

Kavonius, Ilja Kristian; Törmälehto, Veli-Matti

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## Is the financial market driving income distribution? An analysis of the linkage between income and wealth in Europe

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Ilja Kristian Kavonius, Veli-Matti Törmälehto

Is the financial market driving income distribution? – An analysis of the linkage between income and wealth in Europe

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## **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 contributed to large increases in financial wealth over the past 25 years. Nonetheless, 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 functional income distribution (capital/labour shares) have not been fully transmitted 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 seems to contradict claims that, due to an increase in both financial and inherited wealth, we are entering an era of increasing income inequality.

In this article, the link between financial wealth and pre-tax household income distribution is scrutinised for three European countries using a conceptually fully consistent macro framework. First, national balance sheets are combined with the related income flows. After this, income flows that are not property income but are considered part of national income (e.g., wages and salaries) are added, the national income flows are broken down by institutional sector 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 decile. The article utilises this framework to analyse the evolution of rates of return and capital and labour shares as well as how the property income flows created by financial wealth have affected household primary income distribution.

JEL-codes: D10, D31, D32, E21, G51

Keywords: functional distribution, income distribution, national income, households, wealth

## Non-technical summary

This article presents a framework that begins with the balance sheets of the economy, which are then connected with the corresponding income flows of national income. Next, the income flows that belong to the household sector are separated. This allows examination of rates of return from capital for the total economy as well as for the household sector. Finally, household sector flows are linked with distributional income data, which allows a scrutiny of capital and labour shares by income decile, consistent with the concepts of national accounts. The breakdown by income groups is implemented by linking the national income concept with the EU-SILC and HFCS micro data, which are the only internationally available data sources which can be used for this purpose. The paper includes a comprehensive analysis of the differences between the micro and macro data, showing wide variations by income component and country. Based on a sensitivity analysis on how adjustments for the observed micro/macro differences might impact the results, the article uses the concentration of income components by decile as estimated from micro data without adjustments to match national accounts total.

The analysis is performed for Finland, France and Spain. The analysis in this article is related to but different from the analysis performed by Thomas Piketty (2014) and estimates presented in the World Inequality Database (WID). Piketty argues that wealth is increasingly accumulating in wealthy households, and this wealth is playing an increasingly important role in the generation of income, which will lead to increased income dispersion. The structural changes in the labour shares indicate that, in terms of income generation, the role of both property and labour income is changing. In our framework, this process should entail a structural shift in the ratio between capital and labour income in the highest income deciles.

The stock of wealth has indeed increased much in recent decades. This 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 actual assets. Nevertheless, returns were higher some decades ago, and if they were similar to levels 20 years ago, the capital/labour ratio would have moved structurally towards capital. This would also have strongly increased inequality, as capital income is typically concentrated in the highest income deciles. However, as the rates of return

in these three countries practically halved from 1995 to 2019, the capital/labour ratio has actually remained relatively stable.

Our (arguably short-term) decile-based analysis finds no evidence of a structural shift in capital/labour ratios in the highest income deciles. The share of income which households receive from wealth is sensitive to economic cycles, but there is no clear structural change. In fact, the share of labour income in the highest income deciles appears to have been increasing rather than decreasing. Thus, it seems we are moving towards the modern liberal meritocratic capitalism described by Milanovic (2019), where people are capital- as well as labour-rich, rather than towards a new heyday of classical capitalism. The timeframe of our analysis is considerably shorter than that used by Piketty, but issues of (micro) data availability prevent a longer timeframe for an analysis conducted in such detail and based on actual (rather than constructed or synthetic) distributional estimates.

Piketty's estimation covers the national income, i.e. the assumption is that all the income in the economy is ultimately received by the households and consequently, the other economic sectors are not having any role in the distribution of the income flows. In our model, we focus on the functional distribution of the income which is actually received by households, broken down by observed (rather than constructed) household income deciles. We also analyse how these differences in the sectoral scope as well as in the definitions of the income impact on rates of return and functional income distribution.

It is also essential to note that if we analyse solely the distribution of gross national income, a different picture emerges. In terms of total economic development of all institutional sectors, property income plays a more pronounced role and has more volatility compared to pure household sector income. Relatively volatile property income implies more volatility in the functional income distribution (capital/labour shares), but clear structural changes are not evident. At the national level, the share of capital income is, for obvious reasons, larger than at the household level, but we argue that this does not automatically entail increasing (inter-personal) inequality. In particular, the countries analysed in this article are characterised by

considerable equity ownership by general government and non-profit institutions serving households, whose returns are used for the public good.

***The more the capitalist has accumulated, the more is he able to accumulate - Karl Marx,  
Capital: A Critique of Political Economy***

1. Introduction

The last decade has witnessed much discussion on the role of wealth in the generation of income. Thomas Piketty (2014), example, argues that the growth of wealth plays a central role in the distribution of income. After WWII, Europe experienced an era of exceptionally equally distributed income. This was 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 period where government policy in many countries aimed at equalising income distribution. However, Piketty considers this a temporary period, after which we are returning to the *Gilded Age*,<sup>2</sup> where rich family dynasties play a central role in political decision-making and the overall economy. His argument is that wealth is increasingly accumulating in wealthy households and this wealth is playing an increasingly important role in the generation of income, which leads 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, wealth tends to accumulate more quickly from capital ( $r$ ) than from labour. This increasing income from capital tends to accumulate unequally, favouring the top 10% and particularly the top 1%, thereby increasing inequality. Thus, the fundamental force for divergence and greater wealth inequality can be summed up by the hypothesis  $r > g$ . He analyses inheritance from the perspective of that same formula.

The idea behind this can be described as follows: in the case of functional income distribution, i.e., the relation between the compensation of employees and profits (operational surplus), if

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<sup>2</sup> 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.

employee compensation increases slower than profits, the share of profit in the national income increases. As wealth, and thus property income, are typically concentrated on the right tail of distribution, such growth leads to increasingly unequal income distribution. Piketty assumes that economic growth ( $g$ ) in the long run defines the increase in employee compensation and that property income mostly depends on the rate of return on capital ( $r$ ).

Following his well-known book *Capital in the Twenty-First Century*, Piketty, together with Emmanuel Saez and Gabriel Zucman, has broken down the national income of different countries by income deciles and using this framework illustrated how the role of property income has increased.<sup>3</sup> Nonetheless, Branko Milanovic (2017) has observed that the relation between functional income and household income distribution is more complicated than the description presented in Piketty's studies. Piketty assumes that households ultimately receive income even though that income is generated and consumed, for instance, in the government sector. Here, the assumption is that it is always individuals who ultimately benefit from income. However, even though this idea sounds plausible, it is not necessarily correct.<sup>4</sup> This does not, however, overturn Piketty's argument that wealth and property income play an increasingly important role in economies.

It is clear that in recent decades the role of wealth has increased. The increasing importance of wealth is the outcome of increased stocks of wealth, which are largely an outcome of globalisation and liberalised financial markets. The liberalisation of financial markets began at the beginning of the 1980s, 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 financial assets as well as increased asset prices. This has raised questions related to economic inequality and increased interest in income and wealth distributions.<sup>5</sup>

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<sup>3</sup> For instance, for the US these accounts are reported in Piketty et. al. 2016.

<sup>4</sup> For more debate on the assumptions of Piketty, see Krugman (2017), Milanovic (2017) and Solow (2017).

<sup>5</sup> For instance Peter van de Ven (2017) has emphasised that the increasing interest in wealth is a result of three factors: (1) the increase of wealth – in particular the increase of financial wealth, (2) an overall increase of interest in income and wealth distribution in both society at large and political debate, and (3) the US subprime crisis, which was triggered by subprime loans granted to low-income households.



From the central bank point of view, the role of the increasing wealth and its impact on the inequality is the key issue. The ECB's asset purchase programme (APP) has increased the valuation of assets in the past year and thus, increased nominal value of wealth. Dossche, Slačálek and Wolswijk (2021) argue that since the distribution of labour and capital income differs across countries, the cyclicalities of income inequality can also differ. Wealth inequality, on the other hand, tends to be mostly pro-cyclical. With only wealthier households being willing to shoulder such risk, that pro-cyclicality helps to explain both the limited levels of participation in the stock market and the substantial equity premium. The cyclical properties of certain asset prices can become a longer-term determinant of wealth inequality. The focus of this paper is how the changing wealth inequality influences the income equality and the transmission mechanisms between these two.

This article analyses the relation between wealth, income and economic growth in one integrated model based on a framework of national accounts. The analysis is conducted for three countries: Finland, France and Spain. The motivation for selecting these countries is threefold. First, they are quite different, both institutionally and in terms of the development of wealth, income and growth. Second, there is sufficient available distributional micro data from these three countries to allow such an analysis. The focus of the analysis is on the past two decades. This choice is mainly related to the data, as such a detailed analysis cannot be performed for a longer time span with internationally available data sources alone. Moreover, the time span is sufficiently long to describe the development between the financial crisis and the COVID-19 crisis. Finally, some technical aspects of the micro data (see section 2.2.) have motivated us to focus on these countries at this stage, with extension to the whole euro area left for possible future work.

The model begins by linking financial accounts balance sheets (covering all financial instruments) with the corresponding income flows of national accounts. This allows the calculation of instrument-specific rates of return, which corresponds to Piketty's *return on capital* ( $r$ ). Piketty uses the concept of national accounts income in defining  $r$ ; i.e., it includes profits, dividends, interest, rents and other income from capital. The other income included 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 of and differences between various concepts of income. After this, income flows are completed with the missing flows/components of national income. In the model, national income corresponds to Piketty's *economic growth* ( $g$ ). By comparing these two elements, we can also test whether Piketty's basic condition for increasing inequality is fulfilled.

After this, the household sector is separated from 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 primary income distribution (functional income distribution) by income decile and the 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 Milanovic's (2017) observation that functional income (primary income) distribution is not the same as income distribution between households. First, the functional approach does not cover the redistribution of income at all, while income distribution between households tends to be analysed accounting for current transfers. Second, part of 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 the article. The first part presents a detailed data framework and the latter part discusses the coherence and application of micro data sources (EU-SILC and HFCS). Section 3 introduces the results and, finally, Section 4 presents the conclusions and discusses potential avenues for future research.

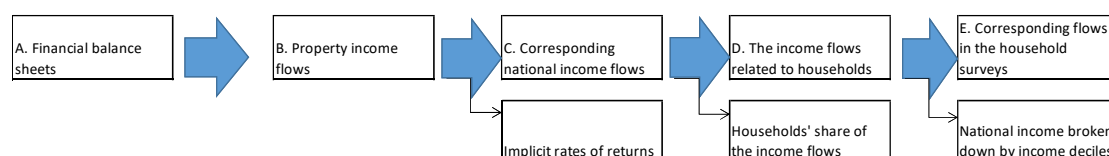
## 2. Framework and data

### 2.1. The applied framework

Table (1.) presents the overall framework applied in this article. The first horizontal row includes input data. The framework starts with balance sheets (A), which generate property income. In practice, this is wealth invested in financial instruments and land. In the step (B),

the property income flows generated by financial instruments and land are linked with the balance sheets. The capital stock of national accounts covers the fixed capital used for actual production. In this context, it should be noted that the letting of flats is considered production in national accounts.<sup>6</sup>

Table 1: Stepwise link between national balance sheets and income flows and the derivation of distributional national income from income distribution data



After this, the balance sheets are linked at an 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. In terms of balance sheets and the corresponding property income, this means instrument-specific rates of return.

After this, national income is completed by adding the missing income flows to property income. In practice, this means employee compensation and production subsidies (C). The flows belonging to the household sector are then separated from the flows of the total economy (D). Finally, these flows are linked with the corresponding flows of the household surveys (E). This framework in detail is presented in Annex (1.).

## 2.2 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 the sub-components of primary income by income decile. In this section, we first examine the quality of the micro data used for such distributions and, in particular, the coherence of income flows in micro and macro aggregates. We then provide an overview of the within-component distributions estimated from the survey data.

<sup>6</sup> The same framework but with more detailed national data is also presented in Kavonius (2019, 24–40) and Kavonius (2020, 483–494).

For the disaggregation of household sector primary income flows by decile, 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. For certain income components, we use micro data from the Eurosystem Household Finance and Consumption Survey (HFCS), made available by the ECB. The EU-SILC micro data cover the income reference years 2007–2018 (EU-SILC survey years 2008–2019).<sup>7</sup> The HFCS micro data are available for three waves in roughly three-year intervals (around 2010, 2014 and 2017).<sup>8</sup>

Both micro datasets are cross-national sample surveys, which are conducted in the countries in a decentralized way based on common ex-ante agreed specifications (so-called output harmonisation). The samples represent resident population in private households and collect information for sampled households and to some extent also for their members aged 16. The data are collected primarily by household and personal interviews, however the countries examined in this paper are characterized by quite extensive use of administrative data in particular in EU-SILC (for income) but also to some extent in the HFCS (for income in France and Finland and for wealth in Finland). Di Meglio et al. (2017) provide a detailed overview of EU-SILC; for further information on the HFCS, see ECB (2020).

Although the ratio of a survey estimate of a total amount of income to the 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, a [methodological report](#) by the ECB contains a chapter on comparability covering coherence with macro data and also with EU-SILC (ECB, 2020).

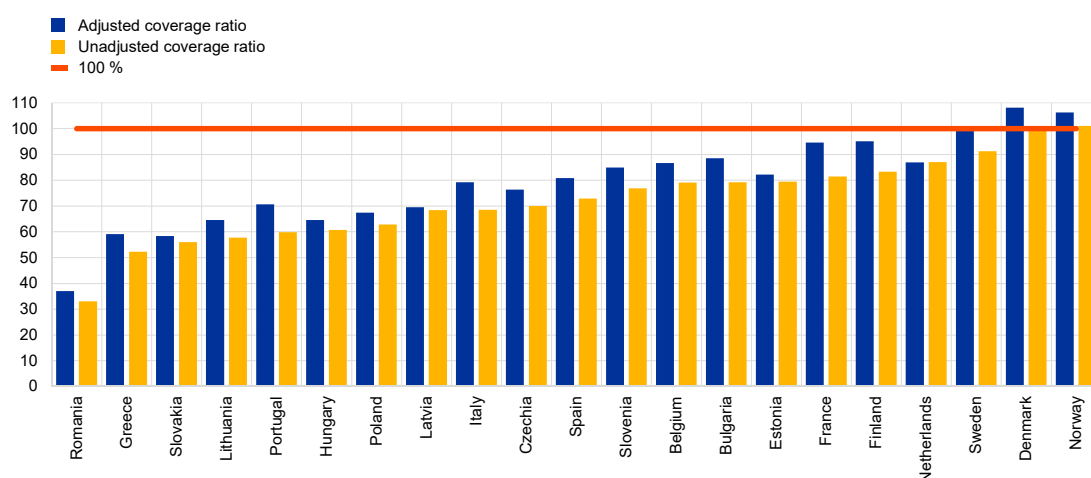
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<sup>7</sup> We use the EU-SILC UDB version 2021-1 (April 2021). Data from the income reference year 2006 are not used because of changes in data collection in France and Spain. France began to use administrative data extensively in EU-SILC in 2007. Similar changes were made in Spain in 2013, but the data were revised backwards to the income reference year 2007 ([Méndez Martín, 2019, see also Törmälehto et al., 2017](#)).

<sup>8</sup> The HFCS UDB versions we use are 1.5 for wave 1, 2.4 for wave 2 and 3.2 for wave 3. The reference periods for wealth were the following: Finland 2009, 2013 and 2016; France 2009, 2014, 2017 ; Spain 2011, 2014, 2017.

In order to place the quality of the EU-SILC income data for the three countries examined in this article in 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 adjustments, the coverage rate of EU-SILC disposable income in France and Finland stands at around 95%, while in Spain it is around 80% of the adjusted national accounts aggregate. EU-SILC income data for Spain, Finland and France benefit from the use of administrative data, which generally improves coverage rates (see, e.g., Trindade and Goedemé 2020; Törmälehto et. al, 2017). Extension of the analysis to other countries with reasonably high coverage rates and possibly to the whole euro area is left for future work.

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 the author's computations from EU-SILC UDB 2015-1 (variable HY020) and annual sector accounts tables (transaction B6G S14).

The focus of this article is income before taxes and transfers (primary income) rather than disposable income, 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 the 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 the concentration of wages and salaries could have been a sufficient proxy.

Table (5.) shows the coverage rates of the survey estimates of the total amounts of these components alongside their conceptual counterparts in NA. 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 display much lower coverage rates, which also exhibit significant variation between the countries.

The level and dispersion of the coverage rates would suggest that the micro estimates should be aligned with the NA aggregates. However, for this one would need auxiliary information on the distribution of the gap within each component by income decile. Such information is unavailable, and any adjustments would need to rely on strong assumptions. We briefly discuss sensitivity of our results to micro data adjustments in the next section.

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

Source: Authors' calculations from EU-SILC UDB 2021-1 micro data and annual sector account tables.

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.<sup>9</sup> It should nonetheless be noted that, while the property income coverage rates for Finland and Spain are low, they are still relatively good in comparison to many other EU-SILC countries (Törmälehto, 2019). Regarding interest repayments, only mortgages are covered in EU-SILC, which should explain the level of 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 method of rental equivalences differ<sup>10</sup>. The observed differences in

<sup>9</sup> Trindade and Goedemé (2020) observed that, in France, a pension or 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 a pension from an individual private plan (PY080G).

<sup>10</sup> Rental equivalences can be estimated with econometric methods (hedonic regression), stratification or with subjective methods (i.e., asking how much the owner would receive if the residence was rented out). For an overview of different estimation methods of imputed rents, see for example Balcazar et al., 2017; Rondinelli and

coverage rates may be due to a number of factors, including the concept of rents and the estimation methods in NA and EU-SILC. The methods used in EU-SILC have been examined for instance by Törmälehto & Sauli (2013). In general, however, the impact of methodological issues on the coverage rates of imputed rents is a complex topic of and detailed exploration is beyond the scope of this article.

EU-SILC lacks a direct counterpart for NA flows of investment income attributable to holders of collective investment funds, life insurance policies and (voluntary) pension entitlements. Here, allocation must 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 the 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). The HFCS is conducted every three years, and the latest data are from wave 3, with reference year mostly 2017.

In the HFCS, the estimated total value of underlying assets (mutual funds, life insurance, voluntary pensions insurance) are generally well below the total value of the corresponding assets in NA. The variation between countries and asset types does not lend itself to an easy explanation. For the purpose of this article, the question is whether it is reasonable to use the concentration of assets by income decile for the distribution of NA flows. As with EU-SILC, we make no 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.

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Veronese, 2011; Törmälehto & Sauli, 2013. In EU-SILC, the available documentation suggests that France has used the (hedonic) regression method, Finland the stratification method, and Spain a mixture of stratified rents and subjective (self-assessed) rents asked in the EU-SILC questionnaire.



Table 6: Coverage rates of mutual funds and life insurance and pension entitlements

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

\*NA only life insurance and annuity entitlements

Source: European Central Bank, Household Finance and Consumption Survey (HFCS), wave 2017

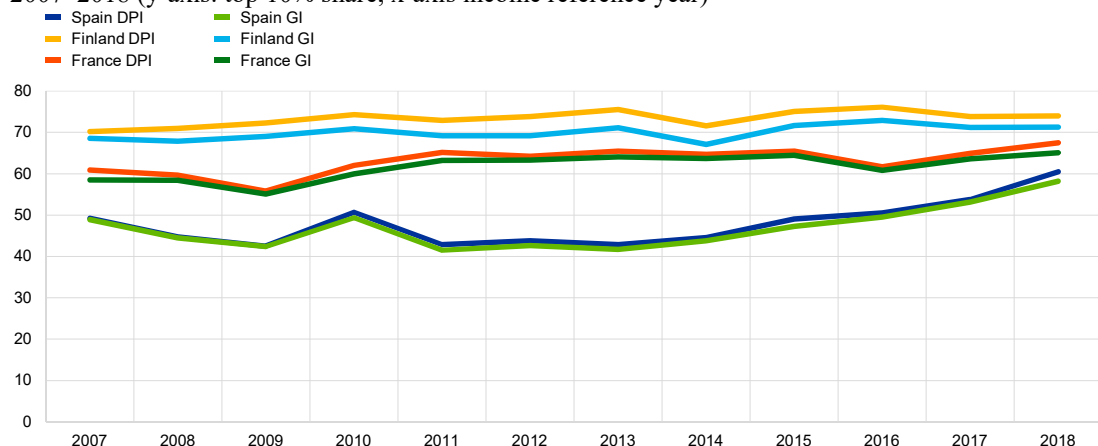
### 2.3 Concentration of primary income components in micro sources

Next, we illustrate the relative concentration of income flows based on EU-SILC and HFCS that are later used to disaggregate NA aggregate income flows by decile. Deciles are based on equivalised gross income, i.e., income before taxes but after current transfers received.<sup>11</sup> The concept of income utilised in the HFCS is gross income, which necessitates the use of gross income also from EU-SILC (see: ECB, 2020, for coherence between HFCS and EU-SILC income data). However, income ranks based on gross and disposable income in EU-SILC are fairly similar because taxes exert only a modest reranking effect.<sup>12</sup> By way of example, 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.

<sup>11</sup> We use the Eurostat equivalence scale (also called modified OECD scale) to equivalise income. In this scale, the first adult in a household is given a value of 1, each additional adult aged 14 and over a value of 0.5 and each child aged 0–13 years a value of 0.3. In Kavonius (2019) and Kavonius (2020), disposable income is applied in this context instead of gross income.

<sup>12</sup> 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 a mortgage, tenant). However, imputed rents are not available in the HFCS, and the sensitivity of concentration of income to the inclusion of imputed rents is left for future work.

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.

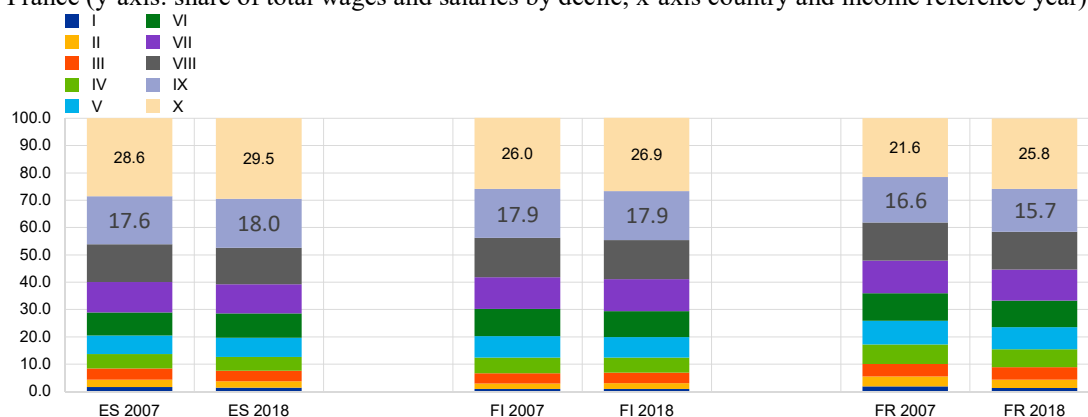
Source: Authors' elaboration from EU-SILC UDB 2021-1.

The graph shows that the highest concentration for this component is in Finland, followed by France and then Spain. The choice of gross versus disposable income causes a slight difference in the levels in Finland, but otherwise the differences are negligible and the time trends the same. As noted earlier, there are extreme differences in the coverage rates of this item, ranging from around 30% of the NA total in Spain to 80% in Finland and more than 200% in France. However, we see no firm grounds for adjusting the distributions on assumptions which, by necessity, would be of an 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 income distribution in Spain. The data suggest a slightly increasing concentration in Spain and Finland, but overall the concentration shares are relatively stable. By contrast, in France, the top 10% has increased its share of total wages and salaries quite markedly from 2007 to 2018.<sup>13</sup>

<sup>13</sup> Additionally, Annex (4.) shows the decomposition for the four main components of pre-tax income in EU-SILC.

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)

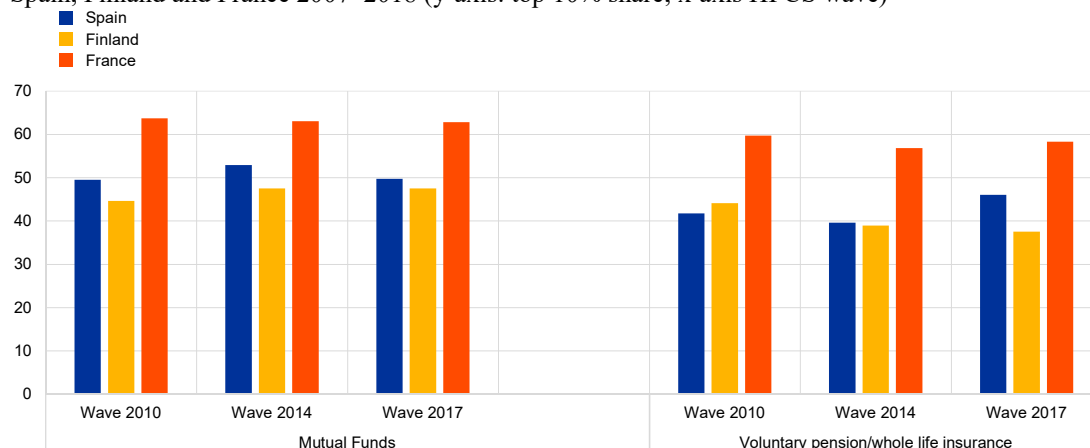


Source: Authors' elaboration from EU-SILC UDB 2021-1.

Turning then to the HFCS and the 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.<sup>14</sup> This is shown in Graph (4.). Given that the shares of mutual funds are relatively stable over time, we use the latest observation for 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). Voluntary pensions/life insurance display more volatility, but we follow the same strategy with the exception of Finland, where wave 1 data are not comparable to waves 2 and 3. For Finland, wave 2 shares are used for the years 2007 to 2016 and wave shares from 2017 onwards.

<sup>14</sup> In Finland, HFCS data on mutual funds are based on administrative data, and voluntary pensions are estimated from tax data. In France and Finland, HFCS gross income is based on administrative data.

Graph 4: Concentration of mutual funds and voluntary pensions/life insurance assets to the 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).

## 2.4 Sensitivity of income concentration to micro/macro discrepancies

The ranking variable used in the current article is equivalised gross income as originally recorded in the micro data sources. As shown earlier, the coverage of survey estimates with respect to NA vary substantially by sub-component and by country, due to conceptual differences (such as exclusion of imputed rents), different operationalisations and variations in sampling and non-sampling errors. We next briefly examine how sensitive the concentration of sub-components with respect to gross income is to such discrepancies from NA totals.

In general, the estimated total amount of a composite income variable  $\hat{Y}$  in a probabilistic sample survey (such as EU-SILC or HFCS) can be expressed as a weighted sum of the different income components with idiosyncratic error terms, as follows:

$$\hat{Y} = \sum_{k=1}^k [\sum_{i=1}^n ((\pi_i n r_i g_i) * f(y_{ik}, \varepsilon_{ik}))],$$

where  $\pi$  is the inverse of the inclusion probability of a sample unit  $i$ ,  $nr$  is the non-response adjustment and  $g$  is the calibration adjustment to external benchmarks,  $y$  is the observed income and  $\varepsilon$  is the measurement error of income component  $k$ .<sup>15</sup>

To align a survey estimate to a given national accounts' total, one may adjust the  $g$  weights via reweighting and/or make assumptions about the individual error term  $\varepsilon_{ik}$ . A naïve but feasible approach is to multiply the observed incomes of component  $k$  with a constant equal to an inverse of the coverage ratio  $\lambda_k$ . This is simple proportional scaling which implies no change in scale invariant (relative) inequality measures (such as Gini coefficient) of the component  $k$ . In turn, adding a constant to each income (for instance, the total discrepancy allocated equally to each sample unit) would imply no changes in translation invariant (absolute) inequality measures of component  $k$ . The error terms of the two cases can be expressed then as:

$$(a) \quad f(y_{ik}, \varepsilon_{ik}) = y_{ik} * \frac{Y_k}{\hat{Y}_k} \quad (b) \quad f(y_{ik}, \varepsilon_{ik}) = y_{ik} + \frac{Y_k - \hat{Y}_k}{N}$$

where  $Y$  and  $Y_k$  are the national account's total values and  $N$  is the total population size. In both cases, measurement errors are assumed to be equal for each household but to vary across income components which leads to changes in the composite income measure.

Other common adjustment tools, such as semi-parametric modelling (Pareto-imputations), could be used, in particular to adjust the 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.

For the sensitivity analysis in this article, we chose to apply proportional scaling to self-employment and rental income and interest and dividends. For wages and salaries  $W$ , we apply reweighting with the adjusted wages and salaries given by the sum of the observe values and imputed values, with the latter obtained via calibration of the weights:

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<sup>15</sup> To give an example, measurement errors of interest and dividends vary across individuals and are different from measurement errors of wages and salaries while for the aggregation usually a single set of calibrated sampling weights are used and these vary across households.

$$(c) \quad W = \hat{W} = \sum_{i=1}^n (\pi_i n r_i g_i) * w_i + \sum_{i=1}^n (\pi_i n r_i) * \left( \frac{\tilde{g}_i}{g_i} - 1 \right) * w_i$$

In (c),  $W$  denotes total wages and salaries and  $\frac{\tilde{g}_i}{g_i}$  is the reweighting adjustment based on constrained minimization of changes in the original calibrated weights, with the constraint that the reweighted survey estimate of total wages and salaries must be equal to NA totals.

The minimization is based on logit distance function with lower and upper bounds for the adjustment factors set at 0.98 and 1.2, i.e. the change in wages and salaries for each household due to reweighting  $\frac{\tilde{g}_i}{g_i}$  is constrained to be between -2 % and +20 %. These are the strictest settings that still allowed reweighting to converge in all three countries, and in practise the minimum change was 0 % rather than -2 %. The conditional distribution of wages and salaries changes as a result of reweighting, differently from the other adjusted income components.

Table 7 shows a factor decomposition of Gini coefficient with both the original and adjusted EU-SILC equivalized gross income. The first row shows that in Finland and France the changes in pre-tax inequality due to the adjustments are relatively small, but there is a more marked increase in Spain. Moreover, there are only modest changes in the distribution of wages and salaries due to the use of the minimum distance calibration approach. The Gini coefficients of the other income components are naturally unchanged due to the proportional scaling approach.

For this article the interest of the exercise lies in the changes in the concentration coefficients, and larger changes are therefore highlighted in grey. The concentration coefficient of all income components increase in France, including wages and salaries. In Spain, we observe sizable increases in the concentrations of self-employment and rental income and interest and dividends. In Finland, only the concentration of self-employment and rental income increases significantly.

Table 7. Factor decomposition of EU-SILC 2018 Gini coefficient of gross income Gini after adjusting to match NA totals

	Spain		Finland		France	
	Original	Adjusted	Original	Adjusted	Original	Adjusted
Gini, gross income	0.37	0.41	0.31	0.33	0.33	0.33
Wages and salaries						
Gini	0.56	0.57	0.53	0.54	0.53	0.54
Concentration	0.43	0.41	0.42	0.42	0.37	0.42
Income share	0.64	0.57	0.63	0.61	0.58	0.63
Self-employment and rental income						
Gini	0.90	0.90	0.91	0.91	0.92	0.92
Concentration	0.43	0.66	0.46	0.57	0.64	0.60
Income share	0.10	0.18	0.06	0.08	0.09	0.08
Interest and dividends						
Gini	0.96	0.96	0.95	0.95	0.90	0.90
Concentration	0.68	0.78	0.78	0.79	0.71	0.61
Income share	0.01	0.03	0.04	0.05	0.06	0.02
Other income						
Gini	0.69	0.69	0.57	0.57	0.62	0.62
Concentration	0.18	0.13	-0.04	-0.05	0.06	0.01
Income share	0.25	0.22	0.28	0.26	0.27	0.26

Note: Adjusted refers to EU-SILC gross income adjusted to match the total amount of wages and salaries, self-employment and rental income and interest and dividends in National Accounts. Income share is the sub-component's share of gross income. Concentration reflects how sub-component is concentrated on ranks based on gross income, with higher values implying more concentration to those with high gross income.

The table above aims to illustrate that there are distributional consequences of relatively simple adjustments to NA totals, and that there is also variation across countries due to different coverage rates. To avoid arbitrary assumptions, our choice for this article has been to use the concentration shares of the components as they come from the data, without any adjustments to match the NA totals.

### 3 Results

Using the framework and methods described in section 2, we next examine the evolution of rates of return on capital and labour/capital shares, the latter also by income deciles.

#### 3.1 Rates of return

Graph (5.) depicts rates of return using different rate of return concepts. The same data are shown in a form table in Annex (2.). In practice, these are the outcome of Step 3 of the

framework (Table 1). The concept and application of rates of return is far from straightforward. Returns are typically a real economy concept and refer to returns from corporations' fixed investment rather than to financial assets. In his concept, Piketty (2014, p. 25) includes profits, dividends, interest, rents and other income from (physical) capital. This is in line with the generic booking-keeping based definition that the rate of return is equal to net operating income after tax and, in practice, covers distributed property income and retained earnings.

From the perspective of corporations, and particularly production, this makes much sense. The rate of return is the part of income accumulated by the capital invested in the production process. In turn, paid wages and social contributions are income accumulated by labour.

From the household investment perspective, this concept nonetheless raises several questions. First, this national accounts concept of income refers to the income generation of corporations, and, as the majority of corporation owners are not domestic households, most of the distributed profits are received by other actors and entities, such as foreign households or corporations. In the case of a corporation, one might assume that, ultimately, the money always benefits its owners. However, the owner can be a national or local government or a non-profit institution serving households, and these institutions change the logic of distribution completely.<sup>16</sup>

Second, typically, retained earnings are never received by households or equity holders.<sup>17</sup> Theoretically, retained earnings increase the value of equity, depending on how they are further invested. Therefore, when 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 such as dividends, interest and often also realised holding gains. These are income truly received by households.

Furthermore, there is an additional complication to this approach. When operating in the national account framework, as Piketty (2014) does, holding gains are not recognised as

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<sup>16</sup> Cf. Milanovic 2017.

<sup>17</sup> Reinvested earnings from direct foreign investment are similarly imputed as distributed income and subsequent reinvestment. However, this does not impact the calculation presented in this article, as at the total economy level these are netted out and, additionally, these transactions do not concern the household sector.



income, and unrealised gains are accounted for as value changes in the financial accounts; i.e., Piketty's framework does not cover holding gains.<sup>18</sup> This is not exactly in line with the Hicksian concept of income, which is the concept usually used in economic theory. Hicks (1939, p. 172) defines "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 income, and thus the price changes of assets would affect the income of households.

Ranaldi and Milanovic (2021) in their article defines the concept of labour and property income slightly differently. The central difference is related to the pension income. Otherwise it is line with the national accounts' concept. In the national accounts' private voluntary pensions are property income but the income from the legally obligatory employment related pension systems are social transfers. This means that the latter ones do not have an impact on analysis based on functional income distribution. Ranaldi and Milanovic (2021) takes two approaches concerning these employment related pensions: in the first approach they define all pensions (private and public) as labour income as in the second approach they define income from pensions as property income.

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 view this conceptually, the development of income is similar. The denominator here is the market value of underlying stock, for instance, in the case of dividends, the stock of the underlying equity. It is impossible to include average investment in capital in the national accounts, which would be an appropriate denominator, and thus the value of equity is normally used instead. Theoretically, this should not differ markedly from the value of the capital stock of the company. In balance-sheet terms, equity additionally includes goodwill. The measures presented in the graph are the following:

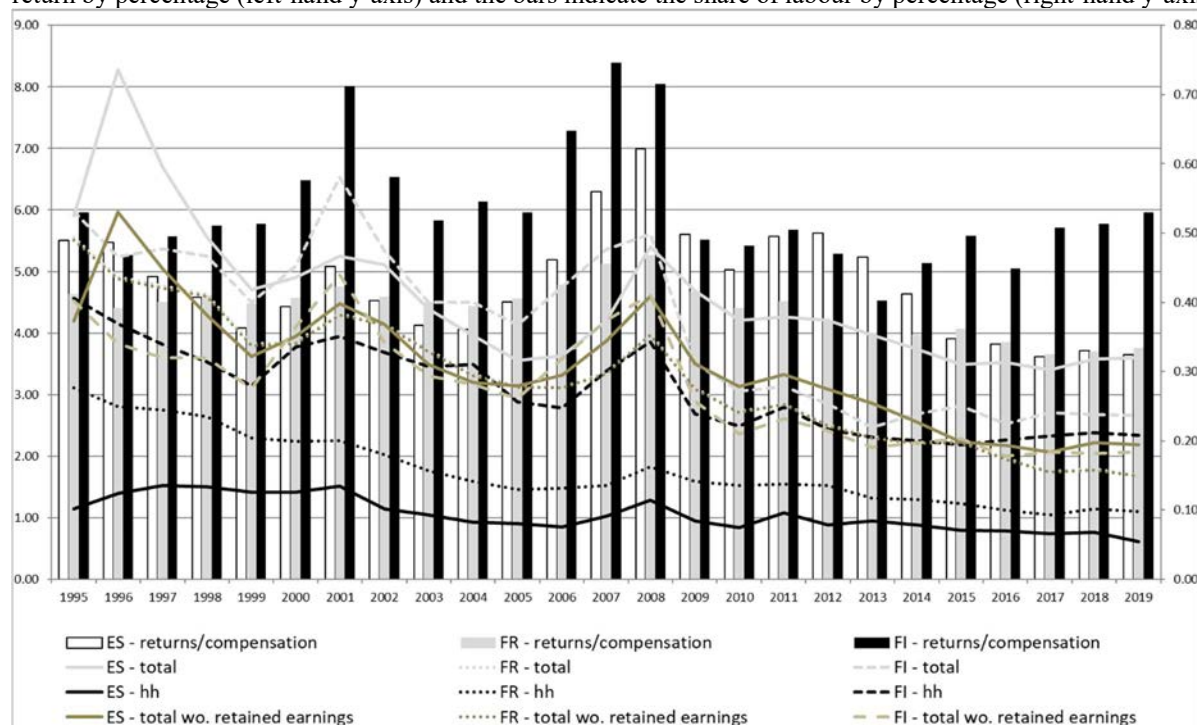
- The measure "total" covers all the received property income and retained earnings. This concept is line with that used by Piketty (2014).

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<sup>18</sup> Kavonius 2006.

- The measure “hh” covers all the property income actually received by households. Compared to concept “total”, this excludes both property income received by other sectors and also retained earnings, as the latter are actually not distributed to households either.
- The measure “total wo. retained earnings” is the same as the concept “total”, but it does not include retained earnings. In principle, this covers all the property income actually paid.
- The 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  $r+c$ , when the ratio decreases,  $r$  grows more slowly than  $g$  and, respectively, when the ratio increases,  $r$  grows faster than  $g$ . This measure is added to illustrate the extent to which actual income distribution is dependent on rates of return.

Graph 5: The development of rates of return, using different rates of return concepts, and the share of labour (returns/compensation) for Spain (ES), France (FR) and Finland (FI). The lines show the development of rates of return by percentage (left-hand y-axis) and the bars indicate the share of labour by percentage (right-hand y-axis).



Source: European Central Bank and authors' calculations.

In terms of the general trend, Graph (5.) shows that it makes little difference which concept of returns is used: returns decreased in the period 1995 to 2019. This can be seen more in detailed

in Annex (2.) where the growth rate is in white cell if the value is decreasing and highlighted if the value is increasing. Indeed, by 2019, rates of return had decreased to below half the levels of the 1990s. Nevertheless, level differences obviously exist depending on the income concept; for instance, retained earnings clearly increase the level of returns. The trend of decreasing returns is clearer in France and Spain than in Finland, but, in Finland too, returns are lower than for most of the time since 1995.

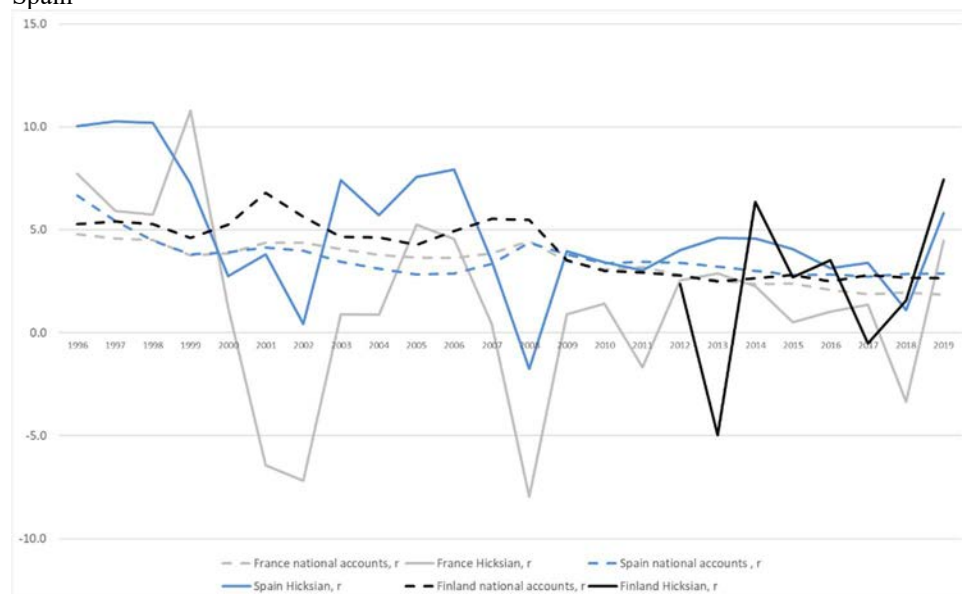
Moreover, the effect of economic cycles can be clearly seen. In the European context, the development is logical. When the euro was first introduced, i.e., from 1999 onwards, the interest rates of euro area countries converged. In these countries, this signified a decrease in interest rates. There are two peaks in returns: one in 2000/01 and another in 2008. The first is the outcome of the economic boom of 1995–2000, which was also reflected strongly, particularly at the end of the boom, in the financial markets. The second one is the peak before the last financial crisis.

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

As indicated before, the level of rates of return depend on the income concept applied. The key is whether holding gains are included in the concept. Graph (6.) shows rates of return based on the national accounts income concept, which does not include holding gains, and the Hicksian income concept, which includes unrealised holding gains. There are two main messages in this

graph. First, in this time period, Hicksian rates of return are no higher than those of national accounts. Holding gains increase the volatility of the rates of return, but overall they do not exceed the level of rates of return without holding gains. Second, no matter which returns we use, rates of return have decreased roughly to half the level they were at in the 1990s.

Graph 6: Rates of return based on the national accounts and Hicksian concept of income for Finland, France and Spain



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

### 3.2 The development of labour and property income

Table (8.) shows the labour share of national income, the labour share of household primary income and households' share of primary income in Spain, France and Finland. In practice, this is the outcome of Step C of the framework. The first observation is that the ranges within the shares vary are relatively narrow: In Spain and Finland the ranges up to six-seven percentage points and in France up to four percentage points. This means that the changes have not been particularly large during this period. The highlighted cells indicate the value is above the average of the corresponding time series.

The labour share of national income shows the level of employee compensation 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 other sectors and abroad. In Finland and Spain, the levels in 2018 are below the average and also below the level of 1995 as in France the labour share in 2018 is above the average and also level of 2018. However, as can be seen in the table, in the past 25 years, no large-scale changes in levels have occurred. This contradicts Heather Boushey's (2019, pp. 126–129) argument that the past 40 years have witnessed a global shift from labour to capital.<sup>19</sup> At least these European countries seem to differ from the development in the US. Similarly, Goodhart and Pradhan (2020, p. 94) argue that the corporate sector is likely to respond to demographic changes in Western economies by raising the capital/labour ratio, i.e., by adding capital to compensate for labour, which is a factor of production that is becoming scarcer and more expensive. The table rather illustrates the cyclical development of the labour share and in all these three countries the shares of labour have been above the average since the financial crisis 2008 and have returned around the average only in last few years.

As Table (8.) demonstrates, developments have been quite different in the three countries. In France the labour share was around 60% from 1995 to 2008, after which it has increased to 62.0%. The table particularly highlights this development as it shows cells which are above the average of the whole time series. This emphasises the cyclicity of the labour share. The shares are typically high in the economic downturns. This can be clearly seen in all the countries after 2008. The 2008 financial crisis is the typical turning point in economic trends, as the crisis caused the profitability of corporations to decrease considerably. Overall, profits are more volatile than employee compensation, as employment does not react particularly rapidly to business cycles. Typically, changes in the labour share of income also reflect changes in the profitability of companies, with rapid decreases in the labour share being an indication of improved profitability. In Spain, the labour share increased from around 55 per cent in 1995 to 60% in 2009. After this, the share decreased to around 53% in 2018. In Finland the share decreased from 61% in 1995 to 55% in 2007. Then, the share increased rapidly, reaching 61% in 2012. It then began to decrease, reaching 57% in 2018. This development is line with overall

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<sup>19</sup> Concerning the income/capital share, it should be noted the income of sole proprietorships and partnerships is often defined as mixed income, which is according to the system of national accounts defined to be capital. However, mixed income can be considered to a borderline case as it includes both elements: compensation of capital and labour. The practical reason for this treatment is that the share of capital and labour cannot often be separated.

economic development: in years of faster growth the labour share tends to decrease, and, during slower growth or recessions, the share tends to decrease.

Table 8: Labour share of national income (net), labour share of household primary income and households' share of primary income in Spain, France and Finland from 1995 to 2018. The last four columns show minimum, maximum, range and average of the corresponding series. The highlighted cells are above the average of the time series and the white cells below the average

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	min	max	range	ave
HH share of primary income ES	79.6	79.9	81.0	81.0	80.6	81.1	82.0	80.9	80.4	80.1	80.0	79.6	79.6	80.1	79.1	78.7	80.4	77.5	77.5	77.0	76.2	75.5	75.5	75.2	75.2	82.0	6.9	79.1
HH share of primary income FR	79.2	79.1	78.1	77.3	76.9	77.9	78.6	79.5	79.2	78.7	78.4	78.7	78.5	79.3	80.8	80.3	79.7	80.7	79.7	79.8	78.8	78.9	78.7	79.0	76.9	80.8	3.8	79.0
HH share of primary income FI	75.1	74.3	71.6	70.5	70.8	71.3	70.1	69.9	71.1	70.1	70.4	69.8	69.3	70.9	74.9	73.6	73.8	75.0	75.0	74.1	73.4	73.2	71.3	71.3	69.3	75.1	5.9	72.1
labour share of NI ES	54.5	54.5	55.8	56.0	56.3	56.3	55.9	55.6	54.9	55.0	55.1	55.5	56.3	58.8	59.4	58.8	58.3	56.1	54.9	54.8	54.2	53.4	53.2	53.3	53.2	59.4	6.2	55.7
labour share of NI FR	60.2	59.8	59.1	58.4	58.6	58.9	59.2	60.3	60.4	59.8	59.8	59.6	59.1	59.6	62.0	61.6	61.2	62.1	62.2	62.3	61.6	61.8	62.0	62.2	58.4	62.3	3.9	60.5
labour share of NI FI	60.8	60.6	57.8	57.3	57.0	56.3	55.8	55.9	56.7	55.6	56.8	56.5	55.4	57.3	60.9	59.3	59.5	61.1	60.7	59.6	58.9	58.4	56.6	56.9	55.4	61.1	5.7	58.0
labour share of HH primary income ES	68.5	68.2	68.8	69.1	69.8	69.5	68.1	68.7	68.3	68.6	68.9	69.7	70.7	73.4	75.1	74.7	72.5	72.4	70.9	71.1	71.2	70.7	70.5	70.9	68.1	75.1	7.0	70.4
labour share of HH primary income FR	76.0	75.6	75.7	75.6	76.1	75.6	75.3	75.9	76.3	76.0	76.3	75.7	75.3	75.2	76.7	76.7	76.8	77.0	78.0	78.1	78.1	78.4	78.8	78.7	75.2	78.8	3.6	76.6
labour share of HH primary income FI	80.9	81.5	80.7	81.2	80.5	79.0	79.6	79.9	79.7	79.3	80.6	80.8	79.9	80.8	81.4	80.6	80.6	81.4	80.9	80.5	80.2	79.8	79.4	79.8	79.0	81.5	2.5	80.4

Source: European Central Bank and authors' calculations.

Households' share of primary income indicates the amount of generated income in the economy that is received by the household sector. Primary income consists of employee compensation, which households receive by definition, and operating surplus, which can be distributed to whichever holding sector. Income that is not distributed to households decreases the labour share. Often a decreasing labour share of income is interpreted as an indication of increasing inequality. However, this relatively large share of income is received by other sectors. In the case of corporations, it can be used, for instance, to pay dividends or further invest. If the receiving sector is either general government or a non-profit institution serving households, this money benefits households. It should be noted that the French and, particularly, the Finnish general government sectors are large owners of equity.<sup>20</sup> In the case of Finland, pension funds, which are considered part of the general government, are large owners of equity because they are partly funded, i.e. comparing to the other European pension system which have not saved any money for the future pensions, the Finnish pension funds have some assets. Moreover, the government holds equity in some strategically important corporations. Dividends from these corporations are typically accounted for in the state budget. Foreign owners, in turn, can be anything from a private person to a pension fund or central bank. State ownership of equity is one of the factors cited by Anthony B. Atkinson (2015, pp. 68–74) as reducing inequality after WWII due to the more equal distribution of capital.

<sup>20</sup> Lillqvist, Kavonius and Pantzar 2020.

In terms of households' share of primary income, the three countries have experienced quite different development. In France the share varied from 77 to 80% between 1995 and 2008. In turn, from 1995 to 2011 the share in Spain was around 80%, after which it steadily decreased to 75% in 2018. In Finland the share was 75% in 1995, falling steadily to below 70% by 2007 and then increasing back to 75% in 2009. After this, it slowly decreased to 71% by 2018.

The labour share of household primary income describes the actual distribution of property and labour income in the household sector; i.e., this indicates the extent to which households live off either their work or capital. As can be seen in the graph, these shares have either 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 remained at around 80% for the whole period from 1995 to 2018. The labour share of household primary income varies slightly and follows the same trend as the labour share and household share of primary income. The reason for its more muted development is twofold. First, the share, and thus the role, of property income is smaller. Second, the portfolio of households differs from the portfolio of other sectors. The main obvious difference is the stock of owner-occupied housing. Returns on housing are typically less volatile than returns on financial assets. In Spain, the labour share of primary income has remained mainly around 70%. 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 steadily increased from 76 per cent in 1995 to 79 per cent in 2018.

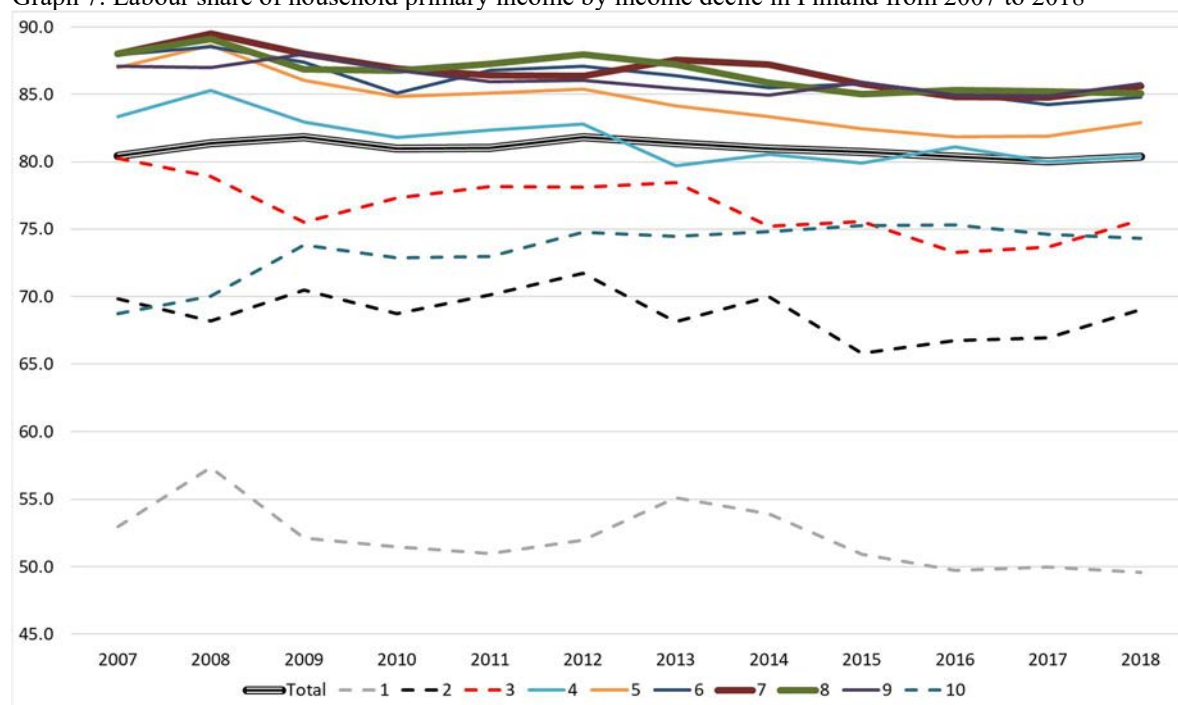
### 3.3 The development of labour and property income shares by income decile

Next, we focus on the importance of labour and property income in the generation of the income of different income deciles. The assumption is that if the capital/labour ratio increases then the capital income is the leading factor income in the development of distribution and respectively, if the ratio decreases labour income is the leading factor. As noted earlier, the income deciles are based on gross income. In practice, this is the outcome of step (E) of the framework; i.e., the household labour shares of primary income are broken down by income decile using estimates derived from EU-SILC and HFCS micro data.



Graph (7.) illustrates the Finnish distribution of property income by income decile. In Annex (3.) a table with corresponding numbers is attached. In Annex (3.) the cells which above the average of the all values in the time series are highlighted. In the graph the thick line shows the total labour share of household primary income; i.e., this corresponds to the results presented in Table (7.) on the last three rows. The remaining deciles, i.e., those that are above the total but which do not have the highest labour share, are indicated as “normal lines”. Graphs (7.), (8.) and (9.) are constructed in the same way.

Graph 7: 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 remained relatively stable at around 80%. 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 reasons for this are of course completely different. The lower deciles consist largely of people living primarily off transfers, and the level of primary income is relatively low. Therefore, relatively low wages or levels of property and entrepreneurial income strongly impact the labour share. Moreover,



property income is probably derived mainly from owner-occupied housing. It is also worth noting that the labour share has slightly decreased in these groups from 2007, which indicates that for these groups participation in the labour market has also decreased.

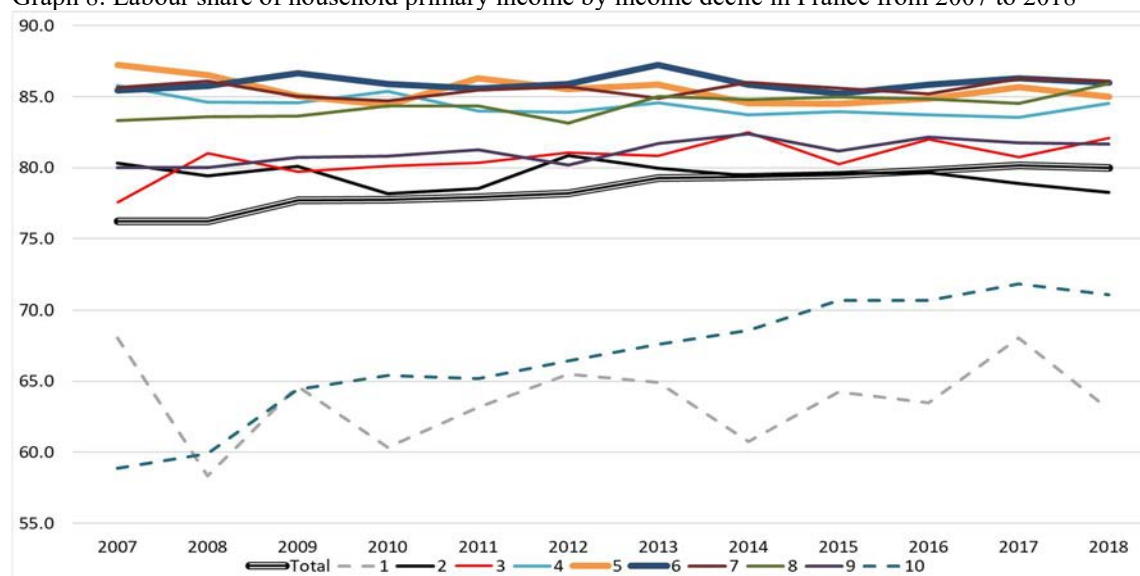
By contrast, the tenth decile contains households with relatively high salaries. Moreover, not only are they high earners, but their property income is also relatively high. Branko Milanovic (2019, pp. 14–21) writes that this is typical for modern liberal meritocratic capitalism, where people are capital- as well as labour-rich. This is a difference from classical capitalism or social democratic capitalism, where the rich are typically only capital-rich, commonly being landlords, financiers and owners of large industrial holdings. In meritocratic capitalism, the rich are highly paid managers or experts. These people are wage workers who must 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 note in Graph (7.) that the labour share of such people has increased and for instance the labour share of tenth decile in the last years was clearly above its average.

This is particularly interesting observation also against the background that Ranaldi and Milonovic (2021) concludes that Finland (and the other Nordic countries) has typically high concentration of capital income and low concentration of labour income. At same time the Finnish labour share of the highest deciles are considerable higher than France and Spain and additionally, the shares also in past years rather increased than decreased.

The highest labour shares are found in the eighth and ninth income deciles. Their labour shares were around 88% in 2017 and slightly decreased to 85% in 2018. These people are relatively high earners – roughly speaking, for single person families, those with gross monthly salaries of up to 5 000 EUR. Families in these deciles often live in owner-occupied housing, but due to their relatively high salary level, the labour share also remains comparatively high. In the remaining income deciles, the labour shares are slightly lower, and the same slightly decreasing trend is evident.

Graph (8.) shows the labour share of primary income by decile in France. In Annex (3.) can be found the corresponding figures. In France, the total (average) labour share has increased from 76% to 80%. The French data contain a certain particularity which may result from the increased concentration of wages and salaries in the right tail of income distribution (see Graph 3 earlier): the top income decile dominates the whole development of labour share. This appears in two aspects. First, it is the only income decile in which the labour share is clearly increasing. This is also reflected in the development of total labour share, which is actually an income-weighted average of the labour shares of different deciles. Consequently, if one or more deciles receive a large share of income, they exert more influence on the total; i.e., this is typically an indirect indication of large income distribution between households. Second, 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 labour share of the remaining deciles stands at roughly 80–85%, and this share has also remained relatively stable during the period studied.

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



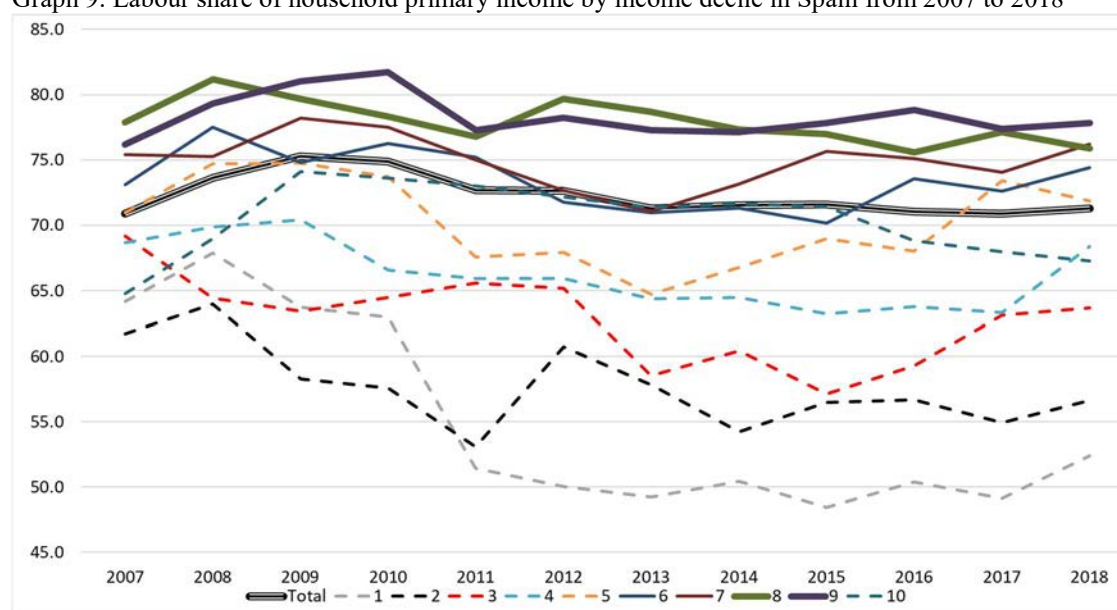
Source: European Central Bank and authors' calculations

Graph (9.) (and Annex (3.)) shows the labour share of primary income by decile in Spain. This graph is constructed in the same way as the Finnish and French graphs. However, it reveals a considerable structural difference compared to the Finnish and French economies: the labour share of all deciles from the first to the fifth is below the total share for households. This was

already the case in 2007, but, typically, the lower the income decile is, more its labour share has fallen after the financial crisis. In the case of Spain, this reflects the relatively poor labour-market situation. Spain has one of the highest shares of the population partially or fully outside the labour market.

In Spain, the tenth decile follows the total (average) share of households relatively closely, and the ninth and tenth deciles possess the highest labour shares. It is worth noting, however, that the labour share of primary income for these deciles is lower than in the Finnish or French economies. Moreover, the total (average) development of labour share has remained relatively stable.

Graph 9: Labour share of 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 that begins with the balance sheets of the economy, which are then connected with the corresponding income flows of national income. Next, income flows that belong to households are separated. Finally, those flows are linked with the income distribution data, which allows scrutiny of capital and labour income by income decile consistent with national account concepts. This is performed for Finland, France and Spain, with the first part of the exercise focused on the years 1995 to 2018. The calculations presented in this article are based on internationally available data sources, i.e., national accounts and micro data from EU-SILC and HFCS. Due to the availability of micro data, the last part of this exercise, i.e., the labour income shares of household primary income, could only be estimated for the years 2007–2018. Moreover, as international data sources contain less detail than their country-level counterparts, this analysis is necessarily less granular than that offered by Kavonius (2019, 2020) for Finland.

The article aimed to analyse whether income generation is driven by income from wealth or labour compensation. The structural changes in labour shares indicate that, in terms of income generation, the role of both property and labour income is changing. Piketty argues that wealth is increasingly accumulating in wealthy households, and this wealth is playing an increasingly important role in the generation of income, which will lead to increased income dispersion. In our framework, this process should entail a structural shift in the ratio between capital and labour income in highest income deciles.

Nevertheless, our (arguably short-term) decile-based analysis finds no evidence of such a shift. The share of income which households receive from wealth is sensitive to economic cycles, but there is no clear structural change. In fact, the share of labour income in the highest income deciles is actually increasing rather than decreasing. Thus, it seems we are moving towards the modern liberal meritocratic capitalism described by Milanovic, where people are capital- as well as labour-rich, rather than towards a new heyday of classical capitalism. The timeframe of our analysis is considerably shorter than that used by Piketty, but issues of data availability prevent a longer timeframe for an analysis conducted in such detail. Moreover, Piketty's focus

is the richest 1% or less, who are seldom captured by macroeconomic frameworks or even official (cross-national) statistics based on sample surveys.

It is also essential to note that if we analyse solely the distribution of gross national income, a different picture emerges. In terms of total economic development, property income plays a more pronounced role than in pure household sector income, and therefore overall development is more volatile. The picture changes little when viewing national income distribution for the total economy or household functional income distribution. Relatively volatile property income changes the ratio, but clear structural changes are not evident. At the national level, the share of capital income is, for obvious reasons, larger than at the household level, but this does not automatically entail increasing (inter-personal) inequality. In particular, the countries analysed in this article are characterised by considerable equity ownership by general government and non-profit institutions serving households, whose returns are used for the public good.

What then is actually occurring in these economies? The stock of wealth has indeed increased much in recent decades. This 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 actual assets. Nevertheless, returns were higher some decades ago, and if they were similar to levels 20 years ago, the capital/labour ratio would have moved structurally towards capital. This would also have strongly increased inequality, as capital income is typically concentrated in the highest income deciles. However, as the rates of return in these three countries practically halved from 1995 to 2019, the capital/labour ratio has actually remained relatively stable. Not yet, at least, has Goodhart's and Pradhan's predicted rise in the ratio of capital to labour occurred, even though demographic change, i.e. a decreasing share of economically active people, is already the reality in these countries.

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## Annex 1: 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, demonstrating how national balance sheets are linked with the corresponding property income flows. On the left-hand side of the table, balance sheets and their asset types are presented and, on the right-hand side, the corresponding income flows are depicted.

Table 2: National balance sheets and related income flows

<u>A: Financial balance sheets:</u>	<u>B: Property income flows (corresponding):</u>
Deposits (F.2) Debt securities (F.3) Loans (F.4) Other accounts payable/receivable (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.423)
	Reinvested earnings 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 (F.64)	Investment income payable on pension entitlements (D.442)
Natural resources (N.21)	Rent (D.45)
Financial derivatives and ESOs (F.7)	By nature do not accumulate any income

In Table (3.) the national income flows, which are missing in Step B, are added. These flows are, in practice, operating surplus, i.e., profits before the distribution of profits and taxes (which covers also rental income from dwellings and imputed rents),<sup>21</sup> employee compensation, 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.<sup>22</sup> It is important to note that imputed rents are based on a

<sup>21</sup> This corresponds in bookkeeping to the concept of EBIT (*earnings before interest and taxes*).

<sup>22</sup> This corresponds in bookkeeping to the concept of EBT (*earnings before taxes*).

similar calculation to entrepreneurial income; i.e., by definition, imputed rents are entrepreneurial income generated by owner-occupied housing.<sup>23</sup> Unfortunately, very few countries separate entrepreneurial income, and therefore we cannot use this distinction in this article. Kavonius (2019, 2020) nevertheless used this breakdown when analysing income development in Finland. Due to data availability, the detail level of linking income and balance items also features some other differences. In the analysis presented in this article, all income flows are included in the breakdown presented in the table on the left-hand side.

Table 3: National income flows

C. Gross National Income (primary income):

1. Property and entrepreneurial 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	Dividends, receivable (D.421)
plus	Dividends, receivable (D.421)		
	Withdrawals from income of quasi-corporations (D.422) = <u>net zero</u>	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	Reinvested earning on foreign direct investment, receivable (D.43)
plus	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 entitlements, payable (D.442)	of which minus	Investment income payable on pension entitlements, payable (D.442)
plus	Investment income payable on pension entitlements, receivable (D.442)	plus	Investment income payable on pension entitlements, 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 the household sector are linked with the corresponding household survey income flows. This linkage is further discussed in the next section on the micro sources (EU-SILC and HFCS) used in this article.

<sup>23</sup> In practice, this is operating surplus generated by owner-occupied housing and from which the corresponding (mortgage) interest flows are deducted.

Table 4: Household share of national income (total primary income) and the corresponding flows of 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)		Interest, dividends and profit sharing (EU-SILC)
minus	FISIM correction, receivable (D.412)		Interest repayments on mortgage (EU-SILC)
			Interest, dividends and profit sharing (EU-SILC)
plus	Interest, payable (D.412)		Interest, dividends and profit sharing (EU-SILC)
minus	FISIM correction, payable (D.412)		
			Mutual funds (HFCS)
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)
	Investment income attributable to collective investment, receivable (D.443)		Life insurance (HFCS)
plus			Voluntary pension insurance (HFCS)
	Reinvested earning on foreign direct investment, payable (D.43)		Self-employment income + rental income from property and land (EU-SILC) entrepreneurial income entrepreneurial income
plus	Reinvested earning on foreign direct investment, receivable (D.43)		
	Investment income attributable to insurance policy holders, receivable (D.441)		
plus			
plus	Investment income payable on pension entitlements, receivable (D.442)		
minus	Rent, payable (D.45)		
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. Transactions on the same line indicate which transactions have been used in breaking down national income transactions by income decile. The grey areas in the table emphasise the differences between the national income and income distribution statistics.

The linkage used above is, in principle, consistent with that applied in Kavonius and Törmälehto (2003), but due to updated reporting details and the insurance and pension related items in the HFCS data used in this article, the level of data aggregation slightly differs. Table (4.) corresponds to steps D and E in Table (1.). The grey areas in the table emphasise the differences between national accounts and household surveys. In practice, micro income components tend to differ in important ways from their 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).

Annex 2: The development of rates of return, using different rates of return concepts, and the share of labour (returns/compensation) for Spain (ES), France (FR) and Finland (FI). These are the underlying numbers for Graph (5.). The cells are highlighted when the value from the previous year is increasing and the cells are white if the value is decreasing from the previous year.

Total economy refers to the total exc. retained earnings concept (below) but additionally, it includes net savings of corporations' sectors (S11 and S12). This concept corresponds with retained earnings.

Households refer to the returns of household sector (S14), i.e. in the national accounts' concepts, it covers the income flows and stock of the household sector (S14) as described in Table (2.).

Total exc. retained earnings refers to the returns of total economy (S1), i.e. in the national accounts' concepts, it covers the income flows and stock of the domestic economy (S1) as described in Table (2.).

Returns/compensation covers returns and compensation of employees as described in Table (3.).

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
ES - total economy	5.90	8.28	6.69	5.56	4.71	4.90	5.25	5.11	4.40	3.96	3.56	3.63	4.19	5.40	4.68	4.21	4.26	4.21	3.97	3.74	3.49	3.53	3.41	3.57	3.60
ES - households	1.15	1.40	1.52	1.50	1.42	1.41	1.51	1.15	1.04	0.92	0.91	0.85	1.02	1.29	0.95	0.84	1.08	0.89	0.95	0.88	0.80	0.79	0.74	0.76	0.62
ES - total exc. retained earnings	4.20	5.97	5.04	4.30	3.62	3.94	4.47	4.15	3.49	3.20	3.14	3.31	3.87	4.59	3.50	3.13	3.32	3.09	2.86	2.56	2.23	2.18	2.07	2.22	2.19
ES - returns/compensation	0.49	0.49	0.44	0.41	0.36	0.39	0.45	0.40	0.37	0.36	0.40	0.46	0.56	0.62	0.50	0.45	0.50	0.50	0.46	0.41	0.35	0.34	0.32	0.33	0.32
FR - total economy	5.55	4.91	4.77	4.63	3.83	3.86	4.32	4.16	3.73	3.33	3.14	3.13	3.36	3.99	3.11	2.73	2.85	2.52	2.31	2.23	2.24	1.96	1.76	1.79	1.69
FR - households	3.11	2.81	2.75	2.64	2.30	2.24	2.25	2.03	1.76	1.59	1.46	1.48	1.53	1.83	1.59	1.53	1.54	1.52	1.32	1.30	1.23	1.12	1.05	1.14	1.10
FR - total exc. retained earnings	5.51	4.88	4.73	4.60	3.80	3.83	4.29	4.13	3.70	3.31	3.12	3.11	3.34	3.97	3.09	2.71	2.83	2.50	2.29	2.21	2.22	1.95	1.74	1.77	1.67
FR - returns/compensation	0.41	0.39	0.40	0.41	0.40	0.41	0.42	0.41	0.40	0.39	0.41	0.43	0.46	0.47	0.41	0.39	0.40	0.37	0.36	0.35	0.36	0.34	0.33	0.33	0.33
FI - total economy	5.98	5.24	5.37	5.25	4.50	5.08	6.53	5.34	4.50	4.50	4.13	4.75	5.36	5.60	3.51	3.05	3.14	2.85	2.47	2.69	2.82	2.52	2.71	2.68	2.66
FI - households	4.56	4.15	3.82	3.54	3.15	3.77	3.95	3.69	3.46	3.49	2.88	2.78	3.39	3.86	2.69	2.50	2.80	2.44	2.30	2.25	2.19	2.27	2.33	2.38	2.34
FI - total exc. retained earnings	4.53	3.83	3.60	3.60	3.10	4.10	4.95	3.85	3.31	3.16	2.93	3.58	4.20	4.62	2.90	2.36	2.61	2.42	2.15	2.22	2.29	2.01	2.07	2.05	2.07
FI - returns/compensation	0.53	0.47	0.50	0.51	0.51	0.58	0.71	0.58	0.52	0.55	0.53	0.65	0.75	0.72	0.49	0.48	0.50	0.47	0.40	0.46	0.50	0.45	0.51	0.51	0.53

Source: European Central Bank and authors' calculations.

Annex 3: The development of households labour income share (compensation of employees/primary income) by gross income decile in Finland, Spain and France from 2007 to 2018.

Households labour income share (compensation of employees/primary income) by gross income decile in Finland from 2007 to 2018. The coloured cells indicate that the labour share above the corresponding decile in 2007-2018 average and white cells indicate that they are below the average.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	80.4	81.4	81.8	81.0	81.0	81.8	81.4	81.0	80.7	80.4	80.0	80.4
1. decile	53.0	57.4	52.1	51.5	50.9	52.0	55.1	53.9	50.9	49.7	50.0	49.6
2. decile	69.8	68.2	70.5	68.7	70.1	71.7	68.1	70.0	65.8	66.7	66.9	69.0
3. decile	80.2	78.9	75.5	77.3	78.2	78.1	78.4	75.2	75.6	73.3	73.7	75.7
4. decile	83.4	85.3	82.9	81.8	82.4	82.8	79.7	80.5	79.9	81.1	80.0	80.4
5. decile	87.0	88.6	86.0	84.8	85.1	85.4	84.1	83.3	82.4	81.9	81.9	82.9
6. decile	87.9	88.5	87.4	85.1	86.8	87.1	86.4	85.5	85.8	85.1	84.2	84.8
7. decile	88.0	89.5	88.0	86.9	86.4	86.4	87.6	87.2	85.8	84.8	84.8	85.6
8. decile	88.0	89.1	86.9	86.8	87.2	88.0	87.2	85.9	85.0	85.3	85.2	85.1
9. decile	87.1	87.0	88.0	86.8	85.9	86.0	85.4	84.9	85.9	85.0	84.9	85.8
10. decile	68.7	70.0	73.8	72.9	73.0	74.8	74.5	74.8	75.3	75.3	74.6	74.3

Households labour income share (compensation of employees/primary income) by gross income decile in Spain from 2007 to 2018. The coloured cells indicate that the labour share above the corresponding decile in 2007-2018 average and white cells indicate that they are below the average.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	70.9	73.7	75.3	74.9	72.7	72.7	71.3	71.5	71.6	71.0	70.9	71.3
1. decile	64.1	67.9	63.7	63.0	51.4	50.0	49.3	50.4	48.4	50.4	49.1	52.4
2. decile	61.7	64.0	58.3	57.6	53.1	60.7	57.8	54.3	56.5	56.7	54.9	56.6
3. decile	69.2	64.4	63.4	64.5	65.6	65.2	58.5	60.4	57.1	59.3	63.1	63.7
4. decile	68.7	69.9	70.4	66.6	65.9	65.9	64.4	64.5	63.2	63.8	63.3	68.3
5. decile	70.9	74.7	74.8	73.7	67.5	67.9	64.7	66.8	69.0	68.0	73.4	71.9
6. decile	73.1	77.5	74.8	76.3	75.2	71.8	70.9	71.3	70.1	73.6	72.6	74.4
7. decile	75.4	75.3	78.2	77.5	75.0	72.7	71.1	73.2	75.6	75.1	74.0	76.2
8. decile	77.9	81.2	79.7	78.3	76.8	79.7	78.7	77.3	77.0	75.6	77.1	75.9
9. decile	76.2	79.3	81.0	81.7	77.3	78.2	77.3	77.1	77.8	78.8	77.4	77.8
10. decile	64.8	69.0	74.1	73.6	73.0	72.2	71.3	71.7	71.4	68.8	68.0	67.3

Households labour income share (compensation of employees/primary income) by gross income decile in France from 2007 to 2018. The coloured cells indicate that the labour share above the corresponding decile in 2007-2018 average and white cells indicate that they are below the average.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	76.2	76.2	77.7	77.8	77.9	78.2	79.3	79.4	79.5	79.8	80.2	80.0
1. decile	68.0	58.3	64.6	60.3	63.2	65.5	64.9	60.7	64.3	63.5	68.1	63.0
2. decile	80.3	79.4	80.1	78.2	78.5	80.9	80.0	79.4	79.6	79.7	78.9	78.3
3. decile	77.6	81.0	79.7	80.1	80.4	81.1	80.8	82.5	80.3	82.0	80.7	82.1
4. decile	85.8	84.6	84.6	85.4	84.0	83.9	84.6	83.7	84.0	83.7	83.5	84.5
5. decile	87.2	86.5	85.1	84.4	86.3	85.5	85.8	84.6	84.5	84.9	85.7	85.0
6. decile	85.5	85.8	86.7	85.9	85.6	85.9	87.2	85.9	85.2	85.9	86.3	86.0
7. decile	85.7	86.1	85.0	84.7	85.5	85.7	84.9	86.0	85.6	85.2	86.3	86.1
8. decile	83.3	83.6	83.6	84.3	84.4	83.1	85.0	84.8	85.0	84.9	84.5	85.9
9. decile	80.0	80.0	80.7	80.8	81.3	80.2	81.7	82.4	81.2	82.2	81.8	81.7
10. decile	58.9	59.9	64.4	65.4	65.2	66.4	67.6	68.6	70.6	70.6	71.8	71.0

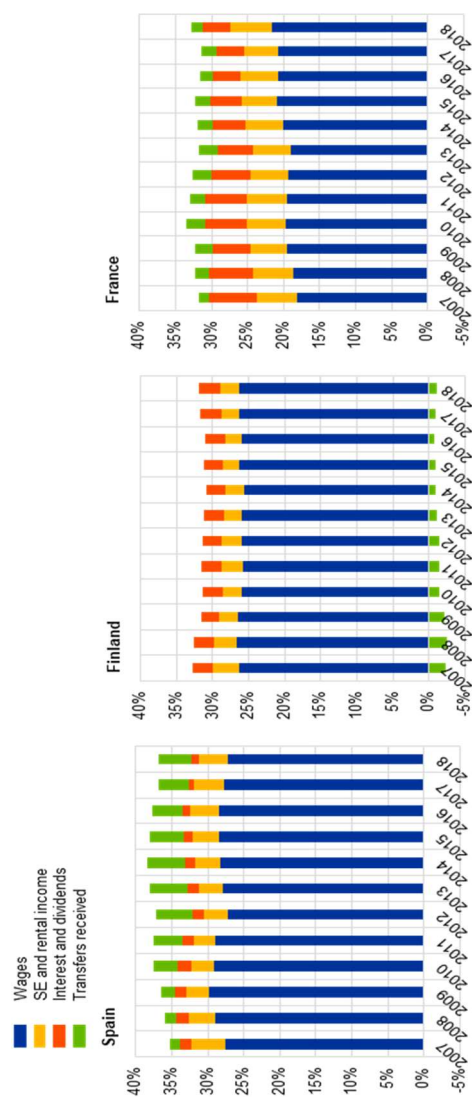
Source: European Central Bank and authors' calculations.



#### Annex 4: Additional information from the micro data

While the article examines functional rather than personal income distribution, it is of interest to see the evolution of pre-tax Gini coefficients and the contribution of sub-components to this in the three countries. This contribution depends on the relative share of 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 also increased. In Finland, pre-tax income inequality has remained stable or has slightly declined, and transfers received contribute negatively. The contribution is negative if the correlation (Gini correlation) between the income component and gross income is negative (within-source Gini and income share are always positive). In France, pre-tax income inequality also increased during the financial crisis and then levelled off. Moreover, the roles of self-employment and rental income as well as interest and dividends are markedly high.

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## Ilja Kristian Kavonius

European Central Bank, Frankfurt am Main, Germany; University of Helsinki, Helsinki, Finland;  
email: [Ilja\\_Kristian.Kavonius@ecb.europa.eu](mailto:Ilja_Kristian.Kavonius@ecb.europa.eu)

## Veli-Matti Törmälehto

Statistics Finland, Helsinki, Finland; email: [Veli-Matti.Tormalehto@stat.fi](mailto:Veli-Matti.Tormalehto@stat.fi)

## © European Central Bank, 2022

Postal address 60640 Frankfurt am Main, Germany

Telephone +49 69 1344 0

Website [www.ecb.europa.eu](http://www.ecb.europa.eu)

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