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Is the Financial Market Driving the Income Distribution? – An analysis of the Linkage between Income and Wealth in Europe

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"The more the Capitalist has Accumulated, the more is he able to Accumulate[1]" -

Is the Financial Market Driving the Income Distribution? – An analysis of the Linkage between Income and Wealth in Europe[2]

Abstract

Globalisation has a major impact on the levels and distribution of wealth. The financial markets are highly integrated and valuations of financial assets follow international patterns, which has resulted partially large increases in financial wealth over the past 25 years. This has not led to an equally large increase in property income because the rates of return have decreased during the same era. Moreover, changes in the functional income distribution (capital/labour shares) have not been transmitted fully to the distribution of primary income between households, because other institutional sectors – particularly, the government sector – hold considerable amounts of financial assets. At least in the short term, the decrease in rates of return seem to contradict claims that due to increase of financial as well as inherited wealth, we are entering into an era of increasing income inequality.

In this paper, the link between financial wealth and pre-tax household income distribution is scrutinised in a conceptually fully consistent macro framework for three European countries. First, the national balance sheets are combined with the related income flows. After this, the income flows which are not property income but belong to the national income concepts (e.g. wages and salaries) are added, the national income flows are broken down by the institutional sectors and the household sector income flows separated. Finally, distributional household micro data are used to break down the aggregate household sector income flows by income deciles. By using this framework, this paper analyses evolvement of rates of return, capital and labour shares as well as how the property income flows created by the financial wealth have affected household primary income distribution.

[1] Marx (1867, 1909) Capital: A Critique of Political Economy - The Process of Capitalist Production, pp. 638.

[2] The views expressed are those of the authors and do not necessarily reflect the views or policies the European Central Bank. We wish to thank Henning Ahnert for helpful comments without implicating him for any remaining errors.

1. Introduction

Over the last decade, there has been much discussion over what role wealth plays in the generation of income. Thomas Piketty (2014) argues that the growth of wealth plays a central role in the distribution of income. After WWII, Europe went through an era of exceptionally equally distributed income. This is the outcome of active income redistribution policies as well as the destruction of wealth during the two World Wars. The World Wars were followed by an exceptionally long era of governments whose policies were aimed at equalizing income distribution. However, Piketty thinks that this is only a temporary period and we are returning to the *Gilded Age*[3], when rich family dynasties played a central role in political decision-making and overall in the economy. His argument is that wealth accumulates increasingly in wealthy households and this wealth is playing an increasingly important role in the generation of income, which will lead to increasing income dispersion.

Piketty (2014) bases his argument on a formula that relates the rate of return on capital (r) to economic growth (g). He argues that when the rate of growth is low, then wealth tends to accumulate more quickly from r than from labour. This increasing income from capital tends to accumulate unequally more among the top 10% and 1%, increasing inequality. Thus the fundamental force for divergence and greater wealth inequality can be summed up in the inequality $r > g$. He analyses inheritance from the perspective of the same formula.

The idea behind this can be described as follows: in the case of functional income distribution, i.e. the relation between compensation of employees and profits (operational surplus), if the compensation of employees increases slower than profits, the profit share of national income increases. As wealth, and thus property income, typically concentrates to the right tail of the distribution, such growth leads to increasingly unequal income distribution. Piketty assumes that the economic growth (g) in the long run defines the increase of compensation of employees and that the property income would mostly depend on the rate of return on capital (r).

Piketty, after his famous book *Capital in the Twenty-First Century*, has together with Emmanuel Saez and Gabriel Zucman broken down the national income of different countries by income deciles and by using this framework illustrated how the role of property income has increased.[4] Branko Milanovic (2017) has pointed out that the relation between functional income and income distribution between households is more complicated than Piketty presents in his studies. Piketty assumes that the households ultimately receive the income even though the income would have been generated and consumed, for instance, in the government sector. It can be assumed that in the end there is always an individual who benefits from the income. Even though this idea sounds plausible, it is not necessarily correct.[5] This does not, however, overturn Piketty's argument that wealth and property income play an increasingly important role in economies.

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[3] In United States history, the Gilded Age was an era that occurred during the late 19th century, from the 1870s to about 1900. The Gilded Age was an era of rapid economic growth, especially in the Northern and Western United States.

[4] For instance for the U.S. these accounts are reported in Piketty et. al. 2016.

[5] More debate on the assumptions of Piketty: Krugman (2017), Milanovic (2017) and Solow (2017).

It is clear that in the past decades the role of wealth has increased. The increasing importance of wealth is the outcome of the increased stocks of wealth, which is largely an outcome of the globalisation and liberalised financial markets. In the beginning of 1980's the liberalisation of financial markets started, going hand in hand with increasing globalisation. This together with relatively favourable economic growth has increased wealth, in particular financial wealth. The increase is a consequence of increasing net investment in these assets as well as increased asset prices. This has raised questions related to the economic inequality and increased interest in income and wealth distributions.[6]

This article analyses the relation between wealth, income and economic growth in one integrated model which is based on national accounts' framework. The analysis is conducted for three countries Finland, France and Spain. The motivation for selecting these countries is twofold. First, they are institutionally quite different and have had different developments of wealth, income and growth. The second reason relates to the quality and availability of the distributional micro data sources from these three countries, i.e. that the available data allows these types of analysis in these three countries. The focus of the analysis is on the two past decades. This is mainly related to the data availability as analysis in this detail is not possible to conduct any further with internationally available data sources. The time span is long enough for describing the development between the financial crisis and the COVID-19 crisis.

The model starts by linking the financial accounts balance sheets (covering all the financial instruments) with the corresponding income flows of the national accounts. This allows the calculation of instrument-specific rates of return, which corresponds with Piketty's *return on capital* (r). Piketty uses national accounts' income concept in defining *r*, i.e. it includes profits, dividends, interest, rents and other income from capital. The other income in capital is, in practice, the part of operational surplus that is not distributed as dividends and is reinvested in production. This implies that neither realised nor unrealised holding gains are considered as income. The same concept is applied in this article. In section 2.1 we discuss the impact and differences of different income concepts. After this income flows are completed with the missing flows/components of the national income. The national income in the model corresponds with Piketty's *economic growth* (g). Comparing these two elements, we can also test whether the basic condition for increasing inequality of Piketty is fulfilled.

After this, the household sector is separated from the national income (primary income). Finally, the primary income components of the household sector are linked with the income components of micro data on income distributions. This allows analysis of the primary income distribution (functional income distribution) by income deciles, and what role labour and property incomes play in the generation of income. This model covers the basic elements of Piketty's model in one framework and emphasises observation by Milanovic (2017) that the functional income (primary income) distribution is not the same as the income distribution between households. First, the

[6] For instance Peter van de Ven (2017) has emphasised that the increasing interest in wealth depended on three factors: (1) increase of wealth – in particular increase of financial wealth; (2) in the societies as well as in political debate, an overall increase of interest in income and wealth distribution; and (3) the U.S. subprime crisis, which was trigged by the subprime loans that were granted to the low income households.

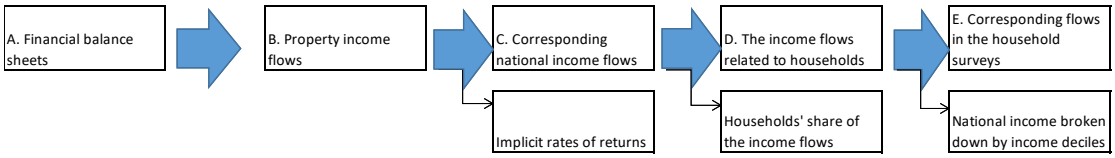
functional approach does not cover redistribution of income at all while income distribution between households tends to be analysed accounting for current transfers. Second, part of the primary income is received by other sectors than the household sector.

This article is organised as follows: the next section discusses the framework applied in this article. The first part presents the detailed data framework and the latter part discusses the coherence and application of micro data sources (EU-SILC and HFCS). Section 3 presents the results and finally, conclusions and potential extensions are discussed.

2. Framework and data

Table (1.) presents the overall framework applied in this article. The first horizontal row includes input data. The framework starts with the balance sheets (A), which generate property income. In practice, this is wealth invested in financial instruments and land, which generates property/rental income. The national accounts capital stock covers the fixed capital that is used for actual production. In this context, it should be noted that letting of flats is considered production in national accounts.[7]

Table 1: The framework illustrating how from the balance sheet of the whole economy data are stepwise-linked with the income flows and the income distribution data is used in deriving distributional national income



After this, the balance sheets are linked at the instrument level with the corresponding property income flows (B). These data are available in the non-financial accounts of national accounts. The second horizontal row presents the derived results, which are based on the calculation performed in this framework. Concerning the balance sheets and the corresponding property income, this means the instrument-specific rates of returns.

After this, national income is completed by adding the missing income flows to the property income. In practice, this means compensation of employees and subsidies on production (C). The flows belonging to the household sector are separated from the flows of the total economy (D). Finally, these flows are linked with the corresponding flows of the household surveys (E).

2.1 The detailed framework

In the following section, the framework will be explained in detail. The letters/steps presented in the tables refer to the letters/steps in Table (1.). Table (2.) presents steps A and B, which shows how the national balance sheets are linked with the corresponding

[7] The framework, which is applying more detailed national data is also presented in: Kavonius 2019, 24–40 and Kavonius 2020, 483–494.

property income flows. On the left-hand side of the table, the balance sheets and its asset types are presented and on the right-hand side, the corresponding income flows.

Table 2: National balance sheets and the related income flows

A: Financial balance sheets:	B: Property income flows (corresponding):
Deposits (F.2) Debt seucrities (F.3) Loans (F.4) Other accounts payable/receiveable (F.8)	Interest payable/receivable (D.41)
Listed shares (F.511) Unlisted shares (F.512)	Dividends (D.421)
Other equity (F.519)	Withdrawals from income of quasi-corporations (D.422)
Investment fund shares/units (F.52)	Investment income attributable to collective investment fund shareholders (D
	Reinvested earning on foreign direct investment (D.43)
Non-life insurance technical reserves (F.61) Life insurance and annuity entitlements (F.62)	Investment income attributable to insurance policy holders (D.441)
Pension entitlements (F.63) Claims of pension fund on pension managers (F64)	Investment income payable on pension entitlements (D.442)
Natural resources (N.21)	Rent (D.45)
Financial derivates and ESOs (F.7)	By nature do not accumulate any income

In step B the income flows in the table, which are missing from the national income concept, are added in table (3.). These flows are in practice operating surplus, i.e. profits before the distribution of profits and taxes[8], compensation of employees and taxes and subsidies on production. On the right hand-side, entrepreneurial income, which is operating surplus plus net property income related to entrepreneurial activities, is separated from the rest of the income flows[9]. It is important to note that imputed rents are based on a similar calculation to entrepreneurial income, i.e. by definition imputed rents are entrepreneurial income generated by owner-occupied housing[10]. Unfortunately, very few countries separate entrepreneurial income and we are therefore, we cannot use this separation in this paper. Kavonius (2019, 2020) used this breakdown when he analysed development in Finland. Due to data availability, the linking has also some other differences. In this analysis, all the income flows are included in the breakdown presented on the left-hand side table.

[8] This corresponds in the bookkeeping with the concept of EBIT (*earnings before interest and taxes*).
[9] This corresponds in the bookkeeping with the concept of EBT (*earnings before taxes*).
[10] In practice this is operating surplus generated by owner-occupied housing and from which corresponding (mortgage) interest flows are deducted.

Table 3: National income flows

C: Gross National Income (primary income):

	1. Property and entrepreunerial income (income flow)		2. Entrepreneurial income		
	Operating surplus, gross (B.2G) / mixed income (B.3G)				Operating surplus, gross (B.2G) / mixed income (B.3G)
minus	Interest, payable (D.411)		of which	minus	Interest, payable (D.411)
plus	Interest, receivable (D.411)		of which	plus	Interest, receivable (D.411)
minus	FISIM correction, payable (D.412)			minus	FISIM correction, payable (D.412)
plus	FISIM correction, receivable (D.412)			plus	FISIM correction, receivable (D.412)
minus	Dividends, payable (D.421)		of which	plus	
plus	Dividends, receivable (D.421)				Dividends, receivable (D.421)
	Withdrawals from income of quasi-corporations (D.422) = net zero		of which	plus	Withdrawals from income of quasi-corporations, receivable (D.422)
minus	Investment income attributable to collective investment, payable (D.443)		of which	plus	Investment income attributable to collective investment, payable (D.443)
plus	Investment income attributable to collective investment, receivable (D.443)			minus	Investment income attributable to collective investment, receivable (D.443)
minus	Reinvested earning on foreign direct investment, payable (D.43)		of which	plus	
plus	Reinvested earning on foreign direct investment, receivable (D.43)				Reinvested earning on foreign direct investment, receivable (D.43)
minus	Investment income attributable to insurance policy holders, payable (D.441)		of which	minus	Investment income attributable to insurance policy holders, payable (D.441)
plus	Investment income attributable to insurance policy holders, receivable (D.441)			plus	Investment income attributable to insurance policy holders, receivable (D.441)
minus	Investment income payable on pension enetitlements, payable (D.442)		of which	minus	Investment income payable on pension enetitlements, payable (D.442)
plus	Investment income payable on pension enetitlements, receivable (D.442)			plus	Investment income payable on pension enetitlements, receivable (D.442)
minus	Rent, payable (D.45)		of which	minus	Rent, payable (D.45)
plus	Rent, receivable (D.45)			plus	Rent, receivable (D.45)
plus	Compensation of employees, receivable (D.1) Wages and salaries (D.11) Employers' social contributions (D.12)				
plus	Taxes on products (D.2)				
minus	Subsidies (D.3)				

Table (4.) shows how the transactions of household sector are linked with the corresponding household survey income flows. The linking is further discussed in the next section on the micro sources (EU-SILC and HFCS) used in this paper.

Table 4: The household share of the national income (total primary income) and the corresponding flows of the income distribution statistics

	D: National income: of which: household sector	**E: Corresponding flows in household surveys**
	Operating surplus, gross (B.2G)	Imputed rents (EU-SILC)
	Mixed income, gross (B.3G)	Self-employment income + rental income from property and land (EU-SILC)
plus	Interest, receivable (D.411)	
minus	FISIM correction, receivable (D.412)	Interest, dividends and profit sharing (EU-SILC)
plus	Interest, payable (D.412)	
minus	FISIM correction, payable (D.412)	Interest repayments on mortgage (EU-SILC)
plus	Dividends, receivable (D.421)	Interest, dividends and profit sharing (EU-SILC)
	Withdrawals from income of quasi-corporations (D.422)	Interest, dividends and profit sharing (EU-SILC)
plus	Investment income attributable to collective investment, receivable (D.443)	Mutual funds (HFCS)
plus	Reinvested earning on foreign direct investment, payable (D.43) Reinvested earning on foreign direct investment, receivable (D.43)	Interest, dividends and profit sharing (EU-SILC)
plus	Investment income attributable to insurance policy holders, receivable (D.441)	Life insurance (HFCS)
plus	Investment income payable on pension enetitlements, receivable (D.442)	Voluntary pension insurance (HFCS)
minus	Rent, payable (D.45)	Self-employment income + rental income from property and land (EU-SILC) entrepreneurial income entrepreneurial income
plus	Rent, receivable (D.45)	
	2. Compensation of employees	
plus	Wages and salaries (D.11)	Wages and salaries (EU-SILC)
plus	Employers' social contributions (D.12)	Employers' social contributions (EU-SILC)

The transactions on the left-hand side (D) are from the national accounts and on the right-hand side (E) from the income distribution statistics. The transactions on same line indicates which transactions have been used in breaking down the national income transaction by income deciles. The grey areas in the table emphasise the differences between the national income and income distribution statistics.

The linkage is in principle consistent with the linkage applied in Kavonius and Törmälehto (2003) but due to the updated reporting details and the insurance and pension related items in the HFCS data applied in this article, the level of data aggregation slightly differs. Table (4.) corresponds in Table (1.) with steps D and E. The grey areas in the table emphasise the differences between national accounts and household surveys. In practise, the micro income components tend to have important differences with NA counterparts even when the conceptual link is strong (e.g. imputed rents and household sector operating surplus as briefly discussed in the next section (see e.g. Törmälehto 2019 for a more detailed discussion).

2.2 The distributional micro data sources and coherence with national accounts

Step E of the framework presented in table (1.) and table (4.) requires information on the distribution of sub-components of primary income by income decile. In this section we first examine quality of the micro data used for such distributions, and in particular coherence of income flows in micro and macro aggregates. We then provide an overview of the within-component distributions estimated from survey data.

For the disaggregation of the household sector primary income flows by deciles, two different micro data sets are used. For the most part, we rely on income data from EU Statistics on Income and Living Conditions (EU-SILC) provided by Eurostat. The micro data covers income reference years 2007-2018 (EU-SILC survey years 2008-2019)[11]. For certain income components, we use micro data from the Eurosystem Household Finance and Consumption Survey (HFCS) made available by the ECB (ECB, 2020). The HFCS data are available for three waves on roughly three-year intervals (around 2010, 2014 and 2017)[12].

Although the ratio of a survey estimate of a total amount of income and a corresponding NA aggregate does not necessarily imply bias in the *relative* distribution of an income component, such ratios – coverage rates - often are used as quality indicators of micro income data. Consequently, the differences between household sector account aggregates and EU-SILC estimates have been studied quite extensively (e.g. Eurostat 2018; Fesseau et. al, 2013; Törmälehto, 2021). Regarding the HFCS, the methodological report by the ECB has a chapter on comparability covering coherence with macro data and also with EU-SILC (ECB, 2020).

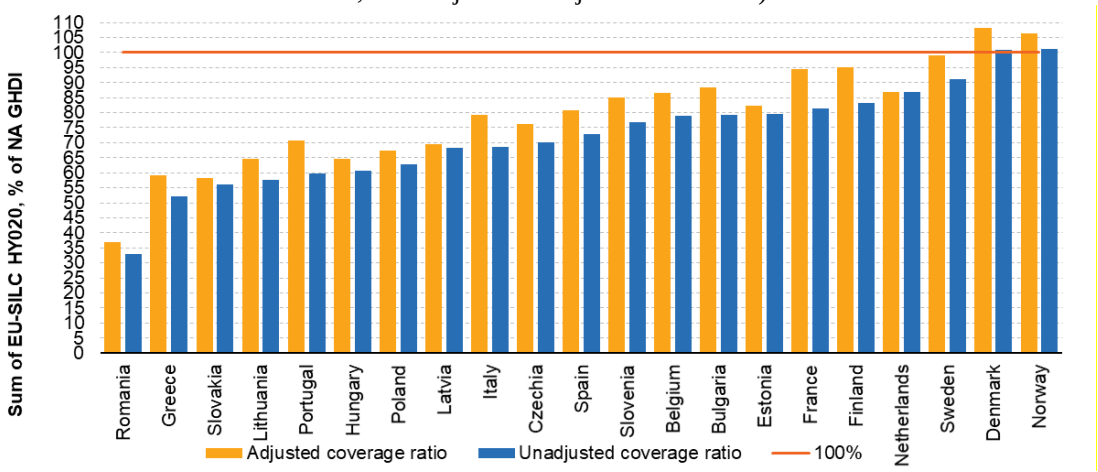
In order to put the quality of EU-SILC income data of the three countries examined in this paper into context, Graph (1.) compares EU-SILC aggregate disposable income with NA GHDI in nearly all EU countries. The Graph reproduces the results from Törmälehto (2021), and includes an adjustment for the main conceptual differences (such as operating surplus and property income from insurance policies). After the adjustments, the coverage rate of EU-SILC disposable income in France and Finland stands around 95 % while in Spain it is around 80 % of the reconciled national accounts

[11] We use the EU-SILC UDB version 2021-1 (April 2021). Data from income reference year 2006 are not used because of changes in data collection in France and Spain. France began to use administrative data extensively in EU-SILC in 2007. Similar changes were made in Spain in 2013 but the data were revised backwards to income reference year 2007 (Méndez Martin, 2019, see also Törmälehto et al., 2017).

[12] The HFCS UDB versions we use are 1.5 for wave 1, 2.4 for wave 2 and 3.2 for wave 3.

aggregate. These are reasonable levels in comparison to most countries. Income data for Spain, Finland and France in EU-SILC benefit from the use of administrative data, which indeed is one motivation for us to focus on these countries (see e.g. Trindade and Goedemé 2020; Törmälehto et. al, 2017).

Graph 1: Coverage rates of EU-SILC disposable income to NA gross disposable income, adjusted for conceptual differences, income reference year 2014, EU-SILC survey year 2015
(sum of EU-SILC variable HY020, % of adjusted/unadjusted NA GHDI)



Source: Törmälehto (2021), based on author's computations from EU-SILC UDB 2015-1 (variable HY020) and annual sector accounts tables (transaction B6G S14).

Income before taxes and transfers (primary income) rather than disposable income is in the focus of this paper since the aim is to allocate the NA primary income components to income deciles using micro data. Indeed, the coverage rates of disposable income mask variation in the sub-components. The main components of income before taxes and transfers available from EU-SILC are wages and salaries, self-employment income, rental income, interest, dividends and profit sharing and imputed rents of owner-occupiers. As a proxy for NA property income paid, we use interest repayments on mortgages. EU-SILC also contains a variable on employers' social contributions and we also use it in the breakdowns although concentration of wages and salaries could have been a sufficient proxy.

The coverage rates of the survey estimates of total amounts of these components with their conceptual counterparts in NA is shown in the table (5.). Such comparisons include a number of caveats related to conceptual differences, data sources, and production methods, including survey sampling and non-sampling errors as well as different target populations. Nevertheless, the table confirms that wages and salaries have a reasonable coverage rate in all countries while self-employment and property income can have much lower coverage rates which also exhibit significant variation between the countries.

For wages and salaries, the conceptual differences are small and moreover all three countries use administrative data in EU-SILC (Trindade & Goedemé, 2020, annex 2). This may explain the relatively high and stable coverage rates. With mixed income, there is more profound variation both across the countries and over time although at least Spain and Finland indicate that they use administrative data (ibid.). From EU-SILC, we have added rental income to self-employment income to align better conceptually with NA which improves the coverage rates significantly.

Table 5: Coverage rates (%) of EU-SILC estimated total amounts with respect to national accounts totals in Spain, Finland and France

	2007	2010	2013	2016	2017	2018
Wages and salaries						
ES	96	92	92	94	95	94
FI	96	96	97	96	97	96
FR	84	85	87	90	88	88
Self-employment income and rental income / mixed income (gross)						
ES	44	41	41	46	47	46
FI	73	71	73	68	68	70
FR	70	87	96	100	92	104
Imputed rents / operating surplus (gross)						
ES	142	130	115	119	120	121
FI	97	99	99	100	104	103
FR	77	77	75	70	71	67
Interest, dividends and profit sharing / interest received and distributed income of corporations						
ES	41	60	60	39	31	33
FI	60	71	73	74	78	79
FR	347	283	347	263	266	216
Interest repayments on mortgage / interest paid						
ES	40	43	44	42	40	36
FI	63	58	58	49	47	44
FR	43	42	47	43	48	47

The coverage rates of imputed rents and interest, dividends and profit-sharing point to comparability issues also within EU-SILC and are hard to explain. The very high coverage rates of property income in France have been noted before but the reason for this has not been adequately documented[13]. It should be noted, though, that while the property income coverage rates for Finland and Spain are low they still are relatively good in comparison with many other EU-SILC countries (Törmälehto, 2019). Regarding interest repayments, only mortgages are covered in EU-SILC which should explain the level of the coverage rates.

As a proxy for NA household gross operating surplus, we have used imputed rents from EU-SILC. Imputed rents in these countries are estimated with the rental equivalence method, although the estimation methods may differ (Törmälehto & Sauli, 2013). The observed differences in coverage rates may be due to a number of factors, including concept of rents and estimation methods in NA and EU-SILC, but such differences are not well document and studying these is beyond the scope of this paper[14].

The level and dispersion of the coverage rates would suggest that the micro estimates should be aligned with the NA aggregates. However, one would need to have auxiliary information on the distribution of the gap within each component by income decile.

[13] Trindade and Goedemé (2020) observed that in France pension or an annuity received in the form of interest or dividend income from individual private insurance plans is occasionally included under the target variable for income from interest, dividends, and profits from capital investment in an unincorporated business (HY090) instead of being treated as pension from individual private plans (PY080G).

[14] Rental equivalences can be estimated with econometric methods (hedonic regression), stratification or exceptionally with subjective methods (i.e. asking how much the owner would get if the residence was rented out). While the methods in EU-SILC are not well documented, it seems that France uses (hedonic) regression method while Finland used stratification method.

Such information is not available, and any adjustments would need to rely on strong assumptions. Simple rescaling by components would not change the within-component distributions but possibly to some extent the distribution of overall income used for the deciles and therefore concentration coefficients of the sub-components. Other common tools, such as reweighting or Pareto-imputations, could be used in particular to adjust upper tails of the distributions. A natural candidate for this could be property income received, however given the over-coverage in France, this is not a uniform approach applicable to all countries. Consequently, our choice for now is to use concentration shares of the components as they come from the data, without any adjustments. The sensitivity of income concentration coefficients to data adjustments could be considered in the future work.

EU-SILC does not have a direct counterpart for NA flows of investment attributable income attributable to holders of collective investment funds, life insurance policies and (voluntary) pension entitlements. Allocation of these needs to be based on ownership of the funds because in micro statistics income flow is typically recorded after the insurance policy ends or savings and accrued return are withdrawn from the policy or collective fund. In national accounts, the flow is recorded when the asset is held in the insurance company or collective investment fund, i.e. there is an annual income flow to household sector.

For this reason, we use the distributions of underlying assets (mutual funds and voluntary pensions/life insurance) by income decile from the Eurosystem Household Finance and Consumption Survey (ECB, 2020). HFCS is available on a three-year frequency and the latest data are from wave 3 with reference years mostly 2017.

The estimated total value of the underlying assets (mutual funds, life insurance, voluntary pensions insurance) in the HFCS are generally well below the total value of corresponding assets in NA. The variation between the countries and asset types does not lend to an easy explanation. For the purpose of this paper, the question is whether it is reasonable to use the concentration of assets by income deciles for distribution the NA flows. As with EU-SILC, we do not make assumptions about the distribution of the observed gap by income and use the HFCS estimates as derived from the data. Table (6.) shows the coverage rates of mutual funds, life insurance and pension entitlements.

Table 6: Coverage rates of mutual funds and life insurance and pension entitlements, HFCS wave 3.

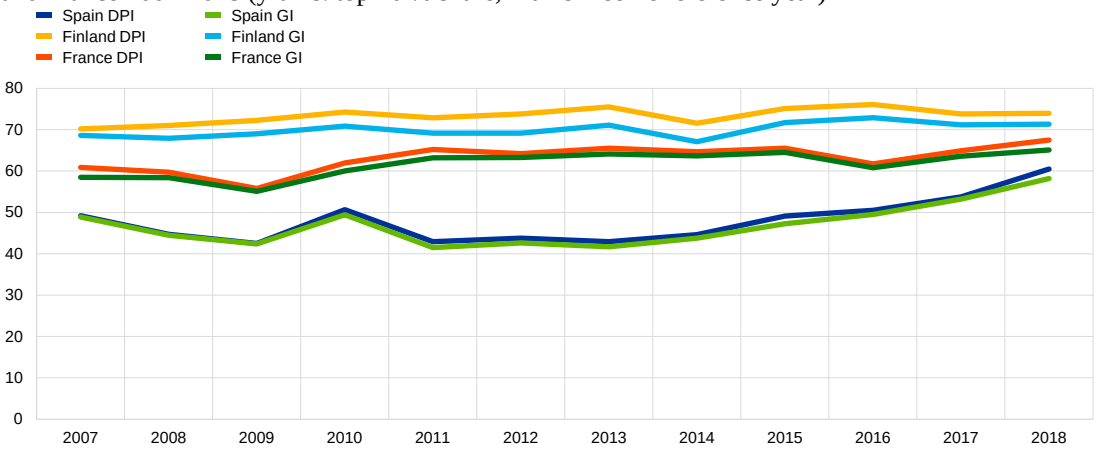
	Finland	France	Spain
HFCS Mutual funds	19,832	74,008	101,225
NA Investment fund shares	21,795	311,123	313,327
Coverage	91 %	24 %	32 %
HFCS voluntary pensions and life insurance	21,912	612,247	151,742
NA Life insurance and annuity entitlements, pension entitlements	50,769	1,905,445*	172,849
Coverage	43 %	32 %	88 %

*NA only life insurance and annuity entitlements

2.3 Concentration of primary income components in micro sources

We next illustrate the relative concentration of income flows based on EU-SILC and HFCS that are later used to disaggregate NA aggregate income flows by deciles. Deciles are based on equivalised gross income, i.e. income before taxes but after current transfers received.[15] The income concept available in the HFCS is gross income which necessitates using gross income also from EU-SILC (see ECB, 2020, for coherence of HFCS and EU-SILC income data). However, income ranks based on gross and disposable income in EU-SILC are fairly similar because taxes have a modest reranking effect[16]. As a way of example, the graph (2.) shows the within component distributions of interest, dividends and profit-sharing in 2007-2018 in the top decile based on both gross income and disposable income.

Graph 2: Concentration of interest, dividends and profit-sharing to top income decile in Spain, Finland and France 2007-2018 (y-axis: top 10 % share, x-axis income reference year)



Note: Top 10 % is based on equivalised gross/disposable income. DPI=decile based on equivalised disposable income. GI=decile based on equivalised gross income.
Source: Authors' elaboration from EU-SILC UDB 2021-1.

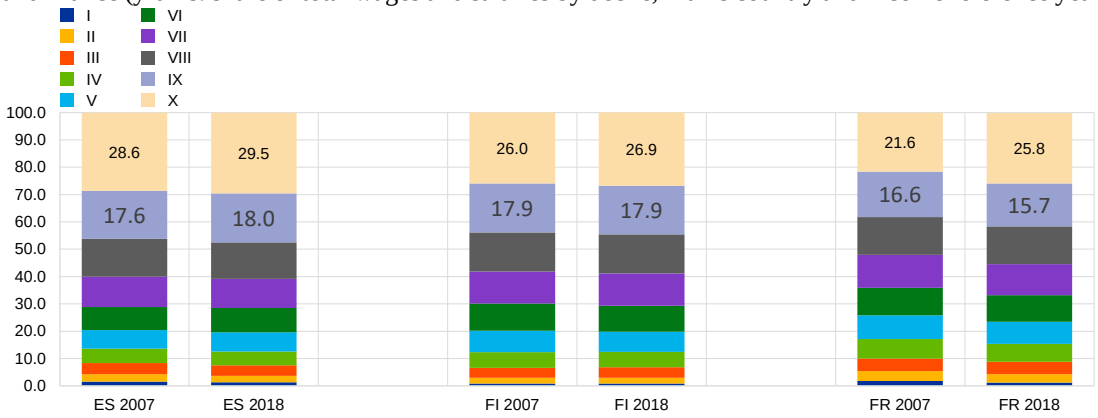
The graph shows has highest concentration for this component in Finland, followed by France and then Spain. The choice of gross versus disposable income has a slight difference on levels in Finland, but otherwise the differences are negligible and time trends the same. As noted earlier, there are drastic differences in coverage rates of this item, ranging from around 30 % of NA total in Spain to 80 % in Finland and more than 200 % in France. However, we see no firm ground to adjust the distributions on assumptions which by necessity would be of ad hoc nature, although one may suspect typical under-estimation in the top tail of this type of very skewed income component.

Wages and salaries are the main component of primary income and their concentration along the gross income deciles is decisive for the results. Graph (3a.) therefore shows the concentration shares in the first and the last year of the micro data. Wages and salaries are more concentrated to the upper part of the income distribution in Spain. The

[15] In Kavonius (2019) and Kavonius (2020) disposable income is applied in this context.
[16] Imputed rents are not included in gross (pre-tax) income although imputed rents tend to re-rank households depending on their homeownership status (outright owner, owner with mortgage, tenant). However, imputed rents are not available in the HFCS and sensitivity of concentration of income to the inclusion of imputed rents is left for future work.

data suggests slightly increasing concentration in Spain and Finland but overall the concentration shares are relatively stable. In France, the top 10 % has increased its share of total wages and salaries quite markedly from 2007 to 2018.

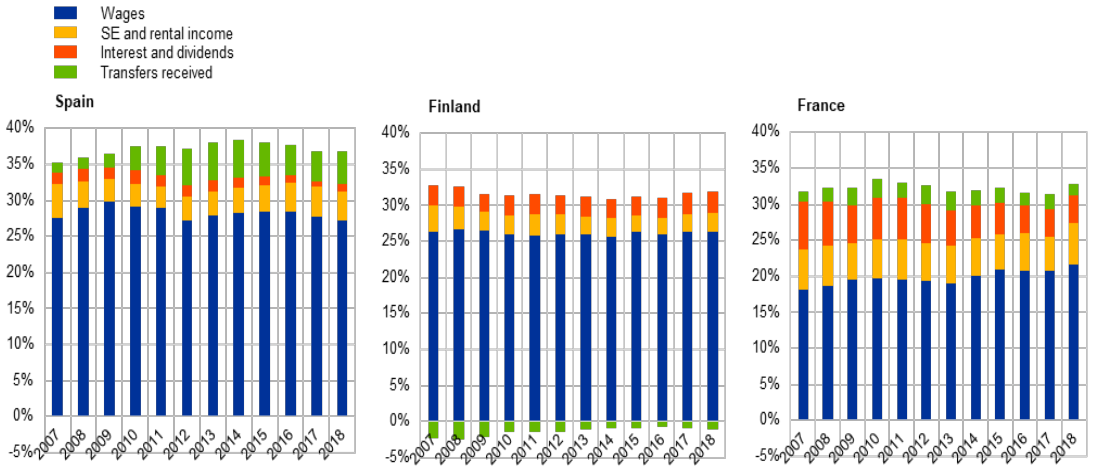
Graph 3a: Concentration of wages and salaries by gross income decile in 2007 and 2018 in Spain, Finland and France (y-axis: share of total wages and salaries by decile, x-axis country and income reference year)



Source: Authors' elaboration from EU-SILC UDB 2021-1.

While this paper examines functional rather than personal distribution of income, it is of interest to see the evolution of pre-tax Gini coefficients and how the sub-components have contributed to this in the three countries. The contributions depend on the relative shares of the income components, their unconditional distributions (within-source Gini coefficients), and correlations with pre-tax income. Graph (3b.) shows the decomposition for the four main sub-components of pre-tax income in EU-SILC.

Graph 3b: Decomposition of gross (pre-tax) income Gini coefficient by income source in Spain, Finland and France 2007-2018 (y-axis: contribution to Gini of gross income (%-points), x-axis country and income reference year)



Source: Authors' elaboration from EU-SILC UDB 2021-1

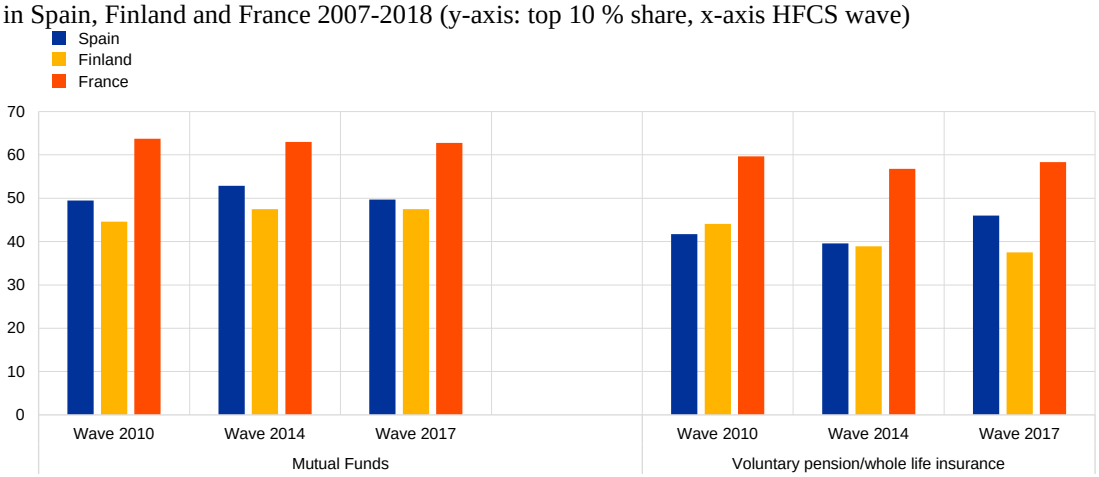
In Spain, the role of transfers has increased markedly, reflecting their increased importance for household income, while pre-tax income inequality has increased. In Finland, the trend of pre-tax income has been stable or slightly declining and transfers received have a negative contribution[17]. In France, pre-tax income inequality also

[17] The contribution is negative if correlation (Gini correlation) of income component with gross income is negative (within-source Gini and income share are always positive).

increased during the financial crisis and then levelled off. Moreover, the role of self-employment and rental income as well as interest and dividends is markedly high.

Turning then to the HFCS and concentration of mutual funds and voluntary pensions/life insurance to the top 10 %, we find that France has the highest concentration of both asset types followed by Spain and then Finland[18]. This is shown in Graph (4.). Given that the shares of mutual funds are relatively stable over time, we use the latest observation of the years between the waves (i.e. wave 2010 for years 2007 to 2013, wave 2014 for years 2014 to 2016 and wave 2017 for 2017 and 2018). For voluntary pensions/life insurance, there is more volatility but we follow the same strategy with the exception of Finland where wave 1 data is not comparable to waves 2 and 3. For Finland, wave 2 shares are used for years 2007 to 2016 and wave shares from 2017 onwards.

Graph 4: Concentration of mutual funds and voluntary pensions/life insurance assets to top income decile in Spain, Finland and France 2007-2018 (y-axis: top 10 % share, x-axis HFCS wave)



Note: Top 10 % is based on equivalised gross income.
Source: Authors' elaboration from HFCS UDB (versions 1.5, 2.4 and 3.2).

3 Results

3.1 Rates of return

Graph (5.) shows rates of return using different income or rather in this case rate of return concepts. Practically, these are outcome of step 3 of the framework (Table 1). The concept and application of rate of returns is not straightforward. The returns are typically a real economy concept and refer rather to the returns of fixed investment of corporations rather than financial assets. Piketty (2014, 25) includes in his concept profits, dividends, interest, rents and other income from (physical) capital. This is in line with generic booking-keeping based definition that it is equal to net operating income after tax and practically covers distributed property income and retained earnings.

From corporation and particularly production point of view, this makes much sense. This is the part of income which is accumulated by the capital invested in the production

[18] In Finland, HFCS data on mutual funds is based on administrative data and voluntary pensions are estimated from tax data. In France and Finland, HFCS gross income is based on administrative data.

process. Similarly, paid wages and social contributions are income accumulated by labour.

From the household investment point of view, this concept raises several questions. First, this national accounts' income concept refers to income generation of corporations and as the majority of corporation owners are something else than domestic households, the large part of the distributed profits are received by other than domestic households. The money can be received by foreign households or corporations. In the case of a corporation, it can be thought that the money benefits always finally its owners. However, the owner can be a general government or non-profit institution serving households and these institutions change the logic of distribution completely.[19]

Second, retained earnings are typically never received by households or equity holder.[20] Theoretically, retained earnings increase the value of equity depending how earnings are further invested. Therefore, when the returns are discussed in the context of households and in particular, in the context of investment in financial assets, the concept refers to received property income like dividends, interest and often also realised holding gains. These are income truly received by households.

There is an additional complication in this approach. If we are operating in the national account framework as Piketty (2014) does, the national accounts do not recognise holding gains as an income and unrealised gains are accounted as value changes in the financial accounts, i.e. Piketty's framework does not cover holding gains.[21] This is not exactly in line with the Hicksian income concept which is the one usually used in the economic theory. Hicks (1939, pp. 172) defines income in the following way "…a man's income as the maximum value, which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning…". This implies that all holding gains (realised and unrealised) should be included in the income and thus, the development of price changes of assets would affect the income of households.

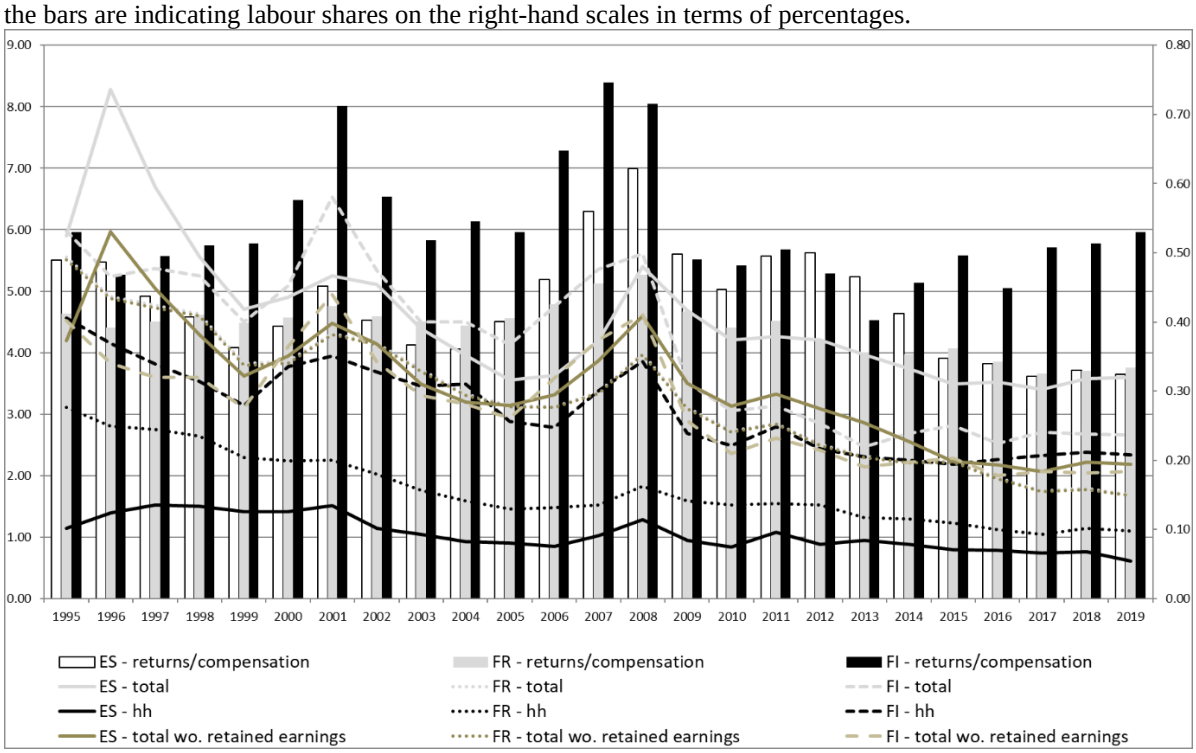
Graph (5.) shows four different measures of returns for Finland, France and Spain. The main purpose of this graph is to illustrate that however we conceptually are looking this, the development is similar. The denominator here is the market value of underlying stock, i.e. for instance in the case of dividends, the stock of the underlying equity. It is impossible to have average investment in capital in the national accounts, which would be an appropriate denominator, and thus, the value of equity is used normally instead. Theoretically, this should not differ so much from the value of the capital stock of the company. In the balance sheet terms, the equity additionally includes goodwill. The measures presented in the graph are the following:

- Measure "total" covers all the received property income and retained earnings. This concept is line with the concept used by Piketty (2014).

[19] Compare: Milanovic 2017.
[20] Reinvested earnings on direct foreign investment are similarly imputed distributed income and subsequent reinvestment. However, this does not impact on the calculation presented in this paper as at the total economy level these are netting out and additionally, these transactions do not concern household sector.
[21] Kavonius 2006.

- Measure “hh” covers all the property income actually received by households. Comparing to concept “total” this excludes property income received by other sectors and in does not include retained earnings as these are actually also not distributed to the households.
- Measure “total wo. retained earnings” is the same as the concept “total” but it does include retained earnings. In principle, this covers all the actually paid property income.
- Measure “returns (*r*)/compensation (*c*)” covers as a numerator the same measure as “total” and as a denominator wages and salaries and social contributions. As Piketty’s *g* is equal to *r+c*, then: when the ratio decreases *r* is growing slower than g and respectively, when the ratio increases, *r* is growing faster than *g*. This measure is added to illustrate how much the actual income distribution is dependent on the rates of returns.

Graph 5: The development of rates of returns by using different concepts of rates of returns and labour share (returns/compensation) for Spain (ES), France (FR) and Finland (FI). The lines show the development of rates of returns and are indicated on the left-hand scale in terms of percentages (%) and the bars are indicating labour shares on the right-hand scales in terms of percentages.



Source: European Central Bank and authors’ calculations.

Graph (5.) shows that it does not really make difference for the time trend which of these different concepts of returns are used, the returns are decreasing in the period from 1995 to 2019. The rates of returns have decreased to half or even below in 2019 from the levels of 1990’s. There are obviously level differences depending on the income concept, for instance retained earnings are clearly increasing the levels of returns. The decreasing trend is clearer in France and Spain than in Finland but also in the case of Finland the returns are lower than the most of time since 1995.

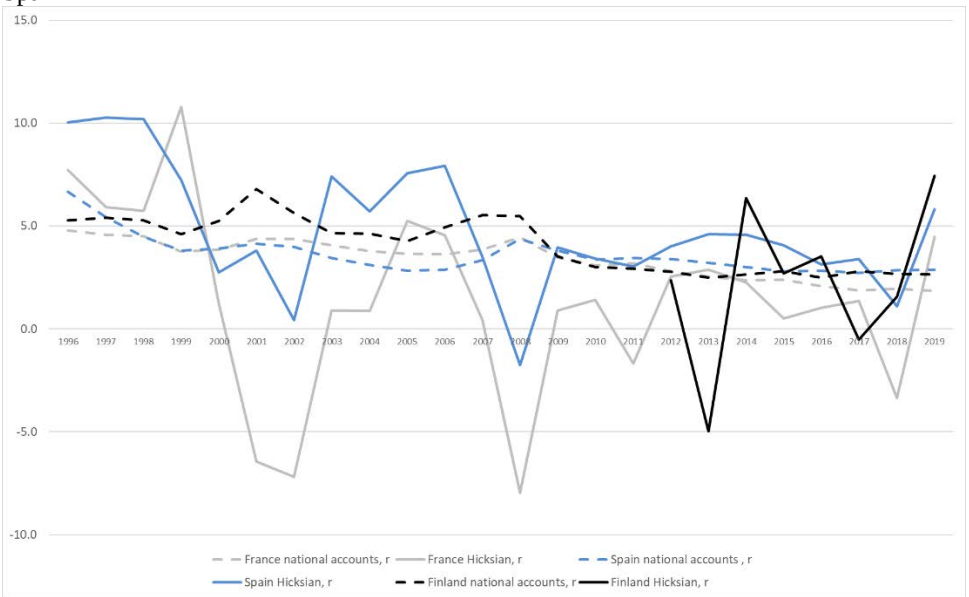
The economic cyclical difference can be clearly seen. Against the European background, the development is logical. In the beginning of euro, i.e. from 1999 onwards, the interest rates of euro area countries converged. In these countries, this

meant the decrease of interest rates. There are two peaks in the returns: one in 2000/01 and another one in 2008. The first one is the outcome of the economic boom in 1995-2000 which reflected also strongly in particular in the end of the boom to the financial markets. The second one is the peak before the last financial crisis.

The overall development is logical. In the second half of 1990's there was an economic boom, profits were increasing, and they were also increasingly distributed. From the start of 1999, the euro is now a real currency, and a single monetary policy is introduced under the authority of the ECB. A three-year transition period begins before the introduction of actual euro notes and coins, but legally the national currencies have already ceased to exist. The monetary integration led also to the convergence of interest rates and, in these three countries the interest levels converged to the German interest rates, i.e. decreased. In the beginning of 2000's the economy started again to boom and led to the increasing distributed profits and at the same time the ECB kept the interest rates relatively high. This can be seen in the graph as increased returns. This turned in 2008 to bust and decreasing distributed profits and interest rates.

As indicated before, the level of the rates of returns depend on the applied income concept. The key is whether the holding gains are included in the income concept or not. Graph (6.) shows rates of returns based on the national accounts' income concept, which do not include holding gains, and Hicksian income concept, which includes unrealised holding gains. There are two main messages in this graph. First, the Hicksian rates of returns are not in this time period higher than national accounts' rates of returns. The holding gains make the rate of returns more volatile but overall the returns do not exceed the level of rates of returns without holding gains. Second, no matter which returns we use, the rates of returns have decreased roughly to the half of levels they used to be in the 1990's.

Graph 6: Rates of returns based national accounts' and Hicksian income concept for Finland, France and Spain



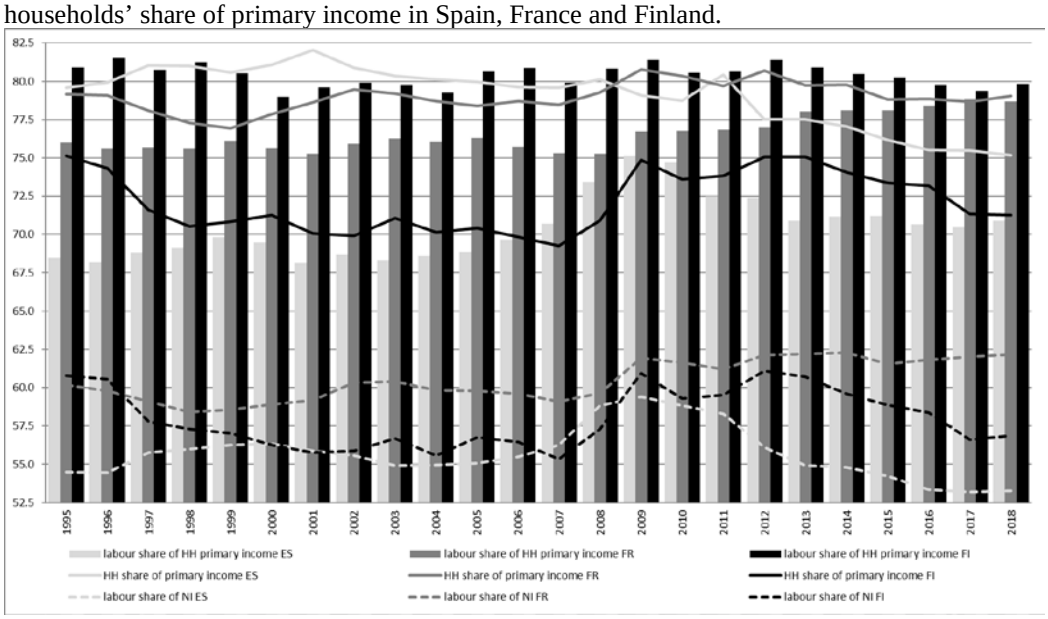
Source: European Central Bank and authors' calculations. Note: the Finnish Hicksian income concept is available only 2012 onwards as that is when the other changes of financial balance sheets are available.

3.2 The development of labour and property income

Graph (7.) shows labour share of national income, labour share off household primary income and households' share of primary income in Spain, France and Finland. This is practically the outcome of step C of the framework. Labour share of national income (dashed line) shows how much compensation of employees are paid in relation to primary income in the whole economy. This does not only cover the property income paid to households but also property income paid to the other sectors and abroad. As can be seen in the graph, in the past 25 years there are no large changes in levels. This also does not support Heather Boushey's (2019, pp. 126-129) argument that there would be a global shift from labour to capital in the past forty years. At least these European countries seem to differ from the development of the U.S. Similarly, Goodhart and Pradhan (2020, pp. 94) argues that the demographic changes in the western economies, the corporate sector is likely to respond by raising capital/labour ratio, i.e. by adding capital to compensate for labour, which is factor of production that will be getting scarcer and more expensive.

The developments are quite different in the three countries. In France the share is around 60 per cent from 1995 to 2008 and that after it has increased to 62.5 per cent. The financial crisis of 2008 is typical culmination point for the development as then the profitability of corporations decreased considerably. Profits are overall more volatile than compensation of employees, as the employment does not react particularly rapidly on the business cycles. Typically, this also reflects the profitability of companies, i.e. typically, if the labour share decreases rapidly, it is an indication of improved profitability. In Spain, the share increased from around 55 per cent in 1995 to 60 per cent in 2009. After this, the share has decreased to around 53 per cent in 2018. In Finland the share decreased from 61 per cent in 1995 to 55 per cent in 2007. Then the share increased rapidly reaching 61 per cent in 2012 and then it has decreased reaching 57 per cent in 2018. The development is line with the overall economic development: in the years of faster growth the labour shares tend to decrease and during slower growth or depression, the shares tend to decrease.

Graph 7: Labour share of national income (net), labour share off household primary income and households' share of primary income in Spain, France and Finland.



Source: European Central Bank and authors' calculations.

Household share of primary income indicates how much of the generated income in the economy is received by the household sector. Primary income consists of compensation of employees, which households receive by definition and operating surplus, which can be distributed to whichever holding sector. The income, which is not distributed to the households, is decreasing the labour share. Often the interpretation is that decreasing labour share would indicate increasing inequality. However, this relatively large share of income is received by other sectors. In the case of corporations, these can be for instance used to pay dividends or further invest. If the receiving sector were either general government or non-profit institution serving households, these money would benefit households. It should be noted that particularly Finnish but also French general government sectors are large owners of equity. In the case of Finland the pension funds, which are allocated to the general government, are large owners of equity as the Finnish obligatory employment pension is partly funded. Moreover, the government helds equity of some strategic important corporations. The dividends of these corporations are typically accounted for the government budget. If the owner is abroad, it can be anything from a private person to pension fund or central bank. This is also partially related to inequality reducing factors after the WWII raised by Anthony B. Atkinson (2015, pp. 68-74) that capital became less unequally distributed.

Concerning the households' share of primary income, the developments have been quite different. In France the share has varied between 77 and 80 per cent between 1995 and 2008. In Spain the share was from 1995 to 2011 around 80 per cent but then it has continuously decreased to 75 per cent in 2018. In Finland the share was 75 per cent in 1995 and it continuously decreased below 70 per cent in 2007. Then the share increased back to 75 per cent in 2009 and after this steadily decreased to 71 per cent in 2018.

Labour share of household primary income describes the actual distribution of property and labour income in the household sector, i.e. this shows how much households are on average living on their work and how much with the capital. As can be seen in the graph, these shares have remained relatively stable or alternatively, the labour share has increased. This means that the role of property income at the aggregate level has not increased. In Finland, the labour share of household primary income has remained the whole period from 1995 around 80 per cent. The share is varying slightly and it follows the same trend as the labour share and the household share of primary income. The reason for the more muffled development is twofold: First, the share and thus, the role property income is smaller. Second, the portfolio of the households differ from the portfolio of the other sectors. The main obvious difference is the stock of owner-occupied housing. The returns of housing is typically less volatile than the returns of financial assets. In Spain, the labour share of primary income has been mainly around 70 per cent. During the 2008 financial crisis, the share peaked at 75 per cent mostly due to the reduced returns in the housing markets. In France, the share has smoothly increased from 76 per cent in 1995 to 79 per cent in 2018.

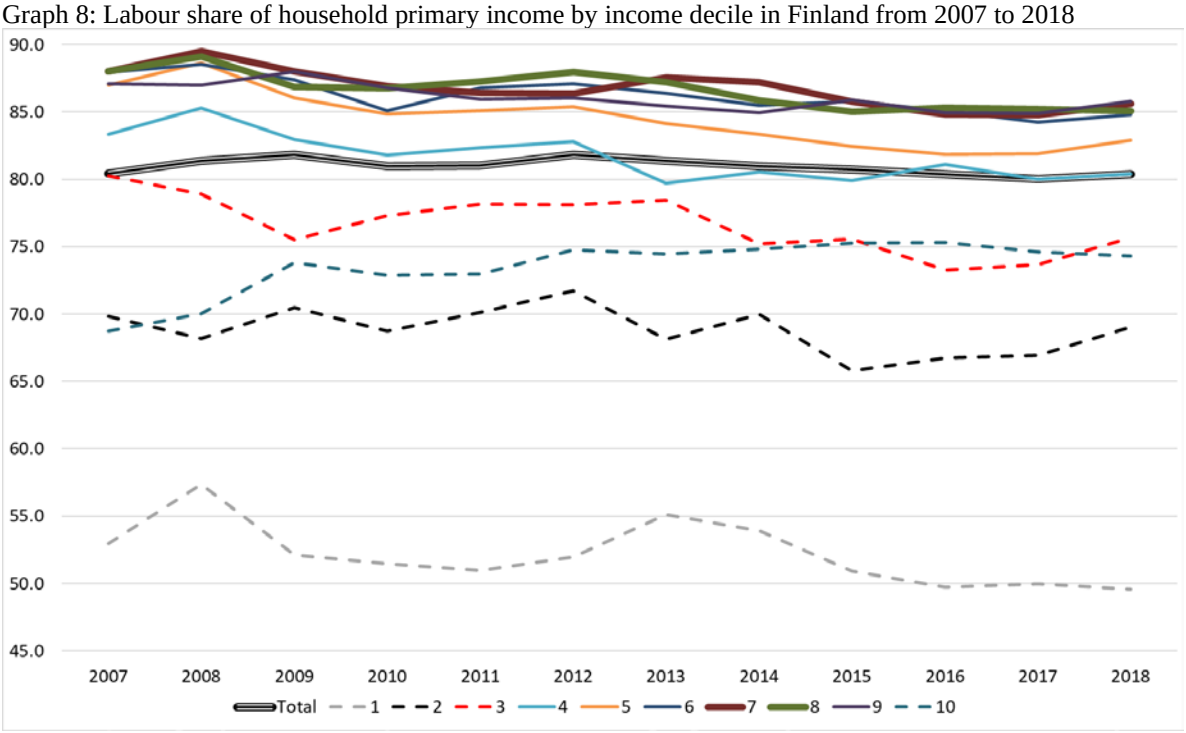
3.3 The development of labour and property income shares by income deciles

In the next part we will focus on the importance of labour and property income in the generation of income of different income deciles. The interpretation is that if the capital/labour ratio changes in some deciles then the relatively increasing income component is running the income developments of these deciles. As noted earlier, the

income deciles are based on gross income. These are practically the outcome step (E) of the applied framework, i.e. the household labour shares of primary income are broken down by income decile using estimated derived from EU-SILC and HFCS micro data.

Graph (8.) shows the Finnish distribution property income by income decile. The fat line shows the total labour share of household primary income, i.e. this correspond with the bars in graph (7.). The deciles which have lower labour share than the total are dashed and the deciles which have the highest labour shares are presented in bold lines in the graph. The rest of deciles, i.e. the deciles which are above the total but which are do not have the highest labour share, are indicated as “normal lines”. Graphs (8.), (9.) and (10.) are constructed in the same way.

Graph 8: Labour share of household primary income by income decile in Finland from 2007 to 2018



Source: European Central Bank and authors’ calculations.

Between 2007 and 2018 the labour share of households has remained relatively stable at around 80 per cent. Several observations can be made concerning the distribution of labour share between the different income deciles. Both the top income decile and the three lowest income deciles (first, second and third deciles) are below the total or average labour share. The reason for this in these two cases are of course completely different. The lower deciles contain largely people who are mainly living with transfers and the level of primary income is relatively low. Therefore, relatively low wages or property and entrepreneurial income impact much on this relation. The property income are probably mainly coming from owner-occupied housing. It is also worth pointing out that the labour share has slightly decreased in these groups from 2007 which indicates that the labour participation in these groups have decreased.

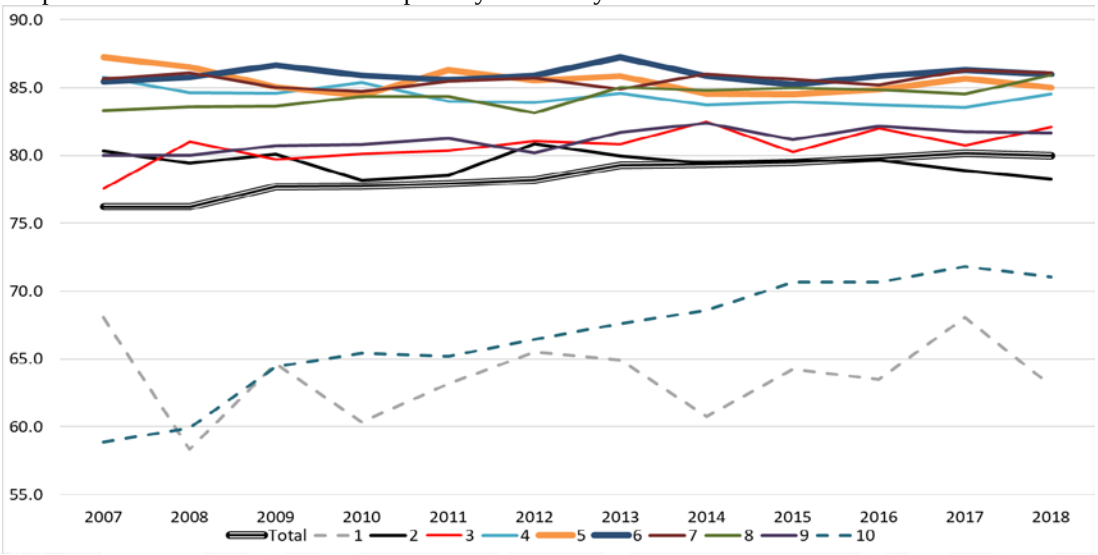
The tenth decile contains households which have relatively high salaries. They earn lot but additionally, their property income are relatively high. Branko Milanovic (2019, pp. 14-21) writes that this typical for the modern liberal meritocratic capitalism where the

people are capital- as well as labour-rich. This is a difference to the classical capitalism or social democratic capitalism where the rich are typically only capital-rich. These people are typically rentiers, financiers and owners of large industrial holdings. In the meritocratic capitalism, the rich are highly paid managers or experts. These people are wage workers who need to work in order to draw their large salaries. These same people, whether through inheritance or because they have saved enough money through their working lives, also possess large financial assets and draw a significant amount of income from them. It is also interesting to notice in the Graph (8.) that the labour share of these people has increased.

The highest labour shares are in the eighth and ninth income decile. Their labour shares were around 88 per cent in 2017 and has slightly decreased to 85 per cent in 2018. These people are earning relatively well – it can roughly be said that one person families up to EUR 5 000 monthly gross salaries would be in this category. The families live often in owner occupied housing but due to relatively high salary level, the labour share also remains relatively high. In the remaining income deciles, the labour shares are slightly lower and the same slightly decreasing trend is evident.

Graph (9.) shows the labour share of primary income by decile in France. In France, the total (average) labour share has increased from 76 per cent to 80 per cent. In the French data, there is a certain particularity which may result from increased concentration of wages and salaries to the right tail of the income distribution (see graph 3 earlier): the highest tenth income decile dominates the whole development of labour shares. This appears in two aspects: the only income decile in which the labour share is clearly increasing is the tenth decile. This is also reflected to the development of total labour share. The total labour share is actually an income-weighted average of the labour shares of different deciles. This means that if one or few deciles receive large share of income then they also have more impact on the total, i.e. this is typically an indirect indication of large income distribution between households. The second aspect is that only the first and tenth income deciles are below the total income labour share. This also clearly indicates the relatively large dominance of the tenth decile. The rest of the deciles have roughly 80-85 per cent labour shares and also the shares are during this period relatively stable.

Graph 9: Labour share off household primary income by income decile in France from 2007 to 2018

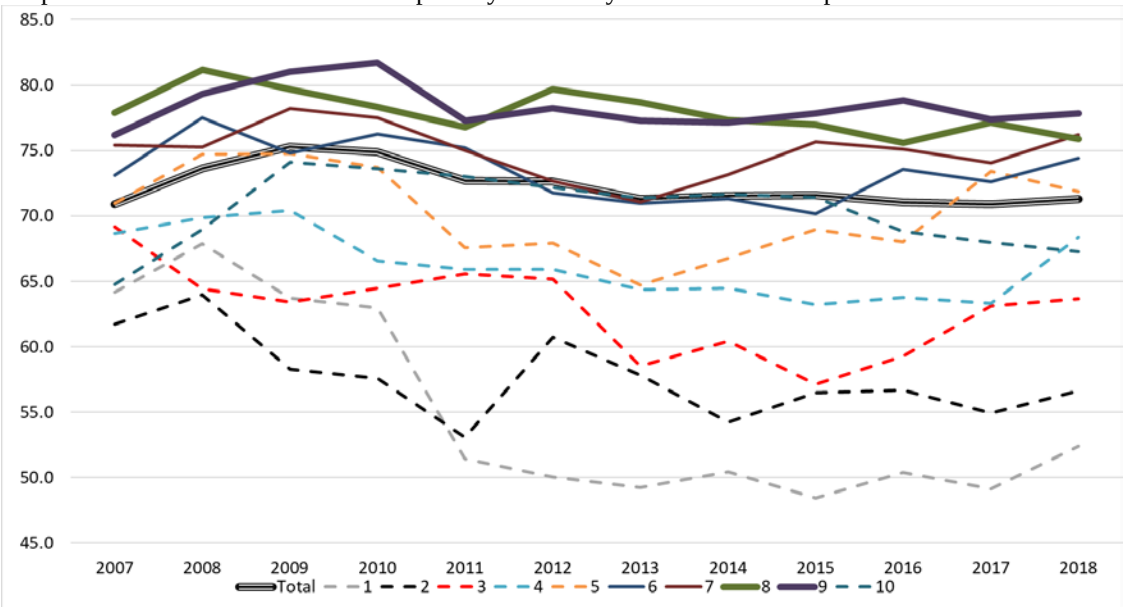


Source: European Central Bank and authors' calculations

Graph (10.) shows the labour share of primary income by decile in Spain. This graph is structured in the same way as the Finnish and French ones. However, the graph shows considerable structural difference to Finnish and French economies: all deciles from the first to fifth are below the labour share of total households. The shares were already in 2007 below the total share but typically, lower the income decile is, more its labour share has dropped after the financial crisis. In the case of Spain, this is a reflection of relatively bad situation in the labour markets. One of the highest share of the population is in Spain partially or fully outside the labour market.

The tenth decile follows relatively close the share of total (average) households and the ninth and tenth deciles have the highest labour shares. It is notable that their primary income labour share is lower than in the Finnish or French economies. The total (average) development of labour share has remained relatively stable.

Graph 10: Labour share off household primary income by income decile in Spain from 2007 to 2018



Source: European Central Bank and authors' calculations

4 Conclusions

This article presents a framework, which starts from the balance sheets of the economy, links those with the corresponding income flows of national income, and separates the income flows that belong to the households. Finally, these flows are linked with the income distribution data, which allows scrutiny of capital and labour income by income deciles consistent with National Account concepts.

This is done for Finland, France and Spain and the first part of this exercise focuses on years 1995 to 2018. The calculations in this paper are based on the internationally available data sources, i.e. national accounts and micro data from EU-SILC and HFCS. Because of micro data availability the last part of this exercise, i.e. the labour income shares of household primary income, could only be estimated for years 2007-2018. Moreover, as the international data sources do not also have similar detail as at country level, this exercise could not be done at the same detail as Kavonius (2019, 2020) for Finland.

The paper aims to analyse whether the income generated from wealth or labour compensation is driving the income generation. The structural changes in labour shares indicate that the role of either property or labour income is changing in the income generation. Piketty argues that wealth accumulates increasingly in wealthy households and this wealth is playing an increasingly important role in the generation of income, which will lead to increasing income dispersion. This process would mean in this framework that in the highest income deciles, the ratio between capital and labour income should move structurally towards capital income.

In our (arguably short-term) decile-based analysis, this is not evident. The share of income which households receive from wealth is sensitive for the economic cycles but there is no clear structural change – the share of labour income in the highest income deciles is actually rather increasing than decreasing. Thus, it looks like, that we are rather moving to the modern liberal meritocratic capitalism described by Milanovic, where the people are capital- as well as labour-rich, than having than having new heydays of classical capitalism. The timeframe in this analysis is considerable shorter than the one used by Piketty but availability of comparable data does not also allow longer timeframe for analysis which is conducted in this detail. Piketty's agenda is also targeted to the richest one per cent or even less which are typically not captured by the macroeconomic framework or even official (cross-national) statistics based on sample surveys.

It is also essential notice that if we analyse only the distribution of gross national income, the development looks different. In the total economy development, the property income has more emphasised role than in the pure household sector income and therefore, the overall development is more volatile. The overall picture does not change much if we are looking total economy national income distribution or household functional income distribution. The relatively volatile property income are changing the ratio but clear structural changes are not taking place in this development. At the national level, the share of the capital income is for obvious reason larger than at the household level but this does not automatically mean increasing (inter-personal) inequality. Particularly, these countries, which are analysed in this paper, have considerable equity ownerships by general government and non-profit institutions serving households which returns are used for public good.

What is then actually happening in these economies? The wealth stock has indeed increased much in the past decades. The increase is a result of increased investment in financial and non-financial assets, i.e. the investment of savings, as well as the price increase of the actual assets. The returns used to be higher some decades ago and if the returns were similar now than they were twenty years ago, the capital/labour ratio would have moved structurally for capital. This would also have a major impact on inequality as the capital income is typically centralised in the highest income deciles. As from 1995 to 2019 the rate of returns in these three countries have practically halved, the capital/labour ratio has actually remained relatively stable. At least yet, the Goodhart's and Pradhan's raise in capital/labour ratio is not taking place even though the demographic changes, i.e. decreasing share of economically active people, is already reality in these countries.

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