds for being included in the respective top groups over time. Hence, to be included in the top 10 requires an individual total income of above around 550,000 SEK (around \$US 60,000) per year in 2017; for the top 1 group the corresponding figure is above 1.2 Million SEK (\$US 130,000), and for the very top P99.99 group more than 15 Million SEK (1.6 Million \$US) in individual yearly income (all figures excluding realized capital gains).

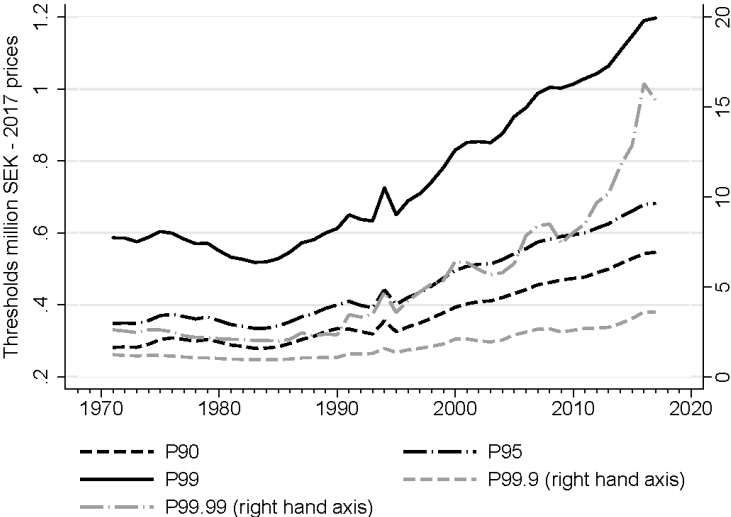


Figure 1. Income thresholds (excluding realized capital gains) for top groups, 1971-2017 (in 2017 prices; 1\$US≈10 SEK).

3. Top income gender gaps in Sweden 1971-2017

We now turn to answer our first set of questions: How has the share of women in the top income groups changed over time? What are their sources of income at different levels, are they different from those of men, and how have they evolved since the early 1970s? What about mobility; are there gender differences in the likelihood of falling out of a top income group? And what can gender differences in observed wealth tell us?

3.1. Share of women in and within the top decile

We begin by presenting changes in the share of women in the top of the total income distribution, as well as the top of the labour income distribution, since 1971. *Figure 2* shows the trends in the share of women in the respective top groups from the P90-95 up to the very top P99.99-100 group, with the

¹⁷ These shares are for the population ranked excluding capital gains but with capital gains then added to the incomes of the individuals in the respective groups. The shares would be slightly larger if ranking including realised capital gains (see Appendix *Figure C1*), and slightly lower if realized capital gains are left out completely. The overall trend, with decreasing top shares until around the mid 1980s followed by a gradual increase since is, however, present regardless of how realized capital gains are treated.

left-hand panel showing the development in the total income distribution, and the right-hand panel showing the labour income distribution.

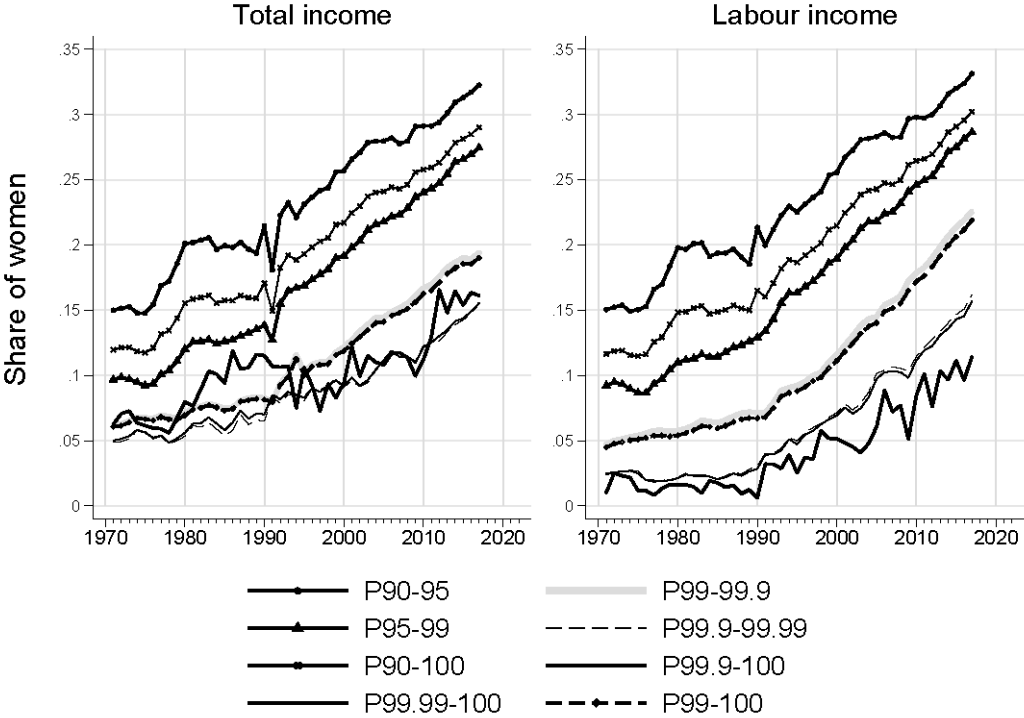


Figure 2. Share women in top groups 1971-2017 in the distribution of total income (left hand panel) and labour income (right hand panel).

The overall picture that emerges is a steady and significant increase in the share of women in all top groups in both distributions. Figure 2 also shows that the share of women is typically smaller the higher up in the distribution one moves. Both of these findings are in line with what is found in Atkinson et al (2018) for total income in a number of countries and what Fortin, Bell and Böhm (2017) find for top earnings in Sweden after 1990, and also in line with what Guvenen, Kaplan and Song (2014) find in the top of the earnings distribution in the U.S. since the early 1980s.

But a closer look shows some important differences between the two distributions. While the share of women is almost the same in the P90-99 group in the total income distribution and in the labour income distribution, both the levels and the time trends in the top 1 group, and especially in the very highest income groups, are different across distributions. In the 1970s the share of women in the total income distribution was around 5 per cent in the top 1 as well as in the top 0.1 and the top 0.01 groups, and for some years in the late 1970s and through the 1980s, the share of women in the extreme top (P99.99-100) of the total income distribution was, in fact, higher than in the rest of the top 1 group. In comparison, the share of women in the top 1 of the labour income distribution was clearly lower, and much lower in the top 0.1 and 0.01 groups in the 1970s and 1980s. At times the difference is large; there are periods in the 1980s when the share of women in the extreme top group is around 10 per cent in the distribution of total income but only a couple of per cent in the labour income distribution.

Over time, however, this pattern changes and is even reversed for the top 1 group. In 2017 the share of women in the top 1 of the labour income distribution is larger than for the share of women in the top 1 of the total income distribution (about 22 % to 19 %). The share of women also increases significantly for the very top groups in the labour income distribution and by 2017 there are as many women in the

P99.9-99.99 group in labour income as in total income. Only in the top 0.01 group is the share of women still larger when looking at total income as compared to labour income.

This indicates that it is important to study both distributions and also that there can be different, gender-specific dynamics in the top income groups depending on the relative importance of capital and labour incomes. We will return to this more formally in Section 4 below.

3.2. Gender differences in income composition for different top groups

Total income in Sweden can basically be divided into three sources: labour income, capital income and business income.¹⁸ Previous studies of top incomes have shown that capital income, in general, becomes more important closer to the top (and typically significant only in the top 1 group) and also, in the case of Sweden, that capital income has grown in overall importance over the past decades. Business income on, the other hand, accounts for only a few percentage points of total income and has been decreasing in importance.¹⁹ A particular feature in Swedish top incomes, previously studied in Roine and Waldenström (2012), is that the treatment of realized capital gains (RCGs) matters for the development of top shares. For this reason, we separate RCGs from other capital incomes.

Exactly how to treat realized capital gains is an open question (that we return to in the next subsection). On the one hand, realized capital gains should undoubtedly be included in total income (in the classical Haig-Simons income sense), on the other hand, they typically count as income only at the time of realization, regardless of the time period over which the gain has accrued. Including them also usually leads to a changed ranking of individual incomes. This can be particularly misleading when it comes to top income groups since individuals with large, one-off, capital gains may appear in the top group only when including RCGs. One way of dealing with this issue is to first rank individuals without RCGs, but then add them to the total income of these top income individuals. Doing so gives the income share including RCGs for those who are in the top even before adding them, thus avoiding inflated top shares that include those who are top earners only as a result of making a large capital gain.

This – ranking the population excluding RCGs but then including them in total income – is our preferred way of treating RCGs, and unless stated otherwise, this is how we create our top groups and their total income.²⁰ However, to study potential gender differences we will in this section sometimes also rank incomes including RCGs.

¹⁸ Before the tax reform in 1991, there were six income categories, but these can be translated so as to correspond to the three categories used after 1991 (see Section 2.1 above and Appendix B for details). Comparing to many other countries the concept of business income is much less important in Sweden since most businesses, including self-employed individuals, pay themselves wages (which thereby become labour earnings in the tax statistics). The main categories are therefore labour related earnings and capital income, with the latter being divided into capital income (mainly dividends and interest) and realized capital gains (RCGs).

¹⁹ As noted before (in footnote 18), business income is in Swedish tax law a relatively narrow concept and it should not be taken to indicate the importance of self-employment income (or small business income). Most self-employed pay themselves a wage (as most social benefits are tied to wages) and also have possibilities to pay out dividends (i.e., capital income in this context) with certain tax advantages.

²⁰ Creating top groups excluding RCGs and then adding back RCGs is done in e.g. Piketty and Saez (2003) and many other studies in the top income literature but it should also be noted that in some countries (and/or sources) RCGs are not included in income at all and in other countries RCGs cannot be separated from other capital income.

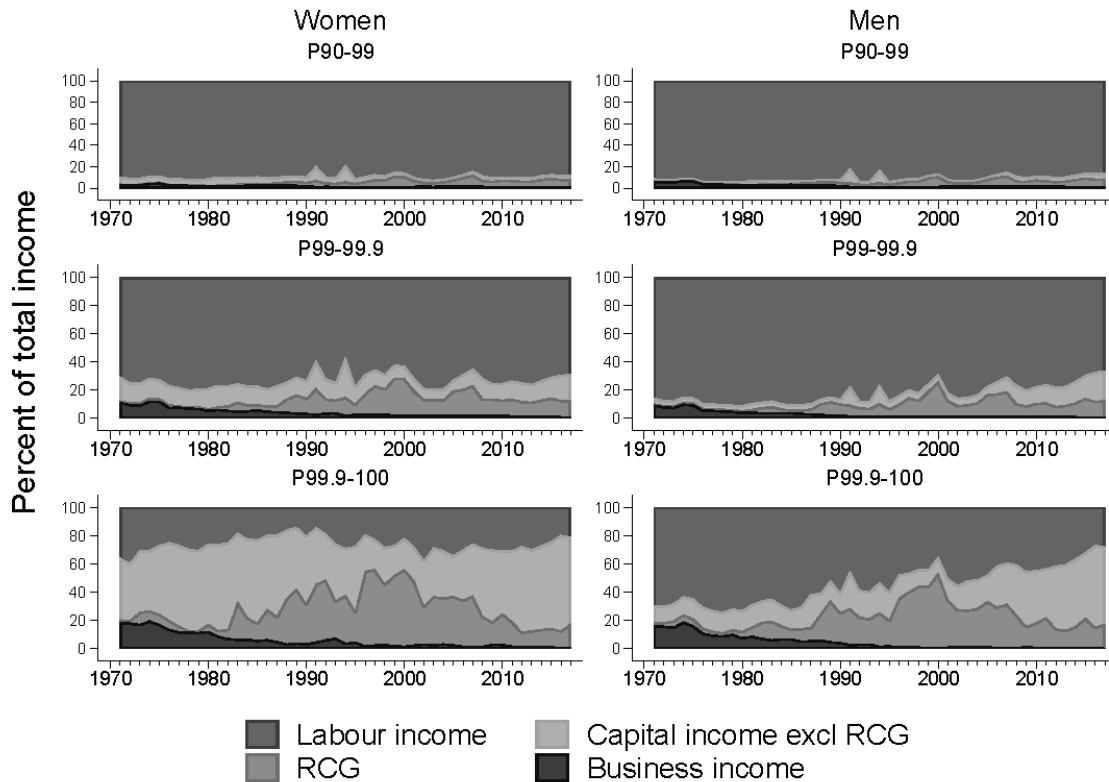


Figure 3. Income composition for P90-99 (top) and P99-99.9 (middle), and P99.9-100 (bottom), by women (left) and men (right) separately.

Starting with the income composition when ranking the population without RCGs, but then adding these, Figure 3 shows the sources of income for three top groups; the P90-99, the P99-99.9, and the top 0.1 group, for women (to the left) and men (to the right) separately. The figures show a number of interesting developments and differences between men and women. A first, well known point is that below the top 1 group, incomes mainly consist of labour income. This is true both for men and women and for the whole period, even though a closer look shows that capital incomes have grown slightly in importance, especially for men in the P90-99 group. In the top 1 group, however, capital incomes start to make up a significant part of total income, around 30 per cent in the P99-99.9 group and some 70-80 per cent in the top 0.1 group for both men and women today. Over time we see clear gender differences though. For top 1 women capital has made up a relatively constant share of total income ever since the early 1970s, around 20-30 per cent in the P99-99.9 group and 50-80 per cent in the top 0.1 group. For top 1 men, on the other hand, capital incomes were small in the 1970s and 1980s (close to zero in the P99-99.9 group and less than 20 per cent even in the top 0.1 group) but have then increased steadily since the late 1980s.²¹

The role of realized capital gains in this is important even when top incomes are ranked before adding them. In the 1990s and 2000s RCGs made up most of total capital incomes, but, interestingly, over the past decade they have been replaced by more regular capital income flows. Over the whole period, RCGs seem to be slightly more important for women.

²¹ The groups studied are of course arbitrary but have been chosen to be representative for the gradual changes we observe over the top decile; in the P90-95 labour incomes are even more dominant than in the P90-99, since capital incomes become gradually more important as we move up the distribution. But the difference becomes marked only as we move to the top 1. Similarly, capital incomes make up an even larger share in the top 0.01 per cent when compared to the top 0.1, which in turn has a larger share of capital incomes compared to the rest of the top 1.

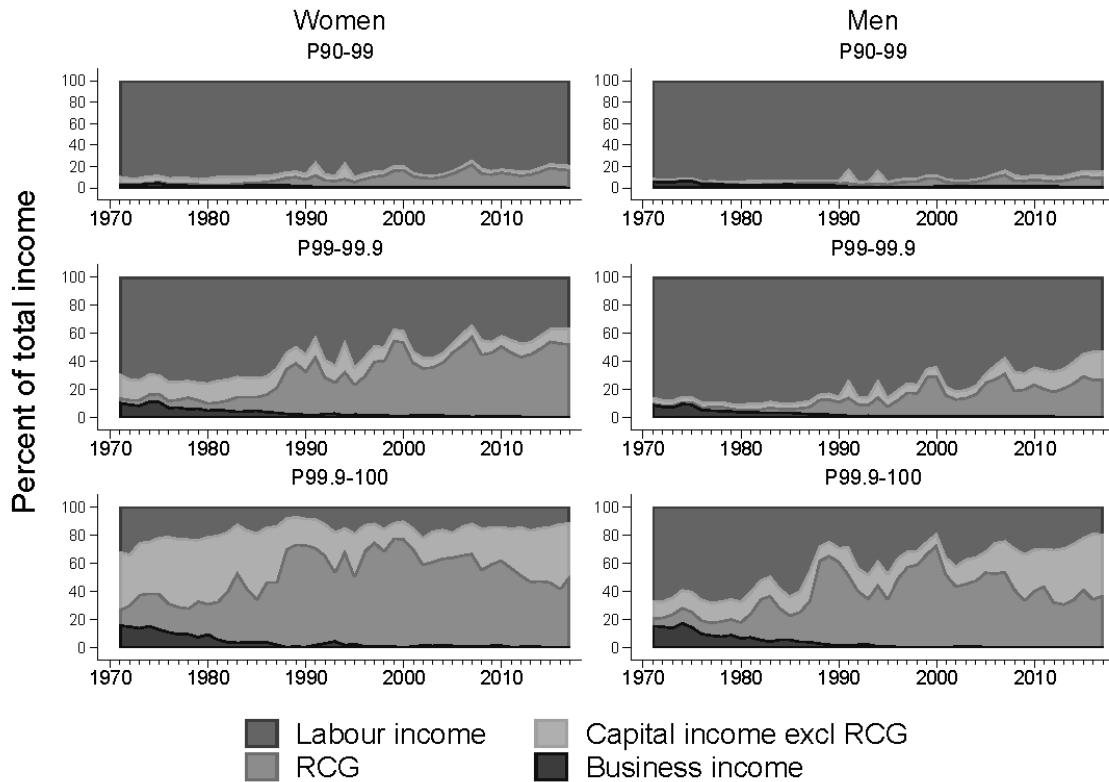


Figure 4. Income composition for P90-99 (top) and P99-99.9 (middle), and P99.9-100 (bottom), ranked including realized capital gains, by women (left) and men (right) separately.

Figure 4 shows the income composition for the same groups as in Figure 3 but now adding RCGs before ranking individuals. This, of course, leads to capital incomes becoming more important for all groups, simply because a number of individuals now qualify for the top group only as a function of their RCGs. However, this way of ranking also makes capital gains much more prominent for women. For example, in the top 1 group RCGs make up about 50 per cent of incomes for women but only about 20 per cent for men over the past decades. This indicates that appearing in the top only as a function of making a (often one-off) realization of a capital gain is more common for top income women than for top income men.

3.3. Gender differences in the role of realized capital gains

How to interpret the role of realized capital gains and gender differences in their importance is not obvious. There are two main aspects that create intertwined concerns: first, adding RCGs are likely to change the identity of who is in the top in every given period; second depending on how common this is, we will either over- or underestimate the income share of the top group (as well as the importance of capital incomes) depending on how we treat RCGs. To be explicit, it is possible that the same individuals somehow manage to make large realized capital gains year after year, and that the “true” top income group therefore actually consists of the those with the highest income after including RCGs. If this is the case, it is correct both to rank individuals after including RCGs and also to include RCGs in total income. However, more likely is that large RCGs for most individuals are realizations of accumulated gains that happen less frequently. If this is the case, we may choose to disregard RCGs completely, trusting that these kinds of incomes are relatively evenly spread out in the population and do not have a large impact on our estimated income shares (or on the gender composition).

Alternatively, we can first rank individual incomes without RCGs, and then add them to total income (our preferred way of treating them). Depending on the nature of RCGs each way creates estimates which over- or understate their role, and to the extent that RCGs are systematically different between men and women, this has different impacts on our understanding of women in top incomes.

To get a better sense of how important gender differences in RCGs are and what causes them, we compare the impact of the different ways of treating them when calculating income shares averaged over different time periods. The logic is straightforward: if the income share of a top group when including RCGs before ranking is similar to that when ranking without RCGs but then adding them back, this suggests that RCGs are mainly “topping-up” income for those who are in the top even without them. If, on the other hand, income shares are very different depending on whether RCGs are included before ranking or not, this suggests that more of RCG income goes to individuals who are not in the top without them. When doing this, but averaging incomes over several years we can also see these patterns in “long run” income shares.

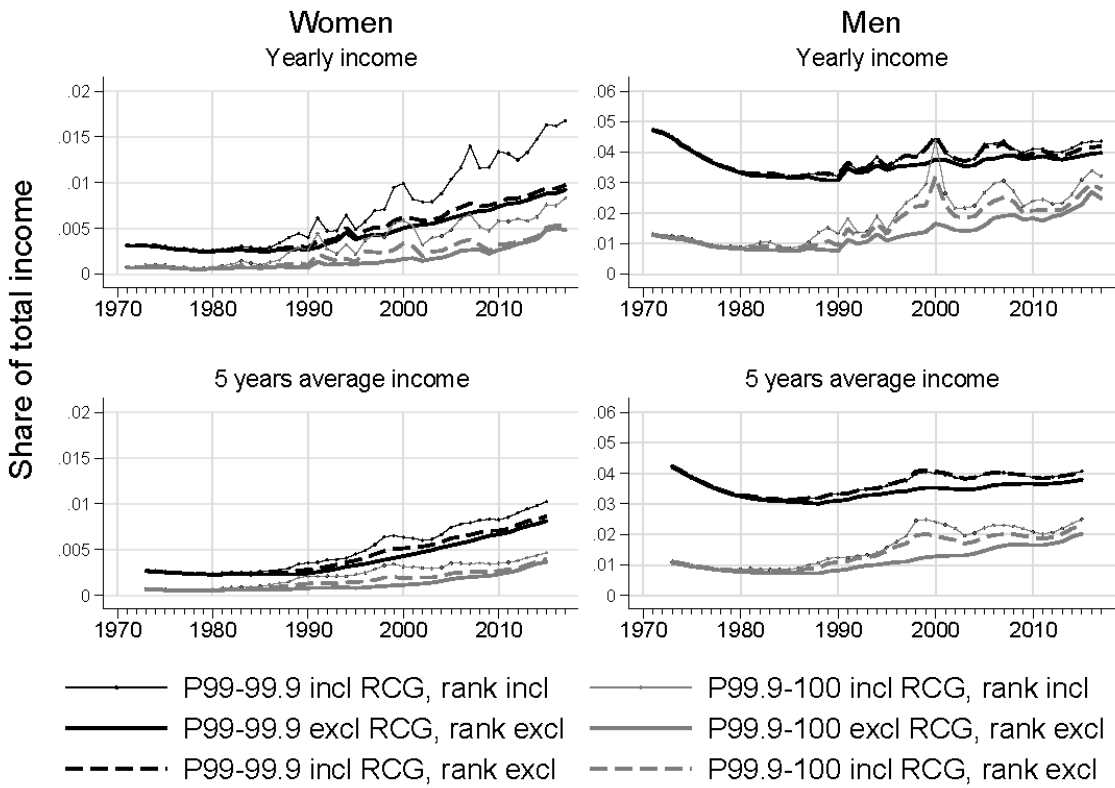


Figure 5. Income shares for P99-99.9 and P99.9-100 women and men respectively with different treatment of RCGs, yearly incomes (top) and long run, 5 years average, income (bottom).

Figure 5 shows results of this exercise for top 1 women (left) and men (right) respectively, first for yearly incomes (top panels), and then for the top 1 group defined as those with the highest incomes over 5 years moving average windows (bottom panels). In both cases, we also split the top 1 group into P99-99.9 and P99.9-100 to see if effects are different within the top 1 group.

The figure shows an interesting general difference between women and men. For top income men, RCGs for the most part top-up already high incomes. The income share for men, when first excluding RCGs when ranking and then adding them, is very similar to that of the top group when including RCGs before ranking, indicating that most of RCGs to top income men go to men who already qualify for the top without them. For women, on the other hand, the income share increases significantly when

adding RCGs before ranking, suggesting that much of women's RCGs go to women who would not be in the top group without them. This is true both for yearly and 5-year average incomes, as well as for the P99-99.9 group and the P99.9-100 group.²² Also for the most recent years, we see the potential importance how RCGs are added. In the top left panel, we see that women in the P99-99.9 group have more than 1.5 per cent of all income if we rank everyone including RCGs. But most of this really goes to women who are not part of this group without RCGs. The "true" top income women in this group only have about 1 per cent of all income.

To understand what drives these patterns in more detail, we further distinguish between financial capital gains and real capital gains, something that is possible starting in 2005 using the Register over Capital Gains and Capital Losses (*Registret över kapitalvinster och kapitalförluster*). Comparing the composition of RCGs for top groups when ranking incomes, first, excluding RCGs and, second, including RCGs, shows that financial capital gains make up most of the gains in the former top groups, but the reverse is true for the second way of ranking. This indicates, as one might have expected, that those who do not appear in the top group without RCGs get there based on sales of real assets, most likely housing. In contrast, the additional income earned by those who already are in the top group excluding RCGs is mainly related to sales of financial assets. When doing this comparison for men and women separately women turn out to have a larger share of real asset sales. This is true for both ways of ranking but especially clear when ranking incomes including RCGs; for example, for women in the P99-99.9 group ranked without RCGs, real asset sales make up around 20 per cent of all RCGs, but when ranking incomes including RCGs, real asset sales make up between 70 and 80 per cent. The corresponding figures for men in these groups are from around 20 per cent to between 50-60 per cent.²³ But the main gender difference comes from combining these results with the finding in *Figure 5*. Both men and women display different profiles in terms of real versus financial RCGs depending on if the ranking is done before or after adding RCGs. But when comparing men and women who are in the top group without RCGs, adding them increases men's income share more than for women.

Overall, the analysis of realized capital gains shows that there are clear gender differences in their importance. In particular, creating top groups including RCGs before ranking tends to increase the share of women in top groups as well as their income share since women are more likely to appear in the top only as a function of realizing (large) capital gains, typically related to selling real assets (most likely housing). This does not, of course, mean that top income women have more realized capital gains in an absolute sense. The more plausible interpretation is that real assets are more evenly owned than financial assets and also relatively more often by women who only become "top earners" at the time when these assets are sold. Top income men who make realized capital gains, on the other hand, are more often already in the top group and for them the RCGs become an additional source, increasing their income share. In the remainder of the paper we focus on the top 1 men and women when ranking excluding RCGs (and adding RCGs afterwards) since these as more permanent members of the top 1.

²² As a result of this, one would also expect to find a larger share of women in the top groups when adding RCGs before ranking the population. This turns out to be true; when first adding RCGs to individual incomes, and then ranking the population, the share of women in top groups increases. The magnitude is quite important. For the top 1 group, for example, the share of women increases by some 5-6 percentage points in recent years when adding RCGs before ranking. The share of women in the top would appear to be about 28 per cent in 2017, rather than the 22 per cent shown in *Figure 2* above. Appendix *Figure C1* shows the share of women when adding RCGs before ranking for the whole period.

²³ The pattern is present in the whole of the top group with financial assets generally being more important higher up in the distribution – Appendix *Figures C2* and *C3* for the different rankings for the P99-99.9 and P99.9-100 groups.

3.4. Gender differences in top income mobility

The analysis above shows that women to a larger extent than men appear in the top of the distribution only as a function of making realized capital gains, but what about mobility in general? Are women more likely to fall out of the top group when we exclude realized capital gains? And if so, to where in the distribution do they move, and how has this changed over time?

Figure 6 shows observed transitions over a five-year period for top 1 women and men respectively (top 1 ranked excluding RCGs), divided into those in the P99-99.9 group and those in the top 0.1 group. More precisely, for every year, the figure indicates wherein the distribution of total income (excl RCGs) an individual is found five years later.²⁴ The top panels show that, for those in the P99-99.9 group, most remain in that same group or move down to the P90-99 group. Seen over the whole period women are somewhat more likely to move down (and also a little more likely to move down to the P0-90 group), but these differences have become very small in recent years. There is no obvious time trend, if anything a slight increase in mobility for men, in the sense that more men in the top group move down today as compared to the 1970s.

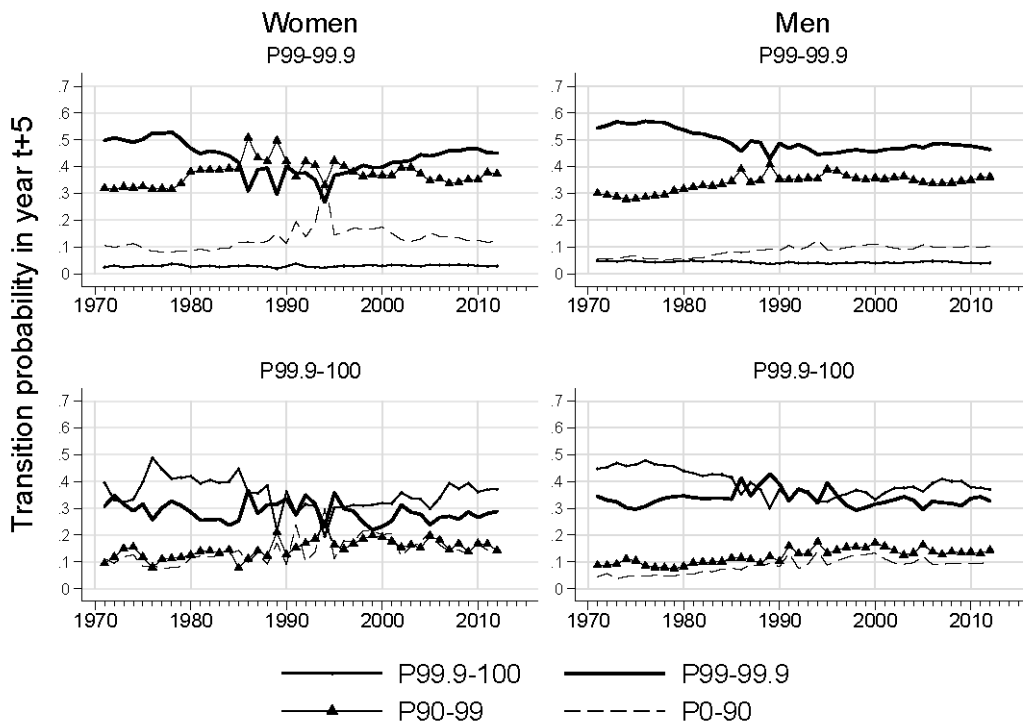


Figure 6. Transition probabilities, five-year windows, out of the P99-99.9 and P99.9-100 groups of the distribution excluding RCGs, for women and men, 1971-2010.

The pattern in the very top 0.1 group is qualitatively similar with the share of those moving down being slightly larger. Gender differences are similar to those in the P99-99.9 group with women being slightly more likely to move down but with this gender difference being very small in recent years.²⁵

²⁴ The final year becomes 2012 since this is the last year for which we can form top groups for which we know where they are five years later (2017 is our final year of data). We think of these as transition probabilities but there is, of course nothing probabilistic in the creation of these data. We simply observe where everyone who was in a certain group in a given year appears five years later (given that they are still in our data).

²⁵ If we were to look at the transition probabilities including realized capital gains before ranking the drop in the likelihood of remaining in the top 1 would decrease much more dramatically over time, especially for women. This, of course, reflects the fact that many women (and more women than men) appear in the top only when including realized capital gains. Parallel to the increasing importance of realized capital gains since the late 1980s, the likelihood of women staying in the top 1 (including RCGs) falls from around 0.7 to between 0.3-0.4, that is much lower than the slight fall shown in Figure 6. For

The patterns and time trends are similar to the results for year-to-year transitions: women are a little less likely than men to stay in the top1 (but of course, more individuals stay in the group where they start from one year to next as compared to five years on). Qualitatively results are also similar when doing a similar exercise but for “long run income” creating top groups based on 5-year average incomes; see *Appendix Figures C4* and *C5*.

Guvenen et al. (2014) look at gender differences in mobility in the same way but for earnings in the US. Comparing to their results our gender mobility differences are similar in the sense that women are more likely to “fall out” of the top groups. However, the gender differences are smaller in Sweden and have been much more constant over time. Also, if anything the trend in our data is slightly towards higher mobility over time, while the US earnings mobility seems to have decreased both for men and women.

3.5. Gender differences in the wealth of top income earners

Given the importance of gender differences in various forms of capital-related incomes shown in Subsections 3.2 and 3.3 above, a natural next step is to consider gender differences in wealth. Since a wealth tax has existed in the Swedish income tax system from 1910 until 2007, with its modern form introduced in 1947, we have information on taxable wealth for most of the period we study.²⁶ These data are, however, far from ideal both in terms of coverage and in terms of asset valuations (see e.g. Roine and Waldenström, 2009). Even if the aim of the wealth tax always was to comprehensively tax total net worth (that is, the sum of real and financial assets minus debt) exactly what was included and, in particular, how it was valued has shifted over time, with adjustments being made at times when it was felt that tax values had diverged too much from actual market values. This means that taxable wealth amounts in the data are typically different from market values and not comparable over time. The period 1999-2007, when there is data from the Swedish Wealth Register, is an exception. In these years an effort was made to cover individual wealth holdings, valued at market prices for the full population.

But even though many aspects of data are problematic, there are some statistics which are likely to be less sensitive to these shortcomings. For example, calculating the share of women in different top groups of the wealth distribution is less sensitive to the changes in valuation and coverage. *Figure 8* shows the share of women in the top 1 group of the wealth distribution, divided into the three subgroups P99-99.9, P99.9-99.99, and P99.99-100. For the period when data are also available from the Wealth Register – which is likely to contain more reliable figures – these are also included (revealing important differences but still an indication that estimates are not wildly diverging in this period).

Two main things stand out from this figure. First, the share of women in the top of the wealth distribution is higher than in the income distribution. For all groups, and throughout the period, women make up between 25 and 40 per cent of the top of the wealth distribution (with the lower range being for the extreme top group, P99.99-100). The second thing is that there is no clear time trend in

men, the likelihood of leaving the top 1 group is also larger when including RCGs but the difference is not as large as for women, in line with our results in the previous section that RCGs to a larger extent go to men who are in the top group even without capital gains.

²⁶ In 1947 a separate tax on the wealth was introduced. Before this wealth was taxed by adding first 1/60, later 1/100, of net wealth to individual income. Many types of wealth, in particular, many forms of pension wealth and life insurance were never included. Married couples and cohabiting partners with (own) children were taxed jointly in the wealth tax regime that existed up until 2007. But wealth holdings are still *registered* to individual people and these registered owners are either men or women. These data form the bases for dividing wealth by gender. See Appendix A for details.

this representation. The data show a slight increase between 1970 and 1990 followed by a slight decrease thereafter, but nothing close to the clear increase over time that we see in the top of the income distribution.

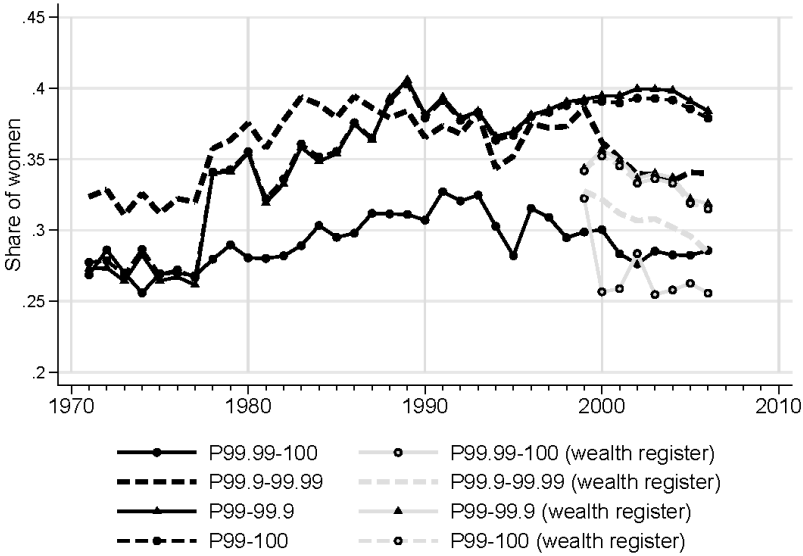


Figure 8. Share of women in top groups of the wealth distribution using income tax register data wealth register data respectively, 1971-2007.

Another way of looking at gender differences in wealth, which is also likely to be less sensitive to all the problems in wealth tax data, is to look at the *ratio* of wealth between top income women and men. As long as the wealth tax data is a proxy for underlying actual wealth, and the problems with coverage and valuation are not systematically different between men and women, the *wealth ratio* captures changes in the relative importance of wealth between women and men over time. Figure 9 shows the ratio of average wealth held by women in the P99-99.9 group and the P99.9-100 group in the *income* distribution divided by the average wealth held by men in these same top income groups.²⁷

This figure shows that top income women are on average wealthier than men, but also that the ratio has fallen significantly over time. Again, using data from the Wealth Register for the years when both sources are available, we see that despite its shortcomings wealth tax data used in this way seems relatively reliable. The main reason for this development is (as we will see in the next section) that the composition of women in the top group has changed as women rely more on labour income, but do not necessarily belong to the top of the wealth distribution.²⁸ Overall, this results in a decreased difference between top income women and men in terms of their wealth.

²⁷ It should be noted that a large part of top income individuals reports zero net wealth (typically because they have wealth below the tax threshold). The average we calculate includes these individuals since we sum all wealth held by top income women and men respectively and divide by the total number of top income women and men. Again, this means that the averages can change due to changes for the representative individual as well as due to changes in the composition.

²⁸ Looking within the groups of married top income men and married top income women, they on average own more wealth than their partner, but their share of joint wealth has decreased over time.

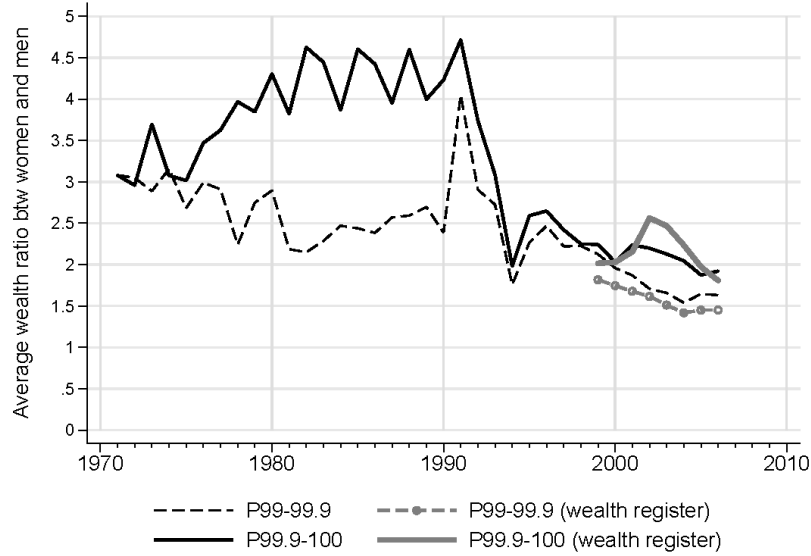


Figure 9. Ratio of average wealth held by top income women to average wealth of top income men, 1971-2007 (last year when data are available).

4. Decomposing top incomes by gender

In the previous section, we documented a gradual and substantial increase of women in top income groups since 1971 as well as differences in income composition between men and women who occupy a place in the top. We have also documented differences in the importance and nature of realized capital gains and wealth holdings between top income men and women. The overall picture that emerges is that capital incomes in various forms have been more important for top income women but also that the gender difference in this respect have decreased and close to disappeared over time.

The changes have taken place over a period when overall top income shares have increased and the balance between labour earnings and capital incomes has also shifted in the direction of capital incomes becoming increasingly important. This raises questions about the relative importance of these various shifts in terms of explaining the increase in women's share of top incomes. Is it the case that the increased top income share going to women is due to women increasingly being among top earners in the labour market? Or is the increased representation of women in top groups mostly a reflection of capital incomes, which make up a larger share of top income women's total, becoming relatively more important over time? To answer such questions more formally we extend the classic factor decomposition in Meade (1964) by attributing the change in the top income share to its different parts and, in particular, by adding a gender split of the top income shares.

Starting first with a non-gendered representation of the income share of a top group; let q represent the proportion of total income (in the whole population) paid as labour income and $(1 - q)$ the proportion paid as capital income. Then, in period t , if the proportion of labour income going to group i , is given by $a_{i,t}$, and the proportion of capital income going to group i is given by $b_{i,t}$, the total income share, s , of a group i is

$$s_{i,t} = a_{i,t} q + b_{i,t} (1 - q).$$

To be explicit, if i is the top one group and their share of labour income is 5 per cent and their share of capital income is 20 per cent, and the proportions between labour and capital in the economy are such

that labour income constitutes 90 per cent, and capital 10 per cent, then the top group's income share will be $0.05 \times 0.9 + 0.2 \times 0.1 = 0.065$. Now, if this were to change so that the proportions of labour and capital in total income shift such that labour becomes 80 per cent and capital 20 per cent, but the top group keeps their respective shares, this would increase their total income share to 8 per cent. But, if instead, labour becomes more important, say the labour share increases to 95 per cent, then the top group's income share instead drops to 0.0575.²⁹

But over time it is, of course, not only q that may change but also a_i and b_i . Simply inserting new values of the respective variables one at a time does not give a correct picture of the relative contribution of each change since they enter multiplicatively. To decompose the total change in s_i (dropping the group-specific subscript) we instead express the change between periods t and $t+1$ as follows:

$$\Delta s = s_{t+1} - s_t = (a_{t+1} - a_t)q_t + (b_{t+1} - b_t)(1 - q_t) + (a_{t+1} - b_{t+1})(q_{t+1} - q_t).$$

This expression has an interpretation that distinguishes the contribution of changes in a_i , b_i , and q . The first term is the contribution from changes in the share of labour income, the second is the change in the share of capital income, and the third is the contribution from a change in the balance between labour and capital.

Now, we want to extend this decomposition to distinguish between women and men in the top group(s). Since they make up additive parts of the top group we can simply split s_i into a part s_i^w being the share earned by women and a part s_i^m earned by men, i.e.,

$$s_i^w + s_i^m = a_i^w q + b_i^w (1 - q) + a_i^m q + b_i^m (1 - q) = (a_i^w + a_i^m)q + (b_i^w + b_i^m)(1 - q)$$

Just as for the decomposition above, we can (again dropping the group subscript i) decompose the change between t and $t+1$ as:

$$\begin{aligned} \Delta s &= (s_{t+1}^w - s_t^w) + (s_{t+1}^m - s_t^m) = \\ &= (a_{t+1}^w - a_t^w)q_t + (b_{t+1}^w - b_t^w)(1 - q_t) + (a_{t+1}^w - b_{t+1}^w)(q_{t+1} - q_t) + \\ &\quad + (a_{t+1}^m - a_t^m)q_t + (b_{t+1}^m - b_t^m)(1 - q_t) + (a_{t+1}^m - b_{t+1}^m)(q_{t+1} - q_t) \end{aligned}$$

The expression has the same straight forward interpretation as the decomposition for the non-gendered version above. Between periods, a and b may changes differently for men and women, contributing differently to the total change, and in addition, the changes in q also change the shares of men and women differently depending on the level difference between a and b for men and women, respectively.

Applying this decomposition to our data reveals some striking facts about the drivers of the changing top income share and its gender dimension over the period 1971-2017. Table 1 shows the decomposition for the total change in a_i , b_i , and q , with i being the P99-99.9 and P99.9-100 groups, together with the same decomposition for men and women separately. The table also shows the change

²⁹ These kinds of thought experiments are exactly the same as those made in Meade (1964), p. 27-30.

for the whole period as well as for two subperiods, the first 1971-1985 being a period of decreasing top income shares, the second, 1985-2017, being a period over which top shares have increased.³⁰

Top group	Total change in top group's income share, s_i (in percentage points)		Contribution from change in labour income share (a _i)		Contribution from change in capital income share (b _i)		Contribution from change in relative importance between capital and labour (q)	
	of which change in share to top group women (p.p.)	of which change in share to top group men (p.p.)	Contribution from change in womens' labour income share (a _w)	Contribution from change in mens' labour income share (a _m)	Contribution from change in womens' capital income share (b _w)	Contribution from change in mens' capital income share (b _m)	Contribution from change in p (given a _w and b _w in t+1)	Contribution from change in p (given a _m and b _m in t+1)
	<u>Over the whole period 1971-2017</u>							
P99-99.9	+0.13		-0.93		+0.17		+0.89	
	+0.66	-0.53	+0.49	-1.42	+0.02	+0.15	+0.15	+0.74
P99.9-100	+1.95		-0.17		+0.44		+1.68	
	+0.47	+1.48	+0.09	-0.26	+0.08	+0.36	+0.30	+1.38
	<u>1971-1985 (period of decreasing top shares)</u>							
P99-99.9	-1.58		-1.47		-0.13		+0.02	
	-0.06	-1.52	-0.04	-1.43	-0.02	-0.11	+0.01	+0.01
P99.9-100	-0.48		-0.48		-0.06		+0.06	
	+0.00	-0.48	-0.02	-0.46	+0.01	-0.07	+0.04	+0.02
	<u>1985-2017 (period of increasing top shares)</u>							
P99-99.9	+1.70		+0.53		+0.41		+0.76	
	+0.72	+0.98	+0.52	+0.01	+0.06	+0.35	+0.13	+0.63
P99.9-100	+2.43		+0.30		+0.69		+1.43	
	+0.47	+1.96	+0.10	+0.20	+0.11	+0.58	+0.25	+1.18

Table 1. Decomposing the change in top shares between men and women, attributing the shifts to changes in labour shares, capital shares, as well as to shifting relative importance of capital and labour in total income.

Looking over the whole period (the two top lines in the table), the overall gain in income share for the top groups is, in fact, composed of a negative contribution from a decreasing share in the labour income distribution, compensated by gains in the capital income distribution and, in particular, by capital income becoming more important overall. But, looking at the gender composition, we see that the overall decreasing share in the labour income distribution, is made up of opposing effects; a positive change for women, and a (larger) negative change for men. Over the whole period top income women, as a group, have gained shares in the labour income distribution, while men, as a group, have lost out. Looking at the sub-periods, the loss in labour income shares in 1971-1985 is almost entirely incurred by men, while most of the gains in the period 1985-2017 go to the group of women. To exemplify, between 1985 and 2017 the P99-99.9 group increase their share of labour income by 0.53 percentage points, out of these women make up 0.52 percentage points.

³⁰ The exact year which divides the whole period according to top shares being first decreasing and then increasing depends on exactly which top group one looks at but, in general, the beginning of the 1980s is indeed the time when top shares are at their lowest. None of our results are qualitatively changed by the exact choice of year.

Looking at changes of top earners in the capital income distribution, these are generally positive, but more interestingly, the table also shows that the biggest contributor to increasing top shares overall is the changing balance between labour and capital income. This is due to the extremely skewed distribution of capital incomes; as the top 1 group earns 35 per cent of all capital income in 2017, the shift from capital incomes being a mere 3.1 per cent of all income in 1971, to being 11.5 per cent in 2017, accounts for more than 100 per cent of the increased income share of the top group (as it also compensates for the loss in the labour income distribution).

But another way of using the decomposition above can illustrate how little of the rising income share for women comes from capital becoming more important over time, even though top income women on average rely more on capital incomes.³¹ By fixing the income shares for a top group, that is a_w , a_m , b_w , and b_m , to their values in the beginning of the period, we can change the balance between capital and labour, that is q , to get counterfactual income shares for men and women that would result only from changing q . We can of course do the opposite too and fix q at its 1971 value (when capital incomes were much less important) and change a_w , a_m , b_w , and b_m according to what we observe in the data, as well as fixing the respective components in 2017. *Figure 10* shows the results of such counterfactuals together with the actual developments.

The results from this exercise show very clearly that the main reason for the increasing share of top incomes going to women is their increasing share in the top of the labour income distribution. This is especially clear for the P99-99.9 group (to the left); if women would have kept their 1971 shares in the distribution of capital and labour respectively, they would only have increased their share marginally (from about 6 to 8 per cent) thanks to the shift toward capital becoming more important. If, on the other hand, women would have started in 1971 with the shares they have today in the distribution of capital and labour respectively, they would have earned close to 20 per cent of the groups' income already in 2017 and the shift toward capital becoming more important would not have altered this share at all. The cases where a_w , a_m , b_w , and b_m change according to actual developments, but keeping q fixed at either the 1971 or the 2017 value, relatively closely follows what actually has happened (with the share of women being slightly higher in the 1970s with today more capital-intensive income composition). The picture is qualitatively the same also in the P99.9-100 group, with the predictable difference that the impact of capital being more important would have had a greater impact on the share of women in the 1970s and 1980s.

³¹ This should not be confused with the impact that the changing balance between labour and capital has had on the top income share overall. This has been important and has increased the top income share significantly (as could be seen in *Table 1*). But it has not been a major contributor to the shifting balance between men and women in the top.

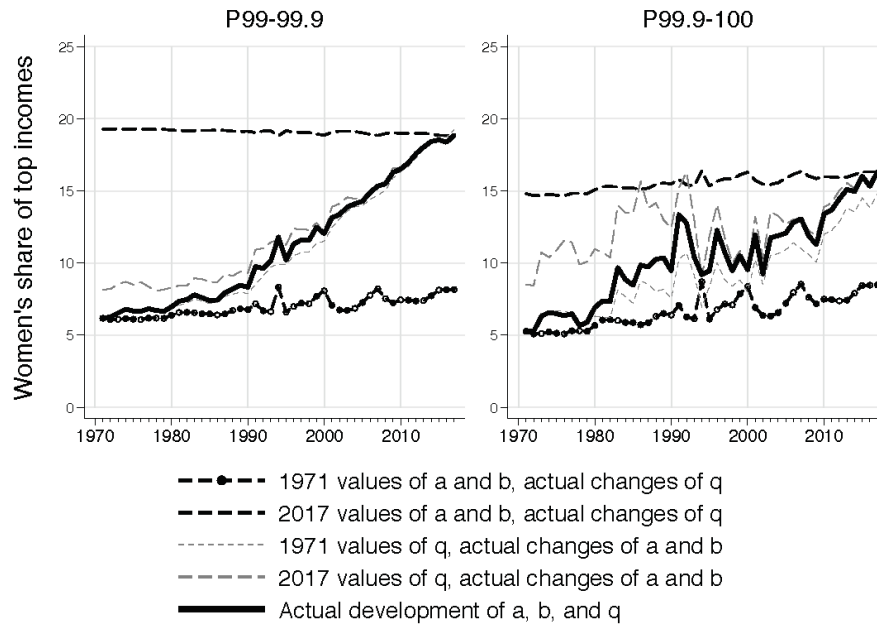


Figure 10. Women's share of top incomes for different counterfactual developments of a_i , b_i , and q .

So far, the above decompositions have treated men and women as groups, earning different shares of labour and capital incomes to make up a total that places them in a certain top income bracket. This does not explicitly explain what has happened to the shares of the average women (or man) as their numbers change, since, in principle, the number of women could be unchanged while their share of income could go up or down.

An illustrative way to show what actually happens over time to relative incomes of the average man and women, respectively, is to weight the changing shares in the respective distributions by the actual shares of women and men (based on their numbers) in the respective top groups. This gives capital and labour incomes for men and women in top income groups in multiples of average incomes. To exemplify, again by using the actual values in 2017, as the top 1 group earns 35 per cent of all capital income, an average person in the group earns 35 times the average capital income ($0.35/0.01=35$). Now, the capital share of women in the top 1 group, b_{99-100}^w , is 6 per cent and the share of women in the top 1 group in 2017 is 19 per cent. This means that the average women in the group earn $0.06/(0.19 \times 0.01)=31.6$ times the average capital income, while the corresponding calculation for men becomes $0.29/(0.81 \times 0.01)=35.8$ times the average capital. Since we can calculate the income shares of top group i women and men in the labour and capital income distributions respectively, that is $a_{i,t}^w, b_{i,t}^w, a_{i,t}^m, b_{i,t}^m$, as well as the changing shares of women in each top group we can calculate the changing composition of their incomes (in multiples of the population average) for any group over the period 1971-2017. Figure 10 shows the result for men and women in the P99-99.9 and P99.9-100 groups.

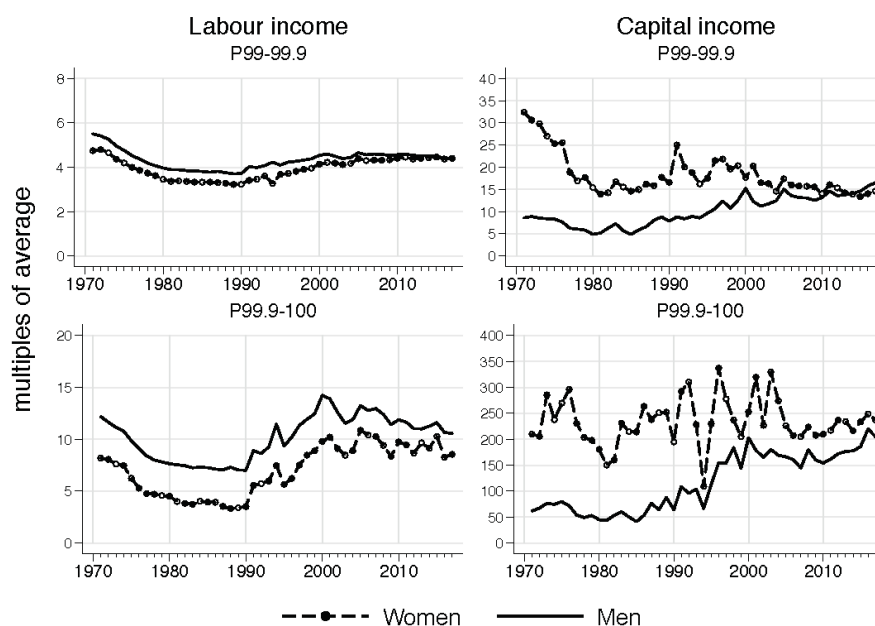


Figure 11. Labour and capital incomes as multiples of population averages for men and women in P99-99.9 and P99.9-100, 1971-2017.

The figures show several interesting differences between men and women and, in particular, some dramatic changes over time. Looking first at the top groups' labour incomes we see that in multiples of the average income, a man in the P99-99.9 group earned about 5.5 times the average labour income at the beginning of the 1970s. This number fell to below 4 in the 1980s but has since recovered and plateaued at around 4.5 since the late 1990s. Throughout the period women in this group have earned less in terms of labour income until very recently when the series have converged. In the P99.9-100 group, the pattern is similar but with a larger difference between men and women and without complete convergence, though the gender difference has shrunk. The lower labour income values for women have been compensated by higher capital incomes. An average P99-99.9 woman had more than 30 times the average capital income in the early 1970s, as compared to the average man in this group who had less than 10 times the average capital income. Over time, as women have become more numerous in the top group, the average capital income for women has fallen but it has increased for men. Today the series have converged with both men and women having around 15 times the average capital income in the P99-99.9 group. Again, the pattern is similar in the P99.9-100 group, with the interesting difference that the average women in the group display no clear drop in capital income, but remain around 200 times the average over the whole period (but with large fluctuations). Men in this group, on the other hand, have increased their capital income in relation to the average. The rise is dramatic from being around 50 times until the late 1980s but then increasing up to around 200 times today.

5. Who are the women in the top 1 group?

So far, we have looked at differences between men and women in terms of income shares and income composition. We now turn to questions about who these top income women (and men) are in terms of observable characteristics. Are top women typically young or old, more or less educated, married or single? How do top women compare to top income men in these respects and how has this changed over time?

The interpretation, of these characteristics of top income earners, should be done carefully since many things change simultaneously over time. Since the share of women grows over time, what we observe is potentially a mix of changing characteristics of the average top income women and changes caused by the addition of women with different characteristics than women who previously made up the top group.³² In addition, there are, of course, overall societal changes such as the population becoming older, more educated, more often divorced, that introduce trends in the overall development. Keeping this in mind, we will examine who the top women are in terms of their observable characteristics relative to men, and how this has changed since the 1970s.

5.1. Gender differences in education, age and marital status of top income earners

Looking first at education, top income women are on average more educated compared to men (as is the case for women in the overall population).³³ In terms of trends, the share of top income earners with university education have increased while those with lower education have decreased. For men, however, this is only true below the very top (in the P90-99 groups). In the P99-99.9 and P99.9-100 groups, men maintain very similar educational pattern since the beginning of the 1990s, and there is no increase in the share of men with tertiary education in these groups – see Appendix *Figure C7* for more details. Moreover, the shares of top men within the most prestigious fields of education have been remarkably stable, while over time top women with tertiary education increasingly have a business major.³⁴

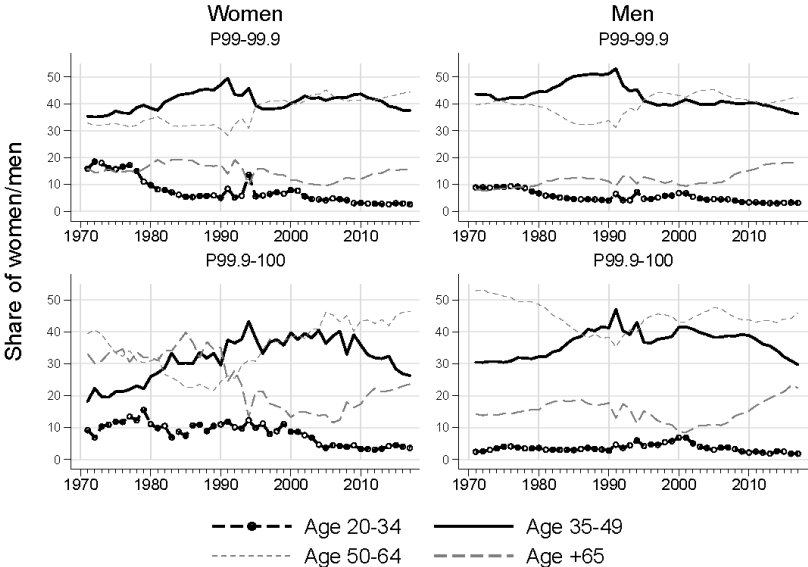


Figure 12. Age composition of women and men in the P99-99.9 and P99.9-100 groups respectively, 1971-2017.

³² To illustrate using a trivial example: if 10 per cent of the top group in period t consists of women who are all 50 years old, a change between t and $t+1$ where the share of women grows to 15 per cent and the average age falls to 45, is compatible with both 10 per cent of the top group still being the previously 50 years old women plus a 5 per cent addition of younger women, as well as all top women now being “new”, on average, 45 years old women replacing them, and any number of combinations in between. The same is of course true for the interpretation of the mirror image of what happens to the composition of men in the top as more women enter the top group.

³³ Note that the education data starts in 1991 and is from the LISA database.

³⁴ Appendix *Figure C8* shows the share of top men and women (in the P90-99, P99-99.9 and P99.9-100 groups) having a major in business, law, engineering and medicine – the prestigious education traditionally leading to top positions and high income.

When it comes to age, women and men in the top are most likely in mid or late stages of work-life, with a tendency over time toward a higher probability of being in later stages of their careers, in particular for women. Looking first at the age distribution in the P99-99.9 group (the top panels of *Figure 12*) the share of women being 50-64 has gone up while fewer top women are young and fewer are also above 65. For men, instead, the share of top income pensioners has increased slightly while the share of young top income men has fallen slightly. This pattern is most likely a consequence of a changed gender composition with more highly paid women, in the later stages of their careers entering the top group.

In the P99.9-100 group over time, men and women have become much more similar in terms of age. Today there are less young women (aged 20-34) and more middle-aged women (34-49; 50-64) than previously. For men the age patterns are somewhat different in that there are more +65 men today than previously.

Looking at the marital status for women and men in our two top groups in *Figure 13*, we observe relatively large differences between genders.³⁵ Over the whole period, roughly half of the top women are married with a slightly increasing trend over time, especially in the P99.9-100 group of top women. The share of single and divorced women has remained roughly the same, but the share of widows has shrunk to less than one third in 2017 from the 1970s. For men, on the other hand, about 75 per cent are married today in both P99-99.9 and P99.9-100 groups, but this is a decrease from around 90 per cent in the 1970s. While the share of widowers has remained roughly constant over time, the share of single men has tripled and there is also a sizeable increase in the share of divorced men.

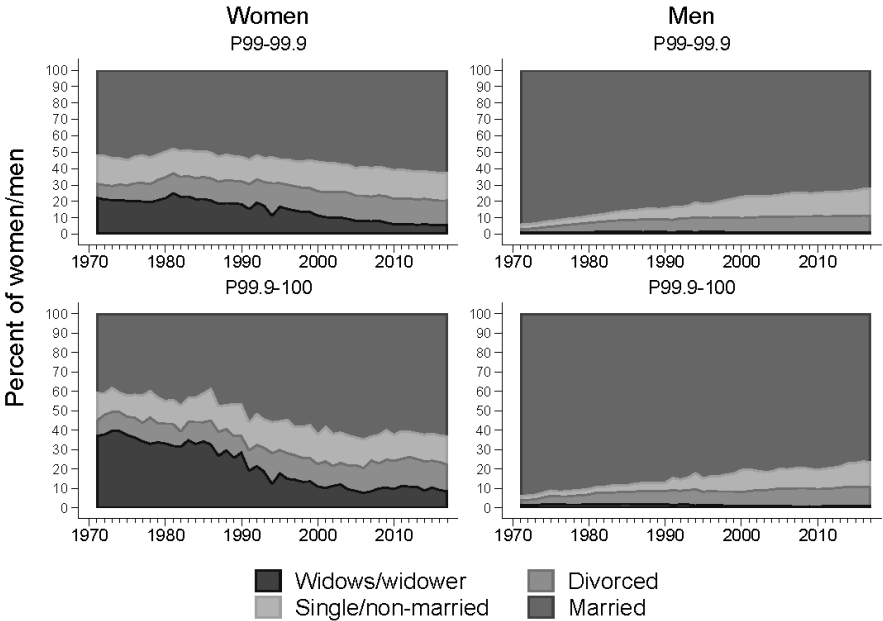


Figure 13. Marital status of women and men in the P99-99.9 and P99.9-100 groups respectively, 1971-2017.

³⁵ Swedish register data allow us to differentiate between married individuals, widows/widowers, divorced and the rest being either singles or co-habiting. This implies for instance that cohabiting couples (that are not married) with children are either classified as non-married or divorced if they have been married previously.

5.2. Gender differences in partnerships

One gender difference between top income men and women, in addition to marital status discussed above, lies in whom they partner with. Our data allow us to connect individuals that form couples to study their respective educations and incomes. Again, it is important to recall that this is a changing subset of everyone in the top since both the gender composition of the group as well as the share of top income men and women who are married change over time.

The education levels of top income women's and top income men's partners have increased, in the sense of more partners – especially to top income men – having tertiary education (see Appendix *Figure C9*). Furthermore, the top income men with tertiary education are considerably more likely to have a partner with tertiary education. The share of top income women with tertiary education marrying a man with tertiary education is, however, rather constant since the beginning of the 1990s – see Appendix *Figure C10*. These trends are in line with the fact that the share of women with higher education in the population has continued to increase, while the share of men with higher education has stalled in Sweden.³⁶

Turning to the incomes of partners to top men and women, *Figure 14* shows this development over time for our two top groups. Looking first at the income characteristics of partners of top income-men, we see that almost 80 per cent of them belonged to the lower part of the distribution (P0-60) in 1971 in both the P99-99.9 and P99.9-100 groups. Over time, these shares gradually decrease as low-income partners, to some extent, are replaced by those in the P60-90 group. But still today, the vast majority of top income men (who are married) have a partner with an income below P90, and, strikingly, almost none of the top income men have partners who are in their top group.³⁷

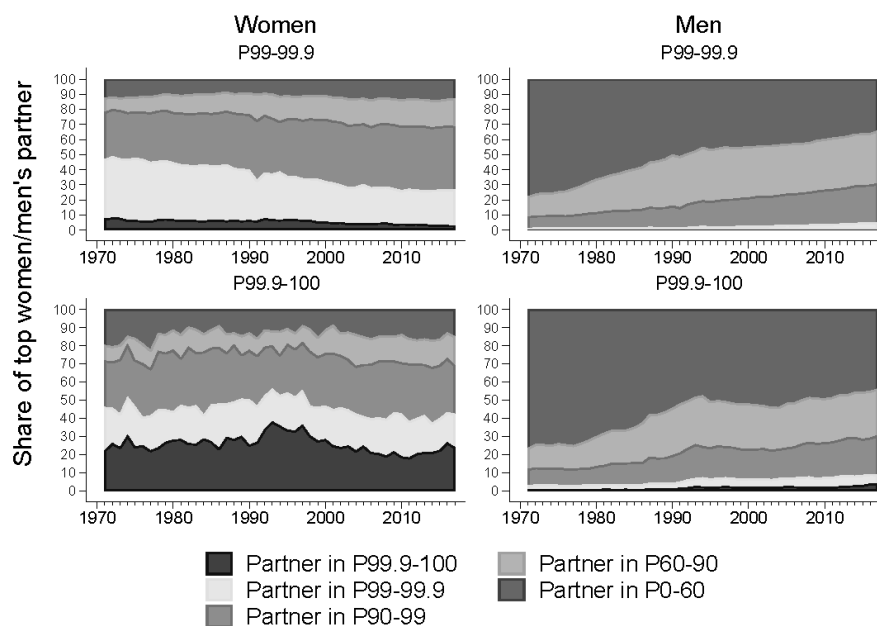


Figure 14. Income group of top women's partners (left) and of top men's partners (right), 1971-2017.

³⁶ Boschini et al (2011) shows that educational assortative mating among the highly educated decreases over time in Sweden, which is in line with the results for Denmark, Norway and other countries in Eike et al (2018).

³⁷ Obviously, part of the asymmetry is a result of top groups being uneven in numbers; even if all top men and women wanted to marry in their income group there would not be enough women to go around. In the top 1 group approximately only a quarter of the men would be able to match with a top 1 woman. But a simple exercise of matching men and women starting from the top of their respective distributions show that ever since 1971 there are more than enough women in the top 10 to create matches for all top 1 men. Under such "perfect matching" 100 per cent of top 1 men would have at least top 10 partners. Hence, what we observe cannot be explained by composition effects alone.

For top income women, the situation is very different. Married top income women are much more likely to have a partner who is also a top income earner. Almost as a mirror image of top men’s situation, about 75 per cent of top income women have a partner above P90, and 30 to 40 per cent of them have a partner who is in the top 1. The share of top income women with a partner below P60 remains small. Over time, the distribution of partner income groups for top women has been relatively constant both in the P99-99.9 and the P99.9-100 groups. If anything, top women show a slight increase in the tendency to “marry down” in terms of their partner’s income group over time. This is most likely a compositional effect, due to the number of top women increasing more than the number of top men. Moreover, almost as a mirror image of top men’s situation, about 75 per cent of top income women have a partner above P90 and 30 to 40 per cent of them have a partner who is in the top 1. The share of top income women with a partner below P60 remains small.

To shed light on the extent to which a married top man/woman is the main breadwinner within his/her household, we study the relative share of the married top person’s contribution to joint total income (of the top income person and his/her partner. *Figure 15* shows that married top 1 men and women contribute the majority of total income jointly earned by themselves and their partner. For men in the P99.9-100 group, the share of joint total income is on average around 90 per cent, while women in the corresponding top group have increased their share of joint total income from 70 to almost 80 per cent over the last fifty years. The levels are slightly lower in the P99-99.9 group, but the gender differences and time trends are similar. Given the recent strand of literature on gender identity and social norms as reflected by women’s share of household income – see Bertrand et al (2015) for the US case and Hederos and Stenberg (2019) for the Swedish case – the married women in the top 1 group of the total income distribution could be labelled “norm breakers” as they, on average, out-earn their partner.³⁸

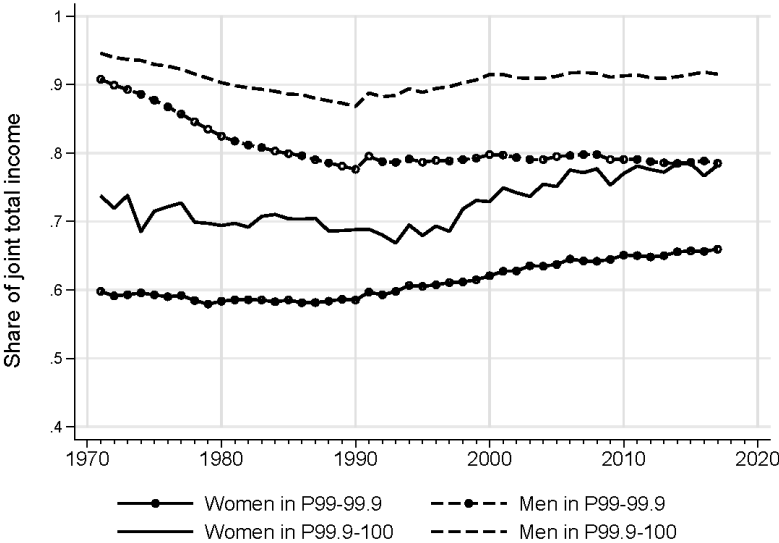


Figure 15. Married top women and married top men’s respective average share of joint total income.

6. International comparison

As already mentioned in the introduction, what we know about women in the top of the total income distribution and how it has developed over time across countries is relatively limited. The main reason

³⁸ If instead computing women’s average share in the distribution of joint total income, this share is below 0.5 – see Appendix Figure C11. This is in line with findings for the US in e.g. Yavorsky et al. (2019) for the distribution of household income.

is that top income studies typically rely on tax data and in many countries the tax unit is the household, making it difficult to distinguish total incomes for men and women (while labour market outcomes, wages and earnings are typically available for men and women separately).

However, for some countries, especially in more recent time-periods, this is not the case, and for these, it is possible to study gender dimensions in the top of the distribution for different periods depending on data availability. The paper by Atkinson et al. (2018) does precisely this. *Figure 16* below puts our basic result about the evolution of the share of women in the top 10 group in Sweden next to their results for eight other countries (Australia, Canada, Denmark, Italy, New Zealand, Norway, Spain and the UK). In most cases, their results are based on distributions when excluding capital gains (see Atkinson et al., 2018, for details) but for Sweden we include the share of women both with and without RCGs.³⁹

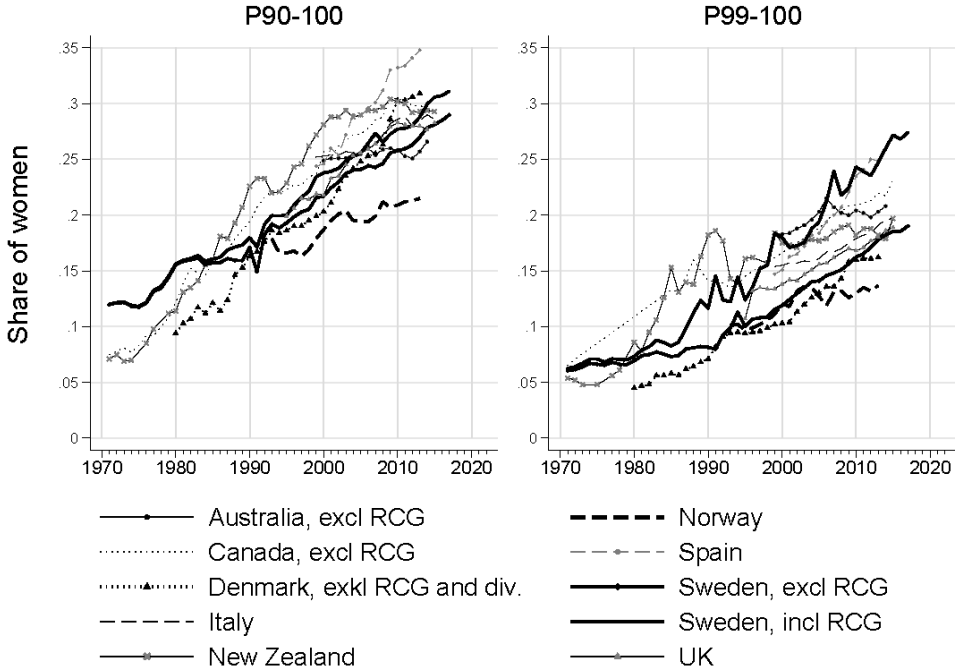


Figure 16. International comparison of the share of women in the top P90-100 (left) and in P99-100 (right) the distribution of total income, 1971-2017.

A first observation, also made by Atkinson et al. (2018), is that the developments are strikingly similar despite the countries being relatively diverse in terms of their overall gender equality.⁴⁰ The left-hand panel in *Figure 16* indicates that while Sweden and Norway are consistently high up in gender equality rankings, countries such as Italy and Spain are typically far behind (especially when it comes to economic opportunity).⁴¹ But there does not seem to be much difference in the number of top income women. If anything, the share of women in the top 10 group has increased at a slower pace in Sweden and Norway and that the representation of women in the top today is lower than in other, overall less gender equal, countries.

³⁹ Recent work by Bobilev et al. (2019) explores how far LIS-data can be used to study the question of women in top incomes and report suggestive evidence for 28 countries.

⁴⁰ These trends and levels are also in line with what Piketty et al. (2016) find in terms of the share of women in the top 10 and top 1 groups of the earnings distribution in the US, as well as with the findings for a broader set of countries in Bobilev et al. (2019).

⁴¹ In the 2016 World Economic Forum Report, Norway and Sweden hold places 3 and 4 respectively, while Spain, Australia, and Italy are at places 29, 46 and 50, out of 144 countries, with the other countries in between. When it comes to economic participation and opportunity specifically Spain and Italy are found in the lower half of the ranking.

These patterns become even more striking when looking at the share of women in the top 1 group of the total income distribution. The right-hand panel in *Figure 16* shows this development over time. The three Nordic countries (Denmark, Norway and Sweden) are now even more clearly the countries with the *lowest* share of women in the top group when excluding income from realized capital gains (RCGs) in the ranking of individuals. As discussed in some length in previous sections, including RCGs increases the share of women substantially in Sweden. However, we know from our analysis of mobility that these women are often different individuals from one year to the next (more so than for men) meaning that the results excluding RCGs when ranking are a better representation of the actual share of women in the top. Nevertheless, this difference in the share of women in the top depending on the treatment of realized capital gains show the importance of treating them separately in the analysis.

There are many possible reasons for why the Scandinavian countries have the smallest share of women in the top of the distribution. The most obvious is the existence of a glass-ceiling in wages (Albrecht et al., 2003, and Albrecht et al., 2015), which is well-known to be more pronounced in Scandinavian countries than elsewhere (e.g. Arulampalam et al., 2006). Different ways in which aspects of the Scandinavian welfare models might lead to this have been suggested: generous parental leave rules may lead to women falling behind in career development due to long periods of absence; expectations about long parental leave may lead to statistical discrimination of women in the labour market; a relative lack of a market for household services and high levels of wage compression make it more difficult, and relatively more expensive, to get help, causing women to cut back on career ambitions or choosing more flexibility over higher pay, etc.

As pointed out before, our results in this paper are different and complementary to the glass-ceiling discussion. We look at the presence of women in the top of the total distribution of total income (not the separate distributions of wages for men and women). The women in the top group are, by definition, on par with the men in terms of income at each point in the distribution so, in this sense, there can be no gender difference. However, our findings about income composition and other ways in which top income men and women differ, give important new insights. One thing, which is in line with the glass-ceiling result, is that women in the top group have lower labour income than men. They need to have higher capital incomes to qualify for the top (see e.g. *Figure 3* above). On the other hand, this difference has decreased markedly over time and our decomposition results suggest that most of the increase of women in the top is due to gains in the labour income distribution. Another point, which is in line with the suggestion that a lack of a developed household service market hurts top income women, is that most top income women have partners who also have high incomes (and therefore are likely to have full-time careers). Top income men, on the other hand, more often have a partner with lower incomes, creating an asymmetry between men and women in the importance of being able to hire household and additional childcare help.

7. Concluding discussion

This paper arrives at several conclusions about the evolution of women in the top of the income distribution in Sweden over the past fifty years. First, and most obviously, it shows that the presence of women in top incomes has increased significantly. There are still fewer women than men in top groups, and typically fewer the higher up we move in the distribution, but there has been a relatively steady rise over the whole period; from 12 to just below 30 per cent in the top decile, from around 6 to 19 per cent in the top 1 group, from 5 to 15 in the top 0.1 percentile group.

Even when focusing on the top 1 group (where capital incomes become important), this change has overwhelmingly been driven by women increasing their share of total labour income, while, on

average, losing shares in the capital income distribution. This highlights the importance of studying the joint distribution of labour and capital to understand the changes in total income, especially in the very top.

When looking at the characteristics of top income women compared to men, they are not very different in terms of age and education (though women are, on average, more educated), and both groups become more and more similar over time. In terms of marital status, however, differences are large, especially at the beginning of the period. Around 1970 more than 90 per cent of top 1 men were married, while this was the case for less than 50 per cent of top 1 women. At that time more than 20 per cent of women were widows (in the top 0.1 group almost 40 per cent), while the share of widowers in the top 1 was close to zero. Over time the share of married men has gone down, the share of married women has increased, and today the marital status of top men and women are much more similar.

The largest remaining difference, however, seems to be in terms of “partner type”, especially concerning partner income. While the education levels of the top earners’ partners, men and women alike, are similar – around 65 per cent have tertiary education, 30 per cent have secondary education, and only 5 per cent have primary education – approximately three quarters of the top 1 men have a partner with income below the 90th percentile. For top 1 women, the opposite is true, three-quarters of them have a partner with income above the 90th percentile, and about 30 per cent have a partner who is also in the top 1.

Trying to take all of these developments together, gives a picture of top income men and women being much more different in the 1970s than today. The typical top 1 woman had much higher capital incomes, and also owned more wealth in relation to the average top 1 man, but in return, she had significantly lower labour income. Over time capital has become more important in total incomes in general and also for top income men. For top income women, however, capital incomes have become relatively less important, both in relation to the population average and especially to the average top income man. In short, concerning income composition and wealth, top income men and women have become increasingly similar.

Why have women gained ground in terms of labour income? The short answer to the first part of this question is simply that more women have gradually risen to higher and higher-paying jobs. Exactly how this has happened requires further detailed study, but it seems to happen with a lag to women’s education levels, since already well before the 1990s, when the increase really takes off, more women than men were graduating from Swedish universities. Also, one should recall that education, while certainly being important, is not everything when it comes to explaining top incomes. More than a third of top 1 earners, and about half of the top 10 earners do not have a tertiary education still today. The increasing share of women executives and senior managers, both in the private and public sector, is notable in the last decade or two. Moreover, tireless pro-active policy for gender equality in wages since the 1970s might finally have been fruitful. Despite these positive trends and also more men taking out parental leave after the introduction of so called “daddy quotas” (especially in high-educated high-income couples) and more women CEOs in listed companies than ever, there is also less positive evidence of both increasing gender wage gaps among executive managers after having their first child (see Keloharju et al., 2019, and more generally Kleven et al., 2019) and an increase in the divorce rate of particularly successful women managers and politicians (see Folke and Rickne, 2019). These findings are undoubtedly related to the partner choices of top men and top women. While the partners of top men and top women are increasingly similar in many dimensions, the large majority of top men’s partners are still not pursuing a career of their own, as opposed to the majority of top women’s partners.

Why have top income women gained less than top income men from the increased role of capital in the top? Again, answering the question in detail requires further study and is likely a complex web of connected developments. But our results give some important clues. First, as far as we can tell using tax data, the wealth difference between the average top income women and man has been shrinking over time. In 2007 – the last year when wealth was taxed – top income women had on average 1.5-2 times more wealth than the average corresponding man, down from more than 3 in the 1970s. At the same time, seen over the whole period, women have not lost ground in the top of the wealth distribution. The number of women in the top 1 of the wealth distribution has been between 30 and 40 per cent over the whole period. This suggests that as the share of women has increased in the top, the composition of the average type of women has shifted in the direction of one with more labour income and less wealth. Furthermore, there are gender differences beyond wealth levels. In particular, our analysis of realized capital gains shows that top men, much more than top women, top-up their incomes with capital gains, and also that these are mainly based on financial assets. This suggests that top income men have more financial wealth than top income women (in line with what numerous government commissions and other studies find for gender differences in wealth holdings in general). These assets generate, not only an income when sold but also a flow of income in the form of dividends, which in turn have grown in importance in relation to other types of income. If top men have more financial assets than top income women, this has a relatively larger impact on their income growth. Finally, while capital incomes, in general, were adversely treated relative to labour before the great tax reform in 1991, the situation today is reversed. This has led to several different ways in which one can suspect that activities that, in a different tax system, would be taxed as labour are now categorized as capital. However, in this respect incentives are similar for men and women alike and to the extent that men would profit more than women from this requires further study.

Overall, the results in this paper suggest that to understand the gender dynamics of top incomes, we need to analyse the joint evolution of both labour and capital incomes, as well as family circumstances.

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Appendix A

A1. Overview of Swedish income taxation focusing on the treatment of men and women

The modern Swedish income tax system was introduced in 1902. Ever since, Swedish citizens (with income above a threshold that has changed over time) have been obliged to file a tax return and pay taxes on their incomes (and for most of the time period also on their wealth). Today all *individuals* in Sweden are treated as individual tax units, but initially, the tax unit was either the individual, or in the case individuals were married, the married couple. The rules for how incomes were split between husband and wife changed a number of times over the twentieth century as did the definition of the tax unit. In addition, some of these changes were also different for different income components. Below we give a brief account of the main changes with respect to how men and women have been treated in terms of taxation, focusing on the period of analysis in this paper, that is 1971-2017 (see Roine and Waldenström, 2010, Appendix 7B and 7C, for a general overview of the Swedish tax system and the different income concepts over the twentieth century). The main purpose of this appendix is to explain and motivate various choices made in the analysis above with respect to dividing incomes between men and women.

A2. The tax treatment of married couples – toward individual taxation, 1971-1986

In the 1950s the labour force participation of married women increased, leading to a debate about tax consequences for married couples. With a progressive income tax system, being assessed jointly was typically less advantageous for married couples, and it also discouraged women's labour force participation. To reduce this effect a reform was introduced in 1952 – the “dual division principle” (tudelningsprincipen) – according to which married couples were allowed to split their labour income (but not other income sources) equally between husband and wife. This of course reduced the marginal tax considerably and being married now became advantageous from a taxation point of view. But realizing this, and the potentially large gains especially for married single-earners with high incomes, the reform was restricted to low and middle income married individuals only. Married high-income earners were still taxed as a unit. The reform, and its arbitrariness in terms of treatment of different married couples, lead to more debates and commissions to change the tax system. In 1960 a commission to investigate individual taxation was launched and in 1965 (implemented for the income year 1966) a system with voluntary individual tax filing also for married couples (and non-married with children, who were also treated as “married” in the tax system) was introduced (SOU 1964:25). It is unclear how many chose to exercise this right to file separately, but judging from the aggregate numbers of tax files, the change was not large.

In 1970 the first, and most important, legal change leading toward independent income taxation was decided, and starting January 1, 1971, the “earned income” of all men and women in Sweden was taxed separately. “Unearned income”, however, remained jointly taxed but with special rules for how such incomes were divided.⁴² “Earned income” (“A-inkomst” in the Swedish tax terminology at the time) was income from employment (inkomst av tjänst), and/or farm income (inkomst av jordbruksfastighet), and/or business income (inkomst av rörelse) when the “individual engagement in

⁴² More precisely: “If both spouses had A-income, the B-income was jointly taxed on top of the highest A-income of the spouses. If the spouses only had B-incomes, the tax was calculated on the sum of the total B-income and the sum was divided between the spouses in relation to their individual B-incomes. If one of the spouses had no taxable income at all, no income or tax was split between the spouses. Other remaining forms of joint taxation were the right to transfer deficit and losses of income between spouses.” Eriksson and Gunnarsson (2017) p. 96. The changes to the legal text are in Prop.70/1970, p. 89-92.

the activity was not too small” (“verksam i förvärvskällan i ej blott ringa omfattning”).⁴³ Unearned income was all other incomes including capital incomes.⁴⁴ In practice, however, this meant that farms and businesses operated by married couples sometimes were jointly taxed (with all incomes typically attributed to the man). An important change in this respect came with the legislative change in Proposition 1975/76:77 (“Om avveckling av s. k. faktisk sambeskattning”). This changed the principles also for taxing business and farm income in the direction of individual taxation by postulating that each spouse be taxed individually in relation to their “degree of participation in the operations” under the condition that each person worked at least 600 hours per year.

Finally, in 1986 the joint taxation of B-incomes together with the rights to transfer deduction for deficit and losses of income between spouses were abolished (Proposition 1985/86:130) completing the process of introducing full independent income taxation of spouses. Taxation of wealth, however, remained joint until the abolition of the wealth tax in 2007.

For our purposes the main concern is to what extent the period between the introduction of individual taxation of (the main) income in 1971 and the final move to fully independent taxation in 1986, had such strong incentives to shift incomes between spouses so as to make our data misleading. Our overall judgement is that this was not the case. The main reason is that the part of income that was taxed jointly after 1971, the “unearned income”, i.e. capital income and so-called B-income, was, for tax purposes always added to whoever had the highest A-income. Hence, shifting capital income to a spouse with lower income to reduce the marginal tax was not possible, since all B-income was assessed on top of the income of the spouse with the higher income, regardless of who earned it.

For sure, income shifting and tax avoidance took place in the 1970s and 1980s, especially with respect to capital incomes.⁴⁵ The progressive taxation with very high marginal rates, and with B-incomes being added on top of other incomes, together with a number of tax exempt forms of capital incomes, certainly affected the volume of capital incomes that appear in tax returns in this period. But there is no reason to believe that transfers between married men and women was a main source of such income shifting.

If anything, it is in the period between 1987 and 1991 – when the “great tax reform” introduced the dual tax system where capital income is taxed at a flat rate – when the incentives to shift capital income to a spouse with lower income, was at its greatest. In this short period incomes were completely individually taxed and with a progressive tax schedule for all incomes. Hence, married couples would have incentives to allocate capital incomes to the spouse with the lowest “earned income”. But nothing in our series indicate any major shifts in this period. Finally, after the “great tax reform” of 1991 shifting capital incomes between spouses became largely pointless as capital income now became taxed at a flat rate (incentives to shift deductions still exist, however).

⁴³ Throughout the appendix we have translated legal concepts and definitions ourselves and therefore included the original Swedish formulations in parenthesis to be as transparent as possible about what we refer to.

⁴⁴ The precise wording in Swedish defining A-income and B-income reads: ”Med A-inkomst förstås inkomst av tjänst, med undantag för periodiskt understöd och därmed jämförlig intäkt, samt inkomst av jordbruksfastighet och rörelse om den skattskyldige varit verksam i förvärvskällan i ej blott ringa omfattning. Definitionen innebär att bl. a. pension och livränta räknas till A-inkomst. Annan inkomst än A-inkomst utgör B-inkomst.” (SOU 1977:91, p 115).

⁴⁵ In an overview of Swedish capital taxation, law professor Leif Mutén makes the following note about capital taxation before the “great tax reform” of 1991: *In the course of the great reform work it was clear that the taxation of income from capital was a loss business for the fisc. Taxpayers saw to it that their incomes as much as possible took the form of tax exempt capital gains or winnings on premium bonds, or were placed in pension insurance. In contrast, the cost of loans in the form of interest was deductible, reducing the total income, with a tax rate on the highest bracket after 1947 and later reforms at times exceeding 80 per cent.*

Our overall judgement is that, while tax evasion and tax planning have certainly been major issues in the Swedish tax system, especially before the tax reform in 1991, we do not believe that incentives have been of a form that drastically alter the balance between top income men and women.

Appendix B

B1. The total income concept and definitions of income components over time

As already mentioned above, the Swedish tax laws and income statistics define the sources of income that are to be specified on the tax returns. The period after 1971 can be divided into two distinct periods with respect to the definitions of income concepts; before and after the tax reform in 1991. Before the tax reform (and, in fact, for most of the twentieth century) there were six income categories: labour income (“inkomst av tjänst”) consisting mainly of wages and salaries; capital income (“inkomst av kapital”) consisting mainly of interest and dividends; entrepreneurial income (“inkomst av rörelse”) mainly in the form of firm profits and royalties; farm income (“inkomst av jordbruksfastighet”), mainly sales of agricultural and forestry products and leases; real estate income (“inkomst av annan fastighet”), mainly rents and in-kind payments; and capital gains (“inkomst av tillfällig förvärvsverksamhet”) from sales of real estate and securities. After 1991, the number of income sources was reduced to three: labour income (“inkomst av tjänst”), business income (“inkomst av näringsverksamhet”), and capital income (“inkomst av kapital”).⁴⁶ Apart from the shift in 1991 an important change took place in 1974 when basically all transfers related to being employed (such as unemployment insurance, parental leave, sick leave, etc.) became part of taxable labour income. Such payments, however have a very marginal impact on top income shares (see Roine and Waldenström, 2010, p. 316) and for the analysis conducted here the shift would under any circumstances only impact the first three years between 1971-1974.

Comparing between the periods, labour income before and after 1991 is basically defined in the same way. Throughout the period it is by far the dominant share of all incomes, typically making up around 85-90 per cent of all incomes (in periods even more). It should be noted that we are concerned here with the total income of the full population (not only the working population) which means that pensions also fall into the category of labour income. This has a large impact on the proportions of different incomes since pensions in relation to wages are about 25 per cent. In Swedish tax law labour income, according to the main paragraph defining it, is “all individual income that is not to be considered business income or capital income”.

Business income after 1991 includes not only what previously was called entrepreneurial income, but also farm income and a small part of real estate income stemming from rental apartments. Comparing to many other countries it should however be noted that business income is very far from being the incomes of all entrepreneurs and farmers and other self-employed individuals. Due to the construction of the Swedish tax and welfare system most self-employed pay themselves a salary making much of the entrepreneurial income part of labour income. Over the time period under study here, business income has always been small (well below 10 per cent of all incomes and since the 1980s only 2-3 per cent of all incomes). For the very top groups (within the top 1) they were, however, slightly more than 10 per cent in the early 1970s but has since declined significantly also in the very top groups.

Capital income after 1991 includes everything that was labelled capital income before 1991, plus most of what was previously “real estate income” as well as realized capital gains. These incomes were a small part of the total in the 1970s and 1980s but have steadily increased in importance. As shares of our total income concept they have gradually gone from being three per cent to above ten (around 11.5 in the years 2015-2017) with some peaks in between in years when realized capital gains for various reasons (often due to tax changes) have spiked. In relation to all market incomes this number is higher, today around 20 per cent.

⁴⁶ Business income is divided into active and passive business income. We always use the sum of these subcomponents in this paper.

To get comparable income concepts and sources for the full period we use four categories: labour income (“inkomst av tjänst”), business income (“inkomst av näringsverksamhet”), capital income (“inkomst av kapital”), and, given its particular nature, realized capital gains (“realiserade kapitalvinster”). We do this as follows:

- Labour income is always all of income from labour (“Inkomst av tjänst”), before 1991 both A- and B-income from labour. In practice this is the sum of many components and (after 1974) it includes all also includes all taxable transfers (related to being active in the labour market) as well as pensions.
- Business income before 1991 is the sum of entrepreneurial income (“inkomst av rörelse”) and farm income (“inkomst av jordbruksfastighet”) (both A- and B-incomes of each type for periods when applicable). After 1991 it is the sum of everything included in business income (“inkomst av näringsverksamhet”).
- Capital income before 1991 is the sum of capital income (at the time basically interest and dividends) and real estate income (“inkomst av annan fastighet”). After 1991 it is all of capital income minus realized capital gains.
- Realized capital gains are realized capital gains as defined in the tax system throughout the period (before 1991 what was labelled “inkomst av tillfällig förvärvsverksamhet” and after 1991 “kapitalvinster”). We only consider positive net gains, that is we include negative numbers when summing components but those that end up with negative totals are set to zero.

Appendix C. Additional figures

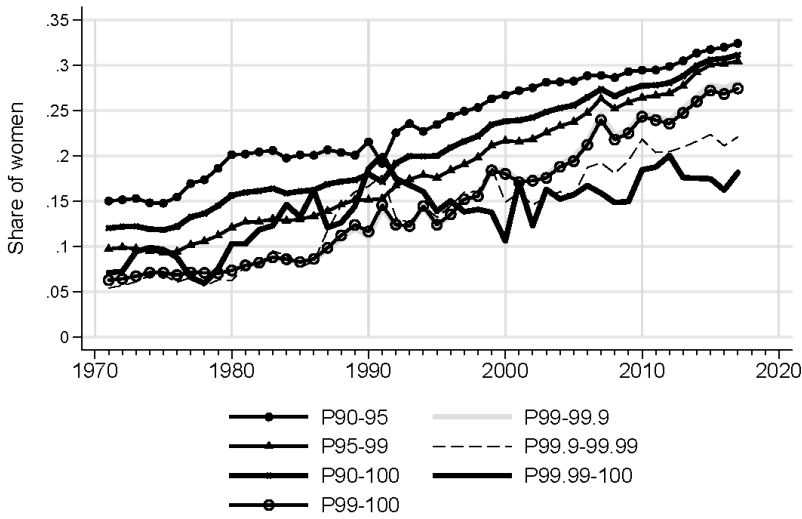


Figure C1. Share women in top groups 1971-2017 in the distribution of total income (ranked including RCGs).

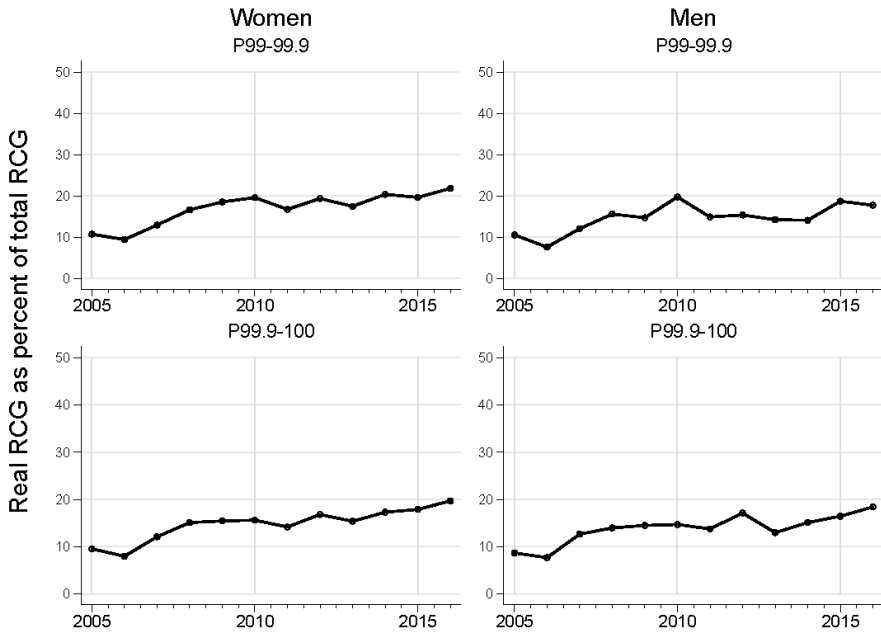


Figure C2. Share of total RCGs stemming from the realization of real assets (as opposed to financial assets) when top groups are defined by ranking total income excluding RCGs.

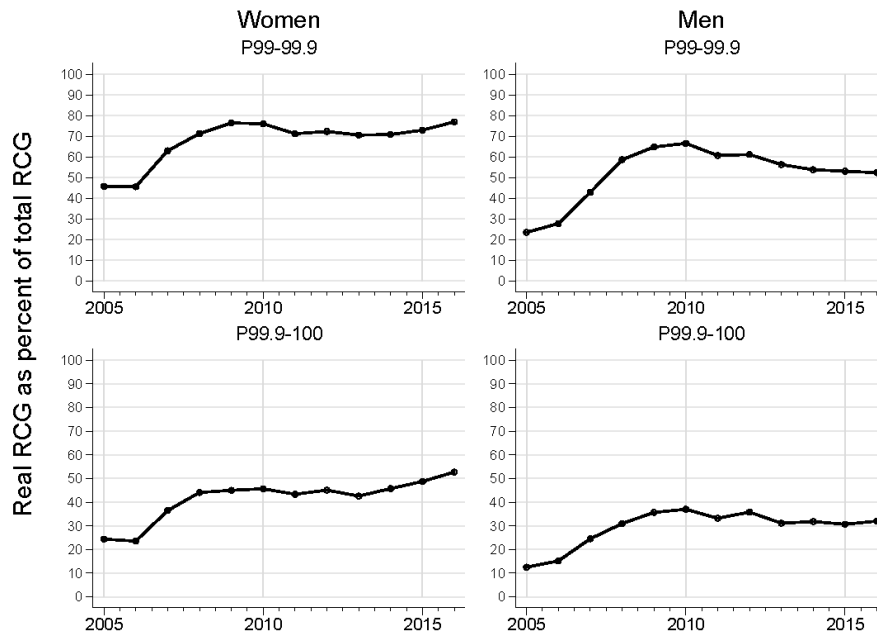


Figure C3. Share of total RCGs stemming from the realization of real assets (as opposed to financial assets) when top groups are defined by ranking total income including RCGs.

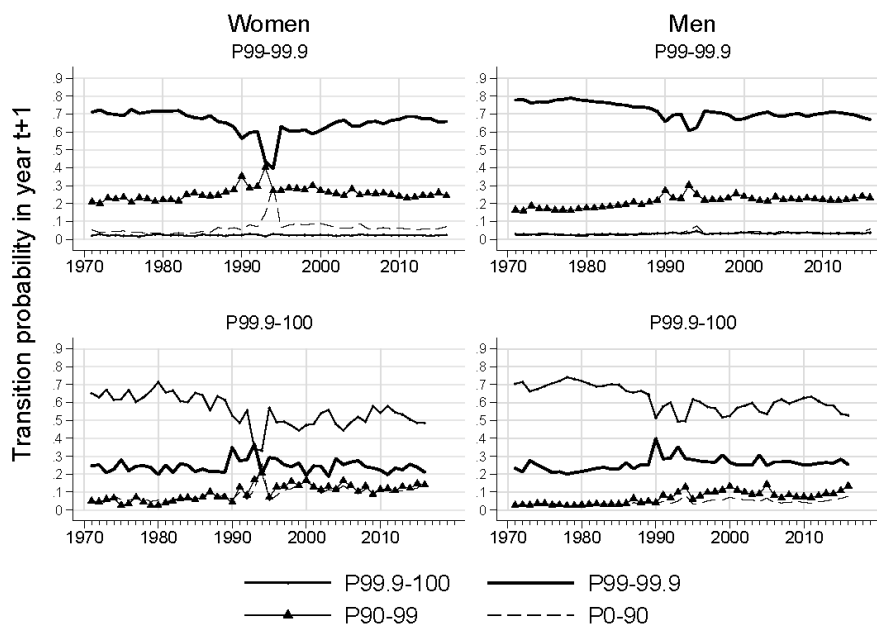


Figure C4. Transition probabilities, year to year, out of the top1 group of the distribution excluding RCGs, for women and men 1971-2015.

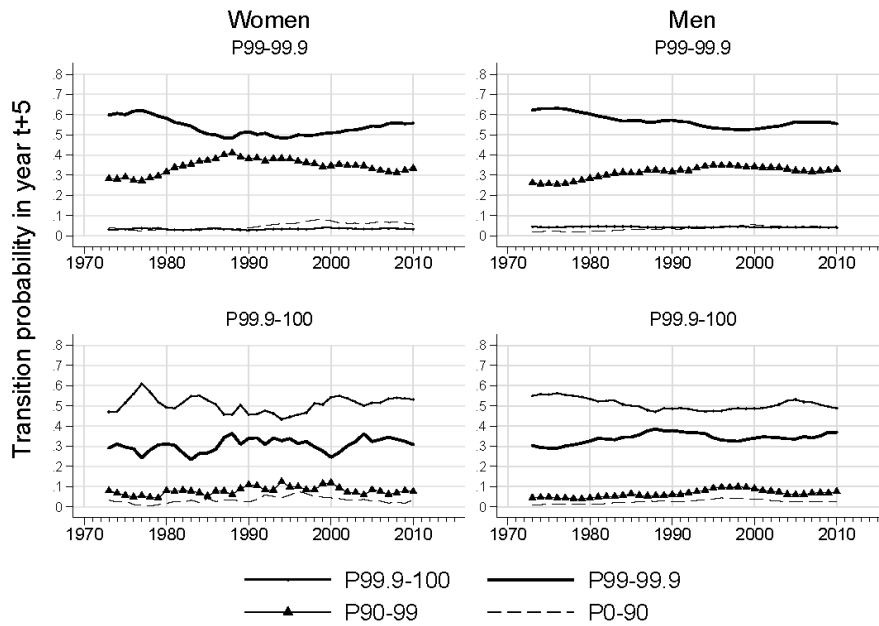


Figure C5. Transition probabilities, from year t to year $t+5$ averaged for five years around each year (up until 2012, five years before 2017) out of the top 1 group of the distribution excluding RCGs, for women and men 1971-2017.



Figure C6. Share of top women and men (in P99-99.9 and P99.9-100 respectively in the total income distribution) in the distribution of total wealth, 1999-2006.

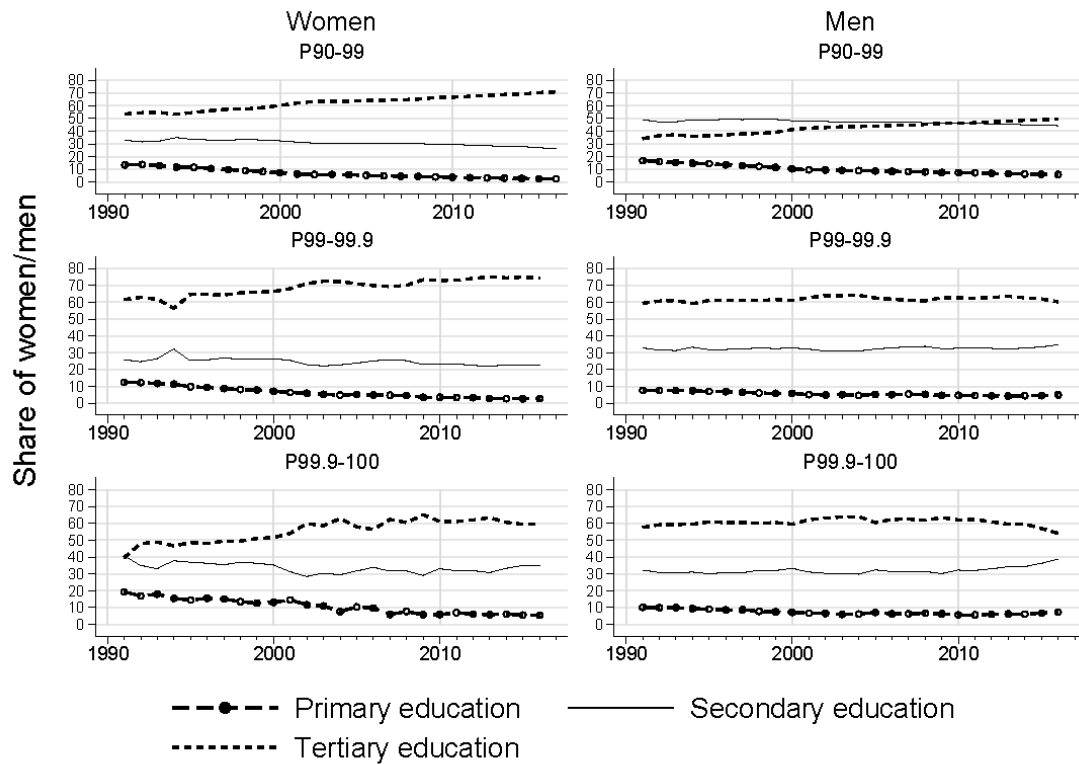


Figure C7. Educational level of top women (left) and of top men (right), 1991-2016.

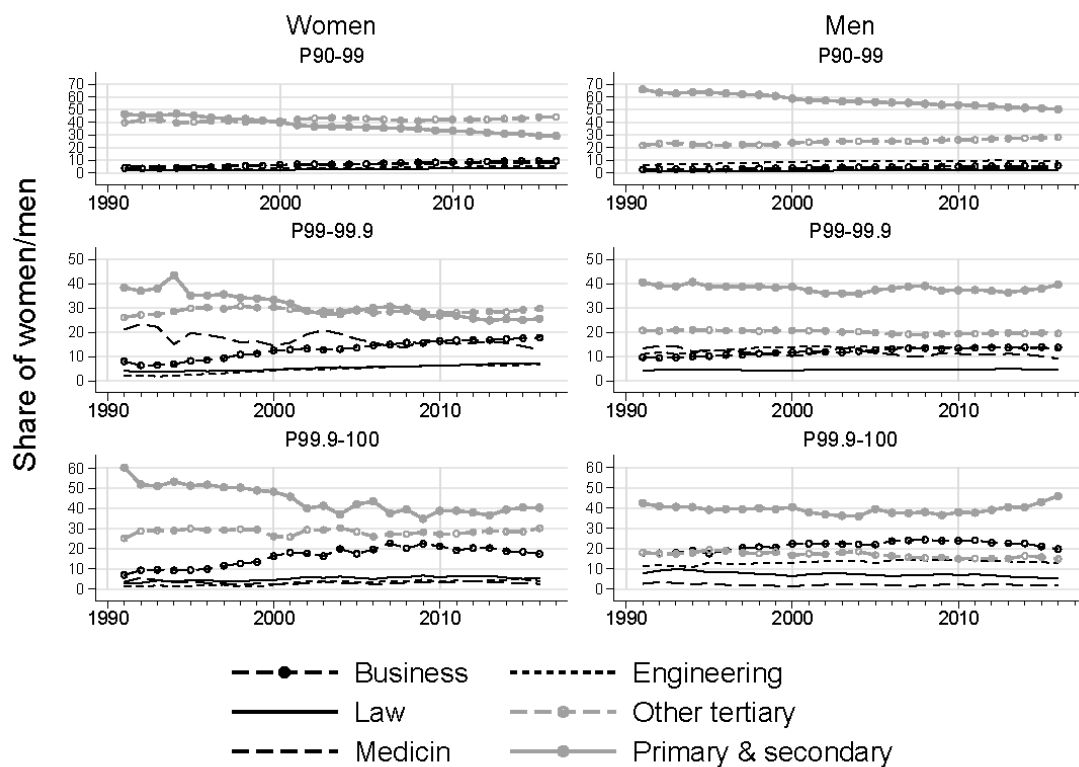


Figure C8. Field of education of top women (left) and of top men (right), 1991-2016.

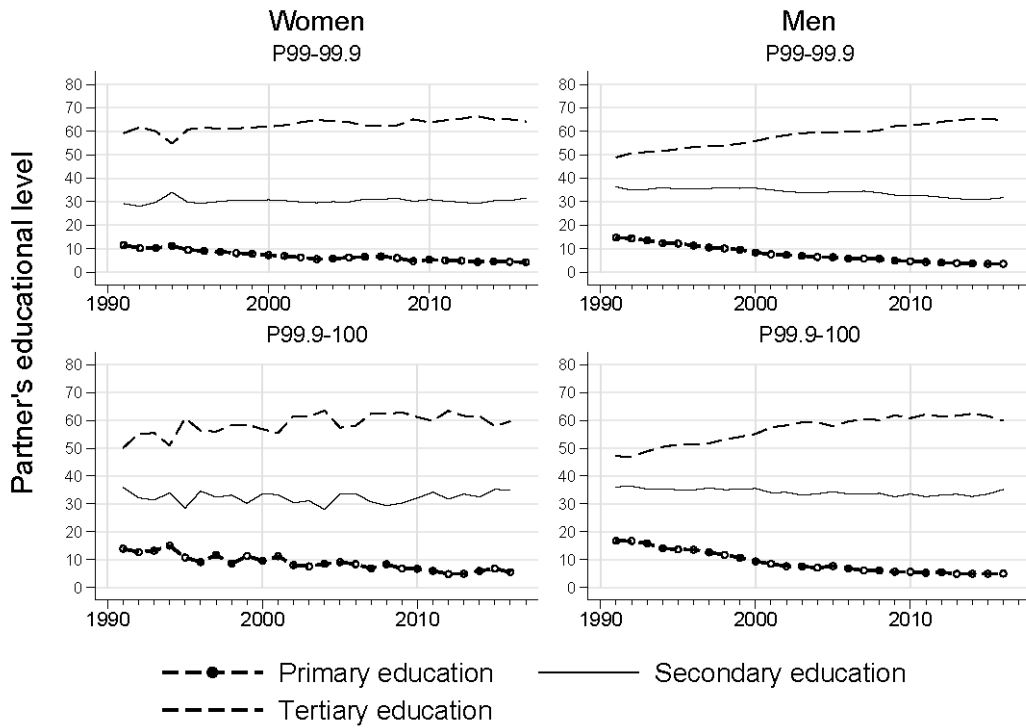


Figure C9. Educational level of the partner of top women (left) and of the partner of top men (right), 1991-2016.

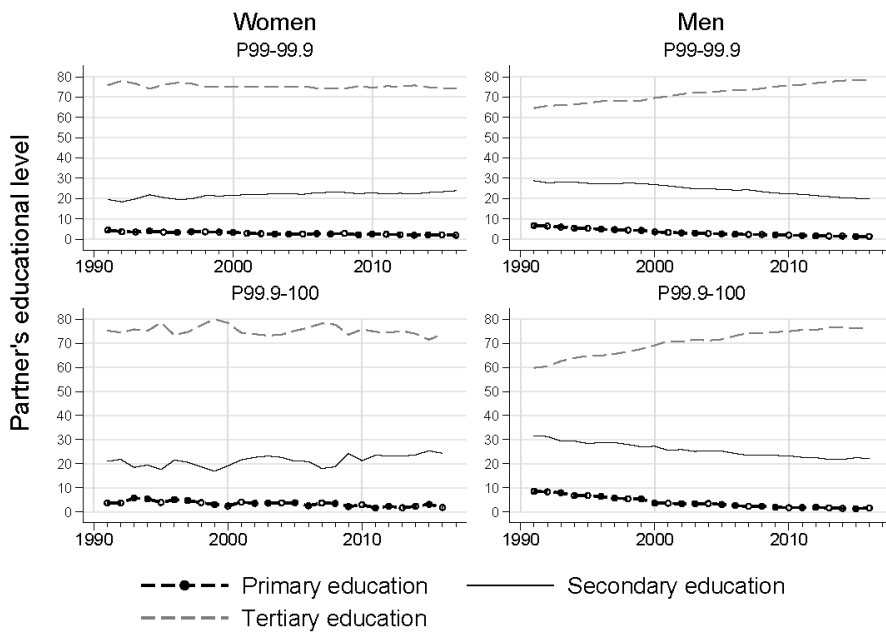


Figure C10. Educational level of the partner of top women with a tertiary education (left) and of the partner of top men with tertiary education (right), 1991-2016.

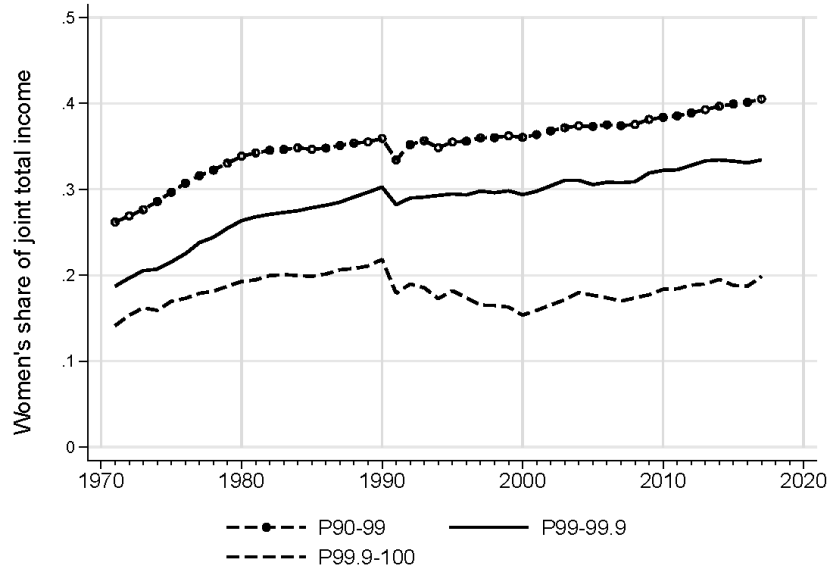


Figure C11. Women's average share of joint total income among household consisting of a married couple (of opposite sex) in the top of the household total income distribution (ranked excluding RCGs).