

On the Role of Capital Gains in Top Incomes

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Abstract

This study shows that including realized capital gains may be more important for understanding recent increases in income inequality than previously suggested. We focus on the case of Sweden, where the difference between yearly cross-sectional estimates when including and excluding realized capital gains respectively, have been the largest in recent decades. Controlling for the potentially transitory nature of realized capital gains we find that this difference is real and that including capital gains does increase top income shares substantially. Averaging income over five year periods (so as to reduce the transitory component), the top 1 and top 0.1 shares including realized capital gains increase by about 30 and 60 percent respectively, compared to estimates excluding them. The effects are, however, concentrated in the top of the distribution and the inclusion of capital gains makes virtually no difference below the top percentile group. Furthermore, we find very small changes over time in terms of the general income make-up of capital gains earners (top wage earners v. capital income earners). Instead the results we find can be traced to capital gains (which are skewed in their distribution) being an increasingly important share of total income after 1980.

Keywords: Top incomes; long run income inequality; realized capital gains; capital income; Sweden; welfare state.

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1 Introduction

In recent decades income inequality has increased in many developed countries. A number of studies have shown that much of this development is due to increases in the very top of the distribution and this, in turn, has created an interest in understanding the details of top incomes.¹ A key feature in terms of composition is that capital income is especially important in the top, often being the largest source of income for top earners. Still, how to treat one specific type of capital income, namely realized capital gains, has been a debated question. On the one hand, capital gains, realized and unrealized, are undoubtedly a source of income according to the classic Haig-Simons income definition.² On the other hand, data based on income tax returns typically only show capital gains at the point of realization, making it difficult to properly allocate them in time. In addition many top income studies use data that groups individuals in different income brackets, making it difficult to allocate observed capital gains to the right individuals.³

In the recent literature on top income shares the approach to capital gains has therefore been largely pragmatic. Where possible, the repeated cross sections of income shares for different top segments of the population have been presented both including and excluding realized capital gains.⁴ In some other cases, various calculations and approximations have been made to estimate the potential effect of realized capital gains.⁵

The overall importance of capital gains to both trends and levels of top income shares is somewhat mixed. Historically they do not seem to make much of a difference for the long run series in most countries. For example, Saez and Veall (2003) show that in Canada, series with and without capital gains are very similar and display the same general pattern for the period

¹ See Atkinson and Piketty (2007, 2010) and Leigh (2009) for overviews of the top income literature.

² According to Haig (1921) and Simons (1938), income is the value of consumption plus any increase in real net wealth, that is, it should include all capital gains, not just the realized ones.

³ Due to the difficulties of correctly allocating realized capital gains they are typically (for example in the influential Luxemburg Income Study) excluded from the income concept used. See Björklund, Palme and Svensson (1995) for a discussion and an example of how to approximate capital gains incomes.

⁴ In most top income studies, grouped income data have been used, making even the allocation of capital gains to the right individuals difficult. So far, treating capital gains separately over the long-run has so far been possible in Canada and the US, in Sweden and in Finland, and in Spain. Estimates are also available for Japan but only for the top 0.1 per cent (see Moriguchi and Saez, 2010). See Atkinson, Piketty and Saez (2010) for a discussion of the definition of taxable income in the top income literature.

⁵ Over and above the timing problem, another difficulty for most top income studies is their use of grouped income data instead of individual micro files, making even the allocation of capital gains to the right individuals difficult.

1972–2000. Piketty and Saez (2003, p. 18) draw similar conclusions for the US. Recent work by Landais (2007) also indicates that while inequality has been increasing in France recently, the role of capital gains in this is minor. In summing up the evidence from both these studies Saez (2005) concludes that the dramatic increase in top income shares in the US and Canada is “totally independent from the erratic evolution of capital gains” (Saez, 2005, p.408).

However, in some countries and, in particular, during recent years the role of capital gains to top incomes has increased. Figure 1 displays the ratio between the share of total income earned by the top income percentile when capital gains are either included or excluded in countries for which such data are available. As is clear from the figure, this ratio has trended upwards in Finland, Spain and Sweden in recent years.⁶ Some other countries, in particular Norway, also display a pattern indicating that realized capital gains are likely to be important.⁷

[Figure 1 about here]

The pattern of an increased role of capital gains to top incomes is especially marked in the case of Sweden. Between 1990 and 2006 the income share of the top one percent when including realized capital gains is, on average, almost 40 percent higher than when excluding them.⁸ This means that the Swedish *average* yearly difference between excluding and including realized capital gains over this period is larger than any one single extreme observation in the other countries for which we have data. The corresponding figures are even higher for higher top groups and in terms of trend capital gains also seem to become increasingly important. This means that the treatment of capital gains may have an important effect on how much inequality has increased in Sweden in recent decades.

⁶ Looking at the latest available data in the cases of Finland and Spain the relative size of realized capital gains has increased substantially. Summarizing the effect in Spain, the top 1 percent share between 1982 and 2005 has increased from 7.5 to 8.8 when excluding capital gains, but from 7.6 to 11 per cent when including capital gains. In a similar way the difference between top shares including and excluding capital gains in Finland has increased in recent years. In 1987 the top 1 percent share was 3.4 and 3.44 when excluding and including capital gains, respectively. In 2004 the corresponding numbers were 6.00 and 7.01.

⁷ Even though realized capital gains are not reported separately in Norway, especially the extreme peak in the Norwegian top 1 percent income share in 2001 is likely to have an important component of realized capital gains. The pattern is similar to the Swedish one where top income shares co-vary with the development of the stock market when including capital gains (but not when excluding them).

⁸ Throughout this article (and in most of the literature on top incomes in general) “income share” refer to the share of total (gross) income from all sources before taxes and transfers, including or excluding realized capital gains.

Given the problems with capital gains analyses using tax-based income records, it is, however, not obvious how to interpret the evidence in Figure 1. In particular, the question is if the increased discrepancy between top shares when including and excluding realized capital gains is a sign of capital gains becoming increasingly important for actual inequality or if it simply is an illusion based on cross sectional, grouped data not being able to take into account mobility and the possible re-ranking of individuals depending on income source? The main objective of this paper is to answer this question. We do so in two ways using a nationally representative individual panel dataset for Sweden over the period 1980–2004. First, we compute annual top income shares including capital gains, but ordering individuals according to income either including or excluding capital gains. This answers the question: “to what extent are realized capital gains an addition to the incomes of those who are already in the top (when excluding capital gains)?”. Second, we recalculate top income shares including and excluding realized capital gains, but this time ordering individuals according to *long-run average incomes* using both three- and five-year windows. Doing this allows us to examine the impact of realized capital gains holding eventual cross-sectional mobility constant. If high incomes are relatively transitory, concentration should go down as we average over longer periods, and if this is especially true for realized capital gains the difference should be larger when these are included.

Furthermore, we also examine what types of individual who make large capital gains. Are they dispersed widely across the top decile or concentrated in the very top? Are they individuals who already have most of their income from capital (“rentiers”) or are they persons with high labor earnings (“working rich”)? And has the composition between these groups changed over time?

Our main finding is that the inequality increasing effect of including realized capital gains in Sweden is a real phenomenon, not one driven by problems in the previously used data, and it does alter the picture of Swedish inequality in important ways. Regardless of ranking individuals according to different income concepts or multi-year averages the effects remain. And the quantitative difference is important. When adding capital gains, the increase of the top percentile income share between 1980 and 2004 (using three-year averages) goes from 23

percent (from 4.3 to about 5.3 percent) to 63 percent (from 4.3 to 7.0 percent).⁹ We also find that the impact of capital gains on income shares is almost entirely a top percentile phenomenon. In the lower half of the top decile there is essentially no difference depending on how capital gains are treated.

Finally, when searching for economic explanations to these results, we study the composition of income of those who earn large capital gains. We find no major shift between high wage earners and high capital income earners, nor has the top percentile increased its share of overall capital gains since 1980. Instead the capital gains-driven rise in top percentile income shares seems attributable to capital gains becoming a larger part of all incomes in the economy. While we cannot entirely determine the drivers of this shift the growth of financial market values certainly appear to be the main contributor to this development.

2 Data and method

In the top income literature the series of top income shares are typically based on tax and other administrative records for groups of earners in different classes of income (see Roine and Waldenström, 2008, 2010 for details on the Swedish series). The use of income tax data has important advantages, in particular regarding its broad coverage of very high incomes, but also some well known problems.¹⁰ In terms of analyzing realized capital gains using grouped data, the main problem is that they cannot be appropriately allocated to the right individuals and, perhaps even more importantly, we do not know the extent to which the top group making big capital gain is the same set of individuals from one year to the next. To be able to allocate realized capital gains to the right individuals and also to deal with the issues of mobility in the top we need longitudinal individual data. We therefore use a Swedish micro panel database, LINDA, which contains yearly observations of individuals' incomes for a nationally representative sample (about three percent of the Swedish population, approximately 200,000 individuals) starting in 1968.¹¹

⁹ These numbers are likely to be lower bounds of this exercise. When comparing top shares in the total tax statistics and the LINDA sample (which we use in this paper) we see that especially for extreme years the top shares are lower in LINDA.

¹⁰ The pros and cons of using tax data when studying top income have been extensively discussed in just about every paper in this literature and will not be reviewed in any detail here. For the main points, see Atkinson, Piketty and Saez (2010).

¹¹ For a closer description of LINDA (Longitudinal INdividual Database), see Edin and Fredriksson (2000).

Income in LINDA is taken from the exact same tax records that form the bases for the tabulated statistics previously used in Roine and Waldenström (2008, 2010), with individuals being the unit of analysis. Consequently the main income concept, total income, is also the same, defined as income from all sources (labor, business and capital) before taxes and transfers with the possibility to add realized net capital gains.¹² Unfortunately, however, the realized capital gains data has no information on what type of asset has been sold. Hence, we cannot, for example, distinguish between gains from real and financial assets, something which would obviously be interesting for the economic interpretation of these incomes.

The estimated top income shares are essentially equal when using LINDA and when using total tax statistics as shown in Figure 2. In years when realized capital gains have been extreme, the top shares in LINDA are somewhat lower, probably because of an underrepresentation of extreme observations. This means that if anything we are likely to underestimate the effect the importance of including realized capital gains for the very top groups when using LINDA.¹³

[Figure 2 about here]

We begin our analysis in 1980. The prime reason for this starting date is that before that year the amounts of realized capital gains were low, both in the economy as a whole and among top earners. Most likely this can be explained by the low returns on the Swedish financial investments (see further our discussion of this in section 5 below).¹⁴ The result is that there are no visible differences in the Swedish top income shares depending on how capital gains are treated (see, e.g., Roine and Waldenström 2008, 2010 and also Figure 1 above).

Most importantly, the consistency of our analysis relies on proper measurement of the capital gains in the economy. The data are based on personal tax returns and this implies that the ob-

¹² We only analyze net capital gains, i.e., gains net of losses, as these are what we observe in the data before 1991 whereas we observe both gross gains and losses from 1991 onwards.

¹³ There are some other differences as well. For example, the reference total income in the series based on total tax statistics include approximations for income of those not filing tax returns while the reference total in LINDA is the total income of all included individuals. This is, however, not likely to make much of a difference especially not after 1978 when virtually all individuals filed tax returns. Yet another difference lies in the population total which in the main series in Roine and Waldenström (2008, 2010) is the whole adult population aged 16 and above while it is 20 and up in the LINDA sample.

¹⁴ We have done all calculations that appear in this text for the full period since 1968 and these confirm that there is nothing happening in the period before 1980. Below we will discuss to what extent this is likely to reflect real circumstances, or whether it is due to reporting being less complete before.

servation of capital gains is closely associated with tax laws. For example, a change in the tax rate or possibility to deduce losses could influence the timing of realizations as well as the share of gains that are taxable. We have therefore studied all changes in the income tax legislation with potential relevance to the reporting of capital gains.¹⁵ Ideally we would also like to assess the coverage of our tax data with respect to the reported capital gains by comparing them with other sources for estimating aggregate capital gains in the economy. Unfortunately, the Swedish National Accounts and Financial Accounts do not report capital gains of the households.¹⁶

The main tax event during our period of analysis is the Swedish tax reform of 1991, when capital gains went from being added to and taxed at the same rate as all other personal incomes to being taxed at a separate, flat capital income tax rate. For high income earners, the reform effectively cut the capital gains tax rate by an order of magnitude and those who were able to shift their realizations from 1990 to 1991 did so, as seen in the spikes in both the amounts realized and the top income share in 1991 (see, e.g., Figures 1–3, 7, and 8). Apart from the comprehensive reform in 1991, there have been a number of minor changes of the taxation of capital gains during the study period.¹⁷

Our basic methodology is to utilize the panel structure of the dataset to investigate the impact of capital gains on inequality. First, we order all individuals aged 20 or above according to their total income when excluding realized capital gains. Maintaining this order we then add realized capital gains to the total income of each individual. Doing so gives an indication of how important the addition of realized capital gains is to those who already have the highest

¹⁵ In 1977 (before our analysis begins), there was a legislative change in the taxation and reporting of capital gains. Before no gains made on assets held longer than five years were taxable, and for shorter holding periods an increasing fraction of the gains were taxed. From 1977, no exemptions were made but for assets held over two years only 40 percent of the gain was made taxable. However important this change may seem, its impact on the reported capital gains is not possible to discern, at least there is no evident shift in the time trend of capital gains during the 1970s.

¹⁶ In a recent overview of the National and Financial Account-based statements of assets and debts among Swedish households and private firms, the lack of proper measures of capital gains over and beyond the tax returns-based sources was discussed as being a "blind spot" in the statistics (Statistics Sweden, 2010, p. 89).

¹⁷ The right to deduce losses were somewhat restricted in 1989–1990 when only 40 percent of losses on short-term sales was made deductible (previously they were fully deductible, just as the short-term gains were fully taxable). The tax on financial asset gains lowered from 30 to 25 percent in 1992, lowered again to 12.5 percent in 1994 but raised to 30 percent in 1995. The tax rate on housing sales was 30 percent 1991–1993, lowered to 15 percent in 1994 and raised to 20 percent in 2001. For further details on the capital gains changes, see Johansson (1999) and National Tax Board (2009).

incomes.¹⁸ Second we calculate three- and five-year averages of total income, both excluding and including realized capital gains.¹⁹ We then order individuals according to their total income over these longer periods and calculate top income shares.

By studying the degree to which shares including and excluding capital gains drop, when averaging over longer periods, we get an indication of how much more transitory capital gains are compared to other income. This, in turn, provides an estimate of their impact on actual income. Put differently, if the difference between shares including and excluding capital gains remain important even for long-run averages of individuals' incomes, this would indicate that realized capital gains in top incomes are not so infrequent after all and that they do, in fact, add substantially to income inequality. Table 1 presents descriptive statistics for the analyzed samples.

[Table 1 about here]

3 Main Results

3.1 Are capital gains mainly transitory and unrelated to other incomes?

In this section, we study the impact on inequality from adding realized capital gains to total income, both using different income concepts by which we have sorted individuals and when averaging individual incomes over several years. In Figure 3, we show three different representations of the top percentile income share: one where incomes include capital gains and tax units are ranked according to this concept, a second with incomes including capital gains but where tax units are ranked according to incomes excluding capital gains and a third one where incomes excluding capital gains throughout was used. As the figure clearly shows, realized capital gains appear to be an important addition to total income for those who make up the top percentile without capital gains, i.e. much of capital gains realized every year seem to go to individuals who are already in the top of the income distribution. Furthermore the importance of this additional income seems to have been growing markedly over time after 1980.

¹⁸ This is precisely what Piketty and Saez (2003) do for the U.S. concluding that shares become slightly different but that this does not affect the overall trend.

¹⁹ When calculating the three- and five-year averages, we drop all observations for which there is at least one year missing.

[Figure 3 about here]

The message of Figure 3 does, however, only indirectly address the concern that capital gains may be transitory and not appropriately measured in the tax data. A more direct way to deal with this issue is to repeat the exercise but this time averaging individual incomes over longer time periods in order to reduce the relative importance of a one-time realization of a capital gain. Figure 4 shows the same three income cases as in Figure 3 (i.e., including capital gains, including capital gains but ranking incomes excluding capital gains, and excluding capital gains) but adding to the annual observations incomes averaged over three and five years. If high incomes are relatively transitory we should see a decrease in concentration as we average over longer periods. While this also turns out to be the case, the decrease is limited and instead the strong upward trend in the income share remains in the averaged series ranked according to incomes excluding capital gains. Capital gains among top earners are hence not only made up of one-time events that create spikes in individual years, but indeed a complementary source of income that increases their share of total income. In short, including realized capital gains do make an important contribution to increasing top income inequality in Sweden.

[Figure 4 about here]

3.2 Are large capital gains a top phenomenon only?

One part of understanding what might lie behind the importance of realized capital gains in the Swedish context is to examine if they are mainly a top phenomenon or if they also make a big difference for broader top groups. As previously stressed in Roine and Waldenström (2008), the top decile is a very heterogeneous group in terms of income composition, in particular with respect to capital being much more important for the top percentile. Figure 4 shows that this difference within the top is present with respect to the importance of capital gains too. For the lower half of the top decile group (P90–95) the inclusion of realized capital gains makes virtually no difference for their income share. As we average over longer time periods income shares fall slightly due to mobility, but again there is no noticeable difference with respect to the treatment of realized capital gains.

3.3 Are the capital gains associated with labor earnings or wealth returns?

We also want to know whether the rise in capital gains in the top income percentile are associated with labor earnings, e.g., as part of a capital-based remuneration scheme, or simply returns to personal wealth. Unfortunately, the Swedish tax data do not detail what assets, e.g., stock or homes, which have been sold with a capital gain. Indirectly, however, other items in the tax registers allow us to acquire information about this issue. For example, one could plausibly assert that a necessary condition for capital gains to emanate from financial asset sales is a prior ownership of such assets. We do have some information about such ownership. In the Swedish Wealth Register, available since 1999, individual asset holdings are specified across a range of categories. Moreover, income statements on interest earnings and dividends also indicate ownership of income-yielding financial assets. Based on these background facts we make a crude distinction of individuals within the top percentile group; we call them “working rich”, “rentiers”, and “hybrids”. The working rich are those who get at least two thirds of their total income from labor income, the rentiers get at least two thirds from interest and dividends, and the hybrid group consists of those who are neither working rich nor rentiers according to these definitions.²⁰

Figure 5 displays no evidence of significant trends in the relative income shares of these three categories of income earners within the top percentile. Clearly, the working rich is the dominant group representing about 80 percent of all incomes while rentiers and hybrids represent about one tenth each. But there are no distinct compositional shifts across these groups that match the observed rise in the top percentile share when capital gains are included.

[Figure 5 about here]

However, perhaps such a compositional shift should not be expected to materialize in terms of total incomes, as displayed in Figure 5, but rather in terms of realized capital gains? Figure 6 shows the share of all capital gains that the top percentile has earned. For the fractile as a

²⁰ These particular definitions are of course arbitrary and we have no particular theory for why to set the cut off at 2/3 of total income (excluding capital gains) from a particular source. For our purposes this does not matter much. We want to see if there have been shifts in terms of the importance of capital gains between groups *mainly* earning wage income or *mainly* earning capital income. We have tried different cut-offs (1/10, 1/5) and the principal difference lies in a shift of levels while the trend (which is what we mainly care about here) is not sensitive to our choice of cut off.

whole, it has been relatively stable since 1980 at a level around 45 percent.²¹ But also when we divide this relatively stable share across the three subgroups, working rich, rentiers, and hybrids, a similar picture emerges. While there is variation between single years within these groups, there are no obvious trends that match the distinct capital gains-driven rise in the top percentile income share that was documented in Figure 3.

[Figure 6 about here]

3.4 Have capital gains become a more important source of income in the economy?

Given the fact that realized capital gains have had an observed impact on the rise in top income shares since 1980, but at the same time there are no signs of capital shares becoming more important for any particular top group over time, a final candidate explanation is that capital gains have simply become a more important source of income in the economy as a whole. As Figure 7 shows this is indeed the case.

While interest and dividend income has declined steadily from being between two and three percent of total income in the early 1980s to just above one percent in recent years, realized capital gains has increased from being well below one percent of total income in 1980 to, on average, being above four percent in recent years with a maximum of almost eight percent in 2008. The fact that top income earners have kept their share of this rapidly growing income component (constantly earning about 45 percent of all capital gains, as shown in Figure 6 above) this explains why their income shares have grown so much more when including realized capital gains.

[Figure 7 about here]

4 The Swedish Transition – a possible explanation?

Our main results above conclusively show that the role of capital gains in top income shares in Sweden has grown substantially since 1980. While questions about the economic explanations for this increase remain, our analysis of how these gains are spread across the top decile,

²¹ One could argue that there is a slight positive trend but given the changes due to the tax reform in 1991, we do not want to draw any such conclusions, and even with this positive trend the share of all capital gains earned by the top percent is remarkably stable.

how they are divided between different types of income earners, and how this has changed over time, offer some indications.

For example, we rule out real estate realizations as main driver of the increased capital gains in the top percentile. Even though we have seen important gains in real estate over this period the magnitudes are simply not large enough.²² Furthermore, real estate sales are less frequent than financial assets transactions, implying that differences between yearly estimates and top shares averaged over longer time periods should be larger than what they appear to be if this was the main driver of what we observe. Also, if real estate was a key factor we would expect differences to show for groups below the top percentile as well.

Another unlikely primary explanation is a capital-based “topping-up” of high wage incomes. The Swedish tax reform in 1991 introduced a much lower marginal taxation of capital income (including capital gains) than on high wages, which certainly made it attractive to device strategies where part of wages would take the form of capital gains. If this were the case Sweden would be an “Anglo-Saxon country in disguise” in the sense that increased wage inequality would lie behind the increased top income shares, but that this would not show up in reported wages but in capital gains.²³ However, if this were the case we would also expect a higher (and growing) share of all realized capital gains in the top to be earned by top wage earners and, in particular, that individuals with high capital income be earning a relatively smaller share of capital gains.²⁴ This is, as we saw above, not the case. By this we do not mean to say that there are no capital gains related to work effort, or that no remuneration schemes include things that in the end show up as realized capital gains. However, in a recent survey of executive remuneration in Sweden, Bång and Waldenström (2009) show that fixed salary represents about two thirds of Swedish top executive pay while the remaining part is predominantly annual bonuses. Long-term incentive plans, including stock- or options-based

²² Between 1981 and 1990, the real price of one- or two-family houses increased by 1 percent per year and between 1990 and 2000 they did not increase at all in real terms (+0.01 percent) (Statistics Sweden, 2001).

²³ As pointed out in many previous studies the increase in Anglo-Saxon top income shares, in particular in the UK and in the US, have primarily been driven by increases in top wages. See Atkinson and Piketty (2007) and (2010) for overviews.

²⁴ These statements are not just mirror images of each other. It would be possible for an individual to show up as someone earning a small share of income from wages if that person received close to all his work related benefits as a capital gain, but it is not possible (nor would it be desirable) for a person with most of his income from capital to show up as such in our data. Hence, given that individuals with substantial shares of their total income from capital have kept their share of realized capital gains, at the same time as the share of total capital gains has increased in the economy, capital income earners have benefitted from the underlying reason for the increase just as much as high wage earners.

compensation plans play a relatively minor role, in the case of options mainly for tax reasons.²⁵ Hence, based on the available evidence from executive pay in Sweden it is not likely that the increased share of capital gains in total income is directly explained by an increasing substitution of traditional salaries for capital-based compensation in the top groups.

The explanation we find most plausible relates to what we might call “the Swedish Transition”. In 1980 Sweden was a highly regulated economy with virtually no stock market activity, regulated capital and credit markets, and with a debate about so-called “wage earner funds”, which were schemes designed to shift corporate ownership over to trade unions by way of increased corporate taxes. In a series of reforms, starting with the deregulation of capital markets and international capital movements in the 1980s, tax reforms in the mid-1980s and early 1990s and the abolishment of the wage-earner funds in the early 1990s, all these things changed dramatically. The impacts of these profound changes have been the subject of extensive discussions and research.²⁶ In this study, we are primarily interested in its effect on financial asset values since we believe these are the most important contributors to the trend in capital gains realizations among top earners.

Swedish stock market values have experienced dramatic changes that parallel this transition. In the twenty years between 1960 and 1979, the Swedish economy grew at a real rate of 3.4 percent per year but at the same time real stock prices *decreased* by 2.6 percent on average.²⁷ A number of factors contributed to this poor stock market development, and among the most important ought to have been the strict rules for issuing and floating new shares, listing and participation in the trading at the Stockholm Stock Exchange.²⁸ After around 1980, the Swedish stock market went into a booming period with average annual real price increases of 13 percent during the 1980s and over 16 percent in the 1990s. As a reference, real stock prices on the New York Stock Exchange increased annually by a relatively modest 3 percent in the

²⁵ Before 1990, stock options hardly existed in Sweden, and after the 1991 tax reform, they were made quite disadvantageous for their holders. The reason is that although any options-related capital gains were taxed at a relatively low rate (a flat rate around 30 percent), their assessed “tax benefit value” (before execution) to the holder was taxed as labor income at a much higher marginal rate (around 52–57 percent). Furthermore, in the case of a sharp stock price drop, perhaps making the options worthless, the holder would generate a *net loss* because of the previous wage taxes paid without any subsequent capital gain.

²⁶ See, e.g., Swedenborg, Freeman and Topel (1997, 2009) and Lindbeck (1997). Domeij and Flodén (2010) study inequality trends over the period 1978–2004 focusing on earnings inequality both pre and post tax. They find clear inequality increases in market outcomes (i.e. pre tax and transfers) but also that this increase is much smaller when looking at disposable income.

²⁷ Real returns, i.e., price gains plus dividends increased at a rate of one percent per year.

²⁸ For a description of how Swedish stock market regulations hampered activities and values and how the developments from 1980 onwards changed all this, see Hägg (1989, p. 57–100).

1980s and 6 percent in the 1990s. All of this is clearly visible in Figure 8, which shows the evolution of real stock prices in Sweden and the U.S. as well as real Swedish GDP between 1960 and 2004.

[Figure 8 about here]

Linking these stock market developments to capital gains realizations in the income top requires information about individual stock ownership and transactions and personal incomes. In particular, how dispersed was stock ownership in the income top in the early years of our study period? Unfortunately, we lack detailed knowledge about these things in the early years. One reliable source of information is a study of the Swedish wealth distribution in 1985, which finds that 44 percent of the persons in the top income decile held exchange-listed shares with an average value of SEK 287,000 and given what we know about concentration of stock ownership in the wealth distribution (the top percentile of the wealth distribution held almost half of the total privately held stock, with an average value of 523,000 SEK) it seems likely that much of this was concentrated to the top.²⁹ Interestingly, this matches the starting capital a person would need in order to keep realizing the average capital gain of the top income percentile every year from 1980 onwards, given that the capital grows according to the stock market index.³⁰ From the Wealth Register we have similar data at the end of our study period. In year 2000, over 80 (88) percent of all income earners in the top income decile (percentile) held corporate stock, with average values of SEK 584,000 (SEK 2,484,000).

A final piece of information is given in Figure 8, which shows the amounts of capital gains realized by the top percentile alongside the stock price index at the Stockholm Stock Exchange. Both the visual pattern and the correlation coefficient of 0.95, are clear indications of a close link between stock prices and realized capital gains.

[Figure 9 about here]

²⁹ Jansson and Johansson (1987, p. 91–97). The average value among all earners in the top decile (including also those not owning shares) is SEK 123,000.

³⁰ Our back of the envelope calculations show that one would need about 270,000 SEK (with 300,000 one would still have 1,000,000 left and starting with 400,000 one would have about 3,000,000 left).

5 Conclusion

In this paper we have shown that including income from realized capital gains significantly adds to the recent increase in inequality in Sweden. We have also shown that the effect of capital gains has become increasingly important over time since 1980. Using a large, nationally representative individual panel dataset we have shown that this result remains regardless of what income concepts one uses to rank individuals in the distributions, as well as when computing long-run averages of individual incomes, something which is particularly important given the large transitory noise in annual individual incomes.

The distributional impact of capital gains also appears to be exclusively a top income phenomenon. While capital gains are, of course, also earned at lower income levels, they make virtually no difference for the income shares of groups below the top percent. When relating capital gains to the general income composition of those who earn them, essentially contrasting high wage earners and capital income earners, we find no trends over time in their respective share of total capital gains. Instead, their increasing importance can be found in the fact that total capital gains as a share of all incomes have increased substantially since 1980. This paired with the fact that their distribution is very skewed explains their increasing contribution to inequality.

These findings are important for some key questions about how to interpret the recent increases in top income shares in Sweden. In the U.S. context it seems clear that the main driving force behind top income growth is increasing wage inequality. In the European, and especially in the Swedish case, there is much less evidence of such pronounced wage dispersion (though wage inequality also has gone up). If the capital gains that we have found to make a big difference to inequality in Sweden stem from work effort and are in effect “hidden” wage income then the Swedish development is much closer to the recent American development than what previous studies suggest. If, on the other hand, the main reason for growing inequality in Sweden is more related to a skewed distribution of private wealth and large increases in asset values the story is a different one.

Given our data we cannot conclusively discriminate between these scenarios, but as pointed out above the strongest channel seems to be personal wealth holdings, and especially ownership of corporate stock which has increased in value substantially over the past decades.

While these fortunes may indeed emanate from high labor incomes as part of a successful career, the role of capital-based remuneration schemes (e.g., stock- or option-plans in executive pay) have most likely been relatively minor in Sweden, making a direct channel from labor income to capital gains less likely.

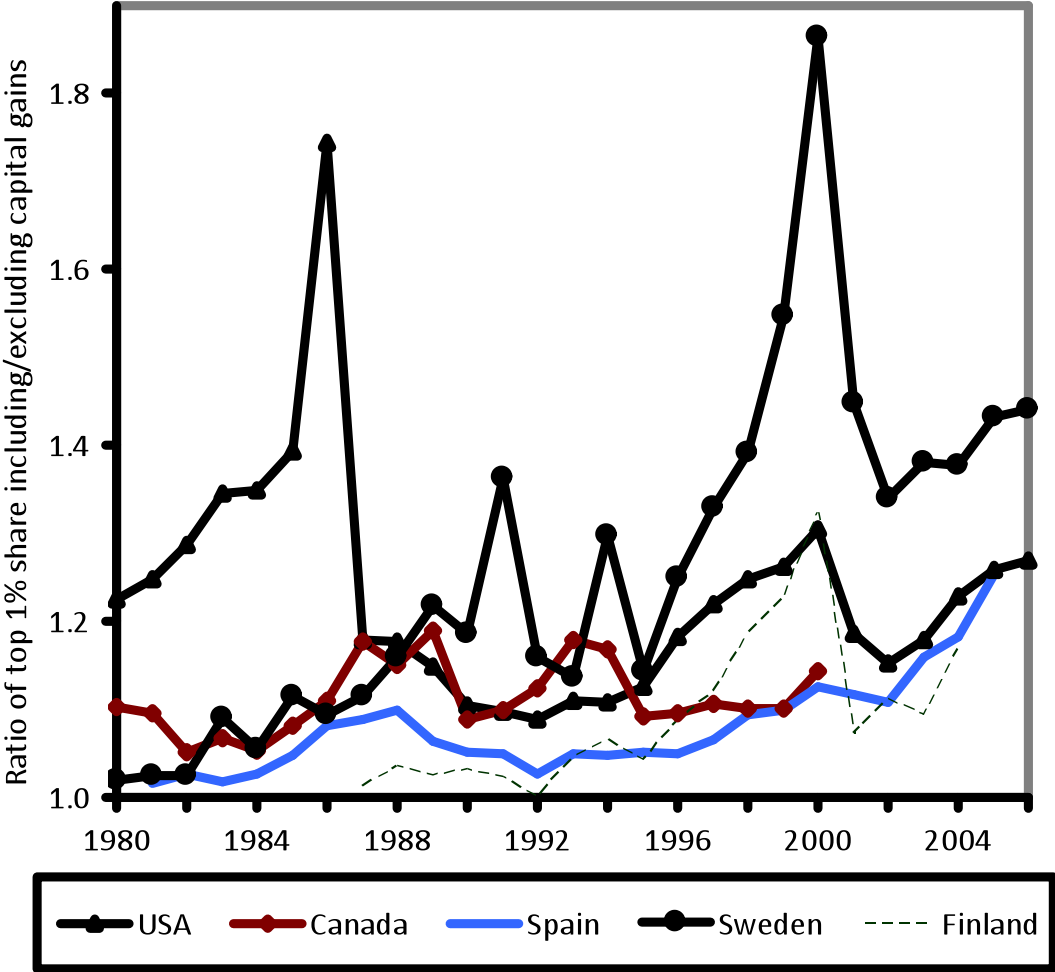
Finally, our results also raise a number of questions regarding the role of realized capital gains elsewhere, especially in the other Scandinavian countries. After all, the changes described above as the Swedish transition, have in various ways happened in these countries too. It would, therefore, be interesting to explore whether capital gains have been more important than previous studies suggest, or if Sweden indeed is different in this respect (and if so, to understand why).

References

- Atkinson, Anthony B. and Thomas Piketty (Eds.) (2007), *Top Incomes over the Twentieth Century: A Contrast between European and English-Speaking Countries*, Oxford: Oxford University Press.
- Atkinson, Anthony B. and Thomas Piketty (Eds.) (2010), *Top Incomes: A Global Perspective. Volume II*, Oxford: Oxford University Press.
- Atkinson, Anthony B, Thomas Piketty and Emmanuel Saez (2010), "Introduction", in: Atkinson, Anthony B. and Thomas Piketty (Eds.), *Top Incomes: A Global Perspective. Volume II*, Oxford: Oxford University Press.
- Bång, Joakim and Daniel Waldenström (2009), "Rörlig ersättning till vd – vad säger forskningen?", *Ekonomisk Debatt* 37.
- Björklund, Anders, Mårten Palme and Ingemar Svensson (1995), "Tax Reforms and Income Distribution: An Assessment Using Different Income Concepts", *Swedish Economic Policy Review*, 2, 229-266.
- Domeij, David and Martin Flodén (2010), "Inequality Trends in Sweden 1978-2004", *Review of Economic Dynamics*, 13(1), 179-208.
- Edin, Per-Anders and Peter Fredriksson (2000), "LINDA - Longitudinal INDividual DATA for Sweden", Working Paper 2000:19, Department of Economics, Uppsala University.
- Haig, Robert M. (1921). "The Concept of Income—Economic and Legal Aspects". The Federal Income Tax. New York: Columbia University Press.
- Hägg, Ingemund (Red.) (1989), *Risikkapitalmarknaden*, Stockholm: SNS Förlag.
- Johansson, Christina (1999), *Dokumentation av LINDA*, Mimeo, Statistics Sweden.
- Jansson, Kjell and Sten Johansson (1987), *Förmögenhetsfördelningen 1975–1987*, Rapport om utvecklingsarbete med redovisning av förmögenhetsfördelningen bland hushållen i Sverige, Statistics Sweden.
- Landais, Camille (2007), "Les hauts revenus en France (1998–2006), Une explosion des inégalités ?", unpublished manuscript.
- Leigh, Andrew (2009), "Top Incomes", in Wiemer Salverda, Brian Nolan and Timothy Smeeding (Eds.), *The Oxford Handbook of Economic Inequality*, (Oxford, Oxford University Press).
- Lindbeck, Assar (1997), "The Swedish Experiment", *Journal of Economic Literature*, 35(3), 1273-1319.
- Moriguchi, Chiaki and Emmanuel Saez (2008), "The Evolution of Income Concentration in Japan, 1885–2002: Evidence from Income Tax Statistics," *Review of Economics and Statistics*, 90:4, 713–734.

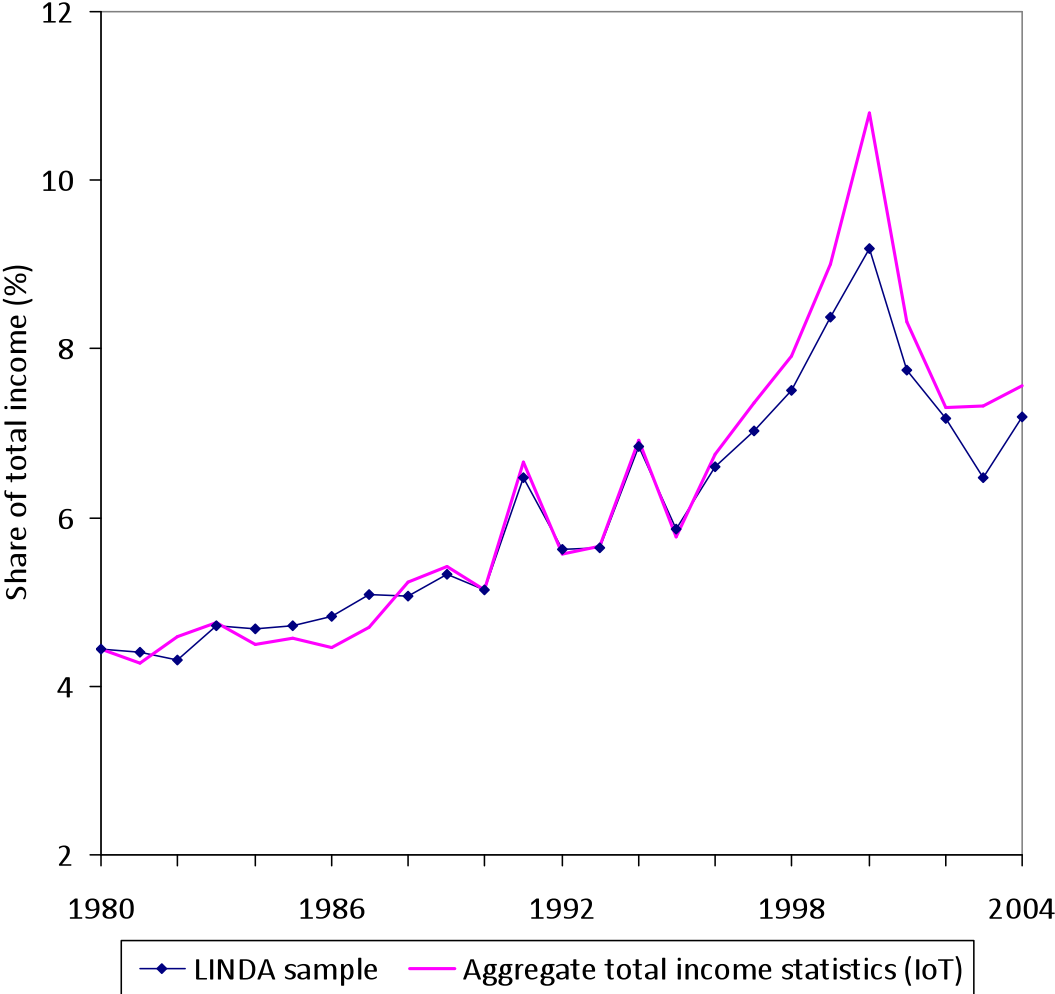
- National Tax Board (2009), *Skatter i Sverige. Skattestatistisk årsbok 2009*, Stockholm: Elanders.
- Piketty, Thomas and Emmanuel Saez (2003), "Income Inequality in the United States, 1913–1998," *Quarterly Journal of Economics* 118:1, 1–39.
- Roine, Jesper and Daniel Waldenström (2008), "The Evolution of Top Incomes in an Egalitarian Society: Sweden, 1903–2004," *Journal of Public Economics* 92:1–2, 366–387.
- Roine, Jesper and Daniel Waldenström (2010), "Top Incomes in Sweden over the Twentieth Century", in: Atkinson, Anthony B. and Thomas Piketty (Eds.), *Top Incomes: A Global Perspective. Volume II*, Oxford: Oxford University Press.
- Saez, Emmanuel (2005), "Top Incomes in the United States and Canada over the Twentieth Century", *Journal of the European Economic Association*, Papers and Proceedings, 3(2-3), 402-411.
- Saez, Emmanuel and Michael R. Veall (2005), "The Evolution of High Incomes in Northern America: Lessons from Canadian Evidence," *American Economic Review* 95:3, 831–849.
- Simons, Henry (1938), *Personal Income Taxation: the Definition of Income as a Problem of Fiscal Policy*. Chicago: University of Chicago Press.
- Statistics Sweden, (2001). *Fastighetsprisstatistik 2000. Småhus, hyreshus, industrifastigheter, lantbruk och obebyggda tomer. Prices of real estates in Sweden 2000*, Statistics Sweden.
- Statistics Sweden (2010), *Tillgångar, skulder och kapitalvinster – Balansräkningarnas roll underskattas i statistik och analys*, Statistics Sweden.
- Swedenborg, Birgitta, Richard Freeman and Robert Topel (1997), *The Welfare State in Transition: Reforming the Swedish Model*, Chicago: University of Chicago Press.
- Swedenborg, Birgitta, Richard Freeman and Robert Topel (2010), *Reforming the Welfare State: Recovery and Beyond in Sweden*, Chicago: University of Chicago Press.

Figure 1: Ratio between top percentile income shares including and excluding capital gains, 1980-2006



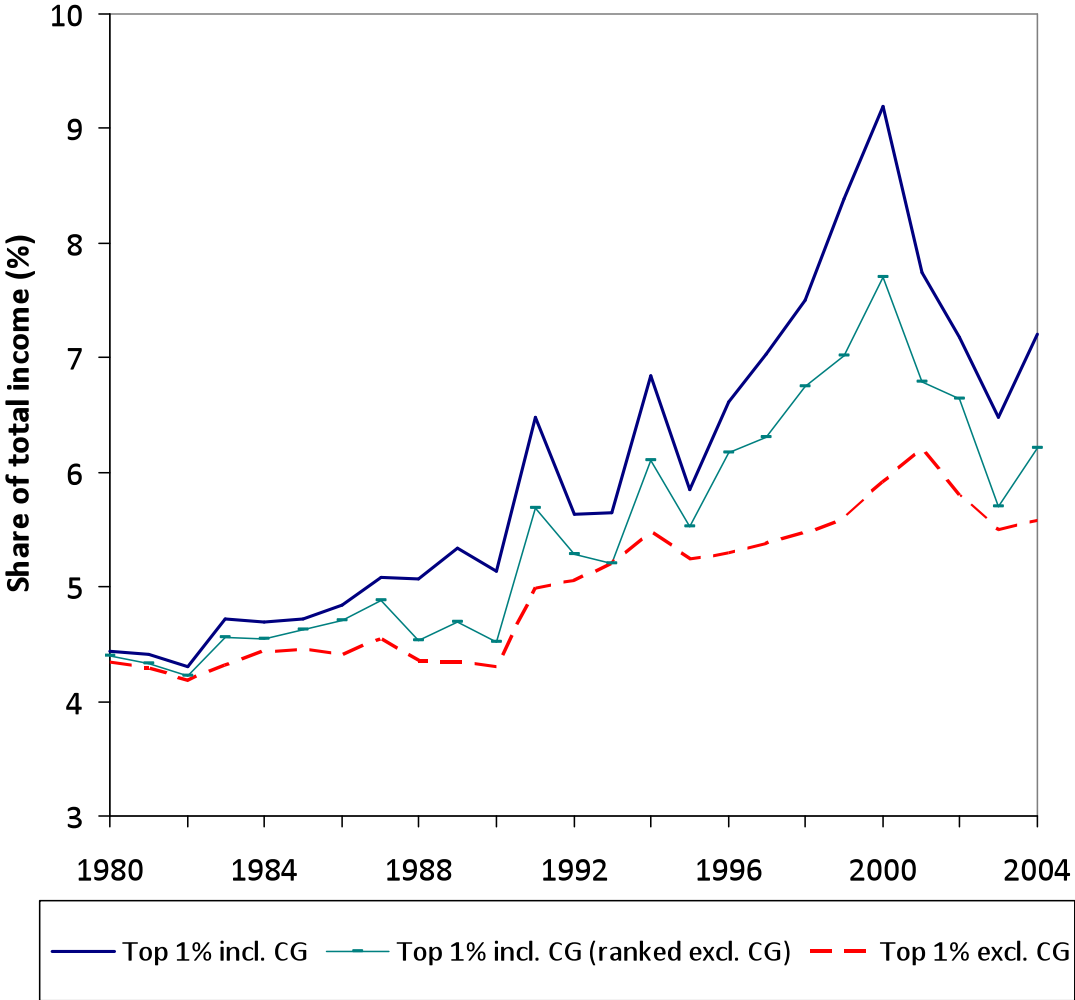
Source: See Table A1.

Figure 2: Top percentile income share in total population data and LINDA.



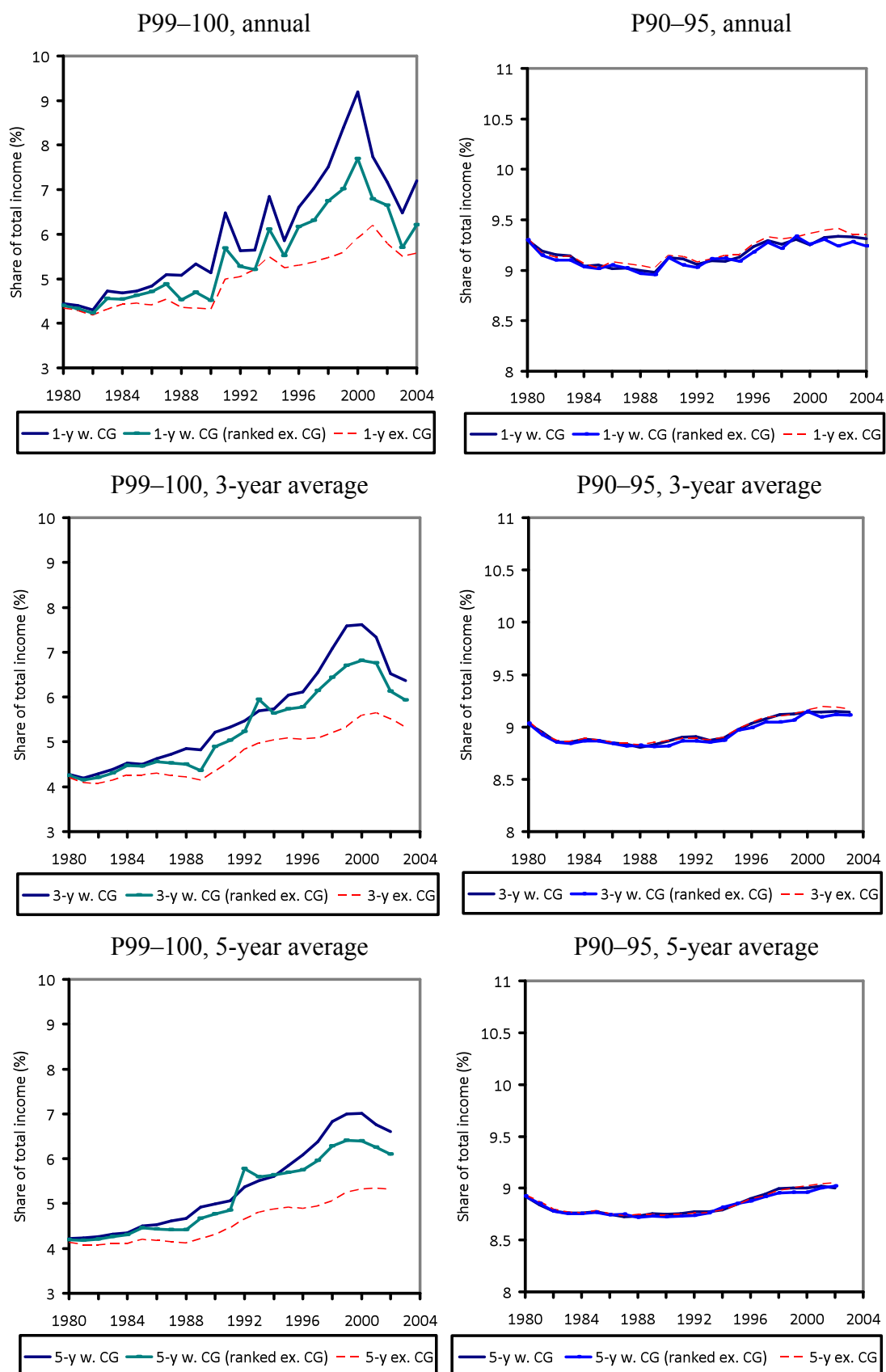
Note: Both samples are based on individuals aged 20 or older.
Source: Table A2.

Figure 3: Swedish top income percentile with and without capital gains, with income earners ranked differently.



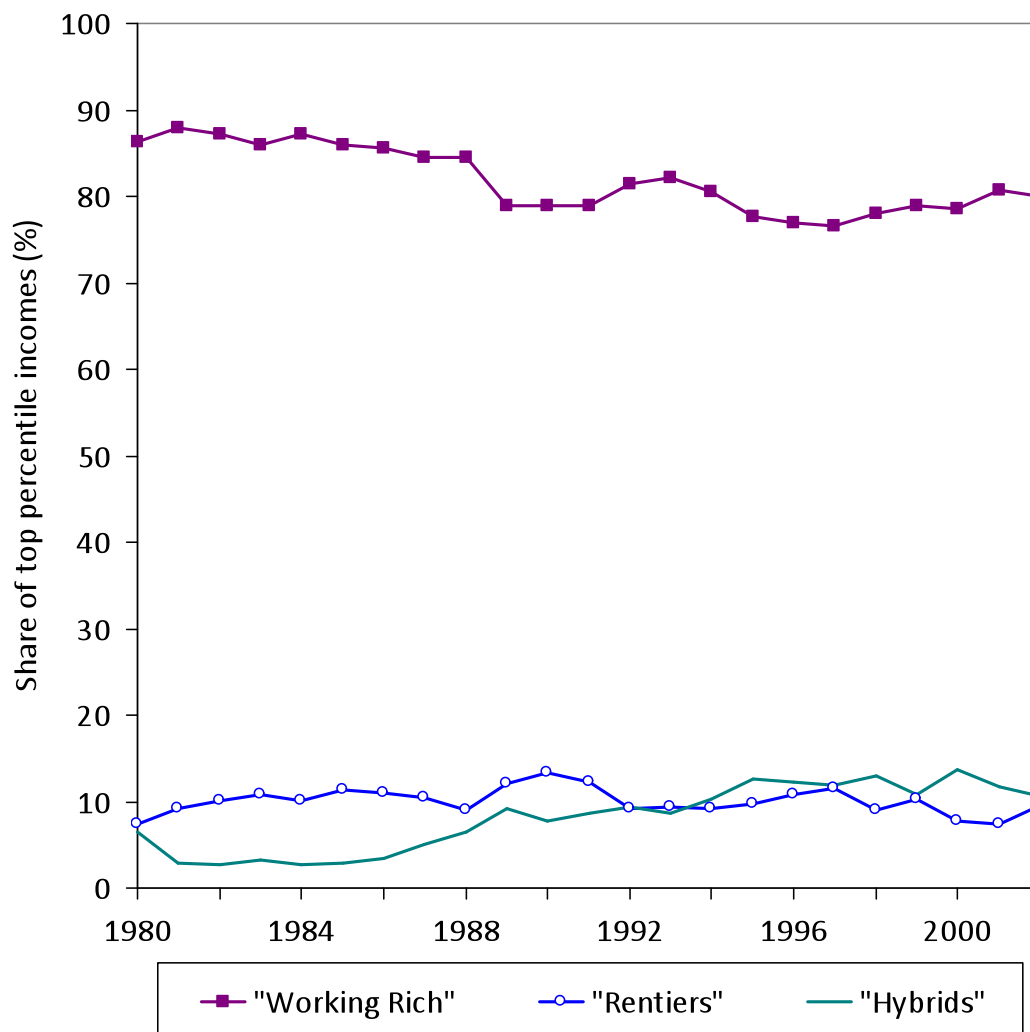
Source: Table A3.

Figure 4: Income shares, averaged 1, 3 and 5 years, different rankings and fractiles.



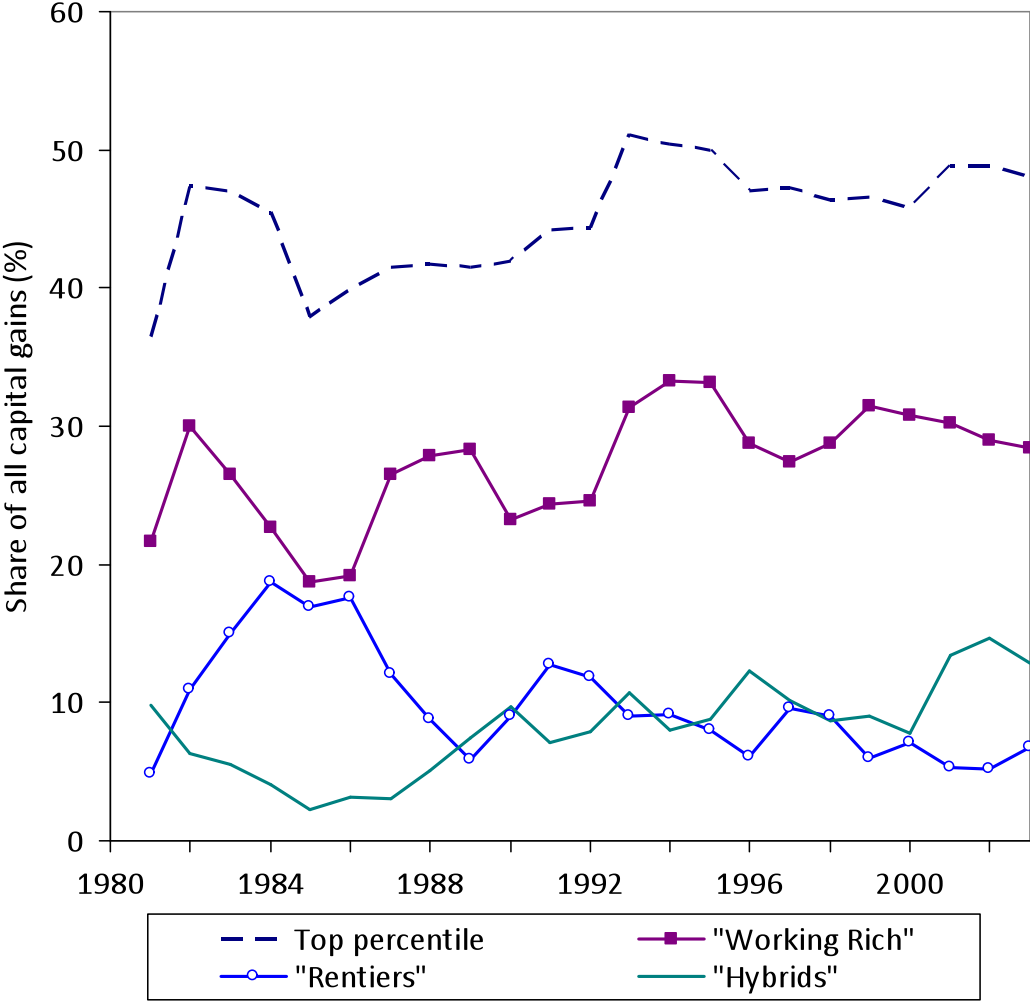
Source: Table A3 and A4.

Figure 5: Share of incomes in the top percentile earned by working rich, rentiers and hybrids, 1980–2004.



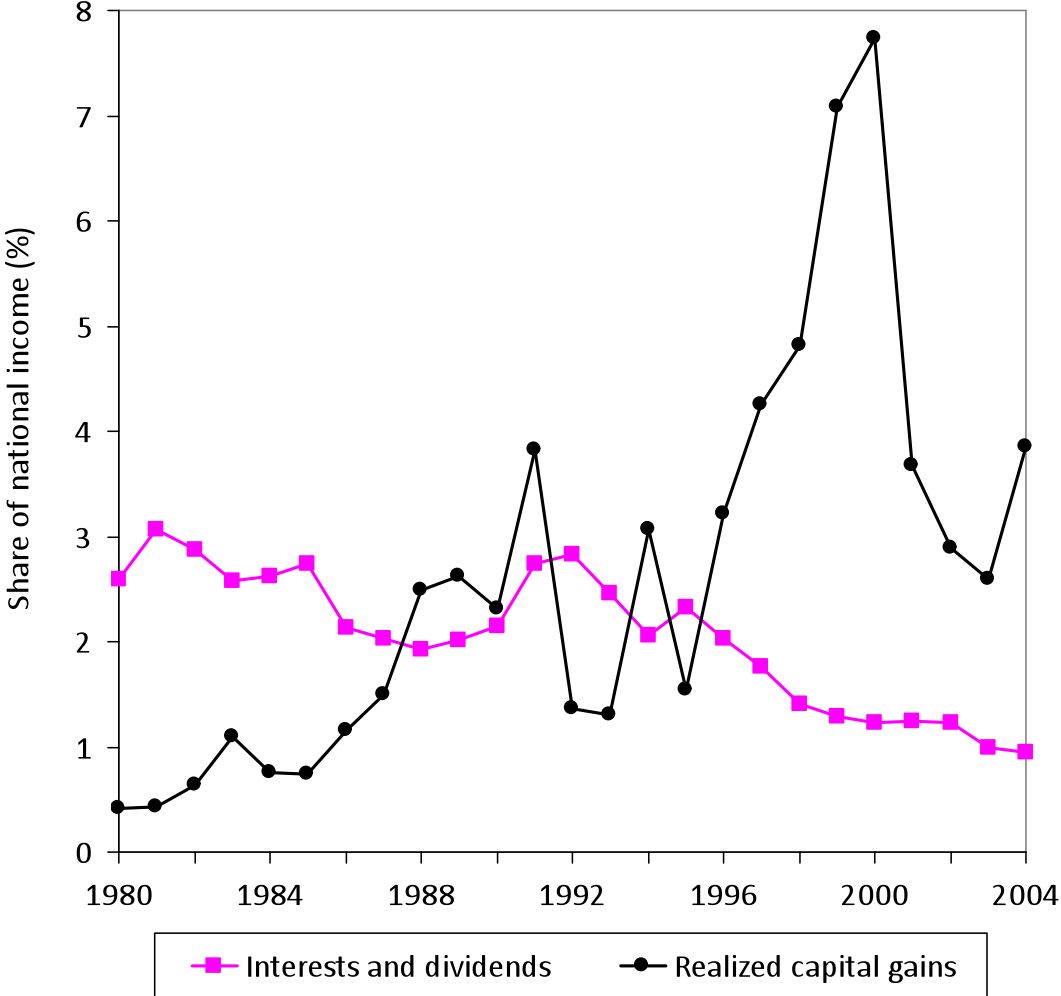
Note: “Working rich” are defined as those persons whose labor income represents at least 2/3rds of their total income excluding capital gains. “Rentiers” are those with interest earnings and dividends exceeding 2/3rds of their total income excluding capital gains, and “Hybrids” are all others. Three-year averages are used.
Source: Table A5.

Figure 6: Share of all capital gains earned by top percentile, 1980–2004.



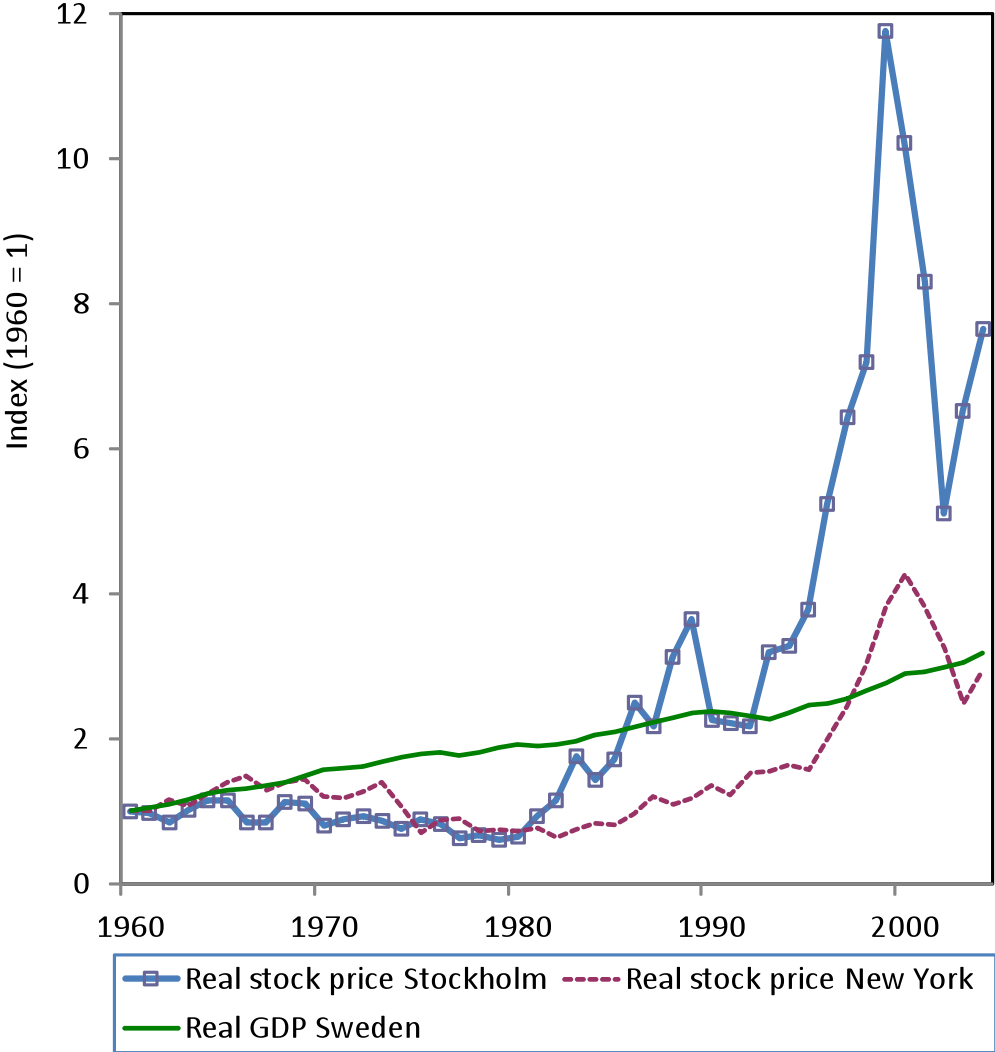
Note: Three-year averages are used. For classification of subgroups, see Figure 5.

Figure 7: Aggregate shares of two sorts of capital income: “interests and dividends” and “realized capital gains”.



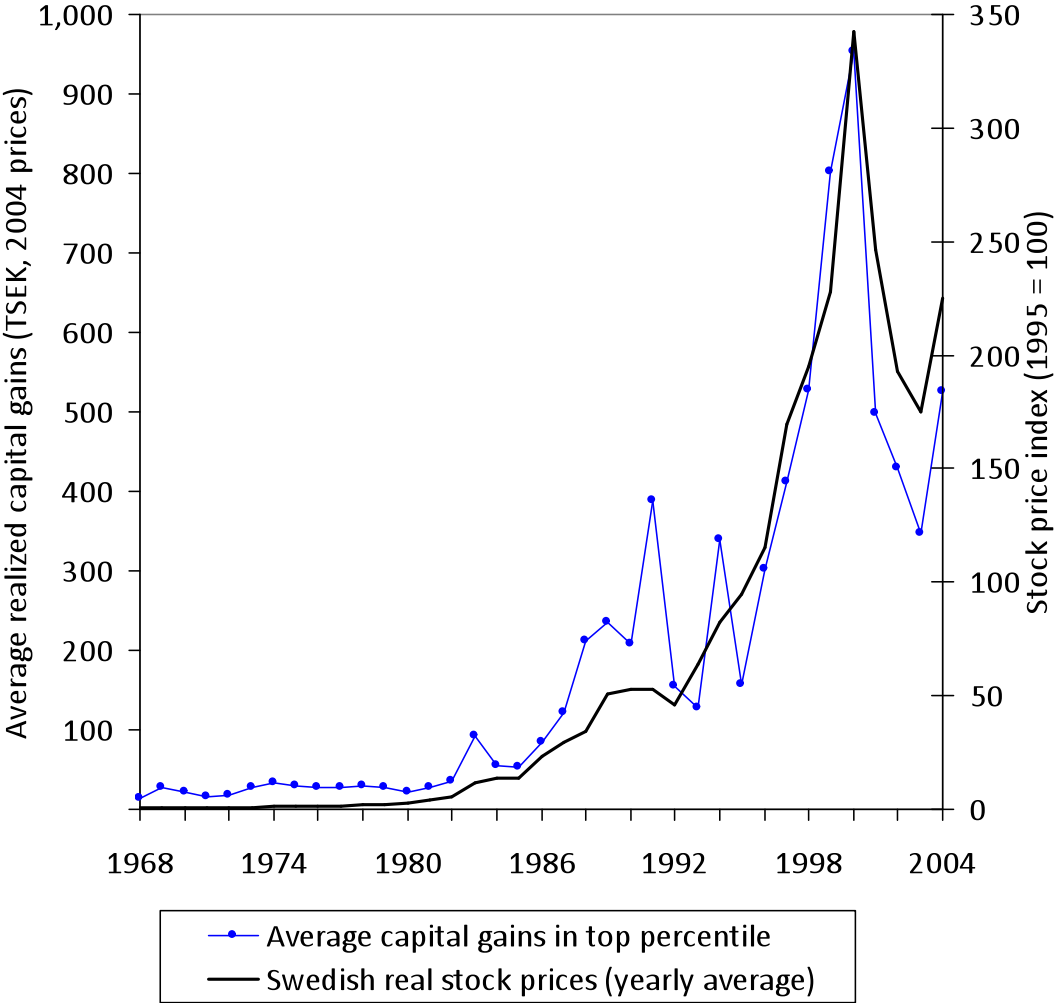
Note: Data based on calculations in LINDA.
 Source: See Table A7.

Figure 8: Real average capital gains in top incomer percentile and real stock price index on the Stockholm Stock Exchange, 1968–2004.



Source: See Table A8.

Figure 9: Real average capital gains in top incomer percentile and real stock price index on the Stockholm Stock Exchange, 1968–2004.



Note: Income earners are ranked according to total income including capital gains.
 Source: See Table A9.

Table 1: Some summary statistics...

Period		Pop	Mean TI	Mean TXCG	P90 TI	P90 TXCG	P99 TI	P99 TXCG	P99.9 TI	P99.9 TXCG
1980	1-yr	208.3	49.5	49.5	85.3	85.1	150.8	149.7	274.5	268.1
1980-82	3-yr	200.8	55.3	54.8	91.9	91.6	160.7	158.8	295.6	283.9
1980-84	5-yr	194.1	62.3	61.8	102.0	101.5	180.3	176.7	326.9	311.2
2000	1-yr	230.3	202.8	187.2	333.9	316.2	798.2	671.4	2893.5	1683.0
2000-02	3-yr	222.5	210.3	200.4	344.6	332.5	770.9	705.4	2307.7	1610.3
2000-04	5-yr	215.0	220.0	211.1	356.1	345.2	783.1	723.2	2208.0	1574.0

Appendix

Table A1: Top percentile income shares excluding (Ex) and including (Inc) realized capital gains, as percentage points, and the ratio between them (Ratio) for five countries, 1980–2006.

	USA			Canada			Sweden			Finland			Spain		
	Ex	Inc	Ratio	Ex	Inc	Ratio	Ex	Inc	Ratio	Ex	Inc	Ratio	Ex	Inc	Ratio
1980	8.18	10.02	1.23	8.06	8.88	1.10	4.05	4.13	1.02						
1981	8.03	10.02	1.25	7.80	8.55	1.10	3.97	4.07	1.03				7.50	7.63	1.02
1982	8.39	10.80	1.29	8.46	8.89	1.05	3.98	4.08	1.03				7.75	7.95	1.03
1983	8.59	11.56	1.34	8.21	8.76	1.07	4.08	4.45	1.09				7.65	7.79	1.02
1984	8.89	11.99	1.35	8.29	8.73	1.05	4.13	4.36	1.06				7.61	7.81	1.03
1985	9.09	12.67	1.39	8.21	8.88	1.08	4.12	4.59	1.11				7.75	8.12	1.05
1986	9.13	15.92	1.74	8.24	9.15	1.11	4.11	4.49	1.09				8.21	8.88	1.08
1987	10.75	12.66	1.18	8.40	9.88	1.18	4.24	4.73	1.12	3.40	3.44	1.01	8.40	9.15	1.09
1988	13.17	15.49	1.18	9.34	10.74	1.15	4.38	5.08	1.16	3.63	3.76	1.04	8.36	9.19	1.10
1989	12.61	14.49	1.15	10.01	11.90	1.19	4.48	5.45	1.22	3.69	3.78	1.02	8.47	9.01	1.06
1990	12.98	14.33	1.10	9.35	10.18	1.09	4.38	5.20	1.19	3.52	3.63	1.03	8.37	8.80	1.05
1991	12.17	13.36	1.10	9.37	10.29	1.10	5.10	6.95	1.36	3.49	3.57	1.02	8.08	8.47	1.05
1992	13.48	14.67	1.09	9.31	10.47	1.12	5.04	5.84	1.16	3.65	3.65	1.00	8.21	8.42	1.03
1993	12.82	14.24	1.11	9.56	11.26	1.18	5.22	5.93	1.14	3.84	4.02	1.05	7.83	8.22	1.05
1994	12.85	14.23	1.11	9.59	11.21	1.17	5.53	7.18	1.30	3.54	3.77	1.06	7.89	8.27	1.05
1995	13.53	15.23	1.13	10.00	10.93	1.09	5.25	6.00	1.14	4.07	4.24	1.04	7.89	8.29	1.05
1996	14.11	16.69	1.18	10.62	11.64	1.10	5.59	6.99	1.25	3.95	4.29	1.09	7.93	8.32	1.05
1997	14.77	18.02	1.22	11.52	12.75	1.11	5.72	7.61	1.33	4.46	5.00	1.12	8.03	8.55	1.07
1998	15.29	19.09	1.25	12.18	13.40	1.10	5.87	8.17	1.39	4.77	5.66	1.19	8.17	8.94	1.09
1999	15.87	20.04	1.26	12.62	13.88	1.10	6.01	9.30	1.55	5.73	7.03	1.23	8.62	9.47	1.10
2000	16.49	21.52	1.31	13.56	15.50	1.14	5.97	11.12	1.86	5.44	7.20	1.32	8.84	9.95	1.13
2001	15.37	18.22	1.19				5.95	8.62	1.45	6.08	6.52	1.07	8.80	9.82	1.12
2002	14.64	16.87	1.15				5.67	7.59	1.34	5.82	6.47	1.11	8.54	9.46	1.11
2003	14.87	17.53	1.18				5.52	7.62	1.38	5.85	6.40	1.09	8.59	9.96	1.16
2004	16.08	19.75	1.23				5.72	7.87	1.38	6.00	7.01	1.17	8.62	10.20	1.18
2005	17.42	21.92	1.26				6.28	8.99	1.43				8.79	11.02	1.25
2006	17.98	22.82	1.27				6.61	9.53	1.44						

Note and source: Income earners are ranked according to the income concepts used. Series are taken from Atkinson and Piketty (2010).

Table A2: Top income percentile in LINDA sample and aggregate full population statistics.

	Top percentile when using LINDA population	Top percentile when using aggregate total income statistics (IoT)
1980	4.44	4.45
1981	4.41	4.28
1982	4.30	4.59
1983	4.72	4.76
1984	4.69	4.49
1985	4.72	4.58
1986	4.84	4.46
1987	5.09	4.70
1988	5.07	5.24
1989	5.34	5.41
1990	5.14	5.15
1991	6.48	6.66
1992	5.63	5.57
1993	5.64	5.66
1994	6.84	6.93
1995	5.85	5.77
1996	6.61	6.75
1997	7.04	7.36
1998	7.51	7.91
1999	8.38	9.00
2000	9.19	10.81
2001	7.74	8.33
2002	7.17	7.30
2003	6.48	7.33
2004	7.20	7.56

Source: The series using aggregate total income statistics (IoT) comes from Roine and Waldenström (2008).

Table A3: Income shares of top income percentile (P99–100), with incomes and rankings either including or excluding capital gains, using 1-, 3- and 5-year averages, 1980–2004 (%).

Income: Ranking:	Incl. capital gains, Incl. capital gains			Excl. capital gains, Excl. capital gains			Incl. capital gains, Excl. capital gains		
	Average:	1-year	3-year	5-year	1-year	3-year	5-year	1-year	3-year
1980	4.44	4.28	4.22	4.35	4.21	4.14	4.40	4.25	4.19
1981	4.41	4.20	4.23	4.29	4.09	4.08	4.33	4.15	4.18
1982	4.30	4.28	4.26	4.19	4.08	4.07	4.23	4.21	4.21
1983	4.72	4.39	4.31	4.32	4.15	4.11	4.56	4.31	4.26
1984	4.69	4.53	4.35	4.43	4.26	4.11	4.54	4.47	4.30
1985	4.72	4.50	4.50	4.46	4.26	4.20	4.62	4.46	4.46
1986	4.84	4.63	4.53	4.41	4.30	4.18	4.71	4.56	4.43
1987	5.09	4.73	4.62	4.54	4.25	4.15	4.89	4.53	4.41
1988	5.07	4.85	4.67	4.36	4.22	4.12	4.53	4.50	4.41
1989	5.34	4.82	4.93	4.35	4.15	4.22	4.70	4.36	4.67
1990	5.14	5.22	4.99	4.31	4.35	4.32	4.51	4.90	4.76
1991	6.48	5.33	5.06	4.99	4.57	4.47	5.68	5.04	4.85
1992	5.63	5.48	5.37	5.05	4.84	4.65	5.28	5.23	5.77
1993	5.64	5.69	5.51	5.20	4.98	4.82	5.20	5.95	5.59
1994	6.84	5.74	5.61	5.48	5.04	4.88	6.11	5.64	5.63
1995	5.85	6.05	5.84	5.24	5.09	4.92	5.52	5.74	5.69
1996	6.61	6.11	6.09	5.30	5.06	4.90	6.17	5.78	5.76
1997	7.04	6.55	6.39	5.38	5.08	4.95	6.30	6.14	5.97
1998	7.51	7.08	6.83	5.48	5.20	5.07	6.75	6.44	6.28
1999	8.38	7.59	7.00	5.59	5.35	5.25	7.02	6.70	6.41
2000	9.19	7.62	7.01	5.92	5.60	5.33	7.70	6.81	6.40
2001	7.74	7.34	6.77	6.20	5.65	5.34	6.79	6.76	6.25
2002	7.17	6.52	6.60	5.79	5.51	5.32	6.64	6.12	6.10
2003	6.48	6.36		5.50	5.33		5.69	5.93	
2004	7.20			5.58			6.20		

Note: To begin in 1980, the 3- and 5-year averages include incomes since 1978 and 1976, respectively.

Source: Own calculations from LINDA database.

Table A4: Income shares of the bottom half of top income decile (P90–95), with incomes and rankings either including or excluding capital gains, using 1-, 3- and 5-year averages, 1980–2004 (%).

Income: Ranking:	Incl. capital gains, Incl. capital gains			Excl. capital gains, Excl. capital gains			Incl. capital gains, Excl. capital gains			
	Average:	1-year	3-year	5-year	1-year	3-year	5-year	1-year	3-year	5-year
1980		9.30	9.03	8.93	9.32	9.05	8.94	9.30	9.04	8.92
1981		9.19	8.95	8.84	9.17	8.94	8.87	9.15	8.92	8.85
1982		9.15	8.85	8.78	9.13	8.87	8.79	9.10	8.85	8.78
1983		9.14	8.86	8.76	9.15	8.87	8.77	9.10	8.84	8.75
1984		9.04	8.88	8.76	9.06	8.89	8.76	9.04	8.87	8.75
1985		9.05	8.87	8.77	9.02	8.88	8.78	9.01	8.87	8.77
1986		9.02	8.85	8.75	9.08	8.85	8.76	9.05	8.84	8.74
1987		9.02	8.84	8.73	9.06	8.85	8.73	9.02	8.82	8.75
1988		9.00	8.80	8.73	9.05	8.83	8.75	8.97	8.83	8.72
1989		8.98	8.83	8.76	9.02	8.85	8.75	8.96	8.81	8.73
1990		9.13	8.87	8.75	9.15	8.87	8.74	9.12	8.82	8.73
1991		9.11	8.90	8.76	9.14	8.89	8.75	9.05	8.87	8.73
1992		9.06	8.91	8.77	9.08	8.89	8.76	9.03	8.86	8.74
1993		9.09	8.87	8.78	9.11	8.88	8.77	9.11	8.85	8.76
1994		9.09	8.89	8.79	9.15	8.90	8.79	9.12	8.87	8.82
1995		9.13	8.97	8.84	9.15	8.98	8.84	9.09	8.97	8.85
1996		9.24	9.03	8.90	9.27	9.04	8.90	9.18	8.99	8.88
1997		9.30	9.08	8.94	9.33	9.09	8.93	9.28	9.05	8.92
1998		9.26	9.12	9.00	9.31	9.11	8.98	9.22	9.05	8.95
1999		9.31	9.12	9.00	9.33	9.12	9.00	9.34	9.06	8.96
2000		9.25	9.14	9.00	9.37	9.16	9.03	9.26	9.15	8.96
2001		9.32	9.14	9.02	9.40	9.20	9.04	9.31	9.10	9.00
2002		9.34	9.15	9.00	9.42	9.19	9.05	9.24	9.12	9.02
2003		9.33	9.14		9.35	9.17		9.28	9.11	
2004		9.31			9.35			9.24		

Note: To begin in 1980, the 3- and 5-year averages include incomes since 1978 and 1976, respectively.

Source: Own calculations from LINDA database.

Table A5: Share of incomes in the top percentile earned by working rich, rentiers and hybrids, 1980–2004 (%).

	Groups within the top percentile:		
	Working rich	Rentiers	Hybrids
1981	86.22	7.37	6.41
1982	87.89	9.19	2.93
1983	87.20	10.07	2.73
1984	86.03	10.80	3.17
1985	87.17	10.16	2.67
1986	85.94	11.27	2.79
1987	85.53	11.08	3.39
1988	84.50	10.54	4.96
1989	84.48	8.95	6.57
1990	78.86	12.00	9.14
1991	78.95	13.28	7.77
1992	78.96	12.33	8.70
1993	81.46	9.11	9.43
1994	82.09	9.34	8.57
1995	80.58	9.22	10.20
1996	77.67	9.76	12.56
1997	76.98	10.74	12.28
1998	76.63	11.55	11.82
1999	78.07	9.00	12.93
2000	78.93	10.33	10.74
2001	78.58	7.77	13.65
2002	80.80	7.44	11.75
2003	79.92	9.48	10.59

Note: For definition of income earner groups, see Figure 5 and the text.

Source: Own calculations from LINDA database.

Table A6:

	Top percentile	Groups within the top percentile:		
		Working rich	Rentiers	Hybrid
1981	36.39	21.68	4.86	9.85
1982	47.33	30.03	10.98	6.31
1983	47.07	26.52	15.03	5.53
1984	45.48	22.70	18.76	4.02
1985	37.92	18.70	16.91	2.31
1986	39.93	19.13	17.62	3.18
1987	41.53	26.49	12.05	2.99
1988	41.67	27.86	8.74	5.07
1989	41.53	28.26	5.84	7.43
1990	41.96	23.21	9.03	9.71
1991	44.24	24.40	12.70	7.14
1992	44.36	24.62	11.87	7.87
1993	51.09	31.34	9.00	10.75
1994	50.42	33.29	9.08	8.05
1995	50.00	33.14	8.03	8.83
1996	47.08	28.73	6.10	12.25
1997	47.20	27.45	9.55	10.20
1998	46.41	28.72	9.02	8.68
1999	46.55	31.52	6.03	9.00
2000	45.76	30.84	7.15	7.77
2001	48.87	30.20	5.26	13.41
2002	48.83	29.04	5.14	14.66
2003	48.01	28.37	6.80	12.83

Note: For definition of income earner groups, see Figure 5 and the text.

Source: Own calculations from LINDA database.

Table A7: Shares of aggregate total income of “interests and dividends” and “realized capital gains” (%).

	Interest and dividends	Realized capital gains
1980	2.60	0.41
1981	3.07	0.44
1982	2.88	0.63
1983	2.57	1.09
1984	2.63	0.75
1985	2.74	0.74
1986	2.14	1.16
1987	2.03	1.50
1988	1.92	2.48
1989	2.01	2.62
1990	2.16	2.31
1991	2.74	3.82
1992	2.83	1.37
1993	2.46	1.30
1994	2.06	3.06
1995	2.32	1.55
1996	2.04	3.21
1997	1.77	4.25
1998	1.41	4.81
1999	1.29	7.09
2000	1.23	7.73
2001	1.24	3.68
2002	1.22	2.89
2003	0.99	2.59
2004	0.95	3.86

Source: Own calculations from LINDA database.

Table A8: Real stock price and GDP indexes, 1960–2004 (1960 base year).

	Real stock price index in Stockholm	Real stock price index in New York	Real GDP in Sweden
1960	1.00	1.00	1.00
1961	0.97	1.01	1.06
1962	0.85	1.16	1.10
1963	1.01	1.08	1.16
1964	1.14	1.25	1.24
1965	1.15	1.39	1.29
1966	0.84	1.48	1.31
1967	0.85	1.30	1.36
1968	1.12	1.41	1.41
1969	1.10	1.45	1.48
1970	0.79	1.21	1.57
1971	0.89	1.19	1.59
1972	0.93	1.27	1.63
1973	0.86	1.40	1.69
1974	0.75	1.04	1.74
1975	0.89	0.70	1.79
1976	0.83	0.88	1.81
1977	0.62	0.90	1.78
1978	0.67	0.73	1.81
1979	0.60	0.74	1.88
1980	0.65	0.72	1.91
1981	0.93	0.77	1.91
1982	1.15	0.63	1.93
1983	1.75	0.74	1.96
1984	1.43	0.82	2.05
1985	1.71	0.82	2.09
1986	2.49	0.96	2.15
1987	2.18	1.20	2.23
1988	3.12	1.09	2.29
1989	3.64	1.19	2.35
1990	2.26	1.35	2.37
1991	2.21	1.22	2.35
1992	2.16	1.52	2.32
1993	3.20	1.54	2.27
1994	3.27	1.63	2.36
1995	3.78	1.56	2.46
1996	5.23	2.01	2.49
1997	6.43	2.43	2.55
1998	7.19	3.01	2.65
1999	11.76	3.84	2.77
2000	10.21	4.26	2.89
2001	8.30	3.84	2.92
2002	5.10	3.25	2.99
2003	6.53	2.49	3.05
2004	7.65	2.95	3.18

Source: Data on Sweden from the Swedish Riksbank (www.riksbank.se/research/historicalstatistics at 2010-05-20). NYSE prices are from Robert Shiller (<http://www.econ.yale.edu/~shiller/data/chapt26.xls> at 2010-05-20). Real GDP come from...