

Can We Really Rely on Income Distribution Statistics? Some Issues in the Swedish data

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Can We Really Rely on Income Distribution Statistics? Some Issues in the Swedish Data

Anders Björklund¹

Abstract

The Swedish Income Distribution Statistics have shown rising gaps in disposable income since the early 1980s. Several reports have shown that capital income is an important driver behind this development. I identify several weaknesses in the measurement of capital income in these statistics. One weakness is that realised capital gains, which generally are included in Swedish reports on income distribution but not in cross-national ones, are not adjusted for inflation from 1991 and onwards but were so until 1990. A considerable part of the capital gains included in data is thus compensation for inflation and not real gains. Further, there is a considerable rise in income shifting from earned income to capital income in closely held corporations and a decline of income shifting from capital income to pension income. New modes of saving, which are taxed according to a standard revenue principle, will most likely create severe problems for the Statistics in the near future but have not done so yet.

A final section of the paper argues that the statistics do not account for the rising prevalence of shared residence for children of separated parents. Therefore, the statistics underestimate the economic standard of children with separated parents.

Acknowledgments

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This is a discussion paper, which addresses some quality issues in the Swedish Income Distribution Statistics. These Statistics are the data source of the income distribution data used by the Swedish Government and in the Swedish policy discussion. It is also the source for cross-national comparisons of income distribution such as those published by the OECD. The purpose of this discussion paper is to share my concerns about some data quality issues with the international community of scholars using such data. A Swedish version of this paper is available upon request from the author. I have benefitted a lot from joint work and many discussions with Markus Jäntti (SOFI) and Per-Olof Robling (now at the Ministry of Finance) as well seminar participants at SOFI. Financial support from Handelsbanken and NORFACE (project number 462-16-061) has helped me obtain the underlying data of the paper.

Introduction

In Sweden, income inequality has been increasing for a long time and, overall, more than in most comparable countries. This message has been conveyed by the news media for several years, and has become an important issue in the public policy debate.

There is every reason to take these reports seriously. Statistics Sweden's income distribution statistics are Sweden's official income statistics, and it is these statistics that show rising income inequality since the beginning of the 1980s, when most likely income inequality was historically low. The Organisation for Economic Co-operation and Development (OECD), which compiles distribution statistics for its member countries and obtains their Swedish data from Statistics Sweden's income statistics, has reported that income inequality in Sweden has increased more than in most other countries. Therefore, Sweden has approached many other European countries in terms of income inequality, and no longer appears as such a unique country in this respect.

This pattern refers to disposable income with income is measured at the household level while inequality of income is measured between individuals. The significance of this is that all individuals in the population are distributed into households. The disposable income of all members in each household is totalled. Subsequently, the total is divided by the "equivalent number of adult members in the household," i.e., a measure of the number of dependents the household needs to support, the burden of support. The result is a measure of income that can be said to capture the economic standard of household members. Finally, the inequality of income between all individuals in society, including the children belonging to the households, is calculated.

This measure of disposable income with the household as the unit of income and the individual as the unit of analysis can be said to constitute the gold standard of income distribution analysis. It does not follow that analyses of other concepts of incomes lack interest. In order to understand how the labour and capital markets work, it is meaningful to study how earned income from employment and income from capital is distributed among individuals. However, this is then primarily a link in the causal chain that leads to the particular individual's economic standard. In addition, the gold standard concept ignores all differences within the household, especially between men and women, which is why gender equality issues should be studied using gender-disaggregated data, and with the individual as a unit of income.

The gold standard income concept may appear to be fairly simple and straightforward. However, it places significant demands on data. One requirement is that all income contributing to the household's disposable income can be measured, including transfers and taxes. Another is that a household concept is needed. In the Swedish statistics, the sources of income, transfers and taxes are taken from registers, which in turn derive from the individual tax return process. For the definition of "household," the data was obtained from interviews up to and including 2013, while register data, which originate from registers of residential flats, are used to define households from 2011 and onwards. Thus, there is overlapping information for the years 2011–2013. These are, in many respects, good sources for distribution statistics. However, it does not

exclude that income components and types of household can change in a way that distorts the picture of how the distribution of income has evolved over time.

In this paper, I will discuss two sources of error in Swedish income distribution statistics, namely the measurement of income from capital and the household definition. The paper is structured so that the development of income distribution and the importance of capital income are described in Section 1. Section 2 addresses the principle question of how capital income ideally should be measured. In Section 3, I go through various savings instruments, and how their returns are dealt with in the income statistics. Section 4 deals with income from capital derived from dividends for closely held corporations. The treatment of capital gains is discussed in Section 5, after which the conclusions on the treatment of capital income are summarised in Section 6. Then a section on the concept of household and shared residence of children whose parents have separated, follows. Finally, some overall conclusions are reported in Section 8.

1. The evolution of income distribution and the importance of income from capital

Figure 1 shows the development of the Swedish income distribution according to the summary measure the Gini coefficient. The figure marks two different shifts in Statistics Sweden's statistics. The first series covers the period 1975–1990. A shift in the measurement of income due to the 1990-91 tax reform made the concept of income broader, which explains the first break in the series. The next series covers the period 1989–2013 with uniform concepts of household and of incomes.² A new and better household concept was introduced in the early 1990s, so for the years 1995–2013, this measure is used. The change to using register information about the household from 2011 and onward implied a new change in the household concept. But the Gini-coefficient for the new series during 2011–13 is almost identical to the old series and therefore this shift in data is not marked in the figure, which instead shows a unified series for the period 1995-2017. Roughly speaking, the two marked shifts in data cancel each other out, i.e., the rise from 1990 to 1991 is roughly of the same magnitude as the decline due to the new household concept.

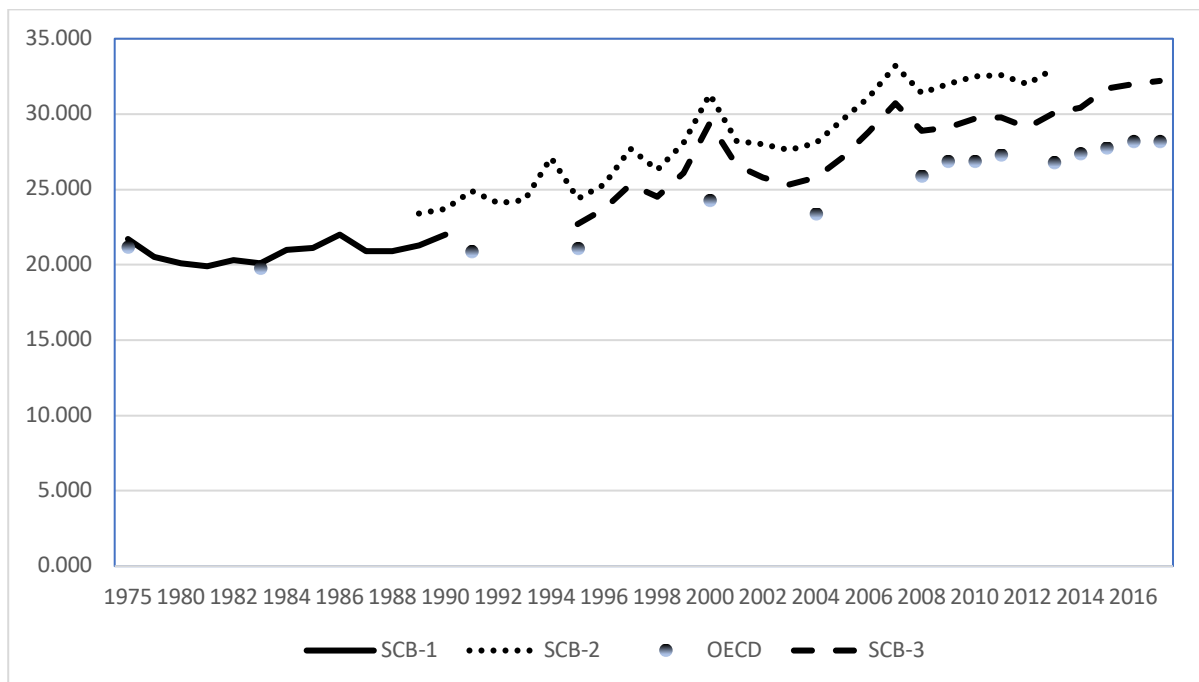
All in all, there is a significant increase in income inequality according to this measure. If we stick to the changes within the framework of the uniform series, we can see an increase of approx. 1.5 units from 1980-83 to 1989-90 (from about 20.0 to about 21.5). From 1989-90 to 2011-13, the increase was as much as 9.0 units (from 23.5 to 32.5). Finally, the third series shows an increase between 2011-13 and 2016-17 of about 2.8 units (from 29.3 to 32.1). If these three increases are added, the total is 13.5, which is very much for a Gini coefficient.

The OECD's observations in Figure 1 also indicate a significant upturn, however overall not quite as strong. If we assume that the different shifts in the series cancel each other out – they are of course reflected in the OECD's data as well – the rise will be from about 20.0 in

² Statistics Sweden has recalculated the incomes for 1989 and 1990 according to the principles of the broader income measure applied in the tax returns from 1991.

1983 to about 28.0 in 2016-17. This gives a total increase of 8.0 units, which is clearly less than for the Swedish statistics. The primary reason for this is that the OECD excludes realised capital gains from its concepts of income, an issue to which I return below.

Figure 1. The distribution of income in Sweden 1975-2017. The Gini coefficient according to Statistics Sweden and the OECD.



Note: Statistics Sweden’s (SCB) interview-based data (HEK) is available until 2013, while the current completely register-based statistics (IoS-data) are available from 2011 onwards. For the Gini coefficient of the overall population there are no signs of shifts in the series in connection with this change, which is why the figure does not mark this shift.

Sources: Statistics Sweden’s and OECD’s websites.

In a number of studies, the authors have used a statistical technique to decompose the Gini coefficient by different types of income, including taxes as a negative income: the Gini coefficient here adds to the total of the contribution of all types of income. The technique cannot be seen as a causal model for the contribution of different types of income to the overall the distribution of income, however can serve as an approximation for the significance of each type of income. The statistical contribution of a certain type of income to the Gini coefficient is actually a product of the type of income’s share of total disposable income and a measure of its distribution profile.³

A consistent result of such decompositions is that the development of capital income has made a significant contribution to the development of the Gini coefficient since the first half of the 1980s when the increase began.⁴ Roughly speaking, two-thirds of Gini’s rise can be

³ See Lerman & Yitzaki (1985) for the original formulation.

⁴ See for example Björklund & Jäntti (2011) covering the period 1975-2009, the Swedish Fiscal Policy Council (Finanspolitiska Rådet) (2018) comparing 1995 and 2016 and the Ministry of Finance (2019) comparing 1995 and 2017.

attributed to income from capital. Since income from capital tends to be high at the top of the distribution of income, it is primarily the development in this part of the distribution that can be attributed to income from capital. Other analyses have shown that the bottom of the distribution has also lost vis-à-vis the middle of the distribution, however this development apparently has other reasons.

2. To measure income from capital

When capital income has contributed to increased income inequality, the warning bells should have actually rang with the regular users of the distribution statistics, both among academic researchers and in the world of investigators and analysts. Income from capital is notoriously difficult to measure in a principled, satisfactory way. There are several sources of error.

In order to assess possible sources of error in Swedish statistics, a standard is needed for how to ideally measure capital income in an analysis of income inequality aimed at highlighting differences in economic standards. A reasonable starting point for deciding how capital income shall be measured is the income concept associated with the names Haig and Simon. The income for a period is defined here as the consumption that a person can afford without reducing the possibilities for future consumption, i.e., without reducing their real wealth.

A first conclusion that follows from this concept is that capital income shall be measured in real terms, i.e., the portion of interest and dividends that are only compensation for inflation should not be counted as income. This may sound completely obvious, and the conclusion may not require a basic concept of income. However, virtually all distribution statistics (that include capital income) use the nominal values and not the real ones. In fact, it is very difficult to find examples of studies or databases of income distribution that measure income from capital in real terms.⁵ However, the reason for this is easy to understand: to calculate the real returns that correspond to a certain amount of interest from a bank or dividends from financial assets, information on the underlying net asset values that generated the capital income in question is required. Such information is usually missing in both surveys, where questions are asked about capital income, and in registers that originate from the tax return process as in the Swedish statistics.

Since inflation has been positive throughout the time period in question, this means that real income from capital is overestimated when nominal income is included in the income statistics. Quite likely, this overestimate was higher until the mid-1990s as the rate of inflation clearly exceeded today's level, which has since remained at or just below the target level of two percent. With a real return of three percent, an inflation rate of two percent and a tax rate at 30 percent applied on nominal income from capital, the tax rate on real income from capital is 50 percent. When the major tax reform came into effect in 1991, inflation was closer to four percent, which (with the same assumptions in general) corresponded to a real tax rate of 70

⁵ It is also uncommon that academic researchers, investigators, and international organisations that present distribution studies mention this weakness of data at all.

percent. Further, capital income tends to be higher in households with high levels of disposable income. Thus, income differences tend to be overestimated (and the tax rate on capital income to be underestimated) at the top of the distribution. This overestimation of income inequalities has quite likely decreased over time as inflation has fallen. However, Sweden shares this trend towards reduced overestimation of income inequality with most other countries with which Swedish the distribution of income usually is compared.⁶

A second conclusion from Haig-Simon's income concept is that (positive) changes in value – capital gains – should also be regarded as income as they provide for consumption during the period without reducing future consumption possibilities; negative changes in value must also be regarded as negative income. However, this means that all changes in value shall be included in the income, not only the realised ones. Unfortunately, it is the realised capital gains that are to be declared by the individual on their tax returns and which can therefore be included in the income statistics based on register data from individuals' tax returns. However, in some countries, income statistics are based on other sources from which it has not been possible to collect data regarding capital gains. One example is the United States, where income data comes from telephone interviews as part of the country's labour force surveys. This is an important reason why in its compilations the OECD excludes realised capital gains (as well as the tax on these profits) in its income statistics.⁷

Of course, even for capital gains, it is the real gains, which are to be included. It is, however, possible that the tax rules are designed so that the declared capital gains are equivalent to the real realised capital gains. In such a case, the statistical problem is solved. We will return to this in Section 5.

3. Various saving instruments and shifts between them

In addition to these two general problems regarding the measurement of income from capital, there are problems associated with the fact that different savings instruments are treated quite differently for tax purposes and thus also treated in completely different ways in statistics based on the income for which individuals report and pay tax on. This problem is best illustrated by means of concrete examples of savings instruments that are dealt with quite differently in Swedish taxation and thus also in the distribution statistics.

The prototype for capital income is *interest* in bank accounts and *dividends* paid on holdings in financial securities. The interest and dividends received during the income year are declared

⁶ Until about 1990, however, income from capital contributed very little to the overall inequality of income as measured by the Gini coefficient. See Björklund & Jäntti (2011). This means that an inflation adjustment of the nominal income from capital, which is included in the statistics, to lower real income from capital would have no appreciable effect on the Gini coefficient for this time. The explanation for the low income from capital during this time is most likely that the tax deductions for interest payments were at that time extensive. The statistics handle a deficit in the source of income from capital as zero income, however take into account that the deficit reduces the tax.

⁷ The same applies to the LIS Cross-National Data Center (formerly known as the Luxembourg Income Study) research database.

by the individual, who also pays the tax.⁸ Since the tax reform in 1991, when Sweden transitioned to what is referred to as a dual tax system, the tax has been 30 percent on nominal capital income. Prior to that, the income from capital was combined with the other earned income (income from employment) and the tax rate was applied to the total of these incomes; in practice, this meant a high marginal tax rate on savings. If interest and dividends were the only types of income from capital, it would be fairly easy to measure income from capital, at least the nominal ones. However, other savings instruments are dealt with in completely different ways by the tax system and are therefore not included in the same simple manner in the declared income from capital on which the register-based income statistics are based.

One savings instrument with completely different characteristics is *private pension insurance (privat pensionsförsäkring)*. This instrument has been of significant importance during the period when income inequality increased. In practice, this instrument is no longer available for new savings, however lives on in terms of the pension payments from previous savings. The fact that this savings instruments has been discontinued makes it particularly relevant for an examination of how the distribution data capture changes in the actual distribution of income.

Private pension insurance has meant that the individual has paid an annual premium to an insurance company, which manages the savings until it is time for retirement and the disbursement of the pension. The premium has been deductible when taxing earned income, while the retirement pensions are taxed as other pensions, i.e., as earned income. One speaks here about the principle of deferred taxation.

This savings obviously generates returns and income from capital, however these are taxed by the insurance company. Instead, the net of the accumulated income from capital plus the amounts paid accrues to the individual as a future pension. One can therefore say that this saving instrument transforms income from capital into pension income for the individual.

This savings instrument has also affected the time profile of the individual's disposable income. During the years of active savings, the tax deduction reduced the individual's disposable income, while this income increases during the pension period when the pension is paid.⁹ The private financial incentives have been to put money into this savings instrument when the marginal tax is high and receive pensions when the marginal tax is lower. Insofar as the saving has had this pattern, it has contributed to levelling the individual's disposable income over their life cycle. It is therefore also possible, but not entirely certain, that income inequality in a cross-section of the population decreased as a consequence of this savings.

Since a couple of decades back, the savings amount for which the tax deduction has been granted has decreased in value, and from 2016 it has been completely eliminated. The amount was unlimited from 1950-1975, limited to one basis amount in 1976-1994, to half a basis amount in 1995-2007, to SEK 12,000 in 2008-2014, and to SEK 1,800 in 2015.

Although this form of savings will generate payment pension benefits for a long time into the future, it has thus gradually been discontinued as a source of new savings. The question then becomes which savings instruments have arisen in their stead. If these new savings

⁸ Due to that the tax withheld at source principle has been in effect since 1991, the submission of the tax payment is dealt with by the bank or the company paying the dividend.

⁹ Statistics Sweden has treated the tax deduction for private pension insurance as a negative transfer.

instruments are treated in a different way for tax purposes and give rise to individually taxed income from capital, an artificial increase in income from capital in the distribution statistics will arise.

It is not easy to determine whether private pension insurance has been replaced by other savings and, if so, which ones. However, it seems reasonable that other savings instruments have increased in scope. In turn, we discuss salary exchange, capital insurance and equity funds here.

Salary exchange (löneväxling) is a technique whereby the employee reaches an agreement with his/her employer about a reduced salary with a corresponding transfer of funds to an insurance account within the framework of the employee's collective insurance. This solution has the same characteristics as private pension insurance. Gross income is lowered during the income year, however this is partly offset by lower taxes.¹⁰ The insurance company pays the tax on returns earned, and therefore the savings do not generate any (reportable) income from capital for the individual. The accumulated savings, including the returns earned, are paid out later in life as pension income, which is then taxed as earned income. Thus, also the salary exchange entails the transformation of income from capital into earned income. To the extent that the salary exchange has replaced private retirement and old age pension insurance, the nature of income from capital and disposable income has not been affected. However, it is unlikely that the instrument of salary exchange is so extensive.

Capital insurance (kapitalförsäkring) is a savings instrument for which the premiums paid in are not deductible and the counter effect is that the insurance benefits disbursed are not taxable. The tax on the returns generated by the savings is paid by the insurance company according to the same principles as for savings in ISK accounts; see below. The disbursed benefits is the total amount of the premiums paid (the savings) plus the net after tax returns. Thus, as for private pension insurance, this savings instruments does not generate income from capital for the individual that needs to be declared. On the other hand, saving in capital insurance does not entail reallocation of declared income over the life cycle, as was the case with private pension insurance.

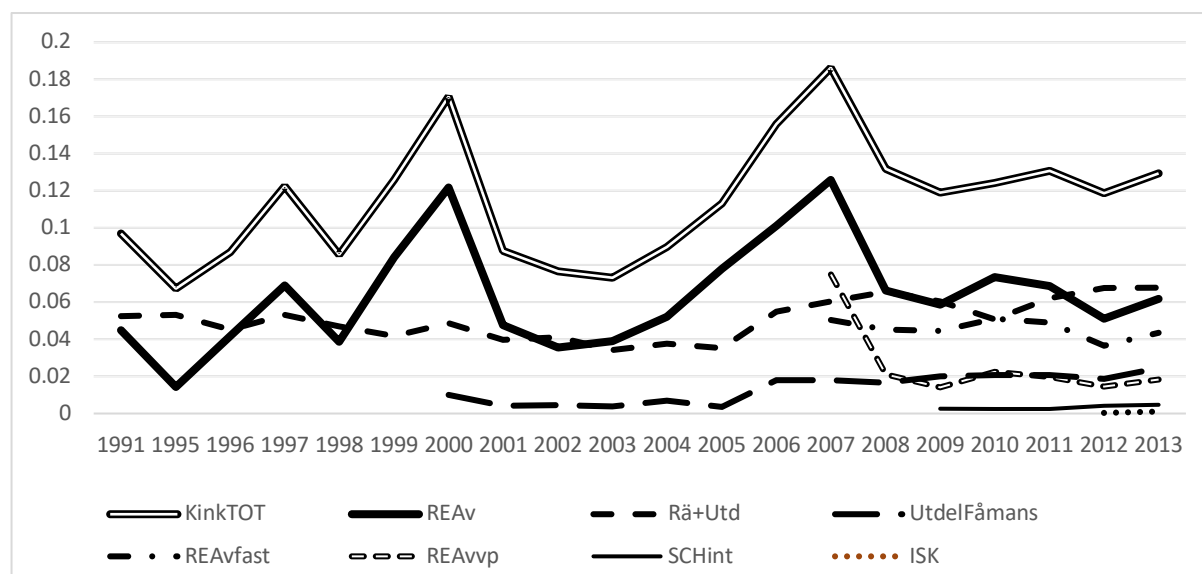
Equity funds (aktiefonder), or mutual funds, that invest principally in company shares, also have gained in popularity when the right to claim tax deductions for private pension insurance was first reduced and then completely eliminated. These funds are subject to a tax on capital gains, i.e., the entire nominal increase in value (including dividends) is included in the taxation of capital when the funds are traded. The capital gains tax also means that this income (neither increases in value nor dividends) are not included in international comparisons of the distribution of income. In addition, as of 2012, a tax on this savings is paid, which is 30% of a calculated imputed income. This income is calculated as 0.4 percent of the value of the funds at the start of the year. This tax on the individual replaced a tax that was paid by the saving company. It was thus a reallocation of taxation from a saving company to the individual, whose declared income increased due to the new taxing technique. We will return to the impact of this change on the income statistics below.

¹⁰ My understanding is that Statistics Sweden does not treat this as a negative transfer but rather as a lower gross income.

As of 2007, Statistics Sweden's income statistics allow a breakdown of the realised capital gains into profits from the sale of real estate and financial assets. These are presented in Figure 2 and Figure 3. For the population as a whole, capital gains on the sale of financial securities accounted for approx. two percent of disposable income from 2008 to 2013, however rose to approx. three percent in 2015-2017. As a proportion of the income in the highest decile group, these incomes were approx. twice as high. The figures also show that 2007 was a year of extremely high capital gains of this kind. It is capital gains on the sale of financial assets that cause the typically erratic pattern in the development of the Swedish income distribution.

Figure 2. Capital income and its components as a share of total disposable income. All income is calculated per equivalent number of adults. Kinktot: total capital income. REAv: total realised capital gains. Rä+Utd: Interest+dividends. UtdelFåmans: dividends in closely held corporations. REAvfast: realised capital gains from sale of real estate. REAvvp: realised capital gains from sale of financial assets. SCHint: all income based on the standard revenue principle. ISK: standard revenue from ISK-accounts.

HEK data 1991-2013



IoS data 2011-2017

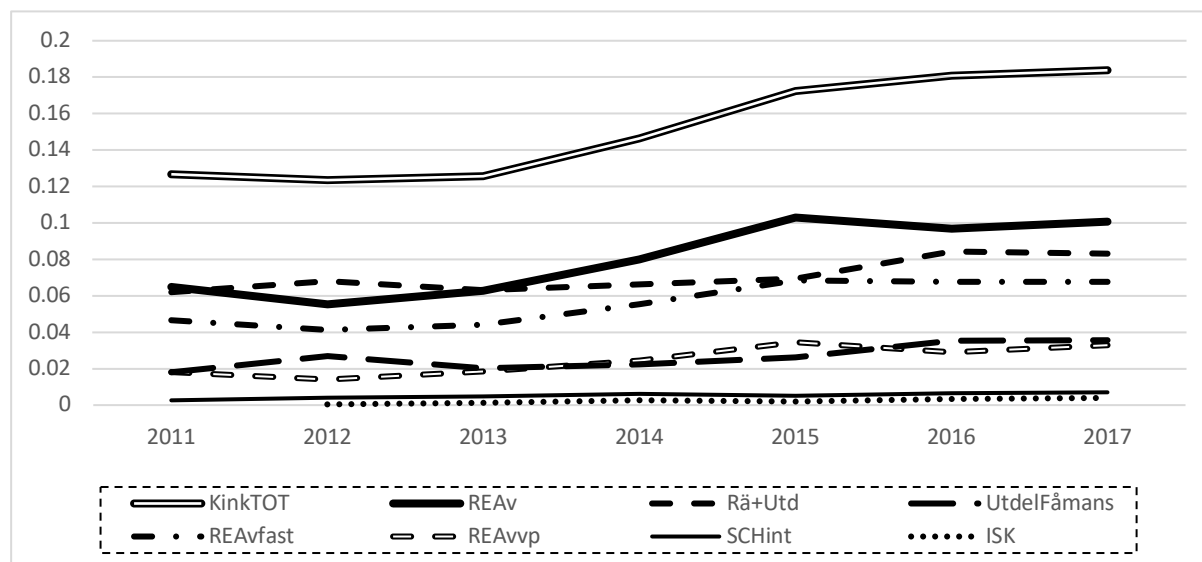
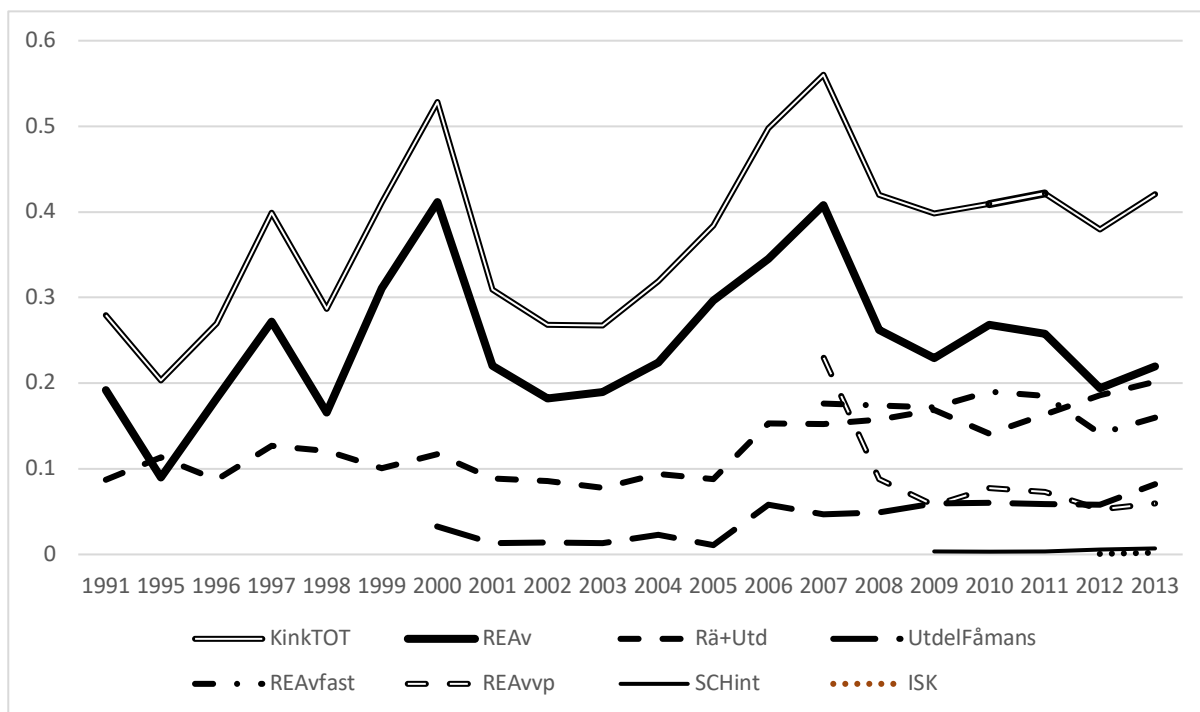
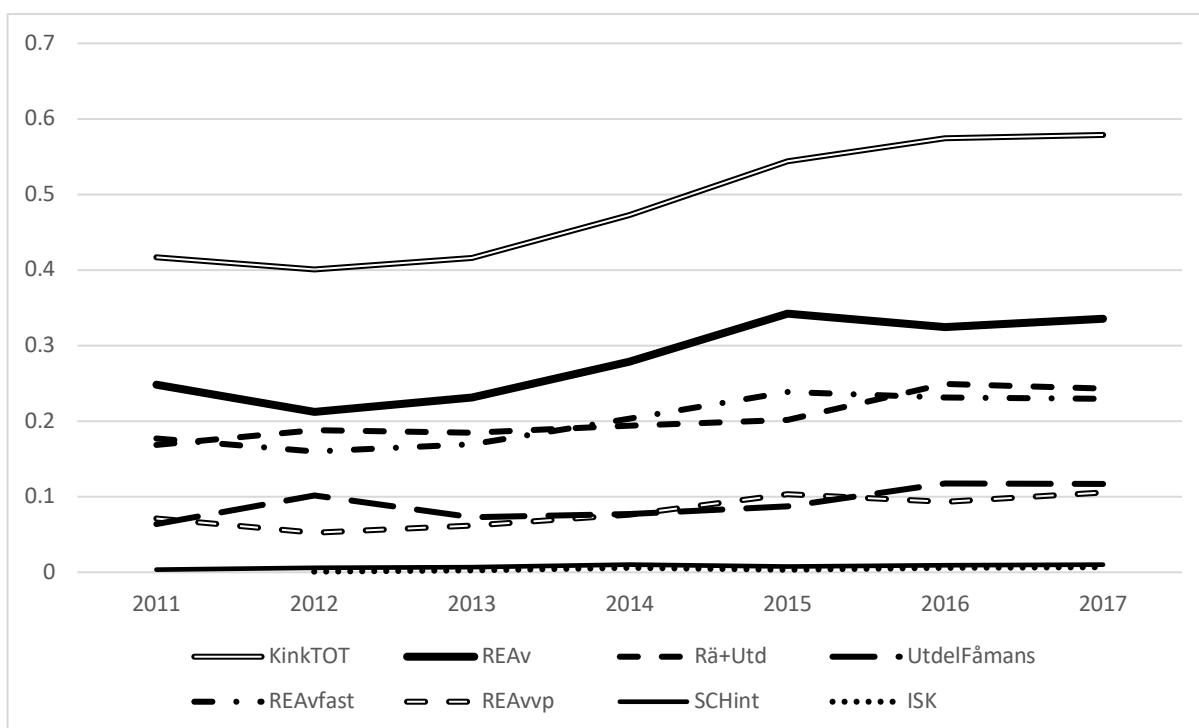


Figure 3. Capital income and its components as a share of disposable income in the highest decile group. All income is calculated per equivalent number of adults. HEK data 1991-2013. Explanations: see Figure 2.



IoS data 2011-2017



In 2012, a new savings scheme was introduced, the *investment savings account* (*investeringsfondskonto, ISK*). In such an account, the individual can collect various financial assets such as shares of individual companies and various mutual funds or investment funds. Taxation of assets in an ISK-account is not based on the actual return (neither dividends nor rise in value). Holdings in the account are instead taxed according to a calculated standard revenue from the assets. This revenue is based on the market value of the assets held in the account during the income year plus payments into the account during the year; this is called the “capital base.” The standard income is calculated by multiplying the capital base by the government loan rate at the end of November (in the year before the income year), increased by 0.75 percentage points (from the 2018 income year by 1.0 percentage points). However, as of the 2017 income year, the standard income has been at least 1.25 percent of the capital base. The calculated standard income is by the tax authorities considered as the individual’s income from capital and is taxed at 30 percent. This means that the savings instruments (for shares) is favourable when the stock market goes up but unfavourable when the stock market goes down. One feature that is particularly advantageous for active investors is that realised profits from transfers within the account do not cause a taxable event for the holder with the requisite payment of capital gains tax.

Although this savings instrument has become quite popular, the income from dividends derived from ISK accounts still remains so low that they have not had any significant impact on the overall income distribution. The amounts in Figure 2 and Figure 3 show that in 2017 (pre-tax) income corresponded to 0.5 percent of disposable income in the population as a whole and 0.8 percent of the income in the highest decile group. If a “thought experiment” is made to consider if in the alternative case the investments had been invested in capital insurance and thus did not generate any income for the individual that needed to be declared, this corresponds to a contribution to the GINI coefficient of around 0.2, or from 32.0 to 32.2.

One reason why the total income from ISK accounts has so far been quite low is that the government loan rate has been low. There are, however, reasons to reflect on the consequences of a continued increase in savings in ISK accounts, and a higher standard interest rate, on the distribution statistics.

Firstly, consider the alternative that savings in ISK accounts increase via a transition from capital insurance to ISK accounts. These two savings instruments have great similarities in terms of tax levels. Capital insurance is subject to taxation according to a calculated standard revenue income in almost exactly the same manner as ISK accounts. The only significant difference is that the insurance company pays the taxes due for capital insurance. However, investment advisers usually emphasise that ISK accounts are slightly better for the saver who desires to be an active owner, due to that the saver formally owns the assets and can participate at shareholders’ meetings. Furthermore, it may be easier to obtain lower fees for the savings in ISK accounts than with capital insurance. A transition from capital insurance to an ISK account, as already indicated above, would mean that (for statistics based on individuals’ income) invisible income from capital would be replaced by visible income from capital and create an imaginary increase in capital income and measured income inequality.

Another possibility is that savers will move their equity funds into their ISK accounts to an increased extent. We will then see a transition from realised capital gains in equity funds to

interest income based on the standard revenue principle. Since the former are not included when international comparisons are made, international comparisons will become misleading.

The predetermined standard interest rate that is applied to the ISK account may increase for any of several reasons. One is that the government loan rate goes up. A sharp upturn would result in sharply increased standard revenue, which then would contribute to increased disposable income inequality. This is equivalent to raising the interest rate on savings accounts in a bank, and is not a source of misleading distribution statistics.

If, on the other hand, the applied interest rate is raised through a rule change, it will be more difficult to interpret changes in the income distribution. One example is the increase from 2017 to 2018, when it was decided that the interest rate would be set at the government loan rate plus 1.0 percentage points, instead of plus 0.75 percentage points. One way of interpreting this change is to see it as a tax increase on this savings. Since the tax rate for income from capital is set at 30 percent, a rise in the standard revenue is the method that must be used in order to achieve a tax increase. It is also quite clear that the increase in question will mean a tax increase for ISK savers and that their actual economic standard will fall. However, their measured disposable income will increase and the measured income inequality will also increase. This is, to say the least, an unfortunate characteristic of the distribution statistics.

Another way of discussing a higher standard interest rate is that the higher level is more reasonable in a general sense. In such a case, the distribution of income will also be adjusted to a more reasonable level. However, the actual *change* in income inequality will still be misleading and it is usually the change in income inequality that is in the focus of the debate.

One question that then arises is what level of standard interest rate is reasonable. The issue has been analysed in detail by the Swedish Fiscal Policy Council (2018). The starting point for their analysis is that anyone who saves in ISK takes a risk and that an assumed risk-free interest is the reasonable standard of comparison. Given the financial situation of households, the secure interest rate is determined by the borrowing rate rather than the interest rate paid on savings held in a bank. However, the borrowing interest rate has generally been slightly above the standard interest rate for ISK, which is why ISK can be said to be tax-advantaged. However, the general assessment is that the tax benefit is “quite small.”¹¹

We have here discussed one type of capital income that is calculated on a standard revenue principle. Above, I also mentioned that equity funds since 2012, in addition to the taxation of the realised gains, are taxed according to this principle. Since 2009 there is a third capital income computed according to the standard revenue principle. This computed capital income consists of a standard revenue based on postponed realised capital gains from sales of real estate. This tax was supposed to contribute to the financing of and counteract the distributional consequences of the elimination of the wealth tax based on the value of real estate

¹¹ However, the Swedish Fiscal Policy Council’s analysis is simplified as it assumes that the net asset value consists solely of assets during the year. However, the net asset value also includes this year’s deposits into the ISK account divided by four. To take into account that these too are included in the capital base and become subject to being taxed in the standard rate tax band makes the analysis more complicated. However, it is possible that the tax benefits would then completely disappear or even become negative. With a superficial observation, it seems illogical to include the deposits in the capital base. However, since the value of net assets is calculated on four occasions during the year, it would otherwise be possible to sell the mutual funds just prior to these the record dates and then repurchase them immediately afterwards, in this manner thus avoiding tax altogether.

(*fastighetskatten*). The design of this standard revenue is such that 1.67 percent of the postponed gains is considered as income for the individual. This income is then subject to the capital income tax of 30 percent.

Figure 2 and 3 also shows the magnitude of the sum of these three types of capital income based on the standard revenue principle. The figures show that not even the total of these three types of capital make up a considerable part of total capital income. In 2017, the total contribution of the three types of capital income based on the standard revenue principle was only around 0.35, or from 31.85 to 32.2. However, if ISK will continue to grow as a mode of saving and will replace savings in equity funds, the impact on income distribution statistics will become larger.

Another change in the Swedish saving schemes concerns the public savings scheme (*allemanssparandet*), which was introduced in 1984 and which was tax-free until 1990. The tax reform introduced in 1991 meant that the returns from this saving became taxable. This explains some of the shifts in the series as noted in Figure 1.

I have here emphasized that various savings instruments are taxed in different ways, and therefore, shifts between savings instruments affect income from capital as measured in the distribution statistics. For the distribution statistics as a whole, it is therefore desirable to have a stable structure on the savings, otherwise an imaginary change in income from capital may arise. However, the disappearance of private pension savings and the introduction of ISK are examples of changes that have quite likely changed the nature of income from capital.

Another change in the Swedish tax system that likely have affected households' choice of savings instruments is the abolishment of the general wealth tax as of the 2007 income year. Until then, there were incentives to save in assets that were not included in the basis for the wealth tax. These included the value of various private insurance policies (both capital pension insurance and private pension insurance), which – as we have seen above -- do not at all give rise to tax-declared income from capital for the individual.¹²¹³ Various forms of difficult-to-value personal valuables (like art) were also more attractive savings instruments during the era of a wealth tax, as well as savings abroad. From 2007, however, these incentives disappeared and the individual became able to choose savings instruments more freely. It is perfectly reasonable for this to give rise to increased savings in equities and equity funds, which give rise to declared income from capital that show up in the statistics.

Nor can it be ruled out that the discontinuation of the inheritance tax and gift tax as of 2005 has since affected choice of savings instruments and wealth management. When these taxes existed, it was important to utilise the possibility to give away small amounts without incurring any obligation for gift tax.¹⁴ This may have led to wealth and income from capital being spread out to more members of the same family who did not share the particular household. Since 2005, these incentives have not been available, so therefore it is possible that wealthy individuals refrain from giving these small annual gifts and instead leave a larger part of their wealth in inheritance.

¹² An capital pension insurance is a special form of capital insurance.

¹³ See Du Rietz & Henrekson (2015) who analyse the design and effects of the wealth tax from 1911 to 2006.

¹⁴ During 2004, gifts from the same donor in amounts below SEK 10,000 were tax-free. What this meant was that a donor could give away annually this amount to all their children and grandchildren (for example) without any tax consequences.

4. Income shifting in closely held corporations

Another factor that may have led to increased importance for capital income for the measured Swedish income distribution is shifting of income from ordinary income (income from employment) to income from capital in closely held corporations. What this concerns is the increasingly discussed “3:12 rules” for owners of closely held corporations. These rules were introduced as part of the major tax reform 1990-91. An important part of this reform was to make the tax system dual so that capital income was taxed separately from income from employment. The tax rate for capital income was set at 30 percent, but since then several exceptions to this basic rule has been implemented. A dual tax system creates incentives to shift income from employment into income from capital if marginal taxes on the former are high and the taxes on capital are clearly lower. Consider a person who owns a company and also works actively in it. If such a person abstains from income of work and instead lets this surplus go into profits, the total tax will consist of the corporate tax of the company’s profits plus the tax on the dividends that the owner receives. This total tax is also proportional. This total tax rate tends to become low compared to the tax rate on income from work, especially for high-income workers in a system with progressive taxation on income from work.

A dual tax system therefore requires rules that set limits on such income shifting and this is the purpose of the Swedish 3:12 rules. However, the opportunities to shift from earned income to capital income have been good in Sweden and through reforms initiated in 2006 and 2011 the opportunities increased.

Income shifting of this kind does not constitute a source of error for the measurement of disposable income. It only affects the type of income that gives rise to the measured income inequality. But for a causal analysis of the mechanisms behind rising income inequality, it is important to know what is pure capital income what in practice is income from employment that has been shifted into income from capital.

Nevertheless, some measurement issues are associated with capital income from closely held corporations. For such a company, it is possible to save the room for dividends that the rules permit. If the dividends are distributed in another year than when the work efforts were made, the income ends up arriving at an incorrect time.¹⁵ Longer time units than one year for the distribution analysis – ideally one’s entire life – can then resolve or alleviate this problem. It is also possible that saved up room for distribution of dividends remains in the company when the company is sold. These dividends – which in the case of purely income conversion constitute compensation for work for a previous period – will then be declared as realised capital gains for the income year when the shares are sold. These realised capital gains must then be described in their entirety as real income.

The trend for the distribution of dividends from closely held corporations is shown in Figure 2 and Figure 3. As a proportion of disposable income for the population as a whole, until 2005 the level was clearly below one percent. Thereafter, there is an upward shift to about two percent until 2011. Since then, the proportion has increased further, and was in 2016 and 2017 close to four percent. For the highest decile group, these proportions are more than twice as

¹⁵ This is, of course, a general problem with income from dividends, which may stem from profits back in time. But here the problem shows up in new context.

high, which emphasises that these incomes are unevenly distributed. In 2016 and 2017, the proportions were approximately 11 percent. The contribution to the Gini coefficient increased from almost zero in 2000-2001 to approximately 2.4 in 2016-2017.

5. Capital gains

For capital gains, the preconditions for calculating real income on the basis of income declared by the individual are better. If the tax rules allow the purchase price of the asset sold to be calculated using inflation, it will be the real gain that is included as income from capital in the tax return and thus also fall into the income statistics.

With the sale of real property, up to 1990 it was permissible to calculate the purchase price with inflation when the taxable gains were being calculated. It was thus the real gain that was included in the tax return and also included in the statistics. This gain was added to other taxable income and the tax rate was based on the total of earned income from employment and income from capital. It is reasonable to regard income from capital as “marginal” on top of other income. Given that marginal taxes were high until 1990, the tax rate on this income from capital was high, however the high tax rate was applied to real gains.

Since 1991, no adjustments of the purchase price for inflation have been allowed, but instead the tax rate has been lower. Until 1994, there was a rule of imputation that made it possible to set the amount of the purchase at 70 percent of the sales price and tax the declared net profits at 30 percent.¹⁶ The rules were modified in 1995 when 50 percent of the nominal profit was regarded as the taxable basis and taxed at 30 percent, i.e., the tax rate was 15 percent of the nominal profit. The next change came into effect as of 2001, when two-thirds of the profits were considered taxable and taxed at 30 percent, i.e. the tax rate was 20 percent of the nominal income. From 2008, the limits were further raised so that the tax rate was 22 percent of the nominal income. However in the income statistics it is not the taxable basis that is counted as the individual’s income before tax but rather the nominal gain.

There has also been increased restrictions imposed as it concerns which costs for improvements and maintenance can be deducted in the calculation of the profits from the sale of a home. Up to and including 1990, both improvements and maintenance (over a certain amount that excluded minor expenses) could be deducted and expenditures that were back in time could be calculated using the price index. Subsequently however, the possibilities to take tax deductions have greatly diminished. Improvements remain tax deductible, however like the purchase price, no indexing is allowed. For maintenance that is more than five years back in time, no tax deductions are allowed at all. If it is regarded that maintenance – in the form of painting, wallpapering and changing of household fixtures and fittings – helps to increase the value (or prevent a decrease) of a home by the same amount as the maintenance expenses, this increase in value will be subject to capital gains tax. Thus, it can be said that maintenance expenses are taxed at a turnover tax rate of 22 percent.

¹⁶ As a result, the tax became a turnover tax of nine percent of the sales price. Andersson (1991) shows that, after a short time’s holding, the imputed rule became more favourable than the basic rule.

The realised capital gains on the sale of financial assets have also received a different meaning from 1991. Until 1990, there was a rule that meant that only 40 percent of the profits from the sale of financial securities that had been held for at least two years needed to be included in the amount on which taxes were based, while the entire nominal gain would be taxed when the holding period was less than two years.¹⁷ If these profits were then placed on top of other earned income, the marginal tax rate would become very high in the unified tax system of the time. From 1991 onwards, the rules meant that a larger part of the nominal realised capital gain would be included in the amount on which taxes were based and thus counted as income while the tax rate was clearly lower.

In connection with the tax reform 1990-91, the rules for the former (1984-1990) tax-free savings in equity funds belong to the public savings scheme (*allemanfonder*) also changed. During the 1990s and up to 1998, when this tax-deductible savings scheme was completely disbanded, the tax burden for this savings increased. Thus previously invisible saving became visible to the statistics and part of the statistics. This has resulted in an illusory increase in realised capital gains.

6. Conclusions concerning capital income: is the increase in income inequality misleading?

A first question is whether it is capital income that has contributed to the rise in income inequality, or whether there are other factors. Two forms of income shifting that probably contributed to a misleading picture of the increasing importance of the capital market have been pointed out above.

(1). One is the increased importance of dividends in closely held corporations. It is likely that the increase in such dividends is to be regarded as shifting of ordinary income from employment to income from capital.¹⁸ We saw that this type of income increased its contribution to Gini by approx. two percentage points from 2000-2001 to 2016-2017, a considerable increase. Of course, the analyst who is interested in earned income can add these receipts of dividends to other earned income as a rough sensitivity analysis. This would probably affect especially the top of the distribution.¹⁹

(2). The second form of income shifting is the one that private pension insurance and salary exchange have contributed to by converting income from capital into pension income. This

¹⁷ The share of 40 percent had applied since 1976. Prior to that, other figures applied which, since 1951, have been lower than 100 percent. See Johansson, et al. (2015) for further information and analysis.

¹⁸ See Alstadsaeter & Jacob (2017).

¹⁹ This can give an overestimate as not all dividends should be regarded as income shifting. However at the same time, this procedure involves the aggregation of income from employment with a high tax rate and dividend income with a significantly lower tax rate. Dividend income of SEK1000 and taxed at 20 % are as valuable as income from employment of SEK1600 taxed at 20%, which suggests that dividend income should be included among income from employment with a factor of 1.6. In addition, it cannot be ruled out that some of the realised capital gains from sales of shares in closely held corporations should be regarded as earned income. In 2017, such capital gains amounted to just above 20 percent of all realized gains from sales of financial assets.

shifting has decreased for private pension insurance, a reduction that has probably been slowed down somewhat by growing salary exchange.

However, it is unlikely that these two forms of income shifting have made overall measures of income inequality misleading. I have pointed out that these types of income have a time pattern that differs from other types of income. However, there are no strong reasons to suspect that the long-term development of inequality of disposable income has become particularly misleading.

The second question is whether the deficiencies in the measurement of capital income are such that we have been given a misleading picture of the evolution of inequality of disposable income. Does the statistics exaggerate the rise in this income inequality? There is reason here to distinguish between, on the one hand, interest + dividends and, on the other hand, realised capital gains (which are not included in the international statistics).

(1). For interest + dividends (excluding dividends within closely held corporations), it is obviously the nominal income which is included in the statistics. Because inflation was high until the beginning of the 1990s and has been at or just below the level of two percent since then, the nominal element of the registered income from capital has decreased. This means that it is quite likely income inequality was overestimated more during the period of high inflation than in the latter period of low inflation. However, as emphasised above, this misstatement of the statistics occurs for most countries with which we normally compare the Swedish income distribution. In addition, the level of income from capital was so low until about 1990 that a downward adjustment for inflation would not mean much.

There have also been several changes in savings instruments that may have affected the statistics.

(1). One such was when the tax-deductible savings scheme (which was introduced as tax-free savings in 1984) was disbanded as of 1991. The effect of this change is included in the shift in the curves from 1990 to 1991 highlighted in Figure 1.

(2). The introduction of ISK in 2012 has only made a small contribution to the overall the distribution of income as of 2017. However, a continued expansion of this savings programme will create major interpretive problems. If the increased ISK-savings has replaced savings in the closely related capital insurance savings instrument, there will be a shift from (for the statistics) invisible to visible capital income. If instead, equity funds are increasingly invested in ISK funds, there will be a shift from capital gains to interest income. In an overall sense, these can offset each other in terms of distribution, but they will have different time profiles. The capital gains appear from time to time in connection with realisation of the gain, while the standard revenue is booked on an ongoing basis. Such a shift will, on the other hand, unequivocally increase the measured income inequality in international statistics since these exclude capital gains.

Already when it comes to interpreting the 2018 distribution statistics, problems will arise. In that case, a tax increase on ISK savings will break through and it will lead to increased measured disposable income of these savers, who in reality receive a higher tax and lower economic standard.

(3). One additional change may have occurred since the wealth tax was abolished as of 2007. This tax encouraged savings in private pension insurance and capital pension insurance,

which are savings instruments that do not generate income from capital that the individual needs to declare for taxation. Savings in other forms that did not give rise to capital income to be declared (in Sweden) may also have been replaced by savings instruments that generate income from capital that needs to be declared. For example, equities and equity funds became clearly more attractive savings instruments. Nor can it be ruled out that the abandonment of the inheritance and gift tax as of 2005 has had effects on the management of assets and thus on the structure and distribution of capital income.

There are also a number of problems for the capital gains.

I have stressed that the tax rules meant that (largely) the real realised capital gains were included in the statistics up to and including 1990. After that, however, it is nominal income that has been taxed and designated as income. The question then is how substantial this misstatement might be. A starting point for the period from 1995 onwards may be the development of the stock exchange and the development of price indices for small houses and apartment buildings. The overall price level of equity shares has risen by about 8 percent since 1995, which together with inflation of 2 percent indicates that an average of 25 percent of the capital gains on the sale of financial securities is to be regarded as compensation for inflation. A rough way to correct this is therefore to reduce these incomes by 25 percent. On the other hand, there is no reason to reduce the taxes that these nominal profits generated.

The price index of single-family homes and block of flats has risen by approx. 6 percent since 1995, and with inflation of 2 percent, this means that approx. 30 percent of the capital gains on the sale of housing is compensation for inflation. Therefore, the corresponding advice here is to reduce these incomes by approx. 30 percent. Given the tighter treatment of repair and maintenance costs, 30 percent is too low a figure. However, it is extremely difficult to have an idea of how much such costs mean in this context. Another reason why an adjustment by 30 percent may too small is that houses and apartments that have been sold were acquired long before the inflation rate fell to around two percent. Most likely, such sales have given very high nominal capital gains, but the nominal component must have been large.

Given that the capital gains contribute 7-8 percent of the average disposable income, this means that the Gini coefficient should be reduced between two and three units. This is a substantial reduction in the figures usually presented in Sweden. The reduction will be most pronounced at the top of the distribution.

Of course, these proposals for corrections to income statistics are very coarse. It would be best to have access to information about the individual sales and make more accurate corrections for each individual.

(2). During the 1990s, the "*Allemanfonderna*" tax-deductible savings accounts became taxable in the same way as other funds, and this provided an increase in income in the form of capital gains, i.e. a shift from tax-free savings to taxable items that were included in the distribution statistics.

(3). The repeal and abandonment of the wealth tax may also have led to a shift in savings towards taxable savings instruments such as equities and equity funds with increased declared capital gains as a result.

7. The household concept and shared custody

One strength of the “gold standard” income concept used in research on income distribution is that all individuals in the population are included in the analysis. Thus, each child’s economic standard is also measured and it becomes possible to include children in the population that is studied. It will also be possible to focus solely on the children and measure income inequality between children in a variety of different ways, such as the proportion of relatively poor children.

In practice, a child’s economic standard is determined by the income of the adults in the household to which the child belongs. Thus, the concept of household becomes central here and it is important that this reflects the imputed income that the child will receive in the data. When parents separate, a special situation arises. The traditional solution has been that the children live with one parent and that the other parent contributes financially to the support of the children. In such cases, the financial support from the non-residential parent has been calculated as a negative income for them and as a positive income for the residential parent with which the child lives. If this transfer of income does not actually take place, a maintenance support could have been paid out by the State.

In recent decades, however, another solution has become increasingly common, namely “shared residence” where children whose parents have separated alternate living with each of their parents, often every other week with each parent. However, there is no direct information about this solution in the sources on which the distribution statistics are based. Therefore, a child is considered to be living in the household where it is registered in the national population register, which in a clear majority of cases is with the mother. Other statistical sources indicate that the proportion of children with shared residence arrangements among those with parents who have separated has increased from almost zero in the late 1990s to about 30 percent today.²⁰

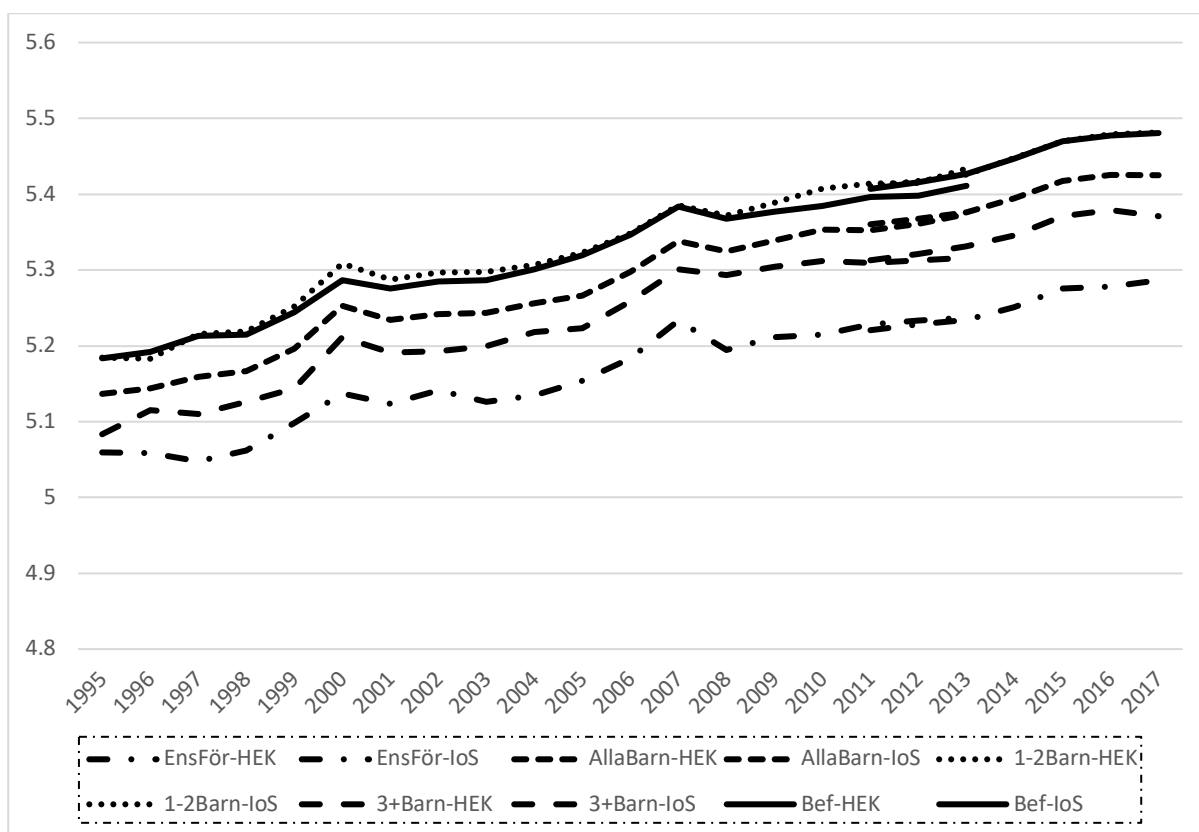
If a child with de facto shared residence in the statistics is registered as residing with its mother, several errors occur in the statistics. Firstly, in the statistics, the mother is assigned a too high a burden of support as her expenses are reduced every other week. How much this burden is reduced, can be debated, as certain costs, for example in the form of a bedroom for a child, quite likely are fixed. However, there is definitely some relief. Secondly, in the statistics, a too low burden of support is assigned to the father. This concerns both variable costs during the presence in the household and the fixed costs in the form of rooms. The underestimation of the father’s burden of support related to the number of dependents he needs to support should generally be greater than the overestimation of the mother’s. Finally, in most cases, the income allocated in the statistics to the child becomes too low. The true income standard is an average of the standard of the mother and the father, but since mothers generally have a lower income than fathers have, the child is allocated too low an income in the statistics.

²⁰ Source: Statistics Sweden, *Undersökningarna av levnadsförhållanden [The studies of living conditions] (ULF/SILC)*

Figure 4 shows the evolution of economic standard for 1995–2017 (expressed in logarithms so as to highlight the relative differences) for (i) the population as a whole, (ii) all children, (iii) children residing with two adults and (in total) 1-2 children, (iv) children residing with two adults and three or more children, and (v) children residing with one adult. The Figure shows that children in families with no more than two children and two adults have had a growth in the economic standard that is extremely close to the population as a whole. As expected, children in families with three or more children and two adults have a lower economic standard than children in families with two adults and a maximum of two children. The difference has remained stable approx. -0.10 log points (just over 10 percent) throughout the entire period. On the other hand, it is quite clear that children living with one adult have lagged behind other children. The difference during the period has gone from about -0.13 log points to about -0.20, or from about 14 percent to 22 percent.

It is quite possible that this backlog is due to the increased frequency of shared residence. It is unfortunate that it is not possible to judge whether such a sensitive group has lagged behind in economic standard. In addition, the mothers in question are listed for a too low a economic standard and the fathers in question, for a far too high economic standard. This makes the statistics to an increasing extent exaggerate income inequality.

Figure 4. Average economic standard for the population as a whole, all children, children residing with two adults and 1-2 children, children residing with two adults and 3 or more children, children residing with one adult. prices in 2018. Logarithmised values.



8. Conclusions: how can the statistics be improved?

The media attention on the long-term rise in income inequality in Sweden shows how important the distribution statistics are. The statistics are also taken most seriously by the Swedish Ministry of Finance with its annual distributional reports, which in turn are also reviewed by institutions such as the Swedish Fiscal Policy Council. The OECD's comparative country reports are also receiving considerable attention. My view is that there is a strong infrastructure around the Swedish distribution statistics that corresponds to the public's view on distribution issues. The information contained in the various registers upon which the statistics are based is a valuable basis for the statistics. There is reason to point out in this regard here that the register-based household definition that has been possible to use since 2011 has made the statistics even more valuable. This information makes it possible to follow individuals' household affiliation over time and thus study income with a unit of time longer than one year. In the future, it will be possible to study lifetime income with the household as income unit. This is particularly valuable for the analysis of the distribution issues that relate to education.

Distribution statistics can never be entirely perfect, especially if the income measures are to correspond to basic economic principles rather than to reproduce the income resulting from the formal tax return process. One could probably say that there is an ongoing race between, on the one hand, structural changes in the economy and the society and, on the other, the work of the statistical authorities to keep the statistics up to date and relevant.

A first conclusion is that it is important to follow changes that affect the statistics and conduct sensitivity analyses that assess the magnitude of the problems. The problems that I have addressed in this report could have been examined by various forms of sensitivity analyses based on other statistical sources. It is quite possible that such analyses would have shown that the problems are of limited size. In itself, I would be surprised if the picture of a considerable long-term rise in the income inequality would change if these problems had been solved. However, sensitivity analyses of various kinds would also raise the credibility of the statistics. Although the problems are still of limited magnitude at best, the continued expansion of savings in ISK accounts – and especially changed tax rates for this savings instrument– will result in that both national and international statistics are difficult to interpret. The same applies to a further increase in shared residence for children after parental separation.

A second conclusion is that these statistics can be made better not only via Statistics Sweden's efforts, but that sometimes political decisions are also needed to improve the quality of the register-based distribution statistics. Such an active measure would be to decide that shared residence is introduced as a new separate category in the national population register. This would solve the problem discussed in Section 7 and thus make it possible to judge whether children living with one adult parent have lagged behind in economic standard. The overall measures of income inequality would also be improved, especially those focusing solely on children's economic standard.

With regards to the measurement of income from capital, it is interesting to note that income statistics would be improved if supplemented by wealth data. Using information on the individual's various assets composing their wealth, it would be possible to determine how

much of the returns in the form of interest and dividends from shares is compensation for inflation and how much is real income from capital. It is also valuable to provide information on assets for which an insurance company pays the capital taxes; capital insurance is a typical example here. With the assistance of detailed information on net wealth, it would also be possible to calculate actual capital gains and thus avoid the realised capital gains that have for a long time created an unfortunate erratic pattern of Swedish income distribution. It is worth noting here that this is a further argument for wealth data in addition to the arguments put forward by both governmental authorities and academic researchers. In the Riksbank's (2019) recent Request to the Swedish Parliament concerning wealth statistics, the argument is a desire is to shed light on the financial stability of the economy. As pointed out above, another argument is that the quality of income data would be improved.

References

- Andersson, Krister (1991), "Realisationsvinstbeskattningen av egna hem" [Taxation of capital gains on the sale of one's own home.} Economic Debate Volume 19, no. 5, p. 430–438.
- Björklund, Anders and Markus Jäntti (2011), "Inkomstfördelningen i Sverige," [The distribution of income in Sweden, SNS Velfärdsrapport 2011, SNS förlag
- Du Rietz Gunnar and Magnus Henrekson (2015), Swedish Wealth Taxation (1911–2007), in Henrekson & Stenkula (eds.) Swedish Taxation: Developments since 1862.
- Finansdepartementet [Swedish Ministry of Finance] (2019), Fördelningspolitisk rapport [Distribution Policy Report].
- Finanspolitiska rådet/Swedish Fiscal Policy Council (2018), the Finanspolitiska rådet [Swedish Fiscal Policy Council].
- Lerman, Robert I and Shlomo Yitzhaki (1985), "Income Inequality Effects by Income Source: A New Approach and Applications to the United States," Review of Economics and Statistics, vol. 67 (1), pp 151–156.
- Sveriges Riksbank (2019), Request to the Swedish Parliamanet 2018/19: RB4. Statistik över hushållens tillgångar och skulder [Statistics on household assets and liabilities].