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Wiemer Salverda

Household Income Inequalities and Labour Market Position in the European Union[1]

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INTRODUCTION

The study of income inequality has progressed since the top-income shares were published (Atkinson and Piketty 2007) and the OECD issued its first report (OECD 2008). This has greatly benefited the analysis of income inequality, but several important problems remain, which are addressed here.

The analysis of the relationship between gross incomes (focus of top incomes) and equivalized incomes (focus of OECD and EU policies) is underdeveloped. The latter derives from the former *via* income redistribution and equivalization for household economies of scale. Equivalized incomes are often viewed as the result of taxation, although equivalization plays an equally important role. It depends on household formation, which differs between countries and has changed strongly in recent decades. The linkage between individual earnings and household income distribution is equally underdeveloped, although earnings are by far the most important source of income. It is a tale of two literatures: of household income inequality and of individual wage inequality, with little contact (Salverda and Checchi 2015). Rapid increases in female employment and part-time employment, educational participation, and higher educational attainment have fundamentally transformed the relationship of households to the labour market, replacing the single full-time breadwinner with dual-earner and multiple-earner households and rising part-time hours, and, a far more complex relationship between earnings and incomes as a result. Finally, the distribution of incomes for the Union as a whole, has received little or no official attention – a serious *lacuna* given monetary unification and the long-run sustainability of the Union.

My aim is to empirically demonstrate the relevance of bridging the gaps for both the countries and the Union as a whole (excl. Croatia), with a focus on gross wage earnings and the incomes of 'labour households' dependent on earnings. All of my work is based on the latest 2015 wave of the *European Union Statistics of Income and Living Conditions* (EU-SILC) with annual data for 2014, the only data available and far from perfect, a caveat to keep in mind.

The argument is presented in two main sections: firstly, the linkage between earnings, households and income inequality for the average country with a few words about variation around this average; and secondly, the position of the countries in an EU-wide income distribution. It concludes with a discussion and some policy implications.

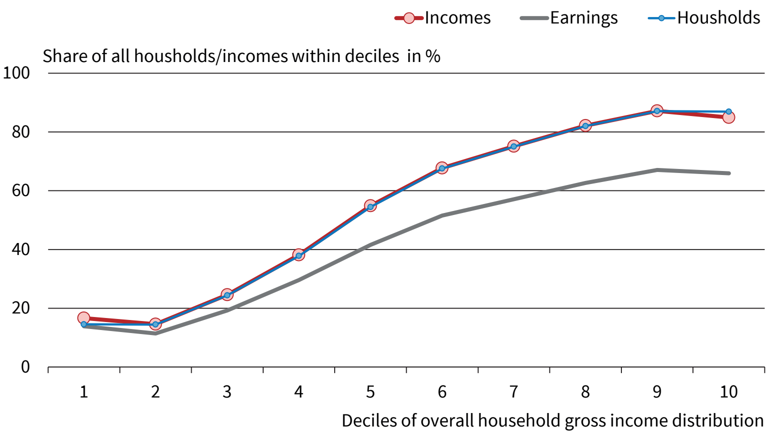
THE AVERAGE COUNTRY

Importance of Labour Earnings

Across EU countries, labour households account for 54 percent of all households and receive 73 percent of total gross income; their earnings contribute 77 percent of their incomes. It makes earnings essential for studying incomes. Their position across the income distribution says the same for studying income inequality (Figure 1). The numbers, incomes and earnings increase strongly relative to all households along with the general level of income.

As combining numbers and earnings levels rise, their own distribution shows a strong gradient (Figure 2). Top-decile labour households obtain 35 percent of labour households' total earnings, sixty times those of the bottom-decile. This rests largely on the combination into households of individual earnings, which do not rise that much. It brings 21 percent of all employees to the top. The breakdown by four household-earner types shows how the top is dominated by dual-earner and multiple-earner households. The percentages shown in the areas indicate their share in total earnings across the ten

Figure 1
Labour Households 2014: Numbers, Gross Incomes and Earnings
EU27 average



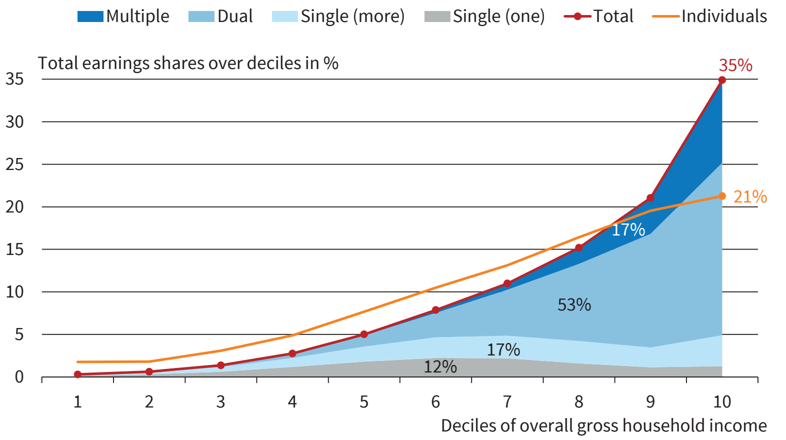
Source: Own calculation on EU-SILC. © ifo Institute

[1] The author is grateful to Veerle Rook for her treatment of the EU-SILC data.

Figure 2

Labour Households 2014: Gross Earnings over Deciles and Household-earner Types

EU27 average



Source: Own calculation on EU-SILC. © ifo Institute

deciles. The majority (53 percent) is received by dual earnings, while 12 percent and 17 percent respectively are received by the two types of single earners and the remaining 17 percent goes to multiple earner households.

It demonstrates how the combination of larger employee numbers and higher individual earnings help to explain the important role of labour households and earnings towards the top of the income distribution. This presents the labour context of household incomes, which cannot be adequately grasped by an exclusive focus on income distribution. Currently, three quarters of all employees share a household with at least one other employee, which draws attention to the household context of labour supply that may escape purely individual-based approaches. The world of the single breadwinner has gone. With one earner in the household working full-time, this meant a close relationship between household incomes and labour-market earnings, which has gone too.

Earnings Gradients

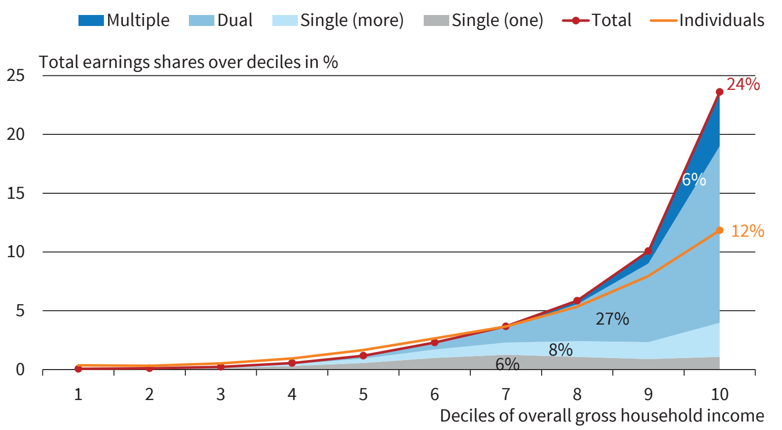
This shift has coincided with other drastic labour-market changes. Female employment, the educational participation of youth, and the educational attainment of the population have surged in recent decades, adding to strong international changes, aptly summarised by Freeman (2006) as 'the doubling of the global work force'. Their significance for household earnings distribution differs substantially. Obviously, gender is central to most household formation and the gender pay gap is a hotly debated issue. However, the gradient of female earners over the household deciles is surprisingly flat. Women comprise 47 percent of employees and receive 40 percent of total earnings. They do lag behind male earnings, but in a similar pattern for all deciles and household-earner types. Women also account for 10 percent of youth employees and 4 percent of earnings. Their strong concentration (53 percent) in multiple-earner households brings them that high up. A very steep gradient, however, is found along the dimension of educational attainment: low, middle and high. The poorly-educated face a four to five-fold decline from the bottom to the top, while the middle-educated show stable shares, which decline substantially in the ninth and tenth deciles. This contrasts spectacularly with the highly-educated. They make up 35 percent of all individual earners and receive 48 percent of all earnings, strongly tilted towards the top. In the top decile they provide 12 percent out of 21 percent of all employees and 24 percent out of 35 percent of all earnings (Figure 3).

Highly-educated dual earners play a very important role as they obtain 27 percent of all earnings, just over half of all dual earnings (53 percent). Some 60 percent of highly-educated dual earners share a household with each other, and 72 percent do so in the top decile. As a result, almost half of the cohabiting highly-educated are found in the top decile. It is an important mechanism that can only grow stronger with increasing educational

Figure 3

Labour Households 2014: High-educated Employee Earnings over Deciles and Household-earner Types

EU27 average



Source: Own calculation on EU-SILC. © ifo Institute attainment and growing employment differentials by educational attainment.

Vicious Circle for Low-paid Jobs

An important effect of this interaction between incomes and earnings is found on the jobs side. In the single-breadwinner world the one source of pay in the household together with the uniformity of full-time working hours keeps employees with low-paid jobs (by the hour) in the lower ranks of the income distribution. This contrasts fundamentally with the world of dual and multiple earners, who can also work part-time hours more easily. Low-wage jobs can now be found all over the income distribution. Using elementary jobs as *pars pro toto* demonstrates the broad spread of low-paid jobs over the income distribution.[2] Two thirds of them are concentrated in the 5th to 9th deciles, and more are actually found in the top decile than in the first or second decile (Figure 4).

This largely corresponds with dual-earner and multiple-earner households, which taken together comprise 70 percent of elementary workers, 63 percent of whom are found in deciles 5 to 10, and 44 percent of whom, in turn, are secondary earners. It suggests a radical change in the functioning of the low-wage segment of the labour market: labour supply originating in well-to-do households competes with other individuals, who are probably less educated and will depend on full-time hours to generate appropriate income.[3] Thus a vicious circle of earnings and income inequality is established where income inequality results in greater difficulty for the low-skilled to find adequate employment, which in turn augments income inequality (see also Salverda 2016).

Differences in Redistribution and Equivalization

We now turn from gross incomes to equivalized ones, the common currency of income policies. The EU definition of monetary poverty as incomes below 60 percent of median equivalized household income is a case in point. These incomes are two subsequent steps away from gross income: firstly, the move towards disposable income through redistribution: the deduction of income taxes and social contributions; and secondly, the step towards equivalized income through equivalization: the attribution of a comparative value that the disposable income has for the receiving household, given the number of persons dependent on it and the economies of scale they may realize as a household (e.g. one house, fridge, etc.).[4] The steps are seldom considered separately, despite the fact that both are quantitatively important and that they depend on different factors: government policy making for the first step and people's household formation for the second.[5] That formation has evolved considerably over time (more singles, fewer children) and also differs between countries. Therefore, it would be a mistake to attribute equivalized incomes entirely to redistributive policies.

Redistribution and equivalization reduce the share of total income accounted for by labour households, as the latter have above-average incomes and household size and therefore pay more taxes and face stronger equivalization. Their share decreases from 73 percent of gross incomes, *via* 66 percent of disposable incomes to 62 percent of equivalized incomes. Importantly, the steps also affect income distribution itself, or the ranking of households by the applicable income level. Figure 5 indicates the corresponding shifts for the gross earnings that households take with them when they shift from their (decile) position in one distribution to a different position in another distribution. For all employees the highest three deciles

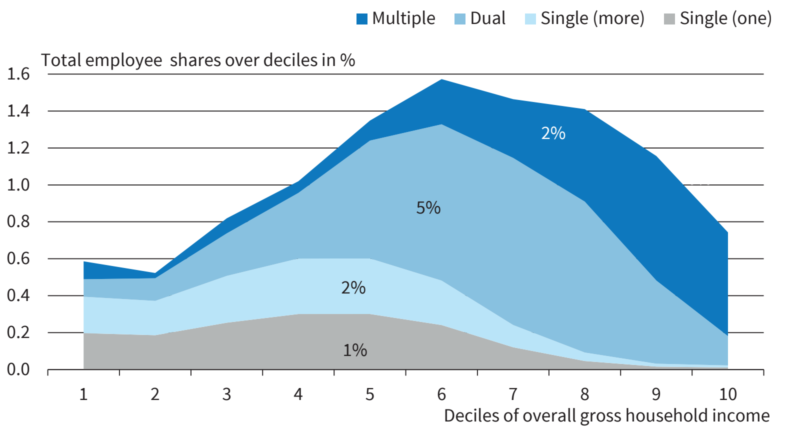
[2] Elementary jobs act as a second-best solution, as SILC data on hours worked are missing for many countries and low pay cannot be properly observed. These jobs concern least-skilled jobs according of the international classification of occupational levels (ISCO), comprising 10 percent of all employees and obtaining 6 percent of all earnings.

[3] In the Netherlands 80 percent of the least skilled jobs are occupied on a part-time basis and by better-skilled persons (Salverda 2016).

[4] Unlike taxation and contributions which are observed quantities, equivalization is an arbitrary interpretation by researchers and policymakers. It can be done in different ways, depending on the weight given to economies of scale. I follow SILC's use of the modified OECD equivalence scale.

[5] This also applies to, for example, the OECD's Income Distribution Database, which equivalizes both gross and net incomes to study the effects of redistribution. However, this keeps household formation effects entirely out of sight. In addition, Salverda (2014) argues that this may lead to an underestimation of redistribution.

Figure 4
Labour Households 2014: Elementary Employees over Deciles and Household-earner Types
EU27 average



Source: Own calculation on EU-SILC.
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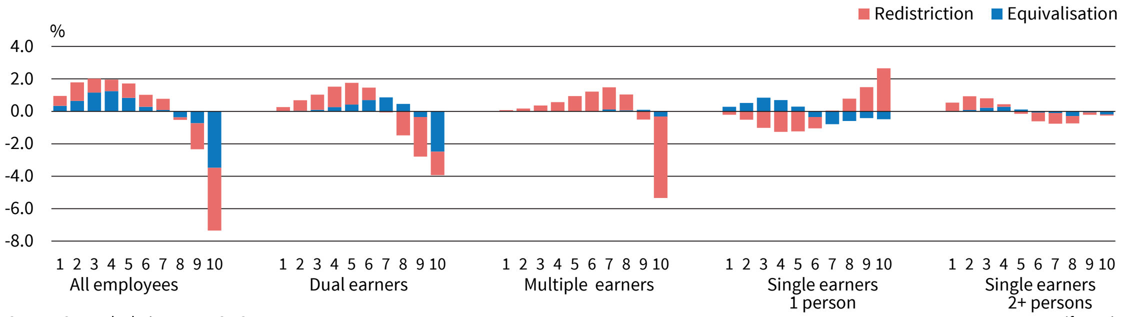
Figure 5

Labour Households 2014: Between-decile Shifts of Gross Earnings from the Gross to the Net to the Equivalized Income Distribution

EU27 average



Source: Own calculation on EU-SILC.

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shrink to the advantage of the lower seven. The effect is particularly large for top-10 percent households. All being expressed in percentage points of total gross earnings, a breakdown into changes of the household-earner types shows significant differences between the four types. Dual earners and multiple earners bear the brunt of the downward shifts. Dual earners do so mainly because of redistribution, probably because they earn more individually and pay higher taxes. Multiple earners are affected primarily because of equivalization, probably as they combine larger households leading to stronger equivalization, and lower individual earnings that are less exposed to taxation. One-person single earners move up towards the top and more-person single earners remain virtually unchanged at the top, but shrink in deciles 6 to 8 to the advantage of deciles 1 to 4. Redistribution and equivalization work mostly in the same direction, with the exception of one-person single earners where inverse movements can be seen, reflecting higher incomes in combination with smaller households. Clearly, it is important to pay attention to both effects and keep them separate.

In-work Poverty

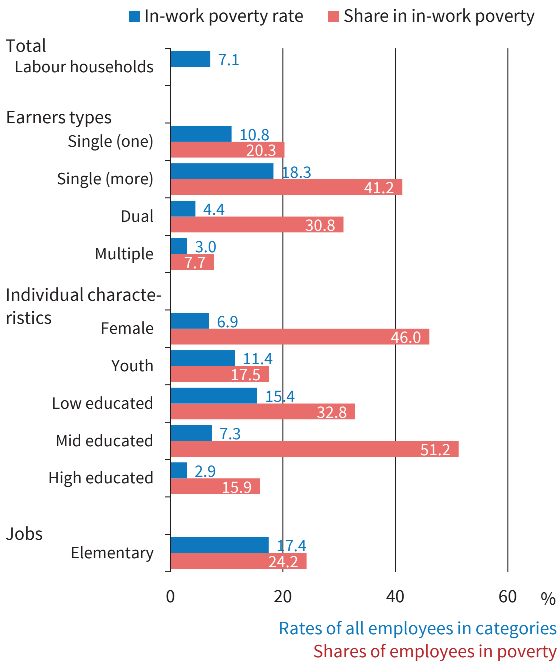
Monetary poverty is a measure of inequality situated in the lower range of equivalized incomes. The average poverty rate is 16 percent for all households, and 9 percent for labour households only. The share of poor labour households among all poor households is 30 percent. So most poor households do not depend on earnings for their main incomes. The poverty rate among employees is 7 percent, which is less than for labour households because dual-earner households (4 percent) and multiple-earner households (3 percent) experience significantly lower rates compared to single earners – 11 percent and 18 percent respectively (Figure 6). Bringing two or three or more earners together in a household seems a sensible strategy for escaping poverty. The traditional single earners with a dependent household, however, face a significantly higher poverty rate of 18 percent, which exceeds the overall rate of 16 percent. Of all poor employees 41 percent belong to this category. The two observations underline the seriousness of in-work poverty and the relevance of distinguishing household-earner types.

The dimensions of gender, age and educational attainment mirror the above findings concerning the earnings gradients. Average poverty rates and shares are found for women and the middle educated, a somewhat higher rate (11 percent) for youth. The rate of the low educated (15 percent) seems modest, probably because an important share of them is secondary earners higher up the distribution. The rate for the high educated (3 percent) is well below average. Finally, on the labour-market side, employees with an elementary job run a substantial risk (17 percent) of poverty.

Figure 6

Labour Households 2014: Poverty Rates and Shares among Poor Employees

EU27 average



Source: Own calculation on EU-SILC.

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Nonetheless, this leaves 83 percent of employees in those purportedly low-paid jobs who are members of non-poor labour households (see also Salverda 2018).

The two steps of redistribution and equivalization apply equally to the in-work poor. They appear to lose 18 percent of their gross incomes due to redistribution and another 37 percent of same gross incomes due to equivalization. This brings them to an average level of equivalized income at 26 percent below the poverty threshold (the poverty gap). Changing the level of taxation could certainly help to alleviate the problem, but it will not go far enough. Accounting for larger household sizes seems a necessary part of the strategy. The systematic eradication of child poverty belongs to that category.

Country Variation

So far, I have pictured inequalities with the stylized strokes of the average EU country. Obviously, EU countries harbour important variation around the average. It is beyond the scope of this contribution to discuss that question in detail. The main issue is whether the basic findings apply: the large role of labour households, the relevance of distinguishing household-earner types, the strong contribution of high-educated employees and its link to dual earning, the vicious circle in the low-wage segment of the labour market, the differential effects of redistribution and equivalization, and the structure of in-work poverty.

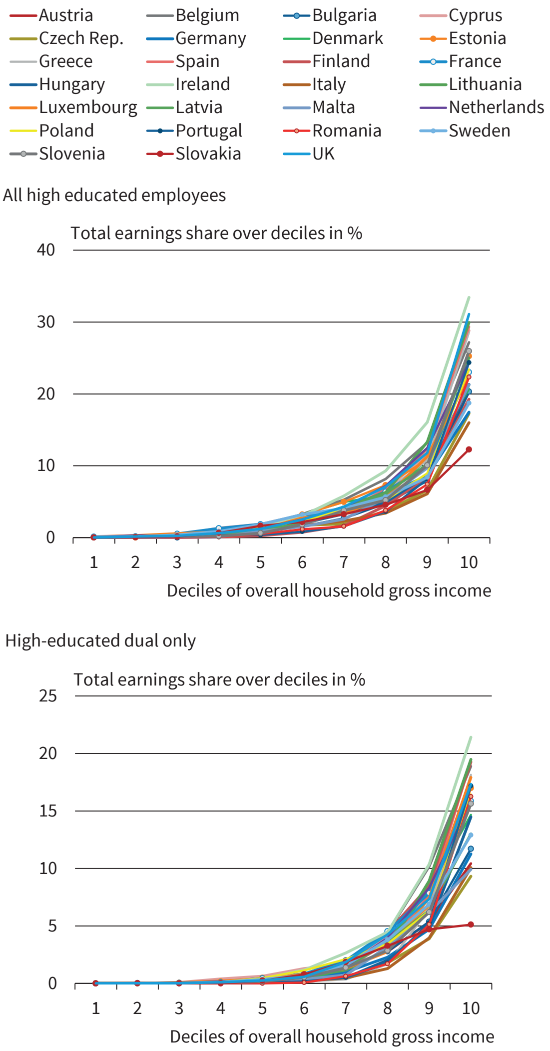
There can be no doubt that labour households make by far the largest contribution to incomes and income inequality in all countries: their contribution to the top decile always exceeds the average contribution. Their incomes are above-average nationally, but equal to the average at the top. Greece and Italy are laggards by international comparison, as labour households number between 35 and 45 percent of all households only. Their incomes, however, account for 50 to 60 percent of the total, which leaves insufficient room so that others could exceed. They also play a smaller role at the top in the two countries. Interestingly, this goes together with the smallest role for dual earners, negatively demonstrating the relevance of looking at household-earner types. Denmark, Estonia and Latvia, at the other end of the scale, make the largest overall contribution, for the top share and for the importance of dual earners. Multiple earners make the largest contributions in Malta and Slovakia. Generally, the share of dual-earner households is the most comparable across the countries, while the shares of single earners and multiple earners are inversely related to each other and each show more cross-country variation.

The gradients that we have considered, by gender, age and education, follow broadly the same trends over the deciles in all countries: rather flat for women and youth, declining throughout for the low educated, flat first and then declining for the middle educated.

Figure 7

Labour Households 2014: High-educated Employee Earnings over Deciles

27 EU countries



Source: Own calculation on EU-SILC. © ifo Institute

These observations apply particularly to the upper half of the distribution, as there is more variation in the bottom half, where numbers are (very) small and can be erratic. This contrasts again with sharp increases for the highly educated (shown in Figure 7, comparable to the total earnings line of Figure 3, which increased to 24 percent in decile 10). The upper panel of Figure 7 shows the earnings gradient for all highly-educated employees while the lower one shows (at a different scale) the contribution made by dual earners among the highly-educated. Across all countries dual earners contribute half or more to the earnings of all highly-educated in the top-10 percent, with the notable exceptions of Malta and Slovakia countries due to the large role of multiple earners. Similarly, the incidence of elementary jobs across the income distribution of Figure 4, that suggests a vicious circle between income inequality and low-wage employment, is replicated in most countries.

The volume of elementary employment at the top always exceeds that at the bottom.

As to redistribution and equivalization both effects are significant and different from each other in all countries. Redistribution brings most households down for all household-earner types with a few exceptions for multiple-earner households and more-person single earners. This contrasts with equivalization, which shifts down across the board with growing household size – dual and multiple earners, and in many but not all cases, also the more-person households of single earners. Finally, the lion share of in-work poverty is always allocated to more-person single earners.

As a general conclusion, by and large the individual country trends are qualitatively the same as the average, albeit with some quantitative variation. For example, although the share of the highly-educated among all employees may differ, as well as their concentration at the top, and their relative earnings, they always show the most important earnings gradient supported by the largest role for dual earners.

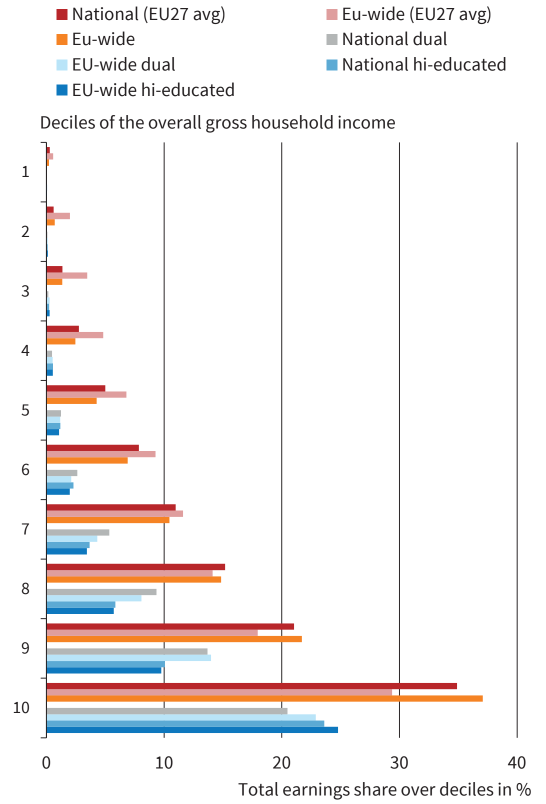
THE UNION PERSPECTIVE

One can also look at the relationship of income inequality and earnings from the viewpoint of the European Union considered as a single entity. Contrary to the above perspective of the average EU country, which aimed to understand the relative patterns and their (dis)similarities, the EU-wide approach helps to grasp how the countries compare to each other in an absolute sense, by identifying their positions in the overall distribution, and particularly in fractiles such as the top-10 percent and poverty, on which I will focus here for the sake of brevity.

Meaningful EU-wide distributions of incomes and earnings are drawn by applying purchasing power parities (PPP) to the individual incomes and earnings of the countries. PPP indicates how countries' price levels deviate from the EU average, comparing what the same amount of money can buy in real terms in different countries. Usually this is less in richer countries compared to poorer ones (Salverda 2015). The EU-wide distribution does not affect the within-country inequalities and mechanisms discussed above, as the PPPs effectively signify linear transformations. Numbers, household-earner types and individual characteristics remain unchanged, but they will be differently distributed in the EU distribution compared to the country distributions, depending on both the country's price level and level of inequality. The EU-wide distribution weights the countries, as it includes all individual observations. This differs from the unweighted countries' average insofar as the roles of characteristics and types diverge by country size. For parts of the EU-wide distribution one can still consider unweighted countries' averages – their comparison to the above findings most directly indicates the differences that the EU-wide approach makes to the national figure.

Figure 8

Household Earnings over Deciles, National and EU-wide, 2014



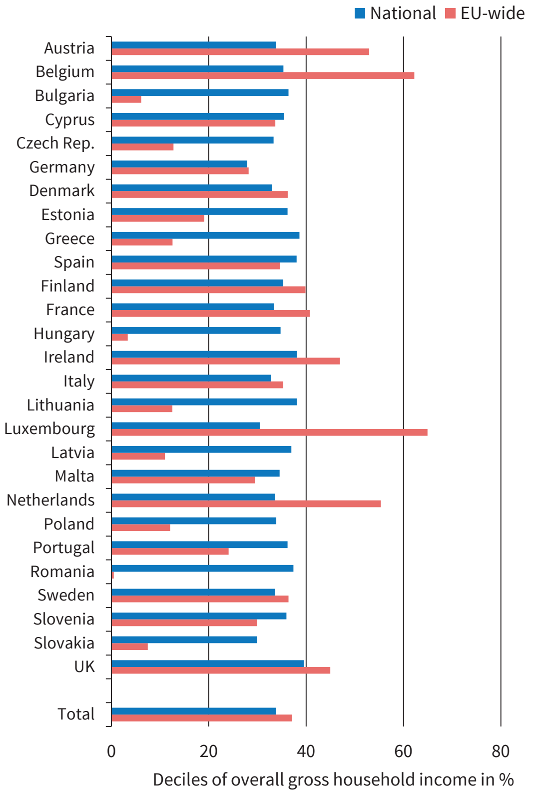
Source: Own calculation on EU-SILC. © ifo Institute

EU-wide inequality, as measured by the percentile ratio P90:P10 differs from average national inequality: 11.7 as against 9.7 for gross incomes and 5.4 to 4.0 for equivalized incomes, but these EU-wide levels are well within the range covered by the individual countries. Differences are small for the upper half of the distribution (P90:P50) and reside largely in the bottom half, but the P50:P10 ratio is still within the national range there too.

Labour households and their earnings are equally important for the Union as a whole, despite some divergence from the national average (the three larger bars of Figure 8). The total EU-wide pattern of inequality (top-10 percent: 37 percent) exceeds the national country average (35 percent), while the EU-wide country average lies far below (29 percent). Apparently, countries that have larger top shares have larger populations. This paper focuses, however, on EU-wide distribution, which is what that we would ideally like to influence. The four smaller bars to the right of the large ones (Figure 8) show that the higher levels at the top of the EU-wide distribution are accompanied by equally higher levels for dual earners and highly educated employees. This underlines the importance of the main mechanism found at the national level for the EU as a whole.

Figure 9

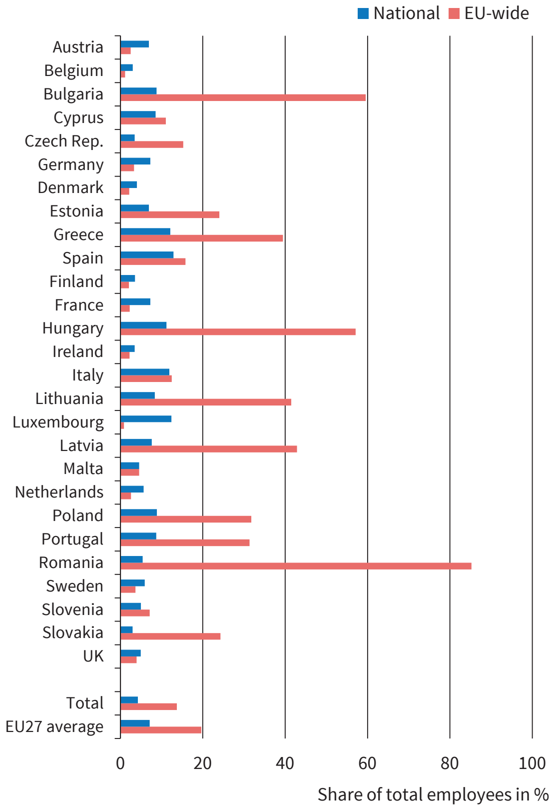
Labour Households 2014: Shares of Top-10% Earnings



Source: Own calculation on EU -SILC. © ifo Institute

Figure 10

Labour Households 2014: In-work Poverty Rates



Source: Own calculation on EU-SILC. © ifo Institute

These differences between distributions still look modest. However, below this aggregate picture lie strong country effects that reflect their absolute positions in EU-wide distribution. Figure 8 shows the largest difference in the top-10 percent and I focus on that. This masks a sharp reshuffling of the countries between national levels and their EU-wide counterparts (Figure 9). Eleven countries witness growing shares, especially in Austria, Belgium, Luxembourg and the Netherlands where the majority of all employees belongs to the EU-wide top-10 percent, while Ireland and Britain come close to this group. Increases are small or modest in Denmark, Germany, Finland, France, Ireland, Italy and Sweden. The fact that the Union's largest four countries are in this category contributes to the gap found between the EU-wide total and the EU-wide country average. It also tilts the geographical composition of the European top-10 percent in their direction, from 52 percent of all top-10 percent employees to 62 percent. The other sixteen countries witness declines, which are particularly sharp in the Baltic states, Bulgaria, Czech Republic, Greece, Hungary, Poland, Romania and Slovakia. Hardly any Bulgarian, Hungarian, or Romanian employees are found in the European top-10 percent. The very low top shares for so many countries explain the much lower EU-wide country average compared to the national figure. By implication, the highly educated workers in these countries can hardly reach the top. Their profile over EU-wide deciles therefore becomes entirely flat, in contrast with the overall rise seen in Figure 7. It is easy to understand the attraction that migrating to a better paid job elsewhere may exert on this category of workers.

The EU-wide incidence of in-work poverty equals 14 percent, twice the national average of 7 percent. Again, country size plays a significant role, as the EU-wide country average attains a much higher level of 20 percent, in contrast with the lowering effect found previously for the top-10 percent. The larger countries, except for Italy, experience low poverty levels. For poverty, being situated at the lower end of the earnings distribution, the shifts go in the opposite direction: they are higher in poor countries and lower in the richer ones. Poverty rates shrink to negligible proportions in EU15 countries, with the exception of Greece, Portugal and Spain. By contrast, they reach dramatic levels elsewhere (Figure 10). The rate shoots up in an extreme fashion for Romania, from 9 percent of all employees nationally to 88 percent EU-wide, and rates increase to (close to) majorities in the other countries that are absent from the European top-10 percent: Bulgaria, Greece, Hungary, Latvia and Lithuania. The poverty rates are also multiplied in Estonia, Poland, Portugal and Slovakia. These extreme levels mean that very large sections of the population, along all dimensions and not just the highly educated, will have incentives to migrate to other countries to seek better pay. The gaps are so immense that it seems impossible for spontaneous wage formation in the labour market to solve the problem within any reasonable time frame.

DISCUSSION

Labour households appear to strongly stratify the distribution of household incomes, primarily because of the combination of individual earnings in dual-earner and multiple-earner households, with a major role for the highly educated, who are heavily concentrated in the top-10 percent. Single earners account for around one quarter of all employees and only 10 percent of top-10 percent employees. Compared to the bygone world of full-time working single breadwinners, when earnings and incomes fundamentally coincided and high earnings reflected high pay, the relationship between earnings and incomes has become far more complex. This takes away the power that social partners used to have to influence the income distribution from the labour market. Low-paid jobs are now found up to the top of the income distribution, where their presence and earnings exceed those at the bottom. The implications are that low pay coincides less with in-work poverty and is largely concentrated in non-poor households with higher incomes (Salverda 2018), and that low-wage jobs may become fragmented and job competition tilted against the poorly educated, instituting a self-reinforcing feedback from household income inequality to individual earnings inequality and employment inequality and then back to household income inequality. Going from gross to net to equivalized incomes, we find that both steps are quantitively important and significantly different between household-earner types, for income distribution as a whole, as well as in-work poverty. This warrants paying special attention to the effects of (changing) household formation in addition to income redistribution through taxation and social insurance. These findings for the average country are largely shared across EU countries, albeit with quantitative variation. The important role of high-educated dual earners is found for all countries.

Secondly, for EU-wide income distribution, based on PPPs, we find modest levels of inequality that fit within the range covered by the countries. This is accompanied, however, by extremely drastic compositional changes for the countries over the distribution. Some countries lose the presence of any employees in the top decile who are replaced by other countries, some of which now have over half their employees in that top decile. The losing countries are overwhelmed by EU-wide poverty: close to 90 percent of Romanian employees and almost 50 percent or more for Bulgaria, Greece, Hungary, Lithuania and Latvia. These figures clearly show that the Union is facing a vast problem of inequality as a stumbling block on its path towards social and economic integration. International migration will never grind to a halt as long as this continues.

What can we expect for the future of income inequality? Without intervention the broader inequality of household market-incomes will tend to grow, especially for labour earnings. Dual earning is here to stay and will only increase, and rightly so; its income effects are being reinforced as partners shift from part-time to full-time employment and their earnings correlation grows with the correlation of their educational attainment. Over time labour households and their earnings seem to be drifting upwards like a tectonic plate towards the top of the income distribution.[6]

Can policies change this? The concern with economic inequality will take centre stage in European policy making. Current EU policy making in the framework of EU2020 concerns poverty only and is legally weak. Moreover, it does not apply to policy making at the European level itself (think of Troika actions). Any future governance of the Union aimed at reversing the trend towards growing inequality into a declining one needs to address the mechanism behind its growth. A focus on poverty and redistribution alone can only try to match growing market inequalities with enhanced redistribution and will quickly run into the constraints of available means. The distribution of market incomes needs to be addressed systematically. An EU-wide agreement on a minimum wage – or effective equivalent – at a significant level is needed and should be accompanied by a revision of tax systems that accounts for the growing divergence between individual earnings in the labour market and incomes of household based on their combination. It stipulates the need for thoughtful income redistribution through earned income tax credit (EITC) and a European child basic income (Atkinson 2013) aimed at taking children out of the equation of earnings and policymaking for adults. The dual-earner world blunts traditional measures of redistribution and inequality reduction, which target low individual earnings (tax credits, minimum wage), but may actually benefit higher-income households comprising low-pay earners. It means that dead-weight loss will increase for measures needed by those fully depending on low-wage jobs – that has to be accepted and the addition to higher incomes may be taxed away to contribute to financing the EITC and other measures.

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[6] This time dimension is not available for EU27 but see Salverda and Haas (2014) for a similar EU analysis for 2009-2010, and Salverda and Thewissen (2018) for a detailed country example.

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