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Factor Components of Inequality

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GINI GROWING INEQUALITIES' IMPACTS

Factor Components of Inequality

A Cross-Country Study

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Abstract

This paper uses data from the Luxembourg Income Study to examine some of the forces that have driven changes in household income inequality over the last three decades of the 20th century. We decompose inequality for 6 countries (Canada, Germany, Norway, Sweden, the UK, and the US) into the three sources of market income: earnings, property income and income from self-employment. Our findings indicate that although changes in the distribution of earnings are an important aspect of recent increases in inequality, they are not the only one. In some countries the contribution of self-employment income to inequality has been on the rise. In others, increases in inequality in capital income –probably caused by tax changes- account for a substantial fraction of the observed changes in the distribution of income.

JEL classification numbers: D31, D33

Key words: income inequality, factor decomposition, decomposition by population subgroups

1. Introduction

The extent to which different sources of income influence overall income inequality across households has interested economists for several decades.[1] One of the problems of this type of research is the fact that because income concepts vary across national surveys, most existing studies deal with a single country. In this paper, we exploit the data collected by the Luxemburg Income Study in order to decompose income inequality into its factor components for six countries over a 30-year period.

A number of industrial countries have experienced an increase in household income inequality in the last decades of the 20th century. At the same time, they have also experienced an increase in earnings dispersion.[2] By decomposing inequality by factor sources we can assess whether increased earnings dispersion has been the only culprit for observed inequality trends, or whether other factors have also contributed to the changing distribution of income. Gottschalk and Smeeding (1997) find that in a number of countries increased earnings dispersion was not accompanied by increased household income inequality, and there are indications in the literature that other factors have been important. Notably, Jenkins (1995) finds that both changes in the distribution of capital income and self-employment income contributed to the increase in income inequality in the UK in the first half of the 1980s. The availability of new data allows us to examine whether these trends have persisted or if they were only a temporary feature. Moreover, by comparing six economies we address the question of whether such pattern has been a more generalized phenomenon present also in other countries or simply restricted to the UK.

The second aspect on which we focus is the age composition of the population and the differences in inequality across age groups. There are two main reasons why a decomposition by age can help us understand the forces that drive inequality changes. First, we want to understand the role of capital income inequality. High inequality in this factor can be due to two effects. One possibility is that it is the result of an unequal distribution of wealth for all age groups. Alternatively, it may be caused by life-cycle savings, in which case the data should show that capital income inequality is mainly due to differences across age groups and not within age groups. Moreover, if life cycle considerations were the main cause of wealth inequality we should also observe important differences across countries. In countries with generous public pension systems, old individuals would tend to live off state pensions rather than their own savings, and hence we would expect to observe less inequality in the distribution of capital incomes. Second, a number of papers examining the recent increase in earnings dispersion have shown that, at least in the US and the UK, greater wage dispersion has been partly the result of increased returns to expe-

1 See, amongst others, Fei et al. (1978), Fields (1979), Pyatt et al. (1980), Lerman and Yitzhaki (1985), Shorrocks (1983), Podder (1993), Jenkins (1995).

2 See Atkinson (1997), Gottschalk and Smeeding (1997), Acemoglu (2003), and Lemieux (2008).

rience.[3] Our analysis can then help us understand to what extent the increase in overall earnings inequality across households is due to the fact that older individuals now receive higher wages. Existing work -such as Cowell and Jenkins (1995), Jenkins (1995), and Jäntti (1997)- has found that inequality across age groups has little explanatory power, but this could be due to the short time periods considered. Here we examine whether this result still holds over the substantially longer period that we analyse.

The paper closest to our analysis is Jäntti (1997), to our knowledge the only cross-country study of factor decompositions of inequality. He uses data from the Luxembourg Income Study for five countries -Canada, the Netherlands, Sweden, United Kingdom and United States- and has two observations, one for the early and one for the late 1980s. He concludes that the increase in household income inequality that took place in Sweden, the UK and the US during the period was mainly due to an increase in labour earnings inequality.

We extend the work of Jäntti in two dimensions. First, we increase the number of countries and consider a longer time period. The increase in available data is significant: our sample includes 6 countries, and we have at best nine observations per country, going from 1969/1970 to 2004. This implies an substantially longer period of study, and allows us to assess to what extent the increases in inequality observed in the 1980s have continued or been reversed. Second, although Jäntti performs decompositions both by factors and by household characteristics such as age, these decompositions are performed separately. In contrast, we nest the decompositions by factors and by age. This allows us to examine not only whether the incomes of the young are more or less unequal than those of the old, but also which are the factors that have generated the differences across age groups.

Methodologically, we follow a large literature that has preformed decompositions of an inequality index into a within-group and between-group component; see, for instance, Mookherjee and Shorrocks (1982), Karoly (1992), Parker (1999), Brandolini and D'Alessio (2001). However, there are only a few studies that perform both decompositions across groups and factors. As well as Jenkins (1995) and Jäntti (1997) discussed above, this approach has been taken by Fluckiger and Silber (1995), Achdut (1996) and Drescher (1999), who focus, respectively, on Switzerland, Israel and Denmark, all countries that are not included in our sample. However, all these papers consider *either* the factor decomposition *or* the decomposition by age (or other characteristics). In contrast, we decompose inequality using a nested approach that allows us to differentiate the contribution of various factors to inequality within each age group.[4] Some recent work, such as Jenkins and van Kerm (2005), proposes as an alternative density function decompositions that allow a richer analysis of distributional changes at all points of the distribution. This method has the advantage of being independent of the choice of inequality index, but does not provide sum-

3 See, for example, Gottschalk and Smeeding (1997), Machin (1996), and Machin and Van Reenen (1998).
4 See Mussard (2004) and Giammatteo (2007) for analyses of nested decompositions.

mary measures of the decomposition. Given that we focus on several countries and years, standard decompositions of an inequality index are more suitable.

Our results indicate that the stability of the share of earnings in household income in the US is remarkable when compared to the experience of other countries. The share of earnings fell sharply in the other Anglo-Saxon economies, dropping by 11 percentage points in the UK and by 12 in Canada (over the periods 1969-2004 and 1971-2004, respectively). As a result, although all countries in our sample experienced an increase in earnings inequality, the contribution of this source of income to overall inequality often remained unchanged due to a reduction in the earnings share. The share of different factors also fluctuates over time. Consider, for example, the UK over the period 1979-2004: the share of earnings fell steadily, that of self-employment income grew from 7% to over 15%, while that of capital income first increased and then decreased.

The contribution of different factors to overall inequality varies sharply across countries. That of earnings accounted, in 2004, for as much as 86% in the US and as little as 70% in Norway, where both capital and self-employment income make large contributions. In the UK and Canada the contribution of self-employment income to overall inequality has been on the rise, while greater inequality in income from property is crucial in explaining the experience of the Scandinavian economies. These results indicate the difficulty in generalizing the causes of distributional changes even within a relatively homogeneous group of countries.

The paper is organized as follows. Section 2 presents an overview of the data and discusses some of the explanations for observed changes in inequality. We then present the decomposition rule of our inequality measure, the half the squared coefficient of variation, into factor components and population groups. Sections 4 and 5 present the results of the decomposition of the inequality index, examining first decompositions by factor and subsequently the nested decompositions by age-groups and factor. Lastly, section 6 concludes.

2. Trends in income inequality

2.1. The data

The source of our data is the Luxembourg Income Study (LIS). The Luxembourg Income Study is a project started in 1983 by researchers in several European and American countries in order to collect income, demographic, labour market and expenditure information at the micro-economic level in a way that is consistent across countries. Surveys are conducted every few years, and the number of member countries has expanded over time, with the project now covering 32 countries. As is well known, the data on income inequality are problematic and international comparisons difficult (see Atkinson and Brandolini, 2001). Although some cross-country differences in methodology remain, LIS provides the best existing data on inequality in terms of cross-country consistency.

In this paper we have chosen to focus on only 6 countries. There are two reasons for this. First, we wanted countries for which we have data going back to the 1980s. Second, we required having comparable measures. This ruled out including France and Italy, since they have information on net rather than gross wages.[5] Details on the data are provided in the Appendix. The number of observations varies across countries, depending on the number and frequency of surveys, with countries having between 5 and 9 observations spread over the period. Our sample includes three Anglo-Saxon countries (US, UK, and Canada), one of the large continental European economies (Germany), and two Scandinavian countries (Sweden and Norway), and the data range between 1969 and 2005.

Because our focus is on factor share, we use gross income measures.[6] Our definition of gross income consists in the sum of earnings, capital income, self-employment income, and a residual category termed "other". This last category includes transfers from various sources, and comprises pensions, state transfers such as unemployment benefit or child benefit, and private transfers such as alimony payments. We would have liked to separate pensions from the remaining sources of income, but for many countries they are not reported separately. Hence, in order to make our results comparable across countries, we grouped pensions with other income even when the information was available.

5 We have, nevertheless, performed the decompositions for France and Italy, and the data are available from the authors on request.

6 The alternative would have been to consider disposable income, which, arguably, is a better measure of welfare. The reason for not doing so is that when using measures of disposable income the direct impact of tax changes can result in rapid and large changes in inequality (see, for example, Jäntti, 1997). Understanding these changes would have required us to discuss changes in taxation and progressivity in the 8 countries under consideration, a task beyond the scope of this paper. Note, nevertheless, that tax changes will also have direct effects on factor prices and shares and thus on inequality, and these are of course captured by our income concept.

2.2. Inequality trends

Figure 1 presents the evolution of inequality, measured by the squared coefficient of variation, in the 6 countries we consider. The data show the well-documented pattern that inequality is highest in the Anglo-Saxon economies, lowest in Scandinavian countries, with the large European economies being somewhere in between. Note, nevertheless that there have been large fluctuations. In the 1970s the SCV in the UK (and also the Gini coefficient; see figure 2) was roughly similar to those observed in the Scandinavian economies. The differences we obtained across groups of countries are smaller than those commonly reported for disposable income. This is not surprising given that we measuring *gross* income inequality, rather than inequality in disposable income. Moreover, as Brandolini and Smeeding (2008) show, some European countries, notably Germany and Sweden, have levels of market income inequality comparable to that in the US, and it is differences in the tax-transfer system that create the gap in disposable income inequality.

We observe the trends that have been widely discussed by the literature, such as the increase in household income inequality in the US and the UK from the early 1980s onwards. The increase in income inequality is also apparent for Canada and, starting in the mid-1980s, for the Scandinavian countries. The German data indicate rather flat time trend.

Since the most cross-country comparisons of inequality uses the Gini coefficient, figure 2 reports the Gini coefficients we obtained from the LIS data. Our definition of income is, as before, gross household income. The ranking of countries in terms of the Gini coefficient and observed time trends reproduce those obtained with the SCV. The two measures indicate, nevertheless, differences in the timing, notably for the US where the Gini coefficient peaked in the mid-1990S while the SCV kept increasing till 2002. Because the Gini coefficient places less weight at the extremes of the distribution, this difference is probably due to an increase at the top or bottom of the distribution.

2.3. What may drive changes in inequality?

There are three basic reasons why the distribution of household income may change: changes in market incomes, such as earnings or income from property; a different demographic structure; and changes in tax and transfer policies. In what follows, we have chosen to concentrate on the first two. This is not because we believe tax and transfer changes to be unimportant, but simply because discussing them would require detailed understanding of the tax-transfer systems in each of the six countries examined here, a task beyond the scope of this paper.[7] In

7 A number of single-country studies have examined the role of the tax-transfer system. See, for example, Jenkins (1995) for the UK, Fjærli and Aaberge (2000) for Norway, and Björklund and Palme (1997) for Sweden.

order to abstract from tax changes, we have chosen as our income concept *gross* household income. Transfer policies will, nevertheless, affect household income since government transfers are part of our fourth category, "other income". An alternative would have been to focus only on the distribution of market incomes. We chose not to do so for comparability with existing work. The first question we want to address is to what extent different sources of market income have driven inequality changes. Market income may come from three sources: earnings, selfemployment income, and capital income. The increase in earnings inequality has been well documented,[8] although there has been little work examining to what extent changes in the distribution of individual earnings drive changes in the distribution of household income. A notable exception is Gottschalk and Danziger (2005), who examine the evolution of hourly wage rates and household income inequality in the US.[9] One of our objectives is to quantify the extent to which earnings inequality has been the culprit for the observed increase in household income inequality. Although earnings are the largest source of household income, changes in income from selfemployment and property can also play a major role. Jenkins (1995) identified a substantial contribution of self-employment income to the increase in inequality in the UK in the first half of the 1980s. Since we can use data for a longer period, we will be able to assess whether the increased contribution of self-employment has continued, and whether this phenomenon also took place in other countries. The early 1980s also witnessed a sharp rise in the contribution of property income to overall inequality. There are three elements that may have contributed to this: changes in the labour and capital shares in aggregate value added, changes in the rate of return, and changes in taxation that may have favoured property income. One possibility is that the changes in property income inequality in the 1980s were the result of the high interest rates that prevailed at the time, rather than of an increase in the concentration of wealth. If this were the case, we would expect that the subsequent reduction in interest rates caused a reduction both in the share of property income in total household income and in its dispersion. Moreover, if it were high interest rates that drove the increase in capital income inequality in the UK, we should observe a similar increase in the other countries in our sample.

The second aspect on which we focus is the age composition of the population and the differences in inequality across age groups. There are two main reasons why a decomposition by age can help us understand the forces that drive inequality changes. First, we want to understand the role of capital income inequality. High inequality in this factor can be due to two reasons. It may be the result of an unequal distribution of wealth for any age group. Alternatively, it may be caused by life-cycle savings, in which case the data should show that capital income inequality is mainly due to differences across age groups and not within age groups. Moreover, if life cycle considerations

8 See Gottschalk and Smeeding (1997) and Atkinson (2007a,b).

9 See also Gottschalk (1997) and Checchi and García-Peñalosa (2008, 2010) on the relationship between wage inequality and household income inequality.

were the main cause of wealth inequality we should also observe important differences across countries. In countries with generous public pension systems, old individuals would tend to live off state pensions rather than their own savings, and hence we should observe less inequality in the distribution of capital incomes across age groups. Second, the literature on the increase in earnings dispersion has shown that, at least in the US and the UK, greater wage dispersion has been, partly the result of increased returns to experience. This would imply that we should observe an increase in earnings inequality across age groups. A further question concerns self-employment. There is evidence that self-employment is more frequent amongst mature workers,[10] and this too should be reflected in a greater contribution of self-employment income to inequality for those age groups.

Both Jenkins (1995) and Jäntti (1997) find little role for demographic changes in their inequality decompositions. However, their data spans a substantially shorter period of time, with the former having data for a 15-year period and the latter for just under a decade. In our case the data cover a longer period, particularly for the UK and the US, were we have information from 1969 to 2004. We would hence expect that changes in the demographic composition are more pronounced and play a greater role in explaining inequality.

10 See, for example, Evans and Leighton (1989).

3. Inequality index decompositions

A large theoretical literature has examined possible ways of decomposing inequality indices by factor components, and illustrated the methodologies proposed with some empirical evidence. As is well known, different inequality indices have different merits and drawbacks.[11] We have chosen to employ as our measure of inequality the squared coefficient of variation, denoted SCV, as is common in the empirical literature on inequality decompositions. The SCV has two key features, as compared to other inequality indices. The first one is that decompositions can be nested, allowing us to examine the changes in factor contributions by population subgroups. The second is that it is more sensitive to extreme values than the Gini coefficient. Although this is an argument that is often used to prefer the use of the latter index, it is useful when we perform decompositions by factor incomes.

In those decompositions we find that there are many observations with zero values, notably in the case of self-employment and property income, and we want to use an index that is sensitive to such extreme values.

The half squared coefficient of variation is defined as

$$I \equiv \frac{1}{2n}\sum_i \left[\left(\frac{y_i}{\mu}\right)^2 - 1\right] = \frac{\sigma^2}{2\mu^2}, \qquad (1)$$

where the population consists of n individuals indexed by i, with mean income μ and variance σ^2 The income of individual i is denoted by y_i, and incomes are received from various sources or factors, denoted by f, so that $\sum_f y_{if} = y_i$. The population can be partitioned in J mutually exclusive age groups, index by j=1, …J. We can then define the inequality index for a particular factor and a particular group as

$$I_f = \frac{\sigma_f^2}{2\mu_f^2}, \qquad (2)$$

$$I_j = \frac{\sigma_j^2}{2\mu_j^2}. \qquad (3)$$

A number of definitions will be useful for the subsequent decompositions

$\chi_f \equiv \mu_f / \mu$	factor f's share
ρ_f	correlation between factor f and total income
$p_j \equiv n_j / n$	population share of group j
$\lambda_j \equiv \mu_j / \mu$	group j's mean income relative to population mean
$\lambda_{jf} \equiv \mu_{jf} / \mu_j$	groups j's mean factor-f income relative to population mean

11 See for example Fei et al. (1978), Bourguignon (1979), Pyatt et al. (1980), Shorrocks (1982), Lerman and Yitzhaki (1985), and Fournier(2001).

In order to analyse the impact of various income sources we follow Shorrocks (1982) and Jenkins (1995). A decomposable inequality index can be expressed as

$$I = \sum_f S_f \tag{4}$$

where S_f is the absolute contribution of factor f to overall inequality. Let $s_f \equiv S_f / I$ be the relative factor contribution, such that $\sum_f s_f = 1$. Shorrocks makes the case for using a decomposition based on the point estimate of a regression of income of source f on total income, that is

$$s_f = Cov(y_{if}, y_i) / \sigma^2 \ . \tag{5}$$

It is then possible to express the absolute contributions in terms of the squared coefficient of variation for aggregate and factor incomes,

$$S_f = s_f I = \rho_f \chi_f \sqrt{I \cdot I_f} \ . \tag{6}$$

There are two ways in which we can assess how the contribution of different sources of income varies across groups. First, we can simply compute inequality indices by age-groups and obtain the contribution of different sources for each group. We can perform the factor decomposition described above for each age group, with the factor shares being defined by

$$S_{jf} = \rho_{jf} \chi_{jf} \sqrt{I_j \cdot I_{jf}} \tag{7}$$

and $I_j = \sum_f S_{jf}$. The term S_{jf} then tells us how much of the overall inequality within-group j is due to inequality in incomes from factor *f*.

Alternatively we can use a group decomposition of the inequality index. It is possible to express our inequality index *I* as

$$I = \sum_j p_j (\lambda_j)^2 I_j + \frac{1}{2} \sum_j p_j \left[(\lambda_j)^2 - 1 \right] = wg + bg \tag{8}$$

where the first term captures inequality within age groups, *wg*, and the second term represents inequality between-groups, *bg*. For factor *f* we can express the inequality index as

$$I_f = \sum_j p_{jf} (\lambda_{jf})^2 I_{jf} + \frac{1}{2} \sum_j p_{jf} \left[(\lambda_{jf})^2 - 1 \right] = wg_f + bg_f , \tag{9}$$

and using this expression we can write overall inequality as

$$I = \sum_f S_f = \sum_f \left(\alpha_f wg_f + \alpha_f bg_f \right), \tag{10}$$

with $\alpha_f \equiv S_f / I_f$. The term *wgf* represents within-group inequality in factor *f*, while $\alpha_f wg_f$ captures the contribution of within-group inequality in factor *f* to overall inequality. Similarly bg_f represents between-group inequality in factor *f*, and $\alpha_f bg_f$ is the contribution of between-group inequality in factor *f* to overall inequality. This decomposition allows us to first determine the contribution of inequality in factor *f* to overall inequality, and then assess how much of it is due to within- and how much to between-group inequality.

4. Decomposition by income sources

4.1. Absolute factor contributions

Tables 1, 2 and 3 report the factor decomposition for the six countries in our sample, for selected years.[12] The inequality index, the SCV, is calculated both for total gross income (first column) and for its four components: earnings, self-employment income, capital income and other. We then calculate the absolute contribution of each of these factors to overall inequality, that is, S_f as given by equation (6), so that the horizontal sum of factor contributions sums up to overall income inequality for each year. The third panel reports the share of factor f in total household income, χ_f, which as we ill see played an important role in observed inequality changes.

The observations for the UK and the US are reported for five dates, 1969, 1979, 1991, 1999/2000 and 2004. This allows us to asses the sources of changes in inequality in the 1970s, 1980s, and 1990s. The US experienced a reduction in inequality in the first decade and an increase in latter ones, while the SCV dropped again at the end of the period (from 0.462 to 0.408 between 2000 and 2004). The UK had an initially lower degree of inequality than the US which increased through to 2000, and exhibited little change between 2000 and 2004. The patterns for the two countries are similar in many aspects. During the 1970s a decline in the contribution of selfemployment and capital income inequality implied a reduction in inequality in the US and a moderate increase in the UK, despite the fact that earnings inequality had already started to increase. In the US, the increase in the SCV of earnings between 1969 and 1979 was moderate (from 0.423 to 0.466) but in the UK it rose by 30 percent (from 0.370 to 0.488). Over the next 25 years, inequality increased by 0.12 points in both the US and the UK. That is, it increased by 40 percent in the US and by 50 percent in the UK. As has been well documented, both countries witnessed a large increase in wage inequality over this period. We find that earnings inequality started rising in the 1970s, i.e. before the increase in wage inequality documented in the data). Between 1969 and 2004, the SCV of earnings more than doubled in the UK and increased by 68% in the US, and this change was clearly the main force driving the increase in income inequality.

There are three notable differences between these economies. The first concerns the timing: in the US, the largest increase in inequality took place in the 1990s, while in the UK it occurred during the 1980s. Second, self-employment income plays a much more important role in the UK. The contribution of self-employment to the increase in inequality between 1979 and 2004 was of 0.038, a third of the total in crease, while more dispersed

12 We have chosen not to report the decomposition for all available years for all countries and give results (roughly) for each decade. Other country-year decompositions are available upon request.

earnings account for two thirds of the increase. The large contribution of self-employment to rising inequality is due to the sharp rise of the share of self-employment in total household income. During this period, the share of earnings fell from 73 to 66 per cent while that of self-employment income rose from 5 to 8 per cent. In contrast, in the US, the earnings share was stable while that for self-employment income fell by two points, implying that it tended to reduce inequality. In fact, increased earnings inequality accounts for the entire change in the scv of income, with a small positive contribution of capital income being offset by a small negative contribution of self-employment inequality.

Two remarks are in order concerning capital income. In both countries the capital share is well below those often obtained from national accounts, which attribute about 60-70 percent of national income and the rest to labour. There are several reasons for this discrepancy. First, standard estimates from national accounts define the labour share as the ratio of payments to employees to output and attribute the remainder to capital. This method of accounting ignores self-employment income, thus overstating the share of capital. When self-employment income is accounted for properly, the capital share falls substantially: from 40 to 23 percent in the US and from 43 to 19 percent in the UK.[13]This adjustment still leaves a substantial discrepancy between our capital shares and those obtained from aggregate data. There are various likely causes. A substantial fraction of the capital income generated by a firm is retained in order to finance future investments and hence not distributed as interest and dividends to households. Capital gains are not included in the LIS definition of capital income and hence not accounted for. Lastly, some under reporting is likely given that capital incomes tend not to be paid in the same regular basis as wages and salaries. These last two factors imply that our measures probably understate capital incomes.

The second comment concerns the returns to capital. As argued by van den Noord and Heady (2001) capital income is defined as the nominal return on capital rather than the real one, which should be adjusted for inflation. As a result periods of high inflation that are accompanied by high nominal interest rates would yield large shares of capital income even if the real incomes generated by those assets were no different from those obtained in periods of low inflation and nominal interest rates.

13 See Gollin (2002, table 2); the figures refer to the 1990s. Similar changes are reported for Norway and Sweden, the data for Canada and Germany not being available. Gollin also discusses the fact that self-employment income is composed of both labour and capital income and proposes a number of alternative adjustments to compute factor shares that capture this fact.

The first panel of table 2 performs the same decomposition for Canada. As we saw earlier, after a decline during the 1970s, starting in 1981 inequality rose, although by less than in the US and the UK (0.09 points). All factors except for capital income contributed to this increase. Although the increase in earnings dispersion was the largest factor (contributing 72 percent of the increase), inequality in self-employment income accounted for 23 per cent of the overall increase. As in the UK, there was little change in the SCV of self-employment income but it share rose over the period while that of earnings fell by 10 percentage points. 'Other incomes' played an important role, since they tended to reduce inequality at the start of the period but to increase it at the end. This could reflect either changes in the extent of redistribution, or an increase in the share of pensions in household income associated with an aging population. Their share in household income also rose substantially (from 11 to 21 per cent of household income).

The results for Germany, reported in the second panel of table 2, are unfortunately for a shorter period due to data availability, 1984 to 2004. The SCV of gross income declined slightly in the first decade and increased during the second one, remaining in 2004 slightly lower than it was in 1984. This stability hides substantial changes in factor income inequality. Earnings dispersion increased by more than in the US: in Germany the SCV of earnings went from 0.570 in 1984 to 0.706 in 2004, while in the US it increased from 0.550 to 0.668 over the period 1986—2004. However, the share of earnings in household income is lower in Germany than in the US and it declined by 7 percentage points over the period, leaving their contribution to overall inequality unchanged. The contribution of both self-employment and capital incomes declined as the dispersion of both sources of income fell, tending to reduce inequality. However, the contribution of other incomes increased, which offset the previous effect.

Decompositions for Norway and Sweden are reported in table 3. As discussed above, these two economies experienced increases in gross income inequality although of smaller magnitude than those observed in the UK and the US, with the SCV increasing by 0.038 points in Norway and by 0.026 in Sweden between the 1979/81 and 2004/5. These changes were mainly the result of a more dispersed distribution of earnings. Starting in 1979/81, the SCV of earnings rose by 18 and 19 percent in Norway and Sweden respectively. Although this was a smaller increase than that experienced by the US and the UK, earnings inequality was, by the end of the period similar to that observed in the Anglo-Saxon economies. For example, in 2004 the SCV of earnings was 0.668 in the US and

0.660 in Sweden. Its contribution to overall inequality is, however, much small in the Scandinavian economies because the share of earnings is about 10 percentage points lower than in the Anglo-Saxon ones.[14]

There are two important differences between the two Scandinavian economies we consider. In Sweden, the increase in overall inequality that started in 1981 was exclusively due to greater earnings dispersion, and the impact on overall inequality of this increased dispersion was partly offset by a reduction in the contribution of capital income. The Swedish data illustrate the importance of factor shares. Recall that the contribution of factor f depends both on the SCV of that factor and on the share of the factor in total household income (see equation (6)). We can see from table 3 that the contribution of earnings was the same in 1975 as in 2004, 0.215. However, in 1975 this was the result of a moderate degree of inequality (0.508) and a high earnings share (0.710) while in 2004 the same contribution was due to substantially higher inequality (0.660) but a lower earnings share (0.632).

In Norway three factors played a role in the increased in inequality observed between 1979 and 2004: a more dispersed distribution of earnings, a greater contribution of capital income inequality and a reduction in the redistributive role of other incomes (their contribution fell from - 0.018 to -0.004). The increase in the contribution of capital income was particularly large: it rose by 0.044 points while the SCV of overall income increased by 0.038, and it was the results of both a more dispersed distribution of capital income (the SCV of capital income rose from 5 to almost 17) and a greater share of this factor in household incomes (under 3% in 1979 and almost 5% by 2004). As it has been documented,[15] the increase in the contribution of capital income inequality was largely due to fiscal reforms that took place in the early 1990s. These reforms increased, on the part of households, the incentives to realize capital gains on financial assets and, on the part of firms, the incentives to pay dividends. Note, however, that the LIS data does not include capital gains; hence our measure of inequality captures only the impact of the tax reforms through increased dividend payments.

If we compare these two economies with the US and the UK we see that, by the end of the period, earnings inequality was of similar magnitude (the SCV of earnings is almost identical in the US and Sweden), while the two Scandinavian countries exhibit a greater dispersion of capital incomes and, in the case of Sweden, much more dispersed self-employment incomes. The major difference is that the share of earnings in household income is much lower and the share of 'other incomes' much higher in the Scandinavian than in the Anglo-Saxon economies. Since a major component of 'other incomes' are welfare transfers, this is capturing the role of redistribution.

14 See Gustavsson (2008) on the evolution of the distribution of earnings in Sweden, and Aaberge and Atkinson (2010) and Roine and Waldenström (2010) on the evolution of top incomes in the two Scandinavian economies.

15 See Aaberge et al. (2000) and Fjærli and Aaberge (2000).

4.2. Relative factor contributions

A convenient way of examining the sources of changes in inequality is to consider the evolution of relative factor contributions. These are captured by the term S_f, as given by equation (5), which measures the share of inequality that is due to inequality in factor *f*.

Figure 3 depicts he relative factor contributions for the US, Canada and the UK, respectively. We can see that in the US earnings are by far the most important source of inequality, and that their relative contribution has increased over time, while that of other factors has diminished. Canada presents a similar pattern to that observed in the US: a high relative contribution of earnings and moderate contributions of capital and self-employment incomes. In the UK, there is greater variability in factor contributions over time. The contribution of earnings increased over the first decade, fell in the 1980s and increased again in the 1990s. The role of capital income also exhibits fluctuations over the period. We can observe the increase in its contribution to overall inequality between 1979 and 1991, consistent with the result obtained by Jenkins (1995) of a rising contribution of investment income over the period 1981-86, but its relative contribution fell subsequently. The contribution of self-employment also presents substantial variation over the sample period, and has been particularly high since 1991. Jenkins (1995) argues that the "increasing incidence of self-employment in the 1980s may also have led to a greater accumulation of assets and hence investment income". Although the data for 1979, 1986 and 1991 seem to support this hypothesis, it is not consistent with those for latter years. The data for 1994, 1999, and 2004 exhibit an even higher relative contribution of self-employment inequality, accompanied by a reduction in the contribution of capital income inequality. An alternative explanation, which would also be consistent with the movements of the capital share reported in table 1, is that the pattern in capital income is due to the high interest rates of the 1980s and early 1990s. Indeed, between 1979 and 1992 the interest rate on 3-month Treasury bills was between 9 and 15 per cent, and declined afterwards, lying between 3.5 and 6.8 percent in the period 1993-2004.

Figure 4 present the factor decomposition for the three continental European countries, Germany, Norway and Sweden. All three figures illustrate the smaller contribution that earnings inequality has compared to the Anglo-Saxon economies. For example, in Norway both in 1979 and in 2004, earnings accounted for only around 70 per cent of overall inequality. Both Norway and Sweden experienced a reduction in the contribution of self-employment income, but differ in that the former experience a large increase in the contribution of capital income inequality that we do not observe in Sweden.

Figure 5 depicts the relative factor contributions for all countries, and illustrates the differences across them. The upper panel is for the mid-1980s (the earliest period for which we have data for all countries), while the bottom panel reports relative factor contributions in the most recent year available, 2004/05. In the top panel, we observe large differences across countries.

Earnings inequality is most important in the UK and Sweden (86% in both countries) and lowest in Germany and Norway (72 and 73%, respectively). The contribution of self-employment income ranges from 5% to 22% (Sweden and Germany, respectively) and that of capital income from 4% to 12% (Sweden and Germany, respectively). A striking feature of the data is that there do not seem to be patterns common to the countries within each of the two groups – Anglo-Saxon, versus "European"–. The contribution of earnings is high in the Anglo-Saxon economies, but also in Sweden. The two Scandinavian countries exhibit very different decompositions, with capital and self-employment income playing a much more important role in Norway than in Sweden. When we do the decomposition for 2004/05 (lower panel of figure 5) we observe the same features just described, with the US, Sweden and the UK having the largest earnings contribution, and Norway the lowest. The first two countries also exhibit a particularly low contribution of selfemployment income (3 and 7%), while for the other countries it ranges between 13 and 19%. The most noticeable change is the large increase in the contribution of capital income in the two Scandinavian countries, but particularly in Norway.

5. Decomposition by age group

5.1. The Anglo-Saxon Economies

5.1.1. Trends in inequality by age

As we have argued, there are two main reasons why a decomposition by age can help us understand the forces that drive inequality changes. First, we have seen that capital income inequality has played an important role, and in some cases, such as for Norway, a crucial one in changes in inequality. If differences in wealth –and hence in capital income- are mainly due to life-cycle considerations, then the data should show that capital income inequality is largely due to differences across age groups and not within age groups. Second, the increase in earnings dispersion has also played a central role in inequality changes. A number of authors have shown that, at least in the US and the UK, greater wage dispersion has been, partly the result of increased returns to experience. This would imply that we should observe an increase in earnings inequality across age groups. A further question concerns self-employment. There is evidence that self-employment is more frequent amongst mature workers, and this too should be reflected in pattern across age groups.[16]

In order to examine these questions, we decompose the population in each country–year in subgroups by age of the household head. We consider 7 subgroups: <25, 25-34, 35-44, 45-54, 55- 64, 65-74, >74. Figures 6 and 7 depict the evolution of total gross income inequality, measured by the SCV, for each age subgroup in each of the six countries (to make the figures easier to read, we do not depict the two end groups, <25 and >74).

In general, although not always, inequality is lower for young (25-34) and prime-age households (35-54) and higher for older households (55-74). This pattern is clearly present for the US and Canada, as can be seen in figure 6. In both countries, the decline in inequality in the 1970s was largely driven by lower inequality for older households, while all age groups experienced an increase in inequality in the last two decades of the century.[17] As a result, differences in withingroup inequality were smaller in 2000 than at the start of our sample period. For example, in the US in 1969 inequality in the 65-74 group was 4.3 times than in the 25-34 group, while this ratio had fallen to 1.4 by 2000 (see table 4). Note also that in Canada inequality fell substantially for older households (those between 65 and 74 years) in the late 1990s, so that all groups except the 55-64 old, had roughly the same degree of inequality by the end of the period. Our last observation, that for 2004, indicates a reduction in overall inequality in the US (see table 1). We can see that all groups except for the oldest cohorts experienced such a reduction, and it

16 See, for example, Evans and Leighton (1989).
17 See Cowell and Jenkins (1995) for decompositions by race and age in the US.

was particularly sharp for those in the 55-64 group. The reason for this seems to be a large reduction in inequality in selfemployment income, which in the 1990s was over 0.050 and in 2004 dropped to 0.026, a change that could well be related to the burst of the dot-com bubble. In Canada, the overall inequality did not change much in the first years of the century, but different groups had different experiences, with inequality falling for the young and the old and increasing for prime–age workers (35-54). The UK also exhibits higher inequality for older households. With the exception of the oldest cohort, all age groups experience an increase in inequality from 1979 onwards. Inequality for the oldest age-group fluctuates substantially, and the data indicates large changes in the role played by the various factors. For example, the contribution of capital income inequality doubled between 1979 and 1991 and fell again to its initial value by 2004 (not reported), consistent with the hypothesis that interest rates affect the income of this group substantially.

5.1.2. Factor contributions

We further decompose inequality for each age group by income source. Tables 4 and 5 report the absolute contributions of the four factors examined in section 4 for the US and the UK in the years 1979 and 2004. Looking at the first column, we observe the increase in income inequality for all age groups (except the under 25) reported in figure 6, with inequality increasing by between 8% (for the over 75) and 61% (for those 25 to 34). The same pattern is observed for almost all age groups: the increase in overall inequality was the result of a large increase in earnings inequality and a moderate increases in inequality in capital income. For both the youngest and oldest cohort there was a significant increase in the contribution of other incomes, probably due to a less progressive welfare system.

In the UK there is much greater variation across age groups. Inequality was between 1.6 times and almost 2.2 times higher in 2004 than in 1979 for households that were less than 64, and fell for those above 65. The contribution of earnings inequality rose for all groups except those above 65. Both the contributions of capital income and self-employment inequality increased for all groups (with the exception for capital income for the 65-74 cohort). The increase in the contribution of self-employment is particularly large, and is important for all age groups. For example, for the 35-44 age group, the relative contribution of this source of income rose from 11% in 1979 to 16% in 2004, for the 45-54 from 6% to 20% and for the 55-64 from 3% to 18%. A possible explanation is that the development of IT technologies increased entrepreneurship in the UK.

Table 6 reports absolute factor contributions by age groups for Canada in 1981 and 2004. The increase in inequality for those between 25 and 64 reported in figure 6 is driven by an increase in earnings and, to a lesser extent, by an increase in self-employment income inequality. Meanwhile, the reduction in inequality for older households

(over 65 years) was driven by reductions in inequality in all three markets incomes, with the contribution of capital income being particularly important.

5.2. The Continental Economies

5.2.1. Trends in inequality by age

The evolution of inequality in the continental economies is depicted in figure 7. A common pattern for all three countries is that differences across age groups are smaller than in the Anglo-Saxon economies, especially in the Scandinavian economies. Germany exhibits an age-group pattern with some fluctuations but no clear trends. In both Norway and Sweden, differences across age groups have been falling over time. For example, by the end of the period the SCV by age group in Sweden ranged between 0.157 and 0.231, much smaller than the gap observed in the US (in 2004, the difference between the SVC of the least and the most unequal age-groups was 0.207). In Norway, inequality increased for all groups except those over 65, for whom it first fell and then stabilized. In Sweden we observe a small increase in inequality for all groups starting in the mid-1980s.

5.2.2. Factor contributions

Factor decomposition across age groups does not allow us to discern a particular trend of inequality in Germany (table 7). Some groups (those in the 35-44 and over 74 categories) experienced a reduction in inequality and others an increase. The contribution of earnings inequality increased for all groups except the two oldest ones, but those of the other factors change without any clear pattern.

When we decompose inequality by factor in each group (tables 8 and 9) both Sweden and Norway exhibit the same main feature: the increase in inequality observed for all groups was due to a higher contribution of earnings inequality for all groups except the oldest (those over 65 in Norway, those over 75 in Sweden). With some exceptions, the contribution of self-employment income fell and that of capital income rose in both countries, though more sharply in Norway than in Sweden. As we saw earlier, the increase in the contribution of capital income inequality was large in Norway, and our decomposition by groups indicates that this occurred for all age groups, including the young. The contribution of capital income increased sevenfold for those between 35 and 64 and between three and fourfold for other households. The increase in the contribution of capital income for young and prime-age households, for whom this source of income was a minor contribution in 1979, can be due to either an increased ability of younger households to accumulate assets or to transfers across generations that result in a perpetuation of wealth inequality. For older households the increase in the importance of this source of income is

striking. The relative factor contribution rose from 4% to around 20% for prime-age households, from 7% to 35% for the 65-74 group and from 18% to 50% for the oldest cohort.

5.3. Within-group and Between-group Inequality

In order to understand the importance of differences across age groups we compute measures of within and between age groups inequality. Recall that we can express the inequality index as the sum of the within and between components, either for the aggregate index, i.e. $I = wg + bg$, or for each of the factor components, $I_f = wg_f + bg_f$. Alternatively, we can compute the contribution of within-group and between-group inequality, according to the expression $I = \sum_f S_f = \sum_f \left(\alpha_f wg_f + \alpha_f bg_f\right)$. The term wg_f the represents within-group inequality in factor f, while $\alpha_f wg_f$ captures the contribution of within-group inequality in factor f to overall inequality. Similarly bg_f represents between-group inequality in factor f, and $\alpha_f bg_f$ is the contribution of between-group inequality in factor f to overall inequality.

Tables 10 to 13 present a decomposition of within-group and between-group inequality for the US, the UK, Norway and Sweden, with the top two panels in each table reporting within and between-group inequalities, wg_f and bg_f, and the two bottom panels reporting their contributions to overall inequality, that is $\alpha_f wg_f$ and $\alpha_f bg_f$.[18]

Table 10 show that in the US within-group inequality accounts for between 87 and 93 per cent of overall inequality, while inequality between age groups explains at most 13 percent. Throughout the entire period, the fraction of inequality due to between-group differences has declined steadily from 13 percent in 1969 and 1979 to 8 per cent in 2004. Moreover, the absolute contribution of betweengroup inequality fell slightly (from 0.039 to 0.032) implying that all the increase in inequality has been due to greater within-group inequality. There are, however, important differences depending on the source of income. Between-group inequality accounts for a larger fraction of inequality in earnings (between 15 and 22 percent) than it does for self-employment and capital income (about 1% for self-employment income and between 2 and 4% for capital income). This indicates, on the one hand, that the returns to experience are important in understanding household inequality. Moreover, the contribution of between-group earnings inequality has risen over our sample period, and this is likely to be the consequence of the increase in the returns to experience observed in the US labour market. On the other hand, the small magnitude of between-group inequality in capital income and the fact that its contribution to overall inequality is virtually

18 The results for Canada and Germany are available on request.

zero (see bottom panel) implies that lifecycle patterns of saving play a minor role in explaining the contribution of wealth inequality to household inequality.

Table 11 presents the decomposition for Norway, which we compare to that for the US since we have observations for both 1979 and 2000 for the two counties, allowing us to compare them over the same period. In Norway, the SCV rose from 0.233 to 0.274, a much smaller increase than that observed in the US (from 0.292 to 0.462). A salient difference between the two countries is that although the levels of between-group inequality are of similar magnitude, within-group inequality is much larger in the US. For example, in 2000, within-group inequality was slightly higher in Norway (0.52 versus 0.33) while between-group inequality was almost twice as large in the US (0.429 versus 0.222). As a result, between-group inequality accounts for a much larger fraction of overall inequality in Norway than in the US, amounting to between 19 and 22%. Similarly, when we consider earnings inequality, the between-group component is about one third in Norway and as low as 15% in the US. Table 11 also shows that, as is the case for the US, the cause of the increase in inequality in Norway was higher within-group inequality, with inequality between age groups experiencing no change. This was in turn driven by increases in within group inequality for all markets incomes. When we consider inequality in capital income, both countries exhibit much greater within-group than between-group inequality in capital incomes. The latter accounts for at most 2 per cent of the SCV in capital incomes, indicating that life-cycle savings are not the main cause of the dispersion in this source of income. Moreover, there seem to be no marked differences between the two countries in the role of between-group age inequality in capital income despite the fact that Norway has a generous public pension system while the US does not.

The decomposition for the UK, reported in table 12. Between-group inequality was more important than in the US at the beginning of the period, accounting for 25 percent of overall inequality in 1979, but, as in the US, it did not change much over the period. In contrast, withingroup inequality almost doubled between 1979 and 2004. As a result, roughly all the increase in inequality observed in the UK is attributable to within-group inequality. The within-group component of earnings inequality rose during the period, in line with what we observe in the US, and the within-group component experienced a moderate increase, rising from 0.098 in 1969 to 0.174 by 2004.

Lastly, table 13 reports the decomposition for Sweden. As is the case for Norway, the between-group component of inequality accounts for a larger fraction of overall and of earnings inequality than in the Anglo-Saxon economies. In the case of overall inequality, it ranged from 29% in 1981 to 18% in 2000, while for earnings inequality it was up to 34%. As in Norway, the increase in inequality over the period was due to an increase in within-group inequality, which in turn was due to higher inequality in earnings and self-employment income.

6. Conclusions

This paper has examined the contribution of various factors and population sub-groups to changes in inequality in 6 industrial countries in the late 20th century. A central question in our analysis has been to examine to what extent a more dispersed distribution of earnings has been responsible for the increase in household income inequality. As has been well documented by a large literature, during the 1980s and 1990s inequality in hourly wages rose in a number of countries, and it is natural to ask how increased dispersion of wages affected the distribution of earnings and income. We find that earnings inequality rose in all countries in our sample. Nevertheless, the impact of this increase in earnings dispersion on household income inequality varied. In the Anglo-Saxon economies it was associated with an increase in the contribution of earnings inequality to overall inequality, while in the European countries this contribution was roughly unchanged. The reason for

this was that the latter experienced a reduction in the share of earnings in total income that offset the impact of increased earnings dispersion. For example, between the mid-1980s and 2004 the SCV of earnings increased by the same amount in the US and Germany, but the stability of the earnings share in the former and a decline of 7 percentage points in the latter implied that the contribution of earnings to inequality increased sharply in the US but remained stable in Germany.

The increase in earnings inequality was by far the most important contribution to greater income inequality in the US, but this was not the case in all countries. Canada and, especially, the UK experienced increases in earnings dispersion but also declines in the share of earnings that dampened the contribution of this factor to the increase in inequality. In both countries a higher share of self-employment income seems to have been an important force, while the contribution of capital income is also important in the UK, particularly up to the mid-1990s. The experience of the UK indicates that the forces driving inequality may vary over time, even in the medium term. Jenkins (1995) showed that, in the early 1980s, the increase in income dispersion was partly driven by an increase in inequality in self-employment income and in income from property, a result that we also obtain over the period 1979-1991. However, over the subsequent 13 years the contribution of inequality in property incomes fell (probably due to lower interest rates), and was in 2004 roughly the same as in 1979. Meanwhile that of inequality in self-employment income kept growing, so that the contribution of this income source to overall inequality rose from 7% to over 15% during the period.

Germany exhibits little change in overall inequality, yet this stability hides substantial changes. Earnings dispersion increased while capital income inequality fell sharply, but since the share of the former fell and that of the latter rose, their contributions barely changed. Earnings exhibit a similar pattern in Norway and Sweden, with dispersion increasing but their share falling, so that they had a moderate impact on overall inequality. In contrast, increased capital income inequality was a major force during the 1990s. This pattern contrasts with our findings for the UK, where capital income inequality seems to have increased and then decreased roughly in line with changes in interest rates. We do not observe such behaviour in the Scandinavian economies, where the increase in capital income inequality is likely to be related to tax changes concerning this source of income.

Our decompositions by age groups yield two main results. First, as found in previous work, within-group inequality is substantially greater than inequality between age groups, with the latter accounting for between 7 and 28 per cent of overall inequality (this figures are for the US in 2000 and Sweden in 1975, respectively). When we compare the UK and the US with Norway and Sweden we find that the main difference is in the degree of within group inequality, which is much higher in the former, while differences in between-group inequality are small. Nevertheless, all countries have in common that the increase in inequality was driven almost exclusively by an increase in within-group.

Second, we observe different patterns depending on the income source. There is evidence of an increase in between-group inequality in earnings, probably reflecting the increase in the returns to experience. In contrast, age differences play virtually no role in explaining capital income inequality, indicating that life-cycle savings are not the main cause for differences in this source of income. Self-employment, is in general, the most dispersed factor and between-group inequality represents a very small fraction of inequality in this type of income. We can, nevertheless, observe some changes over the period. In the earlier observations in our sample, self-employment income is particularly important amongst middle-aged households. By the end of the period, it made a contribution to inequality amongst young households too. This could be capturing the fact that the so-called 'IT revolution' has been largely driven by small firms setup by young individuals, many of which have been phenomenally profitable.

Our results raise a number of questions for future work. One is to try to understand why in several countries the increase in earnings dispersion was associated with a reduction in the share of this factor in total household income. The second is a better understanding of the role of selfemployment, which seems to have been a factor of growing importance in the last two decades of the century. In particular, we would like to understand whether to what extent high inequality in this factor is due to dispersion across individuals or to fluctuations over time for a given individual, an analysis that requires the use of panel data. From a theoretical point of view, our understand-

ing of the determinants of self-employment is limited. Obviously, the decision to be self-employed or work as an employee is endogenous and depends both on the return and the variance of income from self-employment as compared to the wage rate and its variability. If increased dispersion in earnings is the result of greater wage uncertainty, it is possible that the increase in dispersion induced a flow of labour from employment into self-employment leading to the changes in the shares of these two factors that we have observed in a number of countries.

Appendix I: Data source and descriptive statistics

Factor incomes

Data on incomes are obtained from the Luxemburg Income Study (www.lisproject.org, results were obtained between July and September 2010). In LIS there are two files per country/year, a household file and a personal file. Only the former contains information on capital income, hence we have focused on household income. The data come from different surveys (see below), which have been harmonized by LIS. Table A.1. gives the list of countries and years on which we focus.

Earnings: In the LIS household file there is an aggregate variable for wage income (V1 = gross wages and salaries). Note that this variable includes the earnings of all households members.

Self employment income: We add farm self-employment income (V4) and non-farm selfemployment income (V5 = Profit/loss from unincorporated enterprises; the income is recorded gross of social insurance contributions, but net of expenses).

Capital income : There is an aggregate variable for capital income (V8= cash property income). It includes cash interest, rent, dividends, annuities, private individual pensions, royalties, etc. It excludes capital gains, lottery winnings, inheritances, insurance settlements, and all other forms of one-off lump sum payments.

Total gross income: This variable (GI) includes wages and salaries, cash property income, self employment income but also pensions and transfers, both social and private. Total income is gross of tax income.

Other income: We construct this variable as GI-(V1+V4+V5+V8). It consists of pensions, social and private transfers, and non-cash property income. Ideally we would have liked to have pensions as a separate category. Unfortunately, they were not available as a separate item for a number of countries-years, and hence we have grouped them (when available) with other incomes.

LIS does not apply bottom- or top-coding to the microdatasets themselves. Following LIS practice in calculating inequality indices, we have top-coded the date on grpss income at 10 times the median of non-equivalised income. We have chosen not to bottom-code income (the LIS practice is to bottom-coded at 1% of equivalised mean income). The reason for this is that such practice would remove negative income and we find that a signifficant humber of household whose main source of income if self-employment income report negative incomes. The effect of top-coding is substantial as can be seen by comparing the results in this paper with those in a previous version; see Orgiazzi (2009, chapter 1).

Standard errors: In order to examine the precision of our estimates, we have obtained the bootstrapped 95% confidence interval for the UK. Our results are available in Orgiazzi (2009, chapter 1) and indicate a high precision.

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Appendix – tables

Table 1 — Factor decomposition of income inequality: US and UK

		Year	Overall	Earnings	Self-emp Income	Capital Income	Other Incomes
US	Inequality	1969	0.306	0.423	10.968	8.612	1.829
		1979	0.292	0.466	10.790	6.537	1.608
		1991	0.321	0.535	11.406	6.534	1.340
		2000	0.462	0.711	16.929	6.552	1.449
		2004	0.408	0.668	14.846	8.044	1.214
	Absolute contribution	1969		*0.247*	*0.056*	*0.027*	*-0.0057*
		1979		*0.234*	*0.034*	*0.025*	*-0.0016*
		1991		*0.250*	*0.031*	*0.040*	*0.0002*
		2000		*0.385*	*0.046*	*0.033*	*-0.0014*
		2004		*0.350*	*0.029*	*0.029*	*0.0002*
	Factor Shares	1969		0.792	0.085	0.0430	0.0805
		1979		0.762	0.066	0.054	0.118
		1991		0.730	0.060	0.0671	0.143
		2000		0.761	0.055	0.057	0.127
		2004		0.752	0.048	0.048	0.158
UK	Inequality	1969	0.215	0.370	9.078	13.287	1.047
		1979	0.232	0.488	11.514	8.891	0.577
		1991	0.336	0.752	11.120	6.169	0.699
		1999	0.349	0.805	11.493	9.151	0.695
		2004	0.347	0.816	10.646	9.769	0.709
	Absolute contribution	1969		*0.174*	*0.032*	*0.018*	*-0.0097*
		1979		*0.218*	*0.016*	*0.009*	*-0.0098*
		1991		*0.269*	*0.047*	*0.033*	*-0.013*
		1999		*0.282*	*0.061*	*0.019*	*-0.014*
		2004		*0.294*	*0.054*	*0.016*	*-0.015*
	Factor Shares	1969		0.765	0.074	0.034	0.126
		1979		0.728	0.048	0.028	0.196
		1991		0.657	0.075	0.066	0.202
		1999		0.649	0.080	0.041	0.231
		2004		0.656	0.079	0.035	0.230

Table 2 – Factor decomposition of income inequality: Canada and Germany

		Year	Overall	Earnings	Self-emp Income	Capital Income	Other Incomes
Canada	**Inequality**	**1971**	0.318	0.470	15.716	8.661	1.541
		1981	0.243	0.399	13.862	4.137	0.978
		1991	0.279	0.511	13.487	5.821	0.827
		2000	0.320	0.623	12.873	9.301	0.973
		2004	0.334	0.651	13.218	13.191	0.972
	Absolute contribution	**1971**		*0.280*	*0.024*	*0.019*	*-0.0054*
		1981		*0.196*	*0.026*	*0.026*	*-0.0056*
		1991		*0.227*	*0.034*	*0.020*	*-0.0014*
		2000		*0.262*	*0.042*	*0.015*	*0.0020*
		2004		*0.262*	*0.047*	*0.019*	*0.0052*
	Factor Shares	**1971**		0.815	0.048	0.043	0.094
		1981		0.791	0.052	0.042	0.114
		1991		0.714	0.054	0.051	0.180
		2000		0.701	0.062	0.035	0.201
		2004		0.689	0.065	0.034	0.213
Germany	**Inequality**	**1984**	0.299	0.570	10.022	87.310	0.941
		1994	0.276	0.589	13.033	18.401	0.769
		2000	0.289	0.698	9.521	6.478	0.656
		2004	0.290	0.706	10.804	6.537	0.652
	Absolute contribution	**1984**		*0.215*	*0.067*	*0.037*	*-0.0190*
		1994		*0.218*	*0.047*	*0.030*	*-0.0192*
		2000		*0.214*	*0.056*	*0.032*	*-0.0129*
		2004		*0.222*	*0.054*	*0.024*	*-0.0101*
	Factor Shares	**1984**		0.694	0.091	0.020	0.196
		1994		0.686	0.065	0.036	0.212
		2000		0.622	0.085	0.058	0.235
		2004		0.627	0.077	0.044	0.251

Table 3 – Factor decomposition of income inequality: Norway and Sweden

		Year	Overall	Earnings	Self-emp Income	Capital Income	Other Incomes
Norway	**Inequality**	**1979**	0.233	0.478	9.662	5.140	0.872
		1991	0.248	0.522	7.627	4.592	0.671
		2000	0.274	0.537	10.597	13.014	0.624
		2004	0.271	0.564	12.171	16.858	0.529
	Absolute contribution	**1979**		*0.168*	*0.079*	*0.004*	*-0.0179*
		1991		*0.192*	*0.043*	*0.022*	*-0.0095*
		2000		*0.206*	*0.040*	*0.038*	*-0.0101*
		2004		*0.191*	*0.036*	*0.048*	*-0.0038*
	Factor Shares	**1979**		0.670	0.110	0.027	0.163
		1991		0.666	0.080	0.054	0.199
		2000		0.670	0.065	0.046	0.219
		2004		0.633	0.058	0.047	0.261
Sweden	**Inequality**	**1975**	0.234	0.508	13.400	3.739	0.650
		1981	0.216	0.555	12.054	52.249	0.545
		1992	0.228	0.628	110.189	3.099	0.545
		2000	0.265	0.665	24.873	10.383	0.541
		2005	0.242	0.660	20.366	10.069	0.488
	Absolute contribution	**1975**		*0.215*	*0.016*	*0.006*	*-0.0025*
		1981		*0.173*	*0.008*	*0.032*	*0.0034*
		1992		*0.187*	*0.014*	*0.014*	*0.0133*
		2000		*0.232*	*0.009*	*0.021*	*0.0030*
		2005		*0.215*	*0.006*	*0.016*	*0.0038*
	Factor Shares	**1975**		0.710	0.047	0.028	0.215
		1981		0.644	0.036	0.027	0.292
		1992		0.610	0.013	0.045	0.331
		2000		0.645	0.022	0.036	0.296
		2005		0.632	0.022	0.032	0.314

Table 4 — Inequality by age: US

Overall inequality and absolute factor contributions

	Year	All	Earnings	Self-employment Income	Capital Income	Other Income
<25	1979	0.265	0.228	0.023	0.011	0.003
	2004	0.372	0.329	0.016	0.009	0.018
25-34	1979	0.185	0.162	0.021	0.006	-0.004
	2004	0.298	0.278	0.015	0.009	-0.003
35-44	1979	0.188	0.153	0.024	0.011	0.000
	2004	0.340	0.300	0.026	0.016	-0.003
45-54	1979	0.216	0.169	0.024	0.019	0.004
	2004	0.337	0.293	0.024	0.021	0.000
55-64	1979	0.322	0.224	0.043	0.049	0.006
	2004	0.383	0.312	0.026	0.037	0.009
65-74	1979	0.415	0.190	0.051	0.103	0.070
	2004	0.506	0.264	0.050	0.103	0.089
>74	1979	0.442	0.146	0.038	0.142	0.116
	2004	0.480	0.145	0.032	0.148	0.155

Table 5 — Inequality by age: UK

Overall inequality and absolute factor contributions

	Year	All	Earnings	Self-employment Income	Capital Income	Other Income
<25	1979	0.141	0.139	0.004	0.000	-0.002
	2004	0.235	0.225	0.020	0.001	-0.012
25-34	1979	0.110	0.104	0.007	0.001	-0.002
	2004	0.244	0.233	0.024	0.004	-0.017
35-44	1979	0.140	0.123	0.016	0.004	-0.002
	2004	0.263	0.232	0.038	0.006	-0.013
45-54	1979	0.141	0.128	0.008	0.005	0.000
	2004	0.268	0.215	0.054	0.008	-0.009
55-64	1979	0.228	0.204	0.007	0.018	-0.001
	2004	0.370	0.259	0.069	0.038	0.004
65-74	1979	0.365	0.200	0.019	0.072	0.073
	2004	0.357	0.127	0.043	0.063	0.124
>74	1979	0.356	0.204	0.001	0.065	0.085
	2004	0.289	0.045	0.014	0.079	0.151

Table 6 — Inequality by age: Canada

Overall inequality and absolute factor contributions

	Year	All	Earnings	Self-employment Income	Capital Income	Other Income
<25	1981	0.234	0.223	0.011	0.005	-0.004
	2004	0.383	0.314	0.051	0.005	0.013
25-34	1981	0.155	0.131	0.017	0.010	-0.003
	2004	0.203	0.181	0.017	0.003	0.003
35-44	1981	0.158	0.122	0.023	0.016	-0.004
	2004	0.273	0.215	0.048	0.010	0.000
45-54	1981	0.192	0.152	0.025	0.018	-0.003
	2004	0.315	0.251	0.046	0.016	0.002
55-64	1981	0.244	0.192	0.021	0.032	-0.001
	2004	0.355	0.229	0.057	0.035	0.034
65-74	1981	0.365	0.167	0.024	0.113	0.061
	2004	0.263	0.061	0.022	0.059	0.121
>74	1981	0.457	0.078	0.033	0.305	0.041
	2004	0.282	0.022	0.008	0.078	0.175

Table 7 — Inequality by age: Germany

Overall inequality and absolute factor contributions

	Year	All	Earnings	Self-employment Income	Capital Income	Other Income
<25	1984	0.224	0.238	0.000	0.001	-0.015
	2004	0.287	0.292	0.001	0.003	-0.009
25-34	1984	0.189	0.121	0.060	0.015	-0.007
	2004	0.203	0.177	0.025	0.010	-0.008
35-44	1984	0.188	0.135	0.053	0.006	-0.006
	2004	0.178	0.179	0.048	0.019	-0.004
45-54	1984	0.175	0.125	0.044	0.009	-0.002
	2004	0.241	0.179	0.048	0.019	-0.004
55-64	1984	0.239	0.176	0.063	0.015	-0.016
	2004	0.291	0.206	0.065	0.032	-0.012
65-74	1984	0.281	0.086	0.041	0.066	0.088
	2004	0.290	0.073	0.068	0.048	0.101
>74	1984	1.060	0.071	0.114	-0.754	0.121
	2004	0.220	0.029	0.012	0.057	0.122

Table 8 — Inequality by age: Norway

Overall inequality and absolute factor contributions

	Year	All	Earnings	Self-employment Income	Capital Income	Other Income
<25	1979	0.245	0.140	0.103	-0.001	0.003
	2004	0.410	0.316	0.001	0.069	0.023
25-34	1979	0.176	0.074	0.117	-0.008	-0.006
	2004	0.184	0.152	0.012	0.015	0.006
35-44	1979	0.111	0.076	0.035	0.004	-0.004
	2004	0.173	0.130	0.018	0.029	-0.004
45-54	1979	0.137	0.099	0.040	0.005	-0.007
	2004	0.194	0.130	0.035	0.035	-0.005
55-64	1979	0.183	0.130	0.058	0.007	-0.012
	2004	0.215	0.125	0.044	0.053	-0.006
65-74	1979	0.297	0.170	0.079	0.022	0.026
	2004	0.252	0.095	0.015	0.090	0.053
>74	1979	0.269	0.034	0.045	0.049	0.141
	2004	0.303	0.026	0.016	0.150	0.111

Table 9 — Inequality by age: Sweden

Overall inequality and absolute factor contributions

	Year	All	Earnings	Self-employment Income	Capital Income	Other Income
<25	1981	0.153	0.136	0.000	-0.001	0.017
	2005	0.180	0.175	-0.002	0.000	0.002
25-34	1981	0.238	0.092	0.000	-0.139	0.006
	2005	0.157	0.142	0.006	0.005	0.004
35-44	1981	0.116	0.110	0.003	-0.002	0.001
	2005	0.171	0.165	0.001	0.006	-0.001
45-54	1981	0.133	0.128	0.002	0.003	0.000
	2005	0.193	0.183	0.004	0.010	-0.004
55-64	1981	0.141	0.128	0.011	0.004	-0.002
	2005	0.203	0.173	0.004	0.017	0.008
65-74	1981	0.148	0.038	0.007	0.013	0.090
	2005	0.231	0.083	0.014	0.047	0.086
>74	1981	0.156	0.003	0.004	0.029	0.120
	2005	0.176	0.011	0.004	0.058	0.102

Table 10 — Inequality within and between age groups: US

	Year	Overall	Earnings	Self-emp Income	Capital Income	Other Incomes
Within-group Inequality	**1969**	0.267	0.338	10.856	8.353	1.434
	1979	0.253	0.364	10.663	6.267	1.228
	1991	0.288	0.420	11.269	6.276	0.958
	2000	0.429	0.608	16.832	6.390	1.058
	2004	0.376	0.569	14.753	7.894	0.920
Between-group Inequality	**1969**	0.039	0.085	0.112	0.259	0.395
	1979	0.039	0.101	0.126	0.269	0.379
	1991	0.033	0.115	0.137	0.257	0.382
	2000	0.033	0.103	0.097	0.162	0.392
	2004	0.032	0.099	0.093	0.150	0.294
Contribution of Within-group Inequality to overall Inequality	**1969**		0.183	0.061	0.021	-0.005
	1979		0.183	0.034	0.024	-0.001
	1991		0.196	0.031	0.039	0.000
	2000		0.329	0.045	0.032	-0.001
	2004		0.298	0.029	0.028	0.000
Contribution of Between-group Inequality to overall Inequality	**1969**		0.046	0.001	0.001	-0.001
	1979		0.051	0.000	0.001	0.000
	1991		0.054	0.000	0.002	0.000
	2000		0.056	0.000	0.001	0.000
	2004		0.052	0.000	0.001	0.000

Table 11 — Inequality within and between age groups: Norway

	Year	Overall	Earnings	Self-emp Income	Capital Income	Other Incomes
Within-group Inequality	**1979**	0.181	0.330	9.519	5.046	0.594
	2000	0.222	0.380	10.394	12.914	0.402
Between-group Inequality	**1979**	0.052	0.149	0.142	0.095	0.279
	2000	0.052	0.157	0.203	0.100	0.222
Contribution of Within-group Inequality to overall Inequality	**1979**	0.000	0.116	0.078	0.004	-0.012
	2000	0.000	0.146	0.039	0.037	-0.007
Contribution of Between-group Inequality to overall Inequality	**1979**	0.000	0.052	0.001	0.000	-0.006
	2000	0.000	0.060	0.001	0.000	-0.004

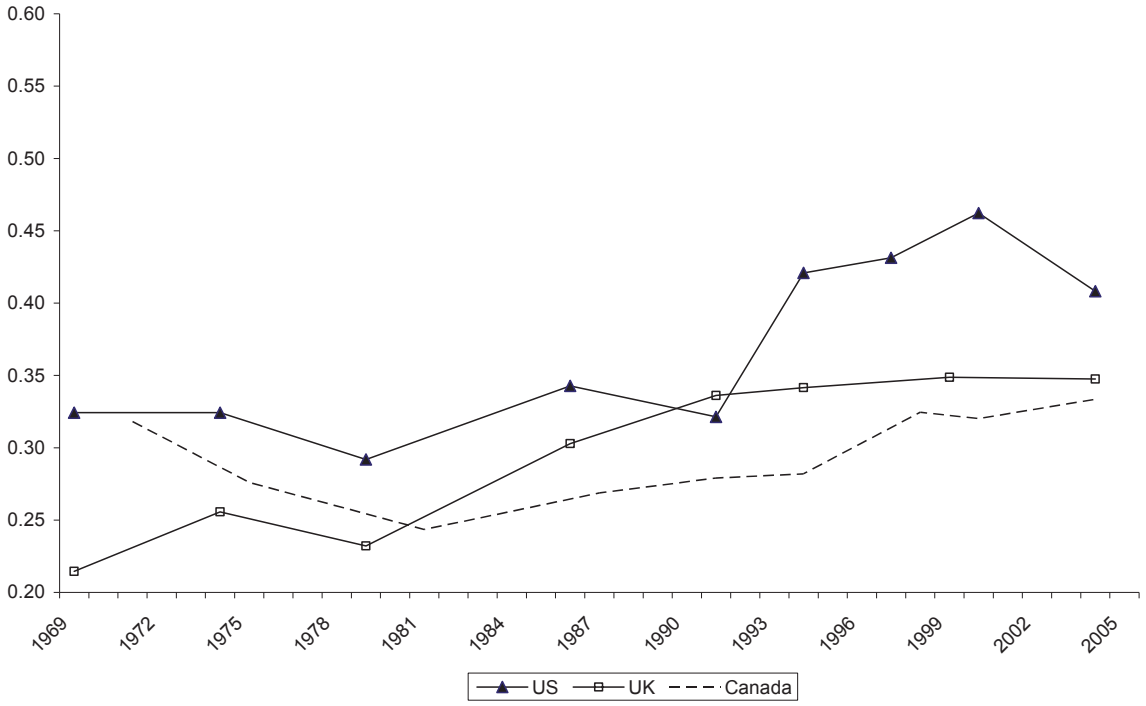
Table 12 – Inequality within and between age groups: UK

	Year	Overall	Earnings	Self-emp Income	Capital Income	Other Incomes
Within-group Inequality	**1969**	0.178	0.272	8.953	13.160	0.771
	1979	0.177	0.340	11.300	8.737	0.480
	1991	0.286	0.571	10.934	5.989	0.547
	1999	0.301	0.626	11.309	8.992	0.549
	2004	0.306	0.642	10.492	9.541	0.539
Between-group Inequality	**1969**	0.036	0.098	0.125	0.127	0.276
	1979	0.055	0.148	0.215	0.154	0.096
	1991	0.050	0.180	0.187	0.180	0.152
	1999	0.047	0.180	0.184	0.159	0.145
	2004	0.042	0.174	0.154	0.228	0.169
Contribution of Within-group Inequality to overall Inequality	**1969**		0.128	0.032	0.018	-0.007
	1979		0.152	0.015	0.008	-0.008
	1991		0.205	0.046	0.032	-0.010
	1999		0.219	0.061	0.019	-0.011
	2004		0.231	0.053	0.015	-0.012
Contribution of Between-group Inequality to overall Inequality	**1969**		0.046	0.000	0.000	-0.003
	1979		0.066	0.000	0.000	-0.002
	1991		0.065	0.001	0.001	-0.003
	1999		0.063	0.001	0.000	-0.003
	2004		0.063	0.001	0.000	-0.004

Table 13 – Inequality within and between age groups: Sweden

	Year	Overall	Earnings	Self-emp Income	Capital Income	Other Incomes
Within-group Inequality	**1981**	0.167	0.356	11.786	51.617	0.381
	2000	0.217	0.482	24.638	10.167	0.391
Between-group Inequality	**1981**	0.049	0.199	0.268	0.632	0.165
	2000	0.049	0.183	0.235	0.216	0.151
Contribution of Within-group Inequality to overall Inequality	**1981**		0.111	0.008	0.031	0.002
	2000		0.168	0.009	0.021	0.002
Contribution of Between-group Inequality to overall Inequality	**1981**		0.062	0.000	0.000	0.001
	2000		0.064	0.000	0.000	0.001

Figure 1 — Income inequality: the Squared Coefficient of Variation



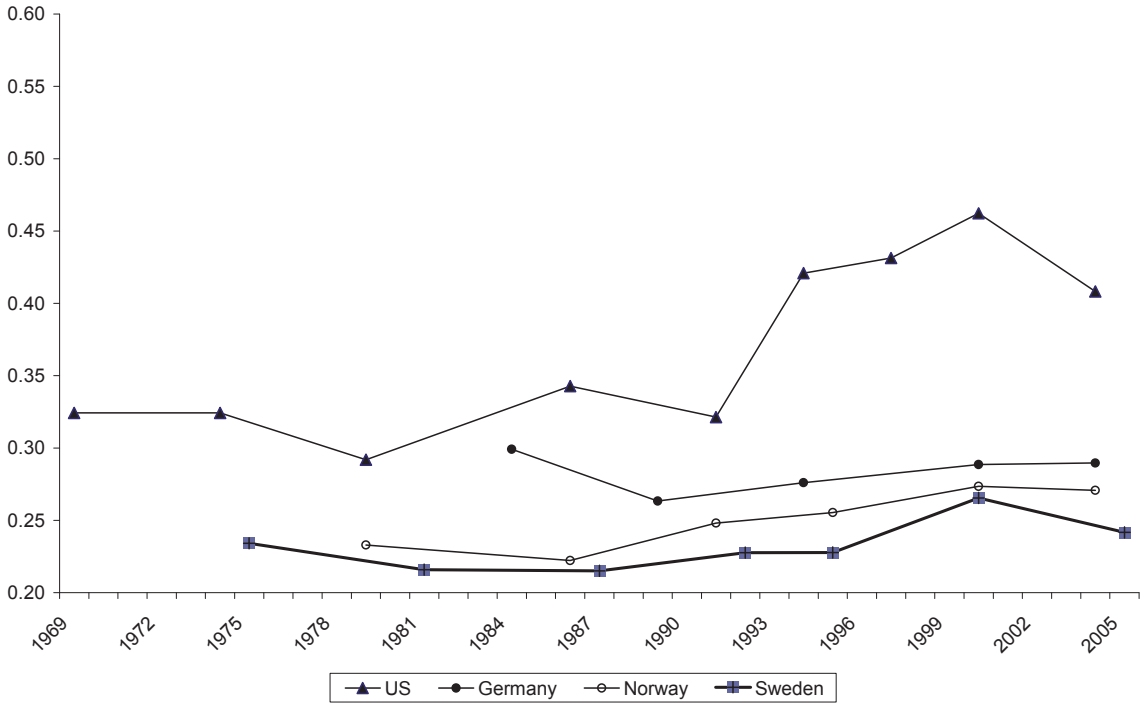
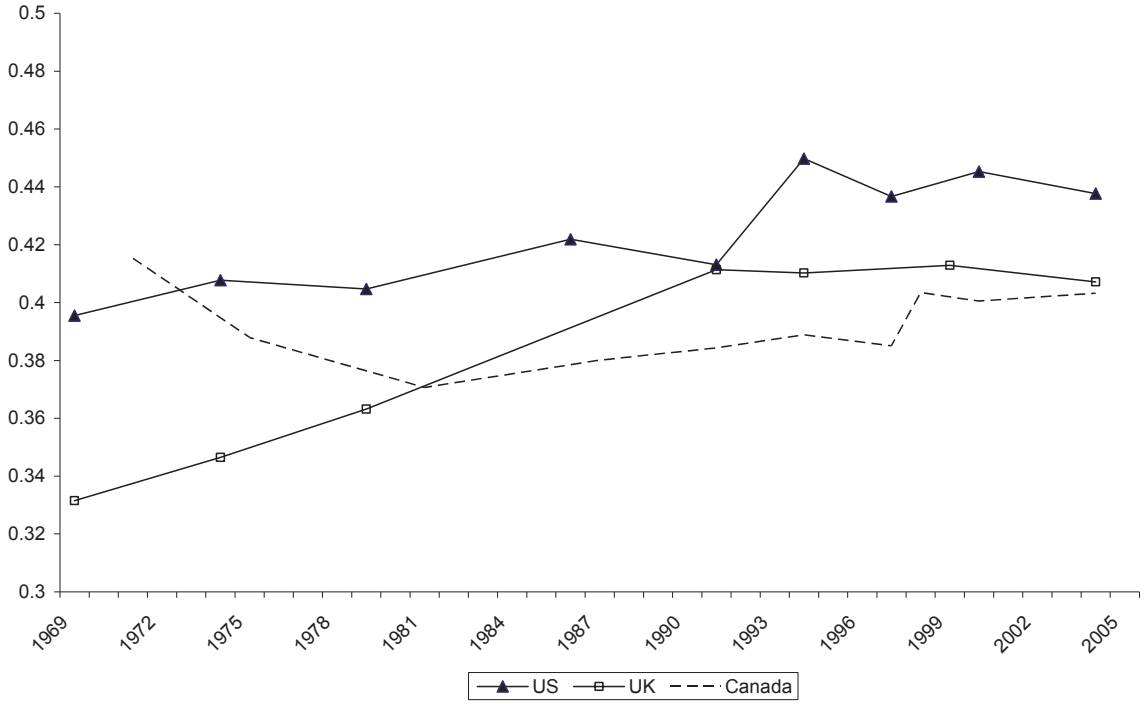


Figure 2 — Income inequality: Gini coefficients



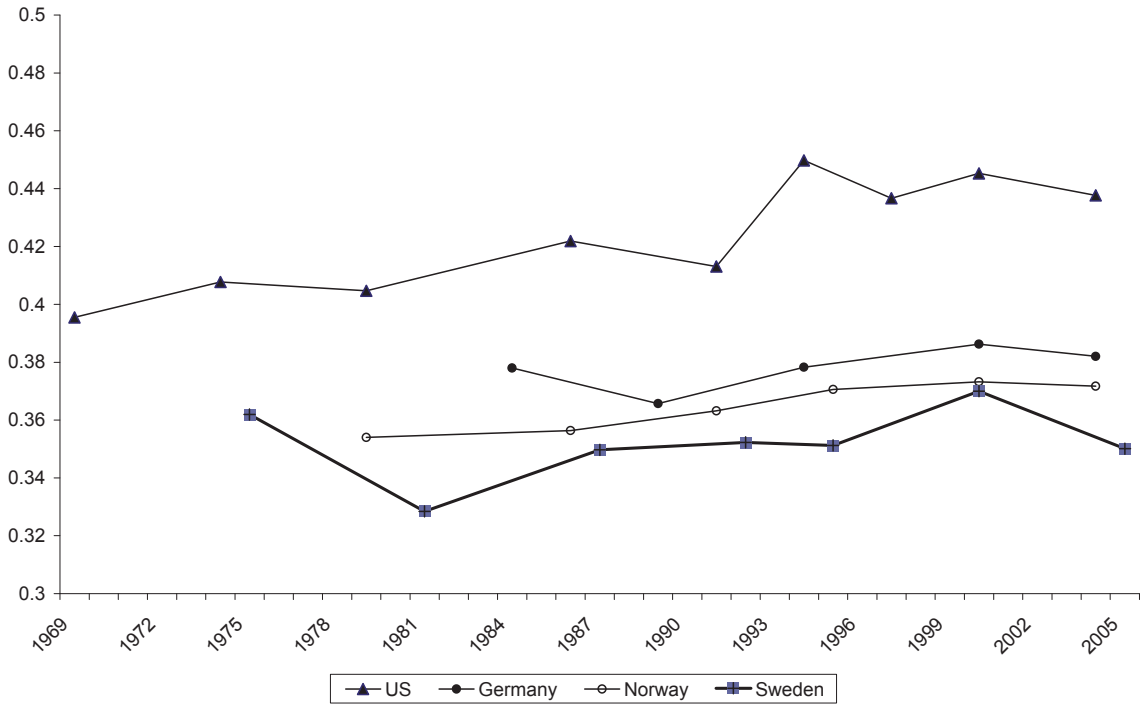


Figure 3 — Relative factor contributions: US, Canada and UK

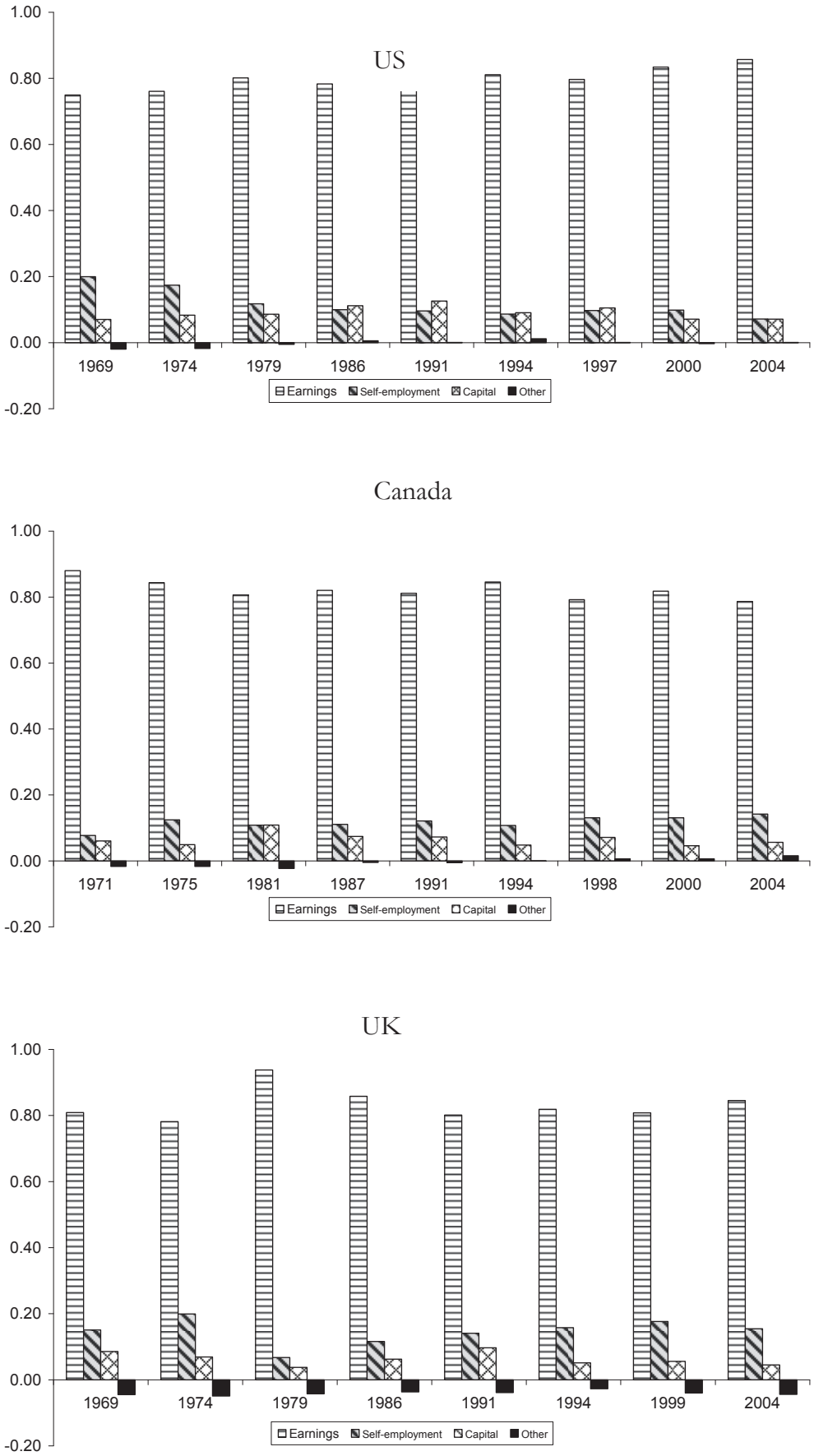


Figure 4 — Relative factor contributions: Germany, Norway and Sweden

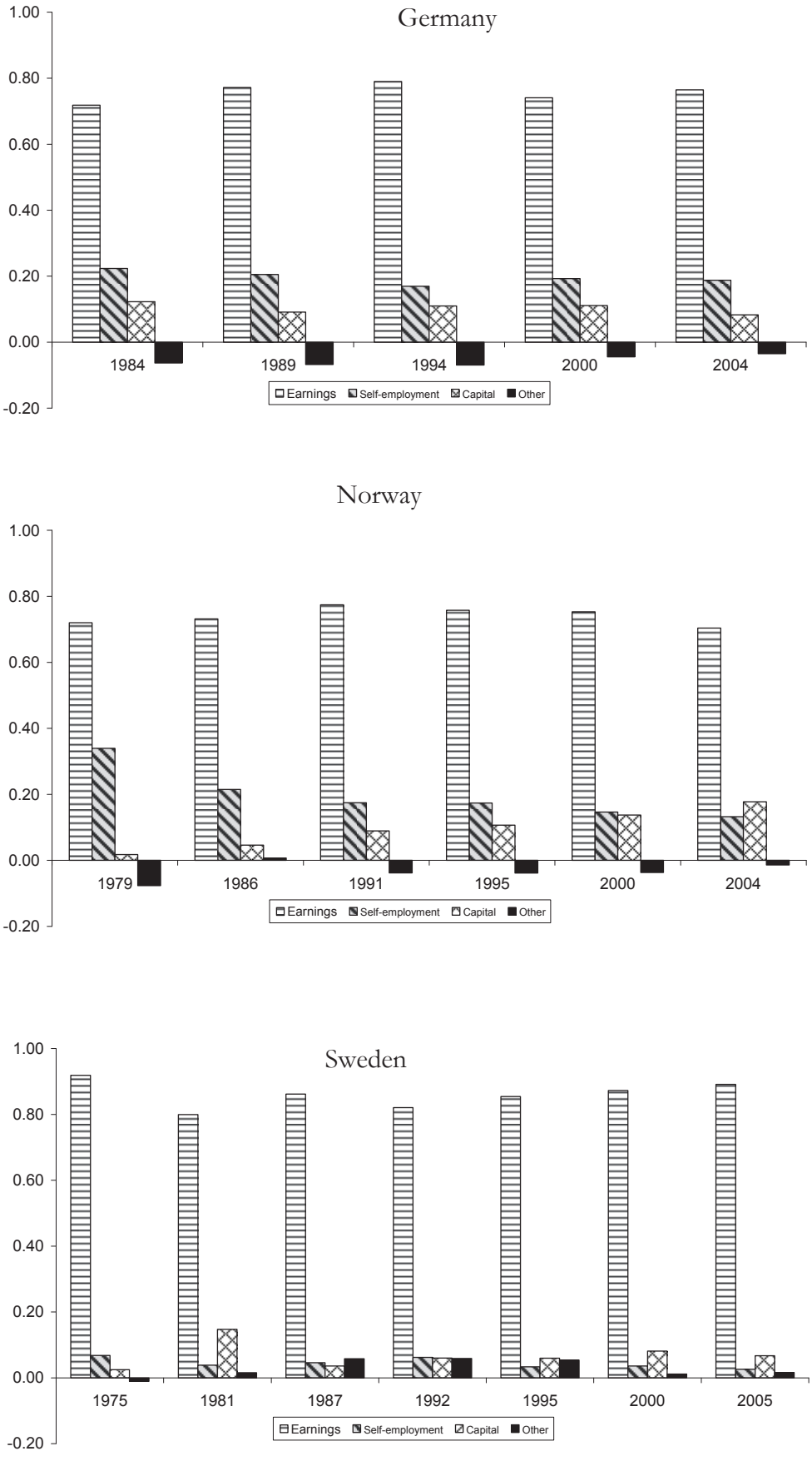
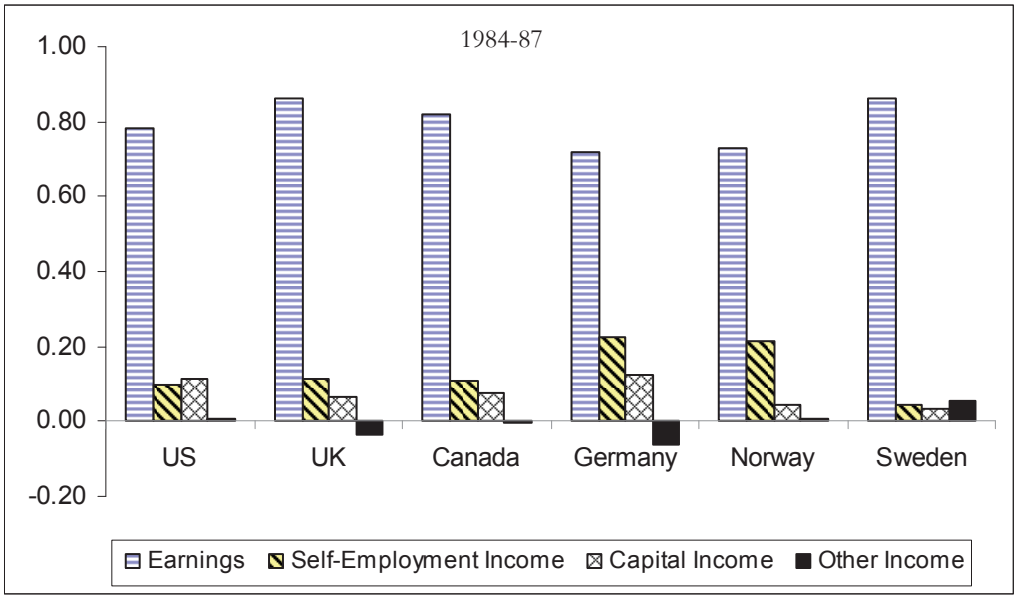


Figure 5— Relative factor contributions: All countries



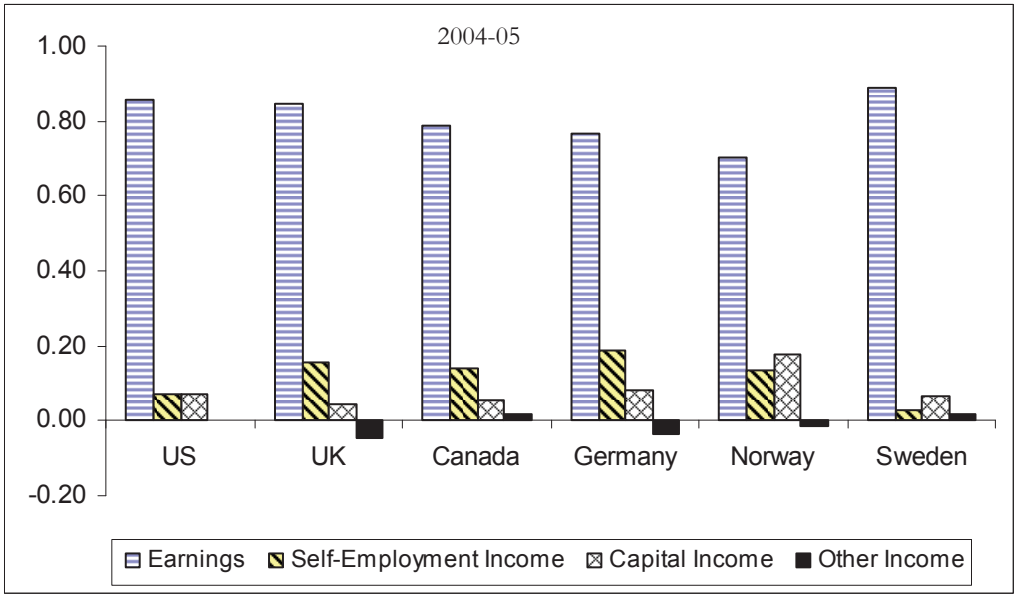


Figure 6 — Income Inequality by Age Group : US, Canada and UK

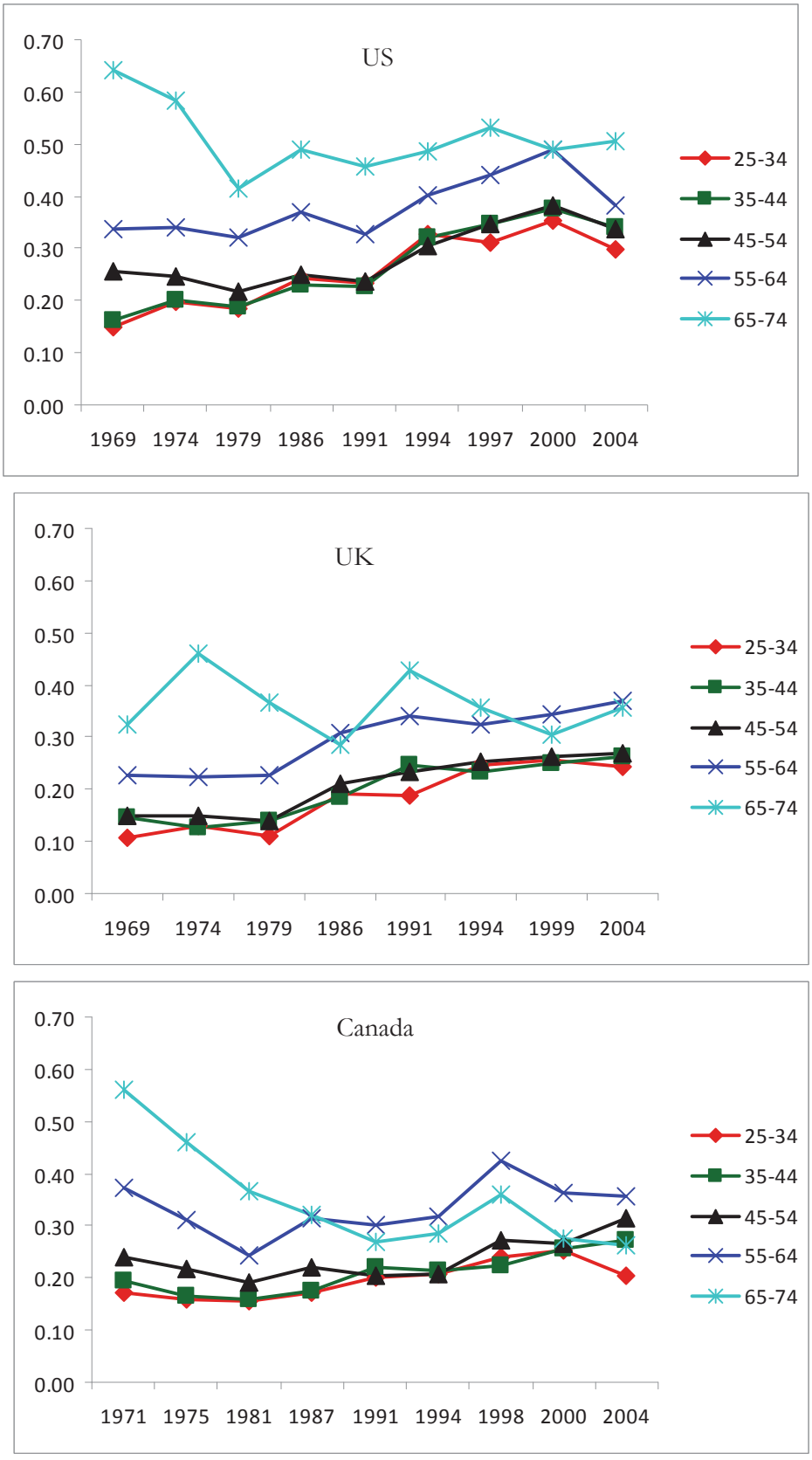


Figure 7 — Income Inequality by Age Group : Germany, Norway and Sweden

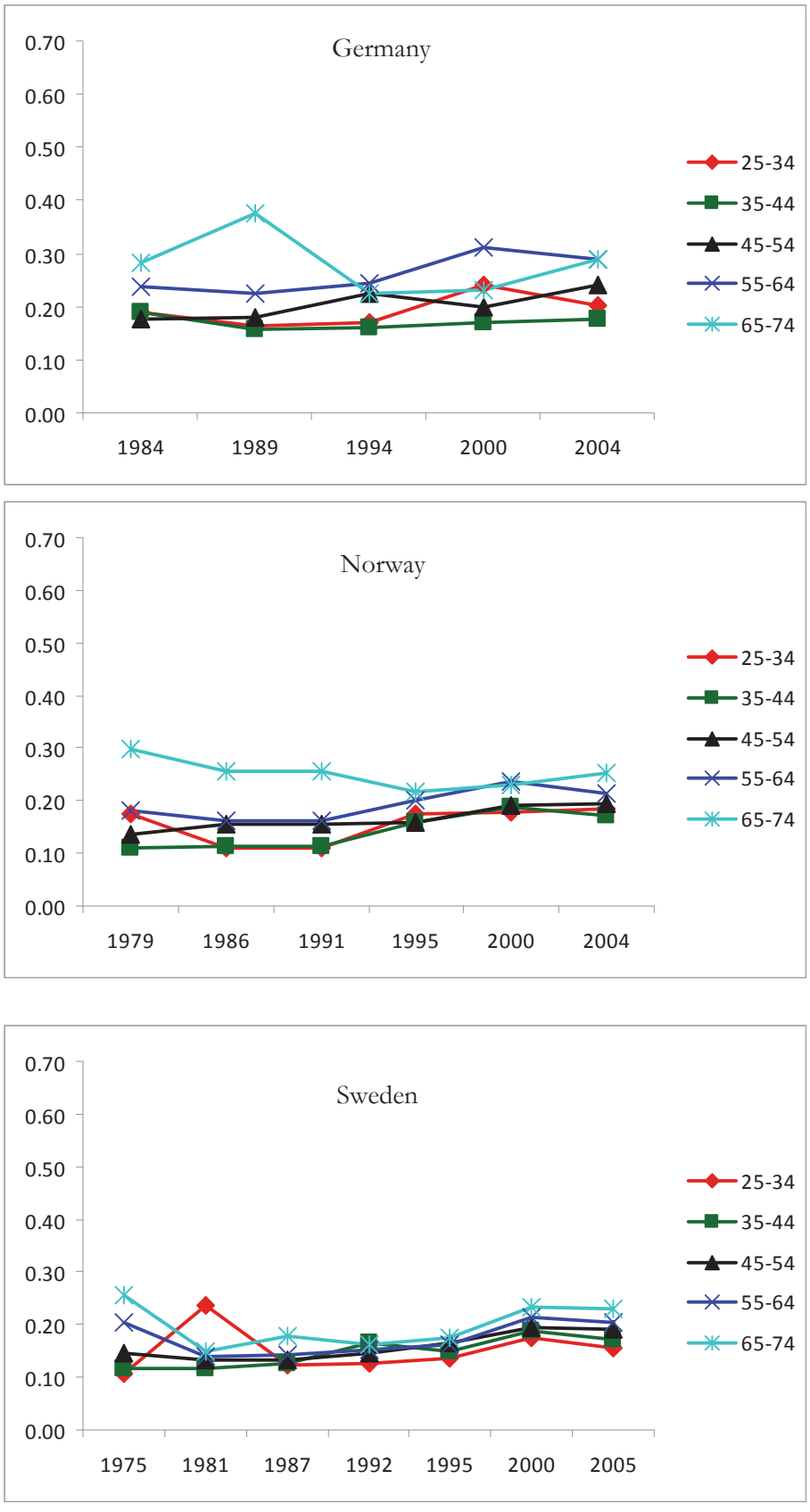


Table A.1 — Luxemburg income study surveys

Country	Year	Survey
Canada	1971, 1975, 1981, 1987, 1991, 1994, 1997, 1998	Survey of consumer finances
	2000, 2004	Survey of Labour and Income Dynamics
Germany[19]	1984, 1989, 1994, 2000, 2004	German Socio-Economic Panel (GSOEP) *(Das Sozio-oekonomischePanel(SOEP)* or *Leben in Deutschland)*
Norway	1979, 1986, 1991, 1995, 2000, 2004	Income Distribution Survey *(Inntekts- og Formuesundersokelsen husholdninger)*
Sweden	1975, 1981, 1987, 1992, 1995, 2000, 2005	Income Distribution Survey *(Inkomstfördelningsundersökningen)*
UK	1969, 1974, 1979, 1986, 1991	Family Expenditure Survey
	1994, 1999, 2004	Family Resources Survey
US	1969, 1974, 1979, 1986, 1991, 1994, 1997, 2000, 2004	Current Population Survey

19 Datasets earlier than 1994 refer to the former West-Germany, whereas the ones of 1994 2000 refer to unified Germany

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DP 11 **An Analysis of Generational Equity over Recent Decades in the OECD and UK**
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September 2010

Information on the GINI project

Aims

The core objective of GINI is to deliver important new answers to questions of great interest to European societies: What are the social, cultural and political impacts that increasing inequalities in income, wealth and education may have? For the answers, GINI combines an interdisciplinary analysis that draws on economics, sociology, political science and health studies, with improved methodologies, uniform measurement, wide country coverage, a clear policy dimension and broad dissemination.

Methodologically, GINI aims to:

- exploit differences between and within 29 countries in inequality levels and trends for understanding the impacts and teasing out implications for policy and institutions,
- elaborate on the effects of both individual distributional positions and aggregate inequalities, and
- allow for feedback from impacts to inequality in a two-way causality approach.
- The project operates in a framework of policy-oriented debate and international comparisons across all EU countries (except Cyprus and Malta), the USA, Japan, Canada and Australia.

Inequality Impacts and Analysis

Social impacts of inequality include educational access and achievement, individual employment opportunities and labour market behaviour, household joblessness, living standards and deprivation, family and household formation/breakdown, housing and intergenerational social mobility, individual health and life expectancy, and social cohesion versus polarisation. Underlying long-term trends, the economic cycle and the current financial and economic crisis will be incorporated. Politico-cultural impacts investigated are: Do increasing income/educational inequalities widen cultural and political 'distances', alienating people from politics, globalisation and European integration? Do they affect individuals' participation and general social trust? Is acceptance of inequality and policies of redistribution affected by inequality itself? What effects do political systems (coalitions/winner-takes-all) have? Finally, it focuses on costs and benefi ts of policies limiting income inequality and its effi ciency for mitigating other inequalities (health, housing, education and opportunity), and addresses the question what contributions policy making itself may have made to the growth of inequalities.

Support and Activities

The project receives EU research support to the amount of Euro 2.7 million. The work will result in four main reports and a final report, some 70 discussion papers and 29 country reports. The start of the project is 1 February 2010 for a three-year period. Detailed information can be found on the website.

www.gini-research.org

GINI GROWING INEQUALITIES' IMPACTS

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