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Top incomes and income dynamics from a gender perspective: Evidence from Finland 1995-2012*

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Abstract

In this paper I study Finnish top incomes from a gender perspective using the Finnish register-based panel data over the period of 1995-2012. I find that that the under-representation of women at the top has been quite persistent in the overall top but the proportion of women in the top 1 % has increased over 18 years. Women's wage share at the top has increased while the self-employment income has decreased. The top income females more often have an entrepreneurial background and are more often sharing a household with a high-income spouse.

The gender-specific income distributions show that female incomes are less dispersed. In this study I also test whether top incomes can be assumed to be Pareto distributed. While the joint and men's top income distributions can be approximated with Pareto distribution throughout the observation period, the Pareto assumption gets more support for women after the year 2000. The female top income receivers have caught up with top earning men over time but I also show that females are more likely to move downwards from the top than men.

JEL: D31, J16, D63, D30

Keywords: income distribution, gender inequality, top incomes, income mobility

Tiivistelmä

Tässä tutkimuksessa tarkastellaan Suomen huipputuloja sukupuolinäkökulmasta. Tutkimus hyödyntää rekisteriaineistoa vuosilta 1995-2012. Tutkimuksessa havaitaan, että naiset ovat aliedustettuina tulojakauman huipulla ja naisten osuus huipputuloissa on ollut pitkälti muuttumatonta lukuun ottamatta ylintä yhtä prosenttia. Ylimmässä yhdessä prosentissa naisten osuus on kasvanut viimeisen 18 vuoden aikana tasaisesti. Naisten palkkatulojen osuus kokonaistulosta on kasvanut samalla kun yrittäjätulojen osuus on laskenut. Verrattuna miehiin tulojakauman huipulla, naisilla on useammin yrittäjätausta ja he jakavat useammin kotitalouden korkeatuloisen puolison kanssa.

Tutkimuksessa havaitaan myös, että tuloerot naisten välillä ovat pienemmät kuin miesten välillä. Tutkimuksessa testataan myös Pareto-jakauman oletuksia Suomen huipputuloissa. Huipputulojen yhteisjakaumaa sekä miesten huipputuloja voidaan approksimoida Pareto-jakaumalla mutta naisten tulojakauman yläpäässä Pareto-oletus saa tukea vasta vuoden 2000 jälkeen. Naiset ovat saavuttaneet miesten tulohuippua mutta tutkimuksessa havaitaan myös, että naisten tuloliikkuvuus huipulta alaspäin on yleisempää kuin miehillä.

JEL: D31, J16, D63, D30

Asiasanat: tulojakauma, sukupuolten välinen eriarvoisuus, huipputulot, tuloliikkuvuus

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1 Introduction

The gender wage gap is a widely researched topic. There are much less studies on gender differences in the total incomes. Since the work by Piketty (2003) and Piketty and Saez (2003), inequality research has paid a lot of attention to the top incomes but little is known about the top income distribution from a gender perspective. While top incomes complement the traditional inequality analysis which focuses on the middle of the distribution and poverty, the gender perspective in the top incomes complements the analysis of overall gender inequality. This paper aims to bring these two perspectives together with empirical evidence from Finland. Finland performs relatively well in gender-equality (OECD, 2017) so this paper provides insight from a new perspective that can be useful for countries where similar steps towards gender-equality have not been taken.

Women at the top of the earnings distribution have been studied in many papers and from many perspectives (Albrecht et al., 2003; Guvenen et al., 2014; Bertrand et al., 2010; Fortin et al., 2017)[1] and this literature has summarized that the wage gap increases and women's presence decreases in the upper tail of the earnings distribution. A large part of the overall wage gap is also explained by the missing women at the top (Fortin et al., 2017). However, women and top incomes have been analysed only in few papers. Studies by Atkinson et al. (2016) and Boschini et al. (2017)[2] show that women are under-represented at the top of the income distribution. The share of women decreases steadily further up in the distribution all over the world.

There are many explanations why the top of the income distribution has so few women. For example, we know the gender wage gap is largely explained by the fact that on average women work in industries with lower wages and work fewer hours than men. Partly these observations can be attributed to chosen education paths. Lower earnings also lead to less saving opportunities for women and thus bigger gender based differences in capital income. However, if women's

[1]There is at least one paper also studying women in the wealth distribution by Edlund and Kopczuk (2009). This paper shows that big part of the wealth held by women is inherited in the US.

[2]Atkinson et al. (2016) study 8 countries which are Denmark, Norway, Spain, United Kingdom, Australia, Canada, Italy and New Zealand while Boschini et al. (2017) provide evidence from Sweden.

education and fields of work explain much of the gender gap, we should see more women at the right end of the income distribution over time as women have become more educated and shifted to work in the traditionally more male-occupied fields. Otherwise the persistent under-representation at the top of the income distribution may be due to a glass-ceiling effect[3].

In many international comparisons, Finland and the other Nordic countries, outperform in the women participation in the labour markets, education and politics and these countries are widely recognised as the most advanced countries in terms of gender equality at work (OECD, 2017). In Finland, women's share of the labour force has been over 45 % for three decades, the employment rates by gender are almost the same (in 2016 67,6 % compared to men's 69,8%[4]) and the education level is higher among women (Pietiläinen, 2013)[5]. How has this increase of educated women in the labour markets transformed the income distribution and its gender composition? The evidence from Sweden suggests that women have improved their representation at the top of the income distribution but still have more transitory incomes and more capital income than men (Boschini et al., 2017). This study looks into the Finnish data to see whether Finland follows similar trends.

In this paper, I will study the Finnish top income distribution closely from a gender perspective. Firstly, I will explore the representation of women in the top income distribution, and study the income composition and background differences between men and women. I will show that there are clear gender differences between the top income receivers. At the very top, women tend to have larger capital income share than men and the share of wage income has only increased after the financial crisis. Compared to the men's income composition at the very top, the female share of capital income indicates that becoming rich by working is less common among women. This is verified by the fact that upper management positions are more common among male top income receivers while a large part of the women in top incomes have entrepreneurial backgrounds especially in the late 90s and early 00s.

[3]The term glass ceiling is used to define an unseen barrier that keeps women out of the top regardless of their qualifications.

[4]Statistics Finland Official Statistics on Employment.

[5]Women have completed more university degrees than men since 1985 (Pietiläinen, 2013, p. 18) and the gap has widened over time.

Secondly, I will study the shape of the top income distribution by gender and show that the common distributional assumption of Pareto Type I does not hold. From the gender perspective we do not have any strong reason to assume that the male and female top incomes can be characterized with the same Pareto model. Even for the joint distribution the assumptions of Pareto distribution have rarely been questioned. The recent contribution by Jenkins (2017) shows that Pareto Type II model is more appropriate at least for the heavy tail in British income distribution. Instead of assuming that top incomes for both genders are Pareto distributed, I also tests this assumption for the Finnish top incomes. This can be seen as a contribution in its own right. In this part I will also compute the top income shares from the gender-specific distributions.

Thirdly, I will answer the question of how income mobility and income dynamics differ between genders. Annual cross-section measures do not give the full picture on income inequality. The income mobility between years contribute to the lifetime income differentials. For this reason I also extends the analysis by taking into account income mobility. From the top of the income distribution, individual can move only to the lower income groups and so the income mobility is measured as the persistence to stay in the top group over different periods. The question is, does this persistence differ between genders?

The analysis is based on the Finnish population's register data for the years 1995-2012. In the data the panel attrition occurs only due to death or emigration. Therefore long time periods of an individual's life can be observed. The panel structure of the data is used by extending the analysis of annual incomes to include average income for longer periods. The data is without top-coding so it is particularly well tailored to studying top incomes. There is a rich set of background variables included in the data from several official registers. The tax register data enables the decomposition of the sources of income. The tax unit in Finland is individual, however, the data includes a household identifier so family characters and spouse income can be used when studying the background of top income receivers. The main contribution of the study is to analyse top incomes from a gender perspective in detail with very extensive micro data.

The paper is structured in the following way: Section 2 introduces the data and income definitions. In section 3 I show time-series evidence on the overall top

incomes and focus on the share of women in different top groups and how the incomes are composed. The subsection 3.3 discusses the background of the individuals in the top groups. Section 4 fits Pareto model separately for genders at the top of the income distribution. Section 5 presents the results with respect to income dynamics and gender. Section 6 concludes.

2 Data and income concepts

The data used in this study comes from the Statistics Finland's collection of administrative data for income distribution statistics. The dataset is constructed by taking a 10 percent representative sample of the Finnish population (approximately 500 000 individuals) and follows the individuals over time between years 1995-2012. Individuals exit the data if they emigrate or die. The individuals without address or who are institutionalized in any of the observation years are not included in the data.

The data includes a rich set of variables. The underlying register data originates from Population Register Center, Tax Administration, The Social Insurance Institution of Finland, National Institute for Health and Welfare, Finnish Centre for Pensions, the Register of Completed Education and Degrees and Financial Supervisory Authority. The data includes among other variables wage income, self-employment income[6], capital incomes (dividends and other capital income) and realized capital gains. The data also includes those with zero incomes. The inflation is taken into account by deflating all income components to 2008 prices with Finnish consumer price index. The data also have a rich set of background variables, such as completed education, type of work, industry, day of birth and death, age in the end of the year, as well as information on the household type. There is no top-coding in the data.

In this study I concentrate on the adult population and thus exclude individuals below the age of 20. The tax unit in Finland is individual. There are some minor exemptions and subsidies that are family- or spouse based. An example of

[6]Self-employment income here refers to entrepreneurial income from agriculture, forestry or copyrights, and entrepreneurial income from business activity where the ownership is active on contrary to the passive owning of business which is taxed under capital taxation rules.

such an item is capital loss credit. The individuals with negative gross incomes are removed from the data (0.01% of the observations). The main analysis is complemented by also using three-year average incomes to reduce the effect of temporary income shocks. Here I have removed those observations that have gaps in the previous 3-year-periods (around 1,7 % of the observations over the years). I have winsorized the outlier observations, i.e individuals with very high incomes representing top 0.01% or higher, from the data. This is done due to the privacy restrictions set by the data provider but also to reduce the potential problems in interpretation of the results[7].

As the data is based on administrative records, it is more reliable than survey estimates of the top incomes. However, registers do not include all income sources. Such missing incomes are almost all interest income (which are taxed at source), some inter-household income transfers (for example child support is missing until 2010) and imputed rent for home-ownership. Also noticeable is that the income concept was updated in 2010 by including more accurate forestry income and child support income. For this reason the time-series before and after are not completely comparable. However, the effect is small. For example, the average equivalent income for the top decile was 0,5 % smaller than with the earlier income concept in 2013 (Statistics Finland).

The main income concept used is individual gross income excluding realized capital gains. The individual gross income is factor income with income transfers such as pensions or sickness benefits. The composition of these income items is shown in Appendix A. The Finnish micro data on incomes is rich enough to build the series for both including and excluding realized capital gains. However, it is not clear if the realized capital gains are a good proxy for the accrued capital gains as tax changes affect the timing of selling assets as demonstrated in Burkhauser et al. (2015) and Armour et al. (2013). Also it has been noticed that top income shares are biased downward if accrued business income is not included (Alstadsæter et al., 2016).

Finland has a dual income tax system, where income from wealth (e.g. dividends, property rents and capital gains) are under capital taxation and labour

[7]Winsorizing ensures that none of the data points is based on less than 30 individual observations.

earnings or self-employment incomes are taxed under a progressive schedule. The capital income tax rate was flat until 2011 and since then there have been two tax brackets. The major tax reform in Finland, introducing the dual tax system occurred in the year 1993 so two years before the observation period starts in this study. There are smaller tax reforms possibly affecting the top incomes during the observation period and these are listed in the appendix B.

Table C1 in the Appendix C shows descriptives statistics separately for each year and gender. From these summary statistics we can conclude a few points about the changes in the overall income distribution over the years. The gross income distribution has become more dispersed for both genders but more so for men. Also the average gross income has increased for women during the observation period but for men the financial crisis lowered the average income. Also over time the mean absolute income gap between men and women has increased. The average size of capital income and capital gains have increased for women since the 90s.

3 Top incomes and women between 1995-2012

This section starts with the overall review of the top income shares in Finland over time. This step is taken in order to place the gender-specific analysis into context. After this the female representation and income composition at the wider top are analysed. In the third subsection simple probability models are run in order to determine what kind backgrounds women and men at the top of the income distribution have.

3.1 Trends in overall top incomes

Trends in the top incomes over the world, including Finland, is summarized in Atkinson et al. (2011). In international comparison Finnish top income shares are low but differ from continental Europe by showing a clearer upward trend during the last decades. The Finnish top incomes have been studied by Jäntti et al. (2010) in more detail until the year 2004. The stark finding is that the top incomes increased rapidly in the late 90s. Here I extend this analysis to the year

2012 and conclude that the top income shares are still at similar levels as in the beginning of the 2000s.

The median individual income without realized capital gains in 1995 was approximately 17,600 € and 18 years later it had increased 35 percent to 23,700 €. The median income in the top 10% group grew around 43 percent from the 44,000 € in 1995. In the top 1% and top 0.1% the income growth was 62 and 85 percent in the same period, respectively. The faster income growth in the top incomes has widened the income distribution.

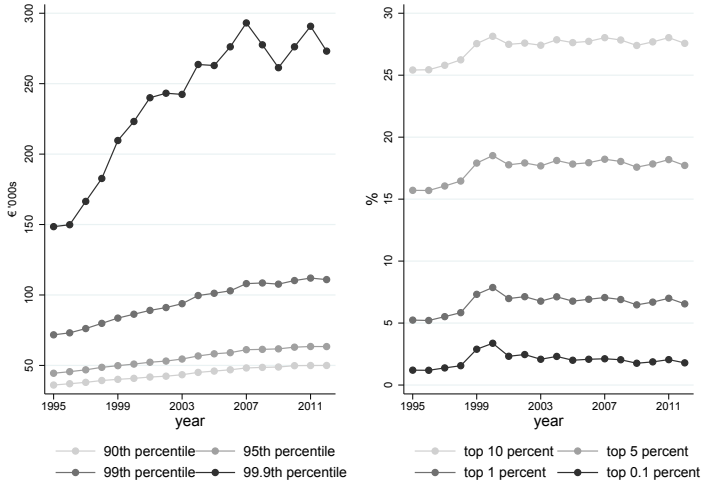
Figure 1 shows the lower thresholds and income shares for selected top income groups based on the individual income[8]. The top 10% income threshold was approximately 36,000 € and the threshold 18 years later approximately 50,000 euros. To be included in the top 1% individual needed to have over 71,800 € of income in the beginning of the observation period compared to 111,000 € in 2012. This translates to 54 % higher income requirement in 2012 in order to be in the top 1%. In the very top, above 99.9 percentile, the income requirement grew even more, nearly 85 percent. The income shares for these groups increased rapidly in the late 90s but in the 00s there has been little changes. The top 1 % received 5 percent of the total income in 1995 and approximately 7% in the 2012.

About 75 percent of the income of the top 10 % is wage income (figure 2). Over the years the share of capital income has increased from 3 % to 8 % but most visible is the important role of capital in the top 1% or higher groups. In these groups it is also clear that the role of capital became more important in the end of the 90s and early 00s. At the very top, the self-employment income was replaced by the capital income. An explanation for this is the income shifting caused by the tax reform in 1993 which created incentives for entrepreneurs to report their income as capital income rather than self-employment income (Selin and Pirttilä, 2011).

The years when the share of capital income grew corresponded with the years

[8]Inequality is preferably studied with equivalised household income but since I am studying top incomes by gender, the individual income is used. While the trend qualitatively is the same whether the top income shares are measured by individual income or equivalised household income, the levels differ. Hence note that the figures here are not comparable to Jäntti et al. (2010)

Figure 1: The annual income thresholds for incomes above different income percentiles (left panel) and income shares (right panel).



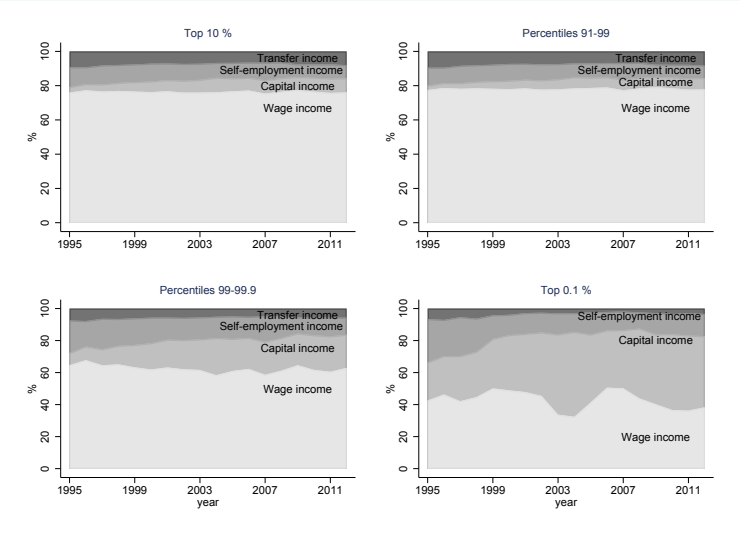
Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

when the top income shares grew the fastest. On average 38 % of total income is capital income in the 0.1% and during the years of high stock market returns capital share is as high as half of the income (excluding realized capital gains).

Just as the annual income from the capital is concentrated to the top, also the realized capital gains are targeted to the top. Over the years, 11 to 14 percent of all realized capital gains are received by the richest 1 %. Figure 3 presents the income composition with realized capital gains. In the groups below 99th percentile, the capital gains have relatively little influence on total income during the observation period as income is composed mainly by the wage income. However, the pattern is totally different in the high income groups where beside annual income stemming from wealth the active selling of assets is important. In the top 0.1% these realized capital gains are on average 22 percent of total income and during the stock market booms the capital gains share is as high as 38%. In the rest of the top 1% the share of realized capital gains varies from 4 to 16 percent.

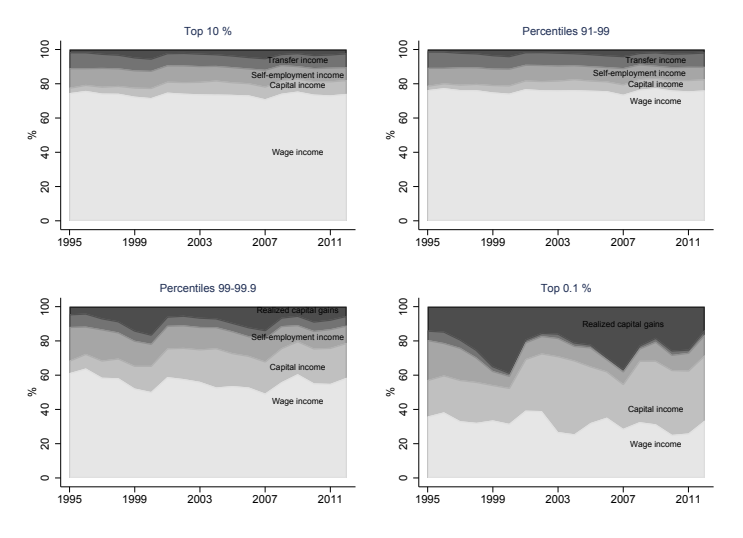
The observation period includes periods of strong economic growth but also deep economic crisis and subsequent recession. To reduce the annual volatility in income, the figure 4 shows the evolution in top income thresholds and income shares

Figure 2: The annual income composition for selected top income groups



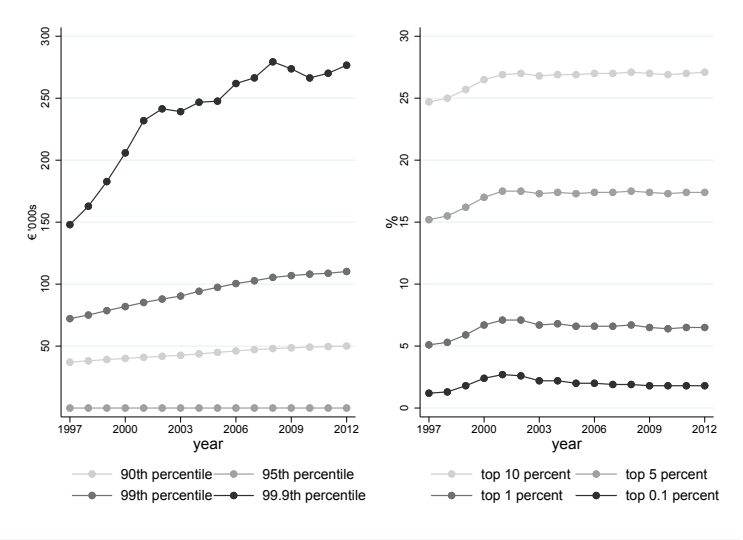
Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

Figure 3: The annual income composition for selected top groups.



Notes: Income measure is gross individual income including realized capital gains. Incomes deflated to 2008 euros.

Figure 4: The income thresholds for 3-year average incomes above different income percentiles (left panel) and income shares (right panel).



Notes: Income measure is average gross individual income during the previous 3-year excluding realized capital gains. Incomes deflated to 2008 euros.

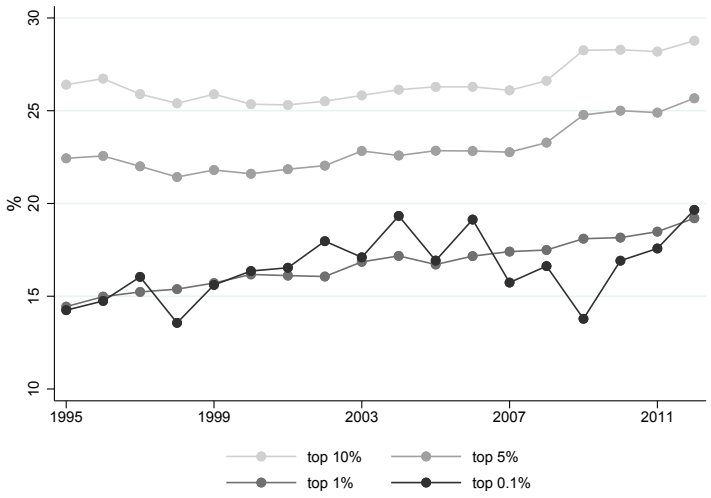
using individuals' average income from the previous three years. This reduces the height of the spikes in the data but the overall trend remains: in the end of the 90s the incomes of the top increased rapidly whether measured as income shares or looking at the thresholds for getting in to the top group. After this period there has been very little movement in either direction. The income shares are 2-3 percentage point higher than in the beginning of the observation period.

3.2 Share of women at the top and their income composition

This section will focus on female share in top incomes. During the observation period the trends in the labour market between genders have been similar so the observed differences between men and women are not stemming from the increasing attachment of women to labour markets. The rapid growth in the female participation in the labour markets already happened in the 70s and 80s.

Figure 5 shows the share of women in different groups based on total income

Figure 5: Share of women in different income groups, years 1995-2012



Notes: Income distribution based on gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

excluding the realized capital gains[9] (figure with 3 year average income is in appendix D). In the broader top 10% and top 5% groups the share was decreasing slightly during the rapid economic growth in the late 90s. Overall the growth in the share of women has been quite flat but there is a clear jump, approximately 2 percentage points, in the aftermath of the financial crisis. The share of women in the top 10% group was almost 29% at the end of 2012 which was an increase of 4 percentage points from the period's lowest value. In the top 5% one in four have been women since 2009.

Looking at the top 1%, the share of women has increased steadily throughout the period from less than 15 percent to almost 20 percent. Together with the fact that the share of women in the overall top 10% was stagnant much of the period, means that the women within the top 10% have become richer. In fact, during the period, the mean incomes in the top 1% percent grew 64,1 % for women and 74,7 % for men and in top 10% 50,2 and 62,0 respectively (table 1). Looking

[9]Figure D2 in appendix D shows the share with the income including the realized capital gains. The realized capital gains do not affect the top 5% or 10% groups. However, women share increase in the higher groups during a stock markets peaks. For example, before the IT bubble, in year 2000 the top 0.1% had 22,5 % of women. This is natural as women in these higher groups tend to have more capital income.

more closely at the yearly figures, we can also notice that even though there are fewer women at the very top, these women have incomes that compare to men's. In the top 1% women have higher mean incomes for half of the observation years.

Table 1: Mean and median incomes (excluding realized capital gains) in top 10% and top 1% groups

	Women				**Men**			
year	median top 10%	mean top 10%	median top 1%	mean top 1%	median top 10%	mean top 10%	median top 1%	mean top 1%
1995	42 865.42	48 486.34	86 925.66	113 331.02	45 202.79	53 226.71	88 814.97	106 080.42
1996	43 860.08	49 501.97	89 211.32	112 535.49	46 344.94	54 521.82	90 716.10	108 185.36
1997	45 093.70	51 760.26	91 706.51	126 434.39	47 601.29	56 640.98	95 206.24	116 999.53
1998	46 743.75	53 847.42	97 389.35	130 917.24	49 420.13	59 489.32	101 165.81	128 891.79
1999	47 741.80	56 484.97	104 137.18	154 619.58	50 676.37	65 643.20	107 009.79	170 666.13
2000	48 835.91	58 924.01	107 041.02	169 315.67	51 822.78	68 418.53	110 748.82	187 668.23
2001	501 66.36	60 055.17	112 733.27	167 769.02	53 079.75	67 198.46	115 454.17	165 570.32
2002	51 048.28	61 665.55	113 692.44	177 764.67	53 928.85	68 786.91	117 357.97	172 137.60
2003	52 605.38	64 043.94	115 822.79	186 088.53	55 274.43	69 055.52	121 039.45	163 427.13
2004	54 415.07	67 231.12	127 687.14	203 540.26	57 640.75	72 933.66	128 523.52	178 333.82
2005	55 892.89	67 323.49	126 076.20	187 636.40	59 238.39	73 795.46	131 260.77	174 347.21
2006	56 723.49	68 180.99	128 271.76	183 619.09	60 030.33	75 717.40	135 291.06	183 987.29
2007	58 608.85	70 179.33	135 311.30	183 349.82	62 174.17	78 906.68	142 776.16	195 163.74
2008	59 091.62	70 551.68	135 793.30	182 043.61	62 387.21	78 919.01	141 582.80	191 658.16
2009	59 312.60	69 569.15	130 520.15	168 291.67	62 874.39	78 274.82	139 372.16	181 421.90
2010	60 713.94	72 151.46	136 847.48	187 694.69	63 990.84	80 148.82	143 076.29	188 163.93
2011	61 186.55	73 423.96	138 539.73	196 610.29	64 458.88	81 571.80	147 903.87	198 195.63
2012	61 267.30	72 841.05	137 933.30	186 011.96	64 380.55	80 052.94	143 935.06	185 279.08
growth %								
1995-2012	**42.93**	**50.23**	**58.68**	**64.13**	**42.43**	**50.40**	**62.06**	**74.66**

The figures 6, 7 and 8 show the income composition in different top income groups for men and women. While it is remarkable that wage share is similar in the top 10% between men and women (around 75%), the higher income group show clear differences, where women have less wage income but more capital or self-employment income. In the top 10% group, women's share of transfer income has decreased over the years. The transfer income in these income groups mainly consists of pension income and secondly disability benefits for men and family and survivor's benefits for women. The reduction in the share of survivor benefits explain much of the decrease in the overall transfer income.

The lower share of wage income in the higher income group could indicate that

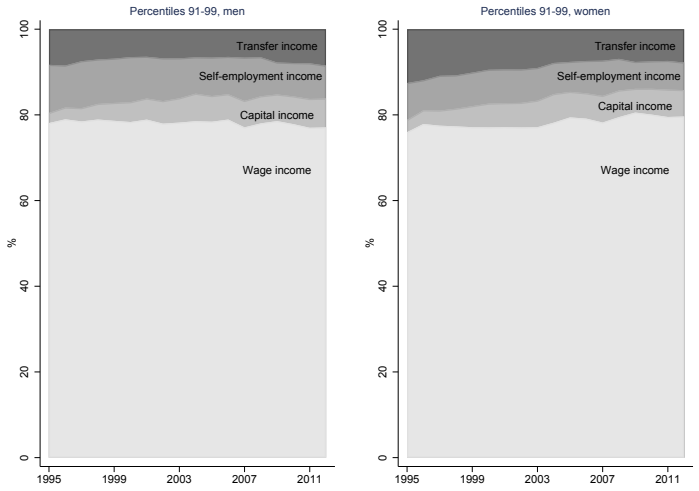
becoming very rich by working for outside firm is less common among women. The self-employment income in the top 1% is more important for the women. The female entrepreneurship indeed is more common in the top groups, however the share of entrepreneurs among top 1% females has decreased while at the same time the wage share has increased towards the end of the period. In 1995 within the top 1% females, approximately one in four were self-employed while among men 14 percent were self-employed. The male entrepreneurship at the top has increased around 4 percentage point while within women the share is almost the same. Despite these trends the self-employment income has decreased in total. Partly this could stem from the income shifting that the 1993 tax change induced (Selin and Pirttilä, 2011).

The most common socioeconomic status for men at the top was senior official and upper management. However, the females have taken over more upper managers positions in the 2000s. At the end of the period there was almost the same share (around 30%) of upper managers among women and men top income receivers. This is also supported by the previous observation that the wage income share has increased for women.

Figure 6: Income composition in top 10%

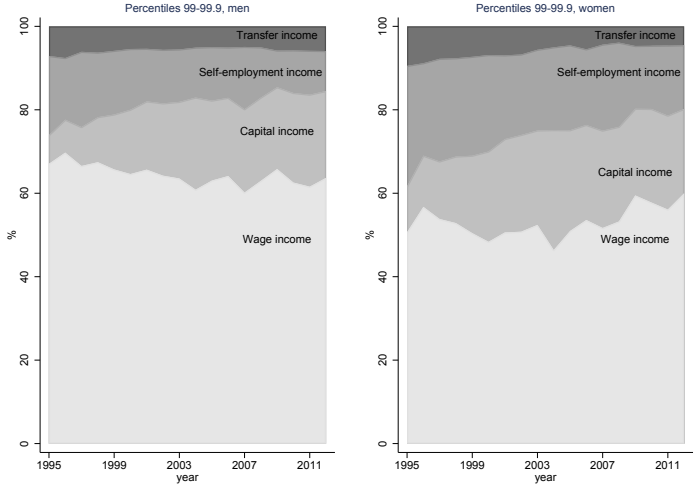
Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

Figure 7: Income composition in 91-99 percentiles



Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

Figure 8: Income composition in 99-99.9th percentiles



Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

Figure 9 presents the top 0.1%. There is a dramatic change in the income composition and a clear gender difference compared to the rest of the top 1%. The wage share for men range between 38 and 55 percent while women's wage share is

on average 22 % over the years observed. The share of self-employment income is approximately 10-15 percent higher among women, and the same is true for the capital income. Unfortunately the data does not include inheritance information, so I cannot determine the role of bequests for the capital share. In conclusion, it seems that the men in the overall top seem to earn from working for somebody else, while women at the top either earn by owning a company or get high returns from owning assets. The higher share of capital also translate as a higher representation of women at the very top of the income distribution including realized capital gains(appendix D, figure D2).

Figure 9: Income composition in top 0.1%

Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

3.3 Who becomes a top income receiver?

In this section I study the background characteristics of becoming a top income receiver. I estimate a logistic regression where the probability of becoming a top income receiver is regressed separately for women and men on their own and on their spouse characteristics. The regression equation is written as:

$$D_i = \alpha + \sum \beta_o X_i^{own} + \sum \beta_s X_i^{spouse} + \theta_s Y_i^d + \epsilon_i, \quad (1)$$

where D_i is a dummy for being in the top income receiver group (top 10% group in joint distribution)[10] and X_i contains a vector with the background variables for the individual herself and for the spouse if a spouse exists. I am especially interested in which fields of work and education levels are associated with a top income position and if there is an association between the spouse's income decile and women's probability to be in the top group. The background characteristics are education, field of work, number of children, marital status, mother tongue and region of residence. I also include spouse income decile Y_i^d in one of the regression specifications. The dependent variable is equal to 1 if the individual belongs to the top group in any year, and zero otherwise and the parameters to be estimated are α, β_o, β_s and θ_s. The industry and region variables are classified according to the TOL2008[11] and education level is categorized in 8 categories. The regressions control also for year fixed effects, age and age square effects. The mother tongue variable is recoded as Finnish speaking, Swedish speaking and other languages.

Table 2 shows the main estimated marginal effects from each regression specification. The full list of variables is shown in appendix C. The first and second column show the association between different characteristics and being in the top 10% for single-adult households separately for men and women[12]. From the fields of work, finance sector is most strongly associated with being in the top 10%. For women the legal sector also increases the probability to be in the top 10%. If an individual has studied in the STEM field, this is positively associated with high incomes but the marginal effect is small. Education level consistently increases the probability to be in the top. For the singles subsample the female entrepreneurship is not a strong correlate with being in the top 10% and for men it is even negative. However, entrepreneurship is associated positively and more strongly among the women who have a spouse (columns 3 and 5).

[10] I have also estimated the model for top 1% but as this smaller group is more prone to small sample bias in this logistic regression, I report here only the results for top 10%.

[11] http://www.stat.fi/meta/luokitukset/toimiala/001-2008/index_en.html

[12] The pooled sample estimates available upon request from the author

Table 2: Marginal effects from logistic regression

VARIABLES	Women (single)	Men (single)	Women (cohabiting)	Men (cohabiting)	Women (cohabiting)	Men (cohabiting)
Working as professional in						
finance	0.0533***	0.0656***	0.0599***	0.122***	0.0629***	0.127***
	(0.00457)	(0.00814)	(0.00338)	(0.00793)	(0.00385)	(0.00827)
legal services	0.0187***	-0.00390	0.0225***	-0.0106***	0.0219***	-0.0100***
	(0.00274)	(0.00254)	(0.00217)	(0.00265)	(0.00243)	(0.00290)
health services	0.0166***	0.0189***	0.0122***	0.0368***	0.0146***	0.0391***
	(0.00247)	(0.00588)	(0.00182)	(0.00591)	(0.00213)	(0.00627)
Education level						
secondary level	0.0123***	0.0135***	0.00989***	0.0439***	0.00607***	0.0345***
	(0.00180)	(0.00297)	(0.00140)	(0.00317)	(0.00168)	(0.00368)
lowest level tertiary	0.0248***	0.0364***	0.0266***	0.0731***	0.0243***	0.0634***
	(0.00155)	(0.00254)	(0.00123)	(0.00256)	(0.00145)	(0.00287)
lower-degree level tertiary	0.0400***	0.0680***	0.0498***	0.140***	0.0466***	0.126***
	(0.00225)	(0.00341)	(0.00187)	(0.00333)	(0.00205)	(0.00358)
higher-degree level tertiary	0.115***	0.122***	0.141***	0.250***	0.137***	0.227***
	(0.00343)	(0.00454)	(0.00269)	(0.00430)	(0.00288)	(0.00461)
doctorate or equivalent	0.205***	0.192***	0.255***	0.386***	0.251***	0.359***
	(0.0122)	(0.0132)	(0.00858)	(0.00986)	(0.00866)	(0.0101)
education in STEM	0.0116***	0.0116***	0.0223***	0.0211***	0.0268***	0.0268***
	(0.00298)	(0.00299)	(0.00245)	(0.00316)	(0.00281)	(0.00341)
Occupation						
self-employed	0.00206	-0.0201**	0.0382***	0.0130**	0.0405***	0.0294***
	(0.0159)	(0.00854)	(0.00625)	(0.00616)	(0.00698)	(0.00715)
upper management	0.187***	0.270***	0.165***	0.384***	0.172***	0.405***
	(0.0176)	(0.0115)	(0.00736)	(0.00706)	(0.00803)	(0.00799)
senior employees in R&D	0.0119	0.0379***	0.0142**	0.119***	0.0289***	0.152***
	(0.0160)	(0.00931)	(0.00617)	(0.00669)	(0.00696)	(0.00767)
senior employees in education	-0.0267*	-0.0618***	-0.0239***	-0.0673***	-0.00872	-0.0364***
	(0.0154)	(0.00917)	(0.00565)	(0.00673)	(0.00646)	(0.00777)
Other senior employees	0.0448***	0.0579***	0.0537***	0.172***	0.0696***	0.199***
	(0.0158)	(0.00997)	(0.00611)	(0.00741)	(0.00690)	(0.00831)
supervisors	-0.0167	-0.00170	-0.00578	0.0217***	0.0114	0.0503***
	(0.0160)	(0.00887)	(0.00613)	(0.00632)	(0.00703)	(0.00740)
clerical workers, independent	-0.0647***	-0.0530***	-0.0503***	0.0252***	-0.0345***	0.0526***
	(0.0152)	(0.00851)	(0.00549)	(0.00649)	(0.00631)	(0.00751)
clerical workers, routine	-0.0917***	-0.112***	-0.0628***	-0.0794***	-0.0503***	-0.0528***
	(0.0155)	(0.0103)	(0.00591)	(0.0111)	(0.00683)	(0.0122)
lower-level admin. & clerical occ.	-0.0930***	-0.0797***	-0.0792***	-0.0930***	-0.0682***	-0.0672***
	(0.0152)	(0.00833)	(0.00542)	(0.00612)	(0.00623)	(0.00716)
workers in agriculture	-0.101***	-0.150***	-0.0914***	-0.165***	-0.0801***	-0.132***
	(0.0171)	(0.00878)	(0.00614)	(0.00992)	(0.00761)	(0.0114)
manufacturing workers	-0.0647***	-0.0572***	-0.0562***	-0.0559***	-0.0375***	-0.0245***
	(0.0165)	(0.00808)	(0.00631)	(0.00597)	(0.00758)	(0.00714)
other production workers	-0.101***	-0.121***	-0.0851***	-0.146***	-0.0732***	-0.117***
	(0.0155)	(0.00828)	(0.00577)	(0.00649)	(0.00675)	(0.00770)
distribution and service workers	-0.107***	-0.132***	-0.0837***	-0.162***	-0.0698***	-0.134***
	(0.0152)	(0.00800)	(0.00549)	(0.00621)	(0.00637)	(0.00740)

Table 2: Marginal effects from logistic regression, cont'd

VARIABLES	Women (single)	Men (single)	Women (cohabiting)	Men (cohabiting)	Women (cohabiting)	Men (cohabiting)
spouse characteristics						
self-employed					0.00418	-0.0145*
					(0.00447)	(0.00762)
upper management					-0.0243***	-0.0380***
					(0.00443)	(0.00812)
senior employees in R& D					-0.0230***	-0.0431***
					(0.00441)	(0.00769)
senior employees in education					-0.0210***	-0.0480***
					(0.00467)	(0.00753)
other senior employees					-0.0196***	-0.0391***
					(0.00448)	(0.00753)
supervisors					-0.0250***	-0.0284***
					(0.00451)	(0.00797)
clerical workers, independent					-0.0132***	-0.0261***
					(0.00457)	(0.00719)
clerical workers, routine					-0.0130*	-0.00932
					(0.00734)	(0.00845)
lower-level admin. and clerical occ.					-0.0204***	-0.0423***
					(0.00464)	(0.00710)
workers in agriculture					-0.0269***	-0.0638***
					(0.00936)	(0.0140)
manufacturing workers					-0.0297***	-0.0350***
					(0.00451)	(0.00840)
other production workers					-0.0269***	-0.0502***
					(0.00521)	(0.00860)
distribution and service workers					-0.0231***	-0.0478***
					(0.00490)	(0.00765)
education in STEM					-0.00653***	-0.00297
					(0.00186)	(0.00507)
spouse income group						
2nd decile					-0.0133***	-0.0317***
					(0.00270)	(0.00326)
3rd decile					-0.0150***	-0.0348***
					(0.00269)	(0.00333)
4th decile					-0.0115***	-0.0334***
					(0.00268)	(0.00336)
5th decile					-0.0130***	-0.0307***
					(0.00268)	(0.00343)
6th decile					-0.0101***	-0.0247***
					(0.00266)	(0.00347)
7th decile					-0.00538**	-0.0201***
					(0.00263)	(0.00355)
8th decile					0.00103	-0.00445
					(0.00260)	(0.00369)
9th decile					0.0186***	0.0186***
					(0.00265)	(0.00394)
10th decile					0.0392***	0.0517***
					(0.00280)	(0.00453)
top 1%					0.00534**	0.0538***
					(0.00269)	(0.0108)
Observations	1,017,288	964,654	1,017,288	964,654	812,841	810,482
Sample mean prob.						
to be in top 10%	0.0414	0.1159	0.0760	0.2448	0.0860	0.2656

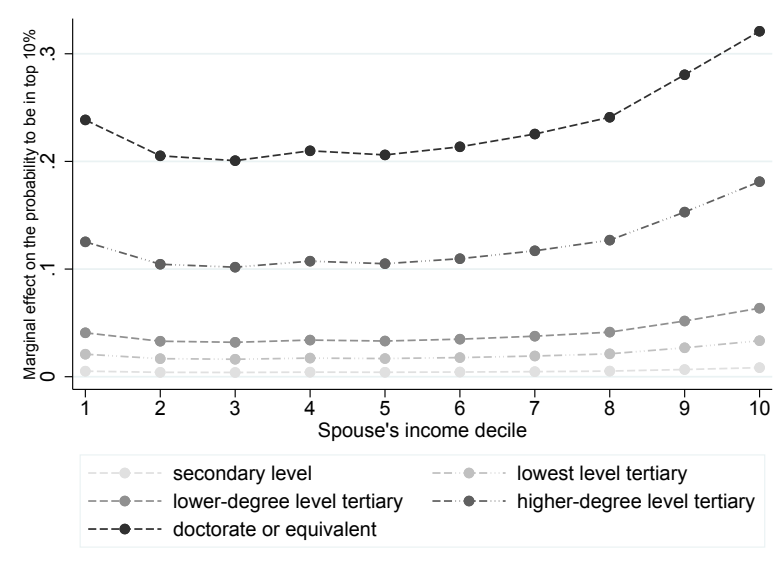
Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Note: All predictors at their mean values. Year fixed effects also included in the regression.

Columns 3 to 6 present the estimated marginal effects for the subsample of cohabiting individuals. For person's own characteristics the coefficients are for the most part in line with the singles subsample. The last rows of the table also show the marginal effects for the spouse characteristics. The last rows show the

estimates for association between being a top income receiver and the spouse's income decile. For women these coefficients are also reproduced conditional on woman's own education level in figure 10. We see that there is a strong positive association between having a spouse in the highest decile and being in the top 10%. For women, this increases the probability by 3.9 percentage points and for men 5.1 percentage points (compared to the baseline where the spouse is in lowest income decile).

The potential explanation for the strong positive correlation between a spouse's income decile and the probability to be in the top are assortative mating (meaning the positive relationship between the couple's income ranks or education already before forming a joint household) or income shifting between spouses (especially through firm and asset ownership). The income shifting from husband to wife gets less support from the estimated marginal effects as the association decreases and gets close to zero if spouse is in the top 1%. With income shifting between spouses, the expected association should be increasing in spouse's income. There is also an asymmetry in the marginal effects. If the woman is in the top 1%, the probability for the man to be in top 10% increases by 5.6 percentage points while women's probability increases by 0.5 percentage points.

Figure 10: Association between spouse's income decile and probability of being in the top 10% for women, conditional on own education.



Notes: The figure displays the marginal effect on the baseline probability to be in the top 10% conditional on spouse's income decile. The coefficients are based on the last two columns in the table 2.

In the current study the assortative mating hypothesis cannot be adequately tested because the data does not show the spouse's characteristics before the joint household is formed. However, using the years before couple gets married, there is some support for assortative mating. 34 % of individuals who are in the top decile (measured with previous 3-year average income) of the income distribution one year before marriage marry a person who is either in the 9th or 10th decile. This is especially strong for women: 65 percent of women in the top decile marry either from the same or 9th income decile (while the same is true for 25% percent for men).

4 Gender-specific income distributions

While section 3 explored women at the top of the joint income distribution, this section analyses the gender-specific income distributions. First I present the income shares calculated from the gender-specific distributions which tell about

the income concentration within women and men at the top. After this I explore the shape of the gender-specific top income distributions.

4.1 Top income shares 1995-2012

Table 3 shows the income shares for women and men in the top decile. Looking at the gender differences in the top decile, we notice that income shares in different years are 3.5 to 6 percentage points higher within men's distribution compared to women's. While the top decile collect on average 24.7 percent of total income in the female distribution over the observation years, the top in the male distribution collect 29.4 percent. That is, the income distribution within men is more unequal.

Relative to the men's top income shares, the changes in the income concentration within the top of the women's distribution has been modest. The increased inequality at the end of the 90s also shows up in the gender specific distributions; there was a clear increase in the gender specific income shares in the year 1999 and after, whether measured in absolute or relative terms. However, the increase in inequality was much higher in the men's distribution. Income shares have been more volatile for men and have ranged between 26,5 % and 31 %. During the years of strong economic growth (and high stock market returns) the gap between women's and men's income shares in the top 10% got larger.

A closer look within the top income decile reveals that much of the increase or decrease in inequality between the years comes from the very rich gaining or losing more over the years. There is extremely small movement in the income share within the percentiles 91-99. The movements in the income shares of the top 0.1% and percentiles 99-99.9 explain much of the overall developments within the top decile. For example between 1998 and 1999 the women's top 10% income share increased 1,21 percentage point while there was practically no change in the income share when the top 1% is excluded. The same is true in the men's distribution. The share of income for the top excluding the top 1% actually shrank even while there was almost a 3 percentage point increase in the income share for the top 10%.

Together with the observations on the overall top income shares presented in section 3.1 we can conclude that the growth in inequality especially during the

late 90s was driven in large part by the very rich men gaining more from the economic growth. Beside growing inequality within the top 10%, at the end of the 90s the gender differences in the income shares also got larger. The economic growth periods have been more favourable for men. However, this is not an indication of a more favourable labour market and saving opportunities for men. One needs to bear in mind that the incomes within the top groups of the men's distribution are higher than in the women's income distribution and thus the economic growth and downturn periods affect men and women disproportionally. The next section explores the shapes of the gender-specific tail distributions more closely.

Table 3: Top income shares from gender-specific income distribution

	Women				Men			
year	top 10%	top 5%	top 1%	top 0.1%	top 10%	top 5%	top 1%	top 0.1%
1995	23,03 %	13,87 %	4,43 %	1,13 %	26,59 %	16,83 %	6,00 %	1,63 %
1996	23,07 %	13,82 %	4,31 %	1,00 %	26,63 %	16,88 %	6,09 %	1,74 %
1997	23,49 %	14,24 %	4,66 %	1,23 %	27,06 %	17,32 %	6,40 %	1,80 %
1998	23,87 %	14,60 %	4,92 %	1,34 %	27,97 %	18,27 %	7,32 %	2,39 %
1999	25,08 %	15,87 %	6,14 %	2,32 %	30,84 %	21,38 %	10,43 %	4,99 %
2000	25,72 %	16,51 %	6,67 %	2,65 %	31,81 %	22,40 %	11,40 %	5,80 %
2001	24,43 %	15,17 %	5,39 %	1,66 %	29,53 %	19,93 %	8,89 %	3,47 %
2002	24,46 %	15,26 %	5,49 %	1,75 %	29,45 %	19,85 %	8,78 %	3,44 %
2003	24,77 %	15,55 %	5,67 %	1,84 %	28,89 %	19,14 %	7,85 %	2,50 %
2004	25,12 %	15,88 %	5,98 %	2,06 %	29,86 %	20,12 %	8,70 %	3,10 %
2005	25,22 %	15,96 %	5,95 %	2,03 %	29,83 %	20,00 %	8,47 %	2,85 %
2006	25,58 %	16,30 %	6,28 %	2,27 %	30,87 %	21,19 %	9,72 %	3,89 %
2007	25,48 %	16,14 %	5,96 %	1,78 %	31,38 %	21,68 %	10,02 %	3,73 %
2008	25,16 %	15,85 %	5,79 %	1,83 %	29,94 %	20,18 %	8,67 %	3,06 %
2009	24,60 %	15,30 %	5,28 %	1,43 %	29,28 %	19,38 %	7,81 %	2,40 %
2010	25,24 %	15,91 %	5,81 %	1,82 %	30,07 %	20,19 %	8,48 %	2,84 %
2011	25,42 %	16,10 %	5,94 %	1,89 %	31,02 %	21,26 %	9,68 %	3,99 %
2012	24,88 %	15,53 %	5,40 %	1,43 %	29,14 %	19,21 %	7,54 %	2,19 %

Notes: income measure is individual gross income excluding realized capital gains

4.2 Pareto model for gender-specific distributions

In modelling top incomes, a typical practice is to assume a Paretian distribution. In a recent contribution by Atkinson et al. (2016), the Pareto Type I assumption was used in order to estimate Pareto α parameters separately for men and women. The differences in αs were defined as sort of a "glass ceiling" because with the Pareto curve estimation one can show how fast, compared to men, the

women disappear from the top. However, even when a Pareto model might be a good approximation for the joint distribution, there might be differences when we are looking at the gender-specific top income distributions. Testing for the Pareto distribution hypothesis is often neglected even when the estimation of the parameters is meaningful only if the used data is drawn from the same distribution.

In the case of top incomes characterized with a Pareto model[13], the complementary CDF (survivor function) is in the form

$$S(y) = (\frac{y}{y_m})^{-\alpha}, \text{ when } y > y_m. \tag{2}$$

In the notation y denotes the income, $y_m > 0$ is the threshold where Pareto assumption is valid and the parameter α is the shape parameter which indicates how heavy the top tail in the distribution is. The smaller the α, the more heavier top tail the distribution has. The α needs to be greater than 1 in order to have a finite mean. In this case the mean is $\frac{\alpha y_m}{\alpha - 1}$. The α parameter is easily estimated if the lower threshold y_m is known with OLS or using maximum likelihood (ML) estimator.

Taking logarithm from each side of equation 2 results in $log\ S(y) = \alpha\ log\ y - C$, where C is a constant. We notice that the relationship between the complementary CDF and income is linear in a log-log plot. The usual first test to see if data is distributed according to Pareto is to graph this relationship. Left panel of the figure 11 shows the log-lot plot and the linear fit for the top 5 % for selected years[14]. In the beginning of the observation period the fit is worse in the women's distribution (lower R-squared), but over time as women catch up with men, the fit improves. Also the absolute slope parameter for women is higher indicating that the upper tail is less concentrated. However, the log-log plots and the linear fits are only necessary conditions and are not sufficient in their own (Clauset et al., 2009; Cirillo, 2013). This type of analysis should be complemented with other graphical tools and distributional tests.

One property of Pareto distribution is that if the minimum threshold is correct, the estimated α parameter should be stable above the threshold[15] The right panel

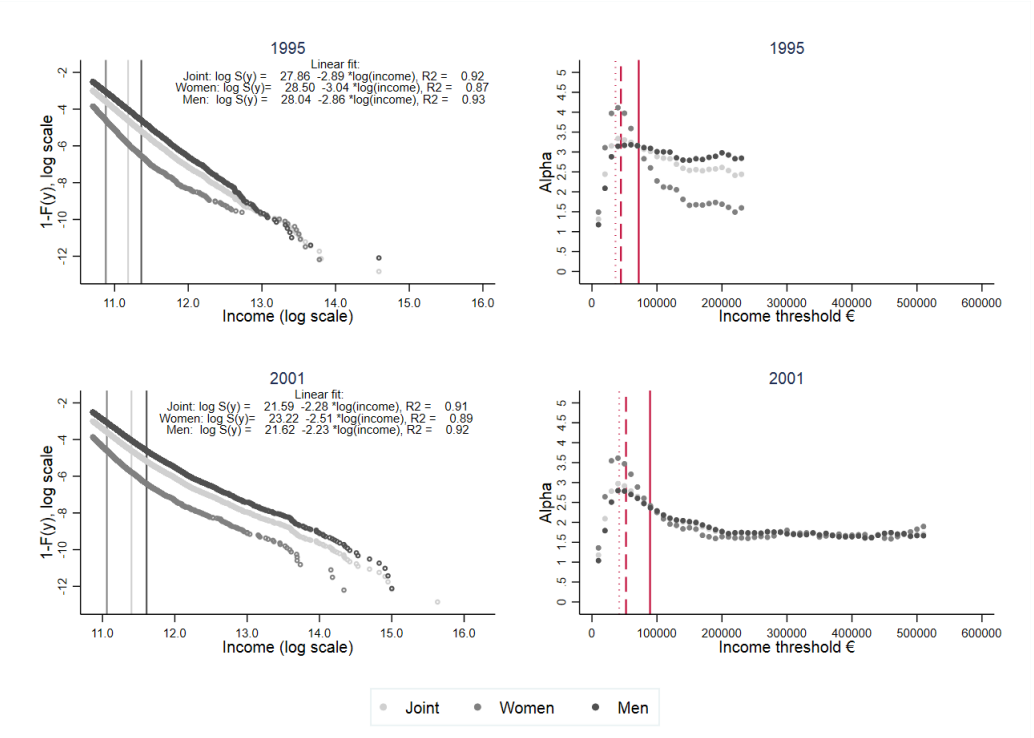
[13]Pareto model here refers to Pareto type I model.

[14]Other years available in the supplementary material.

[15]The ratio $\frac{y^*}{y_m}$ where the y^* is the average income above the threshold y_m is constant for all

of figure 11 plots the estimated α against the minimum thresholds[16]. The vertical lines give the threshold for top 10%, 5% and 1% in the joint distribution. The figure reveals that in the turn of the century and after the Pareto tail is more prevalent. Due to the smaller number of women at the top the men's distribution follows the joint distribution. In previous applications the common practice has been to assume the Pareto tail to be a valid approximation for incomes above the 95th or 99th percentile, however figure 11 reveals that especially for the female distribution, the threshold is higher than the 99th percentile. Kolmogorov-Smirnov goodness-of-fit test statistics indicate that the estimated Pareto distributions fits the data best when the lower threshold is set approximately to 200 000 euros for years after 2000 and this corresponds to 99.5th percentiles and above. However, the number of observations are small at the very top and so this result needs to be replicated with the full population data in the future.

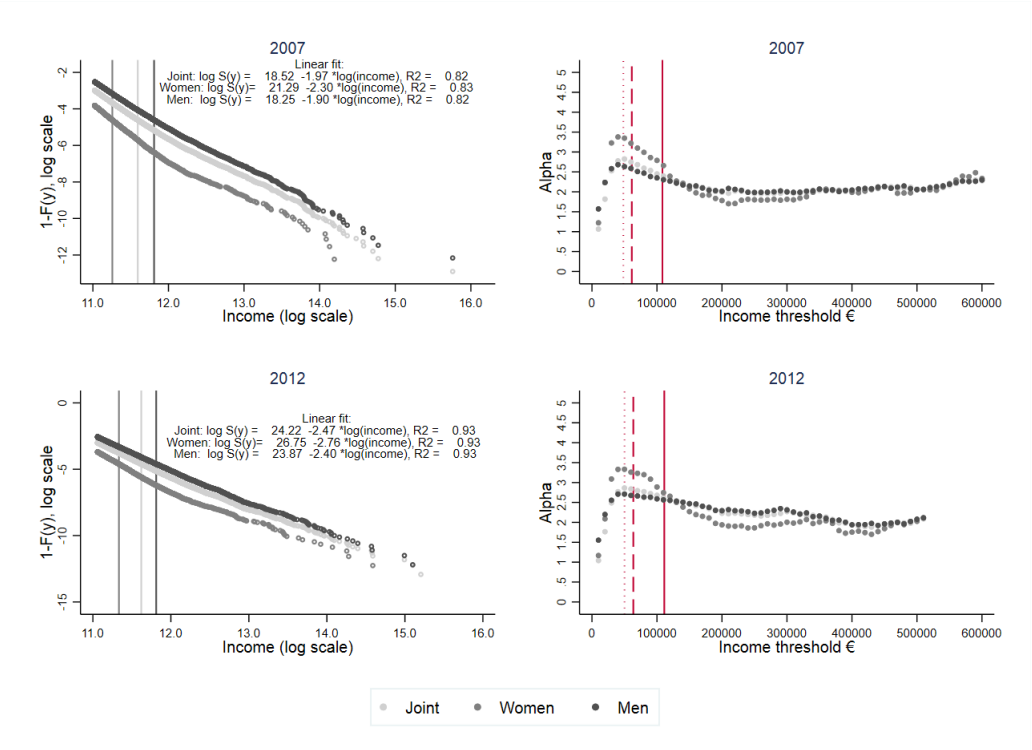
Figure 11: Fitting a Pareto distribution to the top of the income distribution: log-log plot (left panel) and estimated alphas (right panel)



y_m in Paretian distribution. The ratio equals $\frac{\alpha}{1-\alpha}$ and thus the α is constant.

[16] α parameter is estimated by maximum likelihood (Stata package paretofit). The method of maximum likelihood gives unbiased parameter estimates in the limit of large sample size.

Figure 11 (Cont.): Fitting a Pareto distribution to the top of the income distribution: log-log plot and estimated alphas



Notes: The income concept is gross income excluding realized capital gains. In the left panel: vertical lines represent the top 1% threshold from joint, women's and men's distribution. The linear fit is estimated for top 5%. In the right panel: dotted line represents the income threshold (from the joint distribution) for top 10%, dashed line for top 5% and solid line for top 1%. The alpha parameters are estimated with Maximum Likelihood.

The estimation of alphas for years 1995-1999 break down in the upper tail of the women's distribution. This is because either there are too few observations or the tail indeed is not Pareto distributed for women. It is hard to determine in a similar way to Atkinson et al. (2016) whether the "glass ceiling" has got thinner over time in Finland. Comparing the most stable alpha estimates show that in some years the female alpha has been below men's while for other years the opposite is true. However, from the overall analysis we can conclude that women have caught up with men and in this sense the "glass ceiling" has got thinner.

5 Income dynamics at the top by gender

There is relatively little research about the top income mobility beyond one year. Jenderny (2016) studies the top income mobility within 3 years with tax record data for Germany and finds that the top income mobility was fairly constant over the period 2001-2006 and persistence rates for top were somewhat higher than in Canada, the US and France. Evidence from Norway indicates that their top income mobility has increased somewhat in the 1990s (Aaberge et al., 2013). For the US and Canada, the concentration over time of income to the richest percent for US and richest 0.01 percent for Canada has been stable, being around 60-70 percent (Saez and Veall, 2005; Auten et al., 2013).

The income mobility among the top in Finland is briefly discussed in Suoniemi and Rantala (2010). The overall income mobility is shown to be significant but declining in the early 00s. In the top groups approximately 66 percent were the same individuals after 5 years but this decreased to 54 percent in the early 00s. However, the data used in their study is top-coded so they cannot study the mobility within the top 1% group properly. This section tackles the income mobility with an improved dataset for women and men separately.

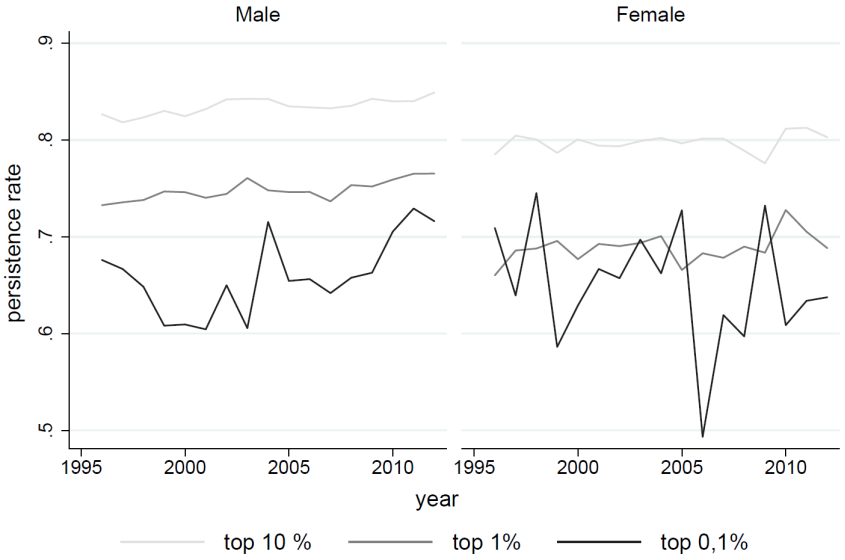
The income mobility measure here is defined as the proportion of individuals who stay in a certain income group after 1, 5 or 10 years and is called persistence rate as in Jenderny (2016). This captures the movement downwards of the certain top income group. To avoid the sizes of the groups affecting the results, I also use equal group sizes within the top 10% and top 1%[17]. The proportion to stay in a certain group is conditional on being in the same income group on all periods being studied. The income groups are defined for both genders from the joint income distribution.

In figure 12 the persistence rates after one year are presented. The proportion of individuals above the highest percentile, 0.1 %, is the most transitory and volatile. For men, this rate has ranged from 60 percent to almost 75 % while for women the very top membership is more volatile ranging from 50 % and 75 %. The other groups are more stable and exhibit a clear difference between the

[17]Jenderny (2016) also discusses this point and proposes to use equal sizes or use rank statistics.

genders in all groups. The top 10 % consists 83 % of same men after one year, while there are just below 80 % of same women in this group.

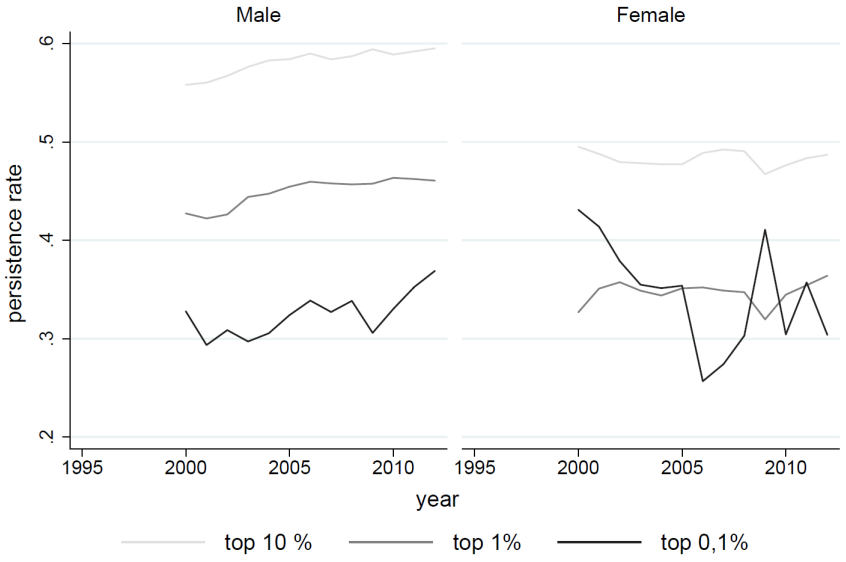
Figure 12: Persistence rates for top groups, after 1 year



Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

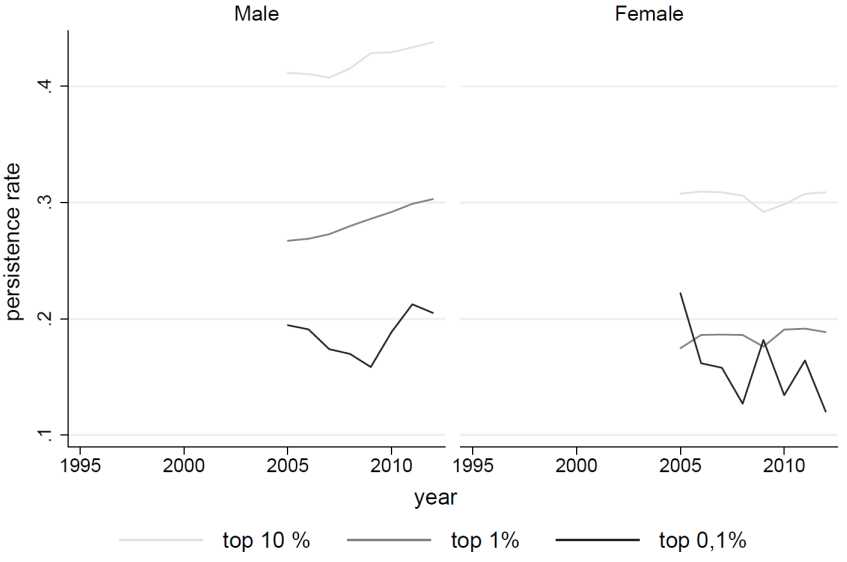
Figures 13 and 14 show the persistence rates for 5 and 10-year-periods over time. For these longer time periods there is a stark difference between the genders and the picture from the one year mobility is somewhat different. For women, the top 1 % and top 0.1% are on average similar but for men there is a large difference in the rates between these two groups. The difference between the other groups are larger than in the previous figure. In the top 10 % approximately 50 % of the women stay in this top group after 5 years but for men this rate has increased from 56% to 60%. The persistence of men at the overall top over the 10-year horizon has increased somewhat and in the top 1% there were approximately 30 percent of same men each year since 2000. For women, there is no similar increasing trend in the persistence and the respective persistence rate is much lower, in approximately 19%.

Figure 13: Persistence rates for top groups, 5 year



Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros. Conditional on being in the top group each year.

Figure 14: Persistence rates for top groups, 10 year



Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros. Conditional on being in the top group each year.

In the above figures, one shortcoming is that the group sizes vary which mechanically increases the downward mobility in the smaller groups. To see if richer

Table 4: Persistence within top 10%, after 1 year (left) and 5 years (right)

Persistence between t and t-1							Persistence between t and t-5						
	1996		2005		2012			1996		2005		2012	
Rank	Women	Men	Women	Men	Women	Men	Rank	Women	Men	Women	Men	Women	Men
1	.498	.5	.472	.518	.487	.534	1	.410	.418	.332	.411	.313	.401
2	.487	.496	.491	.509	.520	.529	2	.414	.406	.349	.392	.306	.402
3	.511	.523	.509	.543	.474	.550	3	.423	.406	.338	.400	.291	.396
4	.513	.511	.478	.513	.510	.544	4	.414	.418	.334	.396	.285	.372
5	.547	.530	.531	.542	.509	.549	5	.406	.414	.323	.395	.297	.397
6	.551	.534	.559	.566	.558	.566	6	.412	.401	.350	.394	.315	.387
7	.546	.547	.553	.579	.546	.581	7	.393	.422	.338	.410	.319	.384
8	.558	.579	.562	.605	.581	.609	8	.373	.423	.331	.428	.317	.418
9	.591	.656	.614	.647	.624	.654	9	.340	.460	.354	.433	.345	.44
10	.657	.731	.665	.745	.688	.764	10	.418	.510	.453	.537	.474	.553

Table 5: Persistence within top 1%, after 1 year (left) and 5 years (right)

Persistence between t and t-1							Persistence between t and t-5						
	1996		2005		2012			1996		2005		2012	
Rank	Women	Men	Women	Men	Women	Men	Rank	Women	Men	Women	Men	Women	Men
1	.327	.332	.384	.424	.326	.451	1	.25	.356	.243	.306	.304	.310
2	.333	.405	.449	.421	.369	.409	2	.303	.348	.159	.298	.202	.256
3	.268	.385	.413	.442	.346	.456	3	.338	.347	.266	.304	.204	.303
4	.393	.403	.450	.448	.324	.437	4	.287	.319	.225	.309	.220	.275
5	.407	.425	.333	.418	.382	.436	5	.291	.365	.253	.286	.259	.284
6	.421	.437	.314	.4	.346	.399	6	.169	.351	.259	.294	.217	.255
7	.346	.469	.474	.423	.420	.453	7	.211	.352	.305	.271	.202	.269
8	.365	.478	.436	.480	.397	.495	8	.354	.359	.236	.303	.176	.338
9	.489	.577	.508	.546	.5	.492	9	.333	.355	.254	.322	.193	.372
10	.709	.676	.727	.648	.637	.716	10	.370	.381	.424	.363	.337	.450

people are genuinely prone to more downward mobility, I split the top groups to equal sizes and compare these persistences between genders. The results are presented with respect to only downward mobility, that is I calculate the individuals who has the same or higher rank in year t compared to t-1 or t-5. These results are presented in tables 4 and 5.

The persistence in equal size groups within top 10% reveal that higher incomes are less mobile. Also the gender divide is present, women are more likely to move downward. In the top 1% the gender differences are not so clear but the mobility also decreases in the upper tail. However, it is noticeable that since the equal size groups are formed from the joint distribution, the gender-specific groups are not

equal sizes as women are under-represented in the top. However from the overall analysis in this section we can conclude that there is sort of a "paper floor effect" (Guvenen et al., 2014) for women present in Finland which has not disappeared over time.

6 Discussion

This paper has analysed Finnish top incomes from a gender perspective. The analysis contributes to the literature by using a unique dataset without top-coding and extending the top income literature to the direction of gender issues. I discovered that the share of women in the top group (defined as the top 10%) is slightly less than 30 percent and there has been few changes in this share during the period 1995-2012. However, within this group women have got richer, which shows up as increasing representation in the top 1%. Comparing to other countries (Atkinson et al., 2016; Boschini et al., 2017) it is interesting to remark that the gender divide at top is similar even though the institutions differ. In an international comparison Finland does not outperform the other countries even when in general Finland is considered as one of the most gender-equal countries.

I also discovered that there are clear gender-specific differences in the individual income composition, income distribution and income dynamics. In the top 1% and above, capital income is on average more important for women. However, in the most recent years, the share of wage income has increased at the top for women. Women also held more upper management positions at the end of the observation period compared to the 90s. This indicates that the share of women who work their way upwards in the income ladder is on the rise. Nonetheless, women are also more likely to drop from the top income groups than men but the downward mobility decreases for both genders in higher income ranks. The gender-specific income distributions show that the income among women is less dispersed but the inequality has increased over time.

Several explanations for increased interest in top incomes can be offered. Top incomes are an important research field as high incomes relate to political and bargaining power that affects other parts of the income distribution as well and have global significance. With the help of improved data it is possible to explore

the reasons behind growing disparities. From an overall inequality perspective, Roine and Waldenström (2015) show that top income shares are in fact associated positively and strongly with several inequality measures. The gender aspects of top incomes is of great importance because strong claims cannot be made about gender equality with respect to income without studying the whole distribution. Also, even in a country like Finland, gender equality is a topical question and thus needs to be monitored.

This paper, as a first step, has provided descriptive evidence on income and women. The next important question is to determine what lies behind it. There are several theories explaining the growing inequality especially at the upper end of the distribution (Alvaredo et al., 2013) but since the dynamics of the phenomenon is complex, the precise quantification of different causal factors is difficult. The gender dimension makes further analysis even more of a challenge because there are many unobservable factors affecting the positions of women and men in the labour markets and in the economy. For example, we do not know how the perception of success in the labour market differs between genders, a factor that might explain differences in incomes. Also, even when we have some knowledge about the gender norm effects on the labour market participation in the US (Bertrand et al., 2015), the Nordic countries have very different institutions.

The extent of assortative mating is an important question but with the current dataset the analysis of this theme was incomplete. Another potential mechanism in the evolution of female top incomes is the income shifting within households. Yet another fruitful avenue would be to analyse the dependencies between earnings and capital distributions, i.e. copulas theory. These questions should be studied further in the future.

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Appendices

A Income concepts

The incomes are drawn from the Statistics Finland's total statistics where the disposable income concept differs from the income distribution statistics. The primary difference is that the income concept used here includes the taxable realized capital gains.

Income items	Notes
gross labour income	
=regular wages and salary	
+ benefits in kind	
+ overtime compensation	
- pay generating costs	excl. travel expenses
+ gross self-employment income	
=income from agriculture	incl. property income
+ net forestry income	
+ other self-employment income	incl. property income
+ income from immaterial rights	
+ gross capital income	excl. interests taxed at source
dividends income	
+ realized capital gains	
- realized losses	
= **FACTOR INCOME**	
+ income transfers	
=pensions	private and public
+ sickness benefits	
+ insurance payments	
+ unemployment benefits	
+ other transfers	
= **GROSS INCOME**	
- income taxes, social contributions	excl. tithe
- labour income taxes in municipal and state taxation	
- capital income taxes in state taxation	
- taxes from self-employment	
- other mandatory contribution	
- wealth tax	until 2005
= **DISPOSABLE INCOME**	

B Major changes in the taxation of Finnish top incomes 1995-2012

Between years 1995-2012 the personal taxation has faced several reforms. The main trend in the tax reforms has been to reduce the tax rates and broaden the tax base. While the labour income taxation concerning the top income receivers has gone through a minor reforms over time, the capital and wealth income taxation has faced a more significant reforms.

From 1990 onwards until 2005, the corporation taxes were fully imputed (avoir fiscal system). The meaning here was to remove the double taxation of dividends and certain kind of interests. In this system, the corporation tax base included the dividends and interests which were payed out to the owners. The individual receiving the dividend or interest payment could then reduce his own tax burden with the same amount that the corporation had paid. This meant that if the dividend was capital income (after 1993), the individual did not have to pay any tax for this income, as the two tax rates (capital and corporation) were at the same level.

In 1993 Finland started to apply the dual income tax system. The earned income (wages, benefits, pensions, transfers, earnings shares, i.e. items not listed as capital) is taxed at a progressive tax rate and capital income (interests, part of dividends and realized gains, rents, insurance income, enterprise capital share, forest capital share) at a flat tax rate. The tax rate on capital (and corporations) was 25 per cent in 1995, 28 per cent between years 1996-1999 and 29 per cent between years 2000-2004, 28 per cent between years 2005-2011. Since 2012 there has been two tax rates for capital income, first set to 30 per cent for income that was less than 50 000 € and 32 for income that was over the threshold.

After avoir fiscal system was abolished, there was a shift towards the partial double taxation of dividends. Part of the dividends were tax-free under personal taxation. 70 per cent of the dividends from publicly listed companies were included in the personal capital income base and the rest was tax free. Dividends from privately held businesses are assigned as capital or labour incomes depending on the amount of dividend and net wealth of the business. If the return on the shares was less than 9 % of the firms net wealth and the dividends was below 90

000 € (60 000 € after 2011), the receiver paid no taxes. The dividends exceeding these thresholds were 30% tax-free and 70% taxable under capital taxation. If the return on the shares were more than 9 % of the net worth, the exceeding amount was taxable under labour taxation for the 70% part and tax-free for 30%. Since 2005 the corporation tax rates and capital tax rates have not moved hand in hand anymore, in fact the corporation tax rates are much lower.

The common interests are under tax-at-source since 1991. These are not part of the income statistics. Wealth tax was abolished from the beginning of 2006.

C Additional tables

Table C1: Descriptive statistics on income items

	Men			Women		
	mean	standard deviation	ind.	mean	standard deviation	ind.
1995						
Gross income	23 849.17	24 431.48	178 085	18 084.71	13 476.35	194 606
Disposable income	16 426.40	16 606.88	178 085	13 533.64	8 927.10	194 606
Wage income	14 485.12	18 323.17	178 085	9 876.44	12 290.99	194 606
Self-emp. income	2 330.47	9 755.95	178 085	824.15	6 162.23	194 606
Capital income	885.52	16 006.93	178 085	434.93	7 151.84	194 606
Realized capital gains (RCG)	322.15	12 438.97	178 085	134.82	4 737.44	194 606
Transfers	6 148.07	8 482.74	178 085	6 949.20	6 369.24	194 606
Gross income excl. RCG	23 527.03	19 822.56	178 085	17 949.89	12 337.22	194 606
1996						
Gross income	24 442.94	26 776.74	178 432	18 418.17	13 033.53	194 860
Disposable income	16 813.55	18 069.90	178 432	13 752.92	8 207.80	194 860
Wage income	15 137.96	18 938.34	178 432	10 356.27	12 777.38	194 860
Self-emp. Income	2 120.13	9 025.01	178 432	758.60	5 853.67	194 860
Capital income	1 009.93	19 519.87	178 432	447.00	5 818.30	194 860
Realized capital gains (RCG)	363.85	16 272.35	178 432	113.21	2 813.06	194 860
Transfers	6 174.91	8 688.28	178 43	6 856.31	6 399.90	194 860
Gross income excl. RCG	24 079.08	20 140.47	178 432	18 304.95	12 474.84	194 860
1997						
Gross income	25 373.32	27 035.91	179 433	18 831.36	14 757.12	195 508
Disposable income	17 753.63	18 834.32	179 433	14 227.19	9 711.26	195 508
Wage income	15 876.14	19 679.58	179 433	10 713.97	13 077.80	195 508
Self-emp. Income	2 344.89	10 378.41	179 433	816.22	7 169.64	195 508
Capital income	1 247.40	18 311.88	179 433	570.31	7 550.40	195 508
Realized capital gains (RCG)	473.01	12 856.40	179 433	194.71	3 578.34	195 508
Transfers	5 904.90	8 554.37	179 433	6 730.87	6 366.90	195 508
Gross income excl. RCG	24 900.31	22 612.70	179 433	18 636.65	13 972.74	195 508
1998						
Gross income	26 532.13	36 266.37	180 221	19 314.02	16 812.73	196 261
Disposable income	18 487.14	23 696.88	180 221	14 533.96	12 019.16	196 261
Wage income	16 870.06	25 051.32	180 221	11 104.89	13 470.49	196 261
Self-emp. Income	2 303.59	10 247.49	180 221	797.32	5 693.20	196 261
Capital income	1 590.96	25 964.59	180 221	714.68	11 450.76	196 261
Realized capital gains (RCG)	683.47	21 973.56	180 221	272.96	6 228.91	196 261
Transfers	5 767.52	8 793.93	180 221	6 697.15	6 650.08	196 261
Gross income excl. RCG	25 848.66	27 503.61	180 221	19 041.06	15 060.64	196 261

Table C1: Descriptive statistics on income items, cont.

	Men			Women		
	mean	standard deviation	ind.	mean	standard deviation	ind.
1999						
Gross income	28 316.34	84 430.28	180 964	20 027.44	33 567.54	197 197
Disposable income	19 698.52	46 370.54	180 964	15 114.56	23 416.11	197 197
Wage income	17 961.50	70 113.69	180 964	11 484.06	17 841.83	197 197
Self-emp. Income	2 331.71	11 666.58	180 964	808.73	5 918.34	197 197
Capital income	2 268.61	44 761.98	180 964	1 053.90	28 920.09	197 197
Realized capital gains (RCG)	1 176.74	40 157.79	180 964	534.44	24 956.79	197 197
Transfers	5 754.52	9 057.43	180 964	6 680.78	6 631.10	197 197
Gross income excl. RCG	27 139.59	71 674.95	180 964	19 493.01	19 961.04	197 197
2000						
Gross income	29 295.78	158 111.70	181 960	20 351.85	41 220.93	197 671
Disposable income	20 343.87	75 889.04	181 960	15 350.01	28 725.41	197 671
Wage income	18 687.67	148 103.80	181 960	11 779.28	19 846.49	197 671
Self-emp. Income	2 355.33	10 547.42	181 960	827.68	6 059.22	197 671
Capital income	2 653.74	47 983.75	181 960	1 230.53	36 363.74	197 671
Realized capital gains (RCG)	1 386.22	44 295.56	181 960	632.57	31 762.64	197 671
Transfers	5 599.04	8 813.98	181 960	6 514.37	6 568.32	197 671
Gross income excl. RCG	27 909.57	149 444.90	181 960	19 719.29	21 738.05	197 671
2001						
Gross income	28 746.85	54 934.64	183 110	20 395.26	22 418.86	198 642
Disposable income	20 373.97	33 433.41	183 110	15 640.21	17 979.2	198 642
Wage income	18 778.18	39 896.15	183 110	12 173.30	14 692.82	198 642
Self-emp. Income	2 250.93	10 262.49	183 110	819.25	6 233.17	198 642
Capital income	2 058.83	35 507.53	183 110	866.43	17 711.16	198 642
Realized capital gains (RCG)	649.68	30 385.08	183 110	211.67	4 336.40	198 642
Transfers	5 658.97	8 863.02	183 110	6 536.26	6 713.41	198 642
Gross income excl. RCG	28 097.17	43 348.68	183 110	20 183.58	21 280.70	198 642
2002						
Gross income	29 123.12	61 302.91	184 446	20 857.98	22 539.17	199 683
Disposable income	20 850.89	36 141.55	184 446	16 079.59	16 764.12	199 683
Wage income	18 872.72	51 584.28	184 446	12 483.00	16 378.91	199 683
Self-emp. Income	2 284.91	10 823.16	184 446	817.43	6 226.86	199 683
Capital income	2 070.74	31 392.89	184 446	890.63	16536.21	199 683
Realized capital gains (RCG)	532.67	21 793.02	184 446	205.30	6 947.577	199 683
Transfers	5 894.75	9 280.47	184 446	6 666.92	6 914.176	199 683
Gross income excl. RCG	28 590.45	56 221.53	184 446	20 652.68	20 847.02	199 683
2003						
Gross income	29 439.35	38 088.16	185 621	21 431.54	35 630.47	200 724
Disposable income	21 282.85	28 059.99	185 621	16 596.92	31 713.02	200 724
Wage income	18 884.19	25 358.20	185 621	12 770.26	15 020.87	200 724
Self-emp. Income	2 231.93	10 833.19	185 621	821.89	6 347.59	200 724
Capital income	2 238.89	27 049.01	185 621	1 040.41	32 831.1	200 724
Realized capital gains (RCG)	519.06	13 011.86	185 621	240.77	4 649.47	200 724
Transfers	6 084.34	9 351.26	185 621	6 798.97	7 003.70	200 724
Gross income excl. RCG	28 920.28	34 042.34	185 621	21 190.77	34 333.1	200 724

Table C1: Descriptive statistics on income items, cont.

	Men			Women		
	mean	standard deviation	ind.	mean	standard deviation	ind.
2004						
Gross income	30 774.13	54 233.35	186 835	22 239.27	34 705.44	201 587
Disposable income	22 389.6	41 978.93	186 835	17 290.21	29 936.48	201 587
Wage income	19 518.40	26 617.47	186 835	13 267.07	16 012.78	201 587
Self-emp. Income	2 226.92	11 438.36	186 835	823.58	6 303.94	201 587
Capital income	2789.28	459 59.11	186 835	1 199.67	31 447.27	201 587
Realized capital gains (RCG)	742.00	29 561.99	186 835	285.94	7 729.71	201 587
Transfers	6 239.54	9 500.58	186 835	6 948.95	7 058.77	201 587
Gross income excl. RCG	30 032.13	42 331.76	186 835	21 953.33	32 143.61	201 587
2005						
Gross income	31 432.23	47 233.92	188 196	22 788.03	37 467.06	202 676
Disposable income	22 737.96	32 464.81	188 196	17 618.90	27 844.65	202 676
Wage income	20 104.56	28 194.18	188 196	13 678.13	16 365.57	202 676
Self-emp. Income	2 294.226	11 724.75	188 196	842.20	6 822.31	202 676
Capital income	2 734.68	36 493.14	188 196	1 230.217	34 309.48	202 676
Realized capital gains (RCG)	917.23	27 116.37	188 196	415.48	23 766.15	202 676
Transfers	6 298.76	9 598.30	188 196	7 037.47	7 169.50	202 676
Gross income excl. RCG	30 514.99	34 726.93	188 196	22 372.55	24 672.98	202 676
2006						
Gross income	32 602.45	77 706.96	189 162	23 283.96	46 166.02	203 564
Disposable income	23 595.48	53 827.63	189 162	18 059.09	33 142.97	203 564
Wage income	20 784.22	34 946.61	189 162	13 984.39	17 240.99	203 564
Self-emp. Income	2 279.43	11 889.13	189 162	868.86	7 793.89	203 564
Capital income	3 192.87	68 265.04	189 162	1 342.80	43 178.40	203 564
Realized capital gains (RCG)	1 422.26	63 819.02	189 162	562.42	39 132.76	203 564
Transfers	6 345.94	9 761.04	189 162	7 087.89	7 282.32	203 564
Gross income excl. RCG	31 180.19	39 445.43	189 162	22 721.54	20 021.14	203 564
2007						
Gross income	33 878.47	61 372.77	190 225	23 741.41	22 234.53	204 479
Disposable income	24 694.12	41 259.53	190 225	18 513.12	15 218.33	204 479
Wage income	21 355.52	37 437.83	190 225	14 356.42	17 939.89	204 479
Self-emp. Income	2 576.14	13 033.17	190 225	944.13	7 503.72	204 479
Capital income	3 579.39	45 194.79	190 225	1 350.02	14 103.93	204 479
Realized capital gains (RCG)	1 618.48	35 647.42	190 225	538.25	8 910.60	204 479
Transfers	6 367.42	9 959.44	190 225	7 090.83	7 362.87	204 479
Gross income excl. RCG	32 260.00	45 148.83	190 225	23 203.16	19 059.69	204 479
2008						
Gross income	33 183.39	52 508.13	191 631	23 881.18	33 250.17	205 709
Disposable income	24 376.7	36 049.08	191 631	18 725.67	23 599.75	205 709
Wage income	21 529.11	32 992.06	191 631	14 728.93	17 579.40	205 709
Self-emp. Income	2 361	11 707.65	191 631	914.99	7 477.75	205 709
Capital income	2 885.797	39 229.37	191 631	1 179.053	28 961.92	205 709
Realized capital gains (RCG)	827.77	27 413.85	191 631	359.70	26 790.21	205 709
Transfers	6 407.48	10 025.93	191 631	7 058.20	7 399.89	205 709
Gross income excl. RCG	32 355.62	42 405.03	191 631	23 521.48	19 130.40	205 709

Table C1: Descriptive statistics on income items, cont.

	Men			Women		
	mean	standard deviation	ind.	mean	standard deviation	ind.
2009						
Gross income	32 538.35	41 686.72	192 781	24 402.18	22 242.49	206 678
Disposable income	24 315.83	28 567.63	192 781	19 357.87	15 633.54	206 678
Wage income	20 756.65	30 112.24	192 781	14 978.24	17 757.11	206 678
Self-emp. Income	2 039.986	10 468.38	192 781	843.40	7 118.38	206 678
Capital income	2 520.71	27 373.71	192 781	1 036.73	15 301.07	206 678
Realized capital gains (RCG)	571.55	15 534.11	192 781	259.41	11 424.75	206 678
Transfers	7 221.01	10 570.30	192 781	7 543.81	7 852.34	206 678
Gross income excl. RCG	31 966.80	36 678.86	192 781	24 142.76	18 263.93	206 678
2010						
Gross income	33 444.27	46 387.91	194 116	24 955.60	30 209.25	207 939
Disposable income	24 926.83	32 977.38	194 116	19 711.78	21 609.74	207 939
Wage income	20 748	27 045.78	194 116	15 121.22	18 551.04	207 939
Self-emp. Income	2 162.58	11 936.91	194 116	878.46	7 740.90	207 939
Capital income	3 088.66	35 973.95	194 116	1 267.61	24 545.77	207 939
Realized capital gains (RCG)	941.51	24 013.86	194 116	403.72	17 747.64	207 939
Transfers	7 445.03	10 798.48	194 116	7 688.31	7 933.07	207 939
Gross income excl. RCG	32 502.76	36 154.23	194 116	24 551.88	20 650.54	207 939
2011						
Gross income	33 948.14	104 285.10	195 295	24 971.76	27 059.80	208 923
Disposable income	25 275.19	75 195.20	195 295	19 711.07	19 235.51	208 923
Wage income	20 956.06	27 703.1	195 295	15 138.08	18 485.98	208 923
Self-emp. Income	2 196.028	12 254.84	195 295	909.79	7 869.95	208 923
Capital income	3 469.56	99 586.63	195 295	1 304.282	20 508.62	208 923
Realized capital gains (RCG)	1 189.019	88 146.57	195 295	388.45	14 324.62	208 923
Transfers	7 326.49	10 813.49	195 295	7 619.60	7 924.53	208 923
Gross income excl. RCG	32 759.12	41 015.78	195 295	24 583.30	21 803.60	208 923
2012						
Gross income	33 092.08	40 783.97	196 967	25 032.32	22 195.65	210 288
Disposable income	24 572.82	28 086.85	196 967	19 732.23	15 082.27	210 288
Wage income	20 850.40	26 704.07	196 967	15 225	18 634.98	210 288
Self-emp. Income	2 051.664	11 383.39	196 967	877.20	7 992.11	210 288
Capital income	2 617.73	29 318.28	196 967	1117.12	13 660.51	210 288
Realized capital gains (RCG)	522.94	13 324.35	196 967	240.75	4 027.85	210 288
Transfers	7 572.28	11 040.32	196 967	7 813.00	8 104.217	210 288
Gross income excl. RCG	32 569.14	36 110.50	196 967	24 791.57	21 495.90	210 288
Observations over time			3 357 480			3 626 995

Notes: income items deflated to 2008 euros.

Table C2: Marginal effects from logistic regression, full list

VARIABLES	Women (single)	Men (single)	Women (cohabiting)	Men (cohabiting)	Women (cohabiting)	Men (cohabiting)
Working as professional in						
finance	0.0533***	0.0656***	0.0599***	0.122***	0.0629***	0.127***
	(0.00457)	(0.00814)	(0.00338)	(0.00793)	(0.00385)	(0.00827)
legal services	0.0187***	-0.00390	0.0225***	-0.0106***	0.0219***	-0.0100***
	(0.00274)	(0.00254)	(0.00217)	(0.00265)	(0.00243)	(0.00290)
health services	0.0166***	0.0189***	0.0122***	0.0368***	0.0146***	0.0391***
	(0.00247)	(0.00588)	(0.00182)	(0.00591)	(0.00213)	(0.00627)
Education level						
secondary level	0.0123***	0.0135***	0.00989***	0.0439***	0.00607***	0.0345***
	(0.00180)	(0.00297)	(0.00140)	(0.00317)	(0.00168)	(0.00368)
lowest level tertiary	0.0248***	0.0364***	0.0266***	0.0731***	0.0243***	0.0634***
	(0.00155)	(0.00254)	(0.00123)	(0.00256)	(0.00145)	(0.00287)
lower-degree level tertiary	0.0400***	0.0680***	0.0498***	0.140***	0.0466***	0.126***
	(0.00225)	(0.00341)	(0.00187)	(0.00333)	(0.00205)	(0.00358)
higher-degree level tertiary	0.115***	0.122***	0.141***	0.250***	0.137***	0.227***
	(0.00343)	(0.00454)	(0.00269)	(0.00430)	(0.00288)	(0.00461)
doctorate or equivalent	0.205***	0.192***	0.255***	0.386***	0.251***	0.359***
	(0.0122)	(0.0132)	(0.00858)	(0.00986)	(0.00866)	(0.0101)
education in STEM	0.0116***	0.0116***	0.0223***	0.0211***	0.0268***	0.0268***
	(0.00298)	(0.00299)	(0.00245)	(0.00316)	(0.00281)	(0.00341)
Other control variables (own)						
married	0.00295	0.0342***	0.00286**	0.0289***	-0.00217	0.0256***
	(0.00204)	(0.00280)	(0.00129)	(0.00203)	(0.00158)	(0.00229)
children	0.0194***	0.0265***	0.0116***	0.0375***	0.0107***	0.0354***
	(0.00142)	(0.00256)	(0.00114)	(0.00183)	(0.00134)	(0.00208)
small children	-0.0139***	-0.0171***	-0.0188***	0.00314*	-0.0216***	0.0106***
	(0.00212)	(0.00490)	(0.00113)	(0.00181)	(0.00130)	(0.00197)
living in the capital region	0.0323***	0.0303***	0.0386***	0.0752***	0.0350***	0.0708***
	(0.00152)	(0.00199)	(0.00143)	(0.00235)	(0.00161)	(0.00259)
age	0.00693***	0.0101***	0.0154***	0.0243***	0.0170***	0.0212***
	(0.000278)	(0.000379)	(0.000425)	(0.000503)	(0.000812)	(0.00106)
age squared	-4.69e-05***	-7.22e-05***	-0.000139***	-0.000203***	-0.000161***	-0.000181***
	(2.90e-06)	(4.29e-06)	(4.75e-06)	(5.42e-06)	(8.66e-06)	(1.12e-05)
native finnish	0.0314***	0.0527***	0.0449***	0.144***	0.0458***	0.143***
	(0.00303)	(0.00397)	(0.00249)	(0.00468)	(0.00341)	(0.00616)
native swedish	0.0404***	0.0609***	0.0419***	0.164***	0.0391***	0.149***
	(0.00416)	(0.00516)	(0.00325)	(0.00586)	(0.00456)	(0.00791)
self-employed	0.00206	-0.0201**	0.0382***	0.0130**	0.0405***	0.0294***
	(0.0159)	(0.00854)	(0.00625)	(0.00616)	(0.00698)	(0.00715)
upper management	0.187***	0.270***	0.165***	0.384***	0.172***	0.405***
	(0.0176)	(0.0115)	(0.00736)	(0.00706)	(0.00803)	(0.00799)
senior employees in R	0.0119	0.0379***	0.0142**	0.119***	0.0289***	0.152***
	(0.0160)	(0.00931)	(0.00617)	(0.00669)	(0.00696)	(0.00767)
senior employees in education	-0.0267*	-0.0618***	-0.0239***	-0.0673***	-0.00872	-0.0364***
	(0.0154)	(0.00917)	(0.00565)	(0.00673)	(0.00646)	(0.00777)
Other senior employees	0.0448***	0.0579***	0.0537***	0.172***	0.0696***	0.199***
	(0.0158)	(0.00997)	(0.00611)	(0.00741)	(0.00690)	(0.00831)
supervisors	-0.0167	-0.00170	-0.00578	0.0217***	0.0114	0.0503***
	(0.0160)	(0.00887)	(0.00613)	(0.00632)	(0.00703)	(0.00740)
clerical workers, independent	-0.0647***	-0.0530***	-0.0503***	0.0252***	-0.0345***	0.0526***
	(0.0152)	(0.00851)	(0.00549)	(0.00649)	(0.00631)	(0.00751)
clerical workers, routine	-0.0917***	-0.112***	-0.0628***	-0.0794***	-0.0503***	-0.0528***
	(0.0155)	(0.0103)	(0.00591)	(0.0111)	(0.00683)	(0.0122)
lower-level admin. & clerical occ.	-0.0930***	-0.0797***	-0.0792***	-0.0930***	-0.0682***	-0.0672***
	(0.0152)	(0.00833)	(0.00542)	(0.00612)	(0.00623)	(0.00716)
workers in agriculture	-0.101***	-0.150***	-0.0914***	-0.165***	-0.0801***	-0.132***
	(0.0171)	(0.00878)	(0.00614)	(0.00992)	(0.00761)	(0.0114)
manufacturing workers	-0.0647***	-0.0572***	-0.0562***	-0.0559***	-0.0375***	-0.0245***
	(0.0165)	(0.00808)	(0.00631)	(0.00597)	(0.00758)	(0.00714)
other production workers	-0.101***	-0.121***	-0.0851***	-0.146***	-0.0732***	-0.117***
	(0.0155)	(0.00828)	(0.00577)	(0.00649)	(0.00675)	(0.00770)
distribution and service workers	-0.107***	-0.132***	-0.0837***	-0.162***	-0.0698***	-0.134***
	(0.0152)	(0.00800)	(0.00549)	(0.00621)	(0.00637)	(0.00740)
students	-0.115***	-0.171***	-0.0863***	-0.223***	-0.0755***	-0.200***
	(0.0152)	(0.00770)	(0.00559)	(0.00625)	(0.00644)	(0.00736)
pensioners	-0.108***	-0.155***	-0.0797***	-0.169***	-0.0676***	-0.136***
	(0.0152)	(0.00762)	(0.00542)	(0.00563)	(0.00626)	(0.00677)
unemployed	-0.115***	-0.170***	-0.0913***	-0.214***	-0.0799***	-0.186***
	(0.0151)	(0.00757)	(0.00540)	(0.00554)	(0.00621)	(0.00665)
unknown	-0.0925***	-0.146***	-0.0350***	-0.102***	-0.0195**	-0.0685***
	(0.0154)	(0.00790)	(0.00668)	(0.00732)	(0.00759)	(0.00852)

Table C2: Marginal effects from logistic regression, full list (cont.)

VARIABLES	Women (single)	Men (single)	Women (cohabiting)	Men (cohabiting)	Women (cohabiting)	Men (cohabiting)
spouse characteristics						
self-employed					0.00418	-0.0145*
					(0.00447)	(0.00762)
upper management					-0.0243***	-0.0380***
					(0.00443)	(0.00812)
senior employees in R& D					-0.0230***	-0.0431***
					(0.00441)	(0.00769)
senior employees in education					-0.0210***	-0.0480***
					(0.00467)	(0.00753)
other senior employees					-0.0196***	-0.0391***
					(0.00448)	(0.00753)
supervisors					-0.0250***	-0.0284***
					(0.00451)	(0.00797)
clerical workers, independent					-0.0132***	-0.0261***
					(0.00457)	(0.00719)
clerical workers, routine					-0.0130*	-0.00932
					(0.00734)	(0.00845)
lower-level admin. and clerical occ.					-0.0204***	-0.0423***
					(0.00464)	(0.00710)
workers in agriculture					-0.0269***	-0.0638***
					(0.00936)	(0.0140)
manufacturing workers					-0.0297***	-0.0350***
					(0.00451)	(0.00840)
other production workers					-0.0269***	-0.0502***
					(0.00521)	(0.00860)
distribution and service workers					-0.0231***	-0.0478***
					(0.00490)	(0.00765)
students					-0.0127**	-0.0506***
					(0.00546)	(0.00765)
pensioners					-0.00570	-0.0140*
					(0.00462)	(0.00771)
unemployed					-0.0133***	-0.0422***
					(0.00459)	(0.00733)
unknown					-0.0254***	-0.0562***
					(0.00539)	(0.00837)
age					-0.00171**	0.00361***
					(0.000730)	(0.00106)
age squared					2.24e-05***	-2.94e-05**
					(7.43e-06)	(1.16e-05)
native finnish					-0.00147	0.0139*
					(0.00521)	(0.00727)
native swedish					-0.000433	0.0370***
					(0.00604)	(0.00906)
education in STEM					-0.00653***	-0.00297
					(0.00186)	(0.00507)
secondary level					0.00538**	0.0134***
					(0.00256)	(0.00347)
lowest level tertiary					0.00588***	0.0261***
					(0.00189)	(0.00252)
lower-degree level tertiary					0.00308	0.0110***
					(0.00206)	(0.00299)
higher-degree level tertiary					0.000194	0.00766**
					(0.00204)	(0.00345)
doctorate or equivalent					-0.00784**	0.00375
					(0.00321)	(0.00828)

Table C2: Marginal effects from logistic regression, full list (cont.)

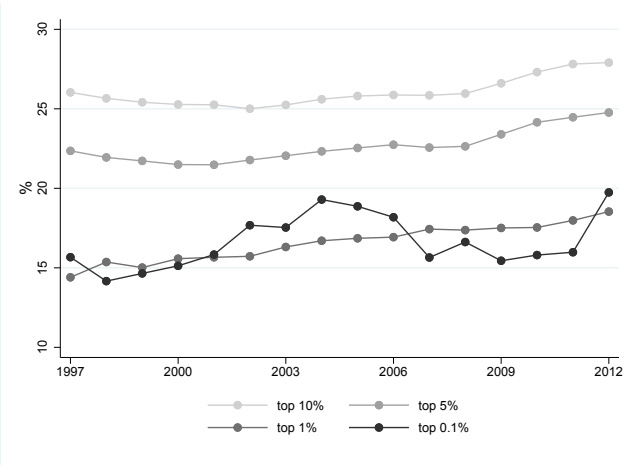
VARIABLES	Women (single)	Men (single)	Women (cohabiting)	Men (cohabiting)	Women (cohabiting)	Men (cohabiting)
spouse income group						
2nd decile					-0.0133***	-0.0317***
					(0.00270)	(0.00326)
3rd decile					-0.0150***	-0.0348***
					(0.00269)	(0.00333)
4th decile					-0.0115***	-0.0334***
					(0.00268)	(0.00336)
5th decile					-0.0130***	-0.0307***
					(0.00268)	(0.00343)
6th decile					-0.0101***	-0.0247***
					(0.00266)	(0.00347)
7th decile					-0.00538**	-0.0201***
					(0.00263)	(0.00355)
8th decile					0.00103	-0.00445
					(0.00260)	(0.00369)
9th decile					0.0186***	0.0186***
					(0.00265)	(0.00394)
10th decile					0.0392***	0.0517***
					(0.00280)	(0.00453)
top 1%					0.00534**	0.0538***
					(0.00269)	(0.0108)
Observations	1,017,288	964,654	1,017,288	964,654	812,841	810,482
Sample mean prob. to be in top 10%	0.0414	0.1159	0.0760	0.2448	0.0860	0.2656

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Note: All predictors at their mean values. Year fixed effects also included in the regression.

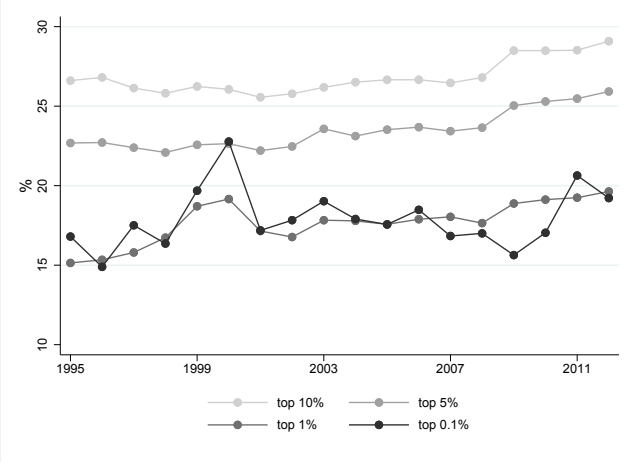
D Additional figures

Figure D1: Share of women in different income groups, 1995-2012



Notes: income distribution based on 3-year average gross income excluding the realized capital gains. Incomes deflated to 2008 €'s.

Figure D2: Share of women in different income groups, years 1995-2012



Notes: income distribution based on gross income including the realized capital gains. Incomes deflated to 2008 €'s.

Supplementary material

Top incomes and income dynamics from a gender perspective:
Evidence from Finland 1995-2012

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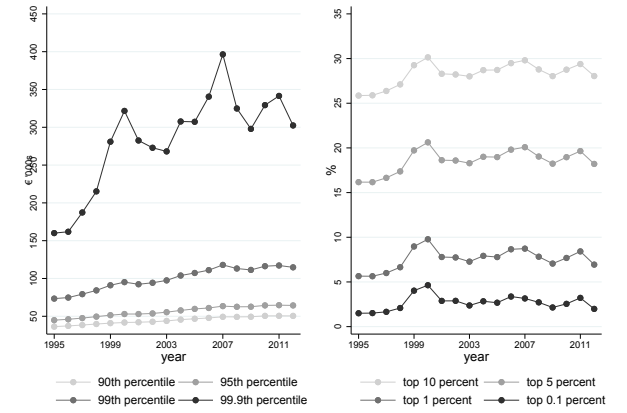
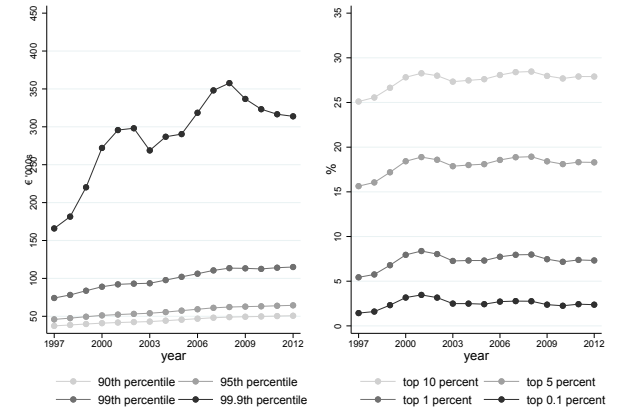
1 Figures including realized capital gains

Figure 1: The annual income thresholds for incomes above different income percentiles (left panel) and income shares (right panel)



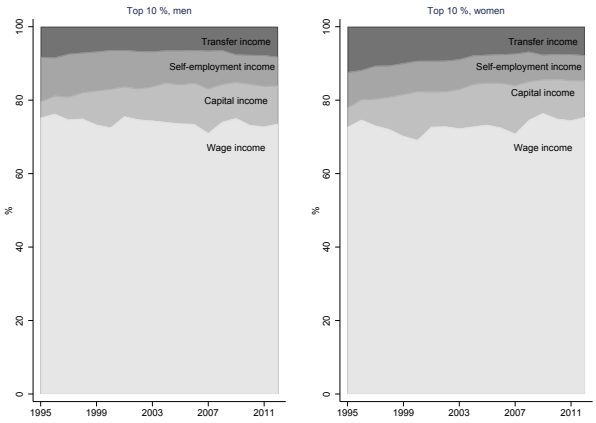
Notes: Gross income measure used here is income including realized capital gains and. Incomes deflated to 2008 euros.

Figure 2: The income thresholds for 3-year average incomes above different income percentiles (left panel) and income shares (right panel)



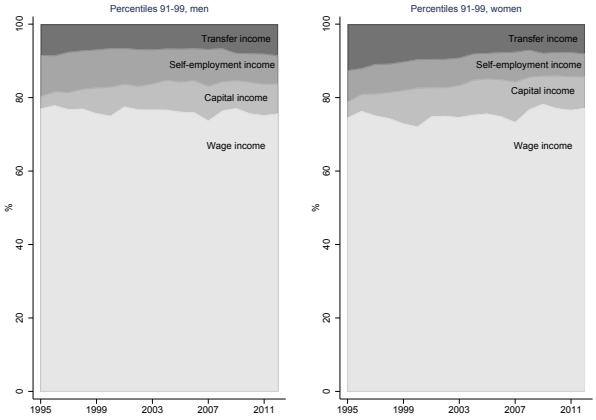
Notes: Gross income measure used here is income including realized capital gains and. Incomes deflated to 2008 euros.

Figure 3: Income composition in top 10%



Notes: Income measure is gross individual income including realized capital gains. Incomes deflated to 2008 euros.

Figure 4: Income composition in 91-99 percentiles

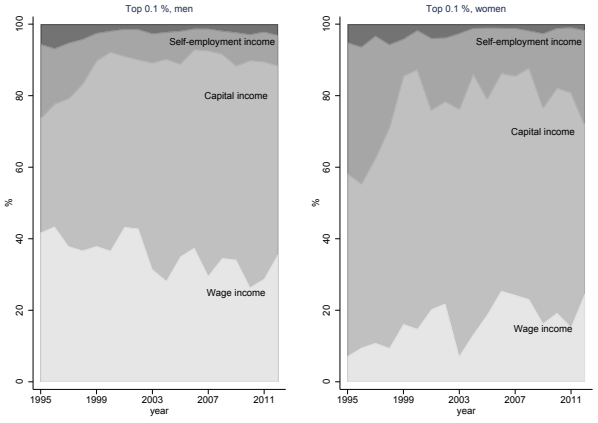


Notes: Income measure is gross individual income including realized capital gains. Incomes deflated to 2008 euros.

Figure 5: Income composition in 99-99.9th percentiles

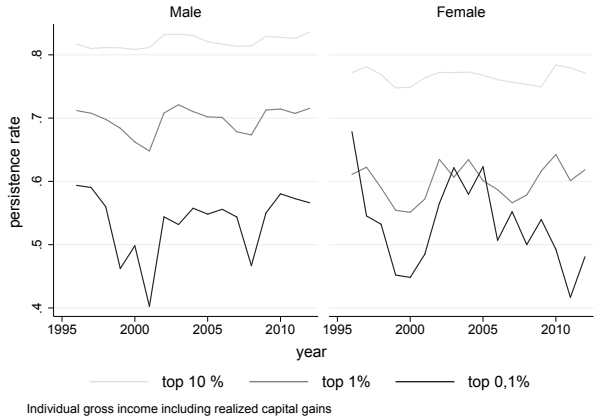
Notes: Income measure is gross individual income excluding realized capital gains. Incomes deflated to 2008 euros.

Figure 6: Income composition in top 0.10%



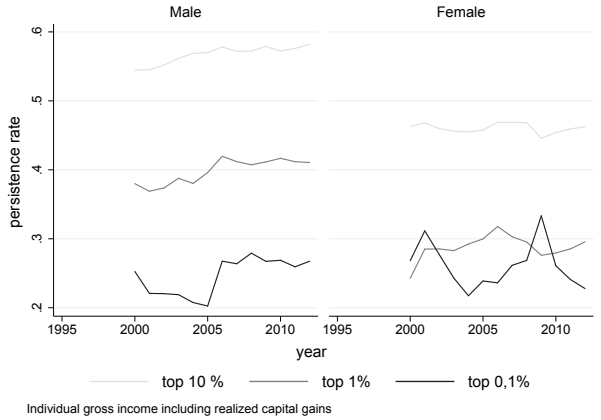
Notes: Income measure is gross individual income including realized capital gains. Incomes deflated to 2008 euros.

Figure 7: Persistence rates for top groups, after 1 year



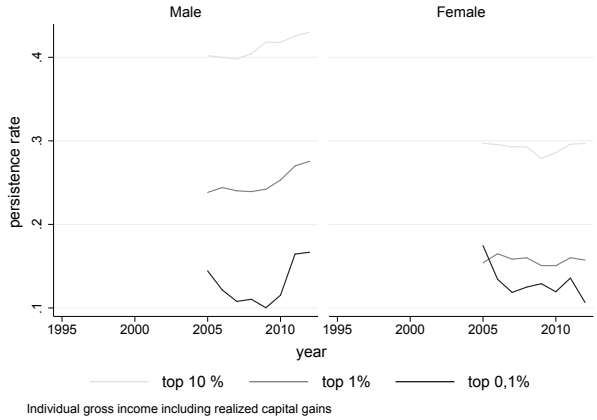
Notes: Gross income measure including realized capital gains. Incomes deflated to 2008 euros.

Figure 8: Persistence rates for top groups, after 5 years



Notes: Gross income measure including realized capital gains. Incomes deflated to 2008 euros. Conditional on being in the top group each year.

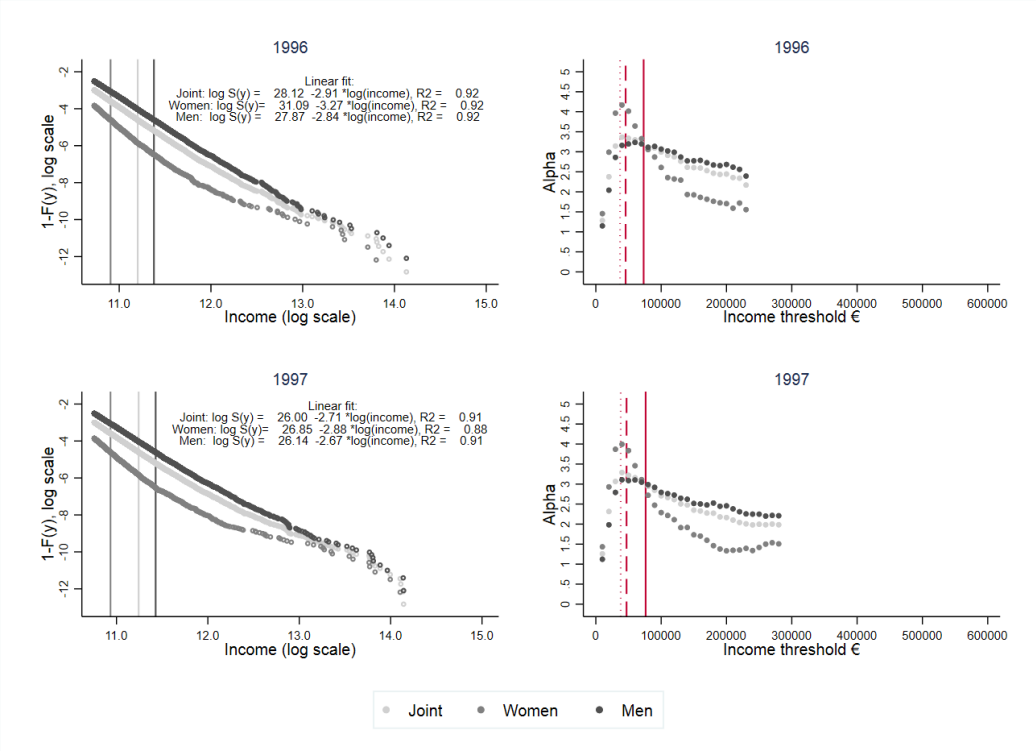
Figure 9: Persistence rates for top groups, after 10 years

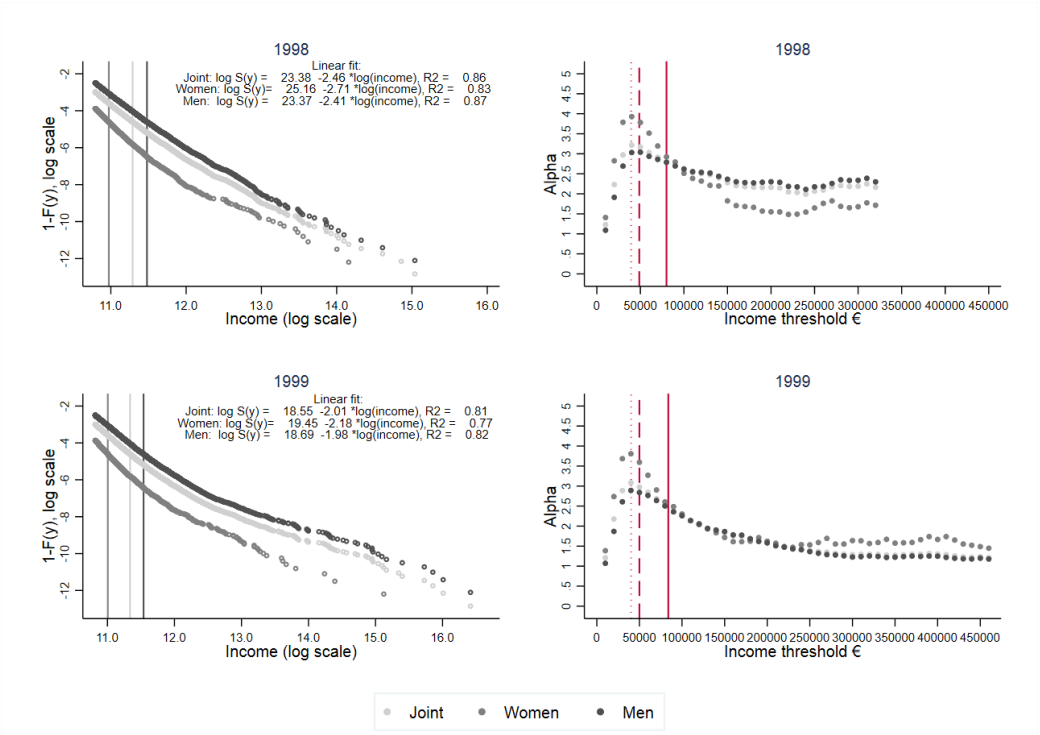


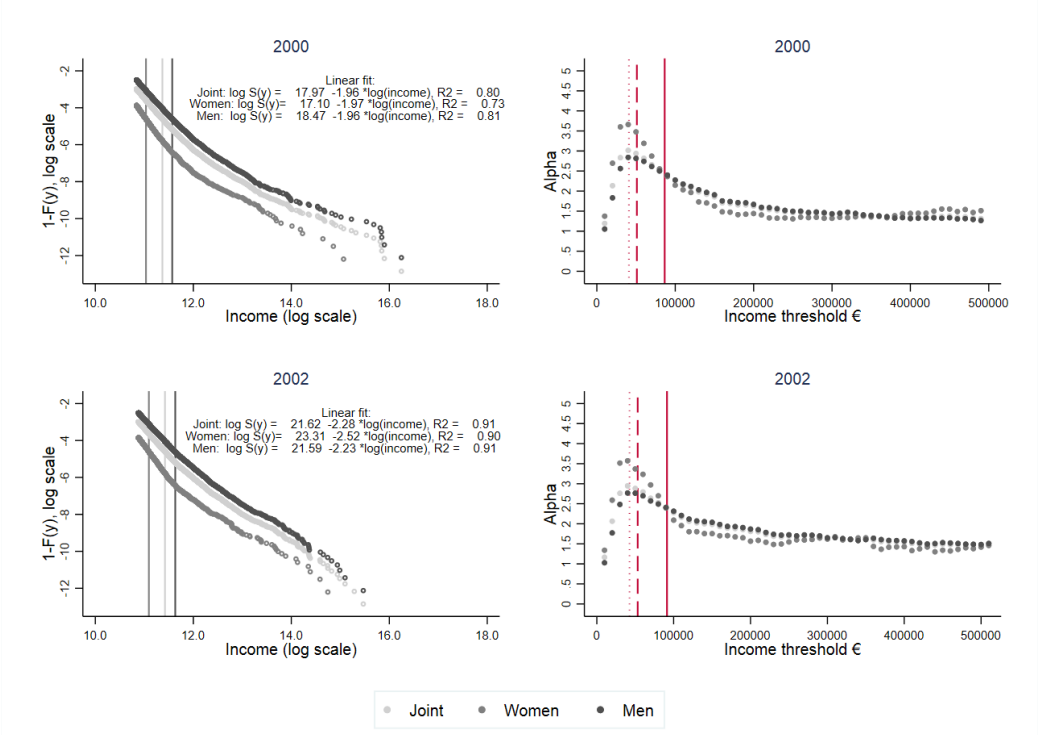
Notes: Gross income measure including realized capital gains. Incomes deflated to 2008 euros. Conditional on being in the top group each year.

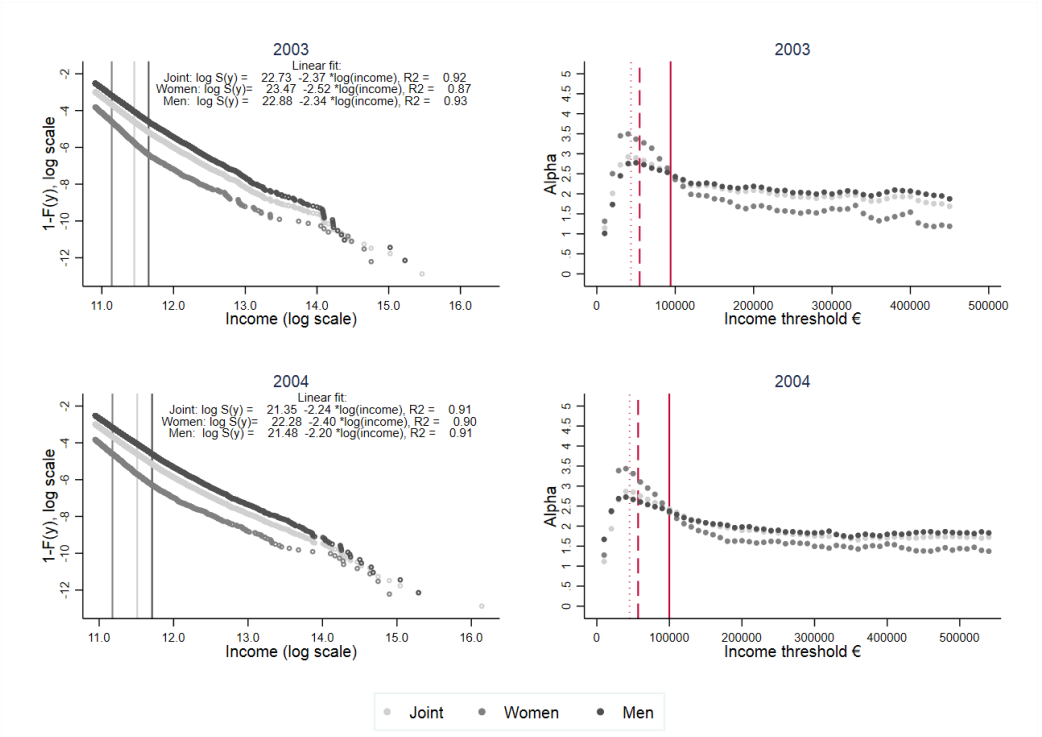
2 Pareto Fits for Other Years

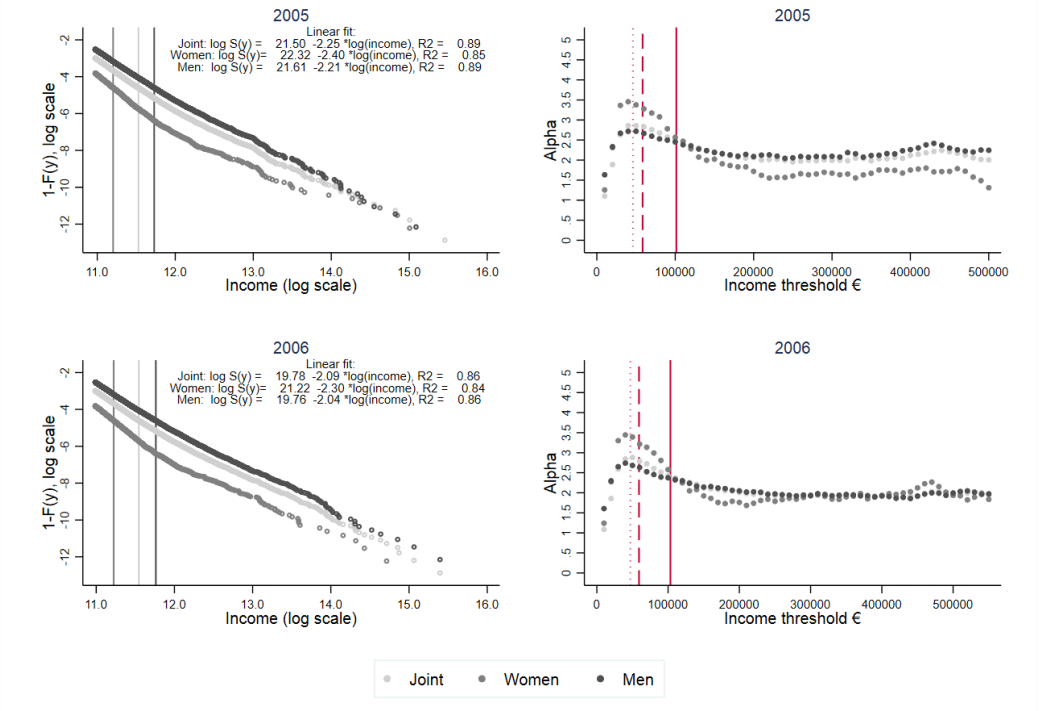
Figure 10: Fitting a Pareto distribution to the top of the income distribution: log-log plot (left panel) and estimated parameters (right panel)

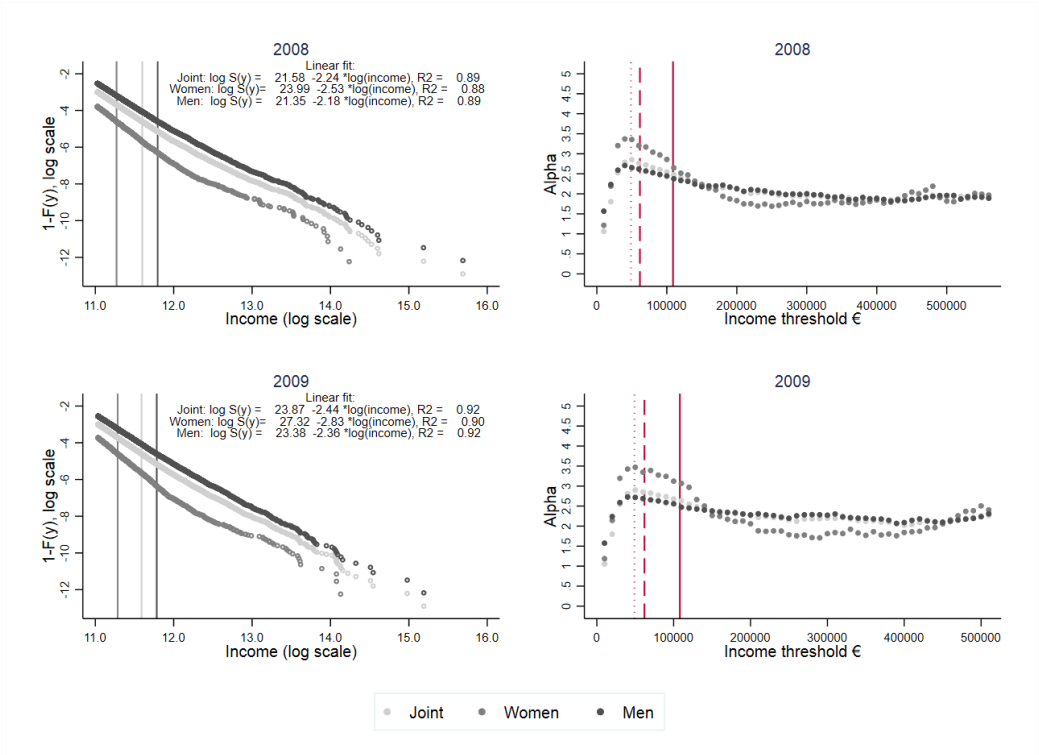


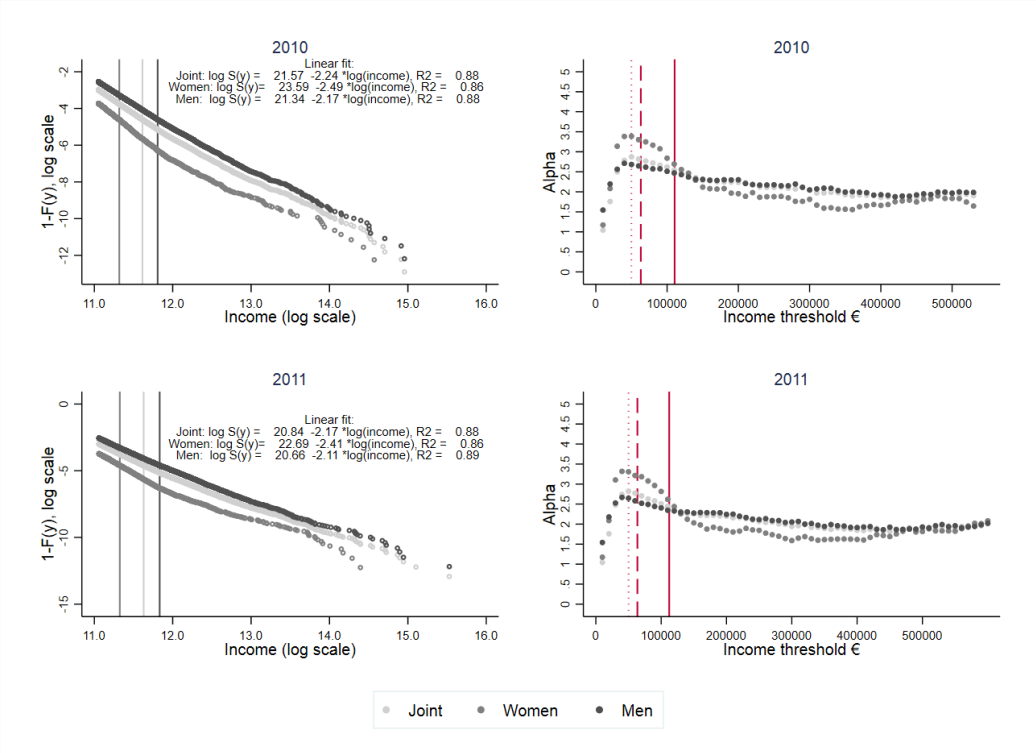

1998
Linear fit:
Joint: log S(y) = 23.38 -2.46 *log(income), R2 = 0.86
Women: log S(y)= 25.16 -2.71 *log(income), R2 = 0.83
Men: log S(y) = 23.37 -2.41 *log(income), R2 = 0.87
1-F(y), log scale
Income (log scale)
Alpha
Income threshold €
1999
Linear fit:
Joint: log S(y) = 18.55 -2.01 *log(income), R2 = 0.81
Women: log S(y)= 19.45 -2.18 *log(income), R2 = 0.77
Men: log S(y) = 18.69 -1.98 *log(income), R2 = 0.82
Joint
Women
Men


2000
Linear fit:
Joint: log S(y) = 17.97 -1.96 *log(income), R2 = 0.80
Women: log S(y)= 17.10 -1.97 *log(income), R2 = 0.73
Men: log S(y) = 18.47 -1.96 *log(income), R2 = 0.81
1-F(y), log scale
Income (log scale)
Alpha
Income threshold €
2002
Linear fit:
Joint: log S(y) = 21.62 -2.28 *log(income), R2 = 0.91
Women: log S(y)= 23.31 -2.52 *log(income), R2 = 0.90
Men: log S(y) = 21.59 -2.23 *log(income), R2 = 0.91
Joint
Women
Men


2003
Linear fit:
Joint: log S(y) = 22.73 -2.37 *log(income), R2 = 0.92
Women: log S(y)= 23.47 -2.52 *log(income), R2 = 0.87
Men: log S(y) = 22.88 -2.34 *log(income), R2 = 0.93
1-F(y), log scale
Income (log scale)
Alpha
Income threshold €
2004
Linear fit:
Joint: log S(y) = 21.35 -2.24 *log(income), R2 = 0.91
Women: log S(y)= 22.28 -2.40 *log(income), R2 = 0.90
Men: log S(y) = 21.48 -2.20 *log(income), R2 = 0.91
Joint
Women
Men


2005
Linear fit:
Joint: log S(y) = 21.50 -2.25 *log(income), R2 = 0.89
Women: log S(y)= 22.32 -2.40 *log(income), R2 = 0.85
Men: log S(y) = 21.61 -2.21 *log(income), R2 = 0.89
1-F(y), log scale
Income (log scale)
Alpha
Income threshold €
2006
Linear fit:
Joint: log S(y) = 19.78 -2.09 *log(income), R2 = 0.86
Women: log S(y)= 21.22 -2.30 *log(income), R2 = 0.84
Men: log S(y) = 19.76 -2.04 *log(income), R2 = 0.86
Joint
Women
Men


2008
Linear fit:
Joint: log S(y) = 21.58 -2.24 *log(income), R2 = 0.89
Women: log S(y)= 23.99 -2.53 *log(income), R2 = 0.88
Men: log S(y) = 21.35 -2.18 *log(income), R2 = 0.89
1-F(y), log scale
Income (log scale)
2008
Alpha
Income threshold €
2009
Linear fit:
Joint: log S(y) = 23.87 -2.44 *log(income), R2 = 0.92
Women: log S(y)= 27.32 -2.83 *log(income), R2 = 0.90
Men: log S(y) = 23.38 -2.36 *log(income), R2 = 0.92
1-F(y), log scale
Income (log scale)
2009
Alpha
Income threshold €
Joint
Women
Men



Notes: The income concept is gross income excluding realized capital gains. In the left panel: vertical lines represent the top 1% threshold from joint, women's and men's distribution. The linear fit is estimated for top 5%. In the right panel: dotted line represents the income threshold (from the joint distribution) for top 10%, dashed line for top 5% and solid line for top 1%. The alpha parameters are estimated with Maximum Likelihood.

3 Additional tables

Table 1: Persistence within top 10% (equal group sizes), after one year (upper table) and five years (lower table)

	Persistence between t and t-1																															
	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
1	0.50	0.50	0.56	0.51	0.57	0.52	0.52	0.55	0.55	0.54	0.52	0.51	0.51	0.53	0.49	0.52	0.50	0.53	0.47	0.52	0.53	0.52	0.54	0.56	0.46	0.51	0.38	0.45	0.53	0.52	0.55	0.54	0.49	0.53
2	0.49	0.50	0.59	0.55	0.55	0.52	0.50	0.55	0.56	0.53	0.53	0.52	0.49	0.55	0.51	0.52	0.52	0.53	0.49	0.51	0.52	0.52	0.55	0.56	0.48	0.50	0.40	0.47	0.51	0.53	0.54	0.55	0.52	0.53
3	0.51	0.52	0.57	0.54	0.55	0.53	0.53	0.53	0.56	0.54	0.53	0.51	0.51	0.56	0.49	0.53	0.52	0.56	0.51	0.54	0.53	0.52	0.54	0.57	0.46	0.51	0.39	0.47	0.51	0.53	0.53	0.55	0.47	0.55
4	0.51	0.51	0.59	0.54	0.57	0.52	0.54	0.55	0.57	0.56	0.54	0.52	0.51	0.55	0.53	0.55	0.53	0.56	0.48	0.51	0.50	0.53	0.53	0.58	0.47	0.51	0.38	0.49	0.51	0.55	0.55	0.53	0.51	0.54
5	0.55	0.53	0.59	0.57	0.60	0.55	0.56	0.58	0.54	0.56	0.52	0.53	0.52	0.57	0.53	0.56	0.50	0.56	0.53	0.54	0.55	0.52	0.56	0.57	0.49	0.52	0.41	0.49	0.52	0.55	0.54	0.56	0.51	0.55
6	0.55	0.53	0.61	0.57	0.60	0.55	0.55	0.58	0.58	0.56	0.53	0.55	0.54	0.56	0.54	0.57	0.53	0.58	0.56	0.57	0.53	0.55	0.57	0.59	0.50	0.53	0.48	0.52	0.56	0.55	0.57	0.57	0.56	0.57
7	0.55	0.55	0.59	0.59	0.58	0.56	0.57	0.58	0.56	0.57	0.53	0.56	0.54	0.61	0.54	0.59	0.59	0.60	0.55	0.58	0.54	0.59	0.57	0.59	0.55	0.57	0.50	0.56	0.56	0.60	0.61	0.59	0.55	0.58
8	0.56	0.58	0.61	0.63	0.60	0.61	0.60	0.60	0.57	0.62	0.57	0.60	0.54	0.61	0.58	0.62	0.60	0.62	0.56	0.61	0.57	0.62	0.62	0.60	0.55	0.58	0.51	0.57	0.61	0.60	0.61	0.59	0.58	0.61
9	0.59	0.66	0.60	0.66	0.58	0.66	0.60	0.66	0.56	0.64	0.57	0.64	0.58	0.67	0.61	0.67	0.65	0.66	0.61	0.65	0.63	0.65	0.65	0.66	0.59	0.62	0.58	0.63	0.62	0.67	0.63	0.66	0.62	0.65
10	0.66	0.73	0.69	0.73	0.69	0.74	0.69	0.75	0.68	0.74	0.69	0.74	0.69	0.74	0.69	0.76	0.70	0.75	0.67	0.75	0.68	0.75	0.68	0.74	0.69	0.75	0.68	0.75	0.73	0.76	0.71	0.76	0.69	0.76

	Persistence between t and t-5																															
	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.42	0.40	0.41	0.39	0.41	0.35	0.41	0.37	0.40	0.33	0.41	0.37	0.41	0.36	0.42	0.35	0.43	0.32	0.40	0.32	0.39	0.32	0.42	0.31	0.40
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.41	0.42	0.42	0.39	0.41	0.36	0.41	0.38	0.40	0.35	0.39	0.33	0.39	0.36	0.41	0.36	0.40	0.33	0.40	0.33	0.39	0.35	0.39	0.31	0.40
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.41	0.41	0.40	0.40	0.43	0.36	0.43	0.36	0.40	0.34	0.40	0.34	0.41	0.34	0.41	0.34	0.42	0.31	0.41	0.32	0.39	0.33	0.41	0.29	0.40
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.42	0.41	0.41	0.39	0.40	0.38	0.43	0.36	0.42	0.33	0.40	0.33	0.40	0.34	0.40	0.32	0.40	0.31	0.40	0.33	0.40	0.30	0.39	0.29	0.37
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.41	0.42	0.41	0.40	0.43	0.36	0.42	0.36	0.41	0.32	0.40	0.37	0.40	0.37	0.42	0.35	0.38	0.31	0.41	0.35	0.38	0.35	0.41	0.30	0.40
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.40	0.37	0.41	0.38	0.40	0.36	0.41	0.35	0.41	0.35	0.39	0.35	0.41	0.38	0.42	0.34	0.40	0.34	0.41	0.32	0.41	0.33	0.42	0.32	0.39
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.42	0.38	0.43	0.36	0.43	0.33	0.42	0.36	0.42	0.34	0.41	0.35	0.41	0.35	0.42	0.35	0.43	0.35	0.42	0.32	0.42	0.36	0.43	0.32	0.38
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.42	0.38	0.43	0.34	0.43	0.36	0.42	0.32	0.44	0.33	0.43	0.32	0.43	0.38	0.41	0.40	0.42	0.33	0.41	0.34	0.41	0.36	0.41	0.32	0.42
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.46	0.39	0.46	0.35	0.47	0.33	0.45	0.36	0.46	0.35	0.43	0.35	0.45	0.40	0.44	0.42	0.44	0.41	0.43	0.38	0.45	0.39	0.46	0.35	0.44
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.51	0.43	0.51	0.47	0.52	0.44	0.54	0.46	0.54	0.45	0.54	0.47	0.55	0.45	0.55	0.47	0.55	0.43	0.55	0.47	0.56	0.47	0.57	0.47	0.55

Notes: Income measure is gross individual income excluding realized capital gains. M refers to men and F to females. The groups are formed from the joint distribution. The persistence is measured by the probability to stay in the same or move to higher income rank, that is the "1-persistence" measures the downward mobility.

Table 2: Persistence within top 1%, after one year (upper table) and five years (lower table)

Persistence between t and t-1

	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
1	0.33	0.33	0.44	0.49	0.41	0.49	0.52	0.51	0.46	0.50	0.38	0.49	0.44	0.45	0.49	0.47	0.49	0.52	0.38	0.42	0.42	0.41	0.40	0.44	0.34	0.44	0.30	0.38	0.48	0.48	0.47	0.50	0.33	0.45
2	0.33	0.41	0.38	0.49	0.35	0.49	0.46	0.51	0.41	0.49	0.33	0.42	0.43	0.43	0.40	0.43	0.46	0.44	0.45	0.42	0.38	0.49	0.48	0.51	0.42	0.40	0.31	0.36	0.40	0.42	0.39	0.46	0.37	0.41
3	0.27	0.39	0.45	0.54	0.51	0.48	0.44	0.54	0.51	0.49	0.46	0.42	0.46	0.43	0.42	0.53	0.41	0.50	0.41	0.44	0.36	0.46	0.35	0.46	0.34	0.43	0.25	0.37	0.45	0.48	0.50	0.51	0.35	0.46
4	0.39	0.40	0.44	0.48	0.41	0.51	0.47	0.51	0.40	0.46	0.40	0.44	0.47	0.46	0.39	0.43	0.39	0.52	0.45	0.45	0.44	0.49	0.46	0.45	0.31	0.43	0.41	0.39	0.50	0.46	0.48	0.44	0.32	0.44
5	0.41	0.43	0.58	0.55	0.55	0.50	0.49	0.49	0.50	0.48	0.37	0.47	0.38	0.44	0.27	0.50	0.42	0.49	0.33	0.42	0.38	0.44	0.42	0.48	0.26	0.42	0.29	0.39	0.32	0.48	0.48	0.50	0.38	0.44
6	0.42	0.44	0.68	0.50	0.44	0.48	0.43	0.50	0.34	0.52	0.43	0.40	0.27	0.43	0.47	0.45	0.35	0.48	0.31	0.40	0.53	0.45	0.44	0.50	0.42	0.43	0.38	0.40	0.43	0.49	0.52	0.51	0.35	0.40
7	0.35	0.47	0.61	0.55	0.47	0.50	0.43	0.57	0.38	0.51	0.49	0.51	0.37	0.50	0.54	0.49	0.45	0.48	0.47	0.42	0.41	0.49	0.51	0.45	0.36	0.44	0.32	0.44	0.34	0.51	0.48	0.54	0.42	0.45
8	0.37	0.48	0.38	0.55	0.55	0.51	0.58	0.52	0.48	0.49	0.42	0.51	0.52	0.53	0.54	0.47	0.45	0.56	0.44	0.48	0.49	0.54	0.38	0.49	0.49	0.50	0.50	0.50	0.46	0.54	0.48	0.55	0.40	0.50
9	0.49	0.58	0.45	0.62	0.56	0.55	0.52	0.62	0.53	0.57	0.50	0.58	0.34	0.61	0.47	0.50	0.49	0.57	0.51	0.55	0.55	0.57	0.55	0.56	0.43	0.53	0.49	0.53	0.53	0.61	0.57	0.60	0.50	0.49
10	0.71	0.68	0.64	0.66	0.75	0.65	0.56	0.61	0.63	0.61	0.67	0.60	0.66	0.65	0.70	0.60	0.65	0.72	0.73	0.65	0.49	0.66	0.62	0.64	0.60	0.66	0.73	0.66	0.61	0.71	0.63	0.73	0.64	0.72

Persistence between t and t-5

	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.36	0.25	0.35	0.38	0.33	0.26	0.32	0.33	0.35	0.24	0.31	0.32	0.30	0.23	0.37	0.28	0.33	0.24	0.31	0.26	0.29	0.23	0.33	0.30	0.31
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.35	0.29	0.34	0.31	0.33	0.21	0.27	0.20	0.32	0.16	0.30	0.26	0.32	0.20	0.29	0.23	0.31	0.16	0.31	0.21	0.30	0.21	0.31	0.20	0.26
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.35	0.39	0.31	0.24	0.32	0.16	0.35	0.23	0.36	0.27	0.30	0.33	0.30	0.33	0.29	0.24	0.30	0.19	0.29	0.19	0.31	0.20	0.31	0.20	0.30
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.32	0.28	0.36	0.30	0.34	0.31	0.30	0.30	0.31	0.23	0.31	0.36	0.36	0.25	0.35	0.24	0.31	0.19	0.26	0.25	0.27	0.18	0.32	0.22	0.28
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.37	0.19	0.38	0.25	0.34	0.22	0.33	0.23	0.28	0.25	0.29	0.25	0.29	0.28	0.28	0.15	0.29	0.20	0.27	0.17	0.31	0.27	0.31	0.26	0.28
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.35	0.29	0.33	0.19	0.35	0.16	0.36	0.14	0.26	0.26	0.29	0.32	0.26	0.35	0.32	0.31	0.33	0.30	0.28	0.27	0.27	0.24	0.30	0.22	0.26
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.35	0.25	0.33	0.24	0.29	0.23	0.30	0.24	0.29	0.31	0.27	0.28	0.27	0.32	0.29	0.23	0.28	0.23	0.30	0.22	0.33	0.28	0.34	0.20	0.27
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.36	0.30	0.38	0.41	0.37	0.30	0.32	0.30	0.30	0.24	0.30	0.31	0.31	0.35	0.29	0.33	0.31	0.27	0.30	0.24	0.35	0.20	0.32	0.18	0.34
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.36	0.27	0.35	0.29	0.38	0.30	0.33	0.27	0.32	0.25	0.32	0.26	0.33	0.22	0.33	0.24	0.34	0.27	0.32	0.31	0.35	0.29	0.32	0.19	0.37
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.38	0.41	0.35	0.46	0.37	0.45	0.44	0.41	0.41	0.42	0.36	0.32	0.38	0.33	0.39	0.43	0.46	0.55	0.43	0.39	0.46	0.42	0.43	0.34	0.45

Notes: Income measure is gross individual income excluding realized capital gains. M refers to men and F to females. The groups are formed from the joint distribution. The persistence is measured by the probability to stay in the same or move to higher income rank, that is the "1-persistence" measures the downward mobility.