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ABSTRACT

The Impact of Household Capital Income on Income Inequality: A Factor Decomposition Analysis for Great Britain, Germany and the USA

This paper analyses the contribution of capital income to income inequality in a cross-national comparison. Using micro-data from the Cross-National Equivalent File (CNEF) for three prominent panel studies, namely the BHPS for Great Britain, the SOEP for West Germany, and the PSID for the USA, a factor decomposition method described by Shorrocks (1982) is applied. The factor decomposition of disposable income into single income components shows that capital income is exceedingly volatile and its share in disposable income has risen in recent years. Moreover, capital income makes a disproportionately high contribution to overall inequality in relation to its share in disposable income. This applies to Germany and the USA in particular. Thus capital income accounts for a large part of disparity in all three countries.

JEL Classification: D33, I31, F00

Keywords: inequality, capital income, factor decomposition, CNEF

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1 Introduction

There is ample evidence in the literature showing a significant increase in income inequality since the mid-1970s in a wide range of OECD countries (e.g., Atkinson et al. 1995, Milanovic 2005, Burkhauser et al. 2007). While scholars agree on the existence of inequality, the question of its underlying causes still remains largely unanswered. Not only is the income distribution affected by demographic, political-structural, and labour market changes; it is also affected by individual components of household income, which also mirror these societal changes. The most important sources of received income are wages and salaries, which have a distinct impact on inequalities in disposable income. One often-cited explanation for increasing wage inequality is that of "skill-biased technical change" leading to a wider spread in labour income (Bound and Johnson 1992; Juhn et al. 1993, Autor et al 1999).

Up to now, however, little evidence has been produced to show how other income components influence the personal distribution of income (see for instance Jäntti 1997, Jenkins 2000, Lerman and Yitzhaki 1985, O'Higgins et al. 1990, Schwarze and Frick 2000, Shorrocks 1983). Capital income is seen as playing an important role in this process. It can consist of either dividends and interest or returns from trust funds or other assets. Most essential are returns from property investments: namely, income from rentals and leasing and potentially royalties.[1] Capital gains are another important source, translating into future returns on capital. However, capital gains are typically not considered when looking at income flows.

In the national accounts, capital income or investment income covers income derived from a resident entity's ownership of foreign assets. The most common types of investment income are income on equity (dividends) and income on debt (interest). The components of investment income are classified as direct investment income, portfolio investment, and other investment income (OECD 2007).[2]

[1] An exact definition of "capital income" will be given in Chapter 3.

[2] A more detailed definition of investment income is given by the IMF: investment income consists of direct investment income, portfolio investment income, and other investment income. The direct investment component is divided into income on equity (dividends, branch profits, and reinvested earnings) and income on debt (interest); portfolio investment income is divided into income on equity (dividends) and income on debt (interest); other investment income covers interest earned on other capital (loans, etc.) and, in principle, imputed income to households from net equity in life insurance reserves and in pension funds. (IMF: 39).

The contribution of capital income to personal income inequality and the question of its role in increasing inequality have scarcely been examined. It is to be expected that the share as well as the volatility of capital income has risen in the recent past and will rise in the future as well. In fact, the rate of property income in the German national accounts has increased considerably for the last several years (Statistisches Bundesamt 2003).[3] If capital income is more volatile than other income components, the altering share of capital income could also provide an explanation for observable fluctuations in measured income inequality.

Given that capital income is more concentrated at the top of the income distribution, one may argue that a further increase in capital income also leads to an increase in inequality. On the other hand, wealth and derived capital income are more prevalent among the elderly, who are often found in the lower and middle quantiles of the income distribution. Due to demographic changes that are resulting in obsolescence and the increased importance of private retirement funds, this is having a levelling effect on the overall income distribution.

There is also cross-country variation in the incidence and relevance of capital income (see Hedstrom and Ringen 1990). In addition, the Anglo-Saxon countries traditionally invest money in the stock market, yielding a higher probability of increased capital gains and income from dividends in these countries than in countries like Germany.

Aside from the cross-country variation, the general picture is that capital income is strongly linked to economic development and hence to current interest rates. However, since the early 1980s there has been a trend toward decreasing interest rates in most of the OECD countries, which could yield a levelling effect on capital income.

Past studies have dealt at least peripherally with the contribution of capital income to income inequality. According to Atkinson (2000), rising capital income, which he identifies in the shift from earned income to other income components and increased rates of return, can potentially influence the income distribution. Gottschalk and Smeeding (1997) explain the higher income shares at the top of the income distribution by increased capital income among other factors. O'Higgins et al. (1990) find that the average shares of property income in gross income are 5.8% in the USA, 2.7% in Great Britain, and 1.1% in West Germany. Furthermore, they examine the shares of the single income components in total income within the

[3] One reason for that development is the increasing importance of inheritances from the baby-boomer generation in particular.

first to the fifth quintiles, and find no significant difference between quintiles for property income in Germany or Great Britain, in contrast to the USA. Indeed the highest values appear in the highest quintiles of all three countries (see O'Higgins et al. 1990). Atkinson (1997) explains the four percentage point increase in the contribution of capital income to income inequality between 1973 and 1993 (from 7% to 11%) primarily on the basis of increasing private pension benefits, whose share he calculates to have doubled from 3% to 6%. He also believes this development resulted from rising interest rates at the beginning of the 1980s, their continued rise in the 1990s, and increasing dividend and share prices (Atkinson 1997). Jenkins (2000) addresses the issue of rising income from investment and savings in Great Britain and its increasing influence on inequality in the 1980s as well, arguing that the impact has not risen since the 1990s (see Jenkins 2000). The contribution of property income to inequality is also discussed by Jäntti (1997): he points out that although only 3% of income in Great Britain was property income in 1986, it was responsible for 10% of inequality. According to Jäntti, the 6% share of the income component even accounts for 18% of income disparity in the USA.

Becker (2000) looks at the influence of single income components on inequality in Germany, comparing the years 1988 and 1993. She draws similar conclusions for Germany to those of Jäntti (1997) for Great Britain and the USA: although only around 5% of income was property income in 1988 and 7% in 1993, it accounted for approximately 14% and 18% of total inequality in these two years, respectively (see Becker 2000).

Gottschalk and Smeeding (1997) emphasise that as a result of the rising correlation between high earned and high capital income, the inequality in market income increased in Great Britain in the eighties (see Gottschalk and Smeeding 1997). Franz (1997) also alludes to the fact that capital income contributes noticeably to total income and should hence be included in the inequality analysis.

The aim of this paper is to investigate the impact of capital income on the overall distribution of income in a cross-national comparison using three prominent panel surveys. In our examination of how inequality of capital income has developed in the USA, Great Britain, and Germany, we decompose disposable income into single income sources. We analyze, among other things, the relative and absolute contribution of capital income as well as the share of this income component in disposable income.

In the following, Section 2 defines the analytical framework for the empirical study, and outlines the method of inequality decomposition. In Chapter 3, we give an overview of our empirical analysis of the contribution of capital income to income inequality in Great Britain, Germany, and the USA. In Chapter 4, we summarise and discuss the findings.

2 Data and Methods

The analyses in this paper are based on data from the Cross-National Equivalent File (CNEF, Burkhauser et al. 2000) which is constructed by Cornell University in collaboration with DIW Berlin, ISER Essex, and StatsCan Ottawa. The CNEF contains data from the German Socio-Economic Panel Study (SOEP started in 1984, see Haisken-DeNew and Frick 2005),[4] the US American Panel Study of Income Dynamics (PSID started in 1968, see Hill 1992),[5] the Canadian Survey of Labor and Income Dynamics (SLID started in 1992, see Canberra Group 2001),[6] and the British Household Panel Study (BHPS started in 1991, see Bardasi et al.1999). The CNEF is designed to allow researchers to analyse the dynamics of income in an international context. Thus it contains information about household income and income components, socio-demographic variables and other labour market data (see Burkhauser et al. 2000). Furthermore it provides some imputed variables that are not available in the original datasets—for instance, post-government income, tax estimations, and variables regarding the composition of households. To allow the comparison between countries, the variables are defined as equivalently as possible. The income variables are measured on an annual basis, thus also including one-time payments such as 13th-month salary, Christmas bonuses, and income from interest and dividends. The CNEF is updated each year by the new surveys of the four panels. Currently, data are available from 1980 to 2005.

Conventional definitions of income (e.g., those from the Canberra Group 2001 or from Smeeding and Weinberg 2001) are based on the so-called "full-income concept" which includes monetary and non-monetary income, i.e., in-kind transfers and services are factored into measuring welfare.[7] The transfers in-kind considered in the CNEF are income advantages

[4] For the following analysis, we focus on West Germany only, because the incidence of capital income in East Germany is still relatively low and would distort the West German results.

[5] All panel studies included in the CNEF survey information annually. However, interviews in the PSID have been carried out at two-year intervals since 1997.

[6] Because of specific data access rules for the SLID data, we refrain from considering this survey in our investigation.

[7] On the discussion about income definition, see inter alia Gottschalk and Smeeding (1997) and Smeeding and Weinberg (2001).

from owner-occupied housing (imputed rents).[8] However in the following only monetary income is taken into consideration. The household disposable income or post-government income result from the sum of the following kinds of income[10]:

$$(1) \qquad Y = E + \underbrace{C + R_{PR}}_{capitalincome} + T_{PR} + \underbrace{T_{SO} + T_{PU}}_{\substack{public \\ transferincome}} - T \,.$$

The disposable income Y contains gross earnings from dependent employment and self-employment (E)[11], asset income (C), private retirement pensions (R_{PR}), private transfers (T_{PR}), social security pensions (T_{SO}), public transfer payments (T_{PU}) and taxes and social contributions (T).

Asset income in the three panel studies consists of gross income from interest, dividends, trust funds, and other assets (see appendix for the exact wording of the underlying questions).[12] If respondents do not know the exact amount, all surveys additionally ask for a rough assessment in several income classes.[13] Irregular income inflows like one-time transfers, winnings, inheritances, gifts of money or items, and capital gains are not considered in the measure of capital income.

According to Smeeding and Weinberg (2001), it is advisable to extend the concept of capital income to private retirement pensions—as is done in the accounts—given that this income component represents an alternative investment in insurance instead of the capital market. Income from private retirement pensions in the CNEF consists of income from previous employers, private pensions, and annuities. Veterans' pensions are also included in the PSID.

[8] According to Frick and Grabka (2002) imputed rent makes a considerable contribution to inequality. As this income component is no longer computed for Great Britain, it has to be left aside in this analysis although this source is embraced by the term of property income in some studies (see Becker and Hauser 2003). However it can be shown that trends and on the whole even the level of capital income inequality does not change essentially no matter whether imputed rent is taken into consideration or not.

[10] On the definition of income components, see Burkhauser et al. (2000) or CNEF Codebooks. For the BHPS see Bardasi et al. (1999), for the SOEP see Grabka (2007).

[11] For reasons of measurement quality, income from self-employment is not embraced by the term capital income here.

[12] The SOEP also considered income from rentals and leasing (minus maintenance and operating costs) as one other type of gross asset income.

[13] The income classes used in the SOEP are defined as follows: lower than €250, € 250 to 1000, €1,000 to 2,500, €2,500 to 5,000, €5,000 and higher; since 2003 the supplemental classes €5,000 to 10,000 and €10,000 and higher exist. These grouped data are converted into metric information by the CNEF data producers . In case of item-non-response, this information is imputed; for the German SOEP, see, e.g., Frick and Grabka (2005).

When analysing capital income, some problems of definition and measurement can arise. For instance, it is complicated to define capital income and to draw the distinction between capital and property income.[14] Smeeding and Weinberg (2001) make the attempt to determine income components and household income consistently. Furthermore the Canberra Group (2001) suggests how to complete the definition of income, particularly regarding capital income.

Atkinson and Bourguignon (2000) refer to several factors that hinder the collection of capital income data. They argue that—in contrast to earnings—capital income is paid at irregular intervals. Moreover, according to Atkinson and Bourguignon, this income is often more virtual than real.[15] Therefore capital income (in microdata) is frequently underestimated compared to national accounts data.[16] Smeeding and Weinberg (2001) point out the problem of undervaluation of capital income as well, whereby inequality tends to decrease due to the decreasing incomes of households at the top of the distribution, which obtain relatively high capital incomes. Gottschalk and Smeeding (1997) argue similarly that the survey of capital income in annual income statistics is limited. All of these arguments also apply to the underlying data. However we refrain from a correction of capital income for the following analysis, since these systematic problems apply to all countries and for every point in time. Additionally there is no potential correction factor, given that investment income in the national accounts is partly derived as a residual.

Our measure of disposable income is equalized using the square root of the household size to adjust for differences in household composition. The Canberra Group (2001) proposes the use of price indices and purchasing power parities for the temporal and regional comparative analysis of distributions expressed in monetary units. The CNEF provides a consumer price index for each dataset, although the base years differ. To make the data on the three countries comparable, the price indices are converted into the base year 2001. Data concerning the purchasing power parities are supplied by the OECD.[18]

[14] Non-monetary components are subsumed under the term "property".

[15] Atkinson and Bourguignon (2000) take private pensions as an example. The annual income on this source is mostly reinvested. Thus, contractually, one does not obtain the income on the accumulated savings directly. The amount consequently neither appears in income tax returns nor is mentioned spontaneously as an income source. The same is true for unrealised capital gains or losses.

[16] One reason why the aggregated capital income in the national accounts differs from micro-data is the consideration of accumulated savings (e.g., from private pensions) at the macro level (see Atkinson 1996).

[18] In the calculations, the low-income family sub-sample of the PSID and the high income sub-sample of the SOEP are omitted.

Besides the Gini-coefficient,

(2) $$G(y) = \frac{1}{2n^2\mu}\sum_{i=1}^{n}\sum_{j=1}^{n}\left|y_i - y_j\right|,$$[19]

which is sensitive to changes in the middle of the income distribution for this analysis, half the squared coefficient of variation (HSCV) belonging to the class of the generalised entropy measures is of importance.

(3) $$I_2(y) = \frac{C(y)^2}{2} = \left(\frac{1}{2n\mu^2}\right)\sum_{i=1}^{n}(y_i - \mu)$$

$I_2(y)$ is defined for negative incomes and factor incomes amounting to zero. The measure is sensitive to changes at the top of the distribution. $I_2(y)$ is often employed for the factor income decomposition because it exhibits the desirable feature of additive decomposability. Shorrocks (1982) demonstrates why it is reasonable to choose $I_2(y)$ as a measure of disparity when decomposing inequality into income components.

According to Shorrocks (1982) the relative contribution of an income component to income inequality s_k results from the absolute contribution of that component to inequality S_k

(4) $$S_k = \sum_i a_i(y)y_{ik}$$

divided by total inequality $I(y)$:

(5) $$s_k = \frac{S_k}{I(y)}.$$

Each function satisfying $\sum_{k=1}^{K} s_k = 1$ can be characterised as a decomposition rule (see Shorrocks 1982). However, these "natural decomposition rules" are arbitrary. As a solution, Shorrocks (1982) imposes two relatively weak restrictions: first, he assumes that the factor contribution to total inequality amounts to zero if the incomes of this component are equally distributed among the population ("population symmetry"), and second, he requires "two-factor symmetry," that is, he assumes a division of total income into two factors whose factor distributions are each a permutation of the other components and which contribute identically to total inequality (see Shorrocks 1982).

If these assumptions are fulfilled an unambiguous decomposition rule can be derived:

(6) $$s_k = \frac{\mathrm{cov}(y_k, y)}{\sigma^2(y)} = \frac{\rho_k\sigma(y_k)}{\sigma(y)},$$

[19] With *n* as number of individuals, *y* as income and μ as average income.

with ρ_k as the coefficient of correlation between y_k and y. Thus the choice of the inequality measure has no effect on the relevance of the particular income sources (cp. Shorrocks 1982). Equation (3) matches the "natural decomposition rule" of the HSCV $I_2(y)$, hence:

$$(7) \qquad s_k = \rho_k \left(\frac{\overline{y_k}}{\overline{y}} \right) \sqrt{\frac{I_2(y_k)}{I_2(y)}} .$$

which, however, is independent of the choice of the inequality measure. Therefore the correlation of the income source with total income [ρ_k], the share of the income component in total income [$\overline{y_k}/\overline{y}$], and the ratio of inequality of the income source to total inequality [$I_2(y_k)/I_2(y)$] have an impact on the relative contribution of the different income components to total inequality [s_k] (cp. Jenkins 2000).

A special case of inequality decomposition by factor components constitutes the decomposition of the Gini coefficient. First considerations referring to this were made by Rao (1969) and Fei et al. (1978). The Gini coefficient is also decomposable in compliance with Shorrocks' "natural decomposition rule." The absolute contribution of the income components k to inequality is according to Shorrocks (1982)

$$(8) \qquad S_k(G) = \frac{\mu_k}{\mu} \overline{G}(Y^k) = \frac{2}{n^2 \mu} \sum_i \left(i - \frac{n+1}{2} \right) Y_i^k .$$

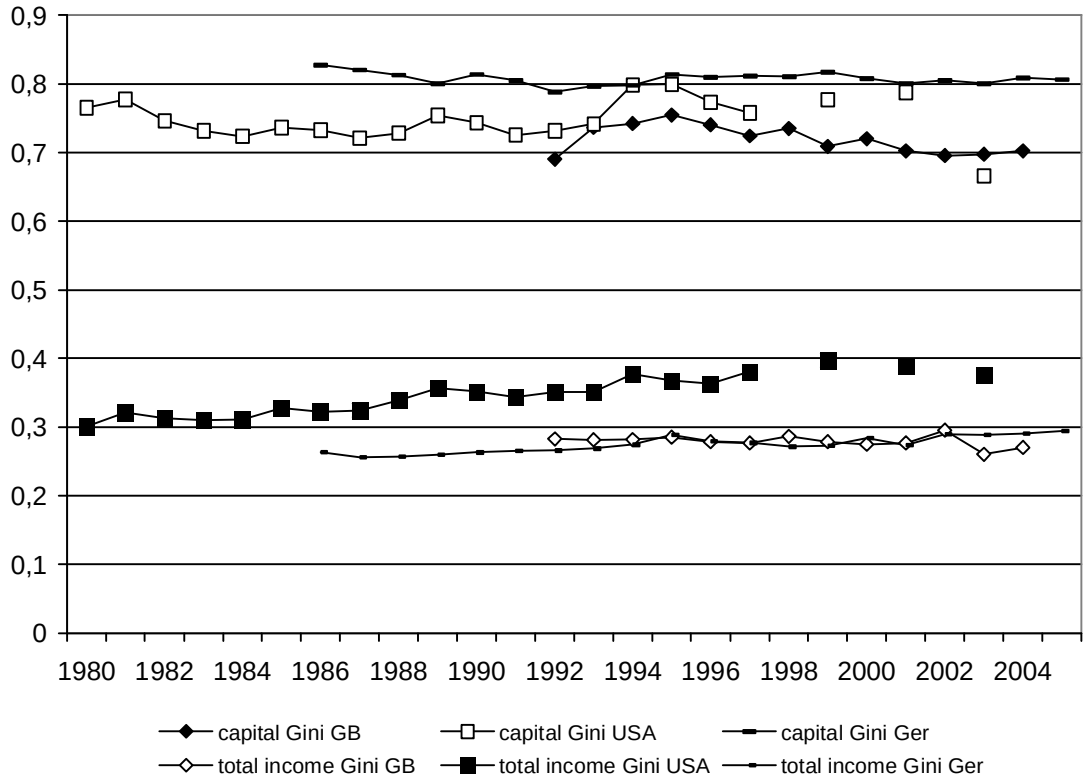
Thereby $\overline{G}(Y^k)$ is known as Pseudo-Gini of income source k since the rank of individual i is not examined within the distribution Y^k but within the distribution Y (see Shorrocks 1982).

3 Empirical Findings

The Gini coefficients in Figure 1 regarding the disparity of capital income show that over time, capital income has been distributed most unequally in West Germany compared to the USA and Great Britain. In addition, it becomes apparent how much more unequally capital income is distributed than disposable income. The Gini coefficients for capital income take an average value of 0.72 for Great Britain, 0.75 for the USA, and even 0.81 for West Germany.[20]

[20] It must be noted that the observation years considered here do not perfectly coincide with the business cycles of the three countries under consideration.

FIGURE 1: The development of inequality of disposable income and capital income measured by the Gini coefficient



Source: CNEF, authors' calculations.

The Gini coefficients on capital income for the USA and Great Britain exhibit a moderate ascent in the middle of the 1990s and a subsequent decline. The value measured for Germany varies less. Furthermore, the similar gradients of the country-specific curves suggest a high correlation between the particular inequalities of capital income and disposable income.[21]

To assess in which part of a distribution inequalities occur, absolute and relative quantiles can be examined. Table 1 gives information about the composition of disposable income in the USA, Great Britain, and West Germany in particular years in the bottom, middle, and top quintiles.

[21] How intensive this interdependence actually is can be read off the coefficients of correlation. Their averages are relatively high for all three countries: 0.54 for the USA, and 0.43 and 0.46 for Great Britain and Germany, respectively. Indeed, the highest correlation becomes continuously apparent between gross income from employment and disposable income.

TABLE 1: The share of the income components in disposable income in %

	GB 1992/2004			USA 1992/2003			Ger 1992/2004		
	bottom quintile	*middle quintile*	*top quintile*	*bottom quintile*	*middle quintile*	*top Quintil*	*bottom quintile*	*middle quintile*	*top quintile*
gross earnings from dependent employment and self-employment	47.8 59.4	87.9 82.7	108.5 96.9	59.9 77.2	104.5 109.1	116.5 121.6	57.4 44.6	108.4 101.8	123.5 116.8
capital income incl. private pensions	6.7 5.4	10.7 12.4	12.3 17.3	6.0 3.5	14.8 12.2	20.3 15.0	4.3 3.8	6.1 8.3	9.4 14.1
private transfers	2.5 1.6	1.5 0.7	2.0 0.6	4.0 5.4	1.4 1.9	0.8 1.2	2.6 3.8	0.5 0.7	0.2 0.3
public transfers & social security pensions	49.9 43.1	21.2 24.3	7.1 12.1	36.0 19.3	8.7 6.3	3.0 3.2	50.9 59.6	19.6 27.2	9.3 15.9
Taxes and social contributions	-6.8 -9.6	-21.3 -20.2	-29.8 -26.9	-5.9 -5.3	-29.5 -29.5	-40.7 -41.0	-15.2 -11.7	-34.7 -38.0	-42.3 -47.0
total	100	100	100	100	100	100	100	100	100

Source: CNEF, authors' calculations. Note: The values are rounded so that they do not sum up to 100 % in all cases.

It is noticeable that the composition of household income varies widely in the particular quintiles of the income distribution. The share of capital income in disposable income differs substantially within the countries and within quintiles. It exhibits the highest values in the top quintiles without exception. Thereby capital income in 2004 in the middle and upper quintiles in Great Britain and Germany gained in importance compared to 1992. Furthermore the shares of capital income increased more in the top than in the middle quintile in each case. The rise of capital income shares constitutes about 36% in the middle and 50% in the top quintile in Germany. The increases in Great Britain amount to approximately 16% and 41%, respectively. Although the share of capital income in the USA decreased in every quintile contemplated, the German share is still the lowest.[22]

Despite the fact that capital income gained in importance in the top and middle quintile, the share of this income component in disposable income declined for the population with the

[22] From other studies (e.g., Burkhauser et al. 2007b) it is well known that the top one percentile further increased their income share (of total capital income in particular). However, this could not be shown for the US with the PSID data, because a specific high income sample is not considered in the PSID, whereas other surveys such as the US Survey of consumer finances (SCF) explicitly make use of a high-income sample.

lowest 20% of income in Great Britain and Germany. Hence, one can assume that inequality of capital income has increased within these countries. This result is consistent with the assumption of Piketty and Saez (2003) that capital income is of particular importance for the higher percentiles. This can also be confirmed for the USA since the relative decrease of the share in the bottom quintile is the highest. Table 1 also reveals a shift from earnings to capital income as supposed by Atkinson (2000) for Germany and the middle and top income quintile of Great Britain. The same cannot be stated for the USA or the bottom British quintile.

On the basis of the relative quantiles in Table 2, it can be shown how much capital income an individual belonging to the top 20% or top 10% of the income distribution obtains proportional to a person in the second or first decile, respectively. The p90/p10 ratio takes the highest values in the USA. In Great Britain and West Germany, the quotient exhibits lower values with comparatively little variation. In the nineties, an increase in the ratio is found for all three countries. On average, an individual belonging to the ninth decile in the USA obtained around six to eight times more capital income than a person in the first decile. In Great Britain and the USA, the p90/p10 ratio decreased slightly for the most recent years, whereas in Germany a small increase in inequality for capital income was observed. The p80/p20 ratio is much more constant over the time than p90/p10 in all of the three countries. This suggests that the inequality of the capital income distribution is particularly affected by the extrema of the distribution.

However this kind of inequality measurement disregards all other points of the distribution.[23] Regarding the inequality of capital income, one can generally state that it has increased in Germany in reference to the extrema in recent years but the level in the USA and Great Britain is still higher.

[23] It must be noted that for this analysis we do not apply a top coding or trimming of the underlying data, thus, outliers can in principle affect the results. However, unusual values are much more prominent in capital income than in other income types. Even a top 1% trimming does not affect the general picture of the results presented here.

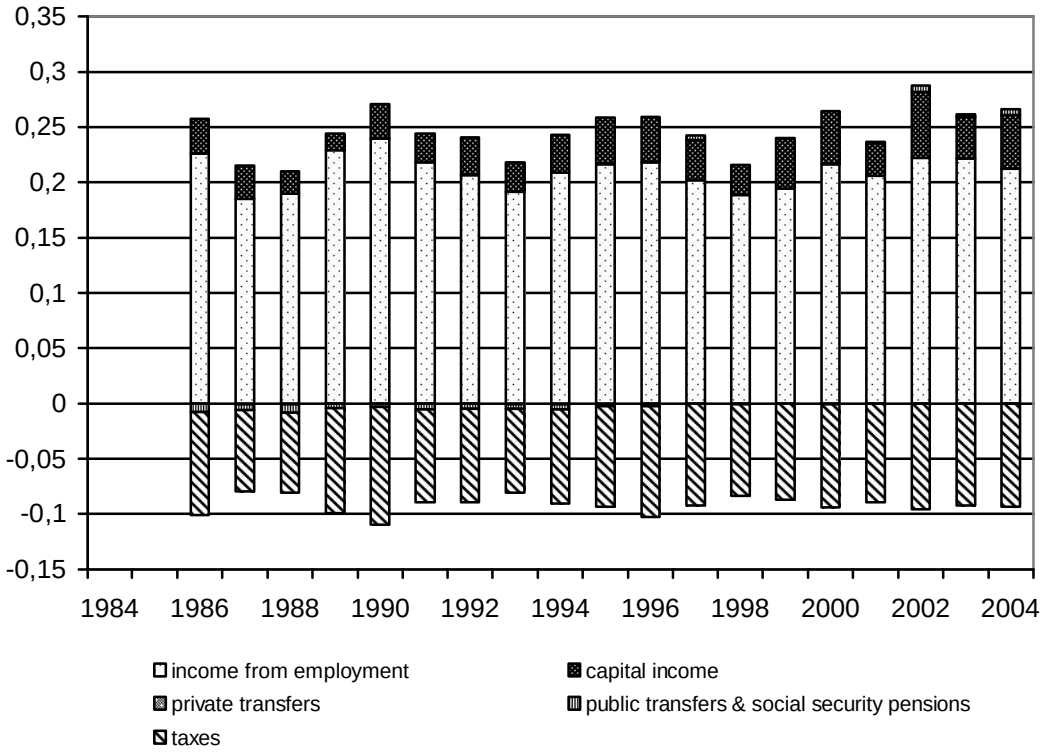
TABLE 2: Percentile Ratios of capital income for the UK, USA, and West Germany

	GB		USA		Ger	
	p90/p10	*p80/p20*	*p90/p10*	*p80/p20*	*p90/p10*	*p80/p20*
1985	n.a.	n.a.	5.71	3.23	4.16	3.39
1986	n.a.	n.a.	6.51	3.01	2.55	2.36
1987	n.a.	n.a.	5.87	3.00	4.84	1.71
1988	n.a.	n.a.	5.77	2.66	6.04	2.97
1989	n.a.	n.a.	5.80	3.45	3.81	2.67
1990	n.a.	n.a.	6.48	3.02	3.15	2.23
1991	n.a.	n.a.	6.75	3.14	2.44	2.04
1992	3.70	2.26	8.04	2.92	3.46	1.90
1993	3.89	2.12	6.40	3.14	3.61	2.32
1994	4.15	2.44	6.73	3.06	2.81	1.92
1995	4.28	2.28	8.78	3.57	4.13	1.70
1996	4.43	2.21	6.54	2.62	4.42	2.84
1997	3.61	2.23	11.73	4.26	3.98	2.05
1998	4.37	2.04	n.a.	n.a.	3.33	2.61
1999	3.34	2.13	7.54	2.83	3.99	1.89
2000	3.47	2.24	n.a.	n.a.	4.61	1.95
2001	3.23	2.24	7.42	3.66	3.59	2.88
2002	4.17	3.86	n.a.	n.a.	3.73	2.15
2003	3.55	2.04	6.54	4.07	4.83	3.12
2004	3.51	2.03	n.a.	n.a.	4.58	2.50

Source: CNEF, authors' calculations.

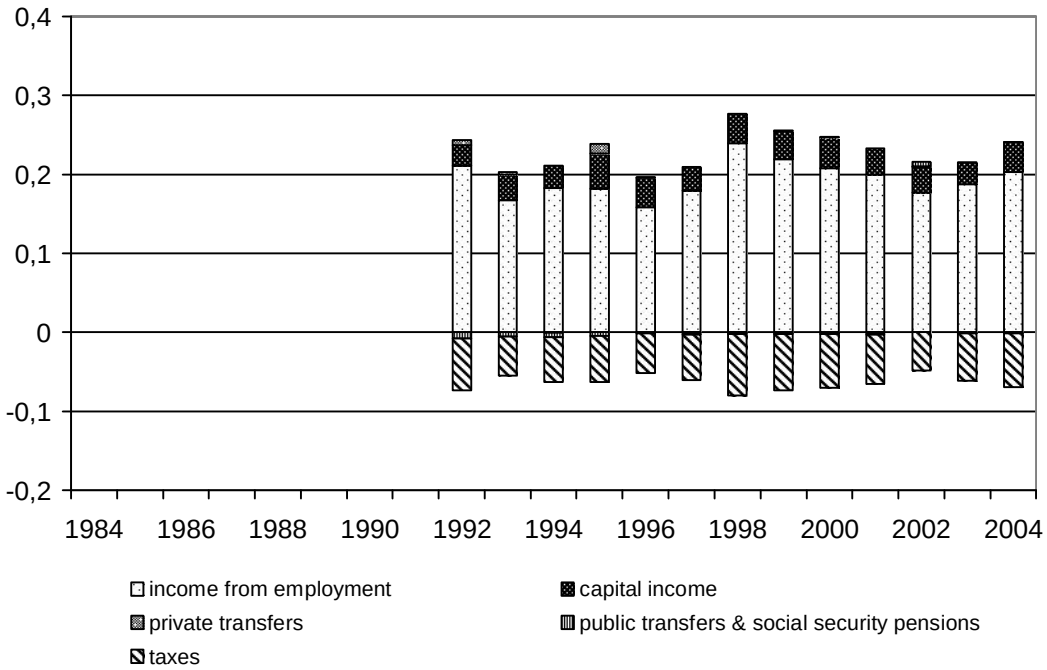
Having gained insight into the distribution of capital income in the three countries, we now turn to the contribution of this income source to total inequality, which we will analyse in more detail. Figures 2 to 4 show the influence of single income components on overall disparity. Some components contribute negatively to the inequality of disposable income. Thus, the absolute contributions S_k of this kind of income take negative values. It becomes apparent that gross income from employment is the income component contributing most to the disparity of disposable income in all three countries. The absolute contribution of capital income to total inequality $S_{capital}$ remains comparatively stable in Great Britain as well as in Germany over time and averages out at 0.034 in both cases. An unambiguous trend of the absolute contribution of capital income to disparity does not become apparent in the long run. Instead, it shows episodic fluctuations that raise the level of the contribution only marginally. However a short-run examination reveals that the absolute contributions of capital income to income inequality in Germany have increased in recent years.

FIGURE 2: The absolute contribution S_k of the particular income sources to inequality of disposable income in Germany 1986 to 2004



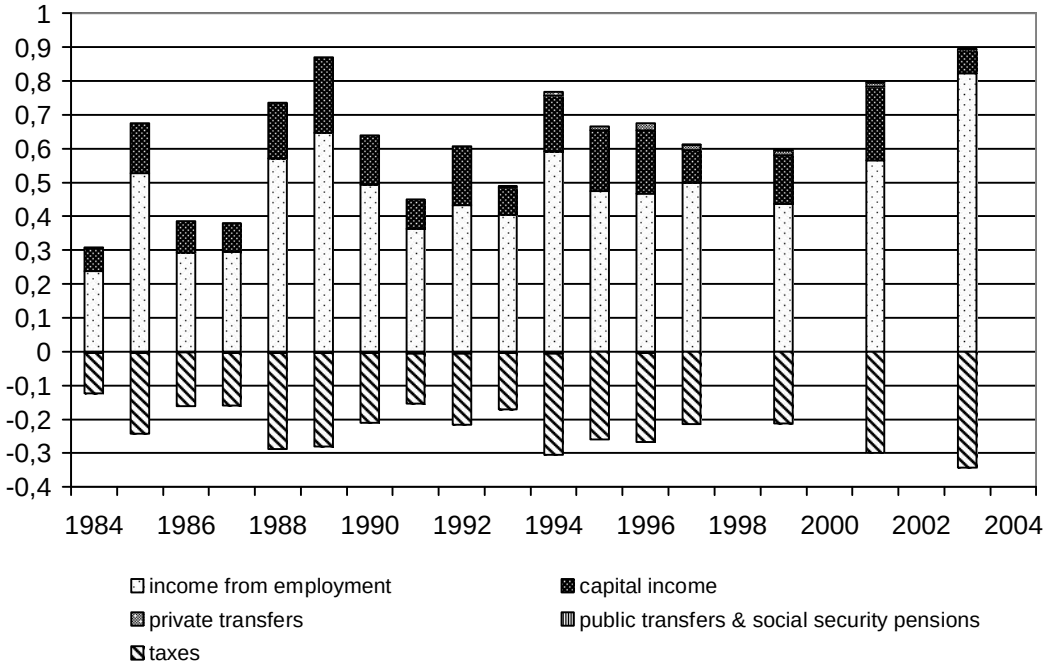
Source: CNEF, authors' calculations.

FIGURE 3: The absolute contribution S_k of the particular income sources to inequality of disposable income in Great Britain 1992 to 2004



Source: CNEF, authors' calculations.

FIGURE 4: The absolute contribution S_k of the particular income sources to inequality of disposable income in the USA 1984 to 2003

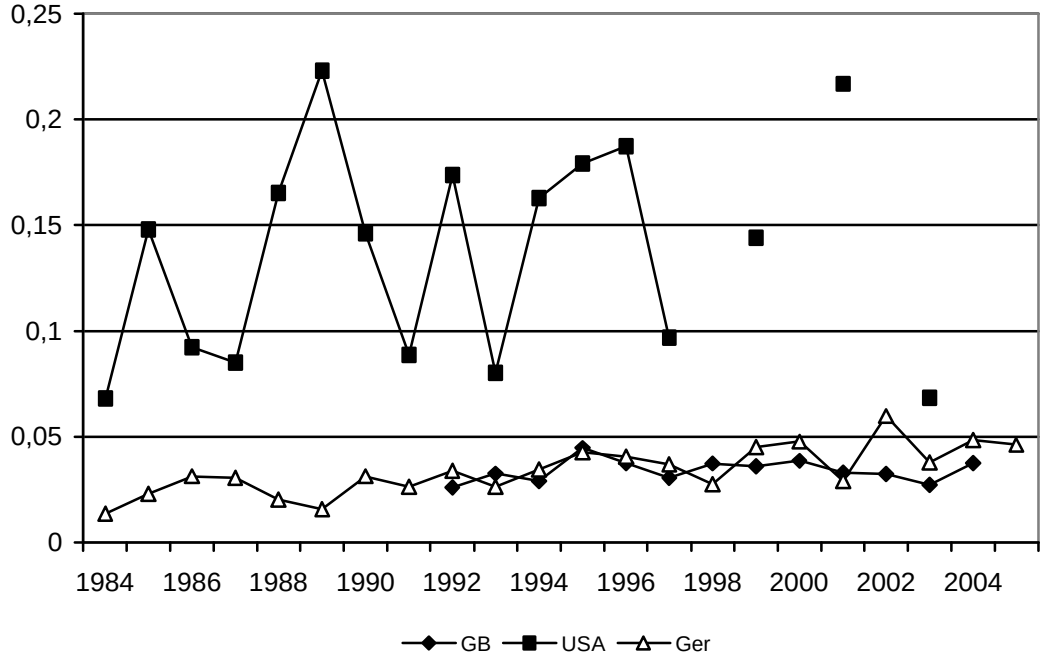


Source: CNEF, authors' calculations.

The value of $S_{capital}$ varies far more widely in the USA and is considerably higher there than in other countries. This becomes apparent in Figure 5 as well. Furthermore similar trends emerge in particular sub-periods. The contribution of capital income to income inequality increased in the middle of the 1980s in Germany and the USA followed by a decrease in both. A similar pattern is seen at the beginning and middle of the 1990s in Great Britain as well.

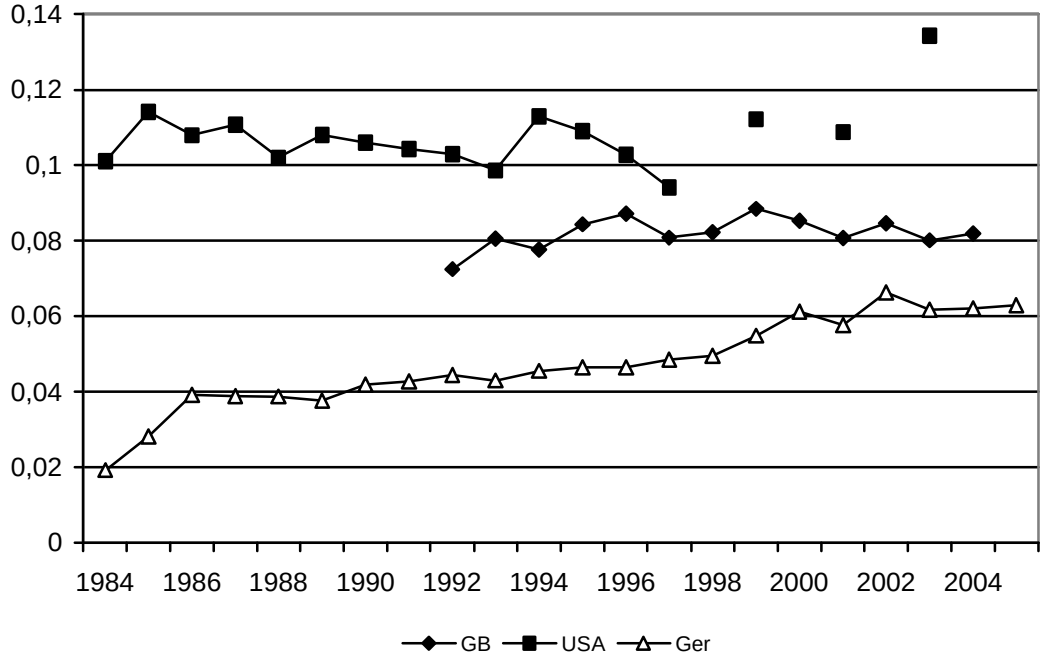
The comparison of Figure 5 and 6 shows that the country-specific curves resemble one another, independent of the choice of measure to be decomposed. The far higher fluctuations emerging from the decomposition of HSCV can be explained by its sensitivity to changes at the top of the distribution. Furthermore it can be assumed that the inequality of capital income is affected more strongly by the middle of the distribution in Great Britain than in Germany because when decomposing the Gini coefficient, a higher disparity of British capital income becomes apparent, whereas the decomposition of I_2 results in a similar level of disparity for both countries.

FIGURE 5: The absolute contribution S_k of capital income to inequality of disposable income decomposing I_2



Source: CNEF, authors' calculations.

FIGURE 6: The absolute contribution S_k of capital income to inequality of disposable income decomposing the Gini coefficient



Source: CNEF, authors' calculations.

On the basis of Table 3 it can be shown that the relative contribution of capital income to disparity is disproportionately high compared to its share in disposable income in all of the three countries, with the highest level for the USA. The shares rise constantly over time in Germany and remains relatively stable in the USA and Great Britain. The British values of s_k are relatively low compared to the share of capital income in inequality. Hence it appears that particularly in Germany and the USA, the importance of capital income is disproportionately high compared to its share in disposable income, thus explaining the disparity.

TABLE 3: The relative contribution of capital income to inequality s_k and the share of capital income in disposable income in %

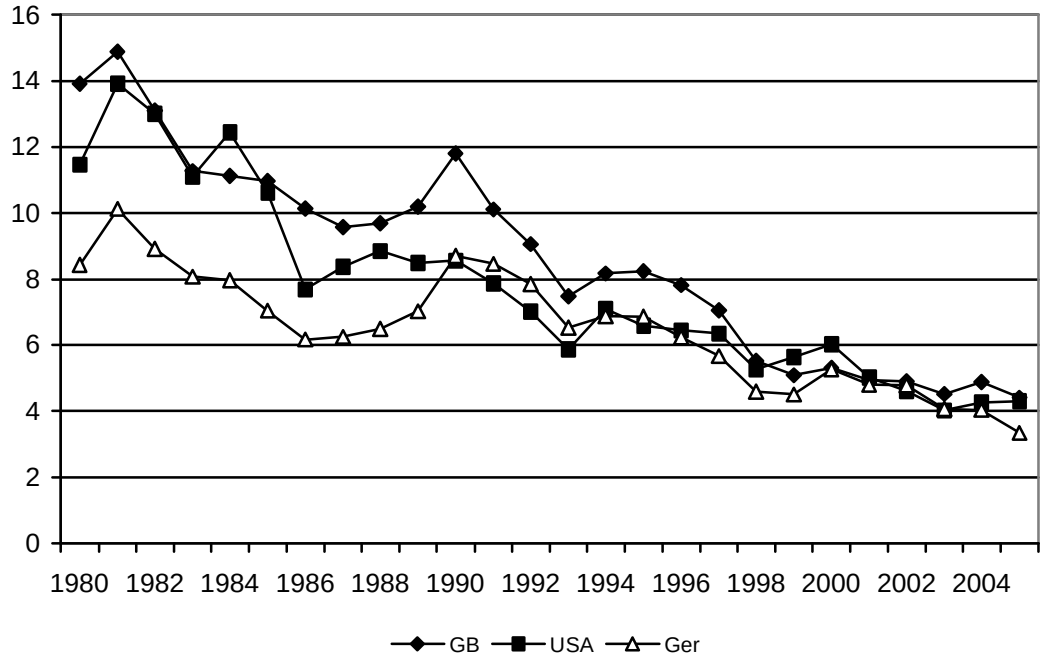
	GB		USA		Ger	
	relative contribution of capital income to inequality s_k	*share of capital income in disposable income in %*	*relative contribution of capital income to inequality s_k*	*share of capital income in disposable income in %*	*relative contribution of capital income to inequality s_k*	*share of capital income in disposable income in %*
1984			32.3	12.7	7.7	2.0
1985			34.8	13.2	11.0	3.4
1986			34.0	12.5	15.8	4.6
1987			33.6	12.8	15.9	4.6
1988			31.0	11.7	15.8	4.6
1989			31.7	12.4	15.3	4.5
1990			31.1	12.2	16.6	5.0
1991			30.8	12.0	16.8	5.1
1992	24.3	9.1	29.9	11.7	17.4	5.3
1993	25.2	9.7	28.2	11.4	16.4	5.3
1994	25.2	9.3	30.0	12.6	17.1	5.5
1995	26.9	10.1	29.9	12.3	17.0	5.5
1996	29.1	10.5	28.5	11.7	17.4	5.6
1997	27.1	9.8	22.8	10.5	18.9	5.8
1998	26.1	9.9			18.9	5.9
1999	28.2	10.4	28.3	11.9	20.9	6.5
2000	28.3	10.1			22.1	7.3
2001	26.2	9.3	27.4	11.6	21.6	6.9
2002	24.0	9.8			23.7	7.9
2003	25.4	9.3	35.3	9.2	22.3	7.4
2004	26.3	9.5			22.5	7.4
2005					22.3	7.4

Source: CNEF, authors' calculations.

4 Discussion

Assuming that capital income is influenced inter alia by interest rates specifically or by the economic situation more generally, we can explain some of the trends in capital income and its role in the development of disposable income inequality—in particular for the USA.

FIGURE 7: Long-term interest rates in %



Source: http://stats.oecd.org/WBOS/default.aspx?DatasetCode=CSP2007.

Especially in the USA, economic crises like the recession of 1990/91 and the Asian financial crisis of 1997 had an inequality-reducing effect as measured by the Gini coefficient and HSCV regarding capital income. This development can also be reproduced using the absolute and relative contribution as well as the share of the income component in disposable income. It can be stated that the relative and the absolute contribution of capital income to income inequality cause a rise in prosperity and a decline in depression. The same is true for the share of this income component in disposable income.

These trends were most dramatic in the USA, while they were much more moderate in Germany and Great Britain. Thus it can be concluded that capital income is particularly sensitive

to changes and fluctuations in interest rates. However, the exact relationship has to be examined in greater detail.

As the development mentioned above can be substantiated less unambiguously on the basis of the Gini coefficient of disposable income (Figure 1) than based on HSCV or the Gini-coefficient concerning capital income (Figure 5 and 6), it can be assumed that the economic changes have an overriding impact on capital income and hence also on the disposable income of the upper income classes. This is evident for all of the three countries.

It has also been verified that the share of capital income in disposable income has risen in recent years, particularly in Great Britain and Germany. And the volatility appears to have increased as well. Because capital income is more volatile than other income components and its inequality exhibits a quite similar course to the inequality of disposable income, it can be held liable for a large part of the disparity. The fact that a higher share of capital income is usually accompanied by higher inequality suggests the same.

For a cross-national comparison of capital income, one should also think about changes in tax-favoured treatment of various assets. A prominent example for Germany is the tax allowance on savings (Sparerfreibetrag) that was introduced in 1993. This specific tax exemption amounted to 6,000 DM for a single tax filer in contrast to a lower amount in previous years. Since 1999, this tax exemption was reduced several times. Another example is the introduction of the promotion of private pensions ("Riester-Rente") in 2002, where all contributions to this pension plan can be fully deducted from taxable income, thus yielding an increasing portion of future income of the elderly in Germany.

In Great Britain, a tax exemption for capital gains amounting to £5500 was determined in 1992 and was raised over the years to £8800 in 2006. Thereby capital losses can be charged against profits. This is also true for the USA. If losses are in excess of capital gains, up to $3,000 per year can be deducted from taxes and the amount potentially exceeding this value can be transferred to the next year. Until 2003, a 20% tax was levied on long-term capital gains. Since then it has amounted to 15% and only 5% for the lowest tax brackets.

Regarding the contribution of capital income to income inequality in the USA, Germany, and Great Britain the following can be stated in summary: in all three countries, this income com-

ponent makes a disproportionately high contribution to inequality in relation to its share in disposable income. This applies to Germany and the USA in particular. The absolute as well as the relative contributions of capital income take the highest values for the USA, where they vary the most. In Germany and Great Britain, these measures exhibit minor fluctuations on a lower level. It is remarkable that the relative contribution of the income component is considerably higher in Germany than in Great Britain although the British absolute contributions are comparable to the German ones and the shares of capital income in disposable income in Great Britain are in excess of those in Germany. In comparison to the USA, capital income contributes relatively little to inequality in Great Britain as well. This result is remarkable insofar as it was assumed, due to the comparable incentive structures in Great Britain and the USA, that capital income plays a more important role in inequality there than in Germany. Less surprising is the rather dominant role of capital income in regard to income inequality in the USA.

Thus the contribution of capital income to income inequality can be considered as substantial. However the results of this analysis cannot be seen as complete. To be better able to judge the extent to which capital income influences disparity, macro-economic conditions and their impact on capital income must be examined in detail. Furthermore, the exact differentiation of property in contrast to capital income has to be implemented and a uniform income concept should be established.

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Appendix B: Exact Wording of capital income Related Questions in Original Survey Instruments

BHPS:

In the past 12 months how much have you personally received in the way of dividends or interest from any savings and investments you may have?
WRITE IN TO NEAREST £: _____

PSID:

Did [you/she] receive any (other) income in [year] from dividends, interest, trust funds or other assets?
How much were the dividends? _____ USD
How much was the interest? _____ USD
How much did [you/she] receive from trust funds? _____ USD
How much was from other assets? _____ USD

SOEP:

How high was your total income from interest, dividends and profits from all investments in the last calendar year?
Last year _____euros