


RESEARCH ARTICLE

Changes in Disposable Personal Income and the Gender Personal Income Gap in Sweden, 1983–2010: A Study of Three Different Income Positions

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Abstract

In recent decades, the Swedish economy has been characterized by rather fast economic growth. At the same time, income inequality has increased substantially. In the present study, I investigated who has gained and who has been left behind during this period—how disposable personal income has changed for men and women, as well as for those in different positions in the income distribution. Register data for the total population (aged 20 to 80 years old) from 1983 to 2010 were used and three different positions in the income distribution were investigated: percentile 10, the median, and percentile 99. Five years were selected: 1983, 1991, 2000, 2006, and 2010. Each selected year represents a snapshot and describes the general trend. Results show that women in the 10th percentile have increased their income quite well, a result of increased female labor force participation during the period. This has led to a decrease of the income gap between genders within this group. But results also show a masculinization of low income and poverty, as the male incomes in this group have not increased to the same extent as for males in the other income groups. At the median, both men and women experienced a steady increase of incomes, but the gender gap for ages younger than 50 widened between 2000 and 2010. At the very top, percentile 99, the increase in disposable personal income was enormous; however, the gender gap in income did not decrease.

Introduction

This article investigates changes in disposable personal income for men and women as well as in the gender gap in disposable personal income in Sweden between 1983 and 2010.¹ This period is characterized by rather fast economic growth. Research has shown that income inequality, measured as differences in households' disposable income (Björklund and Jäntti 2011, 2013), has increased, and that the increased

¹Disposable personal income is calculated as the sum of the components earned income, self-employed income, nominal capital income, and transfers minus tax.

income inequality was mostly driven by the increased income of the top-income earners (Roine and Waldenström 2015). But how has the wealth from economic growth been distributed among the population in Sweden? Who has gained and who has been left behind? And what developments will be revealed when investigating changes in the gap in disposable personal income between men and women?

Sweden is known for its high female labor force participation; indeed, since the beginning of the 1990s, the gap between the female and male participation rates (core workforce, 20 to 64 years old) has been as small as 5 percent (Regeringen 2013a, Prop. 2012/13:1:15). During the same period, the average wage gap between males and females has fluctuated within a narrow band, with a mid-point around 82 percent. In fact, when evaluating the wage gap between men and women with similar characteristics, such as full-time and full-year employment, and with similar educational levels and occupations, there are signs of a closing wage gap (Medlingsinstitutet 2015; SCB 2016). Nevertheless, assessing the wage gap is just one way of measuring economic gender differences. What trends will be shown if all Swedish adults between ages 20 to 80 years old are included, and disposable personal income instead of wages is examined? In this article, I argue that, by applying this infrequently used method of measuring equality and inequality between men and women by comparing individual disposable personal income, a new dimension of gender inequality in Sweden will be explored. The strongest reason for using this variable, disposable personal income, is that it is a more accurate measure of a person's standard of living than relative wages, as it also includes transfers and taxes. The gender gap in disposable personal income is calculated for the total population, that is, all individuals aged 20 to 80 living in Sweden, during the period from 1983 to 2010. Women's income is expressed as a proportion of men's income.² The reason for including the total population and not only individuals who belong to the core labor force (working full-time and full-year) is to explore the general disposable personal income differences between men and women, but also within each gender, in Sweden during this time. If, as in many other studies, I had focused on the core labor force, I would not have been able to reveal and discuss changes in the general pattern of income inequality between men and women, as individuals in the core labor force constitute a special group that is, in many ways, self-selected. For example, more women than men work part-time and in low-wage sectors, which could be a consequence of their own choice but could also be a consequence of norms, attitudes, discrimination, and demands from the labor market. Thus, this study compares males and females in many different positions in the income distribution regardless of whether they work full-time and full-year, have low or no labor force participation, have low wages and/or high transfers, or are retired, and irrespective of their civil status. The objective is to paint a picture of changes in disposable personal income and the disposable personal income gap between men and women regardless of their circumstances, such as labor market attachment, education, profession, or household status.

This study differs in two ways from most other studies examining historical changes in income in different demographics of which I am aware. First, the income

²Expressed as a percentage of the disposable personal female income divided by the disposable personal male income.

variable used was the individual's personal income, which was calculated as the sum of the components earned income, self-employed income, nominal capital income, and transfers minus tax, calculated on a yearly basis and in fixed prices (2010). As the individuals' disposable personal income is the analytic unit, no equivalent scales to account for household size were used. Second, all the calculations were based on register data of the total population and not a sample. The total population (aged 20 to 80 years old) in Sweden from 1983 to 2010, thus including individuals with low or no present labor market attachment, was investigated. The data were a cross-section and included a number of variables, of which a few were chosen, mainly different income variables, the year of birth, and gender. Three different positions in the income distribution were investigated: percentile 10, the median, and the very top, percentile 99. To capture the development of the disposable personal income between 1983 and 2010, five years were selected: 1983, 1991, 2000, 2006, and 2010. Each selected year represents a snapshot and when analyzed together describe the general trend.

The main focus of this study was to investigate how disposable personal income changed for man and women in these three different positions and changes in the gender gap in disposable personal income during the study period. The research questions included the following: How has the disposable personal income changed in the selected income groups from 1983 to 2010? Who has gained and who has been left behind? Are there differences in how it has changed as a function of gender and age?

The article is structured as follows. "Income Distribution and Gender Gap" discusses and motivates this study in relation to earlier research. "The Swedish Context" gives a general background to the Swedish context. In "Data and Methods," the data and methods are presented and discussed. "Results" presents and discusses the results. "Discussion" covers the findings and draws conclusions.

Income Distribution and Gender Gap

Increasing income inequality has interested scholars in recent decades. Cingano (2014) has shown that excessive income differences between a low-income group and the rest of the population have a significant negative impact on economic growth. Atkinson (2008), investigating earnings dispersion from the 1980s to 2005 in a number of Organisation for Economic Co-operation and Development (OECD) countries, found that income has become more unequally distributed since the 1980s and that many of the changes are a consequence of the increased earnings in the upper part of the income distribution. The results indicate that for 16 of 19 investigated countries, either the bottom decile has fallen by 5 percent or more or the top decile has risen by 5 percent or more, and in seven cases both have occurred. Research carried out during the last decade focuses on high-income earners and finds that most of the increased income inequality is a consequence of their extremely increased incomes (Atkinson and Piketty 2007, 2010; Piketty 2014). Although Sweden has long had one of the most equal distributions of income in the world, a number of studies have found that Sweden has had the fastest-growing level of inequality of any nation during recent decades, though it is still low by international standards (Brandolini and Smeeding 2009; OECD 2011, 2017; Pareliussen et al. 2018). Björklund and Jantti (2011) investigated household income distribution

in Sweden between 1975 and 2009 using a sample of the Swedish population and calculating the household disposable income.³ From 1975 to the early 1980s (1981–82), income inequality (measured as the Gini coefficient) decreased. Since then, it has increased. This U-shaped trend was also observed for eight other countries (*ibid.*: 34). These studies investigated the growing level of inequality on a household level. The study presented here uses the variable disposable personal income and investigates the development of income inequality on an individual level, broken down by gender. This study thus differs from previous studies in terms of both the analytic unit and income variable chosen.

Household or Individual

The individuals' and their disposable personal income is the analytic unit in this study, and the reason for this is that it is intended to capture individuals' own economic standard regardless of their household status. A more conventional approach is to use the household as the income unit and the individual as the unit of analysis. In such approach, all household member's disposable income are merged, and an equivalent income is used that is defined as the disposable income of the household adjusted for its expenditure needs (using some equivalence scale). When doing so, an income level is attributed to all members in the household and estimates inequality among all individuals in society, including children.⁴ A consequence of this approach is that it is based on the assumption on equality within the household.

In the human capital literature, analysts have often started by assuming one utility function for the household and a utility-maximizing individual. In reality, when living in a household that consists of at least two individuals, there is often a bargaining situation between the two heads of household, typically a man and a woman. Becker (1991) treated the household as one economic unit, and decisions concerning employment, consumption, and so on were assumed to be made by the household as a unit independent of differences in income and resources among the family members. Each member of the household maximizes his or her own specialties and utilities, and their income and resources are pooled—the household's behavior is assumed not to depend on individual control over resources within the household. This theory has often assumed that women view motherhood and labor force participation as competing careers, and that married women especially (when specializing within the household) focus on either motherhood or working life. The opportunity cost for female labor market attachment in this model is directly dependent on the (expected) female wage level and the cost of childcare. But the model does not consider that the bargaining power between the two individuals living together as a couple may be directly dependent on who has the strongest position in the labor market (usually the man). Another approach was followed by Chiappori (1988, 1992, 1997) and Apps and Rees (1996, 1997), who discussed the theories and methods related to the collective model of household labor supply and the relationship between the intrafamily distribution of income and behavior with

³In the study Björklund and Jäntti (2011) used the household disposable income as the income unit and the individual as the unit of analysis, this method is further discussed in the following text.

⁴As in, e.g., Björklund and Jäntti's study (2011).

respect to economic policy. Such an approach focuses on how households make decisions about the allocation of time between market work, home production, and leisure. This approach emphasizes the need to consider individual preferences and bargaining power as well as the interactions between all the household members. From this, it follows that such models see the differences in income for men and women as a consequence of the division of labor, leisure, and home production within the household. A low-income earner might have a high level of actual market consumption possibilities if married to a high-income earner.

Lundberg and Pollak (2008) discussed the individual control over resources within the household. They showed that nonunitary models have implied that both individual control over resources and environmental factors such as divorce laws, which affect the well-being of individuals outside the household, can affect intra-household allocation. They revealed that the empirical evidence has consistently rejected income pooling (see also Bennett 2013; Cantillon 2013; Henau and Himmelweit 2013; Himmelweit et al. 2013; Nyman et al. 2013). This is one of the reasons for my choice of the individual as the analytic unit. From a gender equity perspective, it matters who contributes or not to the income of the household. The greater the proportion of household income an individual earns, the more power they will have to influence the decisions within the household/family.

The empirical literature has made comparisons of economic well-being between people based on personal income in the household in which they live. In this literature, earnings together with capital income and transfers are added for all household members after having subtracted the taxes paid. This approach makes it possible to study, for example, how the disposable household income of similarly aged men and women has changed as well as poverty rates by gender, and has formed the basis of several investigations of the “feminization of poverty” (see, e.g., McLanahan and Kelly 1999; Pearce 1978). In such an approach, gender differences in the poverty rates, for example, can only occur if the poverty rates among females and males living with no other adults differ. The limitation of this approach, as discussed earlier, is that it builds on the assumption that incomes are perfectly pooled within households, an assumption that might not always be relevant, as, for example, the individual income of each spouse can affect bargaining power within the household. As Ponthieux and Meurs (2015) discussed, there is a lack of statistical information to allow an assessment of the incidence of individual poverty in nonpoor, multiperson households, and there are reasons to believe that neglecting the intrahousehold distribution of resources can contribute to the persistence of gender inequality. By investigating changes in individual disposable income, as in this study, I will be able to illustrate differences in income development between genders.

The Income Variable

The most frequent way of studying income change is to focus on earned income. This practice results in investigation of a specific part of the population and labor force, mainly the core labor force, and does not consider incomes received in ways other than by paid work or as the consequence of taxes. For example, Blau and Kahn (2017) discussed the selection bias when investigating changes over time in female labor force participation rates and established that data used on wages are available

only for a self-selected group of labor force participants. To be included in the wage sample, it requires employment and often additional requirements (full-time, full-year being a wage and salary worker, etc.) depending on the intentions of the study. In this study I chose a method that has not been frequently used to investigate income development and the income gap between genders by including all adults living in Sweden regardless of their labor market attachment. The data sets used allowed for this, as they included yearly information on all sorts on different income sources for the total population. The reason for using the variable “individual personal income” instead of “earned income or wage” was that it includes all income sources: earned income, self-employed income, nominal capital income, and transfers minus tax, and thereby illustrates the actual inequalities in market consumption possibilities in Sweden.

Gender Gap

The last issue regarding choice of variables when designing the study concerned the gender gap. Here I also chose a bit of an unorthodox way of investigating it by including all women and men in the calculations. The most common way is to compare equals with equals,⁵ as is discussed in the excellent overviews of different methods for examining the gender gap provided by Ponthieux and Meurs (2015), Blau and Kahn (2017), and Boschini and Gunnarsson (2018). Many researchers have studied the gender wage gap in connection with income distribution and changes over time in different countries. The seminal study by Blau and Kahn (1992) compared the evolution of the gender wage gap in eight countries⁶ and analyzed the role of two processes in intercountry differences: first, gender-specific factors, including differences in the qualifications of men and women and differences in the treatment of equally qualified women, that is, labor market discrimination; and second, wage inequality, or the price that the labor market of each country places on various labor market skills, both observed and unobserved. They stressed the importance of examining the impact of changes in the wage structure and found that US women, for example, have been swimming upstream in a labor market that is increasingly unfavorable to low-wage workers. If a majority of women are in low-wage sectors, the wage gap will be large; therefore, to decrease the gender gap, there is a need to change the wage structure. Government policy may be used to increase wages in low-paid sectors and by doing so decrease the gender wage gap (see also Edin and Richardsson 2002; Kahn 2010).

More frequent is to investigate gender wage gaps for men and women working full-year and full-time. By estimating wage or earnings functions, analysts have aimed to make workers of the two genders as similar as possible by controlling for characteristics such as education, age, and employment sector (e.g., Del Rio et al. 2011). The results from such studies can be interpreted as indicating the existence of wage discrimination against women (Blinder 1973; Oaxaca 1973; Oaxaca and Ransom 1994). Such investigations are of the self-selected group of labor force participants as discussed in the preceding text.

⁵E.g., comparing women and men working full-time, full-year, and having the same level of education.

⁶Germany, the United Kingdom, the United States, Austria, Switzerland, Sweden, Norway, and Australia.

Other approaches studying gender wage differences have been developed to consider different positions in the earnings distribution. Such an approach makes it possible to investigate the existence of a sticky floor, whereby the gender wage gap is largest at the bottom of the earnings distribution, as well as the existence of a glass ceiling, whereby the gender wage gap is largest at the top of the earnings distribution. An early such contribution was the study by Albrecht et al. (2003), which used register data in Sweden for the year 1998 to show support for the existence of a glass ceiling. In an updated study, Albrecht et al. (2015) reexamined the existence of the glass ceiling in Sweden and investigated when in the life cycle its effect arises and how the effect develops around the birth of the first child. They found a possible connection between the glass ceiling and the parental leave system, as the gender gap increases after the birth of the first child. These gaps (sticky floors and glass ceilings) were also investigated by Christofides et al. (2010). They compared the gender wage gap in 24 EU countries and found that in most countries the wage gap was wider at the top of the wage distribution (glass ceilings) and in fewer countries it was wider at the bottom of the wage distribution (sticky floors). Their results were related to country-specific characteristics, and they explored the influence of policies concerned with reconciling work and family life and wage-setting institutions. Policies and institutions were systematically related to unexplained gender wage gaps; specifically, more generous maternity leave policies were associated with larger wage gaps (see also Arulampalam et al. 2007).

The Swedish Context

In 1983, when this study began, Sweden had an equal income distribution: the Gini coefficient (adjusted disposable income) was 0.18, the unemployment rate was approximately 2 percent, the real GDP growth rate was 1.9 percent, and women were continuing their march into the labor market (Fritzell et al. 2010). Sweden was, in many ways, the classical country with a full employment policy. Joint taxation was abolished in 1971, earnings-related parental leave was introduced in 1974, and the expansion of the public sector and subsidized out-of-home childcare led to growing labor market possibilities for women. Even though the female labor force participation rate increased, differences in working hours remained; women worked for fewer hours and in general had more unsecured labor arrangements, with few working full-time and full-year and most employed in the public sector, mainly in the care and health sectors (Regeringen 2013a, Prop. 2012/13:1).

At the beginning of the 1990s, Sweden endured a deep economic downturn with consequences for the labor force. The GDP growth was negative in 1991–93, the unemployment rate rose to 9 percent, and time-limited employment arrangements increased, which led to more insecurity for individuals with weak positions in the labor market. Since the end of the 1990s, the unemployment rate has hovered between 6 and 9 percent (SCB 2011). This economic crisis led to large decreases in labor force participation among young adults, which were mainly driven by two processes: structural changes, which led to a decrease in many of the previously unqualified entry jobs (Olofsson 2014), and an increasing labor market demand for a higher-educated workforce. This resulted in increased enrollment in higher education among young adults, which delayed their entrance into the labor market.

This led to an expansion of higher education at the beginning of the 1990s, and nowadays more young women than young men have a higher education. In the age group of 25 to 34 years, 37 percent of the women have a higher education longer than 3 years compared with 25 percent of men (SCB 2013). The crises in the 1990s also led to changes for the age group of 55 and older. A postponement of labor force exit was observed, partially explained by the more restricted policy for early retirement (Fritzell et al. 2010). Between 1995 and 2004, the GDP growth rate was 2.6 percent per annum and Sweden had higher GDP growth rates than all the other EU countries and the United States (Regeringskansliet 2006). The income distribution also changed considerably during the study period, while the role of capital gains increased substantially and changes in the tax system favored capital owners. With the new Alliance Government⁷ in 2006, property tax was abolished (in 2007) and the tax rate for nominal capital income is currently 30 percent, which is lower than the tax on earned income (Skatteverket 2007). The Gini coefficient increased to 0.297 in 2011 (Regeringen 2013b, Prop. 2012/13:100, *Bilaga 2*), and, according to the OECD (2011), Sweden then had the fastest-growing rate of inequality among the OECD countries, albeit starting from a low level.

One common explanation for the wage and income differences between women and men is the fact that women take larger responsibilities for family and household work (Evertsson and Neramo 2007; Gupta and Smith 2002; Tichenor 1999). Researchers have shown that the differences in responsibility for household work between women and men often occur with the birth of the first child (e.g., Gauthier and Furstenberg 2002; Van der Lippe and Siegers 1994). Of course, this will have consequences for women's and men's engagement in working life, which will be larger if the women give birth to more than one child. In the international context, the female labor force participation in Sweden is high. The gender employment gap⁸ was just 5.6 percent in 2010 compared with, for example, France (9.1 percent), Germany (11.6 percent), and the United Kingdom (12.3 percent).⁹ Much of Sweden's family policy has aimed to make it possible for mothers to combine participation in the labor market with being a parent. For a long period, those ambitions increased, and they are still larger than in most other high-income countries. I will now discuss such policies and how they have developed, starting with what might be labeled flagship policies: the parental leave policy and the childcare policy. However, as this study will show, some relatively recent changes in other policy domains had the effect of raising the gender gaps in personal income. The share of women above 45 years old in Sweden who have become mothers is 86–87 percent (Persson 2011), which indicates that the majority of women in this study are mothers.

The expansion of subsidized out-of-home childcare started in the 1970s, and in 1999 61 percent of all children aged 1 to 5 years attended preschool; in 2004 this

⁷The Alliance Government consisted of four cooperation parties: the Conservative Party (Nya Moderaterna), the Liberal Party (Liberalerna), the Center Party (Centerpartiet), and the Christian Democratic Party (Kristdemokraterna). They stayed in power from 2006 to 2014.

⁸Calculated as the difference between the female and the male labor force participation rate.

⁹Labor force participation rate calculated for year 2010, ages 15–64 years old. Sweden: table 2:135; France: table 2:72, Germany: table 2:75, and United Kingdom table 2:144 (OECD 2018).

figure had increased to 75 percent, and in 2014 it had increased even further, to 84 percent. Almost all children aged 3 to 5 years, 95 percent, currently attend preschool (Skolverket 2014). Sweden today probably has the most generous parental leave system in the world according to pay and length—480 days (390 days income lost compensated and 90 days flat rated). Within the European Union, Germany has also had quite generous paid parental leave since 2007—14 months' paid leave (based on compensation for income lost up to 65 percent of the income), the United Kingdom has 39 weeks paid (Government United Kingdom 2018), and France has 16 weeks at an income lost compensation grade of 100 percent with the time of leave increasing to 26 weeks for the third child (Connexion French News and Views 2018).

The earnings-related parental leave (based on the principle of income loss compensation) was introduced in 1974, and subsequent reforms, introduced in 1994, 2002, and 2008, increased the earmarked parental months for the father and extended leave periods. The effects of the reforms, to encourage an equal division of parental leave, showed that the 1994 reform had the largest effect (Ekberg et al. 2013), the second reform (2002) had a small effect, but the last reform (2008), a gender equality bonus, had no effect (Fritzell et al. 2014). In 2009 the father's share of parental leave was on average 23 percent compared with 77 percent for mothers, only a modest increase over the 1974 level (Duvander and Johansson 2012).

To deepen understanding of the consequences of parental leave for personal income, it is necessary to measure the length of parental leave and not simply the use of parental benefit days.¹⁰ A study by the National Insurance Office (Försäkringskassan 2013) revealed substantial differences in the length of parental leave and the use of parental benefit days. During the child's first two years, both women and men take considerably more parental leave than parental benefit days. Women take on average 15.3 months while using 9.5 months of parental benefit days, and men take on average 3.8 months while using 2.2 months; both men and women extend their leave by taking more unpaid days than they did 10 years ago. This demonstrates that women are absent from earned labor for a considerably longer period of time than men, and this has an impact on their participation in the labor market as well as their career paths' wage growth and the size of their future pensions. The policy makers' intention has been and still is to make it easier for both mothers and fathers to reconcile work and family, but there is still much progress to be made; the norms related to gender are probably of great importance.

Most transfer payments received from the social insurance system in Sweden are based on the principle of compensation for income lost. The largest transfer systems are sickness insurance, parental leave, pensions, and unemployment benefit. However, the compensation level in these insurances, since the beginning of the 1990s, has not kept up with the general income growth during the last decades, which has led to a real compensation rate below what was originally intended.

¹⁰During a child's first year of life, one of the parents can stay at home to take care of the child without using a single day of the parental benefit days. An employer cannot refuse a parent parental leave without benefit days. When the child is one year old, a parent who wants to take parental leave must use the benefit days.

The system was introduced with a top limit,¹¹ and for income over that limit, there is no additional compensation. The intention was that a majority of the population would have an income below the top limit and therefore the compensation rate would be high enough; as a consequence, the willingness to support the system would be high. In recent decades, the compensation rates have decreased due to both a reform that changed the compensation rates from 90 percent to 80 percent of earned income and an increase in median incomes past the top limit (Ferrarini et al. 2012).

Also the pension system has gone through changes. In 1999 the current pension system was introduced with the first benefit payments in 2003. The transition from the old to the new occurs gradually. Individuals born 1937 or earlier belong to the old system and individuals born 1954 or after belong to the new systems. Individuals born during the years in between receive parts from both systems. For individuals belonging to the old pension system the pension was calculated on earnings for the best 10 or 15 working years, and the required number of working years was 30 years between 16 and 64 years of age. In the new system the pension are based on lifetime income, and to receive a full pension, work is required for 40 years between 16 and 64 years of age. The new pensions system also included new regulations of family pension. The widow's/widower's pension was replaced by an adjustment pension that changed to be gender neutral and no longer lifelong. If younger than 65 years old when becoming widow/widower the time for adjustment pension is 12 months, if older than 65 year it is two years. By the funded component in the new pensions system the person could include survivor protections that give their widows/widowers a part of their earned pension's rights (Pensionsmyndigheten 2017).

Another change relevant to the evolution of the gender gap in disposable personal income is that of the income tax system, which changed several times during the period of study. The large reform that was implemented in 1990 to 1991 had many components and far-reaching consequences (Agell et al. 1998). The tax basis was broadened. A two-base system was introduced, meaning that capital income was taxed independently from work earnings using a proportional rate (30 percent). The tax schedules for work earnings were simplified, and the progressivity in the highest brackets was initially reduced. A so-called break point was introduced; income above this level was subject to tax paid to the central government, while individuals with lower incomes only had to pay the proportional local tax (typically 30 to 35 percent). The economic crises in the 1990s made policy measures necessary to reduce the public deficit. The tax rates for persons with middle earnings and high earnings were increased, and in 1998 a second break point was introduced.¹² Since 2007, with the Alliance Government, new changes in income tax have been introduced. An earned income tax credit was implemented in five steps between 2007 and 2014, which taxed earned income at a lower rate than income from the major

¹¹A price base amount has been used since the 1960s when calculating the income lost compensation. The amount is indexed every year and was equal to 36,600 SEK in 2010. The roof is 7.5 times the base amount, and in 2010 it was equal to a monthly wage of 26,500 SEK before tax. As the mean wage in 2010 was equal to 28,400 SEK, almost half of the labor force had incomes above the roof (SCB 2019).

¹²In 2010 the first break point started for yearly incomes above 384,600 SEK and the second break point started for yearly incomes above 545,200 SEK. Skatteverket (2010).

social insurance programs, including unemployment, sickness, and parental leave benefits as well as the old age pension (Ferrarini et al. 2012). This has and will have consequences both in the present and in the future, especially for individuals with weak labor market attachment, a group in which women are in the majority (Fritzell et al. 2014). The reduction of taxes on capital income in 1991 has had larger positive consequences for males than for females, as men have higher capital income than women. Likewise, the earned income tax credits have benefitted men more than women, as on average they work for more hours and are better paid. As illustrated in the preceding text, women are more likely to receive a large part of their personal income from transfers; therefore, the choice of the variable disposable personal income is relevant to this study.

Data and Methods

Register data¹³ from Statistics Sweden (SCB), including the total population living in Sweden for each year from 1983 to 2010, were used. In the study presented here, the calculation was, to my knowledge, the first to be based on the total population for such a long period. The data included a number of variables, of which a few were chosen, mainly different income variables, the year of birth, and gender. The data are, in part, cross-sectional. New individuals enter the data as they reach the age of 20 years or if they have immigrated to Sweden, and individuals exit the data as they become older than 80 years, die, or emigrate from Sweden. In one aspect the data are longitudinal because, for example, persons who were 20 years old in 1983 might very well be included in the data for 2010 but then as 48-year-olds (as they grow older). However, as different positions in the income distribution are calculated, a person making the median income in 1983 does not have to have the same income position in the other years of observation. As the intention of this study was not to investigate income mobility, a balanced panel was not created.

Starting with the income variable, disposable personal income was defined and calculated as earned income + self-employed income + nominal capital income + transfers¹⁴ – tax. This variable was chosen because, as discussed in “Income Distribution and Gender Gap,” it provides a better measurement of the actual market consumption possibilities and the economic standard of the individual than using earned income/self-employed income before tax. Disposable personal income was calculated on a yearly basis and in fixed prices (2010); a few individuals with

¹³The data derive from different registered data, e.g., tax files and the Register of the Total Population (RTB).

¹⁴Some transfers such the universal child allowances are flat rated and distributed by the national insurance office directly to the mother, if not the parents has decided differently. Other transfers, such as social assistance and housing allowances, are means tested and based on the household income. Housing allowances are distributed by the national insurance office and social assistance is distributed by the social security office after an application from the household. It is paid to the person in the household which in the application are decided as the recipient. In this study the lump sum of transfers of each individual, derived from register data, were used. The implications this have for the results presented here is that the disposable personal income for women (if they are mothers) is higher because of the child allowances, as they are the main recipients of this transfer. The recipients of housing allowances and social assistance are low-income earners and these transfers give them a higher disposable income, which also is the intention of the transfers.

zero income, possibly due to emigration, were excluded from the calculations. Disposable personal income was calculated for the individual. No equivalent scales (to account for household size) were used, as this study investigated the personal economic standard and not an individual's economic standard based on their household's economic standard.

The individuals' disposable personal income was the analytical unit. The reason for using the individual's disposable personal income is that it can show changes in income for women and men individually during these years, whereas household income cannot show that. This methodological choice of using the individual's disposable personal income as a reference is not a common approach for gender gap studies, but it can be useful, as discussed earlier (in "Income Distribution and Gender Gap").

The ages of the individuals were between 20 and 80 years, and each age group consisted of approximately 100,000 individuals, except for the oldest.¹⁵ By starting at the age of 20 years, the consequences of compulsory military service (for male individuals) were reduced.¹⁶ The ending age of 80 years was chosen because many people, particularly males, have not survived to higher ages.

To investigate the development of the gender gap between 1983 and 2010, five years were selected: 1983, 1991, 2000, 2006, and 2010. The year 1983 is the first available in the data when a wide span of public transfers, were recorded and, in several time series, the year 1983 marks a turning point in the development of income inequality and earnings inequality in Sweden. The year 1991 was chosen to capture the changes during the 1980s, and because it was a normal year in terms of the business cycle, just before the deep economic crises that occurred in Sweden during the 1990s. Including the year 2000 made it possible to investigate the development of the 1990s, and it was also a normal year in terms of the business cycle, when Sweden had recovered from the economic crises but was also characterized by so-called jobless growth. The year 2000 was also a year with particularly high realized capital gains, which are included in personal income. However, as research has shown, this increase was almost entirely located in the highest centile of the income distribution. The choice of 2006 made it possible to cover changes for the earlier years of the 2000s as well as to show whether there were changes due to the changes in the tax system in the last years before 2007, when the earned income credit was introduced by the Alliance Government only on earned income and not on transfers such as sickness insurance, parental leave, unemployment benefits, and pensions (Ferrarini et al. 2012; Fritzell et al. 2010). The last available year in the data was 2010, which was also a normal year in terms of GDP growth, unemployment, and the business cycle, and Sweden did not experience a deep economic crisis like the rest of world during the Great Recession (Björklund and Jäntti 2013).

The analysis consisted of the following steps. The development of disposable personal income was calculated for the whole period of 28 years, from 1983 to 2010, according to gender and income distribution position. The ratios P99/P10, P99/50,

¹⁵Some age groups were larger than others, e.g., generations born in the second half of the 1940s and the 1960s. There was also a slight majority of men in each age group except for the oldest.

¹⁶The compulsory military service, typically conducted when persons are 18 or 19 years of age, was in use in Sweden from 1901 to 2010.

and P50/P10 as well as the Gini coefficient were calculated for each gender separately and for all five investigated years. The reason for and the advantage of separating men and women were to allow the income distribution to differ between men and women. If women improved their economic situation, they would improve upon their position in the income distribution. This would not be captured by looking at fixed percentiles in the income distribution common for both men and women. If fixed percentiles were analyzed, the general development of the distribution would have been lost: when separating genders, it is possible to capture, for example, whether low-income men have the same income as low-income women. Possible explanations for changes in the gender gap were investigated by decomposing the individual disposable personal income according to income source and at all three different positions in income distribution. For example, decomposed income for women in percentile 10 in 1983 was compared with the decomposed income for women in the same percentile in 2010. By doing so, it was possible to investigate the development of different income sources, for example, the increased influence of transfers in percentile 10, and the increased share of nominal capital income in percentile 99. Lastly, the gender gap was calculated expressed as a percentage of disposable personal female income divided by disposable personal male income, DPI_f/DPI_m , for the selected years and each income group.

As described earlier, changes occurred in the tax system and the compensation rates of the general insurance systems during the investigation period. However, it is possible to compare the outcomes for the two genders, as they have experienced the same changes.

Results

As this study focus on the development of the gender disposable personal income gap over a period of 28 years, I start by exploring income changes for men and women. Figure 1 shows the development of disposable income for the three investigated positions in income distribution over the whole period.

As shown, top income earners (P99) have almost tripled their income, while the bottom (P10) has experienced a modest increase by 26 percent for men and 58 percent for women. The growing inequality, mainly driven by top income earners, is also shown when calculating ratios for P99/P10, P99/P50, and P50/P10 (see table A1 and A2 in Supplemental Appendix). In 1983, the ratio of P99/P10 for men was 4.4; in 2010, it had increased to 10.2. For women the same ratios changed from 4.1 in 1983 to 7.2 in 2010. Furthermore, the growth of inequality expressed as ratios and according to age results shows a major increase in inequality among those in the youngest age category, 20-year-olds. In 1983, the ratio P99/P10 was 5.3 for young men, in 2010 it had increased to 12.8; the same ratios for young women are 3.3 and 9.4. The explanation for this is the increased labor market demand of an educated labor force and therefore an extended time to labor market entry in that age group, as very few of those that age had a stable income in 2010. More stable are the changes for the older age groups, where results show an increase in inequality for both genders; for men age 50 the increase was from 4.1 to 10.4, and for age 70 the increase was from 3.3 to 8.4, while for women the changes at age 50 were from 4.5 to 6.2, and at age 70 from

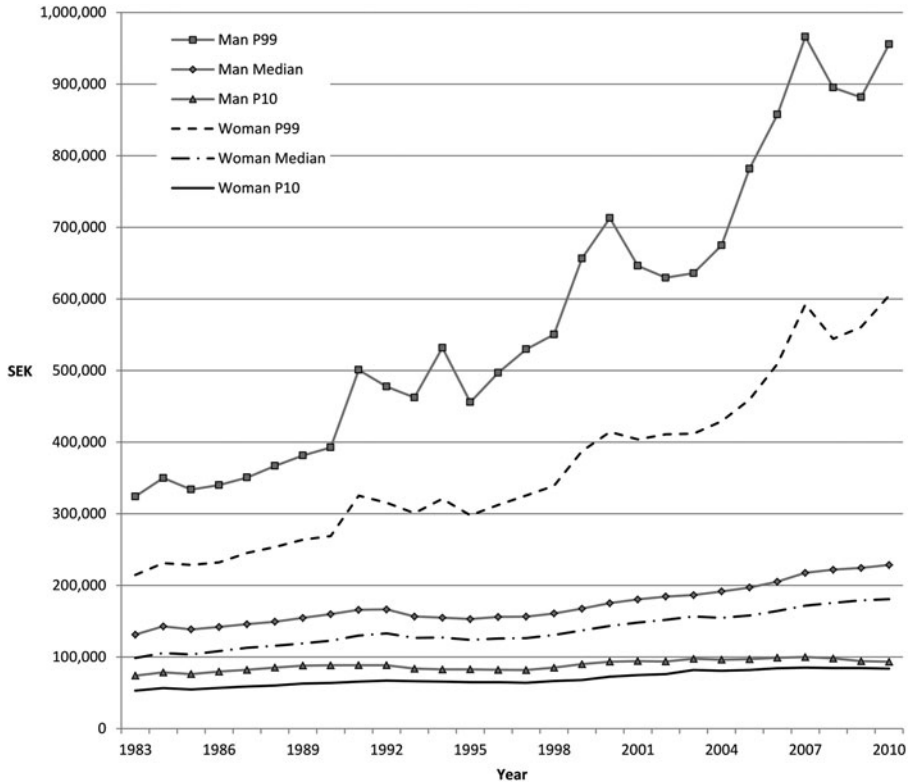


Figure 1. Development of personal disposable income 1983 to 2010, according to gender and income distribution position, mean values.

Source: Author's own calculations from SCB data.

3.0 to 6.7. In figure 2, the development of the Gini coefficient (disposable personal income) for the starting year 1983 and ending year 2010 according to age and gender is shown.

As figure 2 shows, inequality has increased since 1983 and increases with age except for the youngest. In 1983, the decrease between ages 20 to 22 years old is explained by a short time to gain labor market attachment, as there was almost no youth unemployment then. In 2010, the consequences of a longer period among youth (age 20 to 25 years old) to get established in the labor market are shown, probably a consequence of two things: an increasing labor market demand for a higher educated workforce and high youth employment in the beginning of the twenty-first century. In 1983, there was more inequality among women, especially in the age span 50 years to 65 years old. This is explained by the differences in labor market attachment within this group, which also is the main explanation why the Gini coefficient is higher among women compared with men in 1983. In 2010, the opposite is found; there is more inequality among men than women, as the results from the P-ratios show.



Figure 2. The Gini coefficient for the years 1983 and 2010, according to gender, age, and income distribution position.

Source: Author's own calculations from SCB data.

In the Bottom of the Income Distribution

The largest differences when comparing the starting year and the ending year are for the changes in disposable personal income according to gender in this group. Women have increased their disposable personal income more than men and especially women age 50 to 65 years old. This is a result of their increased labor force participation, which qualifies them for transfers connected with earned income. To further understand how different income components may coordinate with the gender income gap, the disposable personal income for the starting year 1983 and the ending year 2010 were decomposed according to different income sources for men and women separately and according to age. Results show that the main increase in disposable personal income derived from transfers such as student loans and grants, sickness insurance, unemployment benefits, early retirement pensions, social assistance.¹⁷

Turning to the gender gap, figure 3 shows changes in the gender gap for percentile 10 across all five selected years. The gender income gap is expressed as a percentage of the female income divided by the male income for each selected year.

¹⁷All estimates discussed here and not shown as figures or tables are available from the author on request.

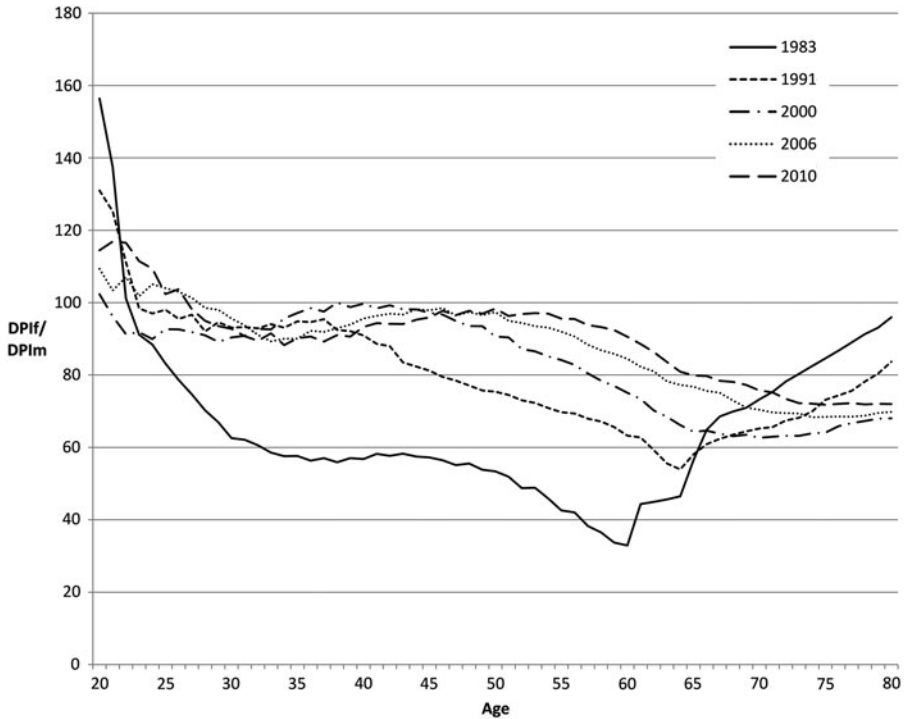


Figure 3. Gender gap for the 10th percentile in 1983, 1991, 2000, 2006, and 2010. Women's personal disposable income/men's personal disposable income, percentage.

Source: Author's own calculations from SCB data.

Here, the gender gap declined dramatically, especially between 1983 and 1991. There was a real reduction in the gender gap; in 1983 a woman aged 35 years had 57.6 percent of an equivalent aged man's wages, while in 1991 it had increased to 91.9 percent, and in 2000 it had more or less disappeared. The largest gap was in 2010 for 34-year-old women and was not more than 11 percent. The main explanation for this reduction was the increased labor force participation among women during these years. But it can also be explained by stagnation in the growth of men's incomes for this age group, as shown in figures 4a and 4b.

As figure 4a reports, a woman aged 35 years had a 78 percent higher disposable personal income in 1991 than an equivalent woman in 1983, and this increase was a consequence of the increased female labor force participation during these years. However, the figure also shows that the youngest women did not gain as much from the strong economic growth in Sweden during these years. In 2010, a 26-year-old woman had the same disposable personal income as her counterpart in 1983. However, the economic crisis years during the 1990s did not affect women in general in the same way as men, as their disposable personal income increased during this decade as well as between 2000 and 2010. Furthermore, a woman aged 40 years in 2010 had doubled her disposable personal income compared with her equivalent counterpart in 1983. In figure 4b changes in disposable personal income for men in

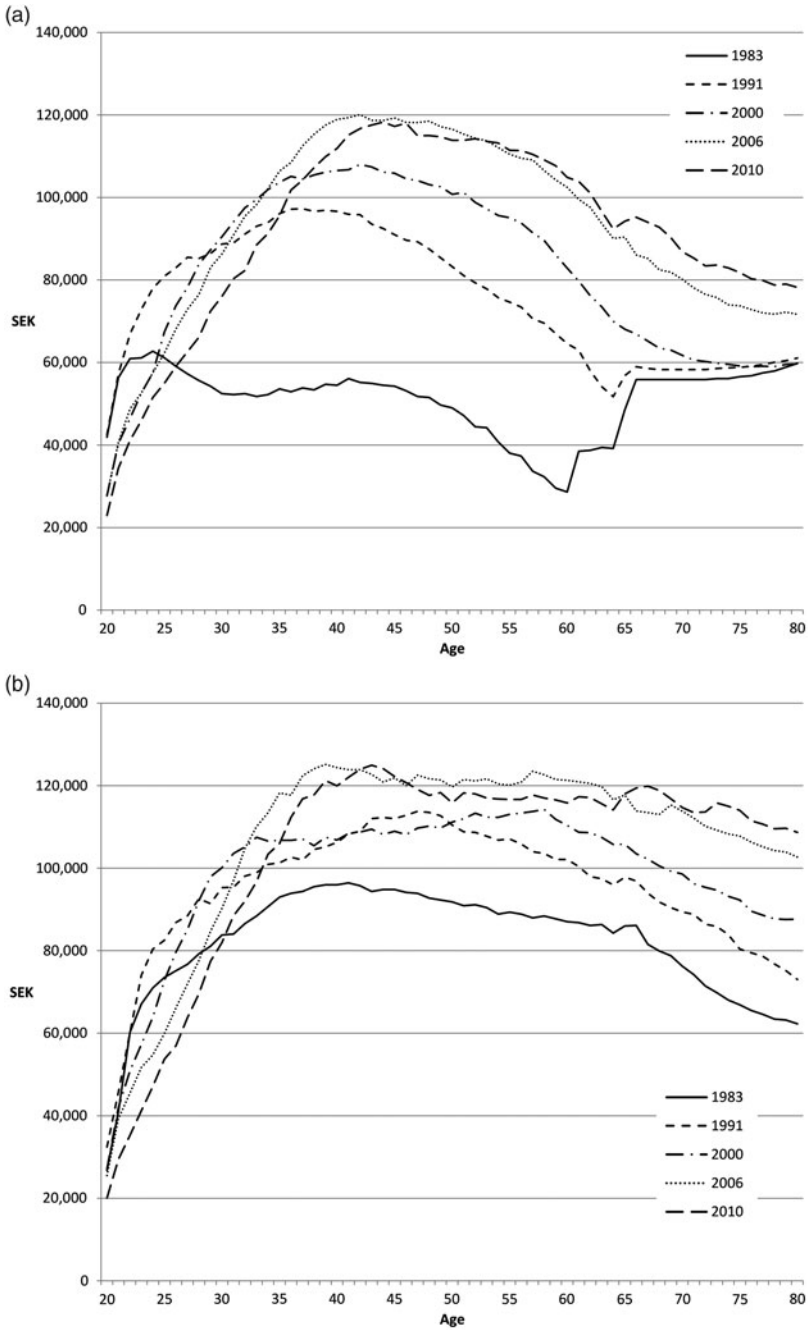


Figure 4. (a) Individuals' personal disposable income 10th percentile, 1983, 1991, 2000, 2006, and 2010. Women, 20 to 80 years old, constant price, SEK. (b) Individuals' personal disposable income 10th percentile, 1983, 1991, 2000, 2006, and 2010. Men, 20 to 80 years old, constant price, SEK.

Source: Author's calculations from SCB data.

percentile 10 during the same years is shown. Starting with the youngest individuals, I find the same pattern as for women. A man in 2010 did not have a higher disposable personal income than his earlier counterpart from 1983 until he was 30 years old, and the increase in disposable personal income was not large. A man aged 40 years in 2010 had just 25 percent higher disposable personal income than his counterpart in 1983. The economic crisis during the 1990s is evident; there were almost no increases in income for this category, and changes during the last decade did not work in favor of this group. There was no substantial increase in disposable personal income for this group during the last decade; the members of this group earned low incomes with very small increases. The male population in this percentile did not experience an increase in disposable personal income following the crisis years in the 1990s and was thereby exposed to an increased risk of being more marginalized than its earlier counterpart.

When comparing disposable personal income between the two genders, low disposable personal income among the elderly population is a real problem for women. A woman aged 65 years and older in 2010 had a yearly disposable personal income of about 80,000 SEK, which is far below the official poverty line, compared with her male counterpart, who had about 110,000 SEK.¹⁸ This result corresponds to a study showing that poverty, calculated at the household level, is a genuine problem for elderly women in Sweden (Nygård et al. 2016). To summarize, the gender gap for age groups below 65 years old (figure 3) was reduced as a consequence of two things: increased labor force participation among women during previous periods and the male incomes in that group not increasing as much during the investigated years. This is interpreted as a masculinization of low income and poverty: a man with a low income remains with a low income and in poverty.

In the Middle of the Income Distribution

Turning to the middle of the income distribution, perhaps the most interesting result is changes in personal disposable income between 1983 and 2010 for women aged 35 to 70.¹⁹ They experienced a larger increase in income than men of the same age. In 2010, women had a much higher degree of paid labor force participation and a more stable position in the labor market than their counterparts in 1983, and their income had more than doubled. The greatest increase was found among women aged 60. It is also apparent that men aged 65 years and older increased their pension quite substantially compared with their earlier counterparts, a consequence mainly of the maturing of the pension system.²⁰ Decomposing income according to income source results shows that the main increase in disposable personal income for active working ages (ages 20 to 64) derived from earned income. Women's earned income increased more than men's; for example, for a woman aged 35 years, earned income increased by as much as 70 percent from 1983 to 2010, mainly as a consequence of increased labor force participation during the study period, particularly

¹⁸The poverty line was 10,180 SEK per month in 2010, calculated as 60 percent of the median disposable income.

¹⁹All estimates discussed here and not shown as figures or tables are available from the author on request.

²⁰A vast majority of individuals in this study belong to the old pension system.

during the first part. For a man of the same age, earned income increased by 44 percent. Transfers also increased; for a woman aged 35 years, transfers doubled, and for a 35-year-old man, transfers more than tripled. These numbers were consistent with the increased transfers from parental leave insurance and sickness insurance. Transfers made up a larger proportion of income in 2010 for an average 35-year-old woman (31 percent) than for a man of the same age (14 percent). At the age of 65, the proportion between transfers and earned income was more or less the same for the two genders; however, at higher ages, the transfers increased substantially and became the main income source, as almost all had exited the labor force. There was a sharp decrease in tax shares between 1983 and 2010. In particular, young adults paid much less tax in 2010 (i.e., at the age of 25 a man paid 20 percent and a woman paid 17 percent) than in 1983 (i.e., a man of the same age paid 30.8 percent and a woman paid 26.4 percent), but for retired individuals the opposite was found. Retired women paid a much higher percentage of taxes in 2010 (i.e., 24 percent at the age of 71 years) than in 1983 (i.e., a woman of the same age paid 19.6 percent), a result of more women over 65 in 2010 having had a working life, resulting in higher pensions and therefore higher taxes. There was no large difference in taxation depending on the taxable income derived from earned income or transfers as in 1983. The tax share is currently relatively more constant over the life cycle, which may be a consequence of the changes in taxation since 2007.

Turning to the development of the gender gap, figure 5 shows the structure of the gender income gap at each age from 20 to 80 and for each of the five observation years.

As figure 5 shows, the median income gap widens with age until labor market exit (age 65), when it starts to decrease. At young ages (20 to 22 years old), a median woman had a higher income than a median man, probably due to the existence of compulsory military service. However, this gap disappeared during the 2000s, when fewer men of a birth cohort were enrolled. Looking closely, within a given age, the curves show that the gap slowly starts to decrease from the age of 50, most likely as a result of increased female labor force participation. However, the opposite was found for women younger than 50. Between 2000 and the two last years, 2006 and 2010, the gender gap widened. This led, for example, to the gender income gap observed for the years 2006 and 2010 for the age of 35 years being of the same magnitude as for 1983. Gender convergence measured as the gender disposable personal income gap has ground to a halt for younger women and even reversed since 2000. Compared with the year 2000, the gender gap for a median woman aged 35 had widened by almost 9 percent in 2010.²¹ How can this be explained? As discussed earlier (in the section “The Swedish Context”), a vast majority of all women in Sweden become mothers, and parental leave is still very unequally shared between the parents. If the mother takes a larger part of the parental leave than her spouse, it is more likely that she will return to the labor market after the leave but will not work full-time (Försäkringskassan 2013). All these things taken together have consequences for women’s personal income. The income from working part-time will, of course, be lower than that from working full-time, and if a larger part of the individual’s disposable personal income derives from transfers, which since the tax

²¹When comparing 1999 and 2009, the results also show a widening of the gender personal income gap.

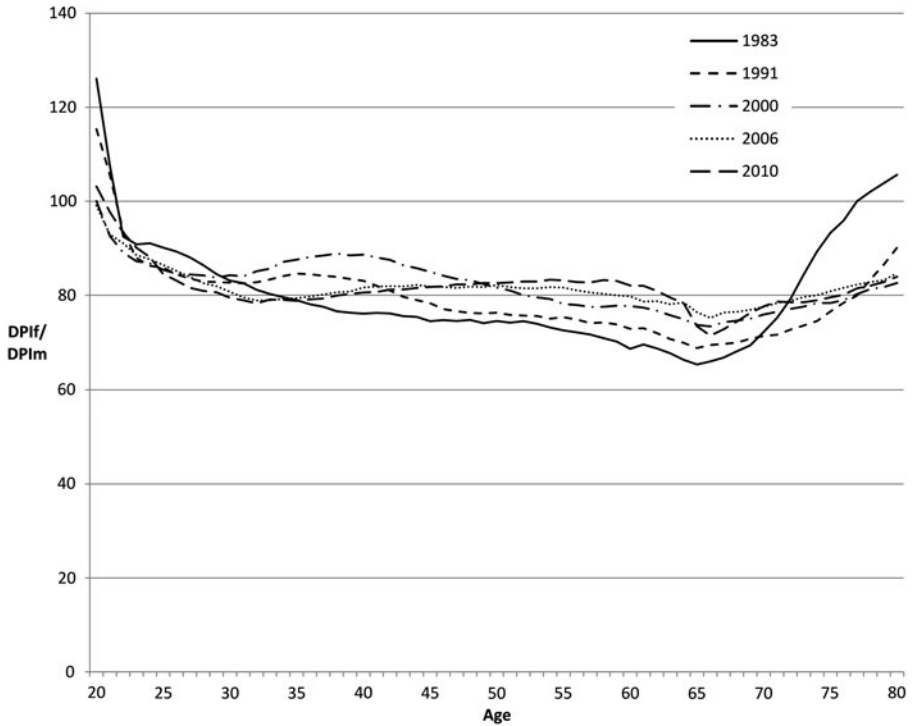


Figure 5. Gender gap for the median in 1983, 1991, 2000, 2006, and 2010. Women's personal disposable income/men's personal disposable income, percentage.

Source: Author's own calculations from SCB data.

reforms starting in 2007 have been taxed higher than earned income (that qualifies for tax reductions), one of the consequences will be a widening gender gap calculated on the individual's personal income.²²

Median, as shown in figures 6a and 6b, shows a steady increase over the investigated years. Women increased their income most between 1983 and 1991, as a result of increased labor force participation. For men, the consequences of the economic crises during the 1990s are shown by a modest increase for men ages 27 to 39 years old, no increase at all for men between 40 and 49 years old, and modest increases for ages above 50 years old.

At the Top of the Income Distribution

Lastly, for income at the very top, percentile 99, contrary to the earlier investigated positions, the increases are similar for men and women. Both genders have experienced a substantial increase.²³ Decomposing disposable personal income according

²²To check this, the transfer gap and tax gap were calculated; the results from these calculations strengthen the findings.

²³All estimates discussed here and not shown as figures or tables are available from the author on request.

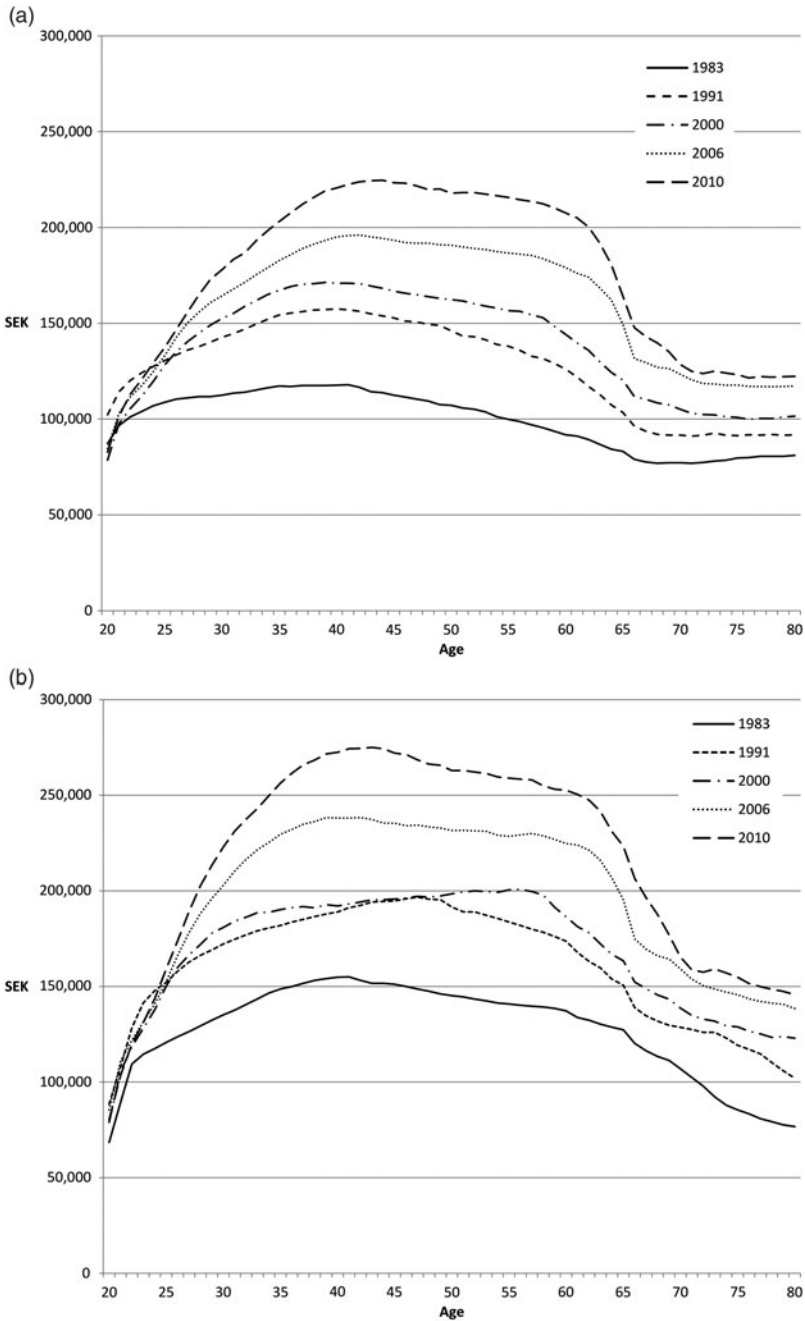


Figure 6. (a) Individuals' personal disposable income median, 1983, 1991, 2000, 2006, and 2010. Women, 20 to 80 years old, constant price, SEK. (b) Individuals' personal disposable income median 1983, 1991, 2000, 2006, and 2010. Men, 20 to 80 years old, constant price, SEK.
 Source: Author's calculations from SCB data.

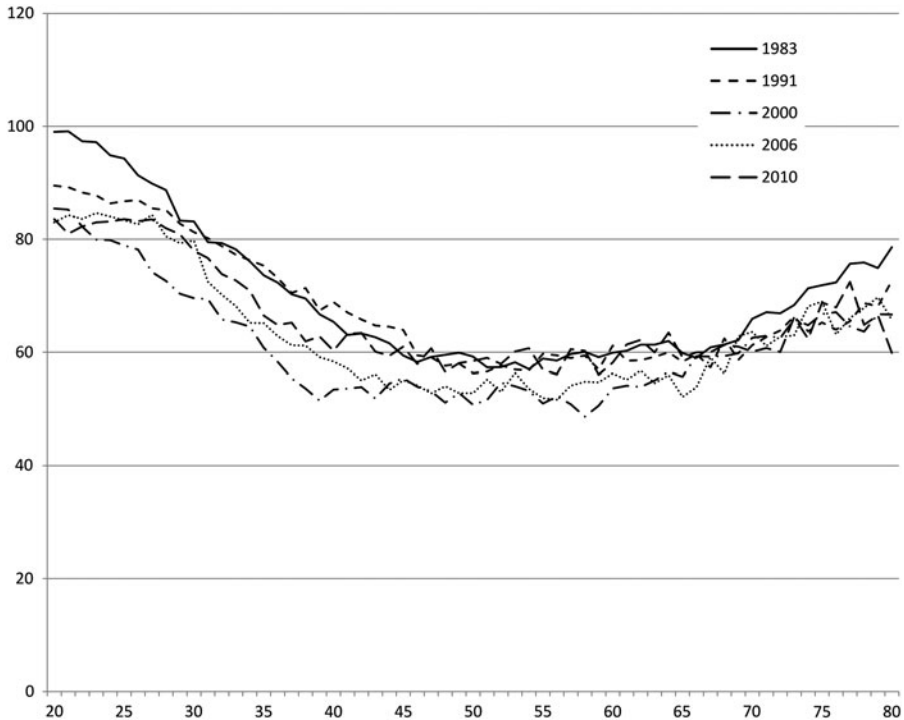


Figure 7. Gender gap for the 99th percentile in 1983, 1991, 2000, 2006, and 2010. Women's personal disposable income/men's personal disposable income, percentage.

Source: Author's own calculations from SCB data.

to income source reveals the increased importance of capital income. In 1983, women in this group had higher capital income than men, especially at age 55 years and older, but the difference was minor (2–8 percent). In 2010, the men's share of capital income has increased by between 20 and 30 percent from age 35 to 44 years old. At age 45 and older it constitutes a more or less steady 30 percent of income till age 70 years old. The capital income share among women is between 10 and 20 percent.

When investigating the gender gap, in figure 7, the pattern differs from the two other groups.

As seen in figure 7, the gender gap has widened with age; a woman aged 35 years in 1983 had 75.3 percent of an equivalent man's income, but in 2000 she had just 60.8 percent: a widening of the gap by 14.5 percent. For the two latest years, 2006 and 2010, the gap was slowly decreasing but still very wide; a female top-income earner had approximately just 60 percent of a male top-income earner's income. This huge disposable personal income gap between men and women in the 99th percentile can be related to research on the so-called glass ceiling and confirms the impression that it is very hard for women at upper income levels to increase their incomes to the same positions as for men at the top; the glass ceiling is hard to break (Albrecht et al. 2015).

The income development for top-income earners was rather different than for the other percentiles, as is apparent in figures 8a and 8b, which show the disposable personal income development for the 99th percentile.

Starting with women, figure 8a shows a steady disposable personal income increase when entering the labor market and a huge increase for individuals during the ages when people are typically in the workforce. A woman aged 40 years in 2010 increased her disposable personal income by 243 percent compared with her counterpart in 1983, and for a woman aged 60 years in 2010 compared with an equivalent woman in 1983, the increase was 365 percent. A similar development was found for men. As shown in figure 8b, there was a steady and large increase in disposable personal income during the years. There are no signs of a similar development for the youngest in the 99th percentile, as seen for the youngest in the 10th percentile. The youngest high-income earners gained from the growing economy and increased its disposable personal income throughout all the years of study. In addition, the crisis years during the 1990s did not seem to affect high earners at all. A man aged 40 years in 2010 who was in the 99th percentile for disposable personal income increased his disposable personal income by 264 percent compared with his counterpart in 1983. The increase was even larger if comparing a man aged 60 years in 2010 with an equivalent man in 1983: 376 percent. The development of disposable personal income for the top-income earners was enormous. However, the gender disposable personal income gap did not decrease.

Discussion

This study aimed to shed light on changes in income and the gender disposable personal income gap in Sweden from 1983 to 2010, for three different positions in the income distribution. Register data based on the total population in Sweden for five selected years, 1983, 1991, 2000, 2006, and 2010, was used.

Results show that the gender disposable personal income gaps have developed quite differently according to the position in the income distribution. Starting with the bottom, the 10th percentile, a remarkable decrease in the gender gap is shown for the age groups below 60 years. The gender disposable personal income gap almost vanished between 1983 and 1991, especially for women below the age of 40. One explanation for this is the increased female labor force participation rate during the studied years. The increased share of transfers, when decomposing income sources, is an indication of this. To receive the main transfers such as sickness and unemployment insurance, the person has to be in the labor market, although having such a large part of disposable income from transfers also shows that this group has more unsecured labor arrangements. Another explanation of the vanishing gap is the masculinization of low income and poverty. Results showed that male incomes in this group have not increased as much as those for males in the other income groups. A man aged 40 years in 2010 had just 25 percent higher income than his counterpart in 1983. Developments during the last few decades have not worked in their favor. For women older than 60 years, the gap has increased, and they are still exposed to poverty in old age.

For the median position the most remarkable result is the widening gender disposable personal income gap since 2000 for women below 50 years old. Despite

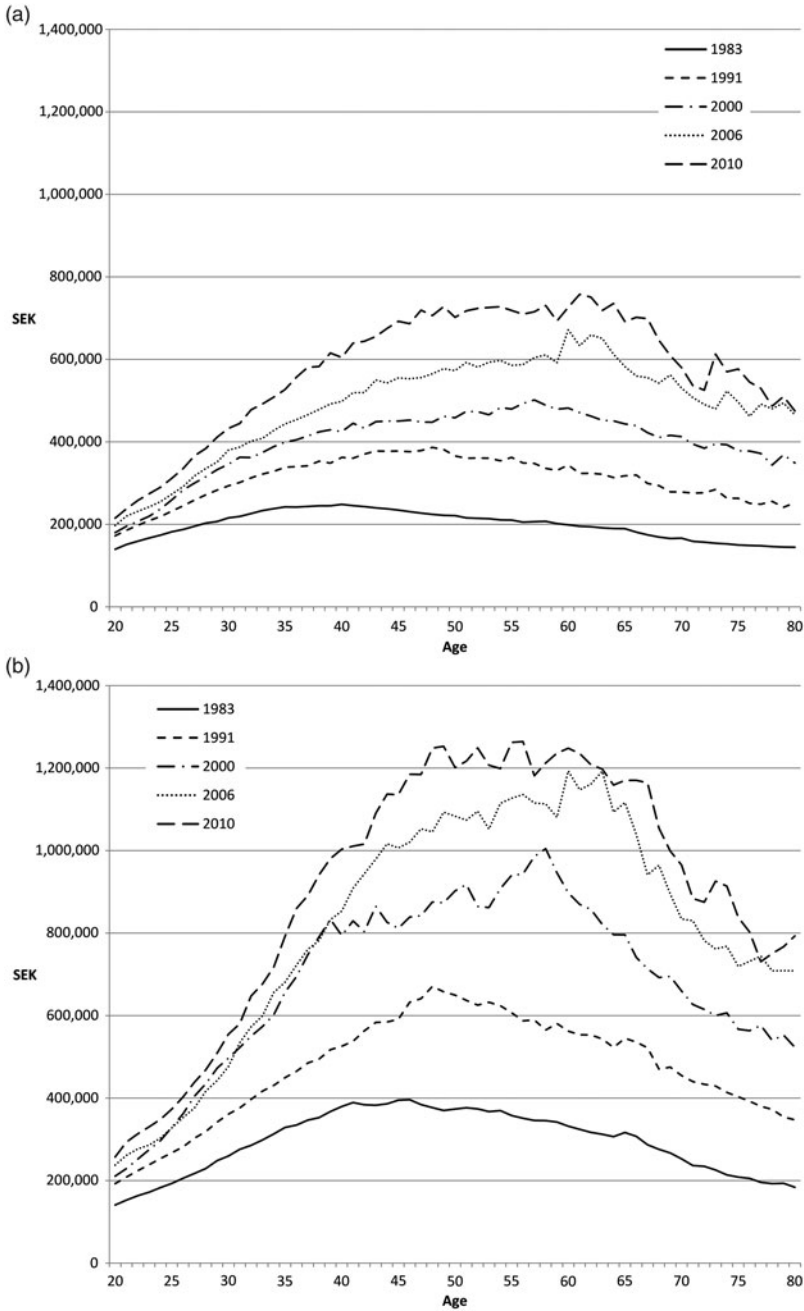


Figure 8. (a) Individuals' personal disposable income, 99th percentile, 1983, 1991, 2000, 2006, and 2010. Women, 20 to 80 years old, constant price, SEK. (b) Individuals' personal disposable income, 99th percentile, 1983, 1991, 2000, 2006, and 2010. Men, 20 to 80 years old, constant price, SEK. Source: Author's calculations from SCB data.

stable and high female labor force participation for women in this age group since the 1990s, the gap has widened during the past decade. I argue that this is the outcome of women still having the main responsibility for family and children but also of changes in the tax system. For women over 50, the results show that the gender disposable personal income gap was decreasing, a positive change evaluated as being mainly explained by their increased labor force participation compared with their counterparts from prior years. However, it seems as though gender convergence, measured as the gender disposable personal income gap, has come to a halt for younger generations and is moving in the opposite direction: increased income inequality between men and women, which will have consequences for women in the future in the form of lower pensions.

In addition, for top-income women (the 99th percentile), the gender gap widened during the time studied: a female top-income earner aged between 40 and 70 years had only approximately 60 percent of a male top-income earner's income; this is interpreted as demonstrating the existence of a glass ceiling that was hard to break through (Albrecht et al. 2003, 2015). The increased importance of capital income, when decomposing disposable income, in favor for men also may explain this. The capital income tax has since the 1990s been just 30 percent and having that part of the income taxed lower than earned income will result in a higher disposable income. In 2010, both genders had increased their income substantially compared with 1983. The increase was between 200 to 400 percent, depending on age, but as this increase happened for both genders, it did not affect the gender gap.

As this study also showed, there is increasing income inequality in Sweden today. When measuring the disposable income gap between the bottom and the top, it was found that it has widened substantially during these 28 years. In 1983, the gap in disposable income between a 40-year-old man in the 10th percentile and one in the 99th percentile was 396 percent; in 2010, it had grown to 836 percent. A growing gap between women at the bottom and women at the top was also observed. The income gap between a 40-year-old woman in the 10th percentile and one in the 99th percentile was 455 percent in 1983; in 2010, it had increased to 540 percent. This is a very strong indicator that their lives have very little in common and that different income earners in Sweden live greatly separated lives.

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