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Redistribution in a joint income-wealth perspective: a cross-country comparison[1]

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Redistribution in a joint income-wealth perspective: a cross-country comparison

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ABSTRACT

Redistribution is usually understood in terms of income; as a way to rank individuals as well as to determine taxable capacity or benefit eligibility. Yet, it is increasingly argued that more prominence should be given to the joint distribution of income and wealth and interest into the taxation of wealth for redistributive purposes has largely increased. By including the HFCS data into the microsimulation model EUROMOD we add two novel aspects to the literature. First, we include the analysis of taxes on wealth and wealth transfers. Second, we evaluate redistributive effects of tax-benefit systems against the joint income-wealth distribution instead of income only. We show that expressing living standards in terms of both income and wealth results in considerable reranking of individuals, which in turn leads to a lower redistributive impact of tax-benefit systems than is traditionally considered.

Keywords: wealth policies, distributional analysis, EUROMOD, HFCS

JEL Classification: C15, H24, I3

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1 Introduction

The increasing accumulation of private wealth in Europe appears as one of the most striking evolutions in the distributional literature over the last 60 years. The aggregate private wealth-national income ratios have nowadays returned to levels observed in the 19th century, ranging from 300% to 600%. Such levels are determined by different economic factors, such as the long-run asset price recovery effect, high saving rates and low economic growth rates, at least partially sustained by pro-capital policies (Piketty & Saez, 2013). High wealth-income ratios are not necessarily bad but they raise challenging issues about capital taxation (Piketty, 2014) and the overall structure of inequality (Davies, 2009).

Despite these developments in private wealth accumulation, living standards have traditionally been defined and measured through monthly or yearly income streams. However, other financial resources such as savings and assets also impact living standards in a significant way (Kuypers & Marx, 2016). Savings and assets can serve as a buffer to smooth out consumption during low income periods or to face unexpected costs, but they also provide their owners with a form of economic power because they entail independence and can be used as collateral to further accumulate wealth (Cowell & Van Kerm, 2015; Azpitarte, 2012). Given the increasing importance of wealth over income, one can even argue that being a capital owner has become the most important determinant of living standards – and hence taxable capacity – today and even more so in the future. Therefore it is increasingly argued that more prominence should be given to the joint distribution of income and wealth (Jäntti, Sierminska & Van Kerm, 2013; OECD, 2013; Brandolini, Magri & Smeeding, 2010; Stiglitz, Sen & Fitoussi, 2009).

The adoption of a broader framework of determining living standards in terms of both income and wealth is also urged by the recent resurgence in the interest in inequality and redistributive policies. Various studies have pointed towards increased inequality in both income and wealth over the past decades in many OECD countries (see e.g. OECD, 2015; Piketty, 2014; Piketty and Saez, 2013) and posed doubt about the redistributive capacity of the tax-benefit systems in place. Indeed, the redistributive effects of taxes and social transfers are typically evaluated comparing the distribution of market and disposable household income (Huber & Stephens, 2014; Avram, Levy & Sutherland, 2014; Fuest, Niehues & Peichl, 2010; Mahler and Jesuit, 2006). This only provides a partial view as the correlation between income and wealth is far from perfect (Kuypers & Marx, 2017; Arrondel, Roger & Savignac, 2014; Skopek et al., 2012; Jäntti, Sierminska & Smeeding, 2008). Moreover, over the last years strong arguments have been made for broadening the taxation of wealth as a way to reduce inequality and raise government revenues (e.g. Piketty, 2014; Bach, Beznoska & Steiner, 2014). However, empirical evidence on the effects of both existing and hypothetical wealth taxes is largely missing as previous studies do not take into account wealth taxes and policies as part of the redistributive effort of welfare states (see e.g. Verbist & Figari, 2014; Immervoll & Richardson, 2011; Verbist, 2004; Zandvakili, 1994).

Our aim is to provide a more comprehensive and refined snapshot of the redistributive capacity of European welfare states. In particular, the relevant question is to what extent tax-benefit

systems are still redistributive when wealth is taken into account both as indicator of individual resources and as component of the taxable capacity of an individual. Hence, this paper contributes to the literature by adding two novel aspects to the redistributive analyses of tax-benefit systems. First, we use and extend the framework developed in the asset-based poverty literature (Brandolini et al. 2010; Weisbrod & Hansen, 1968) to evaluate the redistributive effects of tax-benefit systems against the joint distribution of income and wealth instead of income only. Second, we include recurrent wealth taxes (i.e. real property and yearly wealth taxes) and event-based wealth taxes (i.e. real estate transfer taxes, inheritance and gift taxes) into the analysis of redistributive effects of taxation. We analyse this in a cross-country framework by comparing results across six EU countries; namely Belgium, Finland, France, Germany, Italy and Spain. These countries are characterised by a broad range of tax-benefit systems, of different size and design, heterogeneous distributions of income and wealth as well as their correlation and different housing markets.

In order to do this we included the Eurosystem Household Finance and Consumption Survey (HFCS) as an underlying database for the EU-wide tax-benefit microsimulation model, EUROMOD. As the HFCS originally contains only gross income amounts which are not suitable for distributive analysis (Cowell and Van Kerm, 2015), its inclusion in EUROMOD allows to derive net incomes by simulating the gross-to-net transition taking into account all important details of the social security and tax system. Moreover, the policy domains currently covered in EUROMOD are expanded with simulations of existing wealth taxes and wealth-related policies (Kuypers et al., 2017).

The new empirical evidence presented in this paper provides important insights on the overall redistributive capacity of the current tax-benefit systems and highlights potential new avenues for the future debate on fiscal and social policies in the European Union and on innovative tax-benefit designs.

The remainder of this paper is organised as follows. The data and methods are described in Section 2. In Section 3 we present the joint income-wealth framework which is then used to evaluate the redistributive capacity of tax-benefit systems in Section 4. A decomposition between elderly and non-elderly is analysed in Section 5 to take into account the life-cycle character of wealth accumulation. The last section concludes.

2 A cross-European perspective: countries, tax-benefit systems and data

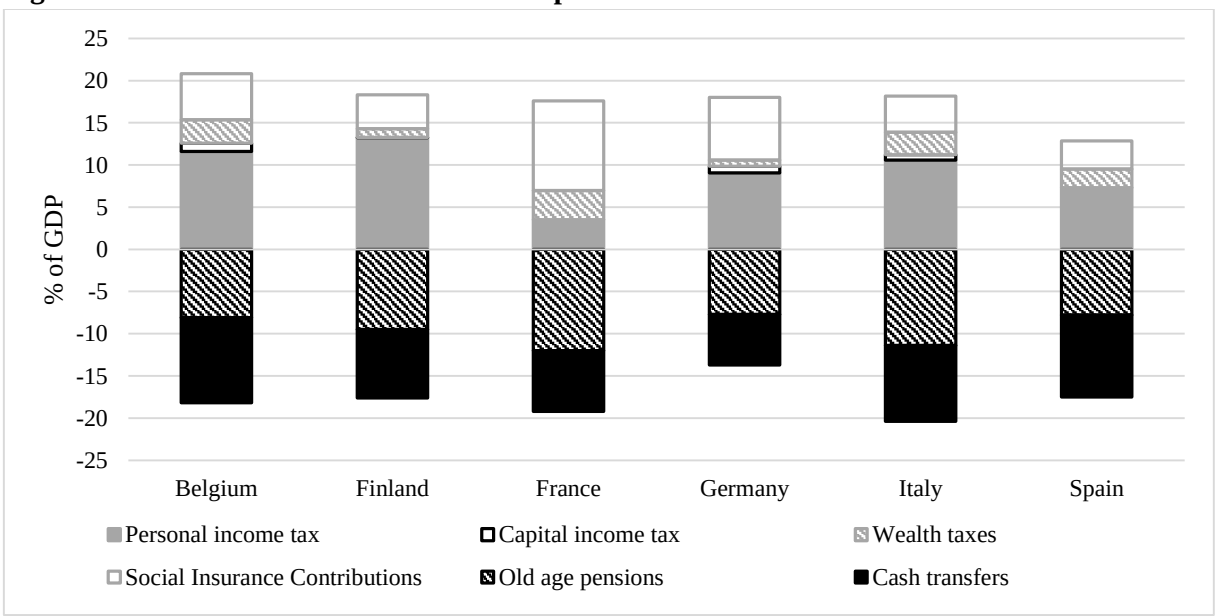
In order to consider the variety of European tax-benefit systems and to be able to provide a strong base for generalising the results to a broad range of welfare states, this paper adopts a cross-country perspective and covers six countries: Belgium, Finland, France, Germany, Italy and Spain. These countries represent different types of income and wealth distributions; the Gini coefficient of net wealth is equal to 0.576 for Spain, 0.598 for Belgium, 0.608 for Italy, 0.638 for Finland, 0.670 for France and 0.744 for Germany. Also the correlation between income and wealth varies largely (Arrondel, Roger & Savignac, 2014) as will be clear from

Section 3. They also provide a good representation of a broad range of tax-benefit systems and existing wealth taxation which largely shape the observed distributions of disposable incomes. Moreover, these countries are characterised by well-developed but heterogeneous housing markets. Focussing on the main residence market emerges a clear prevalence of home-owners in Spain (around 83%), and Belgium, Italy, Finland, where they represent around 70% of the population, while the presence of renters is important in France (around 45%) and even dominant in Germany (55%) (HFCN, 2013b). Given the importance of housing wealth in the individuals' portfolio, the interplay between house ownership and real estate taxes is an important determinant of the overall redistributive effect of wealth taxation.

2.1 Tax benefit systems

The relative importance of taxes and benefits with respect to the overall resources of a given economy and the design of the tax-benefit instruments are the key determinants of the redistributive process that contributes to the observed distribution of disposable income. Personal and capital income taxes, wealth taxes and social insurance contributions represent between 13% (Spain) and 20% (Belgium) of national GDP, while cash social benefits (including contributory pensions which might be considered as a postponed earning stream), absorb more resources than those collected through taxes with the exception of Belgium and Germany (Figure 1). Focussing on cash transfers, government intervention allocates resources between 6% and 10% of GDP, with more efforts clearly identified in Belgium and Spain. On a per capita basis, average social benefits are then smaller than the average tax burden, with part of the tax revenue financing public pensions that absorb the largest share of public resources in Finland, France, Germany and Italy, ranging from 7.7% of GDP in Germany to 12% in France.

Figure 1: Tax revenues and social benefit expenditure as % of GDP



Note: Figures for taxes and social insurance contributions refer to 2015, for social benefits to 2013. In view of comparability with the analyses below tax revenues reflect taxes on individuals only, social insurance contributions exclude employer contributions.

Source: OECD Tax Revenue Database and OECD Social Expenditure Database

The relative importance of the different instruments varies greatly across countries and focusing on a single instrument could be misleading. Personal income taxes have a progressive structure and include the different levies on all sources of earned income, pensions and some social benefits (e.g. unemployment benefits). Taxes paid on income from capital are usually characterised by a separate and often more proportional tax structure. Personal and capital income taxes represent less than 10% of GDP in France and Spain and almost 15% in Finland and Belgium. In all countries mandatory social insurance contributions (SIC) are levied on labour income from employees and self-employed (on voluntary basis in Germany) and on some social benefits (with the exclusion of Italy) although with a contribution rate lower than on income from work. They represent about 5% of GDP, with a higher incidence in France (10%) and Germany (7.5%). Wealth taxes exist in different forms in all countries, with an overall revenue ranging from 1% of GDP in Finland and Germany to almost 3% in Belgium and 3.5% in France.

2.2 HFCS-data and EUROMOD

The empirical evidence presented in this paper is based on the Eurosystem Household Finance and Consumption Survey (HFCS), a recent dataset covering detailed household wealth[2], gross income and consumption information. It is the result of a joint effort of the National Banks of the Euro zone, three National Statistical Institutes and the European Central Bank (ECB). Here, we use information for the six aforementioned countries from the first wave of the HFCS. An overview of their data reference periods and sample sizes is provided in Table 1. The sample sizes of these countries are among the highest in the HFCS and reliability of the data is known either through an external validation against other sources (e.g. for Belgium see Kuypers, Marx & Verbist (2015)) or because the HFCS survey has been adapted from prior existing and well known surveys covering wealth information (e.g. Spain, France, Finland and Italy).The HFCS dataset contains some interesting features, such as oversampling of the very wealthy to obtain a better coverage of the top of the wealth distribution and a multiple imputation technique (HFCN, 2013a).

Table 1: Overview of reference periods and sample sizes

	Reference period		Sample size	
Country	Wealth	Income	Households	Individuals

[2] We adopt in this paper the same wealth definition as used by the HFCS, i.e. net wealth defined as the sum of real and financial assets less liabilities. We only concentrate on privately held wealth, social security and public pension wealth are not included, nor is human capital (HFCN, 2013a).

Belgium	Time of interview	2009	2,327	5,506
Finland	31/12/2009	2009	10,989	27,009
France	Time of interview	2009	15,006	35,729
Germany	Time of interview	2009	3,565	8,134
Italy	31/12/2010	2010	7,951	19,836
Spain	Time of interview	2007	6,197	15,850

Source: HFCN, 2013a, p.74

A major drawback of the HFCS is that it only includes gross incomes, which are not suitable for distributive analyses. By incorporating the survey as the underlying database for EUROMOD, the EU-wide tax-benefit microsimulation model (Sutherland & Figari, 2013), we have developed a unique tool which allows to derive disposable incomes taking into account all important details of the social security and tax system (see Kuypers, Figari & Verbist, 2016). EUROMOD simulates cash benefit entitlements, direct tax, social insurance contribution on the basis of the tax-benefit rules in place and the information available in the underlying datasets. Instruments which are not simulated (due to data constraints), as well as market incomes, are taken directly from the input datasets (Sutherland and Figari, 2013).

Furthermore, we enriched EUROMOD with the simulation of wealth related policies, such as the taxation of wealth, capital income and wealth transfers, tax incentives for asset accumulation and asset means-testing in benefit eligibility. This allows us to include in the analysis the effect of wealth taxes together with the other tax-benefit instruments. The wealth taxes that existed in each country in the HFCS income reference year are listed in Table 2 (national specific names are described in annex 1). A more detailed description of the implementation in EUROMOD of each of these policies is discussed in Kuypers et al. (2017). Real estate taxes, real estate transfer taxes and inheritance and gift taxes, although with a different tax design, exist in all countries considered. A general wealth tax (a tax on all types of assets) exists in France and Spain, while Belgium taxes private pension accumulations and Italy bank accounts and financial products. The inheritance and gift tax in Italy and Finland and also the real estate transfer tax in Finland cannot be simulated due to lack of information in the HFCS for these countries. Also important to note is that the HFCS does not include the region of residence of households and also not inheritances/gifts made between members of the same household, like for instance between spouses.

Table 2: Wealth tax coverage in EUROMOD

	BE	FI	FR	DE	IT	ES
Real estate tax[3]	S	S	S	S	S	S
General wealth tax	N/A	N/A	S	N/A	N/A	S
Specific wealth tax	S	N/A	N/A	N/A	S	N/A
Real estate transfer tax	S	N	S	S	S	S
Inheritance and gift tax	S	N	S	S	N	S

Notes: S = Tax simulated in EUROMOD, N = Tax not simulated, N/A= Tax does not exist.
Source: Kuypers et al. (2017)

As a result we jointly observe wealth (defined as assets minus liabilities), market and disposable income which serves as the main reference framework for the analyses in this paper. An extensive overview and validation of the derivation of the EUROMOD input dataset based on the HFCS can be found in Kuypers, Figari & Verbist (2016) and Kuypers et al. (2017). The outcomes in terms of disposable incomes have been compared to those obtained based on the widely used EU-SILC input database (Jar and Sutherland, 2013). Tax revenues of personal income taxes, wealth taxes and cash benefit entitlements were validated against administrative statistics. The overall quality of outcomes is high and due to the oversampling the HFCS covers the top of the distribution relatively better than EU-SILC.
In common with other analyses of the redistributive capacity of the tax-benefit systems based on a microsimulation approach (e.g. Piketty and Saez, 2007; Decoster and Van Camp, 2001; Avram et al. 2014), our empirical evidence considers the pre-tax pre-transfer income (and wealth) distribution as given. In the interpretation of the results one needs to keep in mind that the direct impact of taxes and benefits on household income is only one way in which redistribution may happen (Boadway and Keen, 2000). One could consider, for example, the impact of individual behavioural reactions (Bergh, 2005), macro-economic shocks which can be affected by the tax system (Poterba, 2007), tax evasion (Zucman, 2015), and the relative importance of benefit in kind, public services and indirect taxes (Figari and Paulus, 2015).

Even if a life-cycle perspective might be informative for the (re)distribution of resources among individuals (Bengtsson, Holmlund & Waldenström, 2016), especially in case of wealth (Ando & Modigliani, 1963), our empirical analysis sheds light on the important impact of tax-benefit systems on the individual living standards as taxes and benefits affect current disposable income of households and implicitly determine a certain level of inter-generational redistribution. We focus on the redistribution between rich and poor at a particular point in time but distinguish the contribution to the overall redistribution of the instruments designed to redistribute across the life-cycle such as social insurance contributions and pensions. Moreover, as wealth taxation lowers the net return on financial investments relative to investments in human capital, it could enhance the intergenerational social mobility and promote equality of opportunities across individuals if the revenue was redistributed to all individuals (directly or not). A quantification

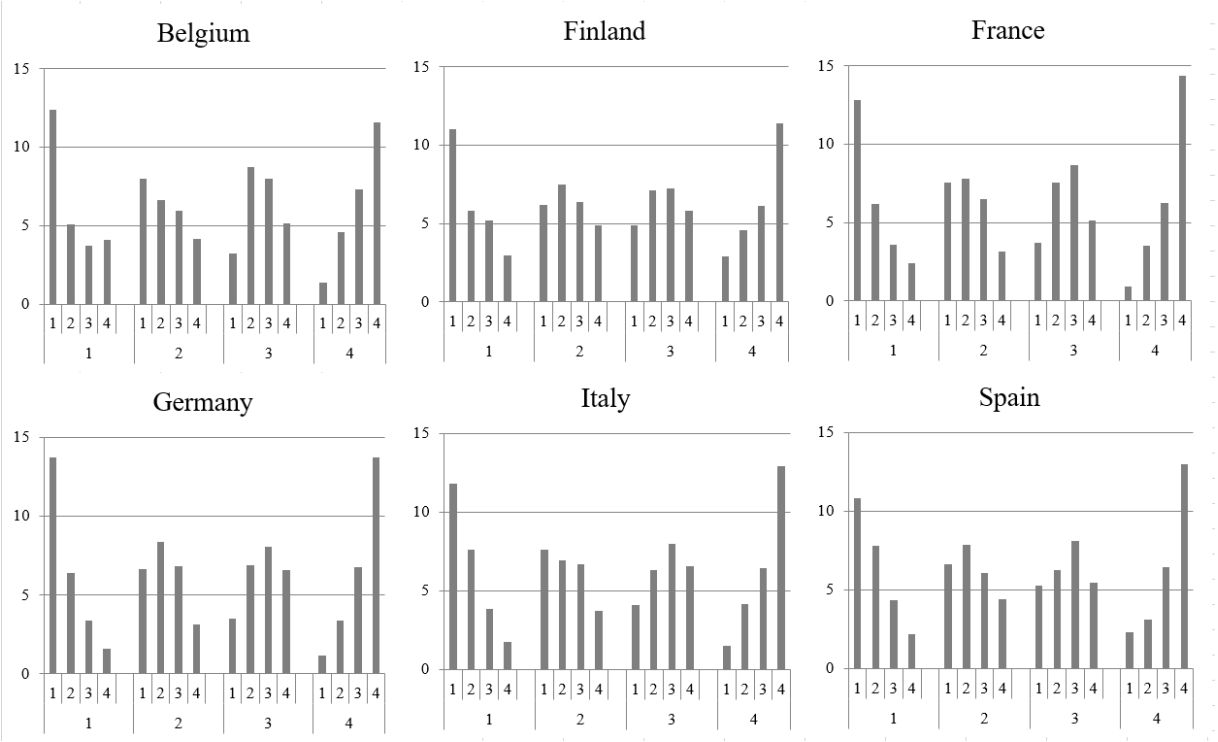
[3] The Belgian real estate tax is sometimes labelled as an income tax as it is levied on the concept of 'cadastral income', which reflects an approximation of the average rent that would be paid for the real estate property. Here we categorise it as a wealth tax in line with other countries.

of the resources embedded in current or potential wealth taxes is then an essential piece of information for the definition of well-designed welfare policies.

3 The joint distribution of income and wealth

Although there exist clear links between income and wealth through savings and borrowing constraints, their correlation is far from perfect. Possible factors mitigating the income-wealth relationship include asset portfolio choices, life-cycle effects and intergenerational transfers (Jäntti, Sierminska & Van Kerm, 2013; Jäntti, Sierminska & Smeeding, 2008; Skopek et al., 2012). Based on our data the Spearman rank correlations of equivalised disposable income and equivalised wealth range from 0.39 for Finland to 0.62 for Spain. Figure 2 shows the position of individuals in the quartile groups based respectively on the income and wealth distributions. In the case of a perfect correlation, the options '11' (i.e. individuals belonging to the first quartile group of income distribution and wealth distribution), '22', '33' and '44' should correspond to 25% each. This is, however, not the case, indicating that there is considerable reranking of individuals if one moves from one distribution to the other. In all countries only around 11% and 14% of individuals are located in the bottom (top) quartile in both the income and wealth distributions (i.e. '11' or '44') and even a smaller share of individuals is located in the second and third quartiles of both distributions. Given the reranking of the individuals in the distribution of income and wealth, it is important to note that income poor individuals are not just concentrated in the bottom of the wealth distribution but they are spread across the entire distribution. Around 50% of the individuals identified as poor on the basis of their income belongs to the second or higher quartile of the wealth distribution. This growing phenomenon of 'income poor-wealth rich' households has important implications for tax and social policy design (Hills, 2013) and their specific situations can be taken into account by defining living standards in terms of both income and wealth.

Figure 2: Distribution across quartiles of disposable income and wealth (% of individuals)



Notes: Bottom number refers to the income quartile and top number to the wealth quartile. Spearman rank correlations are 0.46 for BE, 0.39 for FI, 0.60 for FR, 0.59 for DE, 0.50 for IT and 0.62 for ES.
Source: own calculations based on EUROMOD running on HFCS (EM-HFCS).

The lack of a clear correspondence between the position in the income and wealth distribution poses doubts about the reliability of a single concept to measure the individual well-being. Traditional measures of living standards disregard the role of assets and debt, with the exception of the direct income flow that is generated by certain types of assets (i.e. rents, dividends, …). However, increasingly more researchers and policymakers acknowledge the role savings and assets play in the financial well-being of households (Brandolini et al., 2010). There are households which can smooth out consumption by relying on savings and assets, loans or the financial help of others and these are clearly better off than those who do not have these opportunities (Kuypers & Marx, 2016). In contrast, the presence of large financial liabilities may make households more economically vulnerable than their incomes suggest.

Several studies look at how these flow and stock variables can be integrated into a new living standards concept, but up until now these are mainly confined to poverty studies (for an overview see Kuypers & Marx, 2016). In this paper we apply the approach first proposed by Weisbrod & Hansen (1968) to annuitize wealth into a flow of resources, which is then added to income, using the following formula:

$$AY = Y + \left[\frac{\rho}{1-(1+\rho)^{-n}}\right] * NW \qquad (1)$$

$$n = T \; for \; unmarried, \qquad T_1 + (T - T_1)b \; for \; married$$

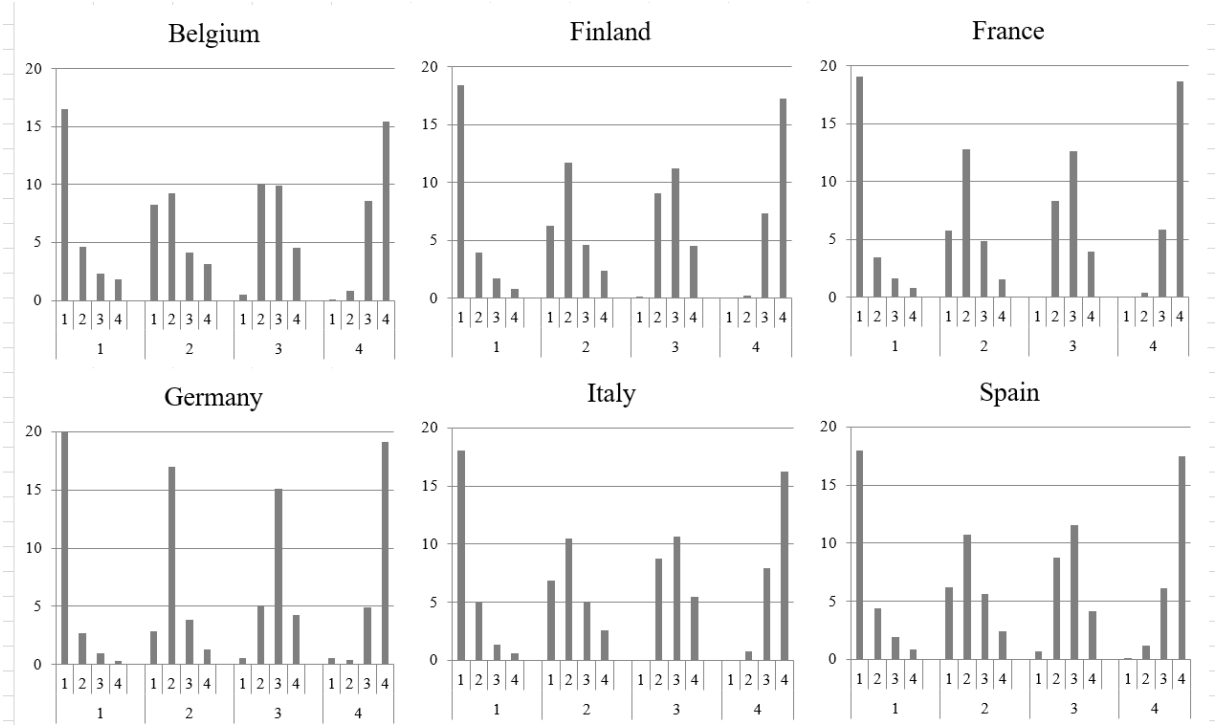
Where AY refers to annuitised income, Y equals income received from labour, pensions and other transfers[4], NW is net worth (defined as the difference between gross wealth and

[4] Financial income is not included as it no longer exists when wealth is depleted.

liabilities), while ρ and n are the interest rate and length of the annuity. With regard to the latter T_1 refers to time to death of the first person, T time to death of the survivor. These are expressed in country-specific life expectancies by age and gender. We equivalise both income and wealth by the modified OECD scale. b is the reduction in the equivalence scale which results from the death of the first person.

The position of individuals across quartiles of disposable income and joint income-wealth distribution is presented in Figure 3. A lower degree of reranking between the position in the two distributions is observed compared to the situation when income and wealth were considered separately. However, there is still considerable reranking of individuals in the middle of the distribution. Reranking is lowest for France and Germany and relatively high for Belgium. Evidence indicates that the reranking effect is higher for elderly than for non-elderly, because pensions are typically relatively low compared to other income sources, while they have accumulated substantial wealth over their life time (Kuypers & Marx, 2016).

Figure 3: Distribution across quartiles of income and joint income-wealth (% of individuals)



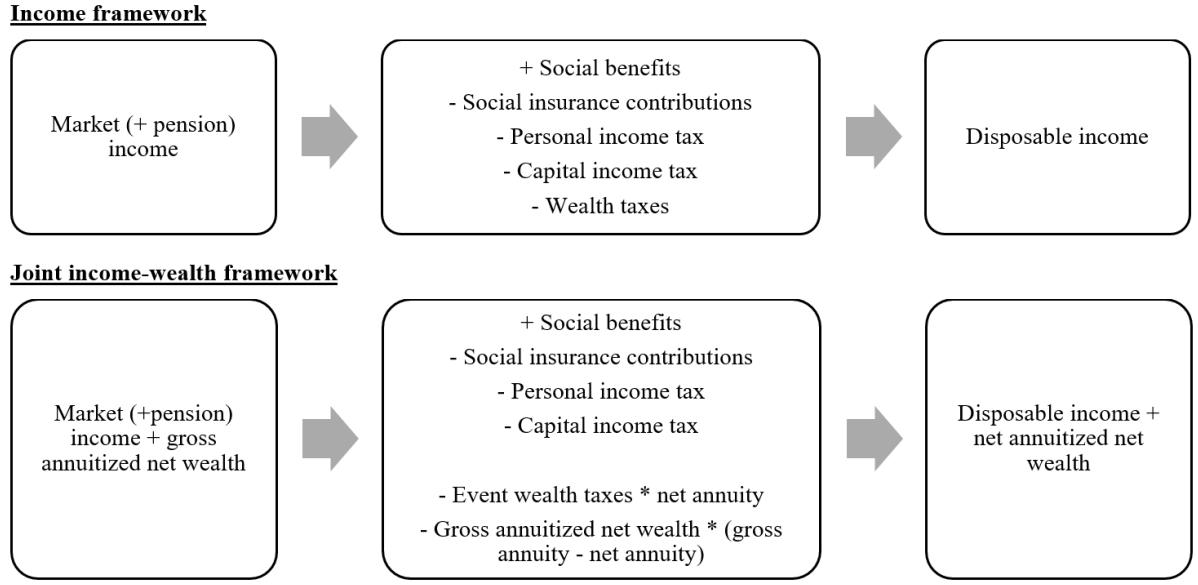
Note: Bottom number refers to the income quartile and top number to the joint income-wealth quartile.
Source: Own calculations based on EM-HFCS.

One of the contributions of this paper is that we extend this annuitization approach to be able to evaluate the redistributive capacity of welfare systems. We do this by assuming that wealth taxes are not paid with income, but instead lower the amount of their tax base, i.e. wealth. In other words, we propose to define pre-tax and post-tax concepts of annuitized wealth based on the following choices. One-time event wealth taxes (i.e. inheritance & gift and real estate transfer taxes) are taken into account in the wealth that is subject to the annuitization, while the yearly recurrent wealth taxes (i.e. real property and wealth taxes) are captured by the difference

between a gross and a simulated net interest rate of the annuity (ρ). We start from a 5% gross interest rate for everyone (long-term pre-tax interest rate assumed in Piketty (2014)[5]) and then simulate for each individual a net interest rate depending on the recurrent wealth taxes paid, which is on average equal to 4.87% in Belgium, 4.95% in Germany, 4.81% in Spain, 4.89% in Finland, 4.80% in France and 4.96% in Italy.

Figure 4 illustrates in detail the gross-to-net transition in the two frameworks adopted in this paper. In the traditional income framework we move from market to disposable income by adding social benefits and subtracting social insurance contributions, personal and capital income taxes. In contrast to previous studies we also subtract wealth taxes to get a more accurate measure of disposable income and a more comprehensive overview of the redistributive capacity of the tax-benefit system. In the joint income-wealth framework the transition to disposable income still reflects the effects of benefits, social insurance contributions and income taxes, but now there is also a transition from gross annuitized wealth towards net annuitized wealth reflecting the impact of event and recurrent wealth taxes. As the event wealth taxes are subtracted from the wealth that is annuitized the effect is equal to multiplying the taxes with the net annuity, while the impact of yearly wealth taxes is equal to gross annuitized wealth times the difference between the gross and net annuity.

Figure 4: Gross-to-net transition in two frameworks



The following (fictive) example further clarifies our proposal for the annuitization process and the different treatments of wealth taxes in the two frameworks (Table 3). Imagine a single-person household with a market income of €25,000, who receives social benefits of €5,000 and pays personal and capital income taxes and social insurance contributions which sum to €7,500.

[5] In practice rates of return to wealth have been found to differ substantially between individuals, but due to information constraints, we have not been able to take this into account. However, the actual choice of the interest rate has only a limited impact on the results (see also Kuypers & Marx, 2016), it is the difference between the net and gross interest rate that is of main importance here.

This person also has a wealth stock equal to €150,000, which includes a house for which he yearly pays €800 real estate tax and an inheritance received in year 1 on which a one-time tax of €5,000 is levied. In the traditional framework market income is equal to €25,000 and disposable income to €25,000 + €5,000 - €7,500 - €800 - €5,000 = €16,700. Hence, the wealth tax is in this case equal to €5,800. In the joint income-wealth framework (assuming a life expectancy of 40 years) market income + gross annuitized wealth is equal to €25,000 + $\frac{0.05}{1-(1+0.05)^{-40}}$ * €150,000 = €33,742. To calculate disposable income + net annuitized wealth, we first derive the net interest rate for annuitization, which is (0.05*€150,000 - €800)/€150,000 = 0.0447. We then find that post-tax post-transfer resources are equal to (€25,000 + €5,000 – €7,500) + $\frac{0.0447}{1-(1+0.0447)^{-40}}$ * (€150,000 – €5,000) = €30,346. In this framework the wealth tax paid in year 1 is then equal to (€5,000 * $\frac{0.0447}{1-(1+0.0447)^{-40}}$) + (€150,000 * ($\frac{0.05}{1-(1+0.05)^{-40}}$ - $\frac{0.0447}{1-(1+0.0447)^{-40}}$)) = €900.

The example shows clearly that the two frameworks may lead to very different effects of wealth taxes in a cross-sectional analysis. The €5,800 in the income framework reflects the amount of wealth tax that the individual is supposed to report to the tax authority in the year the inheritance is received. However, from an economic perspective the consideration of the resources in a single point in time poses some doubts about their implications in terms of living standards. We believe that the wealth tax amount in the joint income-wealth framework provides a better measure of the wealth tax burden, as it smooths out the event-based tax over the remaining life time that the individual could enjoy the wealth component and it also capitalizes the effect of the recurrent wealth tax on the lifetime value of wealth. The effects are actually similar when considered in a life-cycle perspective. Indeed, in the income framework the €800 real estate tax is paid yearly. Assuming a life expectancy of 40 years the total tax this person will pay throughout his/her life is equal to €5,000 + €800*40 = €37,000. In the joint income-wealth framework this person will be able to use €900 less of his wealth in each of the next 40 years, such that the effect of wealth taxation in a life-cycle framework will be equal to €36,000.

Table 3: Example incorporation wealth taxes in two frameworks

Basic information for year 1			
Market income	25,000	Wealth (includes inheritance in year 1)	150,000
Social benefits	5,000	Real estate tax	800
Social contributions, personal and capital income taxes	7,500	Inheritance tax	5,000
Resources	**Income framework**	**Joint income-wealth framework**	
Pre-tax pre-transfer resources	25,000	33,742	
Post-tax post-transfer resources	16,700	30,346	
Wealth taxes	**Income framework**	**Joint income-wealth framework**	
Wealth taxes in year 1	5,800	900	
Wealth taxes over the life-cycle	37,000	36,000	

4 A broader assessment of the redistributive capacity of tax-benefit systems

Section 3 showed that there is considerable reranking between the income and wealth distributions, which strongly argues in favour of using a joint income-wealth concept to determine living standards and taxable capacity. The use of this different framework also has an effect on the evaluation of the (re)distribution of tax-benefit instruments, which is the main focus of this paper.

4.1 Redistributive effects

Following the literature initiated by Musgrave and Thin (1948) and Kakwani (1977a, 1977b) we measure the redistributive effects (RE) of tax-benefit systems in the Lorenz curve framework. The overall redistributive effects are given by the difference between the Gini of a pre-transfer pre-tax concept and the Gini of a post-transfer post-tax concept. In order to facilitate cross country comparability, such a difference is also shown as a percentage of the pre-transfer pre-tax Gini. In the traditional income approach used in the literature this means taking the difference between the Gini's of market (MI) and disposable income (DI). A common critique on this approach is the fact that pensions are included as social benefits and not in the definition of market income, which may be problematic for cross-country comparisons given the characteristics of the pension systems. "In countries with comprehensive public pension systems … pensioners [will] make little other provision for retirement… Thus, pre-tax income inequality (and poverty) will be artificially high and the reduction in inequality also exaggerated" (Bradley et al., 2003). Therefore, by assuming public pensions to be a source of postponed market income (Immervoll et al., 2006) we also show inequality and redistributive effects considering the sum of market income and public pension income (MPI) as the original income distribution. When wealth is brought into the picture, the value of annuitized wealth net of liabilities is added gross of taxes (i.e. gross annuitized wealth, GAW) to the market income concept (MI) or to the market income and public pension income concept (MPI). The value of annuitized wealth net of taxes (i.e. net annuitized wealth, NAW) is added to the disposable income concept resulting in the overall redistributive effect:

$$RE = G_{M(P)I(+GAW)} - G_{DI(+NAW)} \quad (2)$$

The top panel of Table 4 provides an overview of the absolute and relative redistributive effects as traditionally done in the fiscal literature, i.e. redistributive effects assessed against the distribution of market (+ pension) incomes. Besides social benefits, direct taxes on income and social contributions the redistributive effects also take into account here the effect of taxes on wealth and wealth transfers. In the bottom panel the living standard concept takes into account all available household financial resources such that the redistributive effects are evaluated against the joint distribution of income and annuitized wealth.

The level of inequality observed in the different distributions shows important features that impact on the capacity of the tax-benefit system to redistribute resources across individuals.

First, across all countries the Gini coefficient of market income + gross annuitized wealth is lower than the Gini of market income alone. This is largely due to the fact that elderly often have zero market incomes, while holding important amounts of wealth. The inclusion of these wealth holdings then by definition results in a decrease of inequality of market incomes. Second, the inclusion of gross annuitized wealth increases the inequality of the distribution of market + pension incomes in particular in France and Germany, countries characterised by the highest wealth inequality. Finally, the high disparities observed in the distribution of wealth imply that the distribution of disposable income + net annuitized wealth shows a higher inequality than the distribution of disposable income in all countries.

Table 4: Overall redistributive effect of tax-benefit system

Income framework							
	Gini MI	Gini MPI	Gini DI	Abs. RE (MI - DI)	Rel. RE (as % of Gini MI)	Abs. RE (MPI - DI)	Rel. RE (as % of Gini MPI)
Belgium	0.554	0.469	0.342	0.212	38.27	0.127	27.08
	(0.011)	*(0.012)*	*(0.011)*				
Finland	0.372	0.362	0.249	0.123	33.06	0.113	31.22
	(0.003)	*(0.003)*	*(0.002)*				
France	0.522	0.421	0.287	0.235	45.02	0.134	31.83
	(0.003)	*(0.003)*	*(0.002)*				
Germany	0.515	0.417	0.301	0.214	41.55	0.116	27.82
	(0.006)	*(0.005)*	*(0.004)*				
Italy	0.510	0.374	0.309	0.201	39.41	0.065	17.38
	(0.004)	*(0.003)*	*(0.003)*				
Spain	0.476	0.407	0.350	0.126	26.47	0.057	14.00
	(0.006)	*(0.006)*	*(0.006)*				
Joint income-wealth framework							
	Gini MI + GAW	Gini MPI + GAW	Gini DI + NAW	Abs. RE (MI+ GAW - DI + NAW)	Rel. RE (as % of Gini MI+GAW)	Abs. RE (MPI + GAW – DI + NAW)	Rel. RE (as % of Gini MPI+GAW)
Belgium	0.479	0.458	0.393	0.086	17.95	0.065	14.19
	(0.009)	*(0.008)*	*(0.007)*				
Finland	0.366	0.363	0.285	0.081	22.13	0.078	21.49
	(0.002)	*(0.002)*	*(0.002)*				
France	0.478	0.445	0.355	0.123	25.73	0.090	20.22
	(0.004)	*(0.003)*	*(0.003)*				
Germany	0.503	0.453	0.392	0.111	22.07	0.061	13.47
	(0.007)	*(0.007)*	*(0.008)*				
Italy	0.458	0.418	0.405	0.053	11.57	0.013	3.11
	(0.005)	*(0.005)*	*(0.005)*				
Spain	0.425	0.412	0.384	0.041	9.65	0.028	6.80
	(0.006)	*(0.005)*	*(0.005)*				

Notes: MI=market income, MPI=market income + public pensions, DI=disposable income, GAW=gross annuitized wealth, NAW=net annuitized wealth, RE=redistributive effect. Standard errors are shown between parentheses.
Source: Own calculations based on EM-HFCS.

When comparing the fourth and fifth columns in the top and bottom panel we find that in the broader joint income-wealth framework the tax-benefit system is still found to reduce overall

inequality, although to a much lesser extent than considering the traditional notion of income inequality. In countries like Belgium, Italy and Spain the redistributive capacity of the tax-benefit system is at least halved, with a two third reduction in Italy. This is because the tax-benefit system is almost unilaterally focused on reducing income inequalities, which do not necessarily coincide with wealth inequalities, as was shown in the previous section.

Considering public pension income as postponed market income, the redistributive capacity of tax-benefit systems (sixth and seventh columns in Table 4) is, as expected, much lower than evaluated against the distribution of market income alone, in particular in countries characterised by relatively generous pensions with respect to other social benefits. This is the case for Spain and even more so for Italy where pensions absorb more than half of the resources of the entire welfare state and the tax-benefit policies contribute to a reduction of inequality of around 17% relative to almost 40% when including pensions in the redistributive mechanism. An even larger reduction of the redistributive capacity of the tax-benefit system is observed in the joint income-wealth framework when pensions are not considered part of the redistributive mechanisms.

As a consequence, the adoption of the broader reference framework slightly alters cross-country rankings of redistribution. Yet, the overall welfare types remain valid when wealth is taken into account with Scandinavian and Continental welfare states achieving higher levels of redistribution than Southern welfare states.

Next, we look into the contributions to overall redistribution of the different instruments of the tax-benefit system, notably social benefits, social insurance contributions, personal income taxes, capital income taxes and wealth taxes. From now on the analyses will consider pensions as part of market incomes and then we will focus on the elderly in Section 5. In order to analyse the contribution of benefits and taxes, we follow the decomposition approach initiated by Lambert and Pfähler (1988) and Duclos (1993). The overall redistributive effect shown in equation (2) is the result of a vertical equity (VE) and a reranking effect (RR) that captures the impact of individuals that may swap positions in the income ranking before and after transfers and taxes:

$$RE = VE - RR = RS - RR \tag{3}$$

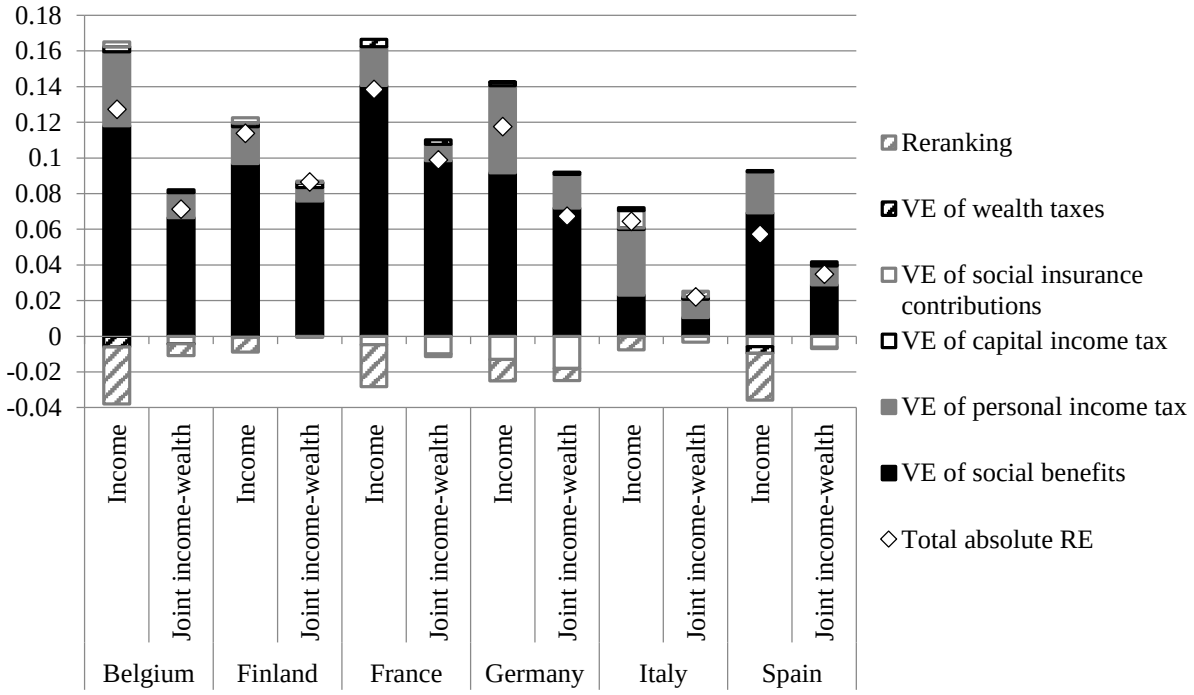
The vertical equity effect measures the total reduction of inequality that would occur if there were no reranking of income units and it is traditionally captured by the Reynolds-Smolensky (1977) index which can be decomposed to highlight the contribution of each tax-benefit instruments T_i which represent individual taxes and/or benefits while g_i the individual tax/benefit rates (i=1…I). The overall 'net fiscal rate' is $g = t - s$, where t is the average tax rate and s is the average benefit rate. The decomposition of the difference between the Gini before redistribution and after redistribution takes the form:

$$VE = \frac{1}{(1-g)} \sum_{i=1}^{I} g_i \prod_{i}^{K} \tag{4}$$

Vertical equity is expressed in terms of a progressivity and an average rate effect. Overall progressivity is measured as the weighted sum of the *i* indices of tax progressivity of each tax/benefit. For more details on the derivation of the decomposition, we refer to Lambert and Pfähler (1988) and Duclos (1993).

The results of this decomposition formula are shown in Figure 5. Social benefits achieve the highest redistribution followed by personal income taxes, with the exception of Italy where the opposite is true. This is in line with Figure 1; social benefits and income taxes are also largest in terms of budget. Social insurance contributions, capital income taxes and wealth taxes have a limited impact across the countries. Furthermore, the results show that the decrease in overall redistribution between the income and joint income-wealth approach reflects a decrease in redistributive effects of all instruments. In general the redistributive effects of taxes are characterised by a relative larger reduction in the broader framework than those of social benefits. In the joint income-wealth framework the redistributive effect of the personal income tax is about half that in the traditional income framework, while for social benefits it decreases by less than a third in all countries except Italy and Spain where the contribution of social benefits is already much lower than elsewhere in the income framework.

Figure 5: Redistributive effects by tax-benefit instruments

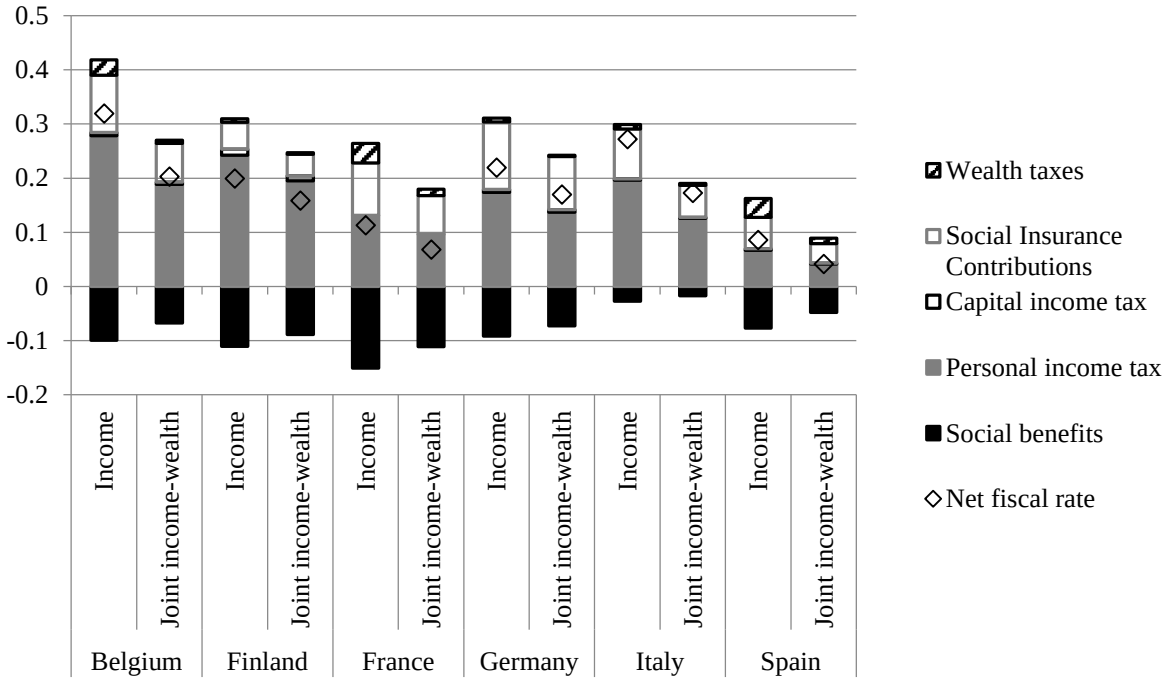


Note: For France the capital income tax is included in the personal income tax.
Source: Own calculations based on EM-HFCS.

As formula (4) indicates the contribution to the overall redistribution of each tax-benefit instrument from Figure 5 is the result of the combination of the size of the respective instrument and its progressivity. First, the size of the instruments as a percentage of the underlying market and pension income (MPI) is shown in Figure 6. As expected personal income taxes are the largest redistributive instrument in all countries except France and Spain where social benefits

have a slightly larger size. In line with previous research (Verbist & Figari, 2014) personal income tax rates are high in Belgium and Finland, while social insurance contributions are important in Germany and France. Wealth taxes are in general small, with average tax rates in terms of income ranging from 3.5% in France and Spain (i.e. the two countries with a general wealth tax in place) to 0.6% in Finland (but not all wealth taxes are simulated, see Table 2). When wealth is included in the assessment framework the size of all instruments decreases due to the larger denominator. The size drops by 38% for Spain, 36% for Italy, 32% for Belgium, 26% for France, 21% for Germany and 19.5% for Finland. The size of wealth taxes decreases by a larger percentage as then not only the denominator changes, but also how wealth taxes are taken into account (see Figure 4 and Table 3).

Figure 6: Size of the tax-benefit instruments



Note: For France the capital income tax is included in the personal income tax.
Source: Own calculations based on EM-HFCS.

The degree of progressivity of the instruments is presented in Table 5 by means of Kakwani indices. In line with previous studies we find that social benefits are the most progressive instrument, followed by taxes on income. With the exception of Spain, taxes on capital income are more progressive than taxes on other types of income, which is what is expected given that capital income is in general more unequally distributed than income from work. Evidence on social insurance contributions and wealth taxes is more mixed across the six countries, with regressivity in some cases and progressivity in others. Indeed, when assessed against the income distribution wealth taxes are regressive in Belgium, Finland and Spain, while they are progressive in France and Italy and proportional in Germany. Such a different pattern observed across countries is not yet investigated in the fiscal literature and might provide novel insights in the design of new fiscal and social policies which could give more prominence to wealth in the definition of taxable capacity.

Table 5: Kakwani indices

		Income framework	Joint income-wealth framework
Belgium	Social benefits	0.809	0.787
	Personal income tax	0.102	0.059
	Capital income tax	0.332	0.327
	Social insurance contributions	0.017	-0.047
	Wealth taxes	-0.140	-0.004
	Total	*0.340*	*0.306*
Finland	Social benefits	0.703	0.719
	Personal income tax	0.068	0.033
	Capital income tax	0.146	0.225
	Social insurance contributions	0.050	-0.014
	Wealth taxes	-0.080	0.126
	Total	*0.491*	*0.456*
France	Social benefits	0.826	0.824
	Personal & capital income tax	0.147	0.089
	Social insurance contributions	-0.043	-0.129
	Wealth taxes	0.103	0.210
	Total	*1.271*	*1.371*
Germany	Social benefits	0.779	0.824
	Personal income tax	0.219	0.114
	Capital income tax	0.293	0.179
	Social insurance contributions	-0.081	-0.152
	Wealth taxes	0.001	0.160
	Total	*0.461*	*0.363*
Italy	Social benefits	0.620	0.499
	Personal income tax	0.137	0.067
	Capital income tax	0.243	0.281
	Social insurance contributions	0.077	-0.045
	Wealth taxes	0.137	0.268
	Total	*0.193*	*0.091*
Spain	Social benefits	0.822	0.579
	Personal income tax	0.316	0.249
	Capital income tax	0.203	0.229
	Social insurance contributions	-0.092	-0.164
	Wealth taxes	-0.098	0.165
	Total	*0.891*	*0.828*

Note: A positive Kakwani index refers to a pro-poor instrument. For social benefits this means that the Kakwani reflects the difference between the Gini of market + public pension income and the concentration coefficient of benefits ($G_{MPI} - C_B$).
Source: Own calculations based on EM-HFCS.

The comparison of the two living standards frameworks shows that social benefits remain relatively strongly pro-poor when assessed against the joint income-wealth distribution, sometimes even more so than by the distribution of income alone. This implies that those receiving social transfers such as unemployment benefits are typically households with both low incomes and low wealth, such that they are concentrated at the very bottom of the joint distribution. In contrast, the progressivity of personal income taxes drops relatively drastically between the income and joint income-wealth frameworks. Capital income taxes become slightly more progressive when evaluated against the joint income-wealth distribution than against the income distribution in Finland and Italy, while the opposite is true for Belgium and

Germany and the same pro-poorness is found for Spain. As expected, wealth taxes become more pro-poor when wealth is included in the ranking variable (or less regressive in the case of Belgium). As a result, wealth taxes are more progressive than personal income taxes in Finland, France, Germany and Italy, while the opposite is true for Belgium, and Spain.

4.2 Sensitivity analysis

In order to have a full picture of how redistribution in the traditional versus the joint income-wealth framework is affected for different parts of the distribution, it is interesting to also look at alternative Gini and redistribution measures that put more weight on either the top or the bottom of the distribution. Indeed, as wealth inequality is typically larger than income inequality the importance that is attributed to individuals at either the top or the bottom might have a larger effect in the joint income-wealth than in the traditional framework.

The S-Gini indicator represents a generalised version of the standard Gini coefficient and allows to take into account an inequality aversion parameter (Donaldson & Weymark, 1980, 1983; Yitzaki, 1983). This S-Gini coefficient is expressed as a weighted average of the difference between the Lorenz curve of the distribution (L) and the line of perfect equality:

$$G(v) = \int_0^1 v(v-1)(1-s)^{v-2}\big(s - L(s)\big)ds, \qquad v > 1 \tag{5}$$

where v is the inequality aversion parameter. Setting the parameter v=2 makes S-Gini equal to the standard Gini coefficient, while values of v>2 yield indices that give greater social weight to poorer individuals than the standard Gini does, and values of v<2 yield indices giving relatively more social weight to richer individuals. Most studies use parameters within the range of 1.5 and 4 (e.g. Immervoll & Richardson, 2011; Jenkins & Van Kerm, 2006).

Table 6: Top and bottom sensitive redistributive effects of tax-benefit system

	Standard Gini (v=2)		Bottom sensitive (v=4)		Top sensitive (v=1.5)	
Income framework						
	Abs. RE	Rel. RE	Abs. RE	Rel. RE	Abs. RE	Rel. RE
Belgium	0.127	27.08	0.178	25.25	0.089	27.05
Finland	0.113	31.22	0.189	32.14	0.074	30.96
France	0.134	31.83	0.211	32.36	0.092	31.83
Germany	0.116	27.82	0.191	29.57	0.076	27.05
Italy	0.065	17.38	0.085	14.58	0.046	18.40
Spain	0.057	14.00	0.081	13.19	0.039	13.88
Joint income-wealth framework						
	Abs. RE	Rel. RE	Abs. RE	Rel. RE	Abs. RE	Rel. RE
Belgium	0.065	14.19	0.112	16.28	0.042	13.21
Finland	0.078	21.49	0.139	23.68	0.049	20.50
France	0.090	20.22	0.154	23.05	0.059	19.09
Germany	0.061	13.47	0.118	17.40	0.035	11.18
Italy	0.013	3.11	0.024	3.86	0.007	2.42
Spain	0.028	6.80	0.039	6.47	0.020	6.92

Notes: Abs. RE = absolute redistributive effect, Rel. RE = relative redistributive effect (as a % of Gini MPI)
Source: Own calculations based on EM-HFCS

Table 6 shows the results of the redistributive effect[6] when relatively more weight is put on poor individuals (inequality aversion parameter = 4) and when relatively more weight is given to rich individuals (inequality aversion parameter = 1.5). In general trends in relative redistributive effects are very similar as for the conventional Gini coefficient; welfare states are less redistributive when evaluated against the joint distribution of income and wealth compared to income alone. In the traditional income framework relative redistributive effects are fairly similar across the different Gini measures. Exceptions are Belgium and Italy with a higher redistribution effect at the middle and the top. Yet, in the joint income-wealth framework tax-benefit systems seem to achieve (slightly) stronger redistribution at the bottom than at the middle or the top of the distribution, with Spain being the main exception. A more detailed analysis of the different tax-benefit elements[7] shows, as expected, that the relative contribution to the redistributive effect of social benefits is more important at the bottom, while taxes and social insurance contributions are more important at the middle and the top.

Finally, we also perform a sensitivity analysis concerning which types of assets are considered for annuitization. In the literature it is often debated whether it is relevant to include real assets. The annuitization approach implicitly assumes that income and wealth are perfectly fungible, while the conversion of non-liquid assets into cash is typically associated with a certain cost (Kuypers & Marx, 2016). Moreover, some authors argue that it does not seem reasonable to assume households to sell their homes to pay taxes or to face income or consumption shocks. Therefore, Table 7 presents the redistributive effects when only liquid assets are subject to the annuitization[8]. It is clear that the difference between the income and joint income-liquid assets frameworks is relatively small as a consequence of the fact that most households' wealth mainly consists of real estate wealth and/or that liquid assets are more strongly correlated with income than real assets.

Table 7: Total redistributive effects tax-benefit system – excluding non-liquid assets

	Income framework		**Joint income-wealth framework**		**Joint income-wealth framework – excluding non-liquid assets**	
	Abs. RE	Rel. RE	Abs. RE	Rel. RE	Abs. RE	Rel. RE
Belgium	0.127	27.08	0.065	14.19	0.118	24.79
Finland	0.113	31.22	0.078	21.49	0.112	31.64
France	0.134	31.83	0.090	20.22	0.134	33.42
Germany	0.116	27.82	0.061	13.47	0.106	25.85
Italy	0.065	17.38	0.013	3.11	0.054	14.21
Spain	0.057	14.00	0.028	6.80	0.068	16.96

Notes: Abs. RE = absolute redistributive effect, Rel. RE = relative redistributive effect (as a % of gini MPI).
Source: Own calculations based on EM-HFCS.

[6] Gini coefficients and standard errors are presented in Table A.1 in Annex 2.
[7] Detailed results are available from the authors upon request
[8] Gini coefficients are presented in Table A.2 in annex 2.

5 Decomposition by age

Age plays an important role when the redistributive effects assessed against joint income-wealth are compared with the traditional income approach. Due to the life-cycle character of wealth accumulation, the elderly typically own large wealth. At the same time they have short life expectancies resulting in relatively large annuities added to income, which in turn leads to high reranking among the elderly between the income and wealth distributions. An important shortcoming of the joint income-annuizited wealth measure as defined in section 3 is that it does not take into account the large savings potential of non-elderly households. It is not likely that they will only have their current wealth available to annuitize until death; most of them will have plenty of opportunities throughout their working lives to accumulate wealth above and beyond the mere interest rate that is applied in the annuitization, for instance by investing in real estate or the receipt of inheritances and gifts (Kuypers & Marx, 2016). These issues imply that the situation of the elderly is very different and therefore hard to compare with that of the non-elderly.

Table 8: Total redistributive effects tax-benefit system – elderly vs non-elderly

	Non-elderly				Elderly			
Income framework								
	Gini MPI	Gini DI	Abs. RE	Rel. RE	Gini MPI	Gini DI	Abs. RE	Rel. RE
Belgium	0.480 *(0.013)*	0.335 *(0.010)*	0.145	30.21	0.395 *(0.033)*	0.381 *(0.041)*	0.014	3.54
Finland	0.368 *(0.003)*	0.248 *(0.003)*	0.120	32.61	0.299 *(0.007)*	0.229 *(0.005)*	0.070	23.41
France	0.429 *(0.003)*	0.285 *(0.003)*	0.144	33.57	0.370 *(0.007)*	0.293 *(0.006)*	0.077	20.81
Germany	0.432 *(0.006)*	0.303 *(0.005)*	0.129	29.86	0.339 *(0.009)*	0.296 *(0.007)*	0.043	12.68
Italy	0.381 *(0.004)*	0.317 *(0.003)*	0.064	16.80	0.337 *(0.007)*	0.269 *(0.006)*	0.068	20.18
Spain	0.395 *(0.007)*	0.356 *(0.006)*	0.039	9.87	0.449 *(0.011)*	0.306 *(0.010)*	0.143	31.85
Joint income-wealth framework								
	Gini MPI + GANW	Gini DI + NANW	Abs. RE	Rel. RE	Gini MPI + GANW	Gini DI + NANW	Abs. RE	Rel. RE
Belgium	0.458 *(0.010)*	0.363 *(0.007)*	0.095	20.74	0.415 *(0.014)*	0.419 *(0.014)*	-0.004	-0.96
Finland	0.371 *(0.003)*	0.280 *(0.002)*	0.091	24.53	0.316 *(0.006)*	0.289 *(0.005)*	0.027	8.54
France	0.442 *(0.004)*	0.337 *(0.004)*	0.105	23.76	0.417 *(0.006)*	0.385 *(0.006)*	0.032	7.67
Germany	0.464 *(0.008)*	0.383 *(0.010)*	0.081	17.46	0.403 *(0.009)*	0.397 *(0.009)*	0.006	1.49
Italy	0.414 *(0.005)*	0.393 *(0.005)*	0.021	5.07	0.414 *(0.010)*	0.409 *(0.011)*	0.005	1.21
Spain	0.407 *(0.007)*	0.379 *(0.006)*	0.028	6.88	0.427 *(0.008)*	0.377 *(0.007)*	0.050	11.71

Notes: MPI=market + pension income, DI=disposable income, GAW=gross annuitized wealth, NAW=net annuitized wealth, Abs. RE = absolute redistributive effect, Rel. RE = relative redistributive effect (as a % of gini MPI). Standard errors are shown between parentheses.
Source: Own calculations based on EM-HFCS.

Table 8 presents Gini coefficients and redistributive effects for the elderly and non-elderly separately, again comparing the two assessment frameworks. In general we find that inequality is considerably lower among the elderly than among their younger counterparts. Since elderly inequality is already very low for the original income concept there is much less need for redistribution, which is confirmed by the fact that redistributive effects are lower than for the non-elderly. Exceptions are Italy and Spain, two countries characterised by relatively less generous redistributive systems for the non-elderly population. As before, the inclusion of wealth information results in an increase in the level of both before and after inequality and lower redistributive effects. Wealth holdings are relatively more important for the elderly which implies that the redistributive effects of the elderly are much stronger affected by the broader reference framework than those of the non-elderly.

6 Conclusion

In the last decades there has been a renewed interest in inequality. Various studies have pointed towards increases in inequality in both income and wealth. Rising market income inequalities have only partially been offset by the redistributive capacity of taxes and transfers (see e.g. OECD, 2011; 2015). This assessment, however, depends on the benchmark used to evaluate the redistributive capacity. Consensus grows among scholars that income is a too narrow concept to assess living standards. In this paper we argue that also wealth should be incorporated and, hence, we assess redistributive instruments against the joint distribution of income and wealth. We also broaden the scope of tax-benefit instruments in our analysis by including taxes on wealth and wealth transfers.

We show that when evaluated against the joint income-wealth framework welfare states across Europe are less redistributive than is considered by the partial income perspective. Interestingly, this is the case for all tax-transfer instruments we consider. This follows on the one hand from the fact that the size of the redistributive instruments is smaller when using the joint income-wealth framework, and the other hand from a lower degree of progressivity. As taxes and benefits are largely income-related, their size is relatively smaller when measured against a living standards concept that is broadened with wealth. Existing wealth taxes are indeed relatively small in size, and thus cannot have a large redistributive impact; this illustrates that wealth considerations are largely absent when designing redistributive instruments. Also progressivity turns out to be lower when moving from the income to the joint income-wealth framework. In particular, personal income taxes and social insurance contributions are not as progressive as they are traditionally thought to be as they are levied on those with the highest labour incomes, which are not necessarily those with the highest wealth. Furthermore, currently wealth taxes are hardly redistributive not only because they are very small in size, but in some

countries they are also proportional or even regressive. Furthermore, although capital income taxes are more progressive than personal income taxes, they also achieve almost no redistribution because they are too small in size. Yet, social benefits do remain strongly pro-poor in the joint income-wealth framework. We also find that the impact of adding wealth information on redistributive outcomes may differ across countries depending on the level of wealth inequality and wealth taxation as well as the correlation between income and wealth.

Our analysis shows that the tax-benefit system is almost unilaterally focused on reducing income inequality, while wealth considerations are largely absent. Our integration of the HFCS data in EUROMOD raises interesting future research possibilities on potential wealth policy reforms and their distributive, work incentive and budgetary consequences in a cross-country perspective. These are highly relevant for policy makers too. Welfare states may increase their redistributive efforts in terms of overall inequality by including the wealth perspective in the design of the tax-benefit system. First, regarding the current debate on wealth taxation there is a special focus on policy reforms aimed at shifting some of the tax burden from labour to wealth taxation as well as the potential of wealth taxation to raise new government revenues in order to address current fiscal imbalances. Second, the broader income-wealth framework can imply new insights for social policy design. While social policies have traditionally focused on income maintenance, it is argued that encouraging asset accumulation among the poor is a potential new social policy strategy complementing existing ones. These so-called 'asset-based social policies' provide incentives to households to build up savings and assets. The policies that currently exist in most European countries typically encourage asset accumulation through tax incentives, which often make them unavailable for the poor.

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Annex 1: national specific names of included wealth taxes

Belgium:

- Real estate tax: "Onroerende voorheffing" / "Précompte immobilier"
- Specific wealth tax: tax on long-term savings: "Taks op het langetermijnsparen" / "Taxe sur l'épargne à long terme"
- Real estate transfer tax: "Registratie- en hypotheekrechten" / "Droits d'enregistrement et d'hypotheque"
- Inheritance & gift tax: "Successie- en schenkingsrechten" / "Droits de succession et donation"

Finland:

- Real estate tax: "Kiinteistöverolaki"

France:

- Real estate tax: "Taxe foncière sur les propriétés bâties et non-bâties"
- General wealth tax: "Impôt de solidarité sur la fortune"
- Real estate transfer tax: "Droits de vente d'immeubles"
- Inheritance & gift tax: "Droits de mutation à titre gratuity par décès ou entre vifs"

Germany:

- Real estate tax: "Grundsteuer"
- Real estate transfer tax: "Grunderwerbsteuer"
- Inheritance & gift tax: "Erbschaft- und schenkungsteuer"

Italy:

- Real estate tax: "Imposta Municipale Unica "
- Real estate transfer tax: "Imposta di registro, ipotecaria e catastale"
- Specific wealth tax: "Imposto di bollo su conto corrente e deposito titoli"

Spain:

- Real estate tax: "Impuesto sobre bienes inmeubles"
- General wealth tax: "Impuesto sobre el patrimonio"
- Real estate transfer tax: "Impuesto sobre transmisiones patrimoniales"

- Inheritance & gift tax: “Impuesto sobre sucesiones y donaciones”

Annex 2: Gini coefficients sensitivity analysis

Table A.1: Bottom and top sensitive S-Gini coefficients

	Bottom sensitive (v=4)		Top sensitive (v=1.5)	
Income framework				
	S-Gini MPI	S-Gini DI	S-Gini MPI	S-Gini DI
Belgium	0.705 *(0.009)*	0.527 *(0.011)*	0.329 *(0.012)*	0.240 *(0.010)*
Finland	0.588 *(0.004)*	0.399 *(0.002)*	0.239 *(0.002)*	0.165 *(0.002)*
France	0.652 *(0.003)*	0.441 *(0.003)*	0.289 *(0.003)*	0.197 *(0.002)*
Germany	0.646 *(0.007)*	0.455 *(0.005)*	0.281 *(0.004)*	0.205 *(0.003)*
Italy	0.583 (*0.004)*	0.498 *(0.004)*	0.250 *(0.003)*	0.204 *(0.002)*
Spain	0.614 *(0.006)*	0.533 *(0.006)*	0.281 *(0.006)*	0.242 *(0.005)*
Joint income-wealth framework				
	S-Gini MPI + GAW	S-Gini DI + NAW	S-Gini MPI + GAW	S-Gini DI + NAW
Belgium	0.688 *(0.008)*	0.576 *(0.007)*	0.318 *(0.008)*	0.276 *(0.006)*
Finland	0.587 *(0.003)*	0.448 *(0.002)*	0.239 *(0.002)*	0.190 *(0.002)*
France	0.668 *(0.003)*	0.514 *(0.003)*	0.309 *(0.003)*	0.250 *(0.003)*
Germany	0.678 *(0.007)*	0.560 *(0.007)*	0.313 *(0.006)*	0.278 *(0.007)*
Italy	0.622 *(0.004)*	0.598 *(0.004)*	0.289 *(0.004)*	0.282 *(0.005)*
Spain	0.603 *(0.005)*	0.564 *(0.005)*	0.289 *(0.005)*	0.269 *(0.005)*

Notes: MPI=market income + public pensions, DI=disposable income, GAW=gross annuitized wealth, NAW=net annuitized wealth. Standard errors are shown between parentheses.
Source: Own calculations based on EM-HFCS

Table A.2: Gini coefficients joint income-wealth framework – excluding non-liquid assets

	Gini MPI + GAW	Gini DI + NAW
Belgium	0.476 *(0.011)*	0.358 *(0.009)*
Finland	0.354 *(0.002)*	0.242 *(0.002)*
France	0.401 *(0.003)*	0.267 *(0.002)*
Germany	0.410 *(0.005)*	0.304 *(0.004)*
Italy	0.380 *(0.004)*	0.326 *(0.004)*
Spain	0.401 *(0.006)*	0.333 *(0.006)*

Notes: MPI=market income + public pensions, DI=disposable income, GAW=gross annuitized wealth, NAW=net annuitized wealth. Standard errors are shown between parentheses.
Source: Own calculations based on EM-HFCS.