Universiteit Antwerpen

Faculteit Sociale Wetenschappen

Departement Sociologie

Two sides of the same coin?

An investigation into the joint distribution of income and wealth and its applications to the analysis of poverty, inequality and redistribution

Proefschrift voorgelegd tot het behalen van de graad van doctor in de Sociaal-Economische Wetenschappen aan de Universiteit Antwerpen te verdedigen door

Sarah Kuypers

Promotors:

Prof. Dr. Ive Marx

Dr. Gerlinde Verbist   **Antwerpen, 2018**

Doctoral jury:

Prof. Dr. Ive Marx (Supervisor, University of Antwerp)
Dr. Gerlinde Verbist (Supervisor, University of Antwerp)
Prof. Dr. Bruno De Borger (Chair, University of Antwerp)
Dr. Eva Sierminska (Luxemburg Institute of Socio-Economic Research)
Prof. Dr. Bruno Peeters (University of Antwerp)
Prof. Dr. John Hills (London School of Economics and Political Science)

Acknowledgements

"If you are the smartest person in the room, then you are in the wrong room". I read this famous quote by Confucius at the start of my PhD and it has since then always stayed with me. Luckily, I had the privilege of being surrounded by numerous persons smarter than me who guided and supported me throughout the PhD trajectory. I would like to take this opportunity to thank these important persons.

First and foremost I am highly grateful to my supervisors Ive Marx and Gerlinde Verbist. Ive, thank you for subtly nudging me in the direction of an academic career when I was in my Master's degree. You believed in my potential before anyone else did and suspected that the topic of wealth would be a good fit for me. Throughout the years I learned a lot from you about how to position my work into the broader academic literature and socio-economic realities. Gerlinde, thank you for introducing me into the wonderful world of microsimulation and EUROMOD, without which this dissertation would not have been the same. I very much enjoyed our trips to conferences and workshops in among others New York, Dresden, Copenhagen and Vienna. Ive and Gerlinde, thank you both for shaping me into the researcher I am today. You have been inspirations, guides and helpful critics throughout the PhD process. Most importantly, thanks for believing in me even when I didn't myself and for providing me with positive affirmations when I needed them the most.

I also thank the members of my PhD commission and jury. I am thankful to Bruno De Borger and Eva Sierminska for reading and commenting on earlier versions of my PhD. I enjoyed discussing my work with you and your insights have largely improved the content of this dissertation. I would also like to express my gratitude to Bruno Peeters and John Hills. I feel honoured that you are willing to be part of my PhD jury and that you have taken the time in your busy schedules to read and discuss my dissertation.

A word of appreciation also goes out to Francesco Figari. As co-author of several of the chapters included in this PhD you have contributed largely to the final quality of the research. I learned a lot from your expertise and it was/is a pleasure to work with you.

During my PhD I had the privilege of working among talented and friendly colleagues. A special thanks goes to Bea Cantillon. As professor in the Bachelor and Master programme of Social and Economic Sciences she has taught me a lot about the welfare state and social policy and as president of the Herman Deleeck Centre for Social Policy she has created a comfortable and stimulating work environment. I also thank Bea for being an inspiration for young female researchers to try to break through the glass ceiling. I am also indebted to Koen Decancq, who was one of my supervisors in the early days of my PhD. Koen, thanks for all the helpful advice and for challenging me to think and rethink my work. Thanks also for the enthusiasm when my work gets published. I am also in particular thankful to Sarah Marchal for helping me find my way when I just started at the CSB and for being my office buddy for the last 2 years. Thanks for allowing me to vent now and again on my frustrations and insecurities and for reading and commenting on the introduction and conclusion of this dissertation. Also thanks to Lien Van Cant, Jonas Boone and Johannes Derboven for the nice collaboration. Finally, I thank all current and former colleagues for making the CSB such a pleasant and inspiring work place, I learned a lot from all of you.

i

While perhaps not always realising it my friends and family have also helped me morally in completing this dissertation. Naomi, Uschi, Glynis, Els and Tom; I am very lucky to have such good friends by my side. I always enjoy our little get-togethers to take my mind off the PhD and to just enjoy life. I also appreciate the support and encouragements received from my aunts, uncles, cousins and my sweet grandmother. Thank you all for positively contributing to my life.

Finally, the most special thanks goes out to those who matter most in life: my parents and sister. Without your unconditional love, support and encouragements I would not have been able to finish this PhD. Melissa, thanks for being my sister, best friend and partner in crime. I admire you for being such a beautiful person. Through your work with people with a disability you have contributed much more to making our society a better place than any dissertation would ever be able to do. Mom, Dad, I am infinitely grateful that you have given me all opportunities in life and that you have always supported me in my decisions. Thank you for raising me to be an independent person, for teaching me to never give up but also for being my safety net in difficult moments. Words are simply not enough to express how grateful I am.

Table of contents

INTRODUCTION

"I have found out what economics is; it is the science of confusing stocks with flows" – Michał Kalecki

Income, wealth and their relation

As the title of this dissertation implies, income and wealth are intuitively often seen as two sides of the same coin, figuratively and literally. Two distinct sides because they each have their own properties. Income represents a flow of resources which individuals or households receive as remuneration for the deployment of their labour and/or capital or as a social transfer from the government. It can fluctuate substantially over time and therefore reflects financial well-being in the short term (usually during a month or a year). Wealth, on the other hand, is a stock variable which represents the accumulations over time such as savings, financial investments and real estate and is rather stable (except when faced with large shocks). In this respect, wealth provides insight into the long-run (past, present and future) financial well-being of individuals and households. There are many possible definitions of wealth. In this dissertation I follow the most common definition adopted in the literature, namely privately held tangible capital, i.e. assets that can be traded on a market or passed on to someone else (through gifts and inheritances), thereby excluding public wealth[1] such as pension and social security wealth as well as human, cultural and social capital. The inclusion of these types of capital is usually referred to as 'augmented wealth'. Although these types of capital are obviously very important for the welfare of individuals and households, there is hardly any reliable and comparable data available due for instance to valuation problems.

At the same time income and wealth are regarded as representing the same coin at different stages. When consumption is lower than income, saving takes place and wealth increases. In other words, the same 'coin' that has been earned as a flow of income later on becomes part of the stock of wealth. However, when looking beyond the surface their relationship is more complex than that. First, the relationship also works in the opposite direction; some types of assets have the ability to generate income flows such as interests, dividends, etc. (which when not consumed again result in the accumulation of wealth). Moreover, wealth does not only increase through saving of income. It can be accumulated through the receipt of wealth transfers such as inter vivos gifts and inheritances, but assets can also be purchased by contracting mortgages or loans. Finally, wealth can also augment naturally as a result of rising asset prices. Hence, although the relationship between income and wealth is strong, it is far from perfect.

Evidence also supports this statement; wealth is much more unequally distributed than income and the correlation coefficient between disposable income and wealth is found to be approximately 0.5 (Arrondel et al., 2014b; Brzozowski et al., 2010; Skopek et al., 2012). Since capital income is included in disposable income part of this correlation is of course synthetic. The correlation between labour income and wealth is indeed considerably lower; around 0.25 (Arrondel et al., 2014b; Lerman & Mikesell, 1988). This means that those who earn the highest (lowest) income do not necessarily own the highest (lowest) net wealth. This in turn implies that analysing just one of the two distributions provides only partial insights.

---

[1] Public wealth is sometimes also referred to as the assets owned by governments (see e.g. Piketty, 2014).

The importance of income and wealth throughout history

The history of social sciences is characterised by structural evolutions regarding the prominence that was given to income and/or wealth. Originally, wealth was often the main focus of attention. Piketty and Zucman (2014, p.1263), for instance, argue that "until the early twentieth century, economists and statisticians were much more interested in computing national wealth than national income and output". This was mainly due to practical reasons. Wealth was highly visible and singularly structured as up until the industrial revolution it mainly consisted of farmland and rural real estate, while after the revolution it was primarily industrial assets. Income, in contrast, was difficult to gauge, even for earners themselves. As a consequence wealth taxes precede income taxes, which in turn provides earlier statistics on wealth than on income (Piketty, 2014; Scheve & Stasavage, 2016). Throughout history the ownership of wealth was reserved to a select group of top-class households. Therefore, wealth research in economics and sociology was largely confined to the field of 'elite studies' with main interests in the lifestyles of the wealthy and wealth as a source of power (Skopek, 2015; Spilerman, 2000).

After the two world wars and the Great Depression, however, wealth stocks largely collapsed, especially for the rich. At this time focus shifted from wealth to income in part because the Great Depression emphasised the importance of short-term fluctuations and partly because it became much harder to estimate wealth due to extremely volatile asset prices (Piketty & Zucman, 2014). Around the First World War most countries introduced income taxes, which were made increasingly more progressive after the Second World War (Scheve & Stasavage, 2016). In other words, the roles reversed; information on income became much more accessible than on wealth, which had become virtually non-existent anyway. In this context, research on living standards, inequality and poverty was largely based on the analysis of income flows, abstracting from any wealth considerations.

In the post-war decades of peace and strong economic growth, wealth grew strongly and became more widespread, resulting in the emergence of a 'patrimonial middle class' (Piketty, 2014). Hence, for a relatively large part of the population wealth became an important part of their financial resources. Nevertheless, the economic and sociological literature remained largely focused on analysing national income and its distribution. Notable exceptions include Atkinson (1971, 1974), Atkinson & Harrison (1978) and Lampman (1962). As a result a lot is known about the distribution of income in modern societies (see e.g. The handbook of income distribution edited by Atkinson & Bourguignon, 2015). In contrast, there is relatively little evidence about total wealth and its distribution as well as how income and wealth are interrelated in practice, especially outside the United States. One major factor is the fact that it has become much harder to estimate wealth because its structure has changed considerably. There now exists a much wider variety of asset types, including some which are difficult to value, and it has also become much easier to own (and hide) wealth abroad (Zucman, 2015). Furthermore, research on inequality and poverty has over the last decades largely relied on information from household surveys, which for a long time included little or no questions on household wealth holdings.

It is only during the last two decades that wealth and its distribution are at the forefront of sociological and economic research again. By exploring this direction researchers and policymakers are trying to find answers to some new emerging socio-economic questions for which the emphasis on the income

distribution seems no longer sufficient. Indeed, the current framework was created to analyse socio-economic issues related to the 20th century characterised by industrial and relatively stable labour markets. At that time a person's financial situation was largely determined by whether he/she was employed, in other words whether he/she earned an income. Among others due to globalisation and the threat of automatisation and robotisation, labour, and hence income, has become much more insecure in the 21st century. Evidence shows an increasing incidence of non-standard forms of employment and rising levels of in-work poverty (Atkinson, 2015; Lohmann & Marx, 2018). At the same time wealth has continuously increased since the Second World War through natural accumulation processes as well as reinforced by the emergence of new asset types (for instance robots) and increasing prices of existing assets (such as housing, see Philiponnet & Turrini, 2017). Hence, wealth seems to be taking over the role of labour (income), as is also indicated by the increasing wealth to income ratios (Piketty, 2014; Piketty & Zucman, 2014) and the declining share of labour in national income (Karabarbounis & Neiman, 2013). Furthermore, many studies have reported increasing levels of inequality in both income and wealth (e.g. Alvaredo et al., 2018; OECD, 2008, 2011, 2015) and its detrimental impact in social, economic, political and environmental terms. Evidence for instance points towards a negative relationship between inequality and social cohesion (e.g. Gould & Hijzen, 2016), economic growth (e.g. Bagchi & Svejnar, 2015; Stiglitz, 2016), democracy (e.g. Stiglitz, 2013, 2015) and pollution and climate change (e.g. Knight et al., 2017). Therefore, there is an increasingly important role for inequality reducing policies. While macro-economic policies can impact on market inequalities (e.g. Carpantier et al., 2018), the focus of this dissertation is on redistributive policies. Since wealth is becoming increasingly more important compared to income, governments will have to look for resources to be redistributed where they are most in surplus, i.e. at the top of the wealth distribution. Finally, also demographic evolutions such as population ageing compels researchers and policymakers to look beyond the income distribution. One of the main functions of wealth is consumption smoothing after retirement (see next section) and this is likely to become more important in the future. Many welfare states are facing rising pressures on public pension provision and have shifted from defined benefit to defined contribution pension plans. The role of wealth accumulation in general and private pension saving in particular will therefore become increasingly essential to insure decent living standards after retirement. However, population ageing may also contribute to increasing levels of wealth inequality as the elderly are generally the wealthiest and descendants receive inheritances later in life when they often have already accumulated significant amounts of wealth themselves.

Under the impulse of these socio-economic and demographic processes the number of wealth studies has increased exponentially over the last decade, further stimulated by the influential work of Thomas Piketty and his colleagues (e.g. Piketty, 2014; Piketty & Zucman, 2014; Saez & Zucman, 2016). This renewed interest in wealth research has gradually also resulted in an expansion of available wealth data. Yet, although the interest in wealth is booming, attention towards the essential joint distribution of income and wealth is still remarkably low. Over the years, some high-level authors and organisations have recommended to give more prominence to the joint distribution of income and wealth (e.g. OECD, 2013b; Stiglitz et al., 2009). However, empirical studies looking into these issues still remain rare. Moreover, the main focus in wealth research seems as before to be the elite. Instead of studying their lifestyles, economists and social policy researchers now concern themselves with how their wealth accumulates and how it can be appropriated for tax purposes. The role of wealth remains largely missing in the analysis of poverty and social policy, which is the main focus of this dissertation.

The effects of income and wealth on well-being

As this brief historical overview indicates the well-being of individuals and households has in recent history mainly been defined and studied in terms of income streams, both for pragmatic and other reasons. Likewise indicators of poverty, inequality and redistribution have been developed in this realm. As a consequence, academic researchers as well as governments, statistical institutes and international organisations such as the OECD and IMF monitor and report evolutions in living standards, inequality, poverty and policy effectiveness mostly in terms of income. Its impact on living standards should of course not be understated; for the large majority of the population income still represents the main – and sometimes only – financial resource.

Yet, indicators based on income alone have already long been criticised. It is, for instance, argued that well-being depends on more than finances alone, aspects such as education, health, etc. are important as well (Stiglitz et al., 2009). Even the focus on income with regard to the financial aspect has received its fair amount of criticisms. Indeed, there is ample evidence that income is an imperfect predictor of financial well-being and whether or not people are able to participate in society (Ringen, 1988). There exists, for example, a mismatch between income and more direct measures such as consumption (which is mainly prominent in economics) (e.g. Krueger & Perri, 2006) and material deprivation (which is mostly used in sociology) (e.g. Kus et al., 2016). This is mainly due to the fact that income is by nature relatively volatile, while consumption is more stable. Almost everyone will be confronted with low income periods, but this does not necessarily mean that all of them also experience poverty. Although longitudinal income measures somewhat narrow the gap, the discrepancy with deprivation remains nonetheless substantial (Berthoud & Bryan, 2011; Whelan et al., 2004).

However, deprivation and consumption measures are also not without their flaws. First, as argued by Serafino & Tonkin (2017, p.256) evidence does not appear "to directly support the assertion that expenditure provides a better measure of material living standards than income …". Second, just like income these direct measures neglect the potential effect of debt. A steady consumption level might hide large liabilities for the most vulnerable. Since credit reliance has substantially increased over the last decades (IMF, 2017) this is an important factor to take into account. Finally, material deprivation and consumption emphasise *what people actually do* with their available finances*.* While this is of course very relevant, it strongly depends on personal preferences and hence from a policy perspective it might be more interesting to look at *what people can do.* To identify the full capability set (Sen, 1985, 1997) requires to take into account all available resources; both income and wealth can be used to finance consumption, while debt lowers capabilities. Besides its contribution to objective well-being, wealth is also found to have an impact, independent from income, on subjective well-being (Headey & Wooden, 2004; Headey et al., 2008) and on satisfaction of life (D'Ambrosio et al., 2009).

There are many ways in which wealth contributes to living standards and generally with higher wealth more channels become applicable (see Figure 1). The functions of wealth can be broadly grouped into three theoretical perspectives. The first perspective focuses on how wealth stabilises as well as increases consumption possibilities. Regarding the stability function a further division can be made in terms of the time horizon. Wealth can be considered as either supporting current consumption as suggested in the precautionary savings theory (e.g. Hubbard et al., 1994; Leland, 1968) or as supporting consumption after retirement as put forward by the life cycle theory (e.g. Ando & Modigliani, 1963;

Shefrin & Thaler, 1988). Besides providing stability, certain asset types also increase potential consumption through income generation, and this without having to sacrifice leisure (McDonnell, 2013). Considering wealth accumulation as part of personal economic and social development constitutes the second perspective (McKernan et al., 2012; Sherraden, 1991). In this sense wealth provides utility to its owner(s) above and beyond the consumption it facilitates. This utility derives from the fact that the ownership of wealth opens up a wider range of free choice. Asset ownership implies independence, autonomy and creates a hopeful future, which in turn may also increase future-oriented behaviour among owner(s) (Sherraden, 1991).The functions captured in the third perspective typically require a substantial amount of wealth accumulations. In this view wealth is an important contributor to achieving or maintaining class status as well as having economic and political power (cfr. the focus of the initial 'elite wealth studies') (Keister, 2000; Spilerman, 2000). For instance, owning a good home or owning a small business has historically been identified with middle and upper class status (Vaughan-Whitehead, 2016). Finally, all these functions of wealth can also be transmitted across generations through inheritances and inter vivos gifts, which enables intergenerational stability.

Figure 1: Functions of wealth
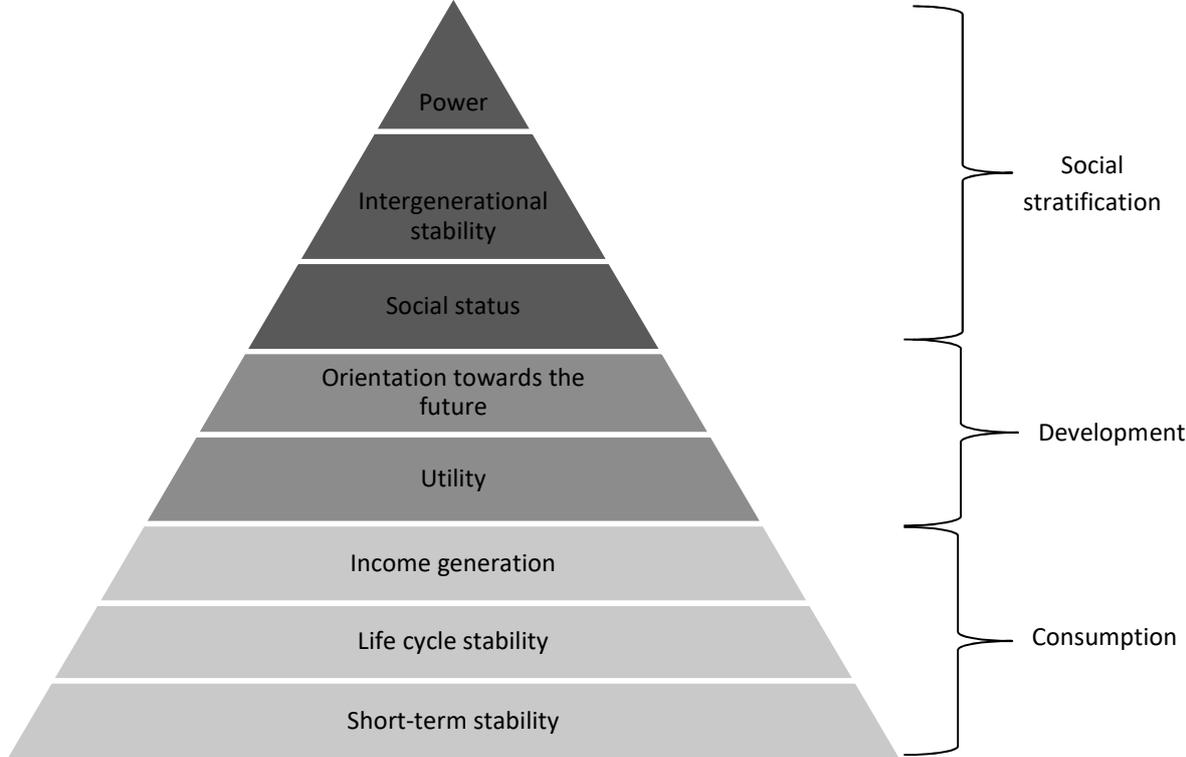
Source: Own extension to Fessler & Schürz (2017).

While most of these wealth functions are complementary, some might be considered substitutes or even conflict with one another (Fessler & Schürz, 2017). Although several of the functions are mentioned throughout this dissertation, the main focus is on the short-term stability function, i.e. securing consumption to overcome low income periods or to face unexpected costs. As Figure 1 suggests this is the function that applies already to a small amount of wealth, hence which covers the majority of wealth owners. It is also argued throughout the dissertation that this is the most important function for vulnerable households. Furthermore, as it is one of the most transparent functions, it is easy to measure and analyse. Since the dissertation only consists of static analyses, life cycle and intergenerational considerations automatically fall beyond its scope.

Contributions and outline of the dissertation

Given the imperfect relationship between income and wealth and the substantial contribution towards financial well-being of both resources, any analysis of living standards in terms of just one of these distributions provides partial, and perhaps even contradictory, results. This doctoral dissertation therefore analyses the joint distribution of income and wealth and its applications to the analysis of poverty, inequality and redistribution. In particular, the dissertation consists of four main parts, as is summarised in Figure 2, addressing the following main research questions: 1) How are the distributions of wealth and income related? 2) How to use the available data and methods for the joint analysis of income and wealth? 3) How can information on both economic resources be combined for the measurement of poverty, inequality and redistribution? and 4) How can the results of the latter influence the evaluation and design of specific fiscal and social policies?

Figure 2: Outline of the dissertation

| Identification of the income-wealth relationship | Improvement of data & methods | Extension of analytical framework | Application to tax-benefit policies |
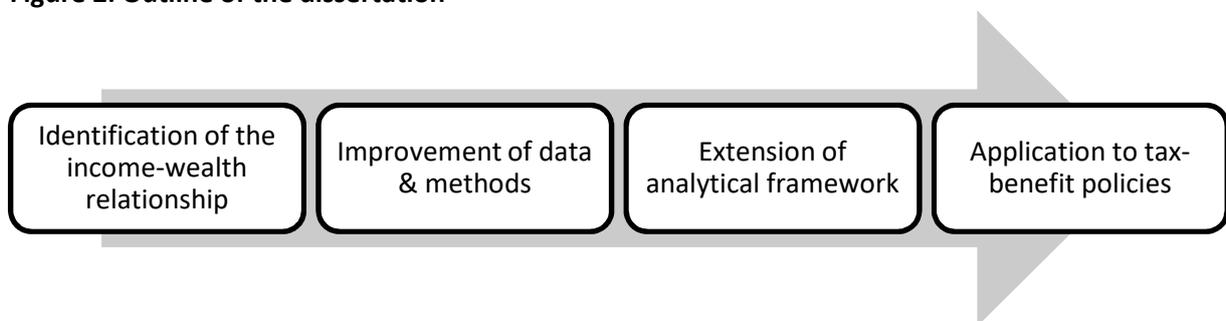
The first part describes the starting point of the dissertation. As mentioned before, the literature on wealth and its distribution largely expanded over the last two decades. Yet, its main focus is on the top of the distribution and studies analysing income and wealth jointly are rare. *Chapter 1* (written together with Ive Marx) adds to this literature by showing that the joint analysis of income and wealth is also relevant for the study of poverty and social policy. Based on a descriptive analysis for Belgium it is shown that although there exist strong links between income and wealth, they are imperfectly correlated. Especially among those identified as income poor, there is a relatively large variation in wealth holdings, which affects the assessment of who is financially vulnerable. To this end the concept of triple precariousness is proposed, afflicting those households that not only have low income but also very low or negative net wealth and in particular few liquid assets. We find that these households – which we might call the truly vulnerable – have sometimes different characteristics from those that we identify as poor or needy on the basis of pure income based metrics. Even though this chapter focuses on Belgium as a particularly interesting case study, the subsequent chapters show that these effects are also found in other countries, albeit to various degrees.

The fact that empirical studies looking into the wealth distribution were for a long time scarce, especially in Europe, was largely due to the absence of comparable data and analytical tools. In the meantime important advances have been made. Thanks to the Luxembourg Wealth Study (LWS) and the Eurosystem Household Finance and Consumption Survey (HFCS) new comparative data on households' assets and liabilities have become available and guidelines on how to properly measure and analyse wealth have been put forward (e.g. OECD, 2013a, 2013b). The second part of this dissertation is in large part technical focusing on the contributions I made together with my co-authors

Francesco Figari and Gerlinde Verbist to the measurement and analysis of the joint distribution of income and wealth. In particular, the prospects for applying micro-simulation techniques are examined, by combining the HFCS data with the EU-wide tax-benefit model EUROMOD. The contributions are twofold. First, the HFCS data originally only covers gross incomes which are by themselves not suitable for distributive analyses. *Chapter 2* therefore shows the possibilities of using the HFCS data as the underlying database for EUROMOD. As EUROMOD simulates all steps in the gross-to-net transition this allows to derive net incomes, which in turn implies that we jointly observe disposable income and net wealth in a comparable way across countries and time. The second contribution described in *Chapter 3* is that the current simulation scope of EUROMOD, which focuses on personal income taxes and cash social transfers, can be expanded to wealth policies. In particular, the simulation of taxes on wealth and wealth transfers, tax reliefs to stimulate wealth accumulation (e.g. for mortgage interests or private pension saving) and the role of wealth in means-testing of benefits is added to EUROMOD. The creation of the new input data and the extension of the policy scope is carried out for six European countries; Belgium, Germany, France, Finland, Spain and Italy. These countries represent different types of income and wealth distributions, as well as the correlation between them (Arrondel et al., 2014b). They also provide a good representation of a broad range of tax-benefit systems as well as existing wealth tax designs.

The identification of the income-wealth correlation and the improvements made to data and measurement tools then feed into the third part of the dissertation, in which the analytical framework for the study of poverty, inequality and redistribution is extended. Instead of defining and analysing living standards in terms of income alone, this dissertation proposes to assess them against a joint framework of income and wealth. In particular, I show how the use of this broader assessment framework alters outcomes in terms of poverty (Chapter 4), inequality and redistribution (Chapter 5).

Previous studies on defining poverty in terms of both income and wealth have proposed two distinct methods. While one approach integrates the two financial resources into one single dimension by converting wealth into yearly annuities, a second approach applies a two-dimensional framework by developing separate poverty lines for income and wealth. In general these studies come to the following conclusions: (1) poverty estimates including wealth are considerably lower than the traditional income-based measures, (2) poverty rates of the elderly are more affected than those of the non-elderly and (3) poverty rates are especially affected by the household's main residence. In *Chapter 4* (co-authored by Ive Marx) the sensitivity of these statements to various plausible alternative measurement assumptions is assessed, among others the calculation of the poverty line, the types of assets included and choices with respect to the equivalence scale. It is shown that accounting for wealth substantially alters the incidence and age structure of poverty, but to which extent strongly depends on several analytical choices. Poverty rates may increase as well as decrease depending on how wealth is accounted for and cross-country poverty rankings may change.

Although poverty is one of the most important and pressing socio-economic issues, it only covers one particular part of the distribution. It is at least as important to study how this part relates to other sections of the population. Therefore, in *Chapter 5* (co-written with Francesco Figari and Gerlinde Verbist) I evaluate inequality and redistributive effects of tax-benefit systems against the joint distribution of income and wealth. To this end I extend the annuity approach from the poverty literature to the analysis of inequality and redistribution. Moreover, besides income taxes, social

contributions and cash benefits, I also include wealth taxes into the calculation of the redistributive effect, using the simulations discussed in Chapters 2 and 3. Results show that welfare states across Europe are less redistributive when evaluated against the joint distribution of income and wealth than when only the income distribution is used as assessment framework. This is because tax-benefit systems are strongly focused on reducing inequalities related to income, while wealth considerations are largely absent. As income inequalities do not necessarily coincide with wealth inequalities, this may lead to an unequitable and inefficient allocation of scarce resources.

Hence, welfare states may increase their redistributive efforts in terms of overall financial inequality by including the wealth perspective in the evaluation and design of their tax-benefit systems. Therefore, the final part of this dissertation studies specific policies in terms of the joint income-wealth framework. While Chapter 6 discusses an application in terms of taxation, the benefit side is the main focus in Chapter 7.

Over the last decades, many researchers and policymakers have made strong arguments for broadening the taxes on wealth and/or its returns. These arguments relate mainly to horizontal and vertical equity reasons but also to revenue and efficiency considerations. Nevertheless, there seems to be a general trend towards less rather than more wealth taxation. These large contradictions between recommendations and real practice make wealth taxation a very interesting research topic. Yet, although the theoretical literature on (optimal) wealth taxation is relatively large and growing, there exists a large void in empirical research. In *Chapter 6* (co-authored by Gerlinde Verbist and Francesco Figari) this void is addressed through an empirical analysis of the redistributive and budgetary impact of existing wealth-related taxes. It is shown that existing wealth taxes do not achieve any significant vertical redistribution, i.e. in their current form they hardly redistribute resources from rich to poor households. Moreover, there is a lack of neutrality in the tax system with regard to the source from which households draw their financial living standard. Those who derive their living standard predominantly from (labour) income bear much higher taxes than those with the same overall living standard but predominantly deriving it from (annuitized) net wealth. Hence, tax systems currently also violate horizontal equity principles.

Wealth taxes cover an important part of the tax treatment of wealth, but the tax system is also used to stimulate the ownership of certain assets, which is studied in *Chapter 7* (single-authored). In most countries tax reliefs are typically granted for three main types of assets: housing (through mortgage relief), private pension savings and financial investments/entrepreneurship. Although these policies may have been effective in the past by contributing to the emergence of a wealthy middle class, a distributional analysis shows they remain out of reach for the most vulnerable. Therefore a hypothetical pro-poor asset building policy is simulated which focuses on the accumulation of liquid assets to insure short-term financial stability. Such an asset-based social policy could complement income-based social policies as the latter by themselves no longer seem to be sufficient to address rising socio-economic and demographic challenges such as globalisation and population ageing.

In the *Conclusion* I summarise the main contributions made in this dissertation and discuss their policy implications. I conclude by identifying some limitations which provide interesting opportunities for future research.

PART 1. SETTING THE SCENE

Chapter 1. The truly vulnerable: integrating wealth into the measurement of poverty and social policy effectiveness[2]

1.1 Introduction

Who is most in need of support? That question has occupied generations of scholars, spawning an extensive literature on ways to identify and target the poor.

Poverty research is dominated by income based measures, in part on theoretical grounds but perhaps even more so for pragmatic reasons. Income as a one-dimensional measure of resources has its shortcomings but it is practical to implement because there is a relative abundance of data on people's incomes (Atkinson et al., 2002; Marx et al., 2015). Yet, several streams of literature show that low income is an imperfect proxy for actual need. Since the way problems are defined typically provides the framework within which policy responses are developed, the definition of poverty in terms of incomes has inevitably led to policies that focus on income maintenance (Cramer et al., 2008).

In addition to a rich literature on income based measures of poverty and need there is an extensive, and for the most part more recent, research tradition that looks at people's standard of living using more direct measures of living conditions and what is called "material deprivation" (Atkinson et al., 2002; Nolan and Whelan, 2011). From that literature we know that low income people are not equally deprived, and therefore not in equal need for support. While there is often a substantial overlap between income poverty and material deprivation measures there are also important systematic differences. That is to say: there are some segments of the population that face significant income poverty risks but that are found to be systematically less deprived (Kus et al., 2016). That may be because they can draw on earlier accumulated financial resources that help them bridge shorter or longer periods of low income.

There is, however, a critical problem with using material deprivation measures for allocating public resources. Lacking certain goods may not be a result of lacking resources, it may just be a matter of preferences or spending patterns (Kus et al., 2016). From the perspective of effective and just redistribution this matters. If people lack certain things that are deemed to be necessities yet they have the resources available to acquire them that is important. If people do not spend their money on essential things like food and housing, for themselves and their children, this is still a significant public policy issue. But it probably requires different actions than giving those households more resources.

Lately, increasing attention is given to how wealth contributes to people's living standards, i.e. taking into account the effect of assets and liabilities such as real estate, deposits, stocks, mortgages, etc. Such joint income-wealth measures allow to look at all resources available to households to achieve a standard of living, and hence can be considered to represent their true financial situation. Yet, up until now the focus is largely on the top (e.g. Alvaredo et al., 2013; Cowell et al., 2017; Kontbay-Busun & Peichl, 2014) or the middle of the wealth distribution (e.g. Jäntti et al., 2013), while wealth remains

---

remarkably absent in the analysis of poverty and social policy. Although there exist strong links between income and wealth through savings and borrowing constraints, they are found to be imperfectly correlated (Jäntti et al., 2008; Skopek et al., 2012) such that income poverty is not a perfect predictor of low wealth accumulations. Those on low income might actually have a much lower need for support when substantial wealth is owned that can be used to smooth consumption. In contrast, when low income is combined with low wealth or when those not considered poor according to income are paying off large amounts of debt, the depth of financial vulnerability is considerably larger.

The purpose of this chapter is therefore to show that including the notions of wealth and liquidity into the framework of poverty and distributive research leads to new insights into financial vulnerability, which in turn opens up new perspectives on redistributive policies. To this end the chapter uses data from the Eurosystem Household Finance and Consumption Survey (HFCS). This study looks in detail at Belgium, a country that represents a particularly interesting case because households are known to have household wealth that is among the highest in the euro area, especially around and below the median, and yet it also has a comparatively high poverty rate, if measured using disposable household income. Furthermore, income and wealth appear to be relatively weakly correlated compared to other countries (Arrondel et al., 2014b; HFCN, 2013b; Kuypers et al., 2015). In other words, a joint income-wealth perspective on the distribution of financial resources might have a much stronger impact on social policy in Belgium than in some other European countries.

The chapter proceeds as follows. The second part discusses in more detail how the inclusion of wealth information could contribute to the inequality and poverty framework and hence the design of social policy in European countries. The data and methodology that are used are described in the third part. The following part focuses on the correlation between income and wealth in the Belgian case. The fifth part studies the differences in portfolio composition of poorer and richer households, particularly along the liquidity dimension, after which it is shown how the population eligible for welfare support might be affected by the inclusion of wealth and liquidity information. The last part concludes and contemplates some potential future policy courses.

1.2 A joint income-wealth perspective on social policy

Living standards are usually defined in terms of equivalised disposable household income. Monetary poverty measures, relative or anchored, also build on this metric. Since this income concept entails not only income from labour and social transfers but also income from financial investments and renting out real estate property, one may wonder why it would still be necessary to include information on assets and debt. There are several compelling reasons.

First, certain asset types generate little or no income flow, such as owner-occupied housing. Although this may be fixed by adding a measure of imputed rent to the income definition, this is not sufficient. Indeed, savings and assets also contribute to living standards above and beyond their income flow. They assure financial security because they can be used to face unexpected events (Cowell & Van Kerm, 2015). In other words, when income is lost or decreased, due for example to unemployment, sickness, divorce, etc., accumulated wealth can be reduced in order to smooth consumption (Brandolini et al., 2010). Moreover, assets can be used as collateral against which can be borrowed (this often relates to mortgage debt) (Azpitarte, 2012). In contrast, when repayments of loans are large, living standards

may be considerably worse than mere incomes suggest (this often relates to consumer loans and credit card debt). Hence, although there exist evident links between income and wealth, mainly through savings and borrowing constraints, the correlation between income and wealth is far from perfect (Brzozowski et al., 2010; Jäntti et al., 2013; 2008; Skopek et al., 2012). In other words, there are households with low income but high wealth and vice versa. From a different perspective assets and savings also largely affect long-term consumption and living standards, for the current as future generations. Indeed, assets allow to make purchases to move up the social ladder (Cowell & Van Kerm, 2015; McKernan et al., 2012). Yet, we mainly focus on current well-being.

An important aspect of the wealth dimension is the composition of the asset portfolio. When analysing joint income-wealth measures of financial vulnerability, we need to better understand how the poor make investment decisions; i.e. in which types of assets do they invest? For instance, it is important to own sufficient liquid assets to overcome low income periods and face unexpected expenses. It is often found that poor households invest proportionally more in safe, real assets than in more risky, liquid assets. Since 1 euro means much more to a poor household than to a rich one, they are less inclined to undertake a risky investment because of the high potential losses (Friedman & Savage, 1948). Campbell (2006) claims that poorer and low educated households are more likely to make investment mistakes than wealthier and higher educated households. These mistakes relate for instance to "nonparticipation in risky asset markets, underdiversification of risky portfolios and failure to exercise options to refinance consumption" (p.1590). Cunha et al. (2011) find that the liquidity of poor households is often very low. Since illiquid assets cannot be easily converted to cash money in times of need, vulnerable households "rely too much and too frequently on the most costly forms of financing (such as overdrafts) […]" (p.1046). Moreover, in many European countries existing policies that encourage wealth accumulation often favour illiquid over liquid assets. Examples are income tax deductions or credits for instance for mortgage repayment or private pension savings *(see Chapter 7)*.

This chapter thus asks how our view of financial need and vulnerability changes when in addition to income we take net wealth into account, its level and composition, especially regarding liquidity.

1.3 Data and methods

Up until a few years ago, evidence on the joint distribution of income and wealth was scarce, mainly as a consequence of a lack of data with regard to household wealth holdings. Initiatives such as the Luxembourg Wealth Study (LWS) and the Eurosystem Household Finance and Consumption Survey (HFCS) largely expanded research possibilities in this regard. Yet, previous studies seem to largely focus their attention towards the top (e.g. Alvaredo et al., 2013; Cowell et al., 2017; Kontbay-Busun & Peichl, 2014) or the middle of the distribution (e.g. Jäntti et al., 2013). In this chapter we focus primarily on the bottom using data for Belgium from the second HFCS wave which covers 2,238 households surveyed in 2014 (income refers to 2013, wealth to the moment of interview).

In the HFCS the concept of net worth is used as wealth measure, which is defined as the sum of financial and real assets less liabilities.[3] It is worth noting that entitlements to public and occupational pension plans and social security funds are excluded from the HFCS wealth concept. Throughout the chapter

---

[3] Wealth and net worth are used interchangeably.

we compare low income households with intermediate and higher income households. This differentiation is made based on the deciles of equivalised income and not a poverty line as such because the HFCS only contains gross incomes. We define low income as those households who have an income in the bottom two deciles, the intermediate income group covers households in the middle six deciles and the high income group are those in the top two deciles. Taking the bottom two deciles as a proxy of low income is intuitive as the official EU At-risk-of-poverty (AROP) measure for Belgium falls in the second decile. Since households at the bottom pay little or no taxes the effect of using disposable instead of gross incomes should not be very large at the bottom, which is our main focus.

In section 1.5 we analyse asset portfolios by liquidity. For this analysis we have grouped the assets surveyed in the HFCS into 3 categories, which is shown in Table 1.1. Liquidity refers to the degree of difficulty of converting an asset into cash in terms of time and effort. It thus signals how quickly a certain asset can be bought or sold on the market, therefore also called 'marketability'. The HFCN (2013b, p.66) regards deposits, bonds, shares, mutual funds, managed accounts and non-self-employment private business wealth as liquid assets because they can be very easily sold on a regulated market. Real estate, self-employment business wealth, private pensions and life insurances are considered to be much less tradable in the short term without incurring substantial costs, which is why we classify them as non-liquid. Vehicles and valuables are assets that can be relatively easy sold on a second-hand market, but it typically takes more effort and time to sell them than the previously mentioned liquid assets, so that we classify those separately as intermediate liquid assets.

Table 1.1 Classification of HFCS assets by degree of liquidity

Liquid assets	Intermediate liquid assets	Non-liquid assets
- Deposits - Bonds - Publicly traded shares - Mutual funds - Managed accounts - Non-self-employment private business wealth	- Vehicles - Valuables	- Household main residence - Other real estate property - Voluntary pension/ whole life insurance - Self-employment business wealth

We use the household as the unit of analysis, also the main unit of measurement in the HFCS. Studies analysing the distribution of income typically use equivalence scales to control for household size and composition in order to capture the impact of economies of scale. However, there is no general agreement on whether and how equivalence scales should be applied to wealth. In the literature the choice depends on which perspective of wealth is adopted. Here wealth is seen as a resource smoothing current consumption of households (in contrast to supporting future consumption as suggested in the life cycle hypothesis). In this perspective it seems appropriate to equivalise household wealth (Brandolini et al., 2010; Jäntti et al., 2013; OECD, 2013b). We use the same equivalence scale for wealth and income, although it is not clear whether the equivalence scales used for income are appropriate for the study of wealth (OECD, 2013a). We opted to equivalise by the square root of household size because it is the most widely used in analyses on OECD countries, but our results remain highly robust when other (or no) equivalence scales are assumed.[4] Since our analyses are at the

---

[4] Results of this validation exercise are not included in this chapter, but are available upon request.

household level, demographic and economic characteristics mentioned in this chapter always refer to the household's reference person. We use the UN/Canberra definition of the reference person. [5]

1.4 Income and wealth in Belgium

The focus in this chapter is on the case of Belgium for a number of reasons. First, while Belgium is characterised by high overall living standards and comparatively low income inequality, poverty rates appear to be relatively high and persistent compared to other West-European countries. Indeed, inequality in market incomes is among the lowest in the world. Belgium has one of the most compressed wage distributions with a very small incidence of low paid work as well as top incomes which have not increased so dramatically as in other countries, aspects which can be largely attributed to its extensive and resilient social concertation model (Kuypers & Marx, 2016). Moreover, the Belgian welfare state is also very extensive, with high levels of public spending and tax levels to match. As a consequence redistribution is considerable in Belgium, which in turn results in a relatively equal distribution of disposable income. Yet, at the same time those not included in the labour market fare worse than almost anywhere else in Europe; divisions along ethnicity, educational level and generation are sharp and persistent. As a result the at-risk-of-poverty rate has been close to 15 per cent for several decades already.

Just as in most countries studies including wealth into the analysis of inequality, poverty and social policy are virtually non-existent, with the notable exception of Van den Bosch (1998). For a long time this was due to the absence of suitable data. However, even now that Belgium is included in the HFCS data, the majority of studies using these data do not appear to include Belgium in their analysis. This is remarkable as HFCS figures show that Belgium has the second highest median wealth in Europe, after Luxembourg, while at the same time wealth is much less unequally distributed than in many other countries with similar wealth levels. This is probably the result of the combination of two aspects. First, Belgium was one of the first industrialised countries. Therefore, capital accumulation processes started early on and could consequently reach higher amounts (cfr. Piketty, 2014). Second, the lower level of inequality may in large part be due to the high homeownership rate of about 70-75 per cent. Although many countries now have similar homeownership rates, Belgium has a long tradition of being a 'nation of homeowners' (De Decker, 2011). Since the end of the 19th century homeownership has been promoted through various policy mechanisms including tax exemptions (i.e. 'Woonbonus'), grants, premiums, social loans, social dwellings and social building parcels.

Finally, previous studies indicate that income and wealth are weaker correlated in Belgium than in many other countries (Arrondel et al., 2014b; HFCN, 2013b; Kuypers et al., 2015). Yet, there is still much more to learn about how wealth relates to income at different points in the distribution. We specifically focus on whether low income families own enough wealth to serve as a financial buffer of any real significance in times of need. As we will show in this chapter, the combination of relatively

---

[5] According to this definition the reference person is determined based on the following sequential steps:
- one of the partners in a registered or de facto marriage, with dependent children
- one of the partners in a registered or de facto marriage, without dependent children
- a lone parent with dependent children
- the person with the highest income
- the eldest person

(HFCN, 2013a, p.16-17)

high income poverty with comparatively high and equally distributed levels of net wealth has interesting implications for the assessment of who is truly financially vulnerable. These implications might be larger in countries with relatively weak income-wealth correlations than countries where the two distributions go hand in hand.

In Table 1.2 some key indicators of the wealth distribution are compared between households with a low (bottom 2 deciles), intermediate (middle 6 deciles) or high income (top 2 deciles). The results clearly show that in general rates of positive net worth are very high, even among low income households (89.5 per cent). However, among those with positive wealth, median net worth is more than ten times lower among low income households than among households that have an intermediate income, and even more than 16 times compared to those with high income. Similar differences are found for gross assets. The Gini coefficients show that inequality in wealth accumulations among those with a low income is higher than among those with an intermediate or high income. Finally, results for the rank correlation coefficient indicate that low income is often accompanied by low wealth, while the correlation between income and wealth further up the distribution is slightly weaker.

Table 1.2 Summary statistics of net wealth by income groups

	Net worth	Assets	Debt
Participation (%)			
Low income	89.5	97.9	27.9
Intermediate income	98.1	99.8	49.9
High income	99.3	100.0	64.5
Median wealth (x1000 euros)			
Low income	14.6	17.4	5.0
Intermediate income	149.4	185.3	30.6
High income	241.3	269.9	39.4
Gini coefficient			
Low income	0.76	0.73	0.68
Intermediate income	0.54	0.49	0.54
High income	0.54	0.49	0.56
Spearman correlation coefficient			
Low income	0.26	0.24	-0.12
Intermediate income	0.18	0.22	0.14
High income	0.18	0.18	0.00

Notes: Low=bottom two deciles, intermediate=middle 6 deciles, high income=top 2 deciles; participation in wealth refers to having a positive net worth.
Source: Own calculations based on HFCS.

Comparing medians between households with different levels of income, however, is not enough. To get a complete picture we should look at the full distribution of wealth by different income positions, which is depicted in Figure 1.1. Again we find that wealth accumulations in the bottom income deciles are generally lower than in the top deciles. Mainly 10th percentile and median values of net worth are substantially higher when one moves up the income distribution. However, even within the first income decile there are some households that have a net worth equal to €200,000 or more.

Figure 1.1 Distribution of net worth along income deciles
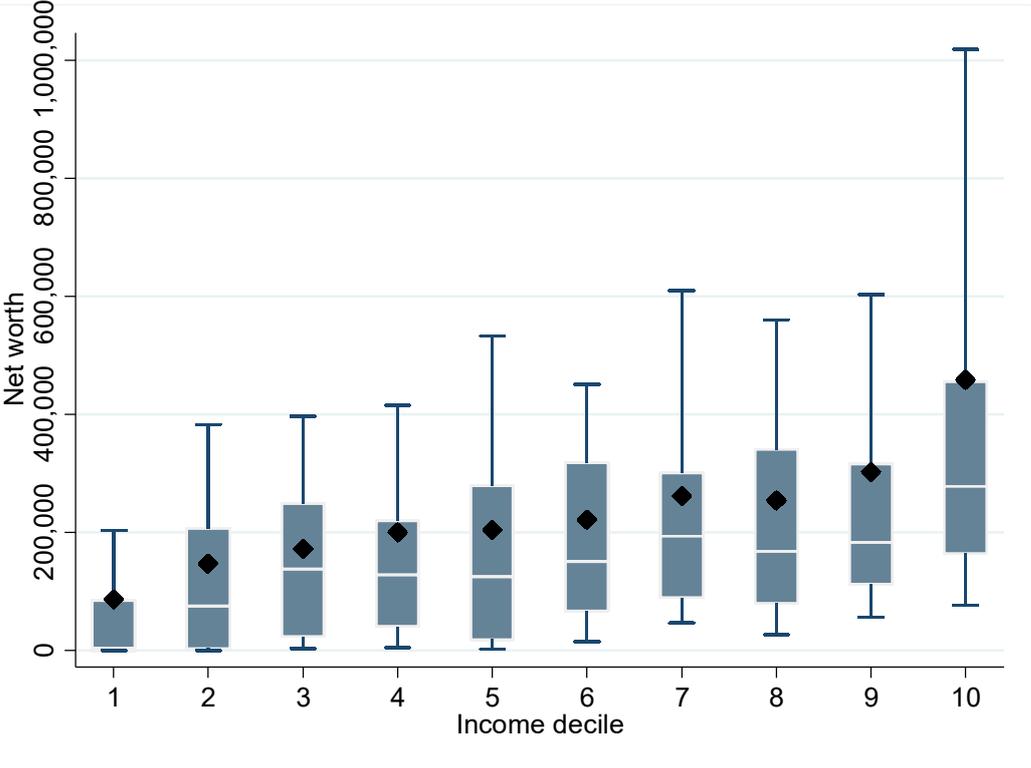
Notes: The white line refers to the median, the black diamond to the mean, the thick bars show the range between the 25th and 75th percentile and the tin bars show the range between the 10th and 90th percentile.
Source: Own calculations based on HFCS.

One could wonder what the driving factor is for the large inequality in net worth among households with similar incomes. One major possibility is age as suggested by the life cycle model of wealth accumulations (Ando & Modigliani, 1963). This model implies that people borrow during the early years of adult life to fund investments and then gradually accumulate wealth until retirement, after which it goes down again. Therefore, Table 1.3 provides the ratio between average net wealth and average income for each income decile and separately for elderly and non-elderly households (i.e. with a household head younger or older than 65 years). We find that systematically throughout the entire income distribution wealth-to-income ratios are substantially higher for elderly than for non-elderly households. While non-elderly households own wealth equal to about 5 to 7.5 years of income, this is generally more than double for their elderly counterparts. This implies that among those with about the same income (i.e. belonging to the same income decile) net wealth is much larger for households with a retired household head. Yet, most noteworthy is the fact that the difference is particularly large in the bottom income decile. Hence, age plays an important role in explaining wealth inequality within income groups, but especially among those with the lowest incomes. In other words, among those traditionally considered as poor there is a share of households which can rely on substantial assets to support their consumption, while others do not have these opportunities. It is clear that living standards of the latter are much lower and therefore we can consider them as the truly vulnerable.

Table 1.3 Net wealth to income ratios by income decile and age

Income decile	Non-elderly	Elderly
1	5.1	28.1
2	6.1	12.3
3	7.5	10.6
4	7.2	10.7
5	6.2	10.6
6	5.1	10.8
7	5.7	10.4
8	4.3	10.4
9	4.1	13.7
10	4.9	12.0
Total	5.1	11.6

Note: Elderly is defined as the household head being equal or older than 65 years.
Source: Own calculations based on HFCS.

For further analyses in this chapter we add to our three categories of income also three categories for the wealth dimension, such that we end up with nine different groups. Again, we have chosen to define the categories in terms of weighted deciles. In other words, those who have low income and low wealth are households who belong to the bottom two deciles of both the income and the wealth distribution, etc. Table 1.4 presents the Belgian weighted population shares and sample sizes for each of these nine joint income-wealth groups. The largest group consists of households with intermediate income and wealth, while there is a non-negligible share of households that combine high income with low wealth and vice versa.

Table 1.4 Weighted population share and sample size of joint income-wealth groups in Belgium

	Low wealth	Intermediate wealth	High wealth
Low income	10.2% *(192)*	8.3% *(192)*	1.6% *(39)*
Intermediate income	9.0% *(197)*	38.8% *(776)*	11.9% *(340)*
High income	0.8% *(19)*	12.9% *(244)*	6.4% *(239)*

Note: Low=bottom two deciles, intermediate=middle 6 deciles, high income=top 2 deciles.
Source: Own calculations based on HFCS.

1.5 Asset portfolio composition

In the previous part we have shown that there exist strong links between the income and wealth distributions, especially among the non-elderly at the low end. This can be mainly attributed to borrowing and savings constraints. However, several factors can mediate the relationship between income and wealth, such as asset portfolio choices, life cycle effects and intergenerational transfers (Jäntti et al., 2015). In the previous part we have shown the effect of life cycle effects, here the focus will be on asset portfolio choices. In this context one can study two aspects: the number of asset types that are held, called 'portfolio span' by Gouskova et al. (2006) and the portfolio composition. As mentioned before, related to the latter we focus on the composition of asset portfolios along their degree of liquidity.

Figure 1.2 first shows the results of a linear regression of the different income and wealth groups on the number of asset types held which provides us with a measure of the heterogeneity in portfolios

(the maximum number of asset types included in the HFCS is 14). We find that households having both a low income and low wealth own on average only one and a half asset types, which refers in most cases to deposits. Households in higher income and/or wealth groups are found to own more differentiated asset portfolios than their poor counterparts. For instance, those having both high income and high wealth own on average almost 6 different asset types.

Figure 1.2 Results of linear regression of income and wealth groups on portfolio span

Notes: Maximum asset types is 14; low=bottom two deciles, intermediate=middle 6 deciles, high income=top 2 deciles. Source: Own calculations based on HFCS.
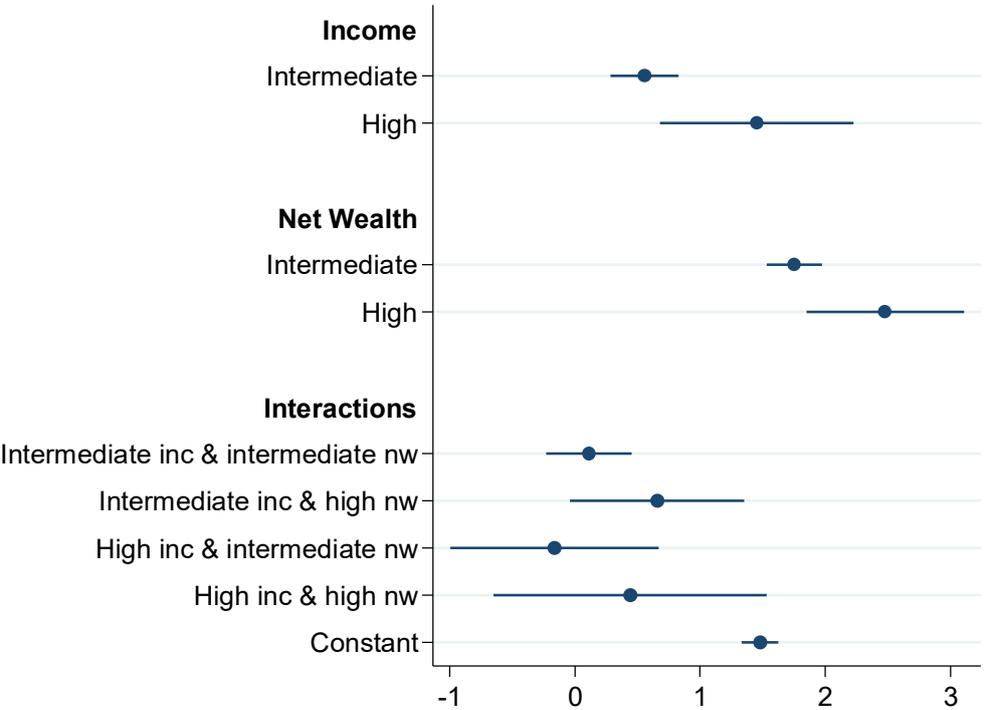
We now move on to the analysis of the portfolio composition. First, the top rows of Table 1.5 present how households, on average, distribute their wealth over assets differing by degree of liquidity. It appears that households with low income and low wealth own a fairly large share of liquid assets (about 35.7 per cent of total assets) compared to the other joint income-wealth groups.[6] Yet, from the perspective of precautionary savings we would prefer households with low income and low wealth to own a much higher share of liquid assets. Indeed, an equal liquidity share will be much more problematic for low income – low wealth households than for households which are richer in at least one of the two dimensions. As the discussion of the portfolio span indicated, liquidity of the poor often also only emanates from deposits, while their richer counterparts tend to have investments in several liquid asset sources.

Hence, in order to obtain a more accurate view on liquidity patterns we also look at the share of households having an adequate level of liquidity. In the American literature this is often defined as having liquid assets equal to three months of expenditure (see Bi & Montalto, 2004 and references

---

[6] It is worth noting that the largest share in total assets highly depends on where the household's main residence and other real estate property are classified because they typically constitute the largest shares of net worth. Indeed, we find for all households that non-liquid assets have the dominant share in total assets. However, our results remain robust even when real estate is not included.

therein). The rationale for this is when confronted with a loss of income, liquid assets should make it possible to smooth consumption during three months, the average duration of an unemployment spell in the US. However, in contrast to the US most European welfare states, including Belgium, have important safety nets in place such as sickness benefits, unemployment benefits and social assistance, generally with a high coverage rate. Therefore, we opted to define adequate liquidity as the amount that is deemed necessary to be able to face unexpected costs such as car or house repairs or large hospital bills. Indeed, social benefits generally cover normal consumption patterns, but it is often hard for those at the bottom to face unexpected costs, also for minimum wage workers. Hence, with this measure of adequate liquidity we check whether households have a sufficient liquid buffer so that they should not resort to debt, which for the poor often implies unsecured and high interest loans, which would make their situation even more precarious. In practice the threshold that is used to define adequate liquidity is taken from a question included in EU-SILC (European Union Survey on Income and Living Conditions), namely: *"Can your household afford an unexpected required expense of [national specific amount] paid using its own resources?".* In Belgium this amount was equal to €1,000 for the 2013 income reference period (i.e. the same as the income reference period in the 2nd HFCS wave). Based on this liquidity indicator we find that only 34.5 per cent of households in the low income – low wealth group have sufficient liquid assets to be able to make an unexpected expense of €1,000, while the majority of households with either higher income and/or higher wealth appear to own an adequate amount of liquid assets.

Table 1.5 Household portfolio composition by liquidity and debt-to-asset ratio

	LI-LW	LI-IW	LI-HW	II-LW	II-IW	II-HW	HI-LW	HI-IW	HI-HW
Share in total assets									
Liquid assets	35.7	10.3	13.2	13.1	12.4	27.1	7.6	15.7	23.2
Intermediate liquid assets	27.5	3.2	1.8	14.7	3.4	2.7	3.3	3.7	2.0
Non-liquid assets	36.8	86.5	85.1	72.2	84.2	70.2	89.1	80.6	74.8
Share of households with adequate liquidity	34.5	73.2	81.6	63.1	92.0	98.5	70.1	98.6	99.1
Debt-to-asset ratio									
Total debt	90.5	7.7	1.0	82.0	18.7	2.1	119.9	19.6	4.3
Mortgage debt	31.3	7.3	0.9	59.4	17.2	1.8	118.0	18.4	4.1
Non-mortgage debt	59.2	0.4	0.1	22.6	1.5	0.3	1.9	1.2	0.3

Note: LI-LW= low income – low wealth, etc.; low=bottom two deciles, intermediate=middle 6 deciles, high income=top 2 deciles.

Source: Own calculations based on HFCS.

Finally, the bottom rows of Table 1.5 present results for the debt-to-asset ratio among the different joint income-wealth groups. As expected the debt-to-asset ratio is much higher among households with low wealth, irrespective of their income position, than those with higher wealth. Particularly interesting to note is the fact that low wealth when combined with high income is the consequence of high indebtedness. Moreover, while for all other groups the debt-to-asset ratio is higher for mortgage debt than for the non-mortgage kind, the latter has an important impact on the situation of households in the low income – low wealth group.

1.6 Characteristics of households in triple precariousness

As mentioned in Table 1.4, 10.2 per cent of Belgian households are considered to have low income and low wealth because they belong to the bottom two deciles in each distribution. Now we can add a third characteristic of having inadequate liquid assets to face an unexpected cost of €1,000. This situation, which we label as 'triple precariousness', is found to affect about 6.7 per cent of Belgian households. These households reflect about 33.3 per cent of low income households and 65.7 per cent of households having both low income and low wealth. In other words, an important share of low income households can rely on some wealth holdings or at least an adequate level of liquid assets, and thus are less financially deprived than their incomes suggest.

Next, we look at the profile of these households in triple precariousness. This can inform policy makers about which types of households are genuinely most in need of help and hence towards which current and possibly new social policies should be targeted. Table 1.6 shows the composition of households in triple precariousness compared to those with low incomes by several characteristics of the household's reference person. The results show that households which are at high risk of being in triple precariousness are mainly those who have a reference person that is young, unemployed or inactive, low educated, migrant, single, and above all a tenant. Indeed, the most striking composition is found with regard to tenure status. Owning your main residence clearly is the most important requirement of not being in triple precariousness. Moreover, the results also show some marked discrepancies between the low income population – those conventionally labelled as poor or near-poor – and the population in triple precariousness. Compared to the demographic characteristics that are highly correlated with low income we mainly find an overrepresentation in triple precariousness of young and tenant households, while older households are clearly underrepresented.

The results of this descriptive analysis are confirmed when controlling simultaneously for different household characteristics in a logistic regression (see Table 1.7). Again, particularly interesting is the impact of tenure status; tenants and free users have almost 300 times more chance on belonging to the triple precariousness group, while this figure is only 1.7 in case of low income. The pseudo R square statistic suggests that these socio-demographic and economic characteristics predict the incidence of triple precariousness much more than of low income.

Table 1.6 Composition of triple precariousness versus low income by characteristics

		Triple precariousness	Low income	Population share
Age	16-34 years	21.5	15.1	13.6
	35-54 years	38.8	31.9	37.7
	55-74 years	35.8	32.7	32.1
	75+ years	4.0	20.3	16.6
Gender	Male	56.4	55.3	62.0
	Female	43.6	44.7	38.0
Educational attainment	No or primary	20.6	19.6	9.7
	Secondary	69.3	64.2	50.0
	Tertiary	10.1	16.2	40.3
Labour market status	Employee	25.2	27.2	50.1
	Self-employed	0.8	4.2	5.9
	Unemployed	32.3	20.0	6.1
	Retired	17.2	35.0	33.3
	Inactive	24.5	13.7	4.6
Household type	Couple	14.4	21.0	28.3
	Couple with children	16.1	14.8	24.3
	Single	55.3	47.9	33.8
	Single with children	12.6	12.5	5.7
	Other	1.7	3.8	8.0
Tenure status	Outright owner	0.4	33.4	38.4
	Owner with a mortgage	0.0	9.5	31.9
	Tennant/free user	99.6	57.1	29.7
Origin	Native	70.5	75.7	88.1
	Immigrant	29.5	24.3	11.9

Notes: Characteristics refer to the household reference person; triple precariousness=belonging to bottom two deciles of the gross income distribution, bottom two deciles of the wealth distribution and inadequate liquid assets to face unexpected costs (N=116); low income=belonging to bottom two deciles of gross income distribution (N=423), total households (N=2,238).
Source: Own calculations based on HFCS.

Table 1.7 Logistic regression of demographics on risk being in triple precariousness vs low income

	Triple precariousness		Low income	
	Odds ratio	**Significance**	**Odds ratio**	**Significance**
Age (ref: 55-74 years)				
16-34 years	1.485011	n.s.	1.253807	n.s.
35-54 years	1.215271	n.s.	1.07817	n.s.
75+ years	0.1309561	**	1.193027	n.s.
Gender (ref: male)	1.442239	n.s.	1.078963	n.s.
Educational attainment (ref: tertiary)				
No or primary	9.742896	***	5.518125	***
Secondary	6.480187	***	3.964123	***
Labour market status (ref: employee)				
Self-employed	0.2476818	n.s.	1.795481	n.s.
Unemployed	6.73186	***	8.80264	***
Retired	2.042815	n.s.	1.520893	n.s.
Inactive	9.854786	***	5.737489	***
Household type (ref: couple)				
Couple with children	0.7849542	n.s.	1.04077	n.s.
Single	0.9890564	n.s.	1.24245	n.s.
Single with children	0.8370084	n.s.	4.582028	***
Other	0.3723905	n.s.	0.5408338	n.s.
Tenure status (ref: outright owner)				
Owner with a mortgage	n/a		0.3527816	***
Tennant/free user	295.2042	***	1.72784	**
Origin (ref: native)	1.86446	n.s.	3.019082	***
Constant	0.0000782	***	0.0348894	***
Pseudo R²:	*0.4093*		*0.2377*	

Notes: *** significant at 1%, ** significant at 5%, n.s. not significant; characteristics refer to the household reference person; triple precariousness=belonging to bottom two deciles of gross income and wealth distribution and inadequate liquid assets (N=116); low income=belonging to bottom two deciles of gross income distribution (N=423), total households (N=2,238). Source: Own calculations based on HFCS.

1.7 Conclusion and policy discussion

There is a burgeoning literature on the significance and distribution of wealth in the rich world. That is entirely justified because assets and wealth play a very large role in people's living standards, mainly exacerbating differences between the richest and the rest. This chapter shows that assets also matter greatly when making assessments of who is poor and financially vulnerable.

We introduce the concept of triple precariousness, afflicting households that not only have low income but also very low or non-existent assets to draw on for consumption needs and to face unexpected costs, especially liquid assets. We analyse whether these households – which we might call the truly vulnerable – have different characteristics from those that we identify as poor or needy on the basis of pure income based metrics.

In an analysis for Belgium, we show that the profile of those that we identify as truly vulnerable – households with low income, few assets, especially few liquid assets – is in some aspects different from

those that we identify as poor purely on the basis of income. Households with a reference person that is young, unemployed or inactive, low educated, migrant, single, and above all a tenant, are especially vulnerable. By contrast, our assessment of the extent and depth of financial need among the elderly – a segment of society that is at a relatively high risk of income poverty – also changes drastically. A substantial share of income poor elderly households own significant assets.

Such results probably hold social policy consequences. First, with respect to existing policies, which are typically focused on income, a distinction between those who can provide in their own income maintenance during difficult periods by drawing on assets and those who cannot surely seems relevant. Yet it is not entirely straightforward in what way. Obviously, state resources could be spent more effectively and possibly more efficiently if social benefits were to be primarily targeted at those who are the most vulnerable, i.e. households with low income, low wealth and inadequate liquidity. Another potential implication is that less is spent on income poor households that have substantial resources. Yet certain assets may not be immediately or fully fungible, or only at a significant cost. It also seems unreasonable to expect people to sell certain types of assets, such as the family home, to meet income needs that are a fraction of the total value of that asset, although policies such as reverse mortgages might provide a solution here. On the other hand, it also does not appear entirely fair that non-contributory income support is provided to people with very significant wealth holdings. How assets should affect eligibility calculations and how aspects like liquidity, divisibility etc. are to matter in this respect clearly requires further thought and analysis.

Second, looking at issues of inequality and poverty within a joint income-wealth framework may lead us to think further about introducing new types of policies. In particular, European welfare states now often focus on the redistribution of market incomes, while this chapter has shown that there is also an important (and increasing) need for distributing wealth resources more evenly. Over the years several authors have made proposals in the direction of supporting asset accumulation among the poor. For instance, Atkinson (2015) argues that there should be a capital endowment for all paid at adulthood, Ackerman & Alstott (1999, 2004) made similar arguments striving for a 'stakeholder society', and Sherraden (1991, 2001) has been advocating pro-poor asset-building policies for three decades already. Although currently several European countries fiscally encourage the ownership of real estate and financial assets, these policies are typically unavailable to poor households (McKernan & Sherraden, 2008). It certainly appears that such policies have not been used to their fullest potential to address financial vulnerability and poverty, although the benefits of doing so may be large and numerous (see Sherraden, 1991). Furthermore, these policies have traditionally favoured the ownership of illiquid assets such as real estate over more liquid asset types. Looking at how we can include the poor into these types of policies is an interesting direction for future research.

However, there are some risks involved in finding a correct balance between these two policy options. When eligibility for social benefits are means-tested against private wealth, it could result in so-called 'saving traps', i.e. households could be discouraged to save so as to remain below the asset threshold (Alcock & Pearson, 1999; Fehr & Uhde, 2013; Jäntti et al., 2008; Sefton et al., 2008). Hence, while the aim of new asset policies would be to encourage the poor to accumulate assets, proper means-testing punishes them for owning such assets. The trade-off between the two will also be an interesting aspect to consider for future research.

PART 2. DATA AND METHODS

Chapter 2. The Eurosystem Household Finance and Consumption Survey: A new underlying database for EUROMOD[7]

2.1 Introduction

Research on private wealth accumulation and concentration has recently received more prominence (see e.g. Jäntti et al., 2008; Piketty, 2014; Piketty & Saez, 2013). Various publications have pointed towards increased income inequality over the past decades in many OECD countries, thereby also devoting attention to the role played by wealth (see e.g. OECD, 2015). In this context the need for more comprehensive and integrated data on individual well-being is widely recognised, as for example highlighted in the Report by the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz et al., 2009). For the component of wealth new household surveys as those developed as part of the Luxembourg Wealth Study (Jäntti et al. 2013) and the Eurosystem Household Finance and Consumption Network (HFCN, 2013a) represent a milestone in this ongoing process for better measurement. These databases can also be the corner stone for the analysis of policies that have been put forward as a way to reduce inequality, such as wealth and property taxation (e.g. Piketty, 2014). For this purpose it is important to assess the role of the different wealth components across countries, in order to set appropriate tax-free allowances and concentrate the tax burden on the wealthy part of the population, given the increasing role of housing assets in the household's portfolio along the entire income distribution (Figari, 2013). Furthermore, defining living standards in terms of income and wealth (e.g. Azpitarte, 2012; Brandolini et al., 2010; Gornick et al., 2009; Haveman & Wolff, 2004; Kuypers & Marx, 2018a *(Chapter 1)*), opens up new perspectives on social policy. In light of current budgetary restrictions social benefits could be focused on those who are most vulnerable, i.e. using the joint distribution of income and wealth as a means-testing tool (e.g. Menon et al., 2016). Moreover, the framework allows for new policies to be introduced that focus on asset building among the poor (McKernan & Sherraden, 2008; Shapiro & Wolff, 2001; Sherraden, 1991).

This chapter aims at contributing to assessing policy options in this area by exploring the prospects for using the Eurosystem Household Finance and Consumption Survey (HFCS) dataset as an underlying database for a tax-benefit microsimulation model. The HFCS is a dataset covering detailed household wealth, gross income and consumption information (HFCN, 2013a), and thus provides more information on wealth than the current database underlying EUROMOD, which is the European Union Survey of Income and Living Conditions (EU-SILC), the standard database for poverty and inequality research in the European Union (EU). Both databases have their weaknesses and strengths and should be regarded as complements. Incorporating the HFCS data in EUROMOD will enhance empirical research possibilities in many ways. First, it will allow analysing the joint distribution of disposable income and net wealth based on information from the same survey, potentially comparable across

---

[7] This chapter is a modified version of Kuypers, S., Figari, F. & Verbist, G. (2016). The Eurosystem Household Finance and Consumption Survey: A new underlying database for EUROMOD. *International Journal of Microsimulation,* 9(3), 35-65. The published paper only includes pilot databases for Belgium and Italy, for the sake of the dissertation information from Kuypers et al. (2017) was supplemented to enlarge the scope of the chapter to all countries studied in the following chapters of this dissertation. The original paper includes some potential research applications, but as these are covered in subsequent chapters it is not included here.

countries and time. As the HFCS contains only gross income amounts which are not suitable for distributive analysis, we derive net incomes by simulating the gross-to-net transition with EUROMOD taking into account all important details of the social security and personal income tax system. Second, policy analysis will be enhanced in different ways, as the policy domains currently covered in EUROMOD will be expanded with dimensions like wealth taxation and asset building incentives, which recently gained much interest in the academic and the public debate. In addition, the model based on HFCS data would allow for an integrated assessment of taxable capacity taking into account direct taxes on income and wealth and tackling challenging issues such as those faced by 'asset rich/income poor' households (Hills, 2013). Moreover, it would enable to estimate the impact of reforms in wealth policies in interaction with other tax-benefit policies.

The chapter is structured as follows. In section 2.2 we argue why it would be interesting to integrate the HFCS database in a tax-benefit model like EUROMOD, while in section 2.3 it is discussed to what extent the HFCS fulfils the necessary requirements to be used as underlying database for EUROMOD. The assumptions and transformations needed to construct the HFCS based EUROMOD dataset is discussed in section 2.4. Section 2.5 then studies the results of the derivation of net incomes for the HFCS data and validates them against those based on the current underlying database, EU-SILC. Section 2.6 concludes this chapter.

2.2 The opportunities of the HFCS data for microsimulation purposes

The main advantage of a tax-benefit microsimulation model is that it allows one to focus quite accurately on the objectives of social and economic policy, on the tools employed, and on the structural change experienced by those to whom the measures apply. Unlike a macroeconomic model, a microsimulation model allows one to simulate individual decision units. These decision units are typically households and the individuals that live in them. As described in Figari et al. (2015) different types of analysis are facilitated by using a microsimulation approach, among else the impact of tax-benefit policy changes (e.g. reforms regarding wealth and income taxation) on income-based indicators and related statistics and the impact of demographic factors on disposable income through the effects of tax-benefit policies (e.g. due to the presence of children). In order to exploit the cross-country dimension of the HFCS data, it is quite natural to build a database from the HFCS for EUROMOD, the EU-wide tax-benefit model, rather than for separate national tax-benefit models. EUROMOD simulates cash benefit entitlements and direct tax and social insurance contribution liabilities on the basis of the tax-benefit rules in place and information available in the underlying datasets for all EU countries. Instruments which are not simulated (mainly contributory pensions), as well as market income, are taken directly from the data (Sutherland & Figari, 2013). As such, EUROMOD is of value in terms of assessing the first order effects of tax-benefit policies and in understanding how policy reforms may affect income distribution, work incentives and government budgets in the short term. Moreover, EUROMOD is built in a way that maximises its flexibility and possibility to simulate tax-benefit policies on different databases.

Currently EUROMOD runs on the EU-SILC data, which has only limited information on wealth and income from wealth. The first purpose of running EUROMOD on the HFCS data is to derive a proper measure of disposable income, as the HFCS contains only gross income amounts which are not suitable for distributive analysis. This allows us to consider the joint distribution of disposable income and net

wealth based on information coming from the same survey, potentially comparable across countries and time. Incorporating the HFCS data will allow expanding the policy domains currently covered in EUROMOD with dimensions like wealth taxation and asset building incentives; this is the second purpose of our study. This expansion will among others enable simulations relating to issues like a tax shift from income to wealth. It will help to understand and measure the redistributive role of these policies, also in relation to the other tax-benefit rules. Moreover, with subsequent waves of the HFCS coming available, the microsimulation model will also enable to investigate changes over time and to determine to what extent these are due to changes in the underlying population or to changes in the policies.

2.3 Assessing the potential of HFCS as EUROMOD input database

In order to be integrated in EUROMOD, a database needs to fulfil certain requirements, which are discussed in section 2.3.1. Next, we show how the HFCS compares to the current EUROMOD database, namely EU-SILC, according to these requirements (section 2.3.2). In section 2.3.3 we provide an overview of the potential extension of the policy scope for EUROMOD.

2.3.1 What is needed for incorporating a new dataset in EUROMOD?

Figari et al. (2013) list a set of basic data requirements that a database must fulfil in order to be incorporated in a sensible way in EUROMOD.
- *Requirement a:* The database used must be a recent, representative sample of households, large enough to support the analysis of small groups and with weights to apply to population level and to correct for non-response;
- *Requirement b:* The database must contain information on primary gross incomes by source and at the individual level, with the reference period being relevant to the assessment periods for taxes and benefits. When benefits cannot be simulated, information on the amount of these benefits, gross of taxes, is required for each recipient;
- *Requirement c:* The database must contain information about individual characteristics and within-household family relationships;
- *Requirement d:* It must contain information on housing costs and other expenditures that may affect tax liabilities or benefit entitlements;
- *Requirement e:* Specific other information on characteristics affecting tax liabilities or benefit entitlements (examples include weekly hours of work, disability status, civil servant status, private pension contributions) is also necessary;
- *Requirement f:* The same reference period(s) should apply to personal characteristics (e.g. employment status) and income information (e.g. earnings) corresponding to it. In principle this implies the recording of status variables for each period within the year;
- *Requirement g:* There should be no missing information from individual records or for individuals within households. Where imputations have been necessary, detailed information about how they were done is necessary.

In general, most of these requirements are met for the data we want to use, as is shown in the next section, where we make a comparison with the current EUROMOD input database, notably EU-SILC.

2.3.2 To what extent does HFCS fulfil the requirements?

The HFCS is a new dataset covering detailed household wealth, gross income and some consumption information (HFCN, 2013a). It is the result of a joint effort of all National Banks of the euro area, three National Statistical Institutes[8] and the European Central Bank (ECB). The first wave was made available to researchers in April 2013 and contains information on more than 62,000 households in 15 euro area member states which were surveyed mostly in 2010 and 2011.[9] Ireland and Estonia are not included, but joined in the second wave (fieldwork period in 2014). Latvia, who joined the euro area on the 1st of January 2014, has also carried out the survey for the second wave.

The HFCS is a recent representative sample of households (see section 2.3.1: Requirement a). For most countries, the sample size is large enough although it might not be exploited to conduct analyses on small groups in some countries (it might be too small for Slovenia with 340 households; in the other countries the sample size of the first wave ranges from 843 households in Malta to 15,006 in France). Survey weights take into account the units probability of selection, coverage issues, unit non-response and an adjustment of weights to external data (calibration) (HFCN, 2013a). An interesting feature of the HFCS dataset is that in most countries the very wealthy are oversampled such that a better coverage of the top of the income and wealth distributions is obtained. This is necessary because there exist large sampling and non-sampling errors as a consequence of the strong skewness of the wealth distribution. In particular the wealthiest households are less likely to respond and more likely to underreport, especially in the case of financial assets (Davies et al., 2011). Hence, in contrast to the EU-SILC sampling design which focuses on the households at the bottom of the income distribution, the HFCS focuses on the top (HFCN, 2013a, pp. 98-99). Since taxes typically have a larger impact on the top of the distribution the implementation of the HFCS in EUROMOD should lead to more accurate outcomes on the distributional and budgetary effects of taxation. The HFCN (2013b, p. 21) indicates that this oversampling strategy in some countries may come at the expense of coverage at the bottom of the distribution, but it is not clear to what extent this is the case in practice. Consequently, the benefit side of the redistributive system may still be better covered by EU-SILC.

The income components that are covered in the HFCS are largely the same as those surveyed in EU-SILC (see section 2.3.1: Requirement b), be it that the HFCS data only covers gross income amounts which make them for instance unsuitable for the analysis of issues of inequality and redistribution. More specifically, the HFCS gross income concept includes the following components: employee income, self-employment income, rental income from real estate property, income from financial investments, income from pensions (public, occupational & private), regular social transfers, regular private transfers, income from private businesses and income from other sources (HFCN, 2013b, p. 108). The major differences with the income concept of EU-SILC are presented in Table 2.1. First, it is clear that in the category of employee income the HFCS only asks respondents about cash and near cash income, while EU-SILC also captures non-cash income. Secondly, pensions from mandatory employer-based schemes are included in public pensions in EU-SILC, while they are covered under private pensions in the HFCS (HFCN, 2013a, p. 100). Finally, income received by people under 16 is only covered in EU-SILC. In contrast, the HFCS covers income from other types of sources (such as capital

---

[8] Of France, Finland and Portugal
[9] Exceptions are France (2009/2010), Greece (2009) and Spain (2008/2009)

gains or losses from the sale of assets, prize winnings, insurance settlements, severance payments, lump sum payments upon retirement), while EU-SILC does not.

Table 2.1 Comparison of gross income components HFCS and EU-SILC

Category	HFCS	EU-SILC
Income from work	Cash & near cash employee income - - - Self-employment income	Cash & near cash employee income Non-cash employee income Self-employment income
Capital income	Rental income from real estate property Income from financial investments Income from private business other than self-employment	Rental income from real estate property Aggregate variable including interests, dividends and profit from capital investments in unincorporated business
Pension income	Aggregate variable of public pensions including old-age pensions, survivor pensions, disability pensions Occupational & private pensions	Old-age benefits Survivor benefits Disability benefits Private pensions
Social transfers	Unemployment benefits Aggregate variable of other social transfers including family/children related allowances, housing allowances, education allowances, minimum subsistence, other social benefits	Unemployment benefits Family/children related allowances Housing allowances Education-related allowances Sickness benefits Social exclusion not elsewhere classified
Private transfers	Regular private transfers	Regular private transfers
Other income	- - - Income from other sources	Income received by people under 16 - - -

Source: HFCN (2013) & Eurostat (2014)

Similar to EU-SILC, the HFCS data contain information about individual characteristics and within-household family relationships (see section 2.3.1: Requirement c). Also information on housing costs and other expenditures (see section 2.3.1: Requirement d) and specific other information that may affect tax liabilities or benefit entitlements (see section 2.3.1: Requirement e) are included in a similar way as is done in EU-SILC. The fieldwork periods of the first HFCS wave range between 2008 and 2010; the income reference period generally refers to the year prior to that of the time of the survey, while the reference for the balance sheet (which includes wealth information) and the personal characteristics correspond in general to the time of the interview (see section 2.3.1: Requirement f).

Another interesting feature of the HFCS data is the use of a multiple imputation technique to deal with selective item non-response (in the form of five different imputations) (see section 2.3.1: Requirement g). Hence, crucial income and wealth information does not need to be imputed by researchers in the process of building the database. This imputation is not standardly performed in EU-SILC, implying that the researcher has to make decisions. Moreover, five different imputations will clearly lead to more accurate outcomes than a single imputation. The number of covariates used for the imputation,

however, largely differs between countries as well as by income or asset type.[10] Moreover, the concrete variables that are used for these imputations are not documented. Therefore, the quality of imputations for individual countries may be hard to evaluate (Tiefensee & Grabka, 2014).

2.3.3 Enhancing the scope of policy analysis

The largest added value from using the HFCS data as an underlying database for EUROMOD is that it covers much more detailed information on wealth issues. This will allow the expansion of policy domains currently covered in EUROMOD with different types of wealth related policies: taxation of wealth and income from wealth, tax incentives for asset accumulation, asset means-testing in determining eligibility for social benefits, etc.

Table 2.2 provides an overview of the additional information available in the HFCS compared to EU-SILC regarding wealth; it also indicates a non-exhaustive list of extensions or refinements of the scope of policy analysis that potentially follows from including the HFCS data in EUROMOD. The scope of analysis is clearly considerably enlarged when using the HFCS database, with e.g. taxes on different types of property, reliefs in the personal income tax for mortgage repayments and contributions to private pension funds, the value of social security wealth, adding wealth to the means-tests for eligibility of social benefits. There are, however, cross-country differences: for instance, the Italian dataset provides no information on the number of cars, on gifts and inheritances and the value of social security plans, occupational and voluntary pension schemes. As it is based on register information also the Finnish dataset lacks much information on these issues. Nevertheless, it is clear from Table 2.2 that the policy scope can be extended or refined substantially.

---

[10] For example, the imputation of missing values of employee income is based on 224 covariates in Spain, while the Netherlands use only 5 variables (HFCN, 2013a, p.51).

Table 2.2 Comparison of available information in HFCS and EU-SILC

HFCS	EU-SILC	Extension policy scope
Main residence		Tax on property
Size in square meters	Number of rooms	
Property value at time of acquisition, way and year of acquiring property, percent of ownership	-	
Self-assessed current price value	-	
Mortgages, up to 3: amount borrowed and still due, year and length of the loan, current interest rate, monthly amount of payment (capital + interests).	Annual amount of interests paid on mortgage(s)	Refinement of tax reliefs for mortgage interest repayments
More than 3: aggregate amount still due and monthly amount payment		
Missing: number of months paying capital + interests in a year		
Other real estate properties		Tax on property
Up to 3: self-assessed current price value, property type, percent ownership	-	
More than 3: aggregate self-assessed current price value		
Mortgages, up to 3: amount borrowed and still owed, year and length of the loan, current interest rate, monthly amount of payment (capital + interests)	-	Tax reliefs for mortgage interest repayments
More than 3: aggregate amount still due and monthly amount payment		
Missing: number of months paying capital + interests in a year		
Cars		Tax on car property
Number and value of cars and other vehicles	-	
Self-employment business		
Self-assessed value of the business, number of employees, economic activity (NACE), legal form of the business	-	
Financial assets		Tax on financial assets
Value of sight accounts, saving accounts, investments in mutual funds, bonds, shares, managed accounts, other financial assets	-	
Social security and pension assets		
Value of social security plans, occupational and voluntary pension schemes	-	Social security wealth
Contributions to private pension schemes	-	Refinement of tax reliefs for contributions to private pension schemes
Net wealth		Tax on net wealth, Net wealth means-test for eligibility of benefits
All of the above	-	
Gift and inheritance		Tax on inheritance and gift
Gift and inheritance received, number, year, kind of assets, value, from whom received	-	
Income from real estate property	Income from rental of a property or land	Tax on rental income
Income from financial assets		Refinement of tax on income from financial assets
Income from deposits, mutual funds, bonds, non-self-employment private business, shares, managed accounts, other assets, voluntary pension/whole life insurance	Aggregate income from financial assets	

Source: HFCN (2013a & b)

2.4 Constructing an HFCS database for EUROMOD

The HFCS data potentially supply micro data on 15 euro area member states (first wave), but here 6 countries were chosen: Belgium, Germany, France, Finland, Italy and Spain. The selection of countries was made such that there is a good representation of different tax-benefit systems and wealth tax designs. They represent the EU member states with the most developed housing markets, thus presenting good cases for the analysis of housing wealth which is a major component of most households' wealth. In addition, the sample sizes of these countries are among the highest in the first wave of the HFCS. Moreover, the quality and reliability of the HFCS data is not clear yet for all countries. For Belgium an extensive validation of the HFCS data against external data sources such as EU-SILC and SHARE (Survey of Health, Ageing and Retirement in Europe) indicates that the HFCS is sufficiently reliable for the study of income and wealth in Belgium (Kuypers et al., 2015). The HFCS surveys of Spain, France, Finland and Italy were adapted from prior existing surveys so that the strengths and weaknesses of these data are also relatively well-known.[11] We make use of the UDB 1.1 data version of the HFCS (February 2015 release) on which we construct five new datasets where each of them contains information on one of the imputations. In what follows we highlight practical issues of sample size, reference period, imputation of missing information, the disaggregation of certain variables into more detailed information, etc.

Sample

To provide an overall picture of the quality and representativeness of the samples Table 2.3 presents an overview of the sample size and weights. As mentioned before, missing information on crucial variables is multiply imputed, so that in principle the full sample can be used for the construction of the EUROMOD input database. Following common EUROMOD conventions, children that were born after the end of the income reference period are deleted from the sample in the EUROMOD input database (difference between original and restricted number of individuals).[12]

Table 2.3 Descriptive statistics of sample and weights

Country	Database	Households	Original individuals	Restricted individuals	Mean weight
Belgium	EM-HFCS	2,327	5,506	5,488	1,961.1
	EM-SILC	6,132	14,754	14,700	727.1
Finland	EM-HFCS	10,989	27,009	27,009	195.2
	EM-SILC	10,989	27,009	27,009	195.2
France	EM-HFCS	15,006	35,729	35,375	1,742.4
	EM-SILC	11,044	26,531	26,387	2,295.8
Germany	EM-HFCS	3,565	8,134	8,117	9,966.8
	EM-SILC	13,079	27,978	27,906	2,888.7
Italy	EM-HFCS	7,951	19,836	19,736	3,032.6
	EM-SILC	19,147	47,551	47,420	1,265.8
Spain	EM-HFCS	6,197	15,850	15,772	2,868.3
	EM-SILC	13,014	35,970	35,858	1,253.7

Source: Own calculations based on HFCS and EU-SILC.

---

[11] Some other studies have looked at general aspects of data quality (e.g. Tiefensee & Grabka, 2014) or compared data sources for other countries (e.g. Westermeier & Grabka, 2015 comparing German HFCS with SOEP).
[12] In the HFCS we only know the age of the individual at the time of the interview, not the year in which they were born. We assume all individuals aged 0 years to be born after the income reference period.

Reference period

For Belgium, Finland, France and Germany, the HFCS questionnaire of the first wave asks individuals to declare incomes received in 2009, while the income reference period is 2010 for Italy and 2007 for Spain. However, all aspects relating to assets and debt holdings as well as demographic and economic characteristics refer either to the time of the interview or to the situation at the last day of the income reference period (Finland and Italy). We have to make the assumption that these aspects have not changed compared to the income reference period. We deem it reasonable to assume that the largest share of individuals has not experienced a change in their main demographic and economic characteristics, or that such a change has no large impact on the outcomes. For countries where the crisis has led to large price fluctuations in housing or stock markets in these years, this assumption may affect outcomes, but in general adjustments are not deemed necessary (Sierminska & Medgyesi, 2013). In sum, the practice is basically the same as the one used when deriving an EU-SILC based EUROMOD input database.

Adjustments of variables

With the exception of certain variables, EUROMOD input variables on labour market information, incomes, benefits, etc. need to be covered at the individual level. As in EU-SILC a number of these components are surveyed at the household level in the HFCS. In order to divide these between individuals we followed the same process that was developed for the EU-SILC based input database. The components for which this applies are rental income from real estate property; income from financial investments; income from regular social and private transfers; and income from other sources[13]. Important to note is that the EUROMOD variable 'INCOME: other' in the EU-SILC refers to income received by individuals younger than 16 years, while it refers to income received from other sources in the HFCS (see Table 2.1).

Disaggregation of social transfers

In the original HFCS dataset all incomes from regular social transfers (except pensions and unemployment benefits) are covered under one aggregated variable, while EUROMOD requires all types of benefits to be covered separately. This variable is surveyed at the household level, but can in principle include benefits received both at the individual (e.g. educational allowances) and the household level (e.g. housing allowances, family benefits, etc.). In light of this issue we have decided to include in the EUROMOD input database a variable set equal to the original HFCS aggregate benefits variable. Then, we simulate in EUROMOD those benefits that can be accurately simulated based on other available information (often child benefits and social assistance[14]), after which these simulated values are subtracted from the aggregate variable. The residual variable should then in theory comprise all other types of country-specific benefits. When the simulated benefits turn out to be larger than the observed amounts, we only use the simulated amounts and set the residual benefits variable to zero. This issue will also affect many income lists which are used throughout the simulations. Furthermore, the disaggregation of the overall HFCS public pension variable into EUROMOD input

---

[13] In practice this means that private and social transfers as well as other income are assigned to the household member whose age is closest to 45 years, while property and investment income are shared equally between the oldest household member and his/her partner. Hence, the assumption for the latter is that in the case of 3 generation households it is most likely that this kind of income is received by the oldest couple. This is in line with the life cycle model of wealth accumulation (Ando & Modigliani, 1963).

[14] Similarly to the EU-SILC based simulations, the amounts of social assistance are for some countries adjusted for non-take-up of benefits with a random non take-up correction.

variables for old age, survivors and disability was imputed based on age, marital status and disability status.

Also for Italy, the HFCS dataset does not provide detailed information about specific benefits in distinct variables: in particular family allowances and unemployment benefits are provided together with employment income. Following Ceriani et al. (2013) we have not disaggregated the family allowances and unemployment benefits in separate variables due to the complexity of the rules but this choice was also justified by the fact that the validation on SHIW data found no overestimation of employment income (Ceriani et al. 2013).

Imputation of mortgages

The HFCS dataset covers very detailed information on mortgages held for the main residence as well as other buildings, among others the monthly payment that is made. However, EUROMOD simulations generally require a separate specification of the part that is paid in interests and the capital part, for instance for the simulation of mortgage interests deductions. We use the following formula to split the mortgage repayment into an interest and a capital part:

$$interest\ part = repayment * [1 - (1 + i)^{(k-n-1)}] \qquad (2.1)$$

where i refers to the interest rate, n to the duration of the mortgage and k to the time of the mortgage period that already passed. Subtracting this interest part from the repayment amount gives the capital part. As wealth information in the HFCS refers to the time of the survey, we assume that mortgage payments are the same in the income reference year and the survey year. Mortgages that were taken or refinanced after the income reference period are not included. We also assume all households to have made a payment during 12 months. This could be a problem if the mortgage was taken or has expired in the income reference period. Finally, we have to use information on the yearly interest rate applicable at the moment of the survey. Given that the first wave of the HFCS data refers to a crisis period, mortgages with adjustable interest rates might have rather large differences.

Missing regional information

Unfortunately the HFCS UDB data do not include information on the region households live in. This mainly affects the simulation of the following policies in EUROMOD: regional surcharges to personal income taxes in Belgium and Italy, the 'Flemish Care Insurance Contribution' in Belgium ('tci_be'), the housing benefit in France ('bhot_fr') and various policies for Spain: regional income tax credits ('tintcrgit_es', 'tintcrgjt_es' & 'tinoptrg_es'), regional minimum income ('bsarg_es') and regional child benefits ('bchrg_es'). In the case of France and Spain the affected policies were switched off in EUROMOD, while for Italy we simulated the additional regional surcharge based on the national tax rate (i.e. 1.23 per cent) which is actually increased by the majority of regions likely resulting in an underestimation of the simulated total revenue. Finally, since Belgium consists of only three regions and regional information will become increasingly important in the future due to the sixth state reform of 2014, we decided to assign households randomly to three regions with respect to their overall population shares.

2.5 Simulating net incomes using the HFCS data

In this section we discuss the outcomes from the EUROMOD simulations based on the HFCS data, comparing the results with those obtained by the EU-SILC database for the same reference year. For the HFCS the reported figures refer to the mean over the five imputations. Interesting to note is that the socio-demographic structure of the two surveys is largely similar and also compares well to figures from external sources (Table A.1 in the Annex shows the comparison for Belgium, similar tables for the other countries can be found in Kuypers et al. (2017)).

We now turn to the validation of outcomes in terms of income of the HFCS-based EUROMOD simulations (further abbreviated as EM-HFCS) with those based on EU-SILC (EM-SILC). All figures below are computed for individuals based on their household disposable income equivalised by the OECD modified scale[15] and expressed in annual terms. Table 2.4 shows mean and median amounts of both original income (including pensions) and net disposable income; the difference between them reflects the inclusion of personal income taxes, social insurance contributions and cash benefits. Overall, median and mean incomes are very similar in the two surveys, although the results for France diverge slightly more. For Belgium, Germany and Spain the relative difference between median and mean income is considerably larger for EM-HFCS than for EM-SILC, which implies a more unequal distribution in EM-HFCS. This is true for both original and disposable income, although the difference tends to diminish in disposable income. The results for the Gini coefficient support these findings. In contrast, in France and Italy the gap between median and mean income is larger in EM-SILC than in EM-HFCS, but Gini's are still larger for EM-HFCS in the case of France. For Finland the results are very similar, which is not surprising as the two surveys are composed of the same sample of households.

Figure 2.1 Average disposable income by deciles according to EM-HFCS and EM-SILC, Belgium, 2009
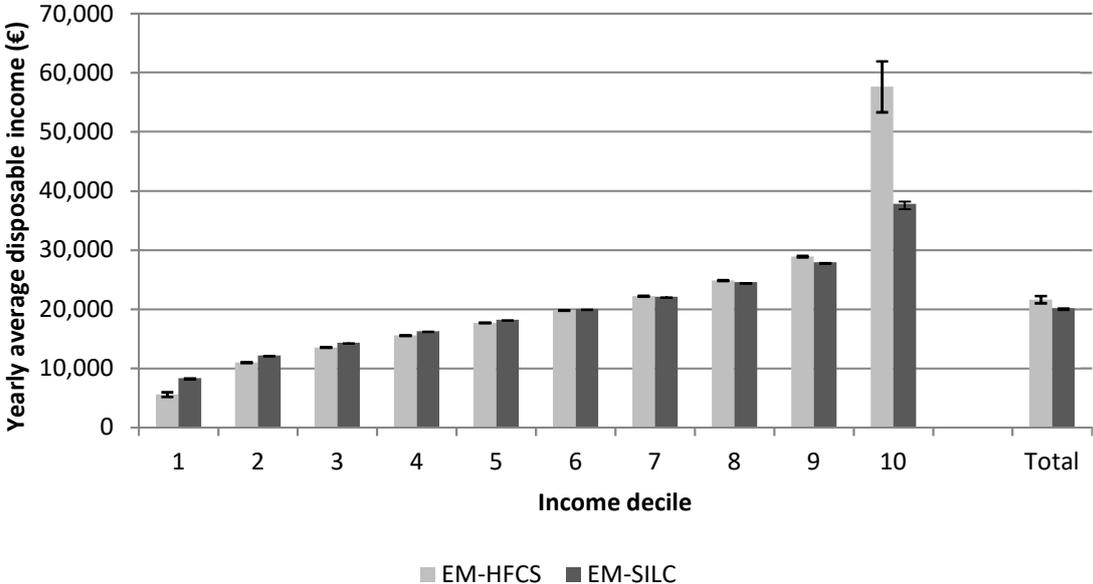
Notes: Decile groups based on disposable income equivalised using the modified OECD equivalence scale, all individuals considered. All figures are derived using sample weights.
Source: Own calculations based on HFCS-EUROMOD and SILC-EUROMOD simulations.

---

[15] The OECD equivalence scale is constructed by giving the first adult a weight of 1, any additional individuals aged 14 years or over 0.5, while individuals younger than 14 count for 0.3. As a sensitivity check we have also calculated outcomes with non-equivalised amounts, and the conclusions are broadly the same.

Table 2.4 Comparison of main EUROMOD income concepts between HFCS and EU-SILC

	Belgium			Finland			France		
	EM-HFCS	EM-SILC	EM-HFCS/ EM-SILC (%)	EM-HFCS	EM-SILC	EM-HFCS/ EM-SILC (%)	EM-HFCS	EM-SILC	EM-HFCS/ EM-SILC (%)
Original & pension income									
Median	21,891	22,638	96.7%	24,696	24,677	100.0%	16,928	22,108	76.6%
Mean	28,987	25,247	114.8%	28,043	27,901	100.5%	19,830	26,299	75.4%
Gini	0.48	0.38	126.3%	0.36	0.35	102.9%	0.48	0.38	126.3%
Disposable income									
Median	18,847	19,067	98.8%	20,566	20,755	99.1%	16,358	19,731	82.9%
Mean	21,636	20,177	107.2%	22,541	22,701	99.3%	18,449	23,032	80.1%
Gini	0.32	0.23	139.1%	0.25	0.24	104.2%	0.34	0.30	113.3%

	Germany			Italy			Spain		
	EM-HFCS	EM-SILC	EM-HFCS/ EM-SILC (%)	EM-HFCS	EM-SILC	EM-HFCS/ EM-SILC (%)	EM-HFCS	EM-SILC	EM-HFCS/ EM-SILC (%)
Original & pension income									
Median	21,520	22,417	96.0%	16,853	17,632	95.6%	13,259	14,109	94.0%
Mean	27,483	26,659	103.1%	19,981	21,286	93.9%	16,877	16,416	102.8%
Gini	0.42	0.37	113.5%	0.37	0.39	94.9%	0.40	0.35	114.3%
Disposable income									
Median	17,940	18,081	99.2%	13,235	14,899	88.8%	12,543	12,980	96.6%
Mean	21,724	20,528	105.8%	15,269	16,906	90.3%	15,347	14,340	107.0%
Gini	0.30	0.27	111.1%	0.33	0.33	100.0%	0.36	0.29	124.1%

Notes: Original and disposable income are annual amounts equivalised using the modified OECD equivalence scale, all individuals considered. All figures are derived using sample weights.

Source: Own calculations based on HFCS-EUROMOD and SILC-EUROMOD simulations.

The large difference in Belgian Gini coefficients based on EU-SILC and HFCS suggests that it is not sufficient to look at median incomes (HFCN, 2013a, p. 100) to provide a reliable comparison between surveys. Therefore, Figure 2.1 shows average disposable incomes according to EM-HFCS and EM-SILC over income deciles for Belgium (see also Annex: Table A.2). It is clear that the difference in inequality is mainly driven by divergence at the top and the bottom of the income distribution. While the average equivalised disposable income in the 10th decile is equal to €57,618 based on the HFCS, it is only €37,832 for EU-SILC. The difference in average disposable income in the bottom decile is approximately 33 per cent higher in EU-SILC than in the HFCS. Kuypers et al. (2015) show that despite their methodological similarities, distributional differences between HFCS and EU-SILC already exist at the gross income level. Moreover, differences are mainly found with regard to taxes and social insurance contributions, which are typically based on the income level, while outcomes for the benefits received are much more similar as eligibility is often based on non-monetary aspects such as the presence of children in order to qualify for child benefits. Hence, we attribute the difference in outcomes between the two surveys mainly to the HFCS oversampling strategy. Bover (2008) and Kennickell (2008) argue that on top of its correction for nonresponse, oversampling of the wealthy also provides more precise estimates of wealth in general and of narrowly held assets as standard errors are much smaller. Since oversampling in the Belgian HFCS data is based on average income by neighbourhood of residence (HFCN, 2013a), it results in more accurate estimates of the top of the income distribution as well as of income sources that are typically received by a select group. Since what happens at the top of the distribution largely drives inequality trends (see Alvaredo et al., 2013; Piketty, 2014), we expect the HFCS to capture the level of inequality more closely to reality than EU-SILC. Vermeulen (2014), however, shows that despite the oversampling strategy wealth shares of the top 5% and 1% are still underestimated. It is not clear whether this is also the case for the income distribution. A comparison of HFCS and EU-SILC with official tax statistics (see Annex: Table A.3) suggests that EU-SILC underestimates the number of tax units and mean net taxable income at the top of the income distribution, while the HFCS appears to overestimate it.

2.6 Conclusion

Converting the HFCS data into an input database for EUROMOD creates many research opportunities. Our exercise for six European countries indicates that it is feasible to use the HFCS database as EUROMOD input data, despite the fact that some of the outcomes need further investigation. Indeed, our results show that a comparison of results between EU-SILC and the HFCS cannot be based just on medians alone. It is important to look at the full distribution, as our outcomes show that there are some discrepancies at the bottom and especially at the top of the distribution. These discrepancies lead to important differences in the level of inequality in Belgium, which is assumed to be the consequence of the HFCS oversampling strategy. The oversampling of wealthy households might result in more accurate estimates of income and wealth at the top, although other potential reasons for the discrepancies should be investigated in more depth. These outcomes also provide an indication of the complementarity of both HFCS and EU-SILC; while EU-SILC is probably more suitable for research questions relating to the bottom of the income distribution, HFCS is probably more accurate for research focusing on the top. Nevertheless, a better understanding of the reasons of the discrepancies is something to be considered a priority for future research developments.

Annex

Table A.1 Comparison of socio-demographic characteristics population, Belgium

	EM-HFCS	EM-SILC	External source [*]
Age			
<16	17.7	18.2	18.1
16-29	17.5	17.5	17.4
30-44	21.3	21.0	20.5
45-64	26.4	27.0	26.9
>64	17.2	16.2	17.1
Gender			
Female	51.0	50.8	50.9
Male	49.0	49.2	49.1
Highest education achieved (**)			
Not completed primary	*12.8*	*18.2*	15.9
Primary	11.5	12.8	13.2
Lower secondary	*16.0*	*18.0*	19.1
Upper secondary	*30.9*	*25.1*	22.0
Post-secondary		*1.8*	2.4
Tertiary	*28.8*	*24.1*	19.5
Labour market status			
Pre-school	*5.9*	*7.3*	7.0
Employer or self-employed	3.7	4.1	5.8
Employee	36.3	35.7	36.9
Family worker	0.1	0.2	0.7
Pensioner	*21.0*	*18.6*	18.3
Unemployed	*6.5*	*5.1*	3.6
Student	*19.8*	*18.1*	17.6
Inactive	*0.0*	*1.4*	
Sick or disabled	2.4	3.0	10.1
Other	*4.2*	*6.5*	
Marital status			
Single	46.6	44.7	45.6
Married	40.8	40.5	40.2
Separated	N.A.	0.3	N.A.
Divorced	*6.6*	*8.8*	7.8
Widowed	6.0	5.8	6.4
Tenure status			
Outright owner	*37.4*	*30.2*	69.1
Owner paying mortgage	*36.2*	*41.6*	
Tenant at market rate	*24.7*	*19.5*	29.9
Tenant at reduced rate		*7.3*	
Free user	1.7	1.4	1.0

Notes: Statistically significant differences (at 5% level) are shown in italics; (*) Education and economic status of individuals aged below 15 imputed based on age; (**) Highest education achieved in external data unknown for 7.9%. All figures are derived using sample weights.

Source: Own calculations based on HFCS-EUROMOD and SILC-EUROMOD simulations. External: CENSUS 2011 (Eurostat, 2016).

Table A.2 Comparison between EM-HFCS and EM-SILC of means of different components by decile of equivalised disposable income, Belgium, 2009

Decile	Disposable income	Original income	Benefits	Taxes	Social insurance contributions
EUROMOD 2009 based on HFCS					
1	5,559	1,526	4,217	-19	203
2	10,971	5,009	6,606	127	516
3	13,526	7,982	7,117	657	916
4	15,540	11,741	6,911	1,609	1,503
5	17,693	15,297	7,245	2,894	1,954
6	19,796	19,579	6,870	4,001	2,652
7	22,192	25,034	6,287	5,816	3,312
8	24,850	30,455	6,189	7,678	4,115
9	28,904	38,049	6,984	10,944	5,186
10	57,618	95,212	8,249	36,142	9,732
Total	21,636	24,936	6,665	6,961	3,004
EUROMOD 2009 based on EU-SILC					
1	8,317	2,301	6,338	-26	350
2	12,184	5,452	7,845	334	747
3	14,326	7,631	8,783	1,045	1,062
4	16,288	12,069	7,810	1,915	1,691
5	18,197	16,363	6,979	3,001	2,156
6	20,031	21,106	5,993	4,200	2,688
7	22,103	25,567	5,418	5,494	3,342
8	24,578	30,544	5,428	7,290	4,128
9	27,950	37,008	5,938	10,056	4,934
10	37,832	57,036	6,884	19,046	7,051
Total	20,177	21,500	6,741	5,233	2,832

Notes: Annual income components equivalised using the modified OECD equivalence scale. All figures are derived using sample weights.
Source: Own calculations based on HFCS-EUROMOD and SILC-EUROMOD simulations.

Table A.3 Comparison between tax statistics, EM-HFCS and EM-SILC of tax units and net taxable income, Belgium, 2009

Decile/Percentile	Tax statistics	EM-HFCS	EM-SILC
	Number of tax units		
1	615,957.6	469,729	203,622
2	615,957.6	550,059	523,956
3	615,957.6	400,565	543,328
4	615,957.6	535,845	544,909
5	615,957.6	634,379	594,512
6	615,957.6	460,388	556,651
7	615,957.6	412,273	563,227
8	615,957.6	499,893	624,264
9	615,957.6	647,452	683,741
10	615,957.6	711,359	552,271
91	61,595.76	80,323	65,886
92	61,595.76	81,886	65,088
93	61,595.76	85,370	66,475
94	61,595.76	63,196	52,019
95	61,595.76	59,804	47,393
96	61,595.76	36,264	54,328
97	61,595.76	60,376	64,060
98	61,595.76	45,649	55,509
99	61,595.76	64,820	46,654
100	61,595.76	133,671	34,859
Total	6,159,576	5,078,337	5,286,509
	Mean net taxable income		
1	1,428	484	929
2	8,632	8,633	8,944
3	12,587	12,653	12,581
4	15,427	15,465	15,466
5	18,845	18,715	18,758
6	22,639	22,740	22,691
7	27,133	27,159	27,223
8	33,982	34,265	33,962
9	45,685	46,101	45,676
10	87,118	111,794	79,162
91	55,864	55,965	55,806
92	58,508	58,459	58,570
93	61,493	61,349	61,358
94	64,904	64,836	64,810
95	68,920	68,704	68,807
96	73,909	73,258	73,970
97	80,480	80,321	80,271
98	90,005	89,502	89,312
99	107,397	107,016	107,013
100	209,700	286,309	183,816
Maximum	/	2,348,883	727,625
Total	27,339	35,175	29,412

Source: Directorate-General Statistics, Department Economics of the Belgian Federal Government (2015) and own calculations based on HFCS-EUROMOD and SILC-EUROMOD simulations.

Chapter 3. Simulating wealth-related policies in EUROMOD[16]

3.1 Introduction

The largest added value from using the HFCS data as an underlying database for EUROMOD is that it covers much more detailed information on assets and liabilities. This allows to expand the policy domains currently covered in EUROMOD, which mainly consist of personal income taxes and cash social transfers. Different types of wealth related policies are added: taxes on wealth and wealth transfers, tax incentives for asset accumulation, asset means-testing in determining eligibility for social benefits, etc. In particular, this extension requires the inclusion of new variables in the underlying input data and the coding of wealth tax laws in the EUROMOD interface. The extension is then thoroughly validated at both the micro and macro level.

This chapter is structured as follows. Section 3.2 provides a brief overview of the different types of wealth-related policies that currently exist in the six European countries under study. Given the constraints of the original HFCS data it is then determined which of these policies can be refined or added to the simulations in EUROMOD. Section 3.3 discusses an example of coding wealth tax laws in EUROMOD, while the addition of new variables to the input data is explained in section 3.4. The validation of the extension is subject of section 3.5 and the last section concludes.

3.2 Overview of wealth related policies in six countries

Table 3.1 presents an overview of the existing policies (in the HFCS reference year) in the six selected countries for which the simulations require some type of wealth information. All countries tax the possession and transfer of real estate as well as inheritances and gifts. A yearly net wealth tax only exists in Spain (abolished in 2008 and reintroduced in 2011 with a general exemption of €700,000) and France (only applicable when you have a net wealth of more than €770,000 in 2009 and €1,300,000 since 2013). Belgium taxes long-term savings at the moment citizens turn 60 years old. Furthermore, all six countries tax income from financial assets and rental income, either as part of the personal income tax or in a separate capital income tax, and they also all have tax deductions for mortgage interests and contributions to private pension funds in place. Finally, several countries appear to include a wealth test in their means-test of certain social benefits. This is the case for the Income guarantee for the elderly in Belgium ('bsaoa_be'), the Pensioner's housing allowance in Finland ('bhope_fi'), the Unemployment benefit 2, Social assistance (normal & for elderly) and Education benefit in Germany ('bunnc_de', 'bsa00_de', 'bsaoa_de', 'bed_de') and the 'Complementary benefit to non-contributory pensions due to housing rent' in Spain ('poanc_es') (there are also wealth tests for some regional Spanish benefits, but these cannot be simulated based on the HFCS data).

Table 3.1 Overview of existing wealth-related policies and their coverage in EUROMOD in the 6 selected countries, HFCS reference period

Tax/policy	Belgium Exist.	Belgium Cov. EM	Finland Exist.	Finland Cov. EM	France Exist.	France Cov. EM	Germany Exist.	Germany Cov. EM	Italy Exist.	Italy Cov. EM	Spain Exist.	Spain Cov. EM
Inheritance tax/provision	Y	A	Y	N	Y	A	Y	A	Y	N	Y	A
Gift tax/provision	Y	A	Y	N	Y	A	Y	A	Y	N	Y	A
Real estate tax/provision	Y	R	Y	A	Y	A	Y	A	Y	S/R	Y	A
Real estate transfer tax/provision	Y	A	Y	N	Y	A	Y	A	Y	A	Y	A
General net wealth tax/provision	N		N		Y	A	N		N		Y	A
Specific net wealth tax	Y (*)	A	N		N		N		N		N	
Taxation of income from financial assets	Y	R	Y	R	Y	R	Y	S	Y	S	Y	R
Taxation of rental income	Y	R	Y	S	Y	R	Y	S	Y	S	Y	R
Tax deduction for mortgage repayment	Y	R	Y	S	Y	R	Y	R	Y	S	Y	R
Tax deduction for contributions to private pension funds	Y	R	Y	S	Y	S	Y	N	Y	S	Y	R
Wealth test for social benefits	Y (**)	S	Y (***)	R	N		Y (****)	R	(N)		Y (*****)	R (N)

Notes: S=already simulated in EUROMOD and no refinements necessary, A=simulation added to EUROMOD, R=simulation refined, N=not simulated;
(*) Taxation of long-term savings, (**) Income guarantee for the elderly, (***) Pensioner's housing allowance, (****) Unemployment benefit 2, Social assistance (normal & for elderly) and Education benefit, (*****) Wealth test for 'Complementary benefit to non-contributory pensions due to housing rent' is refined, wealth test of regional benefits cannot be simulated;
Ernst & Young (2014) make a distinction between a tax and a provision in another non-wealth tax, such as the income tax. We do not make this distinction.
Source: Ernst & Young (2014)

For each country the second column of Table 3.1 states whether the policies that exist were are already simulated in EUROMOD (S), whether we have refined the existing simulation (R), added a new policy (A) or could not simulate it (N). Overall, most taxes and policies that exists are either already correctly simulated, are refined or added in EUROMOD. In Belgium and Italy property taxes were already simulated in EUROMOD, but only for main residences, with the HFCS data we can also include other real estate properties. Policies that cannot be simulated include the inheritance and gift tax in Italy and Finland, also the real estate transfer tax in Finland and the tax deduction for contributions to private pension funds in Germany. This is due to the fact that information on these topics is either not present in the HFCS for this country or is insufficiently detailed for the simulations in EUROMOD. In the case of Spain only the wealth test for 'Complementary benefit to non-contributory pensions due to housing rent' is refined. There are also several regional benefits which have a wealth test, but due to the lack of regional information in HFCS this is not included. The national specific names of each of the newly simulated wealth taxes are described in Table 3.2.

Table 3.2 National specific names of simulated wealth taxes

Country	Tax	National name
Belgium	Inheritance & gift tax	Successie- en schenkingsrechten / Droits de succession et donation
	Real estate tax	Onroerende voorheffing / Précompte immobilier
	Real estate transfer tax	Registratie- en hypotheekrechten / Droits d'enregistrement et d'hypotheque
	Specific net wealth tax	Taks op het langetermijnsparen / Taxe sur l'épargne à long terme
Finland	Real estate tax	Kiinteistöverolaki
France	Inheritance & gift tax	Droits de mutation à titre gratuity par décès ou entre vifs
	Real estate tax	Taxe foncière sur les propriétés bâties et non-bâties
	Real estate transfer tax	Droits de vente d'immeubles
	General net wealth tax	Impôt de solidarité sur la fortune
Germany	Inheritance & gift tax	Erbschaft- und schenkungsteuer
	Real estate tax	Grundsteuer
	Real estate transfer tax	Grunderwerbsteuer
Italy	Real estate tax	Imposta Municipale Unica
	Real estate transfer tax	Imposta di registro, ipotecaria e catastale
Spain	Inheritance & gift tax	Impuesto sobre sucesiones y donaciones
	Real estate tax	Impuesto sobre bienes inmuebles
	Real estate transfer tax	Impuesto sobre transmisiones patrimoniales
	General net wealth tax	Impuesto sobre el patrimonio

3.3 Coding wealth-related policies in EUROMOD

One of the steps for the extension of the scope of simulation is to code the laws regarding wealth-related policies in the EUROMOD interface. New wealth policies were coded in EUROMOD in as much detail as is possible given some of the data constraints. Deductions, credits, exemptions and reduced rates are applied when the relevant information is available directly from the HFCS or can be sensibly imputed based on other HFCS variables. In several cases we have to assume that requirements for preferential taxation are fulfilled. For instance, inheritance and gift taxes often treat business assets in

a preferential way under the condition that the business is continued after transfer for a certain number of years. Similarly, the main residence is often not taxed or taxed at a lower rate when transferred to spouse or children if it has been the main residence of the deceased already for a certain number of years. Since we cannot check for the past or future with the HFCS data we assume that these conditions are fulfilled.

Figure 3.1 shows the example of coding of the real estate property transfer tax in EUROMOD. The example applies to Spain, but this policy is similarly coded for the other countries (other policies often require very different coding across countries). When a real estate is bought in the HFCS reference year (2007) a tax of 8 per cent is levied (7 per cent on the transfer and 1 per cent on the document that registers the transfer). The condition whether or not a real estate was bought in this specific year is checked separately for the variable covering the household main residence (amryp: assets – main residence – year of purchase) and other real estate, for which the HFCS includes detailed information for up to 3 different real estate (aobyp01 – aobyp03: assets – other buildings – year of purchase). When this condition is fulfilled the tax rate is applied to the variable covering the purchase value (pv) of the real estate (amrpv & aobpv01 – aobpv03). As this variable also contains the value of real estate received through inheritance or gift (on which the inheritance or gift tax is applicable instead of the real estate transfer tax) the conditions also disregard those (amrwa: assets – main residence – way of acquiring). The amount of the tax that is due is then stored in the variable tprtf_s: tax – property – transfer – simulated.

Figure 3.1 Coding of real property transfer tax in EUROMOD

1	● tprtf_es		on	**TAX: Real property transfer**
1.1	ƒx DefConst		on	
1.1.1	$tprtf_rate		0.08	7% + 1%
1.1.2	$policy_year		2007	
1.2	ƒx BenCalc		on	
1.2.1	Comp_Cond	1	{amryp=$policy_year} & ({amrwa=1} | {amrwa=2})	Main residence (excluding those received through inheritance or gift)
1.2.2	Comp_perTU	1	amrpv * $tprtf_rate	
1.2.3	Comp_Cond	2	{aobyp01=$policy_year} & ({aobwa01=1} | {aobwa01=2})	Other real estate 1 (excluding those received through inheritance or gift)
1.2.4	Comp_perTU	2	aobpv01 * $tprtf_rate	
1.2.5	Comp_Cond	3	{aobyp02=$policy_year} & ({aobwa02=1} | {aobwa02=2})	Other real estate 2 (excluding those received through inheritance or gift)
1.2.6	Comp_perTU	3	aobpv02 * $tprtf_rate	
1.2.7	Comp_Cond	4	{aobyp03=$policy_year} & ({aobwa03=1} | {aobwa03=2})	Other real estate 3 (excluding those received through inheritance or gift)
1.2.8	Comp_perTU	4	aobpv03 * $tprtf_rate	
1.2.9	Output_Var		tprtf_s	
1.2.10	TAX_UNIT		tu_tinfajt	

Source: Kuypers et al. (2017)

With regard to the refinements of already simulated policies we for example take into account different tax rates applicable to different types of financial income (i.e. interests, dividends, ...) by imputing these separate amounts using the stock variables available in the HFCS. Furthermore, we added to the simulation of personal income taxes the deduction for contributions to private pension funds in Belgium and Spain and the deduction for dividends in France and Spain. In other cases the refinements consisted of adding an additional eligibility criteria for which cannot be checked with the EU-SILC data. An example here is the tax credit for mortgage repayment in France. The tax credit is generally 20 per cent, but increases to 40 per cent in the first year of the mortgage. While this was originally granted randomly to all households with a head younger or equal to 45 years, in the EM-HFCS we have information on the year of mortgage to verify this requirement (see Figure 3.2). Also those welfare benefits for which an asset-test is applied were refined with more detailed information on net wealth. A detailed description of the coding in EUROMOD of all of the refined and new policies can be found in Kuypers et al. (2017).

Figure 3.2 Refinement of coding of French tax credit for mortgage repayment in EUROMOD

Policy	Gr...	FR_2009	FR_2009_HFCS_Extended	Comment
● tintcot_fr		on	on	**TAX: Tax credits other than PPE**
ƒx DefConst		n/a	on	
$policy_year	1	n/a	2009	
ƒx BenCalc		on	on	Tax credit on child care expenses
ƒx BenCalc		n/a	on	Tax credit on mortgage expenses
Comp_Cond	1	n/a	{IsHeadOfTu} & !{IsMarried} & {ddi=0}	Limit if single
Comp_perTU	1	n/a	3750#y	
Comp_Cond	2	n/a	{IsHeadOfTu} & {IsMarried} & {ddi=0}	Limit if couple
Comp_perTU	2	n/a	7500#y	
Comp_Cond	3	n/a	{IsHeadOfTu} & !{IsMarried} & {ddi=1}	Limit doubles if either of the two partners is disabled (here we only check for disability for the household head)
Comp_perTU	3	n/a	7500#y	
Comp_Cond	4	n/a	{IsHeadOfTu} & {IsMarried} & {ddi=1}	
Comp_perTU	4	n/a	15000#y	
Comp_Cond	5	n/a	{nDepChildrenInTu>0}	Limit increases with €500 per dependent child
Comp_perTU	5	n/a	500#y * nDepChildrenInTu	
Output_Var		n/a	sin10_s	
TAX_UNIT		n/a	tu_fiscalunit_fr	
ƒx BenCalc		on	on	
comp_cond	1	{IsHead} & {dag<=45}	{amryp>=$policy_year - 5} & !{amryp = $policy_year}	Credit of 20% of interests if main residence bought in the previous 5 years
comp_perTU	1	0.4*xhcmomi	0.2*xhcmomi	
Comp_Cond	2	n/a	{amryp=$policy_year - 1}	Additional 20% if it is the first year after
Comp_perTU	2	n/a	0.2*xhcmomi	
UpLim		n/a	sin10_s	
output_var		tintcmi_s	tintcmi_s	
TAX_UNIT		tu_fiscalunit_fr	tu_fiscalunit_fr	
ƒx BenCalc		on	on	Tax credit on educational expenses of children
ƒx ArithOp		on	on	Tax liability after non-refundable tax credits (& before PPE)

Source: Kuypers et al. (2017)

The lack of regional information in the HFCS mentioned in the previous chapter is also a problem for the new coded policies. As discussed above, we used a random assignment of households to the three regions for Belgium; we also apply this strategy to the new wealth related policies. In particular, it concerns the taxes on real estate transfers and gifts and inheritances. For France and Germany regional differences exist in the tax rates of the recurrent property taxes in both countries and also the real estate transfer tax in Germany. But since general tax rules are determined at the federal level and the differences in tax rates are relatively small, at least in the HFCS reference year, we coded in EUROMOD average tax rates. In the case of Spain the original regional policies were switched off in EUROMOD. Wealth taxes are typically also a competence of the local government. For the simulation of the recurrent real estate tax and real estate transfer tax we used an average tax rate. The simulation of the inheritance and gift tax is based on the legislation of Cataluña, which appears to be a more or less representative region both in terms of the tax system as in terms of the population share it represents. Also, differences in the legislation of the net wealth tax were still reasonably small in 2007, such that we coded the national legislation in EUROMOD. In other words, for each separate policy we applied a strategy which appeared to be most appropriate. The Italian and Finnish wealth policies do not require regional information.

3.4 Additions to the EUROMOD input database

In many cases the simulations require the inclusion of new information in the input database. Therefore, we have created a list of new EUROMOD input variables using the traditional EUROMOD acronyms system. An overview of these variables is provided in the annex of Kuypers et al. (2017). Some assumptions regarding the variables on inheritances and gifts are particularly noteworthy. First, we have to assume that the amounts reported in the HFCS are gross. From the design of the survey it is not clear whether net or gross amounts are reported by respondents, but because this type of tax is typically levied a few months after the transfer is actually received it is argued that respondents remember and report the gross amount. Moreover, the HFCS covers all information on inheritances and gifts at the household level. This implies that the data do not include transfers made between members of the same household, like for instance between spouses. Also, if several members of the same household receive an inheritance/gift from the same donor they are considered jointly. Since in practice these should be taxed separately it is possible that we will overestimate the tax burden in the EUROMOD simulations. For the practical creation of the input variables the first inheritance/gift received in the policy year is assigned to the household head, if more than one is received in the policy year these are assigned to other members of the household.

The French and Spanish net wealth taxes require information on net wealth during the policy year, while HFCS reports it at the moment of interview. In order to approximate net wealth at the time the tax would have been applicable we subtract from net wealth observed at the time of interview all real estate, inheritances and gifts purchased/received throughout the policy and survey year and financial income as an approximation of the growth of financial assets throughout the relevant year.

Furthermore, all six countries tax the ownership of real estate property, which is generally levied on some definition of taxable values (sometimes also called cadastral values). Unfortunately, the HFCS data do not include these values. In order to solve this issue we have considered several strategies.

Since cadastral values depend largely on the characteristics of the real estate, we first considered to apply a regression. However, the HFCS does not cover sufficient information on building characteristics. Since the HFCS does cover current market values consistently for both main residences and other real estate we decided to estimate taxable values by multiplying households' current market value of a property as reported in the HFCS with a factor that captures the difference between cadastral and market values.

$$imputed\ taxable\ base_i^{HH} = current\ market\ value_i^{HH} * \frac{total\ taxable\ base\ _i^{ext.stat.}}{\sum_{HH} total\ current\ market\ value_i} \qquad (3.1)$$

Yet, there are also several issues with determining which fraction to use. First, in many countries taxable values are largely outdated because they are infrequently revaluated. Hence, although there is hardly any link anymore between market and taxable values this is the only approach we can use. As we will show in the next section the outcomes from the simulations based on our estimated taxable values are relatively good, but it is important to keep this limitation in mind. Second, to be able to estimate the ratio that is applied to the HFCS reported market values we made use of information on the total taxable base from external administrative resources. Here, there is a problem of mismatch; while the HFCS covers only real estate owned by private households, administrative resources generally do not provide separate figures such that cadastral values of business and government owned real estate is often also included. For Belgium and Germany we have used slightly different methods. In the case of Belgium we calculated the multiplying factor by the ratio between average cadastral income of the main residence in EM-SILC and the average market value of main residence in EM-HFCS. For Germany a ratio between cadastral and market values was estimated by a country expert based on a matched dataset of HFCS and EU-SILC (Paetzold & Tiefenbacher, 2018). The resulting imputation factors are presented in Table 3.3.

Table 3.3 Imputation factors for taxable values recurrent real property taxes

Belgium	0.0033
Finland	0.70
France	0.02
Germany	0.08
Italy	0.003
Spain	0.23

Source: Own calculations based on HFCS and national administrative data

3.5 Validation

Our simulation results were extensively validated on both their internal and external consistency. With regard to the latter Table 3.4 presents a comparison of the outcomes regarding tax revenues for our newly simulated wealth tax policies with external figures from the OECD Tax Revenue Database (2016) and national documents. It is, however, important to note that the external statistics are not always available at a detailed level, such that they may not be fully comparable to our simulation outcomes. For instance, in EUROMOD we simulate the transfer tax on real property owned by private households, while the external figures in most countries also comprise taxes paid on the transfer of financial property and there is no distinction made between taxes paid by households versus other agents. Furthermore, for the inheritance and gift tax our simulated revenues are lower than official statistics mainly because the HFCS does not observe inheritances and gifts made between members of the same household, while especially those between spouses represent an important share of the total amount of transfers. Spain is an exception here with higher simulated tax revenues, but this is most likely due to the fact that in the simulations the Catalan legislation is applied to all individuals, while several other regions grant large, if not total, exemptions for certain categories of inheritances/gifts. However, given these comparability restrictions our results are fairly consistent with administrative figures. Only the simulations of the net wealth taxes in France and Spain appear to considerably overestimate the actual revenues. For Spain this can again be the consequence of the fact that we apply the same legislation to all individuals, while important exemptions are granted in some regions. In case of the recurrent real estate tax the largest differences are found for Finland and Germany. For Finland this will mostly be due to the approximation we used to estimate taxable values, while the fact that we cannot apply municipal, or even regional, differences in tax rates is likely the explanation for Germany.

Figure 3.1 to Figure 3.5 show the distribution of wealth taxes among those paying the respective tax across quintiles of pre-tax gross wealth (calculated on the full population). In general, we find that among those paying a particular wealth tax, the wealthy tend to pay a higher amount than those who are less well off. In general, the real estate transfer tax is the most proportionally distributed, while the net wealth taxes in France and Spain are the most concentrated at the highest pre-tax gross wealth quintiles.

Table 3.4 Macro validation: tax revenues new implemented wealth tax policies, HFCS reference year

Country	Policy	Millions of Euro		EM-HFCS/External
		EM-HFCS	External source (*)	source (%)
	Real estate tax	2,691	2,981	90.3%
	Real estate transfer tax	1,898	2,440 (**)	77.8%
Belgium	Registration duties on mortgage creation	198	248	79.8%
	Inheritance tax	1,142	1,782	64.1%
	Gift tax	118	270	43.7%
	Tax on long-term saving	163	185	88.1%
Finland	Real estate tax	656	462	142.0%
	Real estate tax	15,590	13,647	114.2%
France	Real estate transfer tax	6,300	7,188 (**)	87.6%
	Inheritance & gift tax	5,303	7,357	72.1%
	Net wealth tax	5,900	3,580	164.8%
	Real estate tax	5,864	4,374	134.1%
Germany	Real estate transfer tax	3,728	4,857 (**)	76.8%
	Inheritance & gift tax	1,356	4,550	29.8%
Italy	Real estate tax	5,758	9,663 (***)	59.5%
	Real estate transfer tax	742	N.A.	N.A.
	Real estate tax	8,310	7,317	113.6%
Spain	Real estate transfer tax	6,268	9,026 (**)	69.4%
	Inheritance & gift tax	2,987	2,931	101.9%
	Net wealth tax	3,842	2,057	186.8%

Notes: (*) National documents and OECD Tax Revenue Database (2016); (**) no distinction available between tax duties on real and financial transactions and between transactions by private households and others; (***) includes the tax paid by firms on commercial properties and lands.
Source: Own calculations based on EM-HFCS.

Figure 3.1 Mean of wealth taxes by pre-tax gross wealth quintiles – Belgium

Note: Only those eligible for the tax (i.e. a positive tax base) are included. Unweighted number of distinct observations (depending on the type of tax either individuals or households): real estate tax: 1,733, real estate transfer tax: 36, registration duty mortgage creation: 20, inheritance tax: 48, gift tax: 33, tax on long-term saving: 67.
Source: Own calculations based on EM-HFCS.

Figure 3.2 Mean of wealth taxes by pre-tax gross wealth quintiles – France

Note: Only those eligible for the tax are included. Unweighted number of observations: real estate tax: 10,482, real estate transfer tax: 484, inheritance & gift tax: 240, Net wealth tax: 2,158.
Source: Own calculations based on EM-HFCS.

Figure 3.3 Mean of wealth taxes by pre-tax gross wealth quintiles – Germany

Note: Only those eligible for the tax are included. Unweighted number of observations: real estate tax: 2,159, real estate transfer tax: 58, inheritance & gift tax: 97.
Source: Own calculations based on EM-HFCS.

Figure 3.4 Mean of wealth taxes by pre-tax gross wealth quintiles – Spain

Note: Only those eligible for the tax are included. Unweighted number of observations: real estate tax: 5,280, real estate transfer tax: 139, inheritance & gift tax: 112, Net wealth tax: 9,445.
Source: Own calculations based on EM-HFCS.

Figure 3.5 Mean of wealth taxes by pre-tax gross wealth quintiles – Finland & Italy
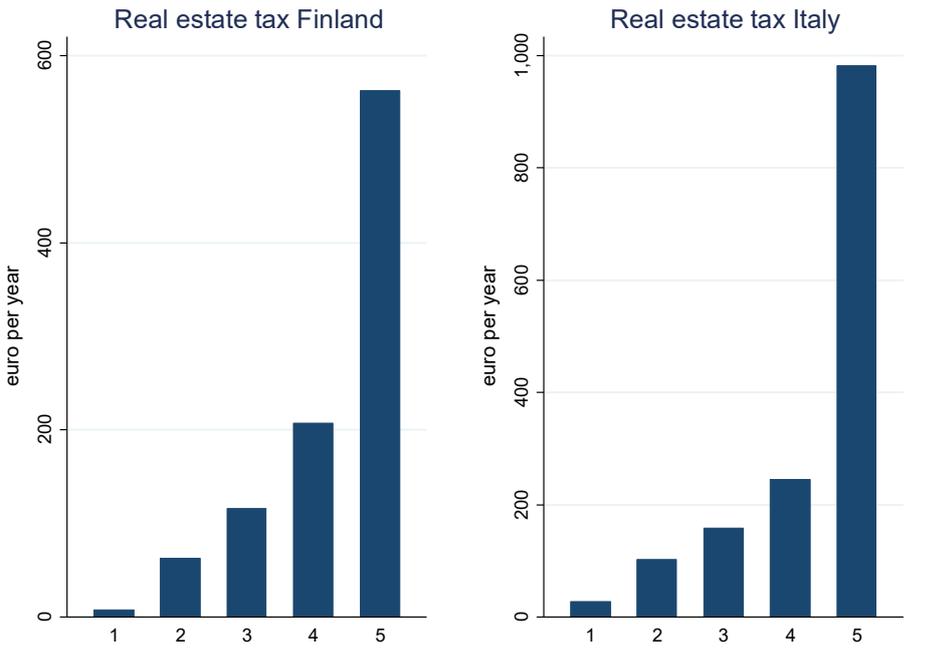
Notes: Only those eligible for the tax are included. Unweighted number of observations: real estate tax Finland: 8,626, real estate tax Italy: 1,884.
Source: Own calculations based on EM-HFCS.

3.6 Conclusion

The traditional simulation scope of EUROMOD mainly covers personal income taxes, social insurance contributions and cash social transfers. By including the HFCS as the underlying database it is possible to extend its scope. All countries included in this dissertation have several wealth taxes and wealth-related policies in place. In particular, we focused on the taxation of wealth, wealth transfers and capital income, tax incentives for asset accumulation and asset means-testing in determining eligibility for social benefits. In general, the HFCS provides sufficient information to be able to simulate these policies in EUROMOD, although in some cases it was necessary to make some assumptions. Validation of our results indicates that the simulation of wealth policies is substantially consistent with external statistics.

PART 3. THE ANALYSIS OF POVERTY, INEQUALITY AND REDISTRIBUTION IN TERMS OF INCOME AND WEALTH

Chapter 4. Estimation of joint income-wealth poverty: A sensitivity analysis[17]

4.1 Introduction

Researchers and policy makers in the rich world mostly worry about income poverty. However, the wider financial resources on which people can draw are also important in assessing financial precariousness. Households that can smooth consumption by relying on savings and assets, loans or the financial help of others are clearly better off than households who do not have these opportunities. Yet, apart from the direct income flows they may generate, traditional poverty measures often disregard the role of such assets (Azpitarte, 2011; Brandolini et al., 2010). In contrast, financial liabilities may make households more economically vulnerable than their incomes suggest. Moreover, evidence also shows that wealth and income have an independent impact on subjective well-being (Headey & Wooden, 2004) and on satisfaction of life (D'Ambrosio et al., 2009). Recent high-level reports also argue in favour of a joint income-wealth perspective on living standards (OECD, 2013b; Stiglitz et al., 2009).

If one agrees on the fact that wealth should be included in poverty measurement, the question arises: how should we do it? The literature has proposed two approaches. A first approach integrates the two financial resources into one single dimension by converting wealth into yearly annuities (Brandolini et al., 2010; Short & Ruggles, 2005; Van den Bosch, 1998; Weisbrod & Hansen, 1968), while a second approach applies a two-dimensional framework by developing separate poverty lines for income and wealth (Azpitarte, 2012; Haveman & Wolff, 2004; Headey, 2008; Kim & Kim, 2013). The general findings of these approaches are (1) that poverty estimates including wealth are much lower than the traditional income-based measures; (2) that poverty rates of the elderly are much more affected than those of the non-elderly and (3) that the decline in poverty rates is much higher when the value of the household's main residence is included than when only non-housing wealth is taken into account (Azpitarte, 2012; Brandolini et al., 2010; Caner & Wolff, 2004; Headey, 2008; Van den Bosch, 1998). However, we may want to be careful about generalising these findings of a limited number of studies. Indeed, "we need to better understand the properties of these alternative indicators and assess their sensitivity to different assumptions" (Brandolini et al., 2010, p.281).

The purpose of this chapter is exactly this. We investigate several issues related to the measurement of joint income-wealth poverty. We discuss in detail the two approaches adopted in the literature and empirically review the robustness of poverty outcomes to various measurement assumptions, such as the use of different poverty lines, wealth concepts, equivalence scales, etc. Moreover, we also highlight the sensitivity of the results from the angle of age. This after all is the socio-demographic characteristic which is thought to be the most sensitive to the way we include wealth information. We use income and wealth data from the Eurosystem Household Finance and Consumption Survey (HFCS) for Belgium and Germany. These countries are known for having very similar living standards and income poverty rates, but appear to have very different levels and distributions of wealth, and which are differently

---

correlated with income. We show that the two most important conclusions drawn in the literature largely depend on specific measurement choices. First, studies generally find that poverty estimates including wealth are much lower than the traditional income-based measures. We show that this strongly depends on the way one calculates the poverty line. Poverty rates may increase as well as decrease after wealth is accounted for, substantially altering cross-country rankings. Second, as one would expect, the inclusion of wealth has a great effect on the observed poverty incidence among young versus older households, yet any conclusion on the ratio between elderly and non-elderly poverty is again highly sensitive to the assumptions that are made.

The chapter proceeds as follows. The second part discusses the literature on joint income-wealth poverty and its relationship to the traditional poverty literature. More specifically, we highlight several reasons why it is important to include wealth in the measurement of poverty and how in practice this is implemented by the two approaches. The data and methods are briefly described in the third part and the fourth part presents the baseline results for Belgium and Germany. In the following part we address the choices that researchers need to make in the operationalisation of the joint income-wealth poverty index and we perform sensitivity analyses for several of these measurement issues. In particular, we consider the robustness of our outcomes to variations in the following aspects: the poverty line, wealth concept, equivalence scale and the interest rate. The last part concludes.

4.2 Measuring poverty

4.2.1 Why include wealth in poverty measurement?

"Although poverty reduction is a universal goal among both nations and international organizations, there is no commonly accepted way of identifying who is poor." (Haveman & Wolff, 2004, p.146). However, the concept of poverty usually refers to a situation of economic hardship, when the financial resources over which people have command are insufficient to guarantee a minimally acceptable standard of living. A definition of poverty requires an identification of 'financial resources' and a method to determine the minimally acceptable living standard. In a developed context, the first is typically expressed in terms of yearly or monthly disposable income, while the latter is more contested. In the EU the most important poverty indicator is the At-Risk-of-Poverty (AROP) measure, which sets the poverty threshold at 60 per cent of national median equivalised disposable household income. This income concept covers income from labour, pensions and social transfers as well as financial income such as interests, dividends, etc.

Hence, apart from the direct income flow they generate, the role of assets is absent (Azpitarte, 2011; Brandolini et al., 2010). Since there are also assets that generate little or no income flow this approach is not satisfying. Moreover, evidence shows that estimates of capital income and self-employment income (which often also includes some type of capital income) are typically underestimated in household surveys (Davies et al., 2011; Mattonetti, 2013; Wagner & Grabka, 1999 as cited by Milanovic, 2006). The most evident example of an asset that is currently not represented in poverty measures is housing. A solution to this problem has been suggested by adding to income the concept of 'imputed rent', which is the estimated value of housing services provided by owner-occupied dwellings less the value of costs incurred to maintain the property (Canberra Group, 2011). However, this addition is not sufficient because savings and assets contribute to living standards above and beyond the direct income flows they generate. They assure economic and financial security because

they can be used to face unexpected financial setbacks. Moreover, assets provide their owners with a form of economic power by enabling them to make purchases to move up or maintain class status (Cowell & Van Kerm, 2015; Nam et al., 2008a). In other words, assets contribute to living standards not only by generating income flows but also because they can be converted directly into cash or can be used as collateral (Azpitarte, 2012). In contrast, the presence of large financial liabilities might also be incorporated in poverty measurement because it may make households much more vulnerable than their mere incomes suggest. Furthermore, because income is by nature rather volatile, evidence shows a large turnover in income poverty (Azpitarte, 2012), while assets and liabilities are much more stable. For these and other reasons several authors have argued in favour of including information on wealth in poverty measurement because it better reflects *all* the financial resources available to households (e.g. Azpitarte, 2012; Brandolini et al., 2010; OECD, 2013b; Stiglitz et al., 2009).

Many authors would take these critiques as arguments for using consumption information. Indeed, as it reflects the difference between income and the change in net worth it might be sufficient to look at this single dimension instead of trying to integrate two resources. The large drawback of this approach, however, is that it only looks at *actual consumption* patterns. Particularly in the case of wealth, households may want to decide not to use all available resources for consumption. Imagine two households with the same low income and median wealth; it is not because the first household decides to use their wealth to support consumption and the second household does not that the latter is necessarily worse off. In the words of Sen (1985, 1997), we should look at all available resources to be able to identify the capability set of households. Combining information on income and wealth allows to determine all *consumption possibilities* (Stiglitz et al., 2009, p.115)*.*

4.2.2 How include wealth in poverty measurement?

In a developed context there exist two main approaches to take account of the contribution of assets to households' living standards. The first one summarises the wealth and income dimensions into a unidimensional poverty index. Since wealth is a stock and income a flow the annuity method proposed by Weisbrod & Hansen (1968) is often used in order to make assets "commensurable" (p.1315). The method is adopted by among others Brandolini et al. (2010), Short & Ruggles (2005), Van den Bosch (1998) and Zagorsky (2005). The second approach follows a two-dimensional approach by developing separate poverty lines for income and wealth. The most notable contributions in this stream are Azpitarte (2011, 2012), Haveman & Wolff (2004) and Headey (2008). We discuss both approaches below in more detail, with a graphical illustration provided in Figure 4.1.

First, the unidimensional approach defines poverty by the sum of income and wealth. In general it is considered too extreme to expect households to use all their wealth to keep living standards at an adequate level. Therefore, the method of Weisbrod & Hansen (1968) to annuitise wealth is used. Wealth is converted into a flow of resources, so as to end up with an augmented income concept (Azpitarte, 2011; Brandolini et al., 2010). "Income and wealth are perfectly fungible, and one unit of wealth can be straightforwardly substituted for one unit of income" (Brandolini et al., 2010, p.269). This seems intuitive because most assets are the result of an accumulation of income and can be

converted back into income (Kim & Kim, 2013).[18] The annuitisation is specified using the following formula:

$$AY_t = Y_t + \left[\frac{\rho}{1 - (1 + \rho)^{-n}} \right] NW_{t-1}$$

(4.1)

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

(Brandolini et al., 2010, p.270)

Where AY_t refers to annuitised income, Y_t equals income received in year t, NW_{t-1} is net worth held at the beginning of the period and ρ and n are the interest rate and length of the annuity respectively. The latter is expressed in terms of life expectancies, where T_1 refers to time to death of the person who dies first, T time to death of the survivor and b is the reduction in the equivalence scale coefficient which results from the death of the first person (for a detailed derivation of this formula see Brandolini et al., 2010, pp.269-271 & 273).[19] Income (Y_t) should be interpreted as net of the yield from net worth because this yield would be lost if net worth is depleted (Weisbrod & Hansen, 1968, p.1317). In other words, Y_t only covers income received from labour, pensions and social transfers and not financial income. A nuance that should be added to this, however, is that annuities exist as distinct financial products. As this flow originates from assets that are no longer in possession of the household it should also be added to the income variable.

The main critique on this first approach is that it aggregates all available information so that it does not allow studying differences in income and wealth positions (Azpitarte, 2012). Second, it is argued that the single income-net worth approach obliges researchers to impose several assumptions, mainly regarding the values of the length and interest rate of the annuity. "We might be reluctant to impose so much structure on the measurement, especially when we take into account the profound implications that such a measure has for the age structure of poverty." (Brandolini et al., 2010, p.271). Finally, Weisbrod & Hansen (1968) stress that they developed an approach that is operationally feasible, but may not reflect how households handle their assets in practice. Indeed, they do not imply "[…] either that people generally *do* purchase annuities with any or all of their net worth, that they necessarily *should* do so, or that they *can* do so" (pp.1316-1317).

The second approach specifies poverty thresholds for each dimension separately. In this regard income poverty retains its traditional interpretation, while asset poverty[20] is seen as the situation where asset holdings are insufficient to maintain the household at a minimally acceptable living standard when income from labour or social transfers is not available (Brandolini et al., 2010; Haveman & Wolff, 2004).

---

[18] It should be clear that not all asset types can be easily sold or bought on the market. In the case of non-liquid assets like real estate it is certain that an immediate sale would mean incurring substantial costs.

[19] The specification of n in function of expected lifetimes of both partners is proposed by Rendall & Speare (1993). Although Brandolini et al. (2010) discuss this broader specification, they do not implement it. As most authors they use the longest of the two expected lifetimes. We prefer to use the Rendall & Speare specification because it represents the improved economic situation of the surviving household as the same level of wealth is then available to fulfill the needs of fewer household members. Ideally, one should take into account the wealth loss due to inheritance taxes.

[20] Authors tend to refer to wealth poverty when implementing the unidimensional approach, while the term asset poverty is mostly used for the two-dimensional approach. As both approaches use net worth in their calculations, this reflects only a difference in terminology.

In other words, wealth adds a sort of sustainability aspect to the definition of poverty (Törmälehto et al., 2013). Caner & Wolff (2004, p.496) and Haveman & Wolff (2004, p.149) use the following operational definition: "a household or a person is considered to be asset poor if their access to wealth-type resources is insufficient to enable them to meet their basic needs for some limited period of time". More specifically, they set the asset poverty threshold as a fraction (ζ) of the official income poverty line (Z_t), which can be formalised as follows:

$$Asset\ poverty: NW_{t-1} < \zeta Z_t$$
$$Income\ poverty: Y_t < Z - r_t NW_{t-1} \tag{4.2}$$

(Brandolini et al., 2010, p.271)

This approach enables one to identify three types of poverty groups, and hence provides an answer to the first critique to the annuity approach. First, there are households which are poor in both dimensions. Second, there is a group of households that fall under the income poverty line, but can rely on substantial amounts of assets. Finally, households may have an income above the income poverty threshold, but are asset poor because they own little or no assets to fall back on (Azpitarte, 2012). Headey (2008) also applies this approach to the measurement of poverty in Australia but takes into account a third dimension, namely consumption. The reason is mainly that it reflects borrowing opportunities. However, for reasons explained in section 4.2.1 and because borrowing opportunities are correlated with income and wealth (e.g. Azpitarte, 2012; Sullivan, 2008) (i.e. they tend to be unavailable to those with both low income and low wealth), it is sufficient to jointly look at income and wealth poverty.

Figure 4.1 Illustration of poverty lines

    (a) Unidimensional poverty index   **(b) Two-dimensional poverty index**
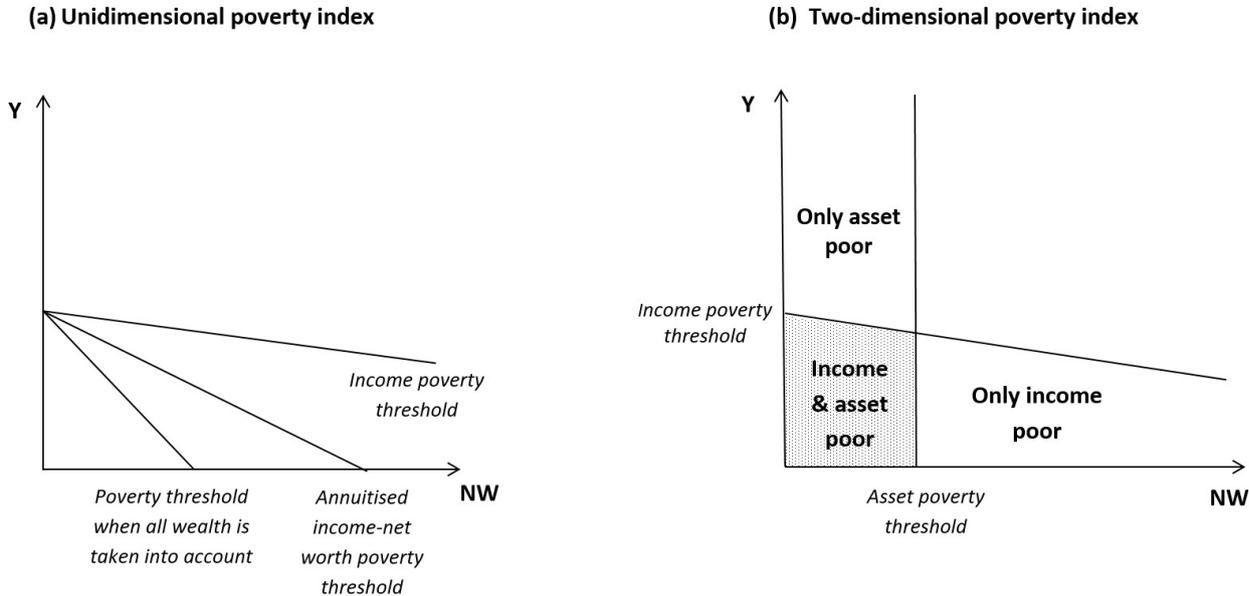
Source: Brandolini et al. (2010, p. 270 & 272)

4.3 Data & methods

We use data from the first wave of the Eurosystem Household Finance and Consumption Survey (HFCS) UDB version 1.1. In Belgium 2,327 households were surveyed in 2010, while the German HFCS covers information on 3,565 households and surveys took place in 2010 and 2011. For both countries incomes refer to 2009, while the value of assets and liabilities refers to the time of the interview.

4.3.1 Belgium and Germany as case studies

This chapter builds on Belgium and Germany as case studies. These neighbouring countries belong to the most advanced economies in Europe and their social security systems are both largely founded on Bismarckian principles. Both countries rely on pay-as-you-go pension systems. What makes the two countries particularly interesting is that while median living standards and overall poverty rates are nearly identical, their levels and distributions of private household wealth differ completely.

As can be seen in Table 4.1, median equivalised incomes are almost the same and the traditional at-risk-of-poverty rate is at a similar level in both countries. However, Table 4.1 also shows that median wealth accumulations are much higher in Belgium than in Germany. This difference is mainly the consequence of a significant discrepancy in the homeownership rate. About 70 per cent of Belgian households own their house, but although many countries have similar homeownership rates today, Belgium has been a 'nation of homeowners' for a long time already (De Decker, 2011). This is the consequence of a century of an "asset-based approach to welfare" (De Decker & Dewilde, 2010) in which homeownership was highly encouraged through various policy mechanisms. In contrast, Germany has at 44 per cent the lowest homeownership rate in the Euro Area, which "[…] can be explained by historical (WW2), taxation and institutional reasons" (HFCN, 2013b, p.29). Moreover, the correlation between the income and wealth distributions is weaker in Belgium than in Germany (Arrondel et al., 2014b; Skopek et al., 2012). In particular, Belgium has a relatively large share of households with low incomes but substantial wealth holdings, which are mainly represented among the elderly population (Arrondel et al., 2014b; Van den Bosch, 1998; *see also Chapter 1*). As a result of the combination of higher wealth levels and a weaker correlation with income, we expect that the inclusion of wealth in poverty measurement will have a larger impact in Belgium than in Germany.

Table 4.1 Comparison of social indicators Belgium and Germany

	Belgium	Germany
Median equivalised disposable income (*)	€19,313	€18,586
At-risk-of-poverty rate (*)	14.6%	15.5%
Median net wealth	€206,000	€51,000
Homeownership rate	69.6%	44.2%

Note: (*) Data from 2009, in line with the HFCS income reference period.
Source: Eurostat, HFCN (2013a)

4.3.2 Methods

With regard to wealth we use the HFCS 'net worth' concept (see first column of Table 4.3 for an overview of its components), which does not include asset types such as human and social capital or the valuation of pension and social security wealth. For income we use the disposable incomes derived

from the original HFCS gross incomes using EUROMOD (see Kuypers et al., 2016 *(Chapter 2)*).[21] For the traditional income poverty we use the EU At-risk-of-poverty line (AROP), which is defined as 60 per cent of national median equivalised disposable income. The income variable that is implemented in the two-dimensional approach refers to disposable income, while the income variable in the unidimensional approach covers only income from employment, self-employment, public and private pensions and social and private transfers. As annuity products are uncommon in Europe, these types of assets are not surveyed in the HFCS.

Formulas (4.1) and (4.2) require income in year t and net worth at the beginning of that year. Since the HFCS combines information on income during the last twelve months/calendar year and net worth at time of survey, there could be some resources that are represented in both income and net worth. This type of 'double counting' exists with regard to income that is received during year t which is not consumed but instead saved or invested.[22] The problem is that it is not clear which part of wealth at the end of the year originated from income received throughout the year. We propose to exclude from wealth an amount equal to the income from financial investments, such as dividends, interests and rental income from property. This appears to be a good proxy because evidence shows that people are more likely to save from irregular income sources such as financial income than from regular wages and salaries (Shefrin & Thaler, 1992; Thaler, 1990 as cited by Beverly et al., 2008). Indeed, since financial income is rather insecure it is often not accounted for in household budgeting, which makes it easier to set aside. Moreover, it will be easier to save or invest financial income because it already originates from the financial sphere and the costs of reinvestment are smaller.

In order to calculate the annuity in the unidimensional approach we use life expectancies by age and gender which are provided by the Directorate-General Statistics, Department Economics of the Belgian Federal Government (2014) and the Statistisches Bundesambt (2012). Since age is top coded at 85 years in the HFCS we restrict our analysis to households where both partners are maximum 84 years old.[23]

4.4 Baseline results

We start our empirical discussion by looking at poverty headcounts for Belgium and Germany when implementing the standard assumptions of the literature, our so-called 'baseline indicators'. The unidimensional approach to joint income-wealth poverty is in most studies operationalised by setting the interest rate (ρ) equal to 2 per cent and the poverty line is set equal to the official income poverty line (e.g. Brandolini et al., 2010; Van den Bosch, 1998; Weisbrod & Hansen, 1968). The parameters of the two-dimensional approach are in existing studies determined as follows: the income poverty line retains its traditional interpretation and the asset poverty line is set at ¼ of the income poverty line (e.g. Azpitarte, 2012; Haveman & Wolff, 2004). Based on these choices the general findings of the literature are first that the estimates are much lower than for the traditional income-based measures. This is not surprising as they tend to keep the traditional poverty line constant while including

---

[21] A Eurostat study (2013) proposes another method to jointly assess poverty in disposable income and net wealth. By statistically matching the EU-SILC and HFCS data they largely find the same results.

[22] Also saved income from the ongoing year can be represented in the net worth measure. As we have no information on current incomes we cannot correct for this.

[23] We cannot assign life expectancies if we do not have information on the exact age. As a consequence for both countries about 80 sample households were not included in the analysis.

considerably more financial resources to the measure that is evaluated against this poverty line. Second, as a consequence of the life cycle model of wealth accumulation poverty rates of the elderly are much more affected than those of the non-elderly. Finally, since housing wealth represents the largest share of a household's asset portfolio the decline in poverty rates is much higher when the value of the household's residence is included than when non-housing wealth is only taken into account (e.g. Azpitarte, 2012; Brandolini et al., 2010; Caner & Wolff, 2004).

The results of the baseline indicators for our two countries are shown in Table 4.2. In line with previous studies we find lower poverty rates when wealth is incorporated in the measurement of poverty compared to the traditional income poverty headcount, but the impact differs largely between countries. The unidimensional approach suggests a decrease of the number of poor households with 5.7 percentage points for Belgium and with 2.2 percentage points for Germany. Outcomes for the two-dimensional approach indicate that about 6.2 per cent of Belgian households are both income and asset poor, while almost 11 per cent have an income below the poverty threshold but own substantial amounts of wealth, which is about two-thirds of all income-poor households. Interestingly, 5.6 per cent of households are not considered poor according to the traditional income poverty line, but they have little or no assets to fall back on, which makes them very vulnerable to an income loss. Among German households the three groups represent about the same share. Less than half of all income poor households are found to have sufficient wealth holdings. These outcomes confirm our expectations; because wealth levels are lower in Germany and more correlated with income, the inclusion of wealth information has a much weaker impact in Germany than in Belgium.

Table 4.2 also provides results separately for the elderly and non-elderly.[24] It is clear that the inclusion of wealth has a much larger impact on the number of poor elderly than non-elderly, which also corresponds to evidence from other studies. Again, the effect is larger among the Belgian elderly than among the German elderly.

Table 4.2 Baseline poverty rates

Poverty measure	All		Elderly (65-84)		Non-elderly (-64)	
	Belgium	Germany	Belgium	Germany	Belgium	Germany
Income poverty[25]	17.1	18.5	14.2	16.6	18.1	19.2
Unidimensional	11.4	16.3	3.5	11.9	14.1	18.0
Two-dimensional						
Income & asset poor	6.2	9.7	1.4	5.7	7.9	11.3
Only income poor	10.9	8.7	12.8	10.9	10.2	7.9
Only asset poor	5.6	11.1	4.2	6.0	6.1	13.0

Note: Unidimensional poverty is calculated using unadapted poverty line (i.e. traditional income poverty line) (see part 5.1).
Source: Own calculations based on HFCS.

---

[24] Elderly is defined as at least one of the adults being 65 years or older, the legal retirement age in Belgium and Germany.

[25] The results based on the HFCS are slightly higher than the official income poverty rates reported by Eurostat (See Table 4.1). This is the consequence of the combination of a slightly higher median income in the HFCS than in other surveys and lower disposable incomes at the bottom of the distribution (Kuypers et al., 2016 *(Chapter 2)*). Moreover, in contrast to the general evidence on income poverty (OECD, 2008; Eurostat), the traditional income poverty measure based on the HFCS suggest a smaller incidence among elderly than among non-elderly.

4.5 Sensitivity analysis

The next step is to assess the robustness of these results to various measurement issues. In section 4.5.1 we consider how to determine the poverty line when taking a joint income-wealth perspective on poverty. Several other issues related to the measurement of joint income-wealth poverty are discussed in section 4.5.2, such as the wealth concept that is adopted, the impact of equivalence scales and differing interest rates. The last section focuses on the age structure of poverty.
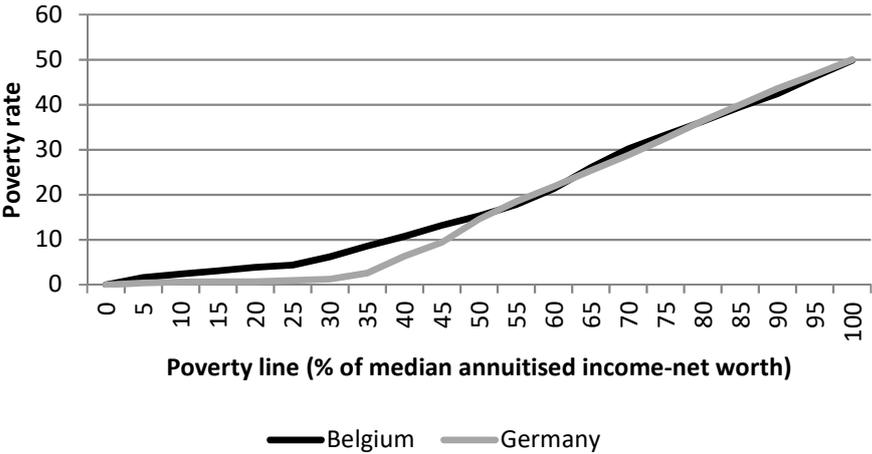
4.5.1 Poverty line

The most important choice when operationalising any poverty measure is where to draw the poverty line. In case of the unidimensional approach it reflects whether or not to adapt the single poverty line to the inclusion of wealth information. Prior studies often only change the sources which are taken into account to assess living standards and evaluates it against the classic income poverty line (this is also what we have done in the baseline indicator in Table 4.2). This is compatible with the view that the current income poverty line reflects the true resources needed by households to sustain an acceptable living standard. As shown above, this choice results in lower poverty estimates which are believed to be closer to the true level of poverty (see e.g. Brandolini et al., 2010; Van den Bosch, 1998; Weisbrod & Hansen, 1968).

A competing view argues that the income poverty line was initially set to represent a 'standard' level of resources, whereby different poverty lines are determined for example for homeowners and tenants. If wealth is accounted for as a financial resource, then the poverty line should be adjusted upwards in order to reflect the fact that it implies a higher level of consumption possibilities (Lerman & Mikesell, 1988, p.360). The poverty line would then be set as a percentage of 'median equivalised income + annuitised net worth'. As Brandolini et al. (2010, p.275) argue this is "more consistent with a fully relative approach". Figure 4.2 shows the poverty rate for different percentages of median equivalised income-net worth. In contrast to the baseline results in Table 4.1, the poverty headcount is considerable lower in Germany than in Belgium up until a poverty line at 45 per cent of median annuitised income-net worth, while poverty lines at higher percentages result in very similar poverty rates in the two countries. For instance, if we would set it at 60 per cent such as in the AROP then the share of poor households would be equal to 21.3 per cent in Belgium and 21.8 per cent in Germany.

Hence, the conclusion of the literature that poverty rates decline when wealth is taken into account largely depends on the assumption that the poverty line is not adapted to the broader resources concept. The poverty headcount can both increase as decrease and this may have a substantial impact on cross-country rankings. The remainder of the sensitivity analyses will all use the 60 per cent of median equivalised income-net worth (hence, the baseline indicator is the one from Table 4.1 but with an adapted poverty line).

**Figure 4.2 Effect of a relative poverty line on poverty rates**

Source: Own calculations based on HFCS.

In the two-dimensional approach to income-wealth poverty a similar issue arises. In this approach the asset poverty line is typically defined in function of the income poverty threshold. It would also be possible to define the asset threshold in function of another approximation of a minimally acceptable living standard, for example the household budget standard. Moreover, one could just as well think of some absolute asset poverty threshold, such as the asset poverty line of $200 000 implemented by Headey (2008). Sherraden (1991) argues that in terms of political reality an absolute perspective on asset poverty is more valid than a relative one. Finally, Bucks (2011) uses a subjective measure of 'assets/savings adequacy' by evaluating the assets available to households to their desired level of precautionary savings, i.e. the amount of savings households themselves consider to be sufficient to cover unanticipated expenses.

When deciding to set the asset poverty line as a fraction of the income poverty threshold, a second choice involves at which fraction it should be set. In other words, what is the time period households are supposed to sustain themselves at the official poverty line without income from work or other sources. In existing studies the asset poverty threshold is generally set at one-fourth, which means that households need to have sufficient wealth to keep them at the income poverty line for at least three months. The rationale provided for this is that unemployment is regarded as the most important cause of economic hardship, for which the expected duration in the United States, prior to the financial crisis, was between two and four months (Caner & Wolff, 2004; Haveman & Wolff, 2004; McKernan et al., 2012). However, expected unemployment duration is typically longer in Europe than in the US (OECD, 2014, p.96) and also longer as a consequence of the crisis. Therefore, we assess the sensitivity of the poverty rate for periods between 1 month and a year, which is shown in Figure 4.3.

Figure 4.3 Effect of number of months of asset poverty line on poverty rates
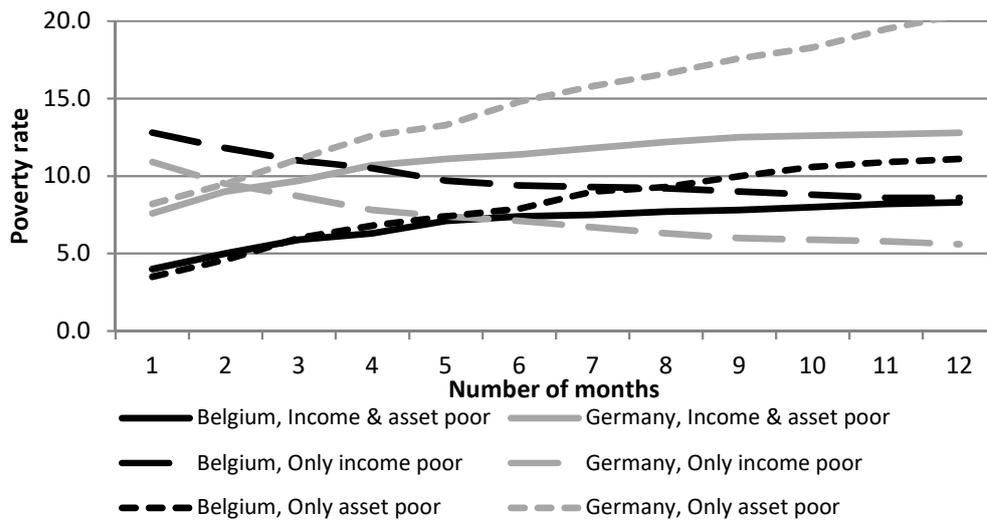
Source: Own calculations based on HFCS.

As expected, the longer households are supposed to sustain themselves at the official income poverty line the larger the share of the categories of income & asset poor and only asset poor and the lower the share of those who are only income poor. For example, if households need to be able to sustain themselves at the income poverty threshold for six instead of three months solely drawing on their wealth the number of income & asset poor increases by about 1.5 percentage points in both countries, which reflects a shift from the group who is only income poor. At the same time the share of households which are only asset poor increases with around 2 and 3.5 percentage points in Belgium and Germany respectively. This means that a non-negligible share of households have enough wealth accumulations to sustain themselves for three months at the income poverty line, but not for six months. Furthermore, the cross point where the share of only asset poor households becomes higher than the share of the only income poor is already at an asset poverty line of 2 months in the case of Germany, while it is found only at 8 months for Belgium. In other words, of those households with an income above the traditional poverty line, Germans have significantly lower wealth accumulations than Belgians.

4.5.2 Other measurement issues

Another methodological issue that applies to both approaches refers to which wealth concept, or 'wealth-type resources' in the definition of Haveman & Wolff (2004), is studied. More specifically, whether to include real estate, and in particular the main residence, in the calculation of poverty is often debated. On the one hand it does not seem reasonable to expect households to sell their homes to overcome periods of low income and in practice they also rarely tend to do so. "Even if a family sells their home, most would need to use the proceeds to lease or buy a replacement home" (Aratani & Chau, 2010, p.5). On the other hand homeowners are clearly better off than tenants. "Owner-occupied housing […] provides services to the owner and frees up resources that would otherwise be spent on rent" (Caner & Wolff, 2004, p.493).

Furthermore, the unidimensional approach assumes that "income and wealth are perfectly fungible, and that one unit of wealth can be straightforwardly substituted for one unit of income" (Brandolini et al., 2010, p.269). However, this is only the case for liquid assets. For non-liquid assets it is very likely

that a certain cost is associated with its conversion to cash income. Therefore, most authors calculate poverty figures for several wealth concepts. We use three different wealth concepts: net worth, non-housing wealth and liquid assets.[26] The HFCS asset components that are covered by these concepts are shown in Table 4.3. Net worth refers to the difference between total assets and total liabilities, non-housing wealth disregards any wealth or debt related to the main residence, while the liquid assets concept only takes into account assets that can be easily bought or sold without incurring substantial costs.

Table 4.3 Asset components covered by the three wealth concepts

Net worth	Non-housing wealth	Liquid assets
+ Household main residence	+ Other real estate property	+ Deposits
+ Other real estate property	+ Vehicles (cars & other)	+ Mutual funds
+ Vehicles (cars & other)	+ Valuables	+ Bonds
+ Valuables	+ Self-employment business wealth	+ Publicly traded shares
+ Self-employment business wealth	+ Deposits	+ Non-self-employment business wealth
+ Deposits	+ Mutual funds	+ Managed accounts
+ Mutual funds	+ Bonds	
+ Bonds	+ Publicly traded shares	
+ Publicly traded shares	+ Non-self-employment business wealth	
+ Non-self-employment business wealth	+ Managed accounts	
+ Managed accounts	+ Money owed to the household	
+ Money owed to the household	+ Private pensions/whole life insurance	
+ Private pensions/whole life insurance	+ Other financial assets	
+ Other financial assets		
- Household main residence mortgage	- Other property mortgage	
- Other property mortgage	- Credit line/ bank overdraft debt	
- Credit line/ bank overdraft debt	- Credit card debt	
- Credit card debt	- Non-mortgage loans	
- Non-mortgage loans		

Table 4.4 shows the poverty headcount for these different types of wealth concepts. For the unidimensional approach, where the poverty line is each time set at 60 per cent of the respective wealth concept, the poverty headcount decreases in the case of non-housing wealth by 2.1 and 1.2 percentage points for Belgium and Germany respectively and by 2.9 percentage points for both countries in case only liquid assets are included. In case of the two-dimensional approach the poverty line is as in the baseline indicator each time set at 3 months of the traditional income poverty line. Results show that for Belgium the share of both income and asset poor increases with 1.3 percentage point when non-housing wealth is used and with about 4 percentage points if only liquid assets are taken into account, while the share of only income poor households decreases at the same rate. The largest impact is found with regard to the share of those who are only asset poor; it increases from 5.6 per cent in case of net worth to 10.4 per cent in case of non-housing wealth and even to more than 22 per cent for the liquid assets concept. These trends are also found for Germany, although the effects are slightly weaker. As a consequence of a lower homeownership rate, the difference between the different wealth concepts is less expressed than in Belgium.

---

[26] It is also possible to use broader wealth concepts. For example, augmented wealth will add to disposable wealth some valuation of pension rights and human capital or a comparable measure of future earnings possibilities (Wolff, 1990). However, since this kind of information is not covered in the HFCS data, we do not implement such a wider wealth concept.

**Table 4.4 Effect of different wealth concepts on poverty rates**

Poverty measure	Net worth		Non-housing wealth		Liquid assets	
	Belgium	Germany	Belgium	Germany	Belgium	Germany
Unidimensional	21.3	21.8	19.2	20.6	18.4	18.9
Two-dimensional						
Income & asset poor	6.2	9.7	7.5	10.2	10.3	12.4
Only income poor	10.9	8.7	9.6	8.3	6.8	6.1
Only asset poor	5.6	11.1	10.4	13.5	22.2	24.2

Note: Unidimensional poverty is calculated using adapted poverty line (i.e. fully relative poverty line) (see part 4.5.1). However, the results are similar if the unadapted poverty line would be used.

Source: Own calculations based on HFCS.

A second measurement consideration that applies to both poverty approaches is whether to apply equivalence scales. Studies analysing income poverty typically use an equivalised income concept to control for different needs, relating for instance to household size and composition in order to capture the impact of economies of scale, although there remains considerable discussion on this issue (e.g. Buhmann et al., 1988; Coulter et al., 1992; de Vos & Zaidi, 1997). There is no general agreement on whether equivalence scales should be applied to wealth holdings and if so whether those used for income are appropriate for wealth (OECD, 2013a, p.169). In studies of financial vulnerability wealth is considered to be an economic resource supporting current consumption and therefore contributing to the standard of living. In this case it seems appropriate to equivalise both household income and wealth (Jäntti et al., 2013; OECD, 2013b, pp. 141-142 & 178). Equivalence scales for wealth are also used by Azpitarte (2011, 2012) and Brandolini et al. (2010). In our baseline indicators the square root equivalence scale for both income and wealth was implemented. In Figure 4.4 we show poverty outcomes for different equivalence scales. We use the functional form $e = 1/h^{\theta}$ where h refers to household size and $\theta \in [0,1]$.[27] We each time apply the same equivalence scale to wealth and income. We only show the results for the unidimensional approach, but the same trend applies to the two-dimensional approach. The overall poverty headcount appears to be largely robust to the parameter θ. Poverty slightly diminishes between 0 and 0.55, after which it is remains more or less stable. As we will show below these small differences are largely driven by effects among the elderly population.

Figure 4.4 Effect of equivalence scale on poverty rates
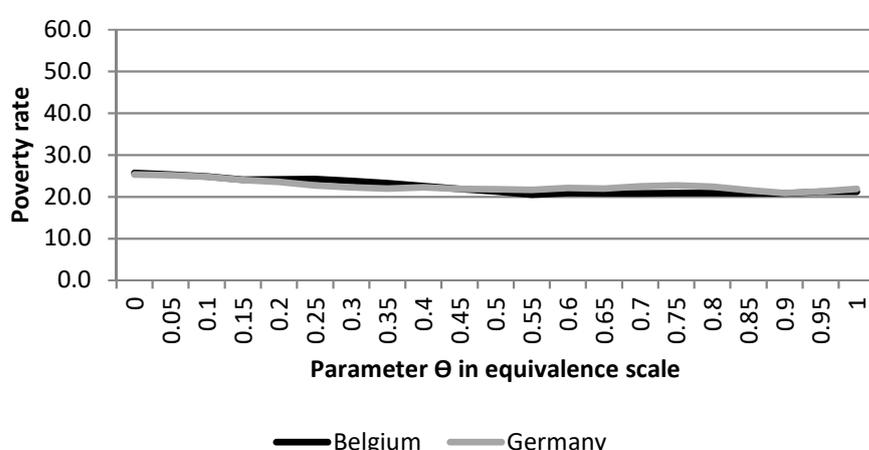
Source: Own calculations based on HFCS.

---

[27] θ equal to 0.5 refers to the square root equivalence scale, which is used in the baseline indicators.

In case of the unidimensional approach a further consideration reflects the interest rate of the annuity (ρ). Radner (1990) argues that the interest rate is essentially an arbitrary choice and that in the literature various interest rates, both real and nominal, have been used. As mentioned before, existing studies mostly implement a 2 per cent interest rate (e.g. Brandolini et al., 2010; Van den Bosch, 1998). Van den Bosch (1998) is one of the few who provides an argumentation for this figure. His choice is based on Vuchelen (1991) who shows that the real average return on wealth of Belgian households between 1961 and 1988 was equal to 2.34 per cent. However, these estimations are based on a proxy indicator of wealth rather than on direct information. Moreover, interest rates tend to fluctuate relatively strongly over time, certainly across business cycles and also across longer economic phases (e.g. Piketty, 2014). Because of the profound impact of the chosen interest rate on the weight that is granted to wealth (Radner, 1990), we study the impact of a different interest rate on our poverty outcomes. The results in Figure 4.5 show a slightly decreasing share of poor households with increasing interest rates of the annuity. Particularly the difference between a 1 or 10 per cent interest rate is significant, while higher interest rates appear to have only a minor effect. Note also that most elderly households already have sufficient wealth holdings to be above the poverty line even without applying an interest rate (see also part 4.5.3). Furthermore, evidence shows that rates of return on wealth differ strongly by initial wealth level (through economies of scale and threshold effects), educational level (i.e. financial literacy), etc. (e.g. Jappelli & Padula, 2013; Piketty, 2014).

Figure 4.5 Effect of interest rate annuity on poverty rates
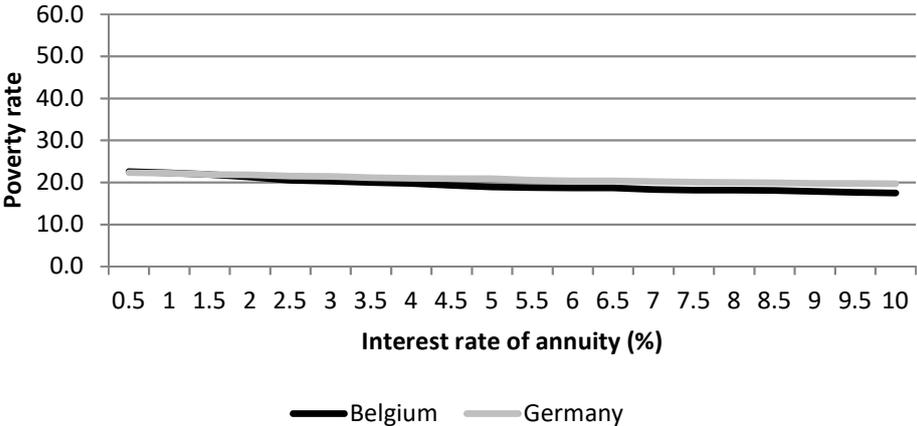
Source: Own calculations based on HFCS.

The length of the annuity (n) is typically expressed in terms of life expectancies "such that the economic welfare of a unit is equal to its current income plus the lifetime annuity value of its current net worth" (Azpitarte, 2011, p.90). This is consistent with the fact that household saving is mainly motivated by consumption smoothing over the lifetime and precautionary saving (Weisbrod & Hansen, 1968, p.1317-1318). A first problem with these expected remaining lifetimes is that they are only available by age and gender and consequently ignore the fact that wealth and life expectancy are correlated. Wealthier persons tend to live longer than poorer ones so that they need to spread out their wealth over a longer period (Radner, 1990, footnote 2 p.4). This in turn implies that the level of annuitised wealth that is included in poverty calculations is smaller, which results in more households being classified as poor (Brandolini et al., 2010, p.271).[28]

---

[28] If wealth is annuitized over an infinite period it would be equal to the traditional income poverty indicator.

Furthermore, by basing the annuitisation on life expectancies one assumes that no wealth remains at death and consequently does not take into account the possibility of bequests. However, besides the consumption smoothing and precautionary saving motives, people are also found to be motivated by leaving something for their survivors (Kopczuk & Lupton, 2007; Szydlik, 2011).[29] Moreover, elderly people might implicitly also trade bequests for care (or future assurance for care) from children or other persons (Cremer & Pestieau, 2006; see also Bernheim et al., 1985, as cited by Rendall & Speare, 1993, footnote 2 p.3). Own calculations on the HFCS reveal that in the euro area around 36 per cent of households have received a 'substantial gift or inheritance' and 13.5 per cent expect to receive one in the future. Moreover, 6 per cent of respondents indicated that one of the purposes they are saving for are bequests. If bequests would be made through inter vivos gifts, a smaller amount of wealth is available for annuitisation. Of course, one could wonder whether people ought to save for estate purposes and if so how much (Weisbrod & Hansen, 1968). Substantial intergenerational transfers may be socially undesirable because they maintain, and possibly increase, the level of wealth inequality from generation on generation. Indeed, Piketty (2014) shows that the increasing importance of inherited wealth is one of the main driving factors of rising inequalities. However, alternatives to these aspects cannot be expressed in terms of formulas (1) or (2) and hence require a fully different perspective on joint income-wealth poverty, such that it is beyond the scope of this chapter.

4.5.3 Age structure of poverty

The results of the previous sections will likely not only affect the *number* of poor households, but also the *types* of households that are regarded as poor. In this respect age appears to be the most important aspect because traditional income poverty rates and wealth accumulations significantly differ over the lifetime. As mentioned before, Belgian elderly are often found to combine a low income with moderate to high wealth holdings.

In a more detailed analysis we have also performed the robustness analysis of the previous part separately for elderly and non-elderly households. Although we have shown in part 4.4 that the initial effect of taking wealth into account in poverty measurement has a larger impact on poverty rates among the elderly than among the non-elderly, the overall effect of different measurement assumptions appears to be relatively similar for the two groups. A notable exception is the effect of equivalence scales. In Figure 4.6 we show the same analysis as in Figure 4.5, but for elderly and non-elderly households separately. It is clear that poverty rates of the elderly are strongly affected by different equivalence scales, while they are relatively constant among the non-elderly.[30]

For Belgium the impact of different wealth concepts also appears to be significantly different for the elderly and the non-elderly. Indeed, when the narrower wealth concepts of non-housing wealth and liquid assets are used poverty increases for the elderly, while it decreases for the non-elderly such that the difference between the elderly and non-elderly diminishes somewhat. In other words, in Belgium the ratio between elderly and non-elderly in poverty depends on whether or not all wealth is taken

---

[29] Weisbrod & Hansen (1968, footnote p.1318) argue: "the fact that intergenerational transfers are so frequently made via the estate route rather than by transfers before death may be less an indication of people's desires to pass on their wealth than it is a reflection of their inability to anticipate the time of their death." Indeed, if people were to know exactly when they would die, they would transfer their wealth before death so as to avoid inheritance taxes.

[30] This is not only true for the joint income-wealth poverty measures; equivalence scales also have the largest impact on the elderly in terms of traditional income poverty (e.g. de Vos & Zaidi, 1997).

into account. Since the net value of the household main residence constitutes the largest share in total wealth, this difference is mainly the consequence of the elderly and non-elderly being in different stages of life cycle accumulation. Elderly households have typically paid off their mortgage, while younger households are often substantially indebted. This means that the difference between the net worth concept on the hand and non-housing and liquid assets concepts on the other hand is much larger for pensioners. Because homeownership is less common this trend is less visible for Germany.

Figure 4.6 Effect of equivalence scale on poverty rates, elderly vs non-elderly
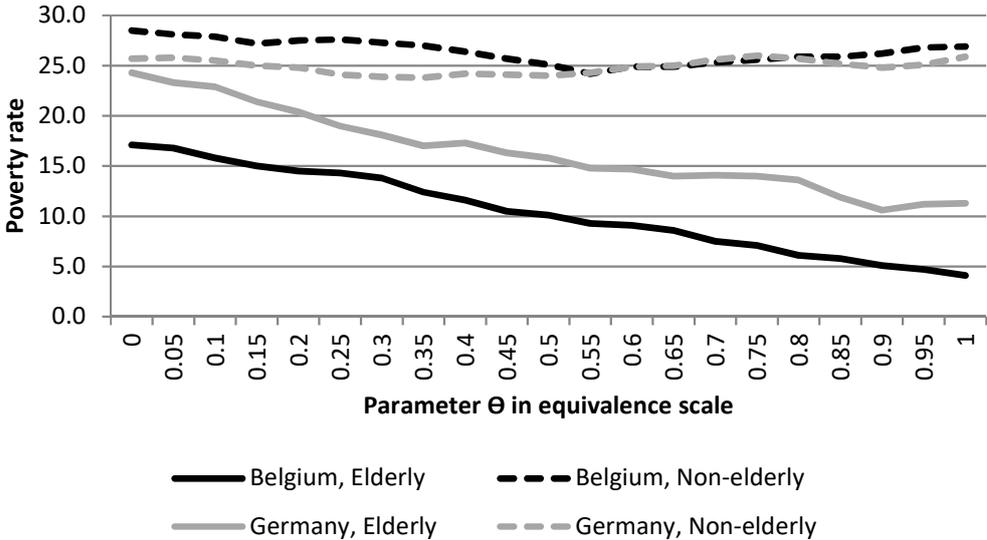
Source: Own calculations based on HFCS.

The most important aspect with regard to the age dimension, however, is that both approaches to joint income-wealth poverty fail to take account of the life cycle effects of wealth accumulation. Younger households typically have lower net worth and longer life expectancies, which translates into much lower annual annuities, which in turn implies higher poverty rates (Brandolini et al., 2010; Weisbrod & Hansen, 1968). However, these households usually have important saving potential and can expand their net worth above and beyond a mere interest rate, for example by investing in a house or business. Also the two-dimensional approach only takes into account the level of current net worth. Ideally, one should be able to distinguish between structural asset poverty and age-related asset poverty. Moreover, the age effect is likely to be an issue in comparisons across countries and across time. If joint income-wealth poverty is larger in one country than in another this can be the effect of either a different age structure in these countries, differences in wealth accumulations or a combination of the two. Likewise, if joint income-wealth poverty of a certain country changes over time it is not clear whether it is the consequence of changes in its age structure or in the wealth accumulations of its households (see Almås & Mogstad, 2012; Atkinson, 1971; Cowell & Van Kerm, 2015 for a discussion of this issue in relation to wealth inequality).

4.6 Conclusion

A convincing case can be made that the measurement of poverty, and more broadly living standards, should be based on a joint income-wealth perspective. Conventional poverty measures mostly assess actual household incomes against some threshold. But the wider financial resources on which people

can draw are also important in assessing financial precariousness. Households that can smooth consumption by relying on savings and assets, loans or the financial help of others are clearly better off than households who do not have these opportunities. Previous studies have implemented two different approaches, one which integrates the two financial resources into a single dimension by converting wealth into yearly annuities and one which applies a two-dimensional framework by developing separate poverty lines for income and wealth. The findings so far are rather similar and indicate that (1) poverty estimates including wealth are much lower than the traditional income-based measures; (2) poverty rates of the elderly are much more affected than those of the non-elderly and (3) the decline in poverty rates is much higher when the value of the household's main residence is included than when only non-housing wealth is taken into account.

However, the analysis here shows that such findings can be quite sensitive to the way one accounts for wealth in measuring poverty. Most strikingly, the conclusion that poverty rates decline when wealth is taken into account hinges on whether the poverty line is adapted to the broader resources concept or not. When the poverty line is defined in fully relative terms, poverty rates could increase as well as decrease and can substantially alter cross-country rankings. Furthermore we show that any conclusion on the ratio between elderly and non-elderly poverty is highly sensitive to plausible measurement choices.

This chapter compared Belgium and Germany, countries with similar living standards and income poverty rates, but very different levels and distributions of wealth. We find that the inclusion of wealth information has a much weaker impact in Germany than in Belgium, which is in line with expectations as wealth levels are lower in Germany and more correlated with income. In terms of the sensitivity analysis we find that in the baseline indicator poverty rates are higher for Germany than for Belgium, while it is the other way around when using a fully relative poverty line up until 45 per cent of median annuitised income-net worth and very similar poverty rates for higher percentages. Poverty ranking between the two countries appears to be less sensitive to the other measurement aspects discussed.

These results may impact on the way we think about social policy and how we evaluate the impact of policy. For example, it is clear that joint income-wealth based poverty measures can impact quite significantly on the relative extent of poverty among young people as compared to older people. For future research purposes it will therefore be interesting to analyse how a joint income-wealth poverty measure could be operationalised in practice such that it can guide future development of the European social agenda. Moreover, in view of the growing importance of bequests shown by Piketty (2014) and others, it might also prove interesting to study the intergenerational transmission of joint income-wealth poverty. Unfortunately, data do not yet allow for this kind of analysis.

Important to note is that we were not able to submit all relevant aspects to an empirical sensitivity analysis. First, sensitivity was checked for a single interest rate, while in practice evidence shows that interest rates differ strongly by initial wealth level (through economies of scale and threshold effects), educational level (i.e. financial literacy), etc. Second, we did not assess the robustness of the specification of the length of the annuity in terms of differential life expectancies. Also, we not yet accounted for the fact that wealth and life expectancy are correlated. Bequest desires are still to be included too. Finally, ideally one would want to take into account the savings potential of (younger) households as well as social security wealth.

Chapter 5. Redistribution in a joint income-wealth perspective: A cross-country comparison[31]

5.1 Introduction

Over the last decades we have witnessed a renewed interest, both from academic and political actors, in the level and evolution of inequality, and the role government intervention plays in these processes. A major reason for this resurgence is the fact that inequality has been on the rise in many developed countries (Huber & Stephens, 2014), as shown for instance by the OECD (2015, 2011, 2008) and which has only partly been offset by government redistribution (Immervoll & Richardson, 2011). Inequality and redistribution are usually understood in terms of income; as a way to rank individuals as well as to determine ability to pay or benefit entitlements. However, one of the most striking distributional evolutions is related to wealth rather than income. Over the last 60 years private wealth accumulation has continuously increased such that aggregate private wealth-national income ratios have nowadays returned to levels observed in the 19th century, ranging from 300 to 600 per cent. 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 continue to be one-dimensionally defined and measured through monthly or yearly income streams. Yet, financial resources such as savings and assets also significantly impact living standards of individuals and households through its various functions. First, wealth increases consumption possibilities through the generation of capital income, and this without having to sacrifice leisure (McDonnell, 2013). When income is insufficient the level of wealth itself also contributes to consumption possibilities through precautionary and life-cycle savings. In other words, savings and assets can serve as a buffer to smooth consumption during low income periods or to face unexpected costs. Furthermore, the mere ownership of wealth also increases utility because it creates independence and opens up a wider range of free choice (McKernan et al., 2012; Sherraden, 1991). Finally, wealth is an important contributor to achieving or maintaining class status (Keister, 2000; Spilerman, 2000) as well as having economic and political power (Cowell & Van Kerm, 2015). 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 ability to pay taxes and benefit eligibility – 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 (Brandolini et al., 2010; Jäntti, et al., 2013; OECD, 2013b; Stiglitz et al., 2009).

As living standards and inequality are typically expressed in income terms, previous studies of redistribution have also evaluated taxes and transfers by comparing the distribution of market and disposable household income (see e.g. Avram et al., 2014; Fuest et al., 2010; Huber & Stephens, 2014; Mahler and Jesuit, 2006). Over the last years strong arguments have been made for broadening the

---

[31] This chapter is a slightly adapted version of Kuypers, S.; Figari, F. & Verbist, G. (2018). *Redistribution in a joint income-wealth perspective: A cross-country comparison.* CSB Working Paper No.18.05 (also as EUROMOD Working Paper No.3/18).

taxation of wealth as a way to reduce inequality and raise government revenues (e.g. Bach et al., 2014; Piketty, 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. Immervoll & Richardson, 2011; Verbist, 2004; Verbist & Figari, 2014; Zandvakili, 1994).

This chapter shows that the correlation between income and wealth is far from perfect (see also Arrondel et al., 2014b; Jäntti et al., 2008; Kuypers & Marx, 2018a *(Chapter 1)*; Skopek et al., 2012) such that expressing inequality and redistribution in terms of income alone provides only a partial picture about the level of socio-economic inequality and government redistribution. Our aim is then to provide a more comprehensive and refined snapshot of the redistributive effects 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 ability to pay taxes of an individual. Hence, this chapter 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; Kuypers & Marx, 2018b *(Chapter 4);* 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, besides direct taxes on income we also include recurrent wealth taxes (i.e. real property and net 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 (the largest component of most households' wealth).

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 & 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 *(see also Chapter 3)*).

The new empirical evidence presented in this chapter provides important insights on the overall redistributive effects 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 chapter is organised as follows. The data and methods are described in Section 5.2. In Section 5.3 we present the joint income-wealth framework which is then used to evaluate the redistributive effects of tax-benefit systems in Section 5.4. We start from the total redistributive effects and then investigate the contribution of each of the different redistributive instruments, which if further decomposed into their size and progressivity. A decomposition between the elderly and non-elderly is analysed in Section 5.5 to take into account the life cycle character of wealth accumulation and issues regarding the treatment of public pensions as social transfer. The last section concludes.

5.2 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 chapter 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 et al., 2014b) as will be clear from Section 5.3. They also provide a good representation of a broad range of tax-benefit systems and existing wealth taxation (see Section 5.2.1) 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 per cent), and Belgium, Italy, Finland, where they represent around 70 per cent of the population, while the presence of renters is important in France (around 45 per cent) and even dominant in Germany (55 per cent) (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.

5.2.1 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 per cent (Spain) and 20 per cent (Belgium) of national GDP, while cash social benefits (including contributory pensions which might be considered as a postponed earning stream (see below)), absorb more resources than those collected through taxes with the exception of Belgium and Germany (Figure 5.1). Focussing on cash transfers (excluding public pensions), government intervention allocates resources between 6 and 10 per cent of GDP, with more efforts clearly identified in Belgium and Spain. Public pensions that absorb the largest share of public resources in Finland, France, Germany and Italy, ranging from 7.7 per cent of GDP in Germany to 12 per cent in France.

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 per cent of GDP in France and Spain and almost 15 per cent 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 per cent of GDP, with a higher incidence in France (10 per cent) and Germany (7.5 per cent). Wealth taxes exist in different forms in all countries, with an overall revenue ranging from 1 per cent of GDP in Finland and Germany to almost 3 per cent in Belgium and 3.5 per cent in France.

Figure 5.1 Tax revenues and social benefit expenditure as % of GDP
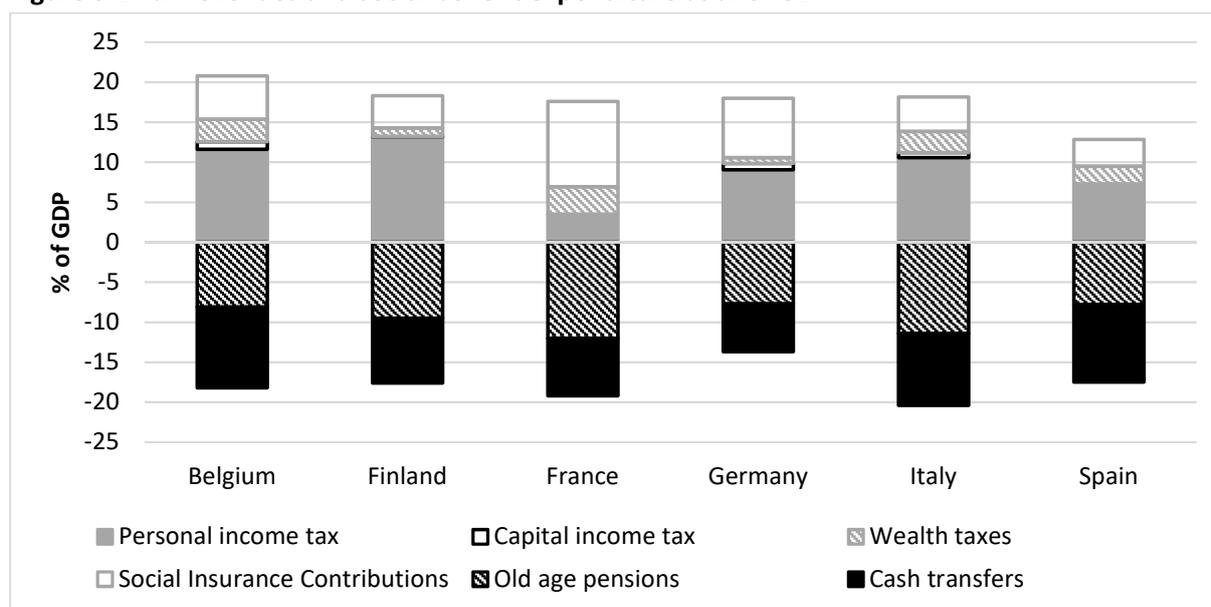
Notes: Figures for taxes and social insurance contributions refer to 2015, for social benefits to 2013. In view of comparability with the analyses below tax revenues reflect taxes on individuals only, social insurance contributions exclude employer contributions.

Source: OECD Tax Revenue Database and OECD Social Expenditure Database.

5.2.2 HFCS-data and EUROMOD

The empirical evidence presented in this chapter is based on running EUROMOD simulations with the HFCS as the underlying database as described in Chapters 2 and 3. As a result of this approach we observe for the samples presented in Table 2.3 jointly their net wealth, market and disposable income, which serves as the main reference framework for the analyses in this chapter. We simulate for each tax unit their social benefit eligibility as well as liabilities for income taxes, social insurance contributions and wealth taxes which have been extended and refined as discussed in Chapter 3.

In common with other analyses of the redistributive effects of tax-benefit systems based on a microsimulation approach (e.g. Avram et al. 2014; Decoster & Van Camp, 2001; Piketty & Saez, 2007), 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 and wealth is only one way in which redistribution may happen (Boadway & Keen, 2000). One could consider, for example, the impact of individual behavioural reactions (Bergh, 2005) such as decisions regarding labour supply, savings and investment, macro-economic shocks which can be affected by the tax system (Poterba, 2007) as well as tax evasion (Zucman, 2015) and benefit non-take-up. The latter is taken into account in EUROMOD for direct taxes on income and cash benefits as good as possible given data limitations. For the countries studied in this paper some calibrations are included to take into account tax evasion in Italy and benefit non-take-up in Belgium, France and Finland. Although tax evasion is also an important issue with respect to wealth taxation, we believe it may have a minor impact on our simulations. Although the HFCS oversamples the wealthy there is still a significant underrepresentation of wealth at the top of the distribution (e.g. Vermeulen, 2016). As this missing wealth is likely to correspond to the wealth that is not declared to tax authorities, the effect of tax evasion may in fact be weak in the HFCS data. We focus here on the cash part of the

income redistribution process, and not on the in-kind benefits people can derive from the use of publicly provided surveys. We recognise the importance of these services for people's living standards, but gauging their redistributive effect falls outside the scope of our study.

Even if a life cycle perspective might be informative for the (re)distribution of resources among individuals (Bengtsson et al., 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 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.

5.3 The joint distribution of income and wealth

Although there exist links between income and wealth through savings and borrowing constraints, their correlation is far from perfect (Jäntti et al., 2013). Possible factors mitigating the income-wealth relationship include asset portfolio choices, life cycle effects and intergenerational transfers (Jäntti et al., 2008; 2013; 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 5.2 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 per cent 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 per cent 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 half 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) as benefit eligibility and tax liability mainly depend on income. Their specific situations can be taken into account by defining living standards in terms of both income and wealth.

Figure 5.2: Distribution across quartiles of disposable income and wealth (% of individuals)
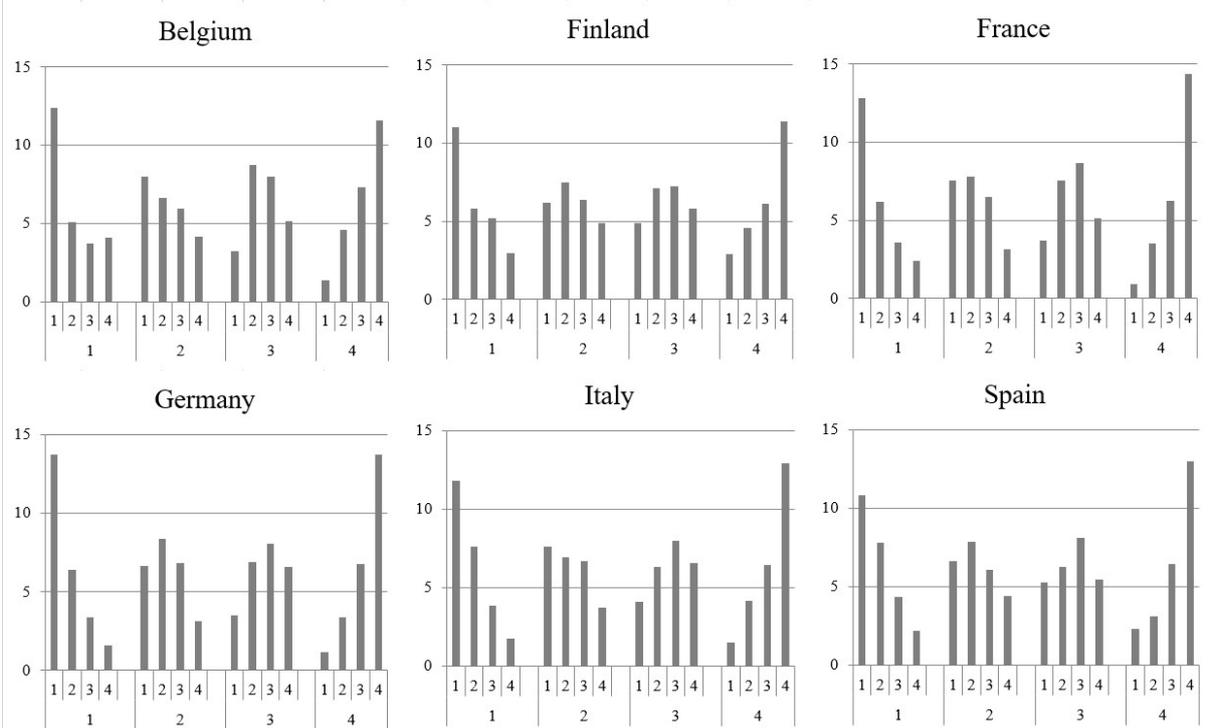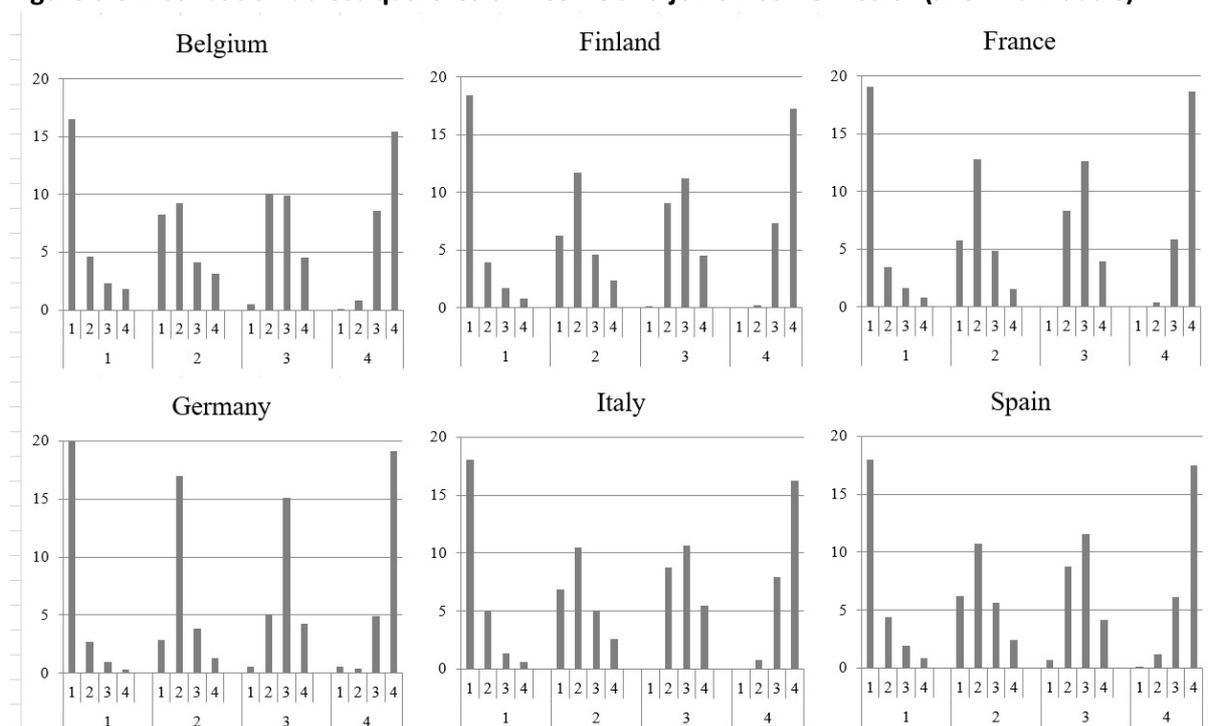

Notes: Bottom number refers to the income quartile and top number to the wealth quartile. Spearman rank correlations are 0.46 for BE, 0.39 for FI, 0.60 for FR, 0.59 for DE, 0.50 for IT and 0.62 for ES.
Source: Own calculations based on HFCS-EUROMOD simulations.

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 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, 2018b *(Chapter 4)*). In contrast, the presence of large financial liabilities may make households more economically vulnerable than their incomes suggest. Hence, income and wealth inequalities do not perfectly overlap. Therefore, we use a joint income-wealth framework by applying the annuitisation approach discussed in Chapter 4.

The position of individuals across quartiles of disposable income and joint income-wealth distribution is presented in Figure 5.3. 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, 2018b *(Chapter 4)*).

Figure 5.3 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 HFCS-EUROMOD simulations.

One of the contributions of this chapter is that we extend this annuitisation approach to be able to evaluate the redistributive effects 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 annuitised 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 annuitisation, while the yearly recurrent wealth taxes (i.e. real property and net 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)[32]) 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 5.4 illustrates in detail the gross-to-net transition in the two frameworks adopted in this chapter. In the traditional income framework we move from market to disposable income by adding cash 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 annuitised wealth towards net annuitised wealth reflecting the impact of event and recurrent wealth

---

[32] 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, 2018b *(Chapter 4)*), it is the difference between the net and gross interest rate that is of main importance here.

taxes. As the event wealth taxes are subtracted from the wealth that is annuitised the effect is equal to multiplying the taxes with the net annuity, while the impact of yearly wealth taxes is equal to gross annuitised wealth times the difference between the gross and net annuity.

Figure 5.4 Gross-to-net transition in two frameworks

<u>Income framework</u>

| Market (+ pension) income | → | + Social benefits
 - Social insurance contributions
 - Personal income tax
 - Capital income tax
 - Wealth taxes | → | Disposable income |

<u>Joint income-wealth framework</u>

| Market (+pension) income + gross annuitised net wealth | → | + Social benefits
 - Social insurance contributions
 - Personal income tax
 - Capital income tax

 - Event wealth taxes * net annuity
 - Gross annuitised net wealth * (gross annuity - net annuity) | → | Disposable income + net annuitised net wealth |

The following (fictive) example further clarifies our proposal for the annuitisation process and the different treatments of wealth taxes in the two frameworks (Table 5.1). 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. 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 annuitised wealth is equal to €25,000 + $\frac{0.05}{1-(1+0.05)^{-4}}$ * €150,000 = €33,742. To calculate disposable income + net annuitised wealth, we first derive the net interest rate for annuitisation, 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 * $\frac{0.0447}{1-(1+0.0447)^{-4}}$) + (€150,000 * ($\frac{0.05}{1-(1+0.05)^{-40}}$ - $\frac{0.0447}{1-(1+0.0447)^{-4}}$)) = €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 capitalises 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 5.1 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	

5.4 A broader assessment of the redistributive effects of tax-benefit systems

Section 5.3 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. 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 chapter.

5.4.1 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 (formula 5.1). 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 annuitised wealth net of liabilities is added gross of wealth taxes (i.e. gross annuitised wealth, GAW) to the market income concept (MI) or to the market income and public pension income concept (MPI). The value of annuitised wealth net of wealth taxes (i.e. net annuitised wealth, NAW) is added to the disposable income concept resulting in the overall redistributive effect.

$$RE = GINI_{M(P)I(+GAW)} - GINI_{DI(+NAW)} \qquad (5.1)$$

The top panel of Table 5.2 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 annuitised wealth.

The level of inequality observed in the different distributions shows important features that impact on the potential of the tax-benefit system to redistribute resources across individuals. First, across all countries the Gini coefficient of market income + gross annuitised 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 annuitised 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 annuitised wealth shows a higher inequality than the distribution of disposable income in all countries.

When comparing the redistributive effects 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 effect of tax-benefit systems is, as expected, 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 per cent relative to almost 40 per cent when including pensions in the redistributive mechanism. An even larger reduction of the redistributive effect 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.

Table 5.2 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)	(0.007)		(0.006)	
Finland	0.372	0.362	0.249	0.123	33.06	0.113	31.22
	(0.003)	(0.003)	(0.002)	(0.001)		(0.001)	
France	0.522	0.421	0.287	0.235	45.02	0.134	31.83
	(0.003)	(0.003)	(0.002)	(0.002)		(0.002)	
Germany	0.515	0.417	0.301	0.214	41.55	0.116	27.82
	(0.006)	(0.005)	(0.004)	(0.005)		(0.003)	
Italy	0.510	0.374	0.309	0.201	39.41	0.065	17.38
	(0.004)	(0.003)	(0.003)	(0.003)		(0.001)	
Spain	0.476	0.407	0.350	0.126	26.47	0.057	14.00
	(0.006)	(0.006)	(0.006)	(0.003)		(0.002)	

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)	(0.005)		(0.004)	
Finland	0.366	0.363	0.285	0.081	22.13	0.078	21.49
	(0.002)	(0.002)	(0.002)	(0.001)		(0.001)	
France	0.478	0.445	0.355	0.123	25.73	0.090	20.22
	(0.004)	(0.003)	(0.003)	(0.002)		(0.001)	
Germany	0.503	0.453	0.392	0.111	22.07	0.061	13.47
	(0.007)	(0.007)	(0.008)	(0.004)		(0.003)	
Italy	0.458	0.418	0.405	0.053	11.57	0.013	3.11
	(0.005)	(0.005)	(0.005)	(0.002)		(0.001)	
Spain	0.425	0.412	0.384	0.041	9.65	0.028	6.80
	(0.006)	(0.005)	(0.005)	(0.002)		(0.001)	

Notes: MI=market income, MPI=market income + public pensions, DI=disposable income, GAW=gross annuitised wealth, NAW=net annuitised wealth, RE=redistributive effect. Standard errors are shown between parentheses. All redistributive effects are statistically significant at the 1% level.
Source: Own calculations based on HFCS-EUROMOD simulations.

Next, we look into the contributions to overall redistribution of the different instruments of the tax-benefit system, notably social benefits (excluding public pensions), 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 difference between the elderly and non-elderly in Section 5.5. In order to analyse the contribution of benefits and taxes, we follow the decomposition approach initiated by Lambert & Pfähler (1988) and Duclos (1993). The overall

redistributive effect shown in equation 5.1 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:

$$RE = VE - RR = RS - RR \qquad (5.2)$$

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 (RS) (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:

$$VE = \frac{1}{(1-g)}\Sigma_{i=1}^{I} g_i \prod_i^K \qquad (5.3)$$

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 Duclos (1993) and Lambert & Pfähler (1988).

The results of this decomposition formula are shown in Figure 5.5. 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 5.1; 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 5.5 Redistributive effects by tax-benefit instruments
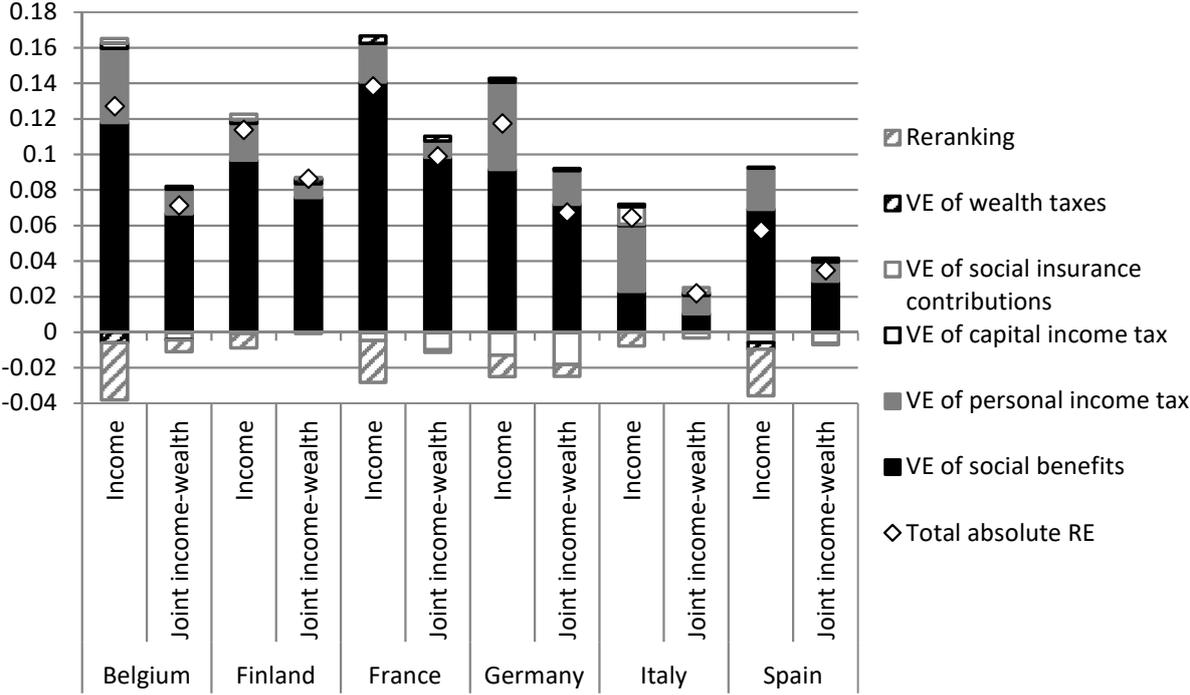
Note: For France the capital income tax is included in the personal income tax.
Source: Own calculations based on HFCS-EUROMOD simulations.

As formula (5.3) indicates the contribution to the overall redistribution of each tax-benefit instrument from Figure 5.5 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 5.6. 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 per cent in France and Spain (i.e. the two countries with a general net wealth tax in place) to 0.6 per cent in Finland (but not all wealth taxes are simulated, see Chapter 3). When wealth is included in the assessment framework the size of all instruments decreases due to the larger denominator. The size drops by 38 per cent for Spain, 36 per cent for Italy, 32 per cent for Belgium, 26 per cent for France, 21 per cent for Germany and 19.5 per cent 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 5.4 and Table 5.1).

Figure 5.6 Size of the tax-benefit instruments
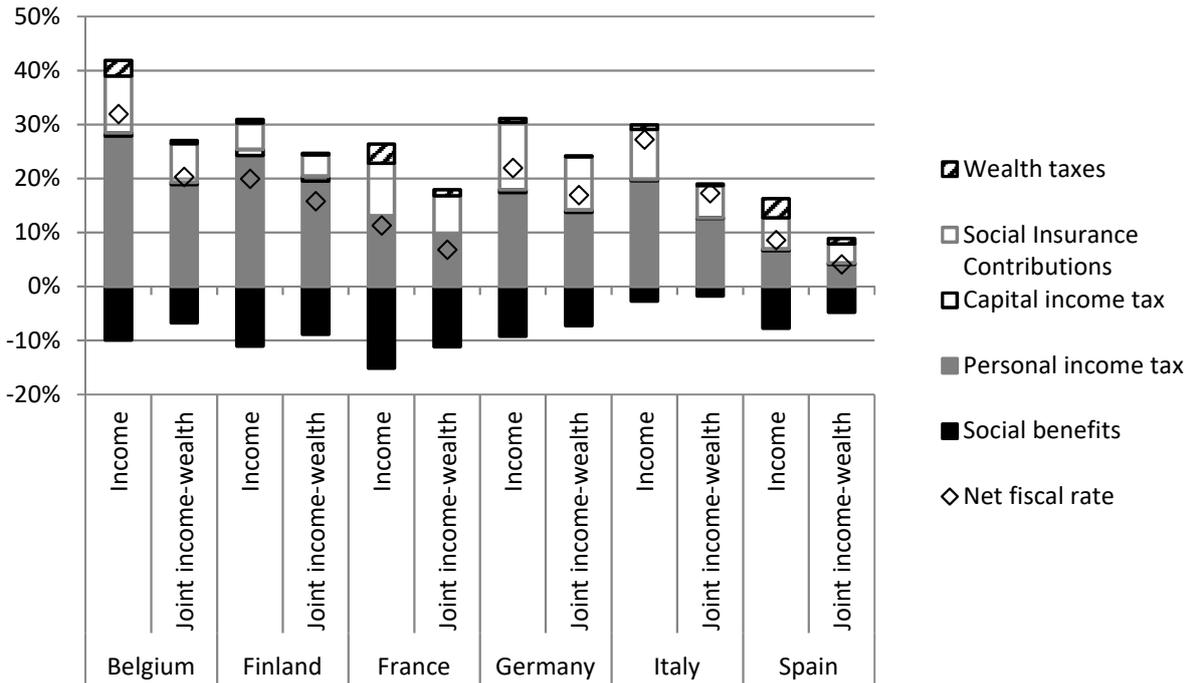
Note: For France the capital income tax is included in the personal income tax.
Source: Own calculations based on HFCS-EUROMOD simulations.

The degree of progressivity of the instruments is presented in Table 5.3 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 ability to pay taxes and benefit eligibility.

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.

Table 5.3 Kakwani indices

		Income framework	Joint income-wealth framework
Belgium	Social benefits	0.810 *(0.018)*	0.789 *(0.018)*
	Personal income tax	0.102 *(0.007)*	0.059 *(0.010)*
	Capital income tax	0.332 *(0.047)*	0.327 *(0.048)*
	Social insurance contributions	0.017 *(0.007)*	-0.047 *(0.009)*
	Wealth taxes	-0.140 *(0.034)*	-0.004 *(0.015)*
	Total	0.340 *(0.015)*	0.306 *(0.015)*
Finland	Social benefits	0.703 *(0.006)*	0.719 *(0.006)*
	Personal income tax	0.068 *(0.002)*	0.033 *(0.002)*
	Capital income tax	0.146 *(0.013)*	0.225 *(0.012)*
	Social insurance contributions	0.050 *(0.003)*	-0.014 *(0.003)*
	Wealth taxes	-0.080 *(0.005)*	0.126 *(0.004)*
	Total	0.491 *(0.009)*	0.456 *(0.009)*
France	Social benefits	0.826 *(0.005)*	0.824 *(0.006)*
	Personal & capital income tax	0.147 *(0.002)*	0.089 *(0.005)*
	Social insurance contributions	-0.043 *(0.003)*	-0.129 *(0.004)*
	Wealth taxes	0.103 *(0.013)*	0.210 *(0.007)*
	Total	1.271 *(0.040)*	1.371 *(0.050)*
Germany	Social benefits	0.779 *(0.015)*	0.824 *(0.015)*
	Personal income tax	0.219 *(0.003)*	0.114 *(0.009)*
	Capital income tax	0.293 *(0.033)*	0.179 *(0.046)*
	Social insurance contributions	-0.081 *(0.005)*	-0.152 *(0.007)*
	Wealth taxes	0.001 *(0.030)*	0.160 *(0.012)*
	Total	0.461 *(0.019)*	0.363 *(0.020)*
Italy	Social benefits	0.620 *(0.045)*	0.499 *(0.039)*
	Personal income tax	0.137 *(0.002)*	0.067 *(0.004)*
	Capital income tax	0.243 *(0.018)*	0.281 *(0.013)*
	Social insurance contributions	0.077 *(0.004)*	-0.045 *(0.006)*
	Wealth taxes	0.137 *(0.019)*	0.268 *(0.010)*
	Total	0.193 *(0.004)*	0.091 *(0.005)*
Spain	Social benefits	0.822 *(0.015)*	0.579 *(0.018)*
	Personal income tax	0.316 *(0.006)*	0.249 *(0.008)*
	Capital income tax	0.203 *(0.021)*	0.229 *(0.025)*
	Social insurance contributions	-0.092 *(0.008)*	-0.164 *(0.008)*
	Wealth taxes	-0.098 *(0.027)*	0.165 *(0.009)*
	Total	0.890 *(0.052)*	0.828 *(0.053)*

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 ($G_{MPI} - C_B$). Standard errors are shown between parentheses. All Kakwani indices are statistically significant at the 1% level with the exception of the wealth taxes of Belgium in the joint income-wealth framework and the wealth taxes of Germany in the income framework.
Source: Own calculations based on HFCS-EUROMOD simulations.

5.4.2 Sensitivity analyses

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:

$$G(v) = \int_0^1 v(v-1)(1-s)^{v-2}\big(s - L(s)\big)ds, \quad v > 1 \tag{5.4}$$

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 5.4 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 *(0.006)*	27.08	0.178 *(0.007)*	25.25	0.089 *(0.008)*	27.05
Finland	0.113 *(0.001)*	31.22	0.189 *(0.002)*	32.14	0.074 *(0.001)*	30.96
France	0.134 *(0.002)*	31.83	0.211 *(0.002)*	32.36	0.092 *(0.002)*	31.83
Germany	0.116 *(0.003)*	27.82	0.191 *(0.003)*	29.57	0.076 *(0.003)*	27.05
Italy	0.065 *(0.001)*	17.38	0.085 *(0.003)*	14.58	0.046 *(0.002)*	18.40
Spain	0.057 *(0.002)*	14.00	0.081 *(0.004)*	13.19	0.039 *(0.004)*	13.88
Joint income-wealth framework						
	Abs. RE	Rel. RE	Abs. RE	Rel. RE	Abs. RE	Rel. RE
Belgium	0.065 *(0.004)*	14.19	0.112 *(0.005)*	16.28	0.042 *(0.005)*	13.21
Finland	0.078 *(0.001)*	21.49	0.139 *(0.001)*	23.68	0.049 *(0.001)*	20.50
France	0.090 *(0.001)*	20.22	0.154 *(0.002)*	23.05	0.059 *(0.002)*	19.09
Germany	0.061 *(0.003)*	13.47	0.118 *(0.005)*	17.40	0.035 *(0.005)*	11.18
Italy	0.013 *(0.001)*	3.11	0.024 *(0.002)*	3.86	0.007 *(0.003)*	2.42
Spain	0.028 *(0.001)*	6.80	0.039 *(0.004)*	6.47	0.020 *(0.004)*	6.92

Notes: Abs. RE = absolute redistributive effect, Rel. RE = relative redistributive effect (as a % of Gini MPI). Standard errors are shown between parentheses. All redistributive effects are statistically significant at 1% level.
Source: Own calculations based on HFCS-EUROMOD simulations.

Table 5.4 shows the results of the redistributive effect 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).[33] 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

---

[33] Gini coefficients are presented in Table A.1 in the annex.

main exception. A more detailed analysis of the different tax-benefit elements 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.[34]

Finally, we also perform a sensitivity analysis concerning which types of assets are considered for annuitisation. In the literature it is often debated whether it is relevant to include real assets. The annuitisation 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, 2018a *(Chapter 1)*). 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 5.5 presents the redistributive effects when only liquid assets are subject to the annuitisation.[35] 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 5.5 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 *(0.006)*	27.08	0.065 *(0.004)*	14.19	0.118 *(0.005)*	24.79
Finland	0.113 *(0.001)*	31.22	0.078 *(0.001)*	21.49	0.112 *(0.001)*	31.64
France	0.134 *(0.002)*	31.83	0.090 *(0.001)*	20.22	0.134 *(0.002)*	33.42
Germany	0.116 *(0.003)*	27.82	0.061 *(0.003)*	13.47	0.106 *(0.004)*	25.85
Italy	0.065 *(0.001)*	17.38	0.013 *(0.001)*	3.11	0.054 *(0.001)*	14.21
Spain	0.057 *(0.002)*	14.00	0.028 *(0.001)*	6.80	0.068 *(0.002)*	16.96

Notes: Abs. RE = absolute redistributive effect, Rel. RE = relative redistributive effect (as a % of gini MPI). Standard errors are shown between parentheses. All redistributive effects are statistically significant at the 1% level.
Source: Own calculations based on HFCS-EUROMOD simulations.

5.5 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-annuitised wealth measure 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 annuitise 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 annuitisation, for instance by investing in real estate or the receipt of inheritances and gifts (Kuypers & Marx, 2018b *(Chapter 4)*). Together with the previously mentioned issue of whether or not to treat

---

[34] Detailed results are available from the authors upon request
[35] Gini coefficients are presented in Table A.2 in the annex.

pensions as social transfer, these issues imply that the situation of the elderly is very different and therefore hard to compare with that of the non-elderly.

Table 5.6 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* (0.005)	30.21	0.395 (0.033)	0.381 (0.041)	0.014 (0.016)	3.54
Finland	0.368 (0.003)	0.248 (0.003)	0.120* (0.001)	32.61	0.299 (0.007)	0.229 (0.005)	0.070* (0.002)	23.41
France	0.429 (0.003)	0.285 (0.003)	0.144* (0.002)	33.57	0.370 (0.007)	0.293 (0.006)	0.077* (0.003)	20.81
Germany	0.432 (0.006)	0.303 (0.005)	0.129* (0.004)	29.86	0.339 (0.009)	0.296 (0.007)	0.043* (0.003)	12.68
Italy	0.381 (0.004)	0.317 (0.003)	0.064* (0.001)	16.80	0.337 (0.007)	0.269 (0.006)	0.068* (0.003)	20.18
Spain	0.395 (0.007)	0.356 (0.006)	0.039* (0.002)	9.87	0.449 (0.011)	0.306 (0.010)	0.143* (0.008)	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* (0.005)	20.74	0.415 (0.014)	0.419 (0.014)	-0.004 (0.003)	-0.96
Finland	0.371 (0.003)	0.280 (0.002)	0.091* (0.001)	24.53	0.316 (0.006)	0.289 (0.005)	0.027* (0.002)	8.54
France	0.442 (0.004)	0.337 (0.004)	0.105* (0.002)	23.76	0.417 (0.006)	0.385 (0.006)	0.032* (0.002)	7.67
Germany	0.464 (0.008)	0.383 (0.010)	0.081* (0.004)	17.46	0.403 (0.009)	0.397 (0.009)	0.006 (0.003)	1.49
Italy	0.414 (0.005)	0.393 (0.005)	0.021* (0.001)	5.07	0.414 (0.010)	0.409 (0.011)	0.005* (0.002)	1.21
Spain	0.407 (0.007)	0.379 (0.006)	0.028* (0.001)	6.88	0.427 (0.008)	0.377 (0.007)	0.050* (0.003)	11.71

Notes: MPI=market + pension income, DI=disposable income, GAW=gross annuitised wealth, NAW=net annuitised wealth, Abs. RE = absolute redistributive effect, Rel. RE = relative redistributive effect (as a % of gini MPI). Standard errors are shown between parentheses. * Denotes a statistically significant redistributive effect at 1% confidence level.
Source: Own calculations based on HFCS-EUROMOD simulations.

Table 5.6 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.

5.6 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 effects of taxes and transfers (see e.g. OECD, 2011; 2015). This assessment, however, depends on the benchmark used to evaluate the redistributive effect. Consensus grows among scholars that income is a too narrow concept to assess living standards. In this chapter 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. Moreover, 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 *(see Chapter7)*.

Annex: 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 annuitised wealth, NAW=net annuitised wealth. Standard errors are shown between parentheses.
Source: Own calculations based on HFCS-EUROMOD simulations.

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 annuitised wealth, NAW=net annuitised wealth. Standard errors are shown between parentheses.
Source: Own calculations based on HFCS-EUROMOD simulations.

PART 4. APPLICATION TO TAX-BENEFIT POLICIES

Chapter 6. An assessment of wealth taxes in a joint income-wealth perspective[36]

6.1 Introduction

Before the Great Recession of 2007 wealth taxation[37] was mainly studied from an efficiency point of view. Wealth taxation was considered by the literature as non-optimal if it is possible to use non-linear labour income tax (Atkinson & Stiglitz, 1976; Chamley, 1986; Judd, 1985). However, over the last years several studies have criticised the strong hypotheses made in these frameworks and consequently argued in favour of wealth taxation (e.g. Piketty & Saez, 2012; Saez, 2002; Spiritus, 2017). Moreover, in the aftermath of the Great Recession and rising inequality as well as the influential study of Piketty (2014), wealth taxes have received increasing interest in light of their potential budgetary and distributive effects. In the context of fiscal consolidation wealth taxes provide an interesting instrument to increase government revenues and they are often defended based on equity and fairness considerations as they are levied on those with the highest ability to pay. Furthermore, international institutions (e.g. IMF, OECD, European Commission) have recommended several countries to reduce the tax burden on labour by broadening the tax base to wealth.

Nevertheless, there seems to be a general trend towards less rather than more wealth taxation in most countries as shown for instance by the fact that over the last decades the contribution of wealth-related taxes to government revenues has diminished, while at the same time the importance of households' financial and housing wealth has increased substantially. This contradiction is among others due to the fact that many OECD countries have abolished their net wealth tax over the last decades and have cut back the taxation of capital income and wealth transfers (OECD, 2018b). It is often argued that as a consequence of globalisation and increased mobility of capital, related issues of discouraging investment and capital flight have resulted in international tax competition and a race-to-the-bottom (Krenek & Schratzenstaller, 2018). The imbalance between the administrative costs vis-à-vis the limited revenues have also played a major role in the decrease of the taxation of wealth (OECD, 2018b).

These large contradictions between recommendations and real practice make wealth taxation a very interesting research topic. Yet, although the theoretical literature on (optimal) wealth taxation is relatively large and growing, there exists a large void in empirical research. Little is known about how in practice current and proposed alternative wealth taxes (might) affect aspects such as redistribution and inequality, investment and portfolio choices, labour supply, etc. Exceptions include Halvorsen & Thoresen (2017) who study the distributional effects of the Norwegian net wealth tax. Krenek & Schratzenstaller (2018) and Lawless & Lynch (2016) simulate the potential budgetary and redistributive effects of the introduction of an annual net wealth tax at the EU level and in Ireland respectively. An overview of the literature on wealth transfer taxation is provided by Kopczuk (2013). Figari et al. (2017)

---

[36] This chapter is a slightly adapted version of a paper prepared for the 35th IARIW General Conference.
[37] Throughout the chapter the terms 'wealth taxes' and 'wealth-related taxes' are used interchangeably to denote all types of taxes levied on (parts of) wealth, their transfer and/or their yields. 'Net wealth tax' will be used to denote the annual tax on the stock of net wealth.

discuss the taxation of homeownership. A recent study by the OECD (2018a) calculates marginal effective tax rates on household savings. Another very recent strand of literature looks into the behavioural aspects of wealth taxation (e.g. Brülhart et al., 2016; Durán-Cabré et al., 2017; Jakobsen et al., 2018; Seim, 2017; Zoutman, 2015).

This chapter contributes to this emerging literature by empirically analysing the equity and budgetary impact of wealth-related taxes. Since it is important to consider wealth taxes within the total tax system (OECD, 2018b) and most countries focus on the taxation of (labour) income, we also adopt an integrated perspective. In particular, we provide a combined assessment of direct taxes on income and wealth against a concept of living standards including both income and wealth resources. To this end we combine data on households' income, assets and liabilities from the Eurosystem Household Finance and Consumption Survey (HFCS) with the EU-wide tax-benefit microsimulation model EUROMOD. The analysis covers six European countries; Belgium, Germany, France, Finland, Italy and Spain, which have different wealth-related taxes in place, differ with regard to their overall tax-benefit system and are characterised by varying income and wealth distributions as well as the correlation between the two.

This chapter has multiple contributions. First, we provide an overview of the main arguments in favour and against wealth-related taxation and also extend the ability to pay argument, already used in terms of vertical equity, to horizontal equity considerations. In particular we argue that well-being and ability to pay essentially depend on one's position in the joint distribution of income and wealth and that two persons or households with the same position in this distribution should for tax purposes by treated equally irrespective of whether they derive this level primarily from their (labour) income or (annuitised) wealth. We show that wealth taxes in their current form hardly achieve any redistribution, while the burden of personal income taxes is in some countries very high. Hence, there is a strong lack of neutrality in the tax system with regard to the source from which households draw their living standard. Second, we adopt a new, broader framework to evaluate wealth-related taxes, i.e. the joint distribution of income and wealth (see also Kuypers et al., 2018a *(Chapter 5)*). Hence, in our assessment we take into account how income and wealth are interrelated, an aspect that is often overlooked in the literature. We also take into account the effect of wealth-related taxes from the moment of observation until death, which is important given the fact that the effects of wealth taxation, especially with regard to the decrease of inequality, are much more important in the long-term (Cowell & Van de gaer, 2017; Halvorsen & Thoresen, 2017). Finally, while previous studies often reflected specific case studies, we adopt a cross-country perspective by comparing effects among countries differing in some important aspects. In short, the new empirical evidence provided in this chapter provides important insights on the effects of current tax systems and highlights potential new avenues for the future debate on fiscal policies and on innovative tax designs.

The chapter is organised as follows. Section 6.2 provides an overview of the main arguments in favour and against wealth taxation. After the description of the data and methods in Section 6.3, we then start the empirical analysis in Section 6.4 by analysing the vertical equity effects of existing wealth-related taxes in the six countries under study. We first analyse wealth taxes against their main tax base, i.e. net wealth and then adopt a more integrated perspective by assessing their redistributive effects against the joint income-wealth framework. In Section 6.5 we look into the horizontal inequity between the taxation of income and that of wealth. The last section concludes.

6.2 Arguments in favour of and against wealth taxation

One of the main recommendations in the traditional literature on optimal taxation was that capital income, and by extension wealth and its transfer[38], should not be taxed if there is a non-linear tax on labour income. The classical Atkinson-Stiglitz model (Atkinson & Stiglitz, 1976) and Chamley-Judd model (Chamley, 1986; Judd, 1985) both imply that any form of wealth taxation is non-optimal because it distorts savings preferences without achieving any welfare improvement compared to the non-linear labour tax. Recently, however, arguments in favour of wealth taxation have increased substantially, even though some of the main concerns are valid and still remain to be addressed. Table 6.1 provides a brief (non-exhaustive) overview of the main arguments in favour of and against wealth taxation as well as some potential responses to the latter.

The largest set of arguments in favour of wealth taxation relates to equity considerations. A first group focuses on levels of inequality. Recently several studies have provided evidence that both income and wealth inequality have been on the rise in most OECD countries since the 1980's (Alvaredo et al., 2018; OECD, 2008, 2011, 2015). The ownership of wealth is highly concentrated, with the top 10% wealthiest households now holding on average about 50 percent of total wealth (OECD, 2015). Reductions in wealth inequality in the past have been mainly associated with external factors such as wars, revolutions, epidemics, stock-market crashes, etc. (Milanovic, 2016; Scheidel, 2017; Scheve & Stasavage, 2016). Yet, the distribution and concentration of wealth is in the first place driven by natural, systematic mechanisms, which cover both market and non-market forces (Cowell & Van de gaer, 2017). The first can take the form of faster growth of the return to wealth than economic output (r>g) (Piketty, 2014), Kuznets waves (Milanovic, 2016) or some other mechanism, while non-market forces mainly refer to the union of wealth through marriage and its division through bequests (Cowell & van de gaer, 2017). Through policies such as taxes and benefits governments may intervene into these systematic processes. Yet, evidence indicates that the progressivity of the total tax system has weakened over time (Immervoll & Richardson, 2011; Piketty & Saez, 2007) and its redistributive efforts are also considerably smaller when assessed against the framework of the joint distribution of income and wealth (Kuypers et al., 2018a *(Chapter 5)*). As wealth is more unequally distributed than income, wealth taxation could be considered an interesting way to reduce overall inequality.

A second group of arguments reflects the relationship of wealth with income as the current main tax base. It is argued that income understates a person's or household's well-being and ability to pay. Indeed, savings and assets also contribute to one's socio-economic well-being and this in a number of ways. First, wealth increases consumption possibilities through the generation of capital income, and this without having to sacrifice leisure (McDonnell, 2013). Yet, when income is insufficient the level of wealth itself also contributes to consumption possibilities through precautionary and life cycle savings. Furthermore, the mere ownership of wealth also increases utility because it creates independence and opens up a wider range of free choice (McKernan et al., 2012; Sherraden, 1991). Finally, wealth is an important contributor to achieving or maintaining class status (Keister, 2000; Spilerman, 2000) as well as having economic and political power (Cowell & Van Kerm, 2015). Given these important contributions of wealth to well-being it has been considered fair to include it in the tax base (Iara, 2015; Meade, 1978). These contributions also imply that a person's or household's ability to pay

---

[38] See for instance Kaplow (2001) and Kopczuk (2001) for an extension to wealth transfer taxation.

depends on both income and wealth, and in some cases wealth can even be regarded as better reflecting true ability to pay. For the wealthy it is for instance often hard to determine income flows. Moreover, income can fluctuate quite strongly from year to year, again especially for the very wealthy. Just because they earned a low income in a particular year generally does not mean they suddenly cannot afford to pay taxes. In contrast, the burden of paying off large amounts of debt may in fact decrease the ability to pay taxes. Hence, the fairness of the tax system can be improved through wealth taxation because it addresses both vertical and horizontal equity considerations. Most of the literature focuses on the vertical equity argument arguing that those who own large wealth should pay higher taxes than those who have low or no wealth. Here we push the argument further by also taking into account horizontal equity considerations. We argue that well-being and ability to pay essentially depend on one's position in the joint distribution of income and wealth (Kuypers & Marx, 2018a, 2018b; Kuypers et al., 2018a *(Chapters 1, 4 & 5)*); i.e. we account for income and wealth as well as their correlation. Two persons or households with the same position in the joint income-wealth distribution are considered to have a similar level of well-being and ability to pay and hence should for tax purposes by treated equally irrespective of whether they derive this level primarily from their income or wealth.

An argument specifically related to wealth transfer taxation is that of equality of opportunity. Indeed, bequests are one of the most important factors underlying the increasing levels of wealth inequality (Piketty, 2011, 2014; Piketty & Zucman, 2015). A relatively large share of people receives bequests at some point in their life and although they can in principle reduce inequality because they represent a larger proportion of poor households' current wealth levels, bequests are generally found to exacerbate wealth inequality because their size increases with wealth levels (Cowell et al., 2017). Hence, those receiving large bequests get an important and unmerited head start in life. This has been considered unfair which paves the way for inheritance and gift taxation.

In the aftermath of the sovereign debt crisis also arguments related to government revenues have been raised. Currently most countries generate little revenues through their existing wealth taxes (see section 6.3.1, such that their abolishment may have a relatively low impact on budgets (Boadway et al., 2010; Kopczuk, 2013). Yet, so far the very wealthy have hardly contributed their share in budget consolidation after the crisis (Krenek & Schratzenstaller, 2018). Given the fact that stabilisation policies have mainly benefited asset values, while austerity increased the burden on labour and transfer incomes, wealth taxation is interesting as it extends the notion of ability to pay to the costs of the crisis (Iara, 2015). Wealth taxes are indeed considered to be a useful instrument to consolidate government budgets in times of crisis as shown by the reintroduction of the annual net wealth tax in Spain and Iceland. Also one-time capital levies are considered to be particularly useful to raise considerable revenues, for instance to bring down public debt (Bach et al., 2014; IMF, 2013). Moreover, the fact that wealth is likely to become increasingly more important than income, also implies that the current primary tax base (i.e. income) may erode in the future, such that wealth taxation may be needed to preserve government revenues. Finally, Krenek & Schratzenstaller (2018) argue in favour of an annual net wealth tax levied at the level of the European Union with the main aim to make the EU's own budget more sustainable.

Although equity and revenue considerations inspire the main claims in favour of wealth taxation, it is also increasingly argued that it would be good from an efficiency point of view. Various studies have criticised the strong hypotheses made in the classical optimal tax literature, especially with regard to

the assumption that individuals only differ in their labour earning abilities, implying that wealth inequality would only originate from income inequality (Bastani & Waldenström, 2018). Several authors have shown that more plausible assumptions such as heterogeneity in multiple dimensions (i.e. different returns to investment, different bequest probabilities, ...) rather point towards non-zero taxation of wealth (e.g. Piketty & Saez, 2012; Saez, 2002; Spiritus, 2017). Furthermore, it has been argued that a too large concentration of wealth has a detrimental impact on economic growth (Bagchi & Svejnar, 2015; Stiglitz, 2016) and overall macro-economic stability (Godar et al., 2015; Iara, 2015). In this context wealth taxation is needed to put a halt to the systematic mechanisms of perpetuating and increasing wealth concentration. Hence, these arguments imply that the efficiency versus equity trade-off in wealth taxation may in fact be attenuated (Krenek & Schratzenstaller, 2018).

Table 6.1 Overview of arguments in favour of and against wealth taxation

	Arguments in favour	
Equity-related	• Increasing inequality • Decreasing redistribution • Ability to pay • Horizontal inequity between wealth and income • Equality of opportunity	
Efficiency-related	• Bring down public debt • Preserve tax revenues in the future • Wealth concentration harms growth	
	Arguments against	**Potential response to arguments**
Equity-related	• Double taxation	• Almost never full double taxation, tax utility derived from ownership
	• Inheritance tax = tax on grief	• Unmerited advantage
Efficiency-related	• Valuation issues	• Use insured values, existing valuations, fixed valuation for few years
	• Cost of tax administration	• Improvements in technology
	• Discouraging financial investment and cause capital flight	• Incentive for productive use of wealth
	• Tax avoidance & evasion	• Third party reporting & Automatic exchange of information
Other	• Political feasibility	

Source: Own summary

Even though the arguments in favour of wealth taxation are numerous, there are also several arguments against (more) wealth taxation. First, there are several technical arguments such as difficulties with the valuation of non- or infrequently traded asset types or the cost of tax administration. Although empirical evidence is scarce, recent progress in information and communication technology may somewhat reduce these challenges (Iara, 2015; Krenek & Schratzenstaller, 2018). For the valuation of assets such as jewellery or artwork insured values could be used (OECD, 2018b). Moreover, costs could be reduced by using the same valuations in the different wealth taxes and/or to treat the value of (particular) assets fixed for a few years (McDonnell, 2013).

A more intrinsic and very popular objection towards wealth taxation refers to the fact that for a large part wealth is the result of saved income and bequests which have already been taxed under the personal income tax and inheritance & gift tax respectively. Moreover, certain asset types also

generate an income stream which is likewise taxed as capital income. As a counterargument one could argue that this issue of 'double (or even triple) taxation' is not confined to wealth taxes; also in the case of consumption taxes a tax is paid on goods and services which are bought using already taxed income (Boadway et al., 2010; OECD, 2018b). In general there seems to be more opposition towards the first than the latter, while in the case of wealth taxation the burden mainly falls on the wealthy compared to the poor in the case of consumption taxes. Furthermore, it almost never consists of full double taxation, i.e. tax bases typically do not correspond perfectly. For instance, capital gains are in a lot of countries not taxed or only when accrued and only those assets that are held until death are taxed both under a general net wealth tax and the inheritance tax (Boadway et al., 2010). Yet, even if one would agree with the argument of double taxation, wealth taxation remains defensible by the fact that the mere ownership of assets provides utility to its owner(s) and it is considered fair to tax this utility (Iara, 2015; Meade, 1978).

Another issue is the fact that it may be politically very difficult to introduce or increase wealth taxes as they are often very unpopular and the wealthiest often have significant political influence. Inheritance taxation is one of the least popular taxes as it is sometimes labelled as a 'death tax' or a 'tax on grief' and prevents the deceased from 'living on' through the bequest to their children (Masson, 2015). It is also often argued that people should have the right of autonomy with respect to what they do with their own acquired property (Rakowski, 2006). The latter may be a valid argument from the perspective of the donor. Yet, in most countries inheritance taxes fall on the recipients for whom the inherited wealth is an unmerited advantage.

The most important arguments against wealth taxation probably relate to economic efficiency. Wealth taxes are argued to distort financial investment, entrepreneurship and risk-taking (in a closed economy) and to cause capital flight (in an open economy). Tax evasion and avoidance is another potential consequence of increased wealth taxation, which implies that it may in practice generate little revenue and might have negative equity effects as the wealthy are more able to use these techniques. Unfortunately, the literature on the elasticity of taxable wealth is still relatively small. Yet, evidence provided by Brülhart et al. (2016), Durán-Cabré et al. (2017), Seim (2017) and Zoutman (2015) indicates that the effects on actual behaviour (i.e. a lower overall level of investment or a reconfiguration of asset portfolios) are rather limited, while there is a much stronger effect on wealth reported to tax authorities (due to tax evasion). Gabriel Zucman and colleagues have shown that the volume of wealth hidden in tax havens is indeed very large (e.g. Alstadsæter et al., 2018; Zucman, 2015, 2013).

A possible reply against the discouragement of financial investment is the fact that the taxation of wealth might provide an incentive for wealth holders to seek the best possible return for their investments which is generally achieved through a more productive use of wealth. In other words, in order to be able to pay the tax inefficient investors have the choice between selling some of their wealth to more dynamic investors or to become more dynamic investors themselves, which is likely to have a positive effect on economic growth (Guvenen et al., 2017; McDonnell, 2013; Piketty, 2014). Moreover, since human capital is exempted from wealth taxation, a tax on wealth lowers the net return on tangible capital relative to the return on human capital. This provides an incentive to invest in human capital, which is again beneficial for growth (OECD, 2018b). Furthermore, it could be argued that the negative effects of capital flight and tax evasion call for restraining these possibilities through

an adequate tax design and the strengthening of international cooperation rather than the abolishment of wealth taxation altogether (Cremer & Pestieau, 2011; Krenek & Schratzenstaller, 2018; Piketty, 2014). Indeed, by relying on third party reporting and the international exchange of information evasion possibilities can be largely curbed. Regarding the latter important progress has been made over the last years on moving towards the automatic exchange of information rather than on request alone. Important landmarks include the EU council directives of 2003 and 2011, the US Foreign Account Tax Compliance Act (FATCA) and the OECD/G20 Common Reporting Standard (OECD, 2018a). However, it is important to note that the restriction of avoidance and evasion possibilities might potentially increase the impact on actual investment behaviour, as a last resort to decrease tax liabilities (OECD, 2018b).

Even among those who agree that wealth should be taxed there remains considerable disagreement on how to do so. Most importantly this reflects the type of tax to be used; i.e. taxing the income generated by wealth, the gains accrued on wealth, the possession of wealth or the transfer of wealth.[39] The arguments listed in Table 6.1 may be applicable in different degrees such that from an efficiency, equity and/or revenue point of view different options may be preferred.

First, from an efficiency point of view capital income taxes are generally preferred over net wealth taxes because they are less distortive and less administratively costly (OECD, 2018b). Yet, in most countries capital income is taxed separately from labour and other income, generally against a flat tax rate and with large exemptions (Förster et al., 2014; OECD, 2018a, 2018b). Furthermore, there are several asset types which do not generate any income such as jewellery, artworks and other collectables, and in most countries also imputed rent is tax exempt. Furthermore, capital income taxes could be avoided by incorporating investments or the return to capital could be left accumulating in trust funds. In other words, capital income often does not reflect the full level of ability to pay because not all assets generate an income and because the utility derived from other functions of wealth are not taken into account.

Moreover, capital income taxation by itself is not sufficient to reduce overall inequality levels as the wealthiest households will still add post-tax returns to investments to the principal wealth level (OECD, 2018b). The fact that wealth inequality is more strongly driven by inherited wealth than self-made wealth (Piketty & Zucman, 2015) argues in favour of combining it with inheritance and gift taxation. Indeed, a combined system of capital income (including capital gains) taxation and inheritance taxation addresses both market and non-market processes of wealth concentration (cfr. Cowell & Van de gaer, 2017) and is often considered the preferred option to wealth taxation. If such a comprehensive system is well-designed there are only limited reasons to have a net wealth tax on top of it (OECD, 2018b).

Yet, there are arguments to have a net wealth tax when this system is less well-designed, which is arguably the case in most countries (OECD, 2018b). Yunker (2010) argues that inheritance taxation has an effect in the long run only if the initial starting point is a scenario of relative equality. When wealth inequality has already reached a high level, inheritance taxation by itself becomes ineffective in

---

[39] Even increased VAT or excise duties on luxury goods are considered as policy options to increase the taxation of the wealthy (Krenek & Schratzensteller, 2018). Furthermore, an alternative way to include wealth considerations would be through wealth-testing to determine tax liability for the income tax and/or social benefit entitlements (OECD, 2018b). These options are outside the scope of this chapter.

reducing this level. However, an annual wealth tax, even at relatively low rates, may be highly effective even when wealth inequality is already very high (OECD, 2018b; Yunker, 2010). Furthermore, self-made fortunes are not necessarily the result of hard work and also largely depend on asset prices and luck (Yunker, 2010). Combined with the fact that the mere ownership of assets provides utility to its owner(s) above and beyond the income stream it generates argues in favour of an annual net wealth tax. Piketty et al. (2013) argue that we need a combination of taxes on (capital) income, inheritance and net wealth. In a similar vein Atkinson (2015) included all three types of taxes in his list of proposals for a more equal society. Moreover, from an efficiency point of view Guvenen et al. (2017) find that an optimal tax system with a net wealth tax yields higher welfare than the one with capital income tax.

6.3 Data & methods

Despite the renewed interest in wealth taxation, empirical studies looking into the budgetary, redistributive and incentive effects of wealth taxes are still rare. Microsimulation modelling presents one interesting approach towards these issues. Yet, although there is an increasing literature on the impact of personal income taxation using microsimulation techniques (see e.g. Immervoll & Richardson, 2011; Piketty & Saez, 2007; Verbist & Figari, 2014), there remains an important void with regard to the taxation of wealth. This is largely due to the fact that the policy scope of microsimulation models largely relies on the underlying dataset. For a long time administrative and survey data did not included wealth-related information. Yet, this has changed recently with the launch of the Luxembourg Wealth Study (LWS) and the Eurosystem Household Finance and Consumption Survey (HFCS). As before the analyses in this chapter are based on EUROMOD simulations which are run on the HFCS database as discussed in Chapter 2 and 3. A brief overview of the existing wealth taxes that we consider, their budgetary impact and how they are simulated is provided in Section 6.3.1. In Section 6.3.2 we explain the approach used to evaluate wealth taxes in Sections 6.4 and 6.5.

6.3.1 Wealth taxes and their simulation

Historically taxes on wealth preceded taxes on income, mainly because wealth was highly visible and singularly structured as up until the industrial revolution it mainly consisted of farmland and rural real estate, while after the revolution it was primarily industrial assets. Income, in contrast, was difficult to gauge, even for earners themselves. In most countries top wealth tax rates peaked around the World War period (Piketty, 2014; Scheve & Stasavage, 2016). Yet, since then the importance of wealth taxation has gradually eroded, accelerating in the last few decades mainly due to the increased mobility of wealth which resulted in increased international tax competition and a race-to-the-bottom. Indeed, over the last decades several countries have abolished their net wealth tax: France (2018), Sweden (2007), Luxembourg (2006), Finland (2006), Iceland (2006), Germany (1997), Austria (1995), Denmark (1995). Only Spain, Norway and Switzerland still have a net wealth tax for individuals in place.[40] Furthermore, many countries have also experienced a reduction in the taxation of capital income and/or inheritances. Capital income is now often taxed separately or at source, generally at a

---

[40] Luxembourg still has a net wealth tax on corporations. France replaced its general net wealth tax (Impôt de solidarité sur la fortune) with a real estate wealth tax (Impôt sur la fortune immobilière). The Netherlands had an actual net wealth tax in place between 1965 and 2001. In 2001 they introduced a presumptive capital income tax *(Vermogensrendementheffing)* which implicitly still functioned as a net wealth tax. Since 2017 the presumptive rate of return follows actual rates of return, differs among asset types and increases with net wealth. Iceland reintroduced its wealth tax as a temporary emergency measure between 2010 and 2014.

proportional and relatively moderate rate (OECD, 2018a). As a consequence the unweighted OECD average statutory capital income tax rate declined from 47 per cent in 1981 to 24 per cent in 2017 (OECD, 2018b). Also inheritance taxation has declined: marginal top tax rates have decreased in all countries but France and Germany, several countries have increased exemptions and some have even repealed them altogether (Australia, Canada and Sweden) (Förster et al., 2014). Today most OECD countries still levy taxes on both income and wealth, but the emphasis clearly lies on the taxation of labour income. As a result wealth tax revenues only represent a minor share of total tax revenues and GDP, as is shown in Figure 6.1. The Figure also shows that our selection of countries represents a good mix: while France, Belgium, Spain and Italy are among the countries generating relatively high tax revenues, wealth taxes in Finland and Germany hardly contribute to government budgets.

Figure 6.1 Revenues of wealth taxes as % of GDP and total tax revenues
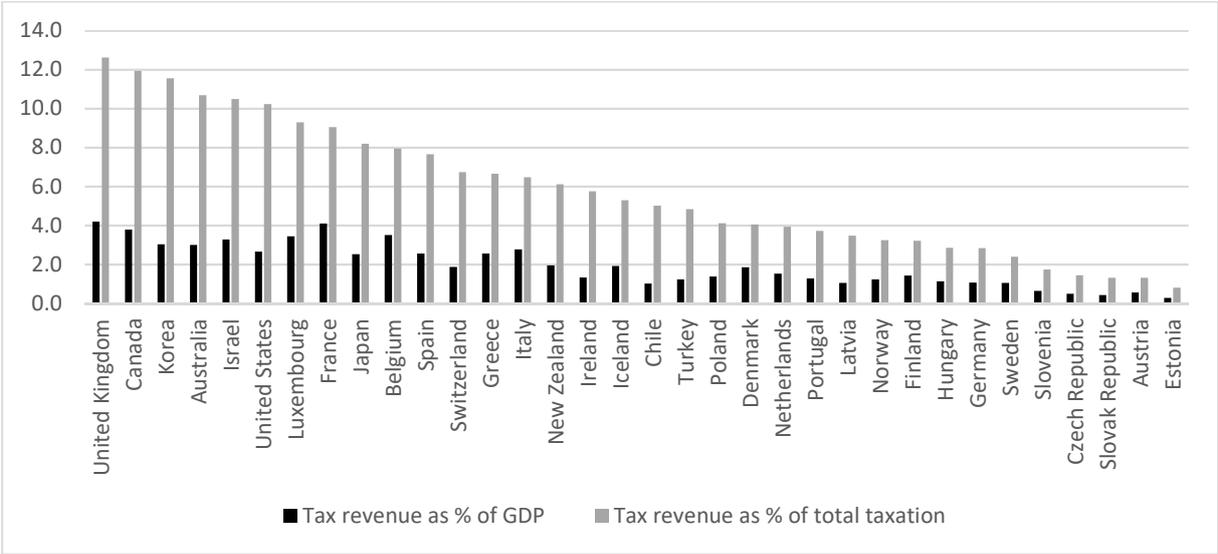
Notes: Figures refer to 2016, for Australia to 2015. Countries are ranked by highest tax revenue as % of total taxation. Figures include taxes on both individuals and corporations.

Source: OECD Tax Revenue Database

Overall, existing systems of wealth taxation largely focus on the taxation of real estate, while the ownership, transfer and/or return of financial assets is often tax exempt. There are several reasons for the focus on real estate: it typically constitutes the most important component in households' asset portfolio such that the revenue potential is large, it is highly visible and most countries keep records in a real estate register (while most do not have a general wealth register in place) which restricts possibilities for tax evasion and avoidance and due to its immobile character behavioural responses are limited and therefore less distortive (OECD, 2018b). As is shown in Figure 6.2 these general trends are also found for the six countries considered here, although there exist some important differences across countries. For all countries the highest revenues are achieved through recurrent taxes on the ownership of real estate property. Furthermore, transaction taxes are often also only in place for real estate or taxed at higher rates than transactions of financial capital (OECD, 2018a). Inheritance and gift taxes are relatively important in Belgium and France, while they hardly generate any revenues in Italy. The general net wealth taxes of France and Spain as well as the specific net wealth tax of Belgium all raise 0.5 per cent of the total tax revenue.

Figure 6.2 Composition of wealth tax revenue (as % of total tax revenue)
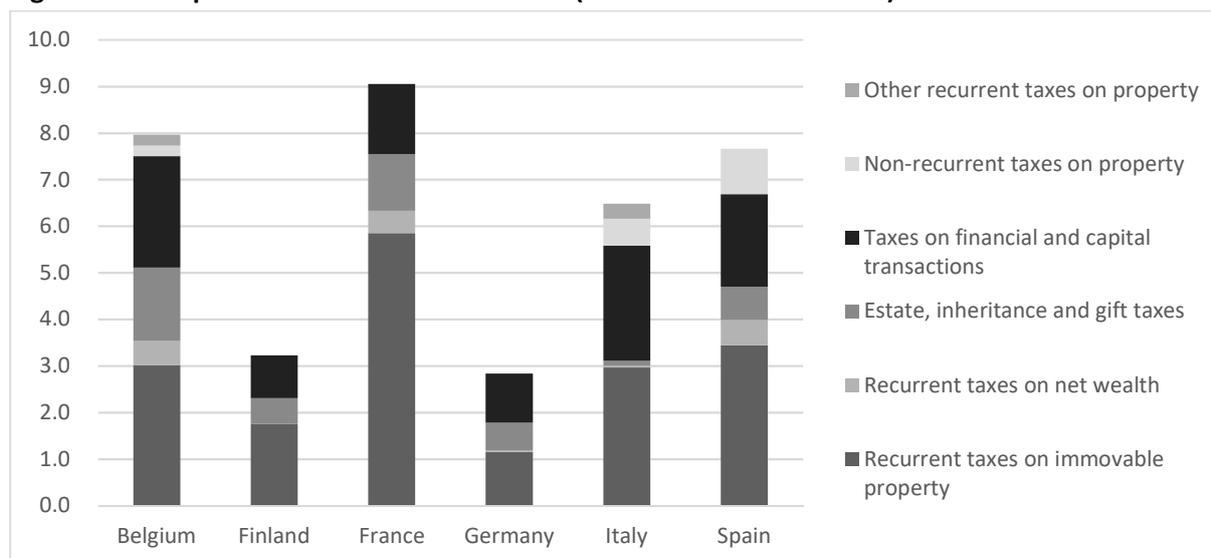
Note: Figures refer to 2016 and include taxes on both individuals and corporations.
Source: OECD Tax Revenue Database

As explained in Chapter 3 an important added value of running EUROMOD on the HFCS data is that it allows to extend the current scope with simulations of existing and hypothetical wealth-related policies. In this chapter we focus on the wealth taxes as they existed in 2017 in each of the six countries. Capital income taxes, recurrent 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 or most types of assets) was in place in France and Spain, while a specific net wealth tax (a tax on specific types of assets) exists in Belgium and Italy. While those countries having a general net wealth often exempt private pensions (OECD, 2018b), Belgium levies a one-time tax on accumulated private pension rights the moment people turn 60. Italy taxes the ownership of bank accounts and financial products. An overview of the main design characteristics of these wealth taxes in each of the countries is provided in Table A.1 to A.5 in the annex. In several countries there exist different rules for the wealth held by non-residents or the wealth held by residents in other countries. The HFCS only includes the wealth held by residents and does not specify where wealth is held. Hence, for the analysis in this chapter the legislation applicable to wealth held by residents within the country of residence is applied to all wealth covered in the HFCS (the tables in the annex also only describe these rules).

Table 6.2 shows again which of the wealth taxes are simulated in EUROMOD. Due to data limitations we cannot simulate capital gains taxes and taxes on financial transactions. The inheritance and gift tax cannot be simulated for Italy and Finland as is the case for the real estate transfer tax in Finland, all due to missing data. As shown in Figure 6.2 these taxes generate little or no revenues so the effect on our simulations will be rather limited. Other data limitations include the fact that taxable values of real estate are approximated as a share of market values, that inheritances & gifts between spouses are not recorded and that regional information is missing (Kuypers et al., 2017 *(see also Chapter 2 and 3)*). The latter may affect the results the most as several of the countries considered here have regional elements in place in their wealth taxes. For Belgium the regional differences are the most extensive so we do simulate these regional elements by assigning sample households at random to the Flemish, Walloon and Brussels Capital Region in accordance to their respective population shares. For the other countries there are often regional or municipal differences in tax rates of the real estate tax and the

real estate transfer tax, in which case we used averages. For Spain we simulate the national tax legislation for the inheritance & gift tax and the net wealth tax, although the Autonomous Regions can decide on different rules.

Table 6.2 Wealth tax coverage in EUROMOD

	BE	FI	FR	DE	IT	ES
Capital income tax[41]	S	S	S/N[42]	S	S	S
Capital gains tax	N/A	N	N	N	N	N
Real estate tax[43]	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)

To be able to use the HFCS-based underlying dataset, which contains information of 2010, 2009 or 2007, for the simulations of 2017 policies monetary variables need to be updated to 2017. Income variables are generally updated based on the evolution of the price index or other relevant information. The asset and debt variables are adjusted according to their aggregate evolution in the national accounts between de HFCS reference year and 2017. Non-monetary variables are assumed to have remained the same.

Table 6.3 shows the validation of the simulated tax revenues against administrative statistics for 2017. The largest discrepancies between the two can be mainly attributed to the aforementioned data limitations; e.g. the inheritance & gift tax is in most cases undersimulated because the HFCS does not cover transfers made between persons living within the same household such as spouses. However, as the main purpose of inheritance & gift taxation is to decrease the transmission of intergenerational inequality these are not the main focus of wealth taxation and hence of this chapter. Also, the OECD categorisation of tax revenues generally does not distinguish between real estate transfer taxation and the taxation of financial transactions as well as no separation between taxes levied on individuals versus corporations (while this distinction is made for the recurrent wealth taxes) *(see also Chapter 3)*.

---

[41] Capital income generally excludes rental income, which is taxed under the personal income tax. Only in Finland rental income is taxed under the capital income tax.

[42] In France capital income is taxed under the personal income tax so there is no separate simulation.

[43] 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.

Table 6.3 Validation tax revenues, 2017

Country	Policy	Millions of Euro		EM-HFCS/OECD (%)
		EM-HFCS	OECD	
Belgium	Capital income tax	3,096	4,099	75.5
	Real estate tax	3,015	3,775	79.9
	Specific net wealth tax	179	382	46.9
	Real estate transfer tax	2,468	4,154	59.4
	Inheritance & gift tax	1,990	2,932	67.9
Finland	Capital income tax	1,584	2,409 (*)	65.8
	Real estate tax	1,022	764	133.8
France	Real estate tax	17,572	18,465	95.2
	Net wealth tax	6,562	4,837	135.7
	Real estate transfer tax	8,644	12,644	68.4
	Inheritance & gift tax	12,030	12,362	97.3
Germany	Capital income tax	8,224	7,333 (*)	112.2
	Real estate tax	6,983	5,462	127.8
	Real estate transfer tax	7,431	12,408	59.9
	Inheritance & gift tax	3,540	7,007	50.5
Italy	Capital income tax	1,576	1,629 (*)	96.7
	Real estate tax	15,740	20,045	78.5
	Specific net wealth tax	1,410	N.A.	N.A.
	Real estate transfer tax	761	1,569	48.5
Spain	Capital income tax	1,012	3,074 (*)	32.9
	Real estate tax	8,310	12,924	64.3
	Net wealth tax	1,594	1,257	126.8
	Real estate transfer tax	4,586	7,490	61.2
	Inheritance & gift tax	2,848	2,676	106.4

Note: OECD figures refer to 2016 as those of 2017 are not yet available.

Source: Own calculations based on HFCS-EUROMOD simulations and OECD tax revenues database. (*) National sources: FI: Statistics Finland (2016), DE: Statistics Germany (2017), IT: Dipartimento delle Finanze (2017), ES: Agencia Tributaria (2016)

Although the HFCS applies an oversampling to the wealthiest, wealth shares of the top 5% and top 1% wealth owners are still found to be underestimated (e.g. Vermeulen, 2014; 2016). Therefore, previous studies have argued that the HFCS data is by itself insufficient to study the distribution of wealth and have proposed ways to combine it for instance with information from national or international rich lists such as the Forbes (e.g. Bach et al., 2018; Eckerstorfer et al., 2016; Vermeulen, 2014; 2016). In this chapter we do not apply this approach as the figures in Table 6.3 show that the wealth taxes most targeted at the rich, i.e. the net wealth taxes of France and Spain, are already significantly oversimulated. In other words, our simulations seem to be rather close to reality in which tax avoidance and evasion among the rich substantially reduce the actual tax revenues obtained. Hence, by not including information on the rich we in fact more accurately simulate those who are paying the taxes in practice and therefore their redistributive effects.

6.3.2 Evaluating wealth taxes

Previous studies on the empirical effects of wealth taxation typically evaluate its impact against the income distribution (e.g. Halvorsen & Thoresen, 2017; Lawless & Lynch, 2016). Although this relates to the fact that taxes are usually paid with income and all existing indicators are developed in income terms, this approach implicitly assumes that it is income inequality which we mainly care about and its decrease is the main goal of wealth taxation. In the literature in general it is often unclear whether the main concern of redistribution should be to decrease wealth inequality or income inequality (Fleischer, 2016). Since it concerns taxes on wealth one could just as well argue that their main goal is to decrease wealth inequality, which does not necessarily coincide with income inequality. Therefore, we first start in Section 6.4 by evaluating wealth taxes against their (potential) tax base, i.e. the distribution of wealth. In this perspective wealth taxes are considered to reduce the after-tax stock of wealth. In contrast to these two approaches, our main argument is that we should care about both income and wealth inequality as well as how they are related to each other. Therefore, the main reference framework used in this chapter is an integrated one, in which we assess the effects of taxes against the joint distribution of income and wealth. As discussed in Section 6.2 our main argument is that well-being and ability to pay ultimately depend on both income and wealth such that one's total tax liability should be linked to one's position in the joint distribution of income and wealth. As before the measure for the joint distribution of the flow of income and the stock of wealth is based on the annuity approach discussed in Chapter 4.

In Chapter 5 an extension to this approach was proposed by defining pre-tax and post-tax concepts of annuitised wealth, which is also used here. As before, 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 annuitisation, while the yearly recurrent wealth taxes (i.e. real estate, specific and general net wealth taxes) are captured by the difference between a gross and a simulated net interest rate of the annuity (ρ). Hence, the effects of wealth taxes are taken into account from the moment of observation until the expected moment of death. This long-term perspective is important given that wealth taxes mainly have an effect in the long run (Cowell & Van de gaer, 2017; Halvorsen & Thoresen, 2017; Yunker, 2010). Again we start from a 5% gross interest rate and then simulate a net interest rate depending on the recurrent wealth taxes paid. For the 2017 tax systems this is on average equal to 4.82% in Belgium, 4.90% in Germany, 4.76% in Spain, 4.42% in Finland, 4.84% in France and 4.83% in Italy.

In the following two sections we will evaluate wealth taxes as in place in 2017 on grounds of vertical and horizontal equity. Regarding the first we measure redistributive effects (RE) of wealth taxes in the Lorenz curve framework as initiated by Musgrave & Thin (1948) and Kakwani (1977a, 1977b). The overall redistributive effects are given by the difference between the pre-tax and post-tax Gini coefficients, which are decomposed into the contributions of each of the different types of wealth taxes, which in turn depend on their tax rate and progressivity (Duclos, 1993; Lambert & Pfähler, 1988) *(for more information see Chapter 5).*

While vertical equity indicators present to which extent those with unequal ability to pay are treated differently by the tax system, the concept of horizontal equity refers to the extent to which those with equal ability to pay are treated similarly. Atkinson (1980) and Plotnick (1981) consider reranking as a measure of horizontal inequity, while others look at the unequal treatment of equals that does not automatically result in reranking (e.g. Lambert & Aronson, 1993). However, the empirical implementation of horizontal equity indicators largely depends on how to define 'equals' which may be difficult in practice (Verbist & Figari, 2014). Therefore we opted for a more pragmatic approach by each time running the simulations on the same total sample and simply changing the resource from which they derive their living standard. In other words, we analyse how the same set of people would be treated differently by the tax system in some hypothetical cases (see Section 6.5 for more details).

Again, it is important to note that EUROMOD is a static simulation model which takes the pre-tax distribution as given. This implies that we only study the direct effects of wealth taxation, while they can of course also have an indirect impact, for instance through behavioural effects, which has been recently demonstrated by a number of studies (e.g. Brülhart et al., 2016; Durán-Cabré et al., 2017; Jakobsen et al., 2018; Seim, 2017; Zoutman, 2015).

6.4 Assessment of wealth taxes: vertical equity

In this section we evaluate the impact of existing wealth taxes in terms of vertical equity. We first start with an evaluation perspective against the distribution of wealth alone, afterwards we will also include income. There are two potential wealth concepts to rank units, i.e. either gross or net wealth, where the latter takes into account outstanding debt on gross wealth.[44] There are arguments in favour of using either one of the two as tax base, and hence also as the reference framework against which to assess equity. On the one hand, if debts can be deducted from the tax base this may provide an incentive to increase borrowing, which in turn facilitates tax avoidance and may raise financial stability concerns (McDonnell, 2013; OECD, 2018b). On the other hand, net wealth is argued to better reflect ability to pay and may therefore be more relevant in terms of vertical and horizontal equity considerations. While net wealth is the main tax base for inheritance & gift taxes and the net wealth taxes of France and Spain, other wealth related taxes generally use gross wealth as tax base. Comparing the two approaches also sheds light on the relation between the distribution of wealth taxes and debt.

---

[44] To avoid confusion we use gross and net here to refer to the difference with or without taking into account outstanding debt, while we use the terms pre-tax and post-tax to distinguish whether or not taxes are taken into account.

Table 6.4 Redistributive effect of wealth taxes assessed against six different frameworks

Country	Gross wealth			Net wealth		
	$Gini_{pre-tax}$	$Gini_{post-tax}$	RE	$Gini_{pre-tax}$	$Gini_{post-tax}$	RE
Stock of wealth framework						
Belgium	0.5563	0.5561	0.0002	0.6085	0.6091	-0.0006*
	(0.0073)	(0.0073)	(0.0001)	(0.0072)	(0.0072)	(0.0002)
Finland	0.5310	0.5307	0.0003*	0.6609	0.6615	-0.0006*
	(0.0038)	(0.0038)	(0.0000)	(0.0039)	(0.0039)	(0.0000)
France	0.6324	0.6320	0.0004*	0.6667	0.6667	0.0000
	(0.0040)	(0.0040)	(0.0001)	(0.0040)	(0.0040)	(0.0000)
Germany	0.6961	0.6961	0.0000	0.7272	0.7274	-0.0002*
	(0.0098)	(0.0098)	(0.0000)	(0.0098)	(0.0098)	(0.0001)
Italy	0.5935	0.5931	0.0004*	0.6071	0.6067	0.0004*
	(0.0059)	(0.0059)	(0.0000)	(0.0060)	(0.0060)	(0.0000)
Spain	0.5490	0.5490	0.0000	0.5980	0.5987	-0.0007*
	(0.0059)	(0.0059)	(0.0000)	(0.0062)	(0.0062)	(0.0001)
Annuitised wealth framework						
Belgium	0.6087	0.6084	0.0003	0.6578	0.6580	-0.0002
	(0.0080)	(0.0080)	(0.0008)	(0.0076)	(0.0076)	(0.0008)
Finland	0.5625	0.5625	0.0000	0.6809	0.6804	0.0005
	(0.0036)	(0.0035)	(0.0003)	(0.0035)	(0.0035)	(0.0002)
France	0.6602	0.6594	0.0008*	0.6941	0.6936	0.0005*
	(0.0038)	(0.0038)	(0.0001)	(0.0037)	(0.0037)	(0.0001)
Germany	0.7116	0.7121	-0.0004	0.7420	0.7426	-0.0006*
	(0.0086)	(0.0087)	(0.0002)	(0.0084)	(0.0085)	(0.0002)
Italy	0.6243	0.6220	0.0023*	0.6386	0.6363	0.0023*
	(0.0061)	(0.0062)	(0.0002)	(0.0061)	(0.0061)	(0.0002)
Spain	0.5778	0.5790	-0.0012*	0.6248	0.6262	-0.0014*
	(0.0054)	(0.0053)	(0.0002)	(0.0055)	(0.0054)	(0.0002)
Joint income-annuitised wealth framework						
Belgium	0.3991	0.3965	0.0026*	0.4093	0.4067	0.0026*
	(0.0069)	(0.0068)	(0.0006)	(0.0069)	(0.0069)	(0.0006)
Finland	0.2805	0.2768	0.0037*	0.2873	0.2832	0.0040*
	(0.0020)	(0.0020)	(0.0001)	(0.0020)	(0.0020)	(0.0001)
France	0.3584	0.3541	0.0043*	0.3570	0.3527	0.0043*
	(0.0030)	(0.0029)	(0.0001)	(0.0030)	(0.0030)	(0.0001)
Germany	0.4061	0.4050	0.0011*	0.4052	0.4041	0.0011*
	(0.0071)	(0.0071)	(0.0002)	(0.0073)	(0.0073)	(0.0002)
Italy	0.3974	0.3942	0.0032*	0.3982	0.3949	0.0033*
	(0.0049)	(0.0048)	(0.0002)	(0.0049)	(0.0049)	(0.0002)
Spain	0.3713	0.3701	0.0012*	0.3752	0.3738	0.0014*
	(0.0053)	(0.0053)	(0.0001)	(0.0054)	(0.0054)	(0.0001)

Notes: RE= redistributive effect, which is the difference between the pre-tax Gini and post-tax Gini; The distinction between gross and net wealth reflects taking into account outstanding debt. In the joint income-annuitised wealth framework pre-tax and post-tax only refers to the inclusion of wealth taxes, they are always post income tax. Standard errors are shown between parentheses, * denotes a 1% statistically significant difference between pre-tax and post-tax Gini.
Source: Own calculations based on HFCS-EUROMOD simulations.

Table 6.4 presents the pre-tax and post-tax Gini coefficients and their difference for both gross wealth and net wealth. The top part evaluates the redistributive effects of wealth taxes against the stock of wealth as originally observed in the HFCS data, while the middle part assesses redistributive effects in the annuity framework. In terms of interpretation the stock approach can be regarded as focusing on the actual tax payment that takes place in a given year, while in the annuity framework the redistributive effect reflects the difference in amount which is available for spending in a given year.

The fact that inequality increases between the stock and annuitised framework reflects the effect of life expectancy: the elderly have high wealth and short life expectancies, while the young have low wealth and long life expectancies, which exacerbates inequality. We find that the redistributive effect of wealth taxes slightly increases when moving from the stock to annuitised framework. However, in general the redistributive capacity of wealth taxation is very small and sometimes even regressive, yet statistically different from zero in several cases. Redistributive effects assessed against net wealth are slightly more regressive than for gross wealth which means that those with large gross wealth often also have large amounts of outstanding debt which lowers their position in the distribution. Italy is the exception with the highest redistributive effects (although still considerably lower than those of other tax-benefit instruments (Kuypers et al., 2018a *(Chapter 5)*)) which remain at about the same level for net and gross wealth and are statistically significant in all four assessment frameworks.

The bottom part of Table 6.4 uses the joint distribution of income and annuitised wealth as the assessment framework. It is important to note here that all the Gini coefficients are after income tax and hence the redistributive effect should be interpreted as the extent to which wealth taxation redistributes on top of the redistribution achieved by income taxes. Another possibility would be to calculate all Gini coefficients before income tax which would show how wealth taxation by itself redistributes market inequalities. As the literature typically considers wealth taxes as a surtax on income taxes (e.g. McDonnell, 2013, p.41), the first option was chosen. In terms of interpretation the comparison of the bottom and middle part of Table 6.4 shows the effect of the reranking of individuals between the income and wealth distributions, which are imperfectly correlated (Kuypers et al., 2018a *(Chapter 5)*). As expected inequality is lower in the joint income-wealth framework as income is more equally distributed than (annuitised) wealth. We also find that redistributive effects increase for all countries, which would be even more strongly so when expressed in relative terms as pre-tax inequality is lower. This implies that the incidence of wealth taxation is more concentrated at the top of the joint income-wealth distribution than in the top of the wealth distribution by itself. In other words, those who own wealth, and hence pay wealth taxes, are substantially richer than those who only earn an income. Redistributive effects are found to be the highest in France, Finland and Italy, lowest in Germany and Spain with Belgium being in the middle. Again it is important to note that they are still considerably smaller than redistributive effects of income taxes and other redistributive instruments (Kuypers et al., 2018a *(Chapter 5)*). In contrast to the frameworks where only (annuitised) wealth is used, the redistributive effects are similar irrespective of whether gross or net wealth is used. This is probably due to the fact that the ranking of individuals is more dependent on income than annuitised wealth, i.e. for the majority of people income is the most important financial resource.

The decomposition of the overall redistributive effects in terms of progressivity and size is shown in Table 6.5 and Figure 6.3 respectively. As it is considered to best reflect ability to pay we use net wealth as the main reference framework from now on. In terms of progressivity Table 6.5 presents Kakwani indices across the three assessment frameworks. In line with the results for redistributive effects above we find that overall progressivity (last column) is substantially higher when assessed against the joint income-wealth framework compared to when only (annuitised) wealth is used. Again, progressivity is strongest in France, Finland and Italy, while relatively low in Spain. As a matter of sensitivity check Kakwani indices are also calculated for gross wealth, which are presented in Table A.6 in the Annex. Similarly as for the redistributive effects we find that there is higher progressivity (or less regressivity) when wealth taxes are assessed against gross wealth.

Table 6.5 Kakwani indices (net wealth)

		Capital income tax	Real estate tax	General/specific net wealth tax	Real estate transfer tax	Inheritance & gift tax	Total
Belgium	Stock of wealth	0.186* (0.050)	-0.087* (0.007)	0.043 (0.058)	-0.453* (0.069)	0.038 (0.063)	-0.093* (0.038)
	Annuitised wealth	0.207* (0.041)	-0.034* (0.006)	0.003 (0.052)	-0.486* (0.070)	0.085 (0.071)	-0.059 (0.045)
	Joint income-annuitised wealth	0.447* (0.042)	0.163* (0.009)	0.197* (0.074)	-0.165* (0.060)	0.328* (0.072)	0.193* (0.044)
Finland	Stock of wealth	-0.068* (0.012)	-0.142* (0.004)				-0.097* (0.008)
	Annuitised wealth	0.081* (0.007)	0.002 (0.002)				0.049* (0.005)
	Joint income-annuitised wealth	0.456* (0.009)	0.302* (0.003)				0.393* (0.006)
France	Stock of wealth		-0.075* (0.004)	0.328* (0.004)	-0.162* (0.032)	0.108* (0.027)	0.012 (0.012)
	Annuitised wealth		-0.045* (0.003)	0.299* (0.004)	-0.201* (0.31)	0.075* (0.024)	0.006 (0.012)
	Joint income-annuitised wealth		0.250* (0.004)	0.633* (0.003)	0.199* (0.028)	0.412* (0.024)	0.342* (0.011)
Germany	Stock of wealth	-0.031 (0.034)	-0.042* (0.008)		-0.187* (0.035)	0.076 (0.058)	-0.068* (0.023)
	Annuitised wealth	-0.008 (0.026)	0.005 (0.006)		-0.247* (0.034)	0.001 (0.048)	-0.089* (0.020)
	Joint income-annuitised wealth	0.240* (0.052)	0.267* (0.008)		-0.032 (0.050)	0.386* (0.044)	0.171* (0.031)
Italy	Stock of wealth	0.151* (0.021)	0.162* (0.007)	-0.253* (0.023)	-0.145 (0.076)		0.121* (0.007)
	Annuitised wealth	0.169* (0.018)	0.137* (0.007)	-0.152* (0.023)	-0.266* (0.065)		0.103* (0.007)
	Joint income-annuitised wealth	0.418* (0.018)	0.329* (0.009)	0.071* (0.023)	0.052 (0.074)		0.307* (0.009)
Spain	Stock of wealth	0.106* (0.017)	-0.139* (0.005)	0.397* (0.006)	-0.370* (0.043)	0.037 (0.050)	-0.117* (0.017)
	Annuitised wealth	0.116* (0.013)	-0.068* (0.003)	0.369* (0.005)	-0.406* (0.048)	-0.017 (0.049)	-0.117* (0.020)
	Joint income-annuitised wealth	0.303* (0.019)	0.078* (0.006)	0.613* (0.006)	-0.061 (0.052)	0.161* (0.061)	0.103* (0.020)

Note: Standard errors are shown between parentheses, * denotes that kakwani index is significantly different from zero (at 5% confidence level), i.e. significantly different from proportionality
Source: Own calculations based on HFCS-EUROMOD simulations.

More importantly, however, Table 6.5 also presents the Kakwani indices for each of the different types of wealth taxes separately. When assessed against the distribution of (annuitised) wealth alone capital income taxes are the most progressive type of wealth tax in Belgium, Finland and Italy (in the latter closely followed by the real estate tax), while in France and Spain the general net wealth tax is the most progressive which is expected given that the threshold for liability is equal to €1,300,000 and €700,000 respectively. In Germany, however, wealth taxes are either regressive or proportional (i.e. Kakwani index not significantly different from zero) when evaluated against (annuitised) net wealth. Interestingly, the incidence of the real estate tax and the real estate transfer tax is regressive in all countries except for the Italian recurrent real estate tax.

When the assessment framework is broadened to also include income then progressivity generally increases (or regressivity decreases). Yet, the ranking of the most progressive type of wealth tax remains the same; the general net wealth tax in France and Spain is by far the most progressive type. Also the capital income tax in Belgium, Finland and Italy exhibit a high degree of progressivity. In Germany the inheritance & gift tax becomes significantly and highly progressive when the joint income-annuitised wealth framework is used. Also for the other countries for which the inheritance & gift tax is simulated it is much more progressive when both income and wealth are taken into account in the reference framework. Also real estate taxes are significantly progressive in all countries when applying this framework. The real estate transfer tax on the contrary is regressive or proportional in all countries, except France. Again, progressivity is slightly higher when gross instead of net wealth is used (with some exceptions in the case of joint income-annuitised wealth) (see Table A.6. in the annex).

Figure 6.3 Size of wealth taxes: average tax rate (net wealth)
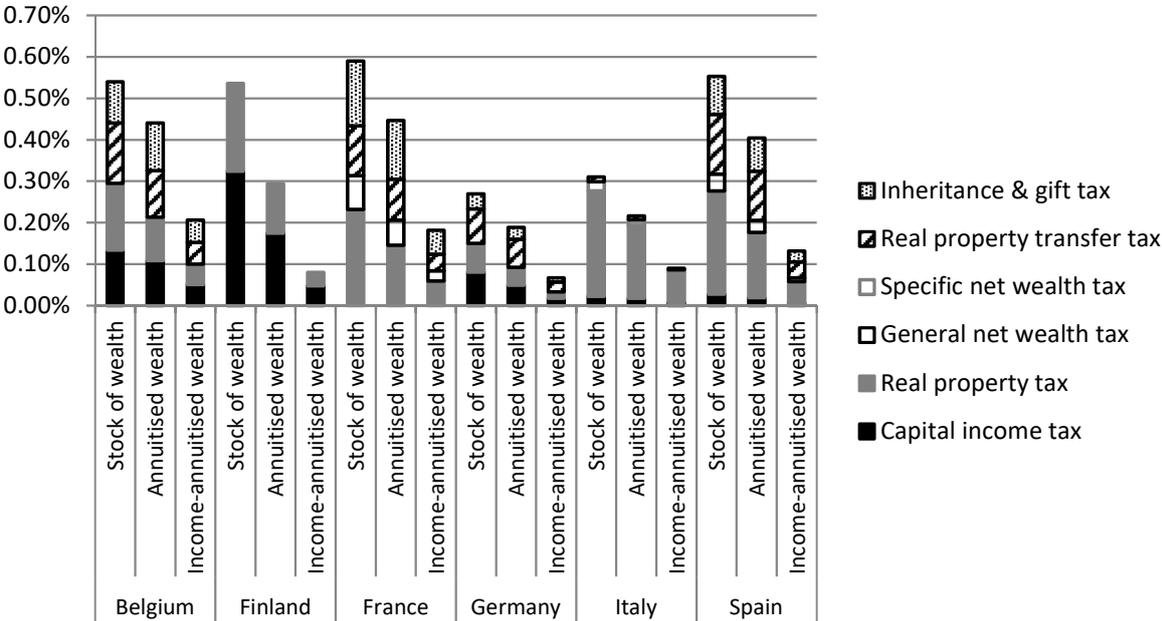
Source: Own calculations based on HFCS-EUROMOD simulations.

Yet, despite the sometimes strong progressive incidence of wealth taxation, the redistribution they achieve is so small due to the fact that their size is negligible in the total redistributive system. Indeed, as Figure 6.3 shows tax rates are extremely small, with the sum of all wealth taxes always less than 1 per cent of the potential tax base. The average tax rate decreases between the stock and annuitised wealth framework due to the different way in which the effect of wealth taxes is taken into account;

i.e. event wealth taxes lower the amount subject to annuitisation, while recurrent wealth taxes impact through the interest rate applied in the annuity itself. Average tax rates decrease of course even stronger when income is added as the denominator then becomes larger. When gross wealth would be used instead of net wealth all the results would decrease even further.

6.5 Integrated assessment of income and wealth taxes: horizontal equity

In this section we turn to an empirical illustration of our main argument in favour of (higher) wealth taxation, i.e. increasing the horizontal equity between income and wealth taxation. As mentioned before, we argue that well-being and ability to pay essentially depend on all available financial resources. Two persons or households with the same position in the joint income-wealth distribution are considered to have a similar level of well-being and ability to pay and hence should for tax purposes by treated equally irrespective of whether they derive this level primarily from their income or wealth. In this section we show how far away the current tax system is from achieving such horizontal equity.

Figure 6.4 first shows the total tax rate (i.e. sum of income taxes, social insurance contributions and annuitised wealth taxes as a percentage of pre-tax income + annuitised net wealth) by quintiles for two groups: those who predominantly derive their living standard from income and those who predominantly derive it from annuitised wealth. We use 65 per cent of total living standard coming from either income or annuitised wealth as threshold (so those who have a more balanced mix are not included). The results clearly show an immense difference in tax rates throughout the entire distribution. Moreover, while the tax rate paid among those predominantly retrieving their living standard from income is clearly progressive, it is more or less flat among those having mainly annuitised net wealth. It should be noted, however, that confidence intervals are large for those having predominantly net wealth in the first quintile, due to too few observations at the bottom of the joint distribution who derive their living standard from net wealth. This implies, as expected, that wealth is most important at the top of the distribution. For Germany confidence intervals are large for all quintiles as wealth is much less important for the average German than their counterparts in other countries. Indeed, median wealth levels are considerable lower and wealth inequality is relatively high (Kuypers & Marx, 2018b *(Chapter 4)*).

Although Figure 6.4 already provides a good indication of the extent of horizontal inequity between the taxation of income and wealth, the operationalisation suffers from several flaws. First, as mentioned before, the assessment of horizontal equity hinges strongly on the way one defines equals. Here, we compare individuals who are only similar with respect to their pre-tax sum of income and annuitised net wealth. The differences in tax treatment may in principle be related to differences in other characteristics of tax payers. Furthermore, it only takes into account that part of the population that derives 65 per cent or more from either resource, which sometimes results in few observations. Finally, it is difficult to determine whether certain types of wealth taxes may perform better than others.

Figure 6.4 Total tax rate by quintile and main source of living standard
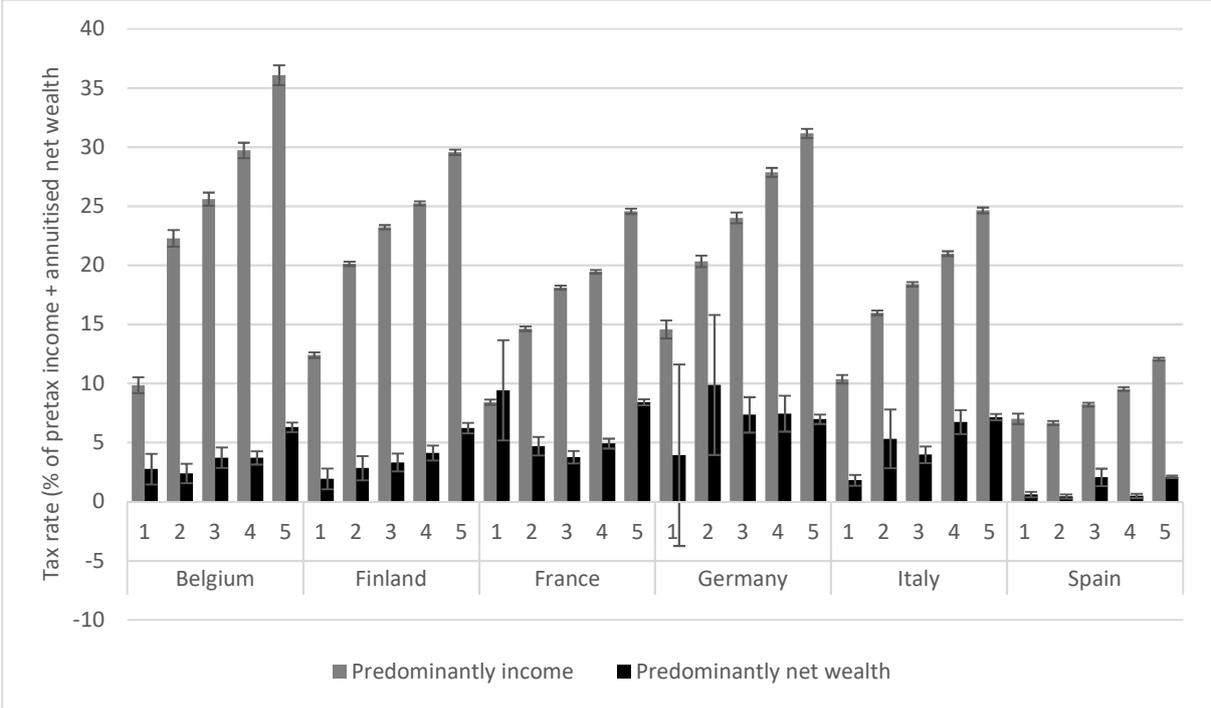
Source: Own calculations based on HFCS-EUROMOD simulations.

In order to circumvent these issues we use a more pragmatic approach in Table 6.6. The baseline (i.e. current) distribution of tax burdens of all individuals is compared with the tax burden in several hypothetical cases when we assume that the same set of people retrieve their living standard solely from one type of financial resource: only labour or pension income (depending on whether they are younger or older than 65), only capital income, only owner-occupied real estate, only other real estate and only financial assets. What we do in practice is take each time the full sample and change the 'label' of their total standard of living, i.e. in a first case we set the value of labour/pension income equal to the total amount of the pre-tax sum of income and annuitised net wealth, while all other resources are set to zero, in a second case capital income is set equal to this amount, etc. In other words, living standards are each time the same as in the baseline, but it is each time assumed that it only comes from one source. Before calculating the tax liabilities the annuities are calculated back to stock variables and when it concerns real estate cadastral amounts are derived. The fact that we only look at one financial source means that we abstract for instance from the fact that when financial assets and non-owner-occupied real estate is held, this will in reality always generate an income flow which is then also subject to the capital income tax. These relabelled datasets are then each time ran through EUROMOD to simulate the hypothetical tax liabilities. We only take into account recurrent wealth taxes. We always simulate the hypothetical tax using the general rules, i.e. without taking into account specific deductions, credits or preferential tax rates. For instance, in the case of capital income taxation in Belgium there is a lower tax rate applied to interests from savings accounts, but we simulate the general tax rule (see Table A.1 in the annex). Also, in the general net wealth taxes of France and Spain as well as the real estate tax in France a cap on tax liability in function of income is built in (see Table A.2 and A.3 in the annex). This is not taken into account in the simulation of the hypothetical tax burdens as the assumption is that there is no income in these cases.

Table 6.6 Average tax rates (% of pre-tax income + annuitised wealth) real and hypothetical cases

	Baseline (current system)	Only labour /pension income	Only capital income	Only owner-occupied real estate	Only other real estate	Only financial assets
Belgium						
1	9.26 *(0.31)*	12.50 *(0.35)*	29.78 *(0.09)*	0.05 *(0.00)*	0.06 *(0.00)*	0.00 *(0.00)*
2	18.55 *(0.35)*	21.47 *(0.34)*	30.00 *(0.00)*	0.07 *(0.00)*	0.07 *(0.00)*	0.00 *(0.00)*
3	21.35 *(0.30)*	29.37 *(0.23)*	30.00 *(0.00)*	0.08 *(0.00)*	0.08 *(0.00)*	0.00 *(0.00)*
4	23.43 *(0.35)*	37.65 *(0.15)*	30.00 *(0.00)*	0.10 *(0.00)*	0.10 *(0.00)*	0.00 *(0.00)*
5	22.77 *(0.37)*	46.33 *(0.13)*	30.00 *(0.00)*	0.10 *(0.00)*	0.10 *(0.00)*	0.00 *(0.00)*
Total	19.06 *(0.17)*	29.44 *(0.20)*	29.96 *(0.02)*	0.08 *(0.00)*	0.08 *(0.00)*	0.00 *(0.00)*
Finland						
1	12.16 *(0.12)*	13.01 *(0.06)*	29.98 *(0.01)*	0.07 *(0.00)*	0.11 *(0.00)*	0.00 *(0.00)*
2	19.02 *(0.10)*	15.90 *(0.08)*	30.04 *(0.00)*	0.08 *(0.00)*	0.16 *(0.00)*	0.00 *(0.00)*
3	21.22 *(0.11)*	20.33 *(0.07)*	30.21 *(0.01)*	0.09 *(0.00)*	0.18 *(0.00)*	0.00 *(0.00)*
4	22.38 *(0.11)*	24.51 *(0.06)*	30.29 *(0.01)*	0.10 *(0.00)*	0.20 *(0.00)*	0.00 *(0.00)*
5	24.47 *(0.13)*	32.03 *(0.07)*	31.20 *(0.01)*	0.11 *(0.00)*	0.23 *(0.00)*	0.00 *(0.00)*
Total	19.83 *(0.06)*	21.12 *(0.05)*	30.34 *(0.00)*	0.09 *(0.00)*	0.18 *(0.00)*	0.00 *(0.00)*
France						
1	8.33 *(0.10)*	18.83 *(0.09)*	15.62 *(0.01)*	0.08 *(0.00)*	0.09 *(0.00)*	0.00 *(0.00)*
2	13.29 *(0.10)*	19.87 *(0.07)*	16.16 *(0.02)*	0.09 *(0.00)*	0.10 *(0.00)*	0.00 *(0.00)*
3	15.26 *(0.10)*	20.63 *(0.05)*	17.57 *(0.04)*	0.11 *(0.00)*	0.12 *(0.00)*	0.00 *(0.00)*
4	15.84 *(0.09)*	21.86 *(0.05)*	20.24 *(0.05)*	0.12 *(0.00)*	0.13 *(0.00)*	0.00 *(0.00)*
5	17.86 *(0.09)*	25.92 *(0.06)*	27.25 *(0.06)*	0.13 *(0.00)*	0.16 *(0.00)*	0.02 *(0.00)*
Total	14.12 *(0.05)*	21.42 *(0.03)*	19.37 *(0.03)*	0.11 *(0.00)*	0.12 *(0.00)*	0.004 *(0.00)*
Germany						
1	14.52 *(0.37)*	20.96 *(0.17)*	23.86 *(0.05)*	0.03 *(0.00)*	0.03 *(0.00)*	0.00 *(0.00)*
2	19.57 *(0.24)*	21.68 *(0.20)*	24.82 *(0.01)*	0.04 *(0.00)*	0.04 *(0.00)*	0.00 *(0.00)*
3	21.63 *(0.25)*	24.94 *(0.20)*	25.26 *(0.01)*	0.04 *(0.00)*	0.04 *(0.00)*	0.00 *(0.00)*
4	24.41 *(0.23)*	28.78 *(0.18)*	25.60 *(0.01)*	0.04 *(0.00)*	0.04 *(0.00)*	0.00 *(0.00)*
5	23.85 *(0.23)*	33.46 *(0.17)*	25.93 *(0.01)*	0.05 *(0.00)*	0.05 *(0.00)*	0.00 *(0.00)*
Total	20.79 *(0.12)*	25.96 *(0.10)*	25.09 *(0.01)*	0.04 *(0.00)*	0.04 *(0.00)*	0.00 *(0.00)*
Italy						
1	9.31 *(0.16)*	12.26 *(0.19)*	25.57 *(0.06)*	0.00 *(0.00)*	0.27 *(0.00)*	0.09 *(0.01)*
2	14.26 *(0.10)*	10.38 *(0.13)*	26.00 *(0.00)*	0.00 *(0.00)*	0.35 *(0.00)*	0.06 *(0.00)*
3	15.89 *(0.09)*	12.83 *(0.14)*	26.00 *(0.00)*	0.00 *(0.00)*	0.41 *(0.00)*	0.07 *(0.00)*
4	17.83 *(0.10)*	19.15 *(0.11)*	26.00 *(0.00)*	0.00 *(0.00)*	0.42 *(0.00)*	0.07 *(0.00)*
5	18.14 *(0.13)*	29.25 *(0.11)*	26.00 *(0.00)*	0.00 *(0.00)*	0.49 *(0.00)*	0.07 *(0.00)*
Total	15.08 *(0.06)*	16.77 *(0.08)*	25.91 *(0.01)*	0.00 *(0.00)*	0.39 *(0.00)*	0.07 *(0.00)*
Spain						
1	5.89 *(0.18)*	5.10 *(0.07)*	19.09 *(0.02)*	0.05 *(0.00)*	0.05 *(0.00)*	0.00 *(0.00)*
2	5.89 *(0.09)*	5.54 *(0.05)*	19.54 *(0.01)*	0.05 *(0.00)*	0.05 *(0.00)*	0.00 *(0.00)*
3	7.10 *(0.08)*	5.89 *(0.05)*	19.92 *(0.01)*	0.05 *(0.00)*	0.06 *(0.00)*	0.00 *(0.00)*
4	8.16 *(0.08)*	7.70 *(0.06)*	20.22 *(0.00)*	0.06 *(0.00)*	0.06 *(0.00)*	0.00 *(0.00)*
5	9.28 *(0.06)*	12.40 *(0.04)*	20.63 *(0.00)*	0.07 *(0.00)*	0.07 *(0.00)*	0.01 *(0.00)*
Total	7.26 *(0.04)*	7.32 *(0.03)*	19.88 *(0.01)*	0.06 *(0.00)*	0.06 *(0.00)*	0.001 *(0.00)*

Notes: 1 to 5 denotes quintiles of pre-tax income + annuitised net wealth, standard errors are shown between parentheses. Source: Own calculations based on HFCS-EUROMOD simulations.

Table 6.6 presents the average tax rates that result from this approach both across quintiles (1-5) and the general average. In the case when we assume living standards to be only derived from labour or pension income (third column) or only from capital income (fourth column) average tax burdens are generally higher than in the actual situation. Yet, while there is clearly a progressive structure in the first case, there is a more or less flat tax rate in the capital income case. When we consider wealth to be the only source of living standards (last three columns), however, average tax rates drop

tremendously. In none of the countries the average tax rates surpasses 0.5 per cent, not even in the top quintile. Even among the wealth cases themselves there is clearly horizontal inequity. Indeed, while most countries tax the ownership of real estate wealth, financial wealth is only taxed in Italy (specific net wealth tax), France and Spain (general net wealth tax). However, it is still taxed at very low rates, only at the top in the latter two countries and all three do not tax self-employment business wealth. There are some differences in the tax treatment between owner-occupied and other real estate wealth, but they are generally quite small. The difference is the largest for Italy as the main residence is exempted in the real estate tax, while other real estate appears to be more heavily taxed than in other countries. In short, horizontal inequity is even much worse than first expected based on Figure 6.4. This implies that the taxes that are paid by those with predominantly net wealth in Figure 6.4 mainly records the tax they still pay on the small part of their living standard that is derived from income.

Hence, a more similar treatment of different types of financial resources has the potential to largely improve the current tax system, not only through their direct effect on vertical and horizontal equity, but also more indirectly because it would reduce the incentives for tax avoidance through portfolio (re)organisation which is typically easier for wealthier households (OECD, 2018a, 2018b). Taxing all resources at the rate of the capital income tax or personal income tax would achieve much more horizontal equity and increase the tax rates to a sufficiently high level to be able to achieve a substantial level of redistribution. However, improvement in terms of vertical equity can currently only be achieved through taxing everything under the personal income tax as capital income is generally levied at a more or less proportional rate. If we would indeed broaden the tax base by taxing both income and annuitised net wealth under the personal income tax, then our estimations indicate that total tax revenues have the potential to increase compared to tax revenues obtained in the existing tax system by 7 per cent in Spain, 23 per cent in Finland, 31 per cent in Germany, 39 per cent in France, 45 per cent in Italy and even by 80 per cent in Belgium. This increase in tax revenues due to more horizontal equity, would then also possibly allow for a decrease of the applicable tax rates, especially at the bottom of the distribution, which would then in turn be an additional improvement on vertical equity grounds. Such a broad base-low rate tax system would then not only improve fairness, but also decrease the incentives for tax avoidance, while the low rate should make financial investments still worthwhile. Of course it should be noted that the hypothetical cases studied here have little relation to what is possible in reality. Yet, this approach nicely shows the strong lack of horizontal equity in the existing tax system as well as the level of potential improvements with a more neutral tax treatment of different resources.

6.6 Conclusion

Traditionally wealth taxation was considered to be non-optimal if it is possible to use non-linear labour income tax. Recently, however, arguments in favour of wealth taxation have increased substantially, based on redistributive as well as efficiency and revenue considerations. The main argument put forward in this chapter is that well-being and ability to pay essentially depend on both income and wealth and that this should be reflected in the tax system. Nevertheless, in practice there seems to be a general trend towards less rather than more wealth taxation. As a consequence of globalisation and increased mobility of capital, legitimate fears of discouraging investment and entrepreneurship and capital flight have emerged. In combination with the overall costs of tax collection and prevention of

tax evasion vis-à-vis the only limited tax revenues these issues have resulted in international tax competition and a race-to-the-bottom. These contradictions between recommendations and real practice make wealth taxation an interesting topic. Yet, although the theoretical literature on (optimal) wealth taxation is relatively large and growing, empirical research is still relatively scarce. This chapter aims to fill this gap by analysing vertical and horizontal equity of existing wealth-related taxes in six European countries.

In a first step we analysed wealth taxes from a vertical equity perspective evaluated against six different frameworks: the distribution of the stock of wealth, of annuitised wealth and the joint distribution of annuitised wealth and income, in each case for both gross and net wealth. We show that wealth taxes hardly achieve any redistribution which is mainly due to the extremely small tax rates. Indeed, while the general net wealth taxes of France and Spain, the capital income taxes in Belgium, Finland and Italy and the Italian real estate tax have a strongly progressive incidence, their size is just too small compared to the potential tax base to achieve any redistribution. When the assessment framework is broadened to also include income then progressivity generally increases (or regressivity decreases), which results in slightly stronger redistributive effects. Nevertheless, redistribution through wealth taxation is still extremely small compared to the redistribution that is achieved by the more 'traditional' instruments such as personal income taxes, social insurance contributions and social transfers (see also Kuypers et al., 2018a *(Chapter 5)*).

In a second step we then analysed wealth taxes side by side income taxes which shows that in the prevalent tax system there is a lack of neutrality with regard to the source from which households draw their financial living standard. Those who derive their living standard predominantly from income bear much higher taxes than those who derive it predominantly from wealth. Moreover, while tax rates are clearly progressive among the first group, they are more or less flat among the latter. Our approach of hypothetical cases in which all people are assumed to derive their living standard solely from one potential financial resource confirms these results and also shows that there is even a lack of horizontal equity between different types of assets. While most countries tax the ownership of real estate wealth, financial wealth is only taxed in Italy, France and Spain. However, it is still taxed at very low rates, only at the top in the latter two countries and all three do not tax self-employment business wealth. There are some differences in the tax treatment between owner-occupied and other real estate wealth, but they are generally quite small.

Based on these results we argue that from an equity perspective the total tax system (i.e. combination of income and wealth taxes) should be designed in such a way that it decreases overall joint income-wealth inequality, not only income inequality. This implies both increasing the vertical redistribution achieved by wealth taxes and moving closer to horizontal equity between the tax treatment of different financial resources. Our hypothetical scenario of taxing all financial resources similarly in the personal income tax would achieve both these goals, would substantially increase tax revenues and would reduce the incentives for tax avoidance. Yet, this hypothetical scenario obviously stands too far from the current situation to be politically feasible anytime soon. Hence, we leave it open for future research and political debates to determine how more vertical and horizontal equity in the tax system may be achieved in practice.

We have focused in our empirical analysis on equity, but future research of alternative policy scenarios should also incorporate the efficiency side of the story. The major arguments against introducing more wealth-related taxes stem from efficiency arguments, and especially issues like tax avoidance and tax evasion are often put forward in the debate. Further research is needed to try to estimate the size of such behavioural responses, in order to gauge a better understanding of how this may affect distributive outcomes and of the feasibility of more wealth taxation.

A limitation of this chapter is that due to data constraints some types of wealth-related taxes are not included. First, we cannot simulate capital gains taxes which are considered to be an important aspect of the taxation of wealth. The OECD (2018b), for instance, argues that if there is a combination of a broad based and progressive system of capital income, capital gains and inheritance tax then a general net wealth tax is not necessarily needed. Furthermore, we only take into account taxes levied on individuals or households, but countries generally also levy a corporate income tax, and some countries even a corporate net wealth tax, which are considered to be indirectly paid by individual shareholders. Moreover, there may be a significant interaction between the two: if wealth taxes levied on individuals increase then more people might choose to incorporate and hence transfer income from the individual to the corporate level. Hence, future studies may want to try to include these types of wealth-related taxes. Given our main results we expect similar effects for capital gains and corporate taxes. Indeed, the analysis clearly shows that despite substantial progressivity the low redistribution of wealth taxes is mainly due to their small size. Capital gains and shares are generally concentrated at the top of the distribution such that their taxation may be strongly progressive, yet their size will also be small compared to total wealth. Finally, we only focused on the actual taxation of wealth, while tax reliefs granted for wealth accumulation in the personal income tax (i.e. for private pension saving, mortgage interests, ...) also reflect an important aspect of the tax system as it lowers the tax burden of wealth owners vis-à-vis non-wealth owners (Kuypers, 2018 *(Chapter 7)*).

Annex

This annex describes the main characteristics of the different types of wealth taxes in the six countries covered in this chapter. All characteristics refer to the rules applicable in 2017. The main sources that have been used to collect these data are the EUROMOD country reports[45], Ernst & Young (2014), Taxes in Europe Database[46] and national legislations.

Table A.1: Overview of characteristics capital income taxes, 2017

Country	Name in national language	Tax schedule	Exemptions, deductions and credits
Belgium	Roerende voorheffing/ Précompte mobilier	Flat tax rate of 30%, exceptional 15% for interests on savings accounts	First €1,880 of interests exempt from taxation
Finland	Pääomatulovero	Up to €30,000: 30% Above €30,000: 34%	Deductions for 45% of paid mortgage interests, for contributions paid to private pension funds (with max of €5,000) and for 15% of listed dividends and 75% of unlisted dividends up to €150,000.
France		*Included in progressive tax schedule of personal income tax*	Deduction of 40% of dividends.
Germany	Abgeltungsteuer	Flat tax rate of 25% + solidarity surcharge of 5.5%	Allowance of €801 (double for joint taxation)
Italy	Imposte sostitutive sui redditi da capitale	Flat tax rate of 26%, exceptional 12.5% on interests from government bonds and 20% on annuities of (some) private pension funds.	
Spain	Cuota base ahorro	Up to €6,000: 19% Between €6,000 and €50,000: 21% Above €50,000: 23%	

---

[45] These are available at https://www.euromod.ac.uk/using-euromod/country-reports.
[46] Available at http://ec.europa.eu/taxation_customs/tedb/taxSearch.html

Table A.2: Overview of characteristics real estate taxes, 2017

Country	Name in national language	Tax schedule	Exemptions, deductions and credits
Belgium	Onroerende voorheffing/ Précompte immobilier	The rate includes a basic rate and provincial and municipal surcharges. - Basic rate: 2.5% in Flemish Region, 1.25% in Brussels Capital and Walloon Region - Given the absence of municipal information, average surcharges are applied in the simulation: 1,676 centimes in Flemish Region, 3,789 in Brussels Capital Region and 4,200 in Walloon Region Tax is levied on indexed cadastral income.	Tax credit for dependents: - Flemish Region: ranging from €7.81 for 2 children up to €55.86 for 10 or more children. (children entitled to child benefits, disabled children count for two): - Walloon Region: €125 per dependent person (at least 2 children alive, tax credit is doubled for disabled) - Brussels Capital Region: 10% tax credit for each dependent child (at least 2 children alive) Tax credit of 25% for main residence if non-indexed cadastral income is lower than €745. In the case of a newly build dwelling the tax credit increases to 50% in first 5 years the tax is due.
Finland	Kiinteistövero	Tax rates are set by municipal governments within statutory limits. At least 2 tax rates need to be set: a general tax rate which may vary between 0.93% and 1.8% and a rate for permanent residences which may vary between 0.41% and 0.9%. Municipalities can also decide to set a special tax rate for secondary residences, which can vary between 0.93% and 1.8%, as well as a rate for unbuilt plots which may vary between 2.0% and 6.0%. - Given the absence of municipal information, an average tax rate is applied in the simulation: 0.49% for permanent residences and 1.06% for other property types (https://www.veronmaksajat.fi/luvut/Tilastot/Kunnat/Kiinteistovero/) Tax is levied on taxable value determined in the 'Act on the Valuation of Assets for Taxation' (1142/2005).	
France	Taxe foncière sur les propriétés bâties et non-bâties	Total tax rate reflects sum of tax rates set at different regional levels which are voted on each year.	Two year exemption for newly build houses Tax liability for main residence for taxpayers with modest income is capped at 50% of income.

		- Given the lack of regional information an average tax rate is implemented in the simulation: 38.08% (source: Barberet & Larquey, 2017, p.16). Tax is levied on deemed rental value (valeur locative cadastrale). Tax base is half of this value for built property and 80% for unbuilt land.	Total exemption for main residence if in receipt of 'Allocation aux adultes handicapés' (AHH) or 'Allocation de solidarité aux personnes agées' (ASPA) or when older than 75 and low income. Tax credit of €100 if between 65 and 75 years and low income.
Germany	Grundsteuer	Total tax rates reflect a basic tax rate and a municipal multiplier. Tax rates vary by type of property, between East and West Germany and between municipalities. Given the lack of municipal information an average is applied in the simulation (Federal Statistical Office Germany, 2017): <table><tr><td>Basic tax rate Class A (farms)</td><td>East & West</td><td>0.0060%</td></tr><tr><td rowspan="2">Basic tax rate Class B – One-family houses</td><td>East</td><td>0.0050%</td></tr><tr><td>West</td><td>0.0026%</td></tr><tr><td rowspan="2">Basic tax rate Class B – Other property types</td><td>East</td><td>0.0060%</td></tr><tr><td>West</td><td>0.0035%</td></tr><tr><td rowspan="2">Average multiplier Class A</td><td>East</td><td>309</td></tr><tr><td>West</td><td>319</td></tr><tr><td rowspan="2">Average multiplier Class B</td><td>East</td><td>441</td></tr><tr><td>West</td><td>471</td></tr></table> Lower tax rate for one-family houses is only applicable to first €15,338.76 in East Germany and €38,346.89 in West Germany, above the rate for other properties applies. Tax is levied on assessed standard value established under the Valuation Law in accordance with 1964 values (1935 for Class B properties in the new Länder).	
Italy	Imposta Municipale Unica	Tax rates are defined at municipal level. The maximum rate of 1.06% is applied to all properties. Tax is levied on the revaluated cadastral value (i.e. multiplied by 1.05).	Main residences are exempted, with the exception of luxury flats, villas, castles and palaces of historic or artistic importance.
Spain	Impuesto sobre bienes inmuebles	Tax rates can be set by municipalities within limits provided in state legislation: 0.4-1.1% for urban properties and 0.3-0.9% for rural properties. Given the lack of municipal information the average urban tax rate of 0.75% (Ernst & Young, 2014) is applied to all properties. Tax is levied on the cadastral value of the property.	

Table A.3: Overview of characteristics general and specific net wealth taxes, 2017

Country	Name in national language	Eligibility	Tax schedule	Exemptions, deductions and credits
Belgium	Taks op het langetermijnsparen /Taxe sur l'épargne à long terme	Ownership of individual life insurance, collective and/or individual pension savings account for which the holder has been entitled to a relief in the personal income tax. - Account opened before age 55: on 60th anniversary of owner - Account opened after age 55: on 10th anniversary of the contract	8% During 2015-2019 each year 1% will collected in advance.	
France	Impôt de solidarité sur la fortune	Combined net wealth of fiscal household above €1,300,000 (i.e. not doubled for couples)	€800,000 - €1,300,000 0.5% €1,300,000 - €2,570,000 0.7% €2,570,000 - €5,000,000 1% €5,000,000 - €10,000,000 1.25% >€10,000,000 1.5% Smoothing mechanism: for wealth between €1,300,000 and €1,400,000 a tax credit is granted equal to €17,500 – 1.25% * P, where P is the tax payer's net taxable wealth.	The most important exemptions are provided for business assets, forests, life annuities acting as retirement pensions and antiques, art objects and collectors' items. A 30 per cent relief is granted for the main residence. Combined income and wealth tax capped at 75% of income.
Italy	Imposto di bollo su conto corrente e deposito titoli	Possession of bank accounts or financial assets	0.2%, with minimum tax of €34.20	Bank accounts and bonds issues by the Italian Post Office with annual average value <€5,000 are exempted
Spain	Impuesto sobre el patrimonio	Individual net wealth above €700,000 (i.e. doubled for couples)	<€167,129.45 0.2% €167,129.45 – €334,252.88 0.3% €334,252.88 - €668,499.75 0.5% €688,499.75 - €1,336,999.51 0.9% €1,336,999.51 - €2,673,999.01 1.3% €2,673,999.01 - €5,347,998.03 1.7% €5,347,998.03 - €10,695.996.06 2.1% >€10,695,996.06 2.5%	Main residence exempted until €300,000 Exemptions for household contents, works of art and antiquities (under certain conditions), pension rights, intellectual property rights, business assets (under certain conditions).

			The autonomous regions can change the tax schedule, but as we have no regional information in HFCS the national legislation is simulated.	

Table A.4: Overview of characteristics real estate transfer taxes, 2017

Country	Name in national language	Tax schedule	Exemptions, deductions and credits
Belgium	Registratie- en hypotheekrechten/ Droits d'enregistrement et d'hypotheque	10% in Flemish Region, 12.5% in Walloon and Brussels Capital Region Reduced rates for modest houses (non-indexed cadastral income below €745, increased if more than 2 dependent children): 5% in Flemish Region ad 6% in Walloon and Brussels Capital Region 1% on registration of mortgage	Exemption for main residence if not yet owner of other real estate: €15,000 in Flemish Region, €175,000 in Brussels Capital Region (provided that tax base is below €500,000). In Flemish Region additional exemption of €10,000 if taxed at general rate and €20,000 if taxed a reduced rate for modest houses conditional on being eligible for general exemption and taking out a mortgage on property within 2 years.
Finland	Varainsiirtovero	*Not simulated*	*Not simulated*
France	Droits de vente d'immeubles	Total tax rate is 5.8% and reflects sum of several tax rates: - 4.5% departmental tax rate (lower for some departments) - 1.2% municipal tax rate - Levy for collection costs of 2.37% of departmental tax rate	Possibility for departments to provide abatement for main residence between €7,600 and €46,000 in fractions of €7,600 (most do not).
Germany	Grunderwerbsteuer	The basic tax rate is 3.5%, but since 1 January 2007 the Länder can determine the tax rate. In 2017 all except 2 (Bayern & Sachsen) have increased the tax rate. Given the absence of regional information an average rate of 5.3% is applied in the simulation (https://www.zinsen-berechnen.de/grunderwerbsteuer/bundeslaender.php).	
Italy	Imposta di registro, ipotecaria e catastale	- Registration Duty (Imposta di Registro): between 2% (main residence) and 9% (other transactions) - Mortgage Duty (Imposta Ipotecaria): fixed amount of €50 - Cadastral Duty (Imposta Catastale): fixed amount of €50	
Spain	Impuesto sobre transmisiones patrimoniales y actos jurídicos documentados	The general tax rate is 6%, but the autonomous regions have set rates between 8 and 10%. Given the lack of regional information an average of 8.2% is applied in the simulation. 1.5% for registering the transfer of immovable property	

Table A.5: Overview of characteristics inheritance & gift taxes, 2017

Country	Name in national language	Tax schedule	Exemptions, deductions and credits
Belgium	Successie- en schenkingsrechten/ Droits de succession et donation	Rates are progressive and vary by region, relationship between the donor and recipient and between gifts and inheritances.[47] - Inheritances in Flemish Region (FL): o Between lineal relatives and partners (separate calculation for movable and immovable assets): | <€50,000	3%
€50,000 - €250,000	9%
>€250,000	27% | o Siblings & others (for others rates are applicable to total inheritance, not individual share): |	Siblings	Others
<€75,000	30%	45%
€75,000 - €125,000	55%	55%
>€125,000	65%	65% | - Inheritances in Walloon Region (WA): o Between lineal relatives and partners: | <€12,500	3%
€12,500 - €25,000	4%
€25,000 - €50,000	5%
€50,000 - €100,000	7%
€100,000 - €150,000	10%
€150,000 - €200,000	14%
€200,000 - €250,000	18%
€250,000 - €500,000	24%
>€500,000	30% | o Others: |	Siblings	Other rel.	Others
<€12,500	20%	25%	30%

€12,500 - €25,000	25%	30%	35%		Personal tax credits (FL):
					- Lineal heirs & partners: €500 * (1- inheritance share/€50,000) (main residence is not taken into account in inheritance share)
					- Children younger than 21 years: €75 for each year below 21 years
					- Siblings:
					  o Inheritance share <€18,750: €2,000 * (inheritance share/€20,000)
					  o Inheritance share >€18,750: €2,500 * (1- inheritance share/€75,000)
					- Others:
					  o Total inheritance <€12,500: €2,000 * (total inheritance/€12,500)
					  o Total inheritance >€12,500: €2,400 * (1- total inheritance/€75,000)
					
					Personal exemptions (WA):
					- Lineal heirs & partners & siblings of deceased minor : €12,500, doubled when inheritance share <€125,000
					- Children of deceased younger than 21 years additional €2,500 for each year below 21
					
					Personal exemptions (BR):
					- Lineal heirs & partners: €15,000

---

[47] Here, we only describe the tax schedule and exemptions, deductions, credits applicable to inheritances as these are most commonly taxed, among others because gifts of movable assets are only taxed when officially registered, which is very uncommon. The tax schedule and exemptions, deductions, credits applicable to gifts in Belgium can be found in the Tax Survey (Federal Public Service Finance, 2017).

		€25,000 - €75,000	35%	40%	60%	- Children of deceased younger than 21 years additional €2,500 for each year below 21
		€75,000 - €175,000	50%	55%	80%	
		>€175,000	65%	70%	80%	

- Inheritances in Brussels Capital Region (BR):
  - Between lineal relatives and partners:

<€50,000	3%
€50,000 - €100,000	8%
€100,000 - €175,000	9%
€175,000 - €250,000	18%
€250,000 - €500,000	24%
>€500,000	30%

  - Between siblings:

<€12,500	20%
€12,500 - €25,000	25%
€25,000 - €50,000	30%
€50,000 - €100,000	40%
€100,000 - €175,000	55%
€175,000 - €250,000	60%
>€250,000	65%

  - Other relatives:

<€50,000	35%
€50,000 - €100,000	50%
€100,000 - €175,000	60%
>€175,000	70%

  - Others:

<€50,000	40%
€50,000 - €75,000	55%
€75,000 - €175,000	65%
>€175,000	80%

Full exemption when inheritance share <€1,250 (BR)/ <€620 (WA)

Tax credit for heirs with at least 3 children below 21 years old (WA & BR): 2% tax credit, maximum €62 per child below 21 years (doubled if partner of deceased)

Tax exemption for disabled persons (FL): €3,000 for lineal heirs and partners/€1,000 for other heirs, each time multiplied by disability coefficient

Inheritance of family business: reduced tax rates (FL & BR), full tax exemption (WA)

Inheritance of family home: full exemption for partners (FL), reduced tax rates for lineal heirs and partners (WA), full exemption for partners & reduced rates for lineal heirs (BR)

Most of the exemptions are foot exemptions, i.e. they apply to the lowest tax brackets while preserving the application of the higher progressive tax rates.

Finland	Perintö- ja lahjavero	*Not simulated*	*Not simulated*
France	Droits de mutation à titre gratuity par décès ou entre vifs	Rates vary by relationship between the donor and recipient: - In a direct line and between spouses or civil partners (latter only for gifts):	Allowances in the case of inheritance: - Spouse or civil partner: total amount - Child: €100,000 - Disabled: €159,325 - Sibling: €15,932

<€8,072	5%
€8,072 - €12,109	10%

		€12,109 - €15,932	15%			- Nephew/niece: €7,967
		€15,932 - €552,324	20%			- Other: € 1,594
		€552,324 - €902,838	30%			Allowances in the case of gifts:
		€902,838 - €1,805,677	40%			- Spouse or civil partner: €80,724
		> €1,805,677	45%			- Child: €100,000

- Between siblings: 35% until €24,430 and 45% above
- Between relatives of the fourth degree or further: 55%
- Between all other persons: 60%

- Disabled: €159,325
- Grandchild: €31,865
- Great grandchild: €5,310

Country	Tax name	Rates	Exemptions
Germany	Erbschaft- und schenkungsteuer	Rates vary by relationship between the donor and recipient:	Personal exemptions:

Germany rates table:

	Class 1	Class 2	Class 3
<€75,000	7%	15%	30%
€75,000 - €300,000	11%	20%	30%
€300,000 - €600,000	15%	25%	30%
€600,000 - €6,000,000	19%	30%	50%
€6,000,000 - €13,000,000	23%	35%	50%
€13,000,000 - €26,000,000	27%	40%	50%
>€26,000,000	30%	43%	50%

Class 1 includes spouses and partners of registered partnerships, (step-)children, grandchildren, parents and ancestors (the latter 2 only in the case of inheritance).
Class 2 includes parents and ancestors in the case of gift, siblings, 1st degree descendants of siblings, step-parents, children-in-law, parents-in-law, divorced spouse and partners of dissolved registered partnership.
Class 3 includes all other individuals and legal entities.

Germany exemptions (right column):

Personal exemptions:
- Partner: €500,000
- Children: €400,000
- Grandchildren: €200,000
- Other persons in Class 1: €100,000
- Persons in Class 2 & 3: €20,000

Maintenance allowance:
- Partner: €256,000
- Children: ranges from €52,000 up to age 5 to €10,300 between age 20 and 27

Exemption for valuables:
- Class 1 beneficiaries: €41,000 for household effects, €12,000 art objects & collections
- Class 2 & 3 beneficiaries: €12,000 for both together

Exemption for family home: full exemption for partners, full exemption for children limited to living area of 200m^2

Exemption for business assets: generally 85% (but can be 100% or lower than 85% depending on conditions)

| Italy | Imposta di successione e donazione | *Not simulated* | *Not simulated* |

Spain	Impuesto sobre sucesiones y donaciones	Tax schedule varies across autonomous regions, but given the absence of regional information in the HFCS the national legislation is applied (the tax schedules of Andalusia and Valencia, two of the most populous regions, are highly similar).	Personal exemptions: - Group 1: €15,956.87 increased with €3,990.72 for each year they are below 21 years old, with maximum of €47,858.59 - Group 2: €15,956.87 - Group 3: €7,993.46 - Disabled beneficiaries: €47,858.59

<€7,993.46	7.65%
€7,993.46 - €15,980.81	8.50%
€15,980.82 - €23,968.36	9.35%
€23,968.36 - €31,955.81	10.20%
€31,955.81 - €39,943.26	11.05%
€39,943.26 - €47,930.72	11.90%
€47,930.72 - €55,918.17	12.75%
€55,918.17 - €63,905.62	13.60%
€63,905.62 - €71,893.07	14.45%
€71,893.07 - €79,880.52	15.30%
€79,880.52 - €119,757.67	16.15%
€119,757.67 - €159,634.83	18.70%
€159,634.83 - €239,389.13	21.25%
€239,389.13 - €398,777.54	25.50%
€398,777.54 - €797,555.08	29.75%
> €797,555.08	34.00%

The tax liability is subject to a multiplier depending on the relationship between donor and recipient and the wealth of the recipient prior to the inheritance/gift:

	Group 1&2	Group 3	Group 4
<€402,678.11	1.0000	1.5882	2.0000
€402,678.11 - €2,007,380.43	1.0500	1.6676	2.1000
€2,007,380.43 - €4,020,770.98	1.1000	1.7471	2.2000
> €4,020,770.98	1.2000	1.9059	2.4000

Group 1 consists of children under 21 years, group 2 consists of children above 21 years, grandchildren, parents, grandparents and partners, group 3 includes in-laws and their ascendants/descendants, stepchildren, siblings, nieces/nephews and aunts/uncles, group 4 covers all other persons.

Exemption of 95% of main residence for ascendants and descendants, with maximum of €122,606.47

Total exemption of life insurance with maximum of €9,159.49

Table A.6: Kakwani indices (gross wealth)

		Capital income tax	Real estate tax	General/specific net wealth tax	Real estate transfer tax	Inheritance & gift tax	Total
Belgium	Stock of wealth	0.233* (0.054)	-0.010 (0.006)	0.045 (0.069)	-0.115* (0.042)	0.110 (0.057)	0.045 (0.028)
	Annuitised wealth	0.241* (0.045)	-0.032* (0.006)	0.016 (0.061)	-0.214* (0.046)	0.144* (0.068)	0.035 (0.037)
	Joint income-annuitised wealth	0.446* (0.045)	0.133* (0.008)	0.179* (0.080)	-0.027 (0.051)	0.343* (0.070)	0.224* (0.039)
Finland	Stock of wealth	0.091* (0.010)	0.035* (0.003)				0.069* (0.006)
	Annuitised wealth	0.083* (0.009)	0.017* (0.002)				0.056* (0.005)
	Joint income-annuitised wealth	0.374* (0.010)	0.228* (0.003)				0.314* (0.007)
France	Stock of wealth		-0.020* (0.003)	0.362* (0.004)	0.013 (0.023)	0.147* (0.026)	0.084* (0.010)
	Annuitised wealth		-0.043* (0.003)	0.333* (0.004)	-0.046* (0.023)	0.113* (0.024)	0.054* (0.010)
	Joint income-annuitised wealth		0.226* (0.003)	0.632* (0.003)	0.273* (0.023)	0.404* (0.024)	0.344* (0.010)
Germany	Stock of wealth	-0.005 (0.033)	0.021* (0.007)		-0.038 (0.024)	0.123* (0.042)	0.009 (0.018)
	Annuitised wealth	0.001 (0.027)	0.009 (0.006)		-0.114* (0.025)	0.041 (0.036)	-0.030 (0.015)
	Joint income-annuitised wealth	0.234* (0.050)	0.246* (0.008)		0.048 (0.045)	0.379* (0.043)	0.195* (0.027)
Italy	Stock of wealth	0.158* (0.022)	0.178* (0.007)	-0.241* (0.023)	0.010 (0.059)		0.141* (0.007)
	Annuitised wealth	0.173* (0.019)	0.146* (0.007)	-0.218* (0.022)	-0.111* (0.055)		0.112* (0.007)
	Joint income-annuitised wealth	0.412* (0.019)	0.326* (0.009)	0.006 (0.022)	0.096 (0.073)		0.301* (0.008)
Spain	Stock of wealth	0.159* (0.015)	-0.064* (0.003)	0.446* (0.006)	-0.062 (0.033)	0.045 (0.057)	0.004 (0.013)
	Annuitised wealth	0.143* (0.015)	-0.073* (0.003)	0.416* (0.005)	-0.139* (0.034)	0.000 (0.055)	-0.034* (0.014)
	Joint income-annuitised wealth	0.297* (0.020)	0.052* (0.005)	0.617* (0.006)	0.030 (0.047)	0.155* (0.061)	0.116* (0.018)

Note: Standard errors are shown between parentheses, * denotes that kakwani index is significantly different from zero (at 5% confidence level), i.e. significantly different from proportionality. Source: Own calculations based on HFCS-EUROMOD simulations.

Chapter 7. Financial inclusion for all? A distributional analysis of asset building policies in Europe

7.1 Introduction

Many European countries have a longstanding policy tradition of stimulating financial investment, entrepreneurship and above all the ownership of real estate. Initially these policies were mainly perceived from a macro perspective as they were often meant to support the construction industry and to stimulate economic growth. Today these are still considered to be important motivations, although other objectives such as affordability of housing and urban planning have often taken priority (Salvi del Pero et al., 2016, Appendix D). Recently, these types of policies have also increasingly gained attention from the perspective of 'asset-based welfare' (Doling & Ronald, 2010), focusing on the fact that assets contribute to the wellbeing of their owner(s) in various ways. Assets allow for consumption smoothing during low income periods, but also increase overall utility and are associated with social status and economic and political power (Nam et al., 2008a). In this realm it has been argued that state-sponsored access to financial products provides a substitution to or a new way of traditional welfare provision, resulting in the 'financialisation of everyday life' (Mertens, 2017).

Up until now this asset-based welfare approach has been largely confined to Anglo-Saxon countries. In Europe it has so far received little attention. Indeed, in the European Union social exclusion has been traditionally translated as labour market exclusion such that policies targeted at reducing poverty and inequality are focused on work and income, first through the income maintenance programs of the 20th century and more recently in the social investment paradigm. Although recent research increasingly acknowledges the roles of assets when defining living standards and poverty in Europe (e.g. Brandolini et al., 2010; Kuypers & Marx, 2018b *(Chapter 4)*), it has up until now been hardly translated into policy analysis. Academic and political discussions concerning wealth have so far largely focused on the top of the distribution, but it can also play an important role in the analysis of poverty and social policy (Kuypers & Marx, 2018a *(Chapter 1)*). Indeed, much of the literature is concerned with how to tax wealth in order to decrease inequality, but looking at how we can encourage wealth accumulation at the bottom of the distribution is just as important (Atkinson, 2015), not in the least to redistribute the returns from wealth taxes in a sensible way.

In the liberal welfare strategy asset building policies are considered to be an interesting substitute for traditional welfare provision as asset ownership implies independence and autonomy. In other words, it is argued that providing everyone with sufficient asset ownership may make traditional welfare provision redundant in the future. This chapter argues that asset building policy may also be an interesting avenue to explore for European welfare states, but as a complement rather than a substitute of existing provisions. Although social investment and asset building policy might appear competing welfare strategies, they are in fact compatible and mutually reinforcing paradigms (Lennartz & Ronald, 2017). An asset based policy strategy would then combat exclusion from financial markets and support wealth accumulation among vulnerable households.

I argue in this chapter that such a complementary asset based social policy strategy might be able to address some of the arising socio-economic developments faced by European welfare states. First, current welfare policies have been mainly created in relation to the industrial and relatively stable labour markets of the 20th century. At that time a person's financial situation was largely determined by income and hence having a decent job was a sufficient condition to live a 'good life'. Although welfare policies were successful at the time, they have seem to hit their boundaries over the last decades. Social minima, for instance, continue to erode relative to overall living standards and are often lower than the poverty threshold (Cantillon, 2011; Cantillon & Vandenbroucke, 2014). This can be largely attributed to socio-economic and demographic changes which have made 21st century societies much more complex and generated new types of social risks. First, due to globalisation it is easier to shift production to other parts of the world and due to technological progress our economy is changing from a labour intensive to a capital driven one. As a result employment relations are less stable with increasing incidence of non-standard employment and individuals that are engaged in a portfolio of activities (Atkinson, 2015). Moreover, being in work is no longer sufficient for guaranteeing non-poor living standards (Lohmann & Marx, 2018). At the same time wealth has increased tremendously since the post-war period, among others due to newly emerging types of capital and increasing asset prices, giving rise to increasing wealth-to-income-ratios (Piketty & Zucman, 2014). This also has an impact on our social structure. Being a capital owner has become an increasingly essential condition to be able to fully participate in society, and this is only likely to increase. Indeed, in the context of volatile and insecure labour markets, assets increase financial stability by providing a buffer to face income and consumption shocks. Moreover, independently from income assets also provide economic power and independence (Sherraden, 1991). Another important process which contributes to the importance of wealth is population ageing. Many welfare states are facing rising pressures on public pension provision and have shifted from defined benefit to defined contribution pension plans. The role of wealth accumulation in general and private pension saving in particular will therefore become increasingly essential to insure decent living standards after retirement.

The chapter is structured as follows. In section 7.2 I define asset building policy and its main objectives and types. Section 7.3 briefly discusses modern social risks and the prospects for asset building policies to address these. Section 7.4 first provides an overview of the data and methodology that are used in the empirical part of the chapter. First, section 7.5 shows the budgetary and distributional impact of some of the existing asset building policies. The focus is on tax reliefs granted for private wealth accumulation in six European countries representing a broad range of welfare regimes, but all having a tradition in promoting asset accumulation: Belgium, Finland, France, Germany, Italy and Spain. Since income maintenance still dominates policy debates, previous research largely focuses on direct social expenditures (i.e. public transfers). The analysis of indirect expenditures (i.e. tax reliefs) receives much less attention, including those related to asset building. Exceptions include Astarita et al. (2014), Figari et al. (2016) and Matsaganis & Flevotomou (2007), but they only look at mortgage tax reliefs. The analysis shows that most of the existing policies remain well out of reach for vulnerable households and hence have not been used to its fullest potential to address social risks. Inspired by the framework of Sherraden (1991), which argues that the poor can save when offered the appropriate structures, the following section then simulates a hypothetical pro-poor asset building policy. In particular, I simulate the equity and budgetary first-order effects of a matched savings program similar to the US Individual Development Accounts (IDA's). The novelty of this chapter is that for the first time the impact of existing and hypothetical asset policies is ex-ante evaluated. For this I use data from the

Eurosystem Household Finance and Consumption Survey (HFCS) and the microsimulation tax-benefit model EUROMOD. The last section concludes.

7.2 Asset building policies: objectives and types

In the broad sense asset building policies refer to all public policies which encourage individuals to accumulate, hold or develop tangible and intangible assets. Tangible assets include real estate, savings, bonds, etc., while access to credit and human, social, cultural and political capital are considered intangible assets (Sherraden, 1991). As such the social investment paradigm with its focus on building up human capital can be considered as part of the asset building framework. Yet, it is much broader than that; social inclusion entails inclusion in both the labour and financial markets. In this chapter I focus on policies which encourage the accumulation of tangible assets. Table 7.1 provides an overview of the three main theoretical perspectives on asset accumulation (Nam et al., 2008a) and their translation into different objectives which can potentially be achieved through asset building policies.

Table 7.1 Overview objectives asset building policies

Perspective	Objective	Asset type
Consumption	Short-term stability	Mainly liquid assets
	Life cycle stability	Mainly public & private pension
	Generate income	Mainly financial assets
Development	Increase utility	All assets
	Orientation towards future	All assets
Social stratification	Maintain social status	All assets
	Intergenerational stability	Inheritances & gifts

The first perspective views wealth as a source of potential future consumption in order to smooth fluctuations in income. In the precautionary savings theory (Hubbard et al., 1994; Leland, 1968) wealth mainly serves as a buffer-stock to face income loss (due for instance to unemployment or divorce) or unexpected expenses (due for instance to sickness, car or house repairs). Providing for consumption after retirement is central to the life cycle theory (Ando & Modigliani, 1963; Shefrin & Thaler, 1988). Although both theories agree that the main objective of wealth accumulation is to assure financial stability, the first focuses primarily on the short term for which the ownership of liquid assets is important as these can be easily transformed into cash in times of need. The latter theory argues that assets should be accumulated at active age to be able to spend down during retirement. In this context policies mainly consist of encouraging the accumulation of public pension rights (through employment) and private pension savings. However, also other types of assets are considered to improve life cycle stability. For instance, homeownership is found to prevent poverty among elderly households (De Decker & Dewilde, 2010; Yates & Bradbury, 2010). Besides spending down the assets themselves, another objective of asset accumulation may be to raise income flows, which increases consumption possibilities even in times when smoothing is not necessary. These reflect in principle mainly financial assets and immovable property rented out to others, but it even applies to owner-occupied real estate. The latter can yield income through financial products such as life annuities and reverse mortgages, but is also considered to provide consumption services in and of itself (Mirrlees et al., 2011) and "frees up resources that would otherwise be spent on rent" (Caner and Wolff, 2004, p. 493).

In the second perspective wealth accumulation is regarded as a way to develop economically and socially and achieve goals beyond the mere satisfaction of consumption needs (McKernan et al., 2012; Sherraden, 1991). In this view asset ownership increases utility as they provide a wide range of opportunities. This in turn brings about capacities, attitudes and behaviours (Nam et al., 2008a). For instance, asset ownership implies independence, autonomy and creates a hopeful future, which may increase future-oriented behaviour among owner(s) (Sherraden, 1991). Assets improve stability not only in the economic sense, but also in social and psychological terms; they allow households to make more careful financial decisions and potentially even take some prudent risks (Nam et al., 2008a).

Finally, in the third perspective assets are considered to be an important instrument to maintain or increase social status as well as transmitting status across generations (Keister, 2000; Spilerman, 2000). For instance, owning or renting a good home or owning a small business has historically been identified with middle and upper class status (Vaughan-Whitehead, 2016). Income is often not sufficient to achieve these objectives; a small amount of assets is typically required to purchase a home or start up a business. Intergenerational transfers such as inheritances and gifts often happen at these crucial life cycle events. In this way parents can pass along social status by providing the assets associated with it, which otherwise may not have been achieved through income alone.

Apart from these micro level objectives, there are also potential objectives at the macro level on both equity and efficiency grounds. Apart from the fact that asset building policies can be designed in such a way that they redistribute wealth and assets from the top to the bottom (Mendelson, 2007) they also stimulate economic growth by providing investment opportunities to a broader share of the population (Cornell, 2003; Laurinavičius & Galinienė, 2013). Asset ownership provides a safety net, which has been shown to increase risk-taking and entrepreneurship (Sherraden, 1991). Overall it are mainly the latter macro level objectives, rather than enhancing the well-being of individual households, that have initially inspired governments to encourage asset ownership.

Table 7.2 Overview of possible asset building policies

Housing	Investment/entrepreneurship	Pensions
- Tax relief for homeownership	- Tax relief for capital income	- First pillar pensions
- Grants for homeownership	- Subsidies for the creation of businesses	- Tax relief for second pillar pension savings
- Financial assistance for homeownership	- Tax relief to business angels	- Tax relief for third pillar pension savings
- Construction subsidies for owner-occupied housing	- Loan guarantee programs	
- Rent-to-buy schemes		
- Relief for distressed mortgages		
- Subsidies for energy efficiency and housing regeneration		
- Taxation of residential housing		

Sources: For housing policies: Salvi del Pero et al. (2016, p.29); for entrepreneurship policies: OECD (2007, p.38).

Table 7.2 provides a (non-exhaustive) overview of asset building policies which are used across Europe. In general, these policies can be reduced to three types of assets: housing, financial investment/entrepreneurship and pensions. First, all three types of assets are traditionally stimulated through tax reliefs in the personal income tax (see also Section 7.5). Public pension wealth is typically build up through labour market attachment. Furthermore, with respect to housing a variety of policies

can be used. Besides tax reliefs, grants and financial assistance for homeownership are the most commonly used across OECD countries. While grants consist of a one-off transfer, financial assistance includes subsidised mortgages, assistance for down-payments and mortgage guarantees (Salvi del Pero et al., 2016). Other programs include subsidised houses or housing plots, rent-to-buy schemes, relief for distressed mortgages, etc. Apart from reliefs homeownership often receives further preferential tax treatment as imputed rent is in most countries not included in the tax base, while the valuation of properties for real estate tax purposes are often strongly outdated (Figari et al., 2017).

7.3 Asset building as a social policy strategy in Europe

So far it has been discussed that many European countries have a strong tradition in stimulating asset-ownership among its citizens, but that mainly macro-economic goals have inspired the types of policies implemented. As a result these existing policies have a strongly regressive impact which in turn exacerbates inequality (see section 7.5). In this section I will discuss some of the main arguments in favour of considering asset building rather as an additional channel for welfare provision. In what follows it is argued that such a complementary strategy may address some of the arising socio-economic and demographic risks which existing welfare programs are increasingly unable to address as they are hitting their boundaries (Cantillon, 2011; Cantillon & Vandenbroucke, 2014) and are focused on income which is losing ground in favour of wealth.

Table 7.3 Indicators of poverty, financial fragility and income volatility (%)

	BE	FI	FR	DE	ES	IT
At-risk-of-poverty rate	15.5	12.8	13.3	16.7	22.2	19.4
Proxy income volatility indicators						
Comparatively low income in ref. period	13.4	N.A.	33.3	11.2	46.2	14.9
Low future income expectations	38.5	N.A.	46.7	45.9	22.9	53.2
Subjective indicators						
Difficulties in making ends meet	39.9	25.5	62.5	19.7	67.8	77.4
No capacity to face unexpected expenses	24.0	27.2	33.4	32.6	42.7	38.8
Perception of high housing cost burden	30.1	20.2	29.0	17.2	58.4	60.1
Debt indicators						
Debt-to-asset ratio >0.75	4.5	14.1	5.9	10.5	7.0	2.6
Debt-service-to-income ratio >0.3						
Arrears on mortgage, other loans, rent or utility bills	7.6	10.7	9.8	5.7	12.5	14.3

Notes: The volatility indicator for comparatively low income reflects the answer 'low' to the following HFCS survey question *'Considering the sum of all sources of income, would you say that your (household's) income over the last 12 months was unusually high or low compared to what you would expect in a "normal" year, or was it about normal?'*. The future expectations indicator reflects the answer 'less than prices' to the following HFCS survey question: *'Over the next year, do you expect your (household's) total income to go up more than prices, less than prices, or about the same as prices?'*. A debt-to-asset ratio above 0.75 and a debt-service-to-income ratio higher than 0.3 are typically regarded as thresholds for over-indebtedness (OECD, 2015). Debt includes both mortgage and non-mortgage debt.
Source: Own calculations based on EU-SILC (2014 wave) for the at-risk-of-poverty rate, subjective indictors & arrears and HFCS (wave 2, mostly 2014) for debt and volatility indicators.

First, the financial stability function of assets is becoming more important. As a consequence of globalisation and technological advancements western economies are increasingly capital intensive,

while labour markets are more volatile and insecure resulting in an increasing incidence of non-standard employment (Atkinson, 2015) and growing numbers of working poor (Lohmann & Marx, 2018). Evidence shows that income volatility is relatively large (Jäntti & Jenkins, 2015), even in Scandinavian countries (Aaberge et al., 2002), such that most people will be faced with periods of low income at some point in their life (see also the proxy volatility indicators in Table 7.3). Vulnerability also includes much more than just mere low income. Lower middle class households have incomes above the poverty line, but a growing share is very vulnerable to shocks, which is referred to in the literature as 'financial fragility' or 'financial distress' (Ampudia et al., 2016; Brunetti et al., 2016). Table 7.3 compares the traditional income based at-risk-of-poverty rate with some indicators of financial fragility typically used in this literature. These include measures that indicate the ability of households to service debt, subjective responses to questions related to making ends meet and the perception of costs (Brunetti et al., 2016). In all countries the share of households declaring difficulties in making ends meet or the lack of a buffer to face unexpected expenses is considerably higher than the at-risk-of-poverty rate. In order to survive these households often resort to debt, which in these cases often implies unsecured and high interest rate loans, which makes their situation even more precarious. The share of households which are over-indebted or have arrears on housing related bills is indeed relatively high. Furthermore, there is also an increasing role for the life cycle stability function of private pension assets. Due to large demographic and economic changes many welfare states across Europe have shifted from defined benefit to defined contribution pension plans such that both soon to be retirees as well as young contributors are insecure about the pension they will receive. The role of third pillar pension savings is therefore becoming increasingly important.

Second, well-being goes beyond consumption; the broader social and political situation is important as well. As suggested by the second and third perspective on wealth accumulation, savings and assets also allow to develop economically, socially and politically, while income maintenance programs are merely focused on supporting consumption. Finally, evidence shows that it is becoming increasingly difficult for young people to attain the middle or upper class status which their parents often acquired relatively easy (Vaughan-Whitehead, 2016). Hence, inheritances and gifts are becoming increasingly essential to insure intergenerational stability.

If social risks are broader than low income, we should also look wider for possible policy responses. Over the last decade measures have been proposed to define and analyse living standards, inequality and poverty in terms of both income and wealth (Kuypers & Marx, 2018b *(Chapter 4)*). Yet, up until now it has hardly any influence on policymaking and policy analysis. Taxation and social policies remain strongly embedded in the traditional income perspective, while wealth considerations are remarkably absent. Although social investment and asset building policy might appear competing welfare strategies, they are in fact compatible and mutually reinforcing paradigms (Lennartz & Ronald, 2017).

7.4 Data & methods

As in previous chapters the analyses are based on EUROMOD simulations using the HFCS data as the underlying database such as described in Chapters 2 and 3 and the annuity approach discussed in Chapter 4 is used as assessment framework. The same six countries are analysed: Belgium, Finland, France, Germany, Italy and Spain. On top of the arguments mentioned before *(see section 5.2)*, these are also interesting here because they are among the countries in Europe with the longest tradition of

promoting asset accumulation and today still a large part of their indirect public expenditures are made up of these policies. As in Chapter 6 policies are simulated as they were in place in 2017 and therefore the monetary variables need to be updated from the HFCS reference year to 2017.

7.5 Existing asset building policies

Table 7.2 provided an overview of policies that have been used by governments to encourage the ownership of wealth. In this part I focus on the asset building policies which operate through the tax system as they are considered to be among the most important policies, in terms of the number of countries which have them in place, the coverage of entitled households as well as the government resources spend on them. Moreover, since income maintenance still dominates, research largely focuses on direct social expenditures (i.e. public transfers). The analysis of indirect fiscal expenditures (i.e. tax reliefs) receives much less attention, including those related to asset building. Exceptions include Astarita et al. (2014), Figari et al. (2016) and Matsaganis & Flevotomou (2007), but they only look at mortgage tax reliefs. Table 7.4 provides a brief overview of the tax reliefs that were in place in the six countries in 2017.[48]

First, mortgage tax reliefs are granted in the form of an income deduction in Belgium, Finland and Germany, while Italy and Spain have a system of non-refundable tax credits[49]. Mortgage tax reliefs are typically granted for the household main residence, but in Germany interests can only be deducted from actual received rental income. In other words, there is only tax relief for mortgages taken to finance the purchase or preservation of properties which are rented to others, not for the main residence or any other privately used real estate. In Belgium different systems apply depending on the year in which the mortgage was contracted. For mortgages contracted before 2005 the interest deduction can be received for one mortgage only, but this does not necessarily have to be related to the main residence. Since 2005 the deduction can only be received for the own and only residence. However, since 2015 the competence for the mortgage tax relief has moved from the federal to the regional level. Since 2016 the first reforms have taken place, among others the fact that the relief is no longer limited to the main residence in the Flemish Region. France and Spain have both abolished their tax credits over the last years, but in Spain it is still received by those who were already eligible. All countries also fiscally stimulate private pension saving. With the exception of Belgium, tax relief is granted in the form of a deduction from taxable income. While the tax relief is typically granted for actual contributions that are made to these types of funds, the French system provides for a deduction in terms of earnings. In Germany the prominence of private pension funds is relatively recent and quite complex. Only the two most important ones are included: the Riester and Rürup pensions. Finally, all countries except Italy and Spain grant a tax relief for some type of capital income. While the Belgian system allows to deduct interests on savings accounts, Finland and France fiscally encourage stock ownership and Germany grants a deduction for all types of capital income. Up until 2014 Spain also had a deduction for dividends in place.

---

[48] Only the main characteristics are discussed, in many cases there are other requirements to take into account, such as specific characteristics which mortgage or pension saving contracts should fulfill.

[49] In line with OECD (2010) the different types of tax reliefs are defined as follows:
- Exemption: income components which are part of pre-tax income but do not need to be declared to the tax authority and hence are not part of the concept of taxable income
- Deduction: amount that is subtracted from pre-tax income
- Credit: amount subtracted from the tax liability

Table 7.4 Overview asset building policies for private wealth accumulation included in the analysis, 2017

Tax relief for	Mortgage repayment	Private pension savings	Capital income
Belgium	*Flemish Region:* deduction of 40% of interests with maximum €1,520 (increased by €760 during first 10 years of mortgage) *Walloon Region:* deduction of €1,520, decreases when net taxable income above €21,000: €1,520 – [(Income-21,000)*1.275] (halved after 10 years) (*)	Non-refundable credit of 30% of contributions, with a maximum contributions taken into account of €940	Deduction of €1,880 of interests on savings accounts
Finland	Deduction of 45% of interest repayments	Full deduction of contributions with a maximum of €5,000	Deduction of 15% of listed dividends; 75% deduction of non-listed dividends up until €150,000
France	N.A. (**)	Deduction of 10% of *earnings*, with minimum of €3,923 and maximum of €31,382	Deduction of 40% of dividends
Germany	Full deduction of interest repayments for mortgages on real estate that is rented, with maximum of real property income	Riester: deduction of maximum €2,100 Rürup: deduction of 84% (***) with maximum contributions taken into account of €23,362	Deduction of capital income equal to €801
Italy	Non-refundable credit equal to 19% of interest repayments with maximum amount of interest considered of €4,000	Full deduction of contributions with maximum €5,164.54	N.A.
Spain	For mortgages taken out before 1/1/2013: Non-refundable credit of 15% of interest and capital repayments, with a maximum taken in consideration of €9,040; Abolished for mortgages taken out since 1/1/2013	Full deduction of contributions, with limit equal to the minimum of the following: 30 % of net labour income and €8,000	N.A. (****)

Notes: Tax relief for mortgage repayment is a policy at the household level, while tax reliefs for private pension contributions and capital income are individual, such that amounts need to be multiplied by two for couples. In line with OECD (2010) types of tax reliefs are defined as follows: an exemption refers to income components which are part of pre-tax income but should not be declared and hence are not part of taxable income, a deduction refers to an amount that is subtracted from pre-tax income and a credit refers to an amount subtracted from the tax liability.

(*) Abolished in Brussels Capital Region since 1/1/2017, still applies to existing beneficiaries. In all regions different rules apply to mortgages taken before 2005, between 2005-2014 and in 2015.

(**) For mortgages taken out before 1/1/2011: Non-refundable credit equal to 20% of interests during first 5 mortgage years, increased to 40% in first mortgage year, with maximum of €3,750 for singles/€7,500 for couples. Still applied to existing benefits in subsequent years, but as it is only received during first 5 years no longer applicable in 2017.

(***) Started at 60 per cent in 2005 and increases with 2 per cent each year until it reaches 100 per cent in 2025.

(****) Before 1/1/2015: deduction of dividends with a maximum of €1,500.

Source: EUROMOD country reports (https://www.euromod.ac.uk/using-euromod/country-reports) and national tax legislations.

Table 7.5 looks at how these tax reliefs affect government budgets. There are different methods to measure the 'cost' or value of tax expenditures (Astarita et al., 2014; OECD, 2010). Here, I estimate the revenue governments have forgone by granting tax reliefs, which reflects the difference in tax revenues of the simulations with and without including the reliefs.[50] I provide absolute figures as well as the percentage they represent of the total income tax revenue (excluding wealth taxes, social contributions and indirect taxes). In general all reliefs represent non-negligible shares of the total income tax revenue. The most 'costly' tax relief is country-specific; it is mortgage repayment in Belgium and Spain, private pension saving in France and Italy and capital income in Finland and Germany. Table 7.5 also shows the total amount of forgone revenues for all tax reliefs jointly. This is not necessarily equal to the sum of the separate policies as there may exist interactions between them. Spain experiences the highest percentage of forgone tax revenues, while they are considerably lower in Italy, and Germany. Since many of the tax reliefs are granted in the form of income deductions these cross-country differences partly depend on the country-specific marginal tax rates (OECD, 2010).

Table 7.5 Forgone government tax revenue due to asset building tax reliefs

	Tax relief for	Millions of Euro	% of total income tax revenue
Belgium	Mortgage repayment	2,689	3.90
	Private pension funds	657	0.95
	Capital income	203	0.29
	All	*3,545*	*5.14*
Finland	Mortgage repayment	91	0.33
	Private pension funds	175	0.63
	Capital income	1,271	4.59
	All	*1,535*	*5.54*
France	Mortgage repayment	N.A.	N.A.
	Private pension funds	2,849	2.06
	Capital income	270	0.20
	All	*3,112*	*2.25*
Germany	Mortgage repayment	1,700	0.48
	Private pension funds	645	0.18
	Capital income	2,771	0.78
	All	*5,113*	*1.44*
Italy	Mortgage repayment	955	0.66
	Private pension funds	2,230	1.54
	Capital income	N.A.	N.A.
	All	*3,185*	*2.20*
Spain	Mortgage repayment	1,741	5.80
	Private pension funds	1,053	3.51
	Capital income	N.A.	N.A.
	All	*2,778*	*9.25*

Note: Forgone tax revenues are calculated as the difference in tax revenues of the simulations with and without including the reliefs. Source: Own calculations based on HFCS-EUROMOD simulations.

The question now arises; who benefits from these tax incentives? Figure 7.1 shows the distribution of the share in forgone tax revenues across quantiles of the sum of income and annuitised net wealth. It is clear that the bulk of governments' investments flow to middle and top class households. For capital

---

[50] Ideally, one should take into account behavioural reactions and interactions between taxes (Astarita, 2014; OECD, 2010).

income the share flowing to the top quantile is 50 per cent and even 75 per cent in France. Middle class households are able to profit from the incentives for mortgage repayment and private pension saving, although less so in France, Germany and Spain. The regressive impact of mortgage interest tax reliefs is in line with the findings of Figari et al. (2016) and Matsaganis & Flevotomou (2007).

It is important to note that the analysis is static such that it is not possible to analyse to which extent these policies do indeed incentivise people to purchase an asset they would otherwise not and hence to which extent they contribute to wealth accumulation. At the time these policies were introduced wealth was in most countries extremely unequally distributed between only a bottom and top part. Over time, however, a 'patrimonial middle class' emerged to which Piketty (2014, p.260) refers to as one of the most structural transformations of the wealth distribution in the twentieth century. Hence, in combination with other factors, asset building policies may have strongly facilitated households with middle class incomes to accumulate wealth, resulting in lower levels of wealth inequality.

Figure 7.1 Share in total forgone tax revenues by income + annuitised net wealth quantiles (%)
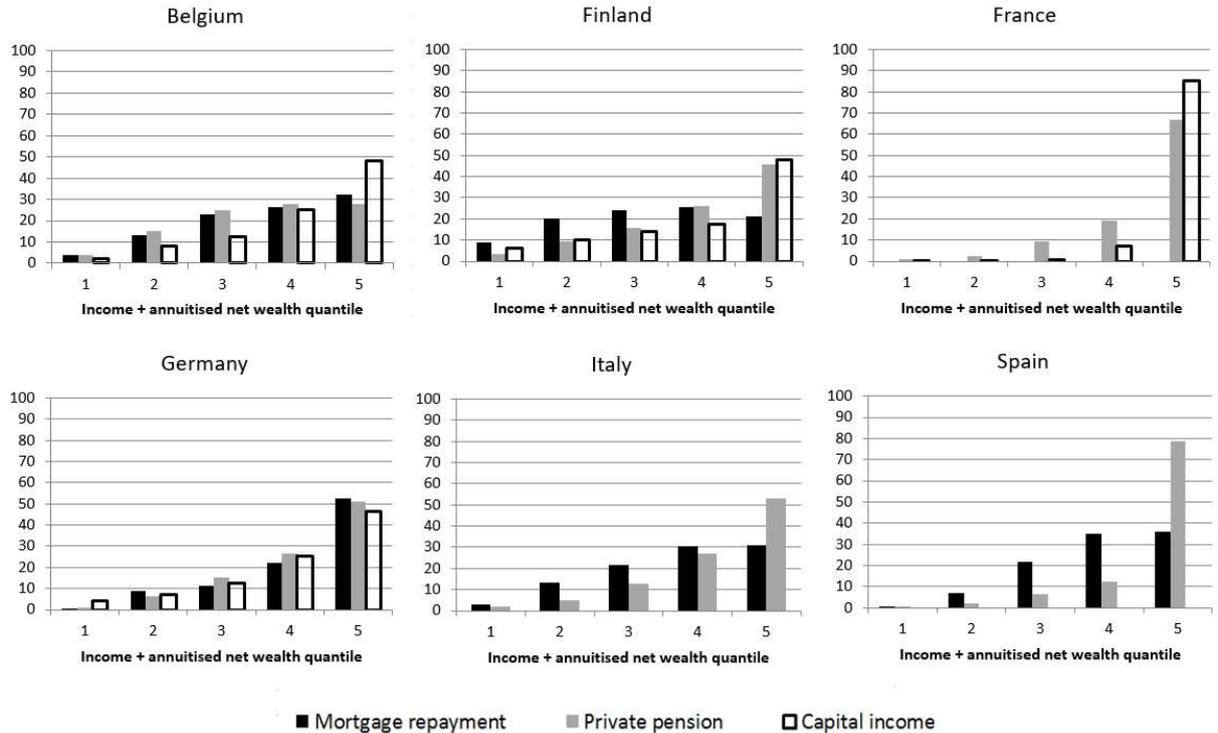
Source: Own calculations based on HFCS-EUROMOD simulations.

Although existing asset policies may have contributed to falling wealth inequality in the past, they lie also partly on the basis of the resurgence of wealth inequality in Europe today. For each country and tax incentive less than 10 per cent of the total cost flows to the bottom quantile (Figure 7.1). Hence, these policies appear to remain well out of reach of poor and lower middle class households, and this for three main reasons. First, the share of households owning these particular asset types is much lower at the bottom than in the middle and the top of the distribution (see e.g. Arrondel et al., 2014a). This is among others because these asset types do not really cover the needs and preferences of those at the bottom. The short-term stability function of wealth (cfr. Table 7.1) is generally their first priority, for which liquid asset holdings are most suitable as they can be easily converted into cash (Kuypers & Marx, 2018a *(Chapter 1)*). While the stimulation of homeownership and retirement savings is obviously

important, for the most vulnerable households it might divert scarce financial resources away from fulfilling other needs rather than building up wealth (Apgar, 2004). Second, even when they do own the asset type and hence are eligible for the tax incentive, they do not realise the full gain because they pay little or no taxes (McKernan & Sherraden, 2008). Finally, asset limits in means-testing of social benefits discourages saving, resulting in a poverty trap (Nam et al., 2008b and references therein).

7.6 Pro-poor asset building to ensure financial inclusion for all

From the previous section it is clear that the asset building policies which operate through the tax system are hardly beneficial for vulnerable households. Furthermore, they are often also disadvantaged in the other types of asset building policies, e.g. as they often do not work they also accumulate lower public pension entitlements. Regarding homeownership, many countries have made efforts throughout the last decades to extend support to lower income families by using policies outside the tax system such as grants and subsidies. However, often eligibility still depends on income conditions – which is rightly so as homeownership is not costless. Indeed, when it comes to insuring affordable housing for the poorest it is much better to invest in rental policies rather than stimulating homeownership. As argued before, wealth ownership is in the first place beneficial through its short-term stability function. In this perspective wealth allows to overcome periods of low income or to face unexpected costs. As was presented in Table 7.1 this function is mainly associated with the ownership of liquid assets. Therefore, I will focus in this section on a new type of asset building policy which focuses on building up liquid assets among the most vulnerable households.

Under the impulse of the work of Sherraden (1991) asset building policies targeted at or inclusive to the poor were first introduced in the United States in the 1990s. Over time countries such as the UK, Canada and some English-speaking countries in Southeast Asia followed (Laurinavičius & Galinienė, 2013). One of the largest and most effective initiatives are the 'Individual Development Accounts' (IDA's) of the US. IDA's are savings accounts for low income households that provide matched funds (financed by private and/or public resources) at the time of withdrawal if the savings will be used for one of the pre-set goals (e.g. higher education, homeownership or entrepreneurship) (McKernan & Sherraden, 2008; Sherraden, 1991). In Europe examples are much scarcer and often consist of local social innovation projects. Besides a pilot project funded by the European Commission that has been implemented in Belgium, France and Hungary (see Guisse & Gilles, 2013), programs for promoting saving among low income people are largely absent. Yet, as discussed above it may be interesting to explore such a policy option also for European welfare states. Therefore, in what follows I look into the possibilities for initiating in the six countries analysed in the previous section a pro-poor asset building policy inspired by the IDA's. Yet, compared to these programs which are focused on providing access to illiquid wealth (homeownership, entrepreneurship) or goods which are publicly provided in Europe (higher education), liquid savings are here considered important in and of themselves in order to provide short-term financial stability. In other words, the considered policy consists of matching (i.e. doubling) household savings.

The target group of the designed policy are those who have low income, low wealth and inadequate liquidity, which are considered to be the most vulnerable households (Kuypers & Marx, 2018a *(Chapter 1)*). The country specific parameters to determine eligibility for the new policy are presented in the top half of Table 7.6. Low income is considered to be below 80 per cent of national median equivalised

disposable household income. The threshold used to determine insufficient liquid assets is taken from the EU-SILC question *"Can your household afford an unexpected required expense of [national specific amount] paid using its own resources?".* The asset types which are assessed against this threshold include deposits, bonds, shares, mutual funds and managed accounts (Kuypers & Marx, 2018a *(Chapter 1)*). Using a slightly higher threshold for income than the official AROP-poverty line in combination with a liquidity threshold implies that both those who fall below the poverty line are included as well as those with incomes just above the poverty line, but who own insufficient liquid assets to face unexpected costs. In order to avoid subsidising large wealth owners who choose to invest only in illiquid assets I also control for total assets held, including both liquid and illiquid assets, which should belong to the bottom two deciles of the distribution. In contrast to above I use gross assets instead of net wealth (i.e. not subtracting outstanding debt) as it might imply subsidising households with large outstanding debt but equally large gross assets available to spend in times of need. However, I do subtract debt repayments from disposable income to take into account only income available for spending. As is presented in Table 7.6 the share of individuals living in a household eligible for the matched savings benefit according to these criteria is around 10 per cent in France and Germany, around 8 per cent in Belgium, Italy and Spain and 6 per cent in Finland.

Table 7.6 Overview of key parameters and outcomes hypothetical pro-poor asset building policy

	BE	FI	FR	DE	IT	ES
Eligibility thresholds						
Lower middle class income	€17,836	€18,920	€17,370	€17,020	€12,998	€10,945
Low gross assets	€64,163	€25,366	€11,093	€10,828	€26,339	€58,692
Insufficient liquid assets	€1,100	€1,200	€1,000	€1,000	€800	€650
Eligible population	8.5%	6.0%	10.1%	10.5%	8.5%	7.8%
Outcomes (only savings deposits)						
Beneficiary population	2.0%	N.A.	5.5%	2.4%	0.2%	0.2%
Average benefit	€164	N.A.	€127	€165	€383	€191
Total cost (million)	€20	N.A.	€199	€199	€19	€7
Total cost (% of tax revenue)	0.03%	N.A.	0.14%	0.06%	0.01%	0.02%
Outcomes (all deposits)						
Beneficiary population	6.6%	6.0%	9.2%	7.1%	1.1%	4.8%
Average benefit	€309	€346	€358	€262	€474	€246
Total cost (million)	€108	€70	€970	€935	€114	€223
Total cost (% of tax revenue)	0.16%	0.25%	0.70%	0.26%	0.08%	0.74%

Source: Eligibility thresholds: Lower middle class income threshold is calculated as 80 per cent of median equivalised disposable income reported by Eurostat. The low assets threshold is calculated as the bottom two deciles of the gross asset distribution in the HFCS dataset. The liquid assets threshold is taken from the national amount used in the EU-SILC question "Can your household afford an unexpected required expense of [amount] paid using its own resources?", Bottom half: Own calculations based on HFCS-EUROMOD simulations.

The middle and bottom part of Table 7.6 present some summary outcomes of the simulated policy in terms of the likely beneficiary population and the potential budgetary range. Since not all households currently own a savings account (Ampudia & Ehrmann, 2017) and the HFCS does not allow to distinguish between sight and savings accounts for Finland, the matching is here simulated for savings accounts separately as well as for all types of accounts together. Although sight accounts are less appropriate to determine the matched savings benefit because the amount depends strongly on the timing of the interview (i.e. before or after the pay check is received), the simulated amounts lie somewhat closer to the findings of the European pilot project and the existing Anglo-Saxon programs. The results show that the share actually receiving a benefit (i.e. those who currently own a positive amount of savings) is generally lower than the eligible population, especially in the case when only

savings accounts are taken into account and most strongly so in Italy. This indicates that saving among vulnerable households is currently indeed very low. The average amount currently saved, and hence the potential benefit amount, ranges between €100 and €200 for most countries in the case when only savings deposits are taken into account, while it lies between €250 and €350 when also balances on sight accounts are included. The amounts are somewhat higher for Italy, but the potential beneficiary population is very small. The cost of this type of asset building policy is likely to be below 1 per cent of total tax revenues. This is generally lower or similar to the forgone tax revenues of the existing asset building policies from Table 7.5. Hence, it could potentially be funded by abolishing or reducing the existing regressive policies.

As in the previous section the figures in Table 7.6 are the result of a static analysis, which means that the expected increase in savings, which is one of the main objectives of this type of policy, is not taken into account. With regard to these behavioural effects the literature is somewhat divided. As economic theory predicts that absolute and relative amounts of savings increase with income, it is often argued that the most vulnerable are not able to save, and hence that pro-poor savings programs such as IDA's do not work. However, besides income also preferences and external factors such as institutions and incentives may influence saving behaviour. In this sense the low wealth accumulations of the poor may in part also be explained by their limited access to the existing asset building policies (Sherraden et al., 2003). The incentives offered in pro-poor asset building policies may, however, induce two opposite behavioural effects. On the one hand, the higher rate of return may incentivise people to save more (substitution effect), while on the other hand people may decide to decrease their savings as the higher rate of return can now be combined with a lower amount of savings to end up with the same level of future consumption (income effect). An additional issue is the fact that as the rate of return in IDA's is considerably higher than for other saving vehicles, an increase in IDA savings may just as well reflect a reshuffling of existing savings or borrowing money to be able to make deposits. In this case such programs may not create new wealth for low-income families (Huang, 2010). In general, however, the evaluations of existing policies are largely positive: "People with low incomes will save if they are offered incentives and if the institutional structures are available to encourage them to save. We also know that most people will feel empowered by saving and will see their experience as positive" (Mendelson, 2007, p.28). Huang (2010), for instance, finds that IDA participation improves saving taste and increases financial assets within and outside IDA's, while no significant relationship is found with respect to liabilities. This suggests that the savings are likely to be new wealth. Hence, the beneficiary population and the average benefit – and therefore the cost of the policy – may be higher than those listed in Table 7.6.

A further analysis (not shown) indicates that the first-order effects of such a policy in terms of poverty and inequality may be relatively limited. Yet, given the positive effects found for existing programs, the impact may be stronger when taking into account behavioural effects. Indeed, the new savings prevent lower middle class households from falling into poverty when faced with an unexpected expense and yields the potential to build up further wealth. For the very poorest it provides an additional help combined with existing income transfers. As a result both groups have a lower necessity to resort to unsecured and high risk loans.

7.7 Conclusion

Many European countries have a longstanding tradition of stimulating the ownership of real estate, financial investment and private pension saving. These types of policies were initially perceived from a macro perspective. Recently, however, is has received renewed interest from the perspective of asset-based welfare, although up until now largely confined to Anglo-Saxon countries. Asset building policies imply independence and autonomy and hence fit perfectly into the liberal welfare strategy. In the European Union social inclusion remains mainly translated in terms of labour market inclusion, but it is argued that it equally entails financial inclusion. This chapter makes the case that given the arising socio-economic and demographic developments a social policy strategy aimed at supporting asset accumulation among vulnerable households might also be an interesting avenue for European welfare states. Yet, while it may be considered a substitution for existing welfare programs in the liberal welfare state, it is here rather regarded as a useful complement to existing welfare provisions.

The empirical analysis first concentrated on the budgetary and redistributive effects of asset building policies which operate through the tax system. It is shown that these policies imply a non-negligible share of forgone tax revenues while having a strongly regressive impact with the bulk of governments' investments flowing to middle and top class households. Although the effect on asset accumulation itself could not be studied, it is argued that these policies may have been effective in the past by allowing the emergence of a wealthy middle class. However, it is also shown that the most vulnerable currently do not benefit from these policies due to a lower share of beneficiaries and the inability to realise full gains. The focus here was on tax reliefs granted for the ownership of tangible private wealth, but the most vulnerable households are also disadvantaged in wealth accumulation in other ways. For instance, they often do not work such that they also have lower public pension entitlements.

Wealth ownership is in the first place beneficial through its short-term stability function, for which liquid assets are the most appropriate assets. In this perspective wealth allows to overcome periods of low income or to face unexpected costs. I looked into the possibilities for initiating a pro-poor asset building policy inspired by the matched savings schemes of the US. Yet, compared to these programs liquid savings are here considered important in and of themselves in order to provide short-term financial stability. Based on the criteria of having lower middle class income, low gross assets and insufficient liquid assets the eligible population comprises about 10 per cent in France and Germany, around 8 per cent in Belgium, Italy and Spain and 6 per cent in Finland. The share actually receiving the benefit in a static framework is much lower as many poor households currently do not own savings accounts. The cost of this type of asset building policy is likely to be below 1 per cent of total tax revenues, which could potentially be funded by abolishing or reducing the existing regressive policies.

The limitation of this chapter is that it only analyses the first-order effects of the hypothetical pro-poor asset policy. Yet, the key element of such a program is to encourage vulnerable households to save more. Future research should try to include behavioural reactions and their resulting second-order effects on poverty and inequality as well as long-term effects. The evaluations of the existing Anglo-Saxon programs and the European pilot study suggest that the anticipated changes in savings behaviour often take place, but further research is needed. Furthermore, the focus here was solely on the cash benefit component, but studies have shown that investment in financial literacy as well as debt counselling are equally essential elements to make such programs work.

CONCLUSION

"If a free society cannot help the many who are poor, it cannot save the few who are rich" – John F. Kennedy

Applying a joint income-wealth perspective to the analysis of poverty, inequality and redistribution

Intuitively income and wealth are often considered to be two sides of the same coin because an important part of wealth accumulation originates from the saving of earned income. However, their relationship is more complex than that; wealth can also be accumulated by receiving inheritances and gifts, by means of mortgages and loans, through rising asset prices and the income generated by wealth itself. Hence, although the relationship between income and wealth is strong, it is far from perfect. In other words, those who earn the highest (lowest) income do not necessarily own the highest (lowest) wealth. This in turn implies that analysing just one of the two distributions provides only partial insights. It is only recently that the importance of analysing income and wealth jointly has been acknowledged. Throughout modern history we have witnessed a shift of focus from wealth, which was mainly studied until the early twentieth century, to income around the World War period and then recently back to wealth as a way to address new socio-economic and demographic issues such as the threat of robotisation, increasing levels of inequality, population ageing and the recent financial crisis. Yet, although the interest in wealth is booming, attention towards the joint distribution of income and wealth is still remarkably low and the emphasis has been mainly on what happens at the top. Indicators of poverty, inequality and redistribution remain to date defined in terms of income alone. Hence, there remains an important void with regard to the relationship between income and wealth from a more social viewpoint, i.e. what does the wealth distribution and its correlation with income imply for the definition and analysis of poverty, inequality and redistribution. This dissertation fills this gap.

The dissertation consists of four main parts, each identifying a sequential step in the process towards a better understanding of poverty, inequality, redistribution and policy in terms of the joint distribution of income and wealth. In particular, I addressed the following main research questions: 1) How are the distributions of wealth and income related? 2) How to use the available data and methods for the joint analysis of income and wealth? 3) How can information on both economic resources be combined for the measurement of poverty, inequality and redistribution? and 4) How can the results of the latter influence the evaluation and design of specific fiscal and social policies?

First, the dissertation argued that including wealth information is not only important at the top of the distribution, but is also relevant for the study of poverty, inequality and redistribution. Wealth contributes to living standards in a number of ways: it stabilises and increases consumption possibilities, it allows owners to develop socially and economically, it contributes to achieving or maintaining class status and it provides economic and political power. Yet, an even more compelling reason for including wealth information is its imperfect correlation with income. Indeed, if income and wealth would be perfectly correlated then taking into account the contributions of wealth may affect absolute levels of well-being, but may have few consequences for the analysis of poverty, inequality and redistribution, i.e. those who are poor or rich according to income remain so when adding wealth. However, as the results from Chapter 1 show income and wealth are indeed positively correlated, but

not to the extent as one would assume when referring to them as two sides of the same coin. The analysis is carried out for Belgium as a case study of relatively low income-wealth correlation, but the results extend to other countries as well, albeit to various degrees. It is shown that there exist large differences in net wealth between low, intermediate and high income households, but there is also considerable inequality in wealth accumulations among households with similar incomes. This is particularly true at the bottom of the distribution. A differentiation is made between income poor households who own considerable (liquid) assets to smooth consumption and households who do not have this option. The latter are considered the truly vulnerable for which the concept of triple precariousness is introduced, describing the combination of low income, low wealth and inadequate liquid assets. Compared to traditional income based poverty I find that especially low educated and tenant households are at high risk of being in triple precariousness. By contrast, elderly households are often found to combine a high risk at income poverty with median to high wealth holdings.

An issue encountered in the first chapter is that households had to be categorised based on deciles rather than applying a common poverty measure such as the EU At-risk-of-poverty rate (AROP) because the HFCS data only include information on gross incomes. This is a major drawback to the use of these data for (re)distributive research. Therefore the second part of the dissertation explored the prospects of combining the HFCS with EUROMOD, the EU-wide tax-benefit microsimulation model. This combination enhances research possibilities in two ways; by using the HFCS as underlying database for EUROMOD it is possible to derive disposable incomes such that they are jointly observed with net wealth in a consistent way across countries and time (Chapter 2) and the current simulation scope of EUROMOD which focuses on personal income taxes and cash social transfers, can be expanded to wealth-related taxes and policies (Chapter 3). The HFCS-EUROMOD combination has been implemented for six European countries: Belgium, Germany, France, Finland, Spain and Italy. The validation exercises indicate that the simulated disposable incomes and wealth policies are substantially consistent with results obtained based on the standardly used database EU-SILC and external statistics. Hence, the combination of HFCS with EUROMOD is a new interesting analytical tool which opens up many new research opportunities for the joint analysis of income and wealth.

Chapter 4 benefited from the first advantage of the HFCS-EUROMOD combination, namely the joint observation of disposable incomes and net wealth, which allows to identify and calculate proper joint income-wealth poverty measures instead of using approximations such as in Chapter 1. Previous studies have proposed two different approaches to such joint income-wealth poverty measures: one which applies a separate poverty line for the income and wealth dimension and one which adds yearly amounts of annuitised net wealth to disposable income. By assessing the robustness of these two approaches to various plausible alternative assumptions such as the definition of the poverty line or of wealth itself it is shown that accounting for wealth substantially affects the incidence and age structure of poverty, but to which extent strongly depends on several analytical choices. Indeed, in contrast to the general proposition of the literature that poverty decreases when wealth is taken into account, poverty rates may just as well increase when adopting a fully relative approach, i.e. when the poverty line is expressed in terms of the broader joint income-wealth concept. The chapter compares poverty outcomes for Belgium and Germany, countries with similar living standards and poverty in terms of income, but very different importance and inequality of wealth. The results indicate that the inclusion of wealth information in poverty indices may have diverging effects across countries, potentially affecting cross-country poverty rankings.

In Chapter 5 the analysis was taken a step further on two dimensions. First, the focus on just one part of the population (i.e. those in poverty) was widened to the full joint distribution. It was shown that there is considerable reranking of individuals between the distribution of income and that of net wealth, especially at the bottom and the top. In other words, although they are positively correlated there is no perfect overlap between income and wealth inequalities. Second, the simulation scope of EUROMOD and its extension to the simulation of wealth taxes is also exploited. In the chapter it was argued that the joint distribution of income and wealth is a more relevant benchmark than income alone against which to assess redistributive effects of tax-benefit instruments. Therefore I proposed a way to extend the annuity approach used in the poverty literature to the analysis of inequality and redistribution. In particular, pre-tax and post-tax concepts of annuitised wealth were derived by assuming that one-time event wealth taxes (i.e. inheritance & gift taxes and real estate transfer taxes) reduce the stock of wealth that is subject to the annuitisation, while the effect of yearly wealth taxes (i.e. real property and net wealth taxes) is captured by the interest rate of the annuity. Results show that welfare states across Europe are less redistributive when evaluated against the joint distribution than when only the income distribution is used as assessment framework. This applies to the 'traditional' tax-benefit instruments, i.e. social transfers, personal income taxes, capital income taxes and social insurance contributions, as well as to wealth taxes. 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, but more importantly also from a lower degree of progressivity. This can be attributed to the fact that existing tax-benefit systems are in the first place focused on reducing inequalities related to income, while wealth considerations are largely absent.

The joint income-wealth framework was then applied to specific policies in the last part of the dissertation. First, Chapter 6 focused more in detail on the redistributive impact of existing wealth tax systems, with a decomposition for the different types of wealth taxes. In a first step wealth taxes were studied from a vertical equity perspective which showed that they achieve hardly any redistribution, i.e. in their current form wealth taxes do not redistribute resources from the rich to the poor. Although some tax types such as general net wealth taxes and capital income taxes are relatively progressive, their size is just too small compared to the potential tax base to achieve this redistribution. When the joint income-wealth assessment framework is used then progressivity generally increases (or regressivity decreases) compared to when assessed against the distribution of (annuitised) wealth alone. Nevertheless, redistribution through wealth taxation is extremely small compared to the redistribution achieved by more 'traditional' instruments such as income taxes and cash benefits. In a second step wealth taxes were studied side by side income taxes. It shown that those who derive their living standard mainly from (labour) income bear much higher taxes than those who have a similar living standard but deriving it predominantly from (annuitised) wealth. While tax rates are clearly progressive among the first group, they are more or less flat among the latter. Moreover, even different types of assets are treated differently. While most countries tax the ownership of real estate wealth, financial wealth is taxed in only a few countries, at very low rates, and often with large exemptions. Hence, there is a strong lack of neutrality built into tax systems with regard to the source from which households draw their financial living standard, which violates horizontal equity principles.

Governments do not only tax wealth, they also have a longstanding tradition of encouraging asset ownership through various policies such as tax reliefs. In general, these policies are linked to three types of assets: housing, financial investment/entrepreneurship and pensions. Chapter 7 analysed the

budgetary and redistributive effects of some of these asset building policies which operate through the tax system. It was shown that they imply a non-negligible share of forgone tax revenues, while having a strongly regressive impact, with the bulk of investments flowing to middle and top class households. Although the effect on asset accumulation itself could not be studied, it is argued that these policies may have been effective in the past by contributing to the emergence of a wealthy middle class, which resulted in a decrease of wealth inequality. However, it is also shown that the most vulnerable currently do not benefit from these policies due to a lower share of beneficiaries and the inability to realise full gains. The focus was on tax reliefs granted for the ownership of tangible private wealth, but the most vulnerable households are also disadvantaged in wealth accumulation in other ways. For instance, they often do not work such that they also have lower public pension entitlements.

Throughout the chapters two sets of sensitivity analyses have recurred. First, it is often debated whether real estate should be included in the wealth concept. On the one hand the annuitisation approach implicitly assumes that income and wealth are perfectly fungible, but the conversion of non-liquid assets into cash is often associated with a certain cost. Moreover, it is argued that it does not seem reasonable to expect households to sell their homes to pay taxes or to face income or consumption shocks. On the other hand it is important to take into account the fact that homeowners are better off than similar tenants, especially because real wealth constitutes the largest share in most households' asset portfolio. To address this debate I have run the analyses for both wealth concepts throughout the dissertation. The results clearly show that the effect on poverty, inequality and redistribution is much stronger when real estate wealth is accounted for. For purposes of defining joint income-wealth indicators to monitor and communicate levels and trends of living standards I think it is important to include all types of wealth. However, further research is needed to determine how issues such as liquidity should be addressed when it concerns actual implementation in designs of taxes and benefits. The horizontal equity principle would require all asset types to be treated equally, but other principles may make the inclusion of owner-occupied real estate socially undesirable.

The second sensitivity analysis refers to the fact that the situation of the elderly is often considered very different than that of their younger counterparts. Due to the life cycle character of wealth accumulation, the elderly typically own much larger amounts of wealth, while at the same time they have shorter life expectancies. Hence, as was shown in Chapter 1 the elderly are often found to combine low income with median to high wealth holdings. As a result the inclusion of wealth in the analysis of poverty, inequality and redistribution is much higher for the elderly as was demonstrated in Chapters 4 and 5. Nevertheless, the sensitivity checks have shown that the impact of adding wealth information is definitely also present when only considering the population at active age such that all the conclusions are generally applicable.

In short, this dissertation clearly shows that combining wealth information with income is very relevant for the analysis of poverty, inequality and redistribution. There is an important difference in ranking of individuals from poor to rich when both income and wealth are accounted for. This among others implies a different incidence and socio-demographic profile of poverty and vulnerability. Existing tax-benefit systems, however, do not yet reflect these realities; they are mainly focused on reducing income inequalities, while wealth considerations are often absent. The few policies which do focus on wealth currently have undesirable social outcomes. Indeed, existing wealth tax systems do not achieve vertical and horizontal equity, while asset building policies are out of reach for the most vulnerable.

Policy implications

One of the main results of the dissertation is that inequality (and possibly also poverty, depending on its operationalisation) is substantially higher when wealth is taken into account, while redistribution is significantly lower. Other studies have shown that levels of both income and wealth inequality have been increasing in most developed countries since the late 1970s (e.g. Milanovic, 2016; OECD, 2015; Piketty, 2014). Although reductions of inequality in the past have been mainly associated with external factors such as wars, revolutions, epidemics, stock-market crashes, etc. (Scheidel, 2017; Scheve & Stasavage, 2016), recent history has indicated that policies can also play a key role (Atkinson, 2015; Piketty, 2014). While monetary policy can directly impact on market inequalities (e.g. Carpantier et al., 2018), the focus of this dissertation is on redistributive policies. I argue that the redistributive instruments that are used today do not sufficiently reflect current socio-economic realities. The transformation from a labour intensive to a capital driven economy has resulted in a social order where one's position on the social ladder increasingly depends on the ownership of wealth. Therefore, I argue that we should design and evaluate fiscal and social policies from the perspective of the joint distribution of income and wealth.

Although exact recommendations are still preliminary given some of the limitations of the current research (see below), some general guidelines may already be distinguished. I argue in this dissertation that in order to decrease inequality we will need to address both sides of the spectrum. Slowing down income and wealth accumulation at the top of the distribution is key in reducing the difference with the middle class, while supporting wealth accumulation at the bottom is deemed crucial to close the gap between the middle class and the poor. Although there may be other potential policies to address these issues, I focus on the role of taxation at the top and of subsidising liquid savings at the bottom. Yet, policy options are typically developed in relation to the way in which problems are portrayed. Hence, the traditional definition of living standards in terms of incomes has inevitably led to policies that focus on income maintenance at the bottom (Cramer et al., 2008) and income taxation at the top. Therefore, the first step towards the inclusion of the wealth perspective in redistributive policy would consist of broadening the current set of EU Social Indicators with measures that take a joint income-wealth perspective on issues of (re)distribution, inequality and poverty. These indicators will then also allow to assess and evaluate the effectiveness of the proposed policy directions.

Include joint income-wealth measures in the set of EU Social Indicators

One of the main targets of the Europe 2020 strategy is to reduce the population at risk of poverty or social exclusion by at least 20 million people by the year 2020. The measure used to monitor progress towards this target consists of a combination of three indicators; namely the at-risk-of-poverty rate (AROP), the severe material deprivation rate and the share of people living in households with very low work intensity. These indicators, either separately or jointly, have been the subject of numerous studies by EU and national agencies as well as academic researchers to report on their evolutions and evaluate whether the target will be reached.

I argue in this dissertation that policy at the European and national level would benefit from adding joint income-wealth distribution and poverty measures to the set of EU Social Indicators for two main reasons. First, the currently used indicators do not provide a full picture. As discussed in Chapters 1

and 4 part of the mismatch between at-risk-of-poverty rates and material deprivation measures may be explained by the fact that income poor households can rely on savings and accumulated assets to purchase the items included in the deprivation measure. Income indicators suffer from the fact that they only reflect part of the available resources or that resources may be lower than income due to debt, while material deprivation measures focus on what people actually do with their resources. Joint income-wealth measures differ from these indicators as they take into account all financial resources which are potentially available. A second reason for including joint income-wealth measures in EU social indicators is that it may induce policymakers to extend social targets. One of the main concepts in the 2020 target is 'social exclusion'. As is argued in Chapter 7 this is currently mainly translated into labour market exclusion, while I believe that it should also address exclusion from financial markets.

Chapters 4 and 5 show that including wealth information in indicators of poverty, inequality and redistribution has a substantial impact on the obtained outcomes. Chapter 4 described two potential approaches to a joint indicator of income and wealth; a unidimensional one and two-dimensional one. Recently, EUROSTAT has published some experimental wealth statistics including a measure of 'asset-based vulnerability', which relates to the two-dimensional approach. In this dissertation, however, I have given preference to the approach in which wealth is transformed into an annuity and summed with income. As the two-dimensional approach largely emphasises the role of wealth in case there would be no income, this mainly makes sense for Anglo-Saxon welfare states where social insurance against income loss is low. In the European welfare states analysed in this dissertation, on the contrary, social safety nets are often much stronger, for which the annuity approach seems more appropriate as it reflects the total financial position at a certain point in time.

Slow down wealth concentration at the top

In Chapter 6 I have argued that the total tax system (i.e. combination of income and wealth taxes) should be designed in such a way that it decreases overall joint income-wealth inequality, not only income inequality. Given that wealth inequality is much higher than income inequality, while income taxes are currently more redistributive than wealth taxes, this mainly implies an increase in the taxation of wealth. Most of the existing wealth-related taxes are already substantially progressive, especially general net wealth taxes, capital income taxes and inheritance & gift taxes. Hence, a first step towards improving vertical and horizontal equity would be to bring wealth tax rates closer to those applicable to (labour) income. At the same time horizontal equity also implies a more similar tax treatment of different asset types. In this context a general net wealth tax is for instance preferred to a tax on real estate alone. Furthermore, capital income taxes could be extended to include imputed rent and/or exemptions for certain asset types in inheritance and gift taxes could be abolished. The results of Chapter 6 suggest that real estate transfer taxes, in contrast, seem to be less appropriate to address equity considerations. The hypothetical scenario presented in Chapter 6 in which all financial resources are similarly taxed under the personal income tax would achieve goals of vertical and horizontal equity and would also substantially increase tax revenues. Hence, from an equity and budgetary perspective stronger taxation of wealth may have many potential benefits.

Nevertheless, in practice there seems to be a general trend towards less rather than more wealth taxation. The main objections towards (higher) wealth taxation stem from efficiency considerations such as the discouragement of financial investment and issues of tax avoidance and evasion. Further

research is needed to estimate the (potential) size of these effects for current and hypothetical wealth taxes, not in the least because it may also have an impact on the equity outcomes. This, however, requires to link models of investment behaviour to EUROMOD, which is at the moment not yet available (see below). Although efficiency arguments against (higher) wealth taxation are very legitimate, recently it has also been argued that wealth taxation might have positive efficiency effects. The taxation of wealth may for instance provide an incentive for wealth holders to seek the best possible return for their investments through a more productive use of wealth, which positively affects economic growth (Guvenen et al., 2017; Piketty, 2014; McDonnell, 2013). Furthermore, I agree with other authors that issues of capital flight and tax evasion call for restraining these possibilities rather than to abolish wealth taxation altogether.

Support asset accumulation at the bottom

A stronger taxation of wealth will, however, only be able to decrease inequality between the top and the middle of the distribution. I argue that it will also be necessary to close the gap with those at the bottom, which is an objective that cannot be achieved through the tax system. Recently, asset building policies have received renewed interest from the perspective of asset-based welfare. Yet, so far this perspective has been largely confined to Anglo-Saxon countries, while in the European Union social inclusion remains narrowly translated in terms of labour market inclusion. In Chapter 7 it was argued that given the arising socio-economic and demographic developments a social policy strategy aimed at supporting asset accumulation among poor and vulnerable households might also be a useful avenue for European welfare states. Yet, while asset based policy is often regarded as a substitute for existing welfare provisions in the Anglo-Saxon context, I consider it as a complementary social policy strategy that has the potential to address social risks for which income protection by itself falls short.

As it has been argued that wealth ownership is beneficial in the first place through its short-term stability function, Chapter 7 has looked into the possibilities of introducing a pro-poor asset building policy. The policy was inspired by the matched savings schemes of the US, although the accumulation of liquid savings is considered important in and of itself. A matched savings program rewards poor savers with a much higher return than is currently offered in any private market, which according to savings theory may increase as well as decrease savings. In general, however, the evaluations of existing policies are largely positive and indicate that savings accumulated in such programs mainly reflect new wealth. These new savings would then possibly prevent lower middle class households from falling into poverty when faced with an unexpected expense and yields the potential to build up further wealth. For the very poorest it provides an additional help combined with existing income transfers. As a result both groups have a lower necessity to resort to unsecured and high risk loans.

The focus on accumulating liquid assets to be able to face income and consumption shocks fits within the focus of the dissertation on the short-term stability function of wealth. For future research it might also be interesting to study the potential of similar policies that are rather aimed at the long-term and on overall well-being and development rather than only consumption, i.e. include insights from other functions of wealth. These kind of programs would for instance make sure that all people start with similar possibilities, i.e. ensure an 'equalisation of endowments' (Milanovic, 2016). Examples include the proposal of Atkinson (2015) for a minimum inheritance paid for all at adulthood and the 'stakeholder society' proposal by Ackermann & Alstott (1999, 2004).

A joint income-wealth perspective on income-based policies

Throughout this dissertation I have mainly focused on policies in which wealth is important in and of itself, i.e. the taxation and subsidisation of wealth accumulation. Yet, as mentioned in the conclusion of Chapter 1, its contribution can also be considered in an indirect manner, by taking into account insights regarding the income-wealth correlation for the design of existing income-based policies. Wealth can for instance be taken into account in the means-testing of social benefits (Marchal et al., 2018) and/or to determine liability for the income tax or eligibility for fiscal expenditures (OECD, 2018b). These options may result in a fairer tax-benefit system in its existing format as the income tax can be made more progressive against total ability to pay and scarce government resources can be targeted at the most vulnerable. However, the balance between direct and indirect wealth policies should always be borne in mind. For instance, in order to not offset the incentives of pro-poor asset-building policies the savings accumulated in such programs may be exempted from asset-testing. In the dissertation I focused on direct wealth policies because I believe that taking wealth into account only indirectly will not be sufficient to reduce existing levels of inequality.

Limitations and directions for future research

One of the most obvious limitations of the analyses in this dissertation is that they only cover a limited set of countries (Belgium, Germany, France, Finland, Italy and Spain). Although they represent a broad range of welfare states with different income and wealth distributions as well as tax-benefit systems, it seems worthwhile to extend the scope of countries within Europe, and possibly also beyond. This is indeed a direction we are currently taking (Boone et al., 2018 forthcoming).

Furthermore, when discussing the policy options for supporting vulnerable households the focus of the dissertation was on the positive side of the balance sheet, but low wealth is often also a consequence of debt. As the results of Chapter 1 show non-mortgage debt is a particular important issue for households in the low income-low wealth group. Hence, policies aimed at reducing liabilities, safeguarding individuals from predatory and abusive lending practices and strengthening financial literacy are just as important for improving the well-being of the most vulnerable.

Another issue is the fact that the dissertation takes a cross-sectional within-country perspective, while the literature increasingly argues in favour of long-run and global analyses. The latter would be particularly interesting given that globalisation significantly changed the income-wealth relationship within as well as between countries. Indeed, globalisation has made it easier to shift production to other parts of the world, while technological progress and the dominance of the financial sector have strongly increased the role played by wealth in the economy. As a result income is becoming more important in traditionally poor countries, while labour is increasingly substituted by capital in rich countries. Yet, so far, studies of global inequality have focused either on the distribution of income (e.g. Anand & Segal, 2008, 2015; Milanovic, 2016) or the distribution of wealth (e.g. Credit Suisse Research Institute, yearly reports; Davies et al., 2008, 2011, 2017). The same is true for studies of long-term trends. Although Piketty (2014) shows the long-run evolution of the wealth-to-income ratio at the aggregate level, so far research on how the correlation between income and wealth at the individual level has evolved over time remains missing. Moreover, most historical studies focus on the top of the distribution. I believe that global and long-run analysis of the joint income-wealth

distribution with attention for all sections of the distribution would provide an interesting addition to this literature.

Yet, the most fundamental limitations pertain to the functions of wealth that are included. As was mentioned in the introduction, the analyses in this dissertation largely concentrate on the short-term stability function of wealth, i.e. securing consumption to overcome low income periods or to face unexpected costs. This is in line with the dissertation's focus on poverty, inequality and redistribution as the short-term stability function has been deemed the first priority for the most vulnerable and already applies to low amounts of wealth. Yet, the other functions presented in Figure 2 are important as well to the role of wealth in the 21st century, but these generally require additional information and/or different research designs. For instance, the study of life cycle and intergenerational stability will require a notion of all wealth and income resources available throughout the lifetime and transferred across generations as well as a dynamic analytical framework; the inclusion of behavioural effects is useful among others with respect to the general socio-economic development of individuals and the analysis of the power and status function of wealth typically calls for the inclusion of data on wealth of the very rich which are underrepresented in survey data. In what follows I explore some of these directions in more detail.

Augmented wealth

The analyses in this dissertation mainly build on the standard definition of net wealth, i.e. marketable wealth. This is in line with the previous literature and also with the definition adopted in existing wealth-related policies. As mentioned above sensitivity analyses taking into account only liquid assets have been carried out throughout the dissertation. Yet, another option would be to use the broader concept of augmented wealth which also includes public pension and social security wealth. While public wealth obviously contributes to well-being when faced with unemployment, sickness or retirement, these entitlements are of course only available when these events effectively take place and hence can neither be used at any other time to support consumption, nor as collateral for a loan or to transfer across generations. Yet, the use of augmented wealth is also of relevance as the provision of pensions and social security benefits has been found to have a partial displacement effect on the accumulation of private wealth. Using augmented wealth is especially relevant for cross-country comparisons, where differences in private wealth inequality may be partially due to differences in pension and social security provisions, but even within countries the comparability of private wealth accumulations may be undermined between covered and non-covered individuals (Bönke et al., 2016).

Therefore, future studies may look at poverty, inequality and redistribution in terms of the joint distribution of income and augmented wealth. Since income is expected to be strongly correlated to pension and social security wealth (as employment is generally the channel through which these entitlements are accrued) the overall correlation between income and wealth may be stronger than considered in this dissertation, which in turn may lead to slightly different results regarding joint income-wealth poverty, inequality and redistribution. Nevertheless, whether marketable or augmented wealth is used, wealth remains more unequally distributed than income, such that there will still be income rich – wealth poor and income poor – wealth rich households. Moreover, as public pensions might become more uncertain in the future their importance may in fact weaken.

Lifetime and intergenerational perspective

The analyses in this dissertation are static in the sense that income and wealth as well as the effects of taxes and benefits are evaluated at one point in time. Taking a lifetime viewpoint on the joint income-wealth distribution might be interesting given that the analyses in this dissertation suggested some profound implications regarding the situation of the elderly vis-à-vis the working-age population. As the annuitisation approach used in this dissertation only applies an interest rate to include wealth increases until death, it fails to take account of some of the main wealth accumulation processes (the same is true for the two-dimensional approach discussed in Chapter 4). Young people may, for instance, increase their wealth above and beyond the interest rate through the acquisition of a house with a mortgage or by receiving an inheritance. As already briefly mentioned in Chapter 4, one possible way to deal with this issue in a cross-sectional analysis is try to separate wealth inequality arising solely due to age from wealth inequality due to other factors (Almås & Mogstad, 2012). Yet, an even more suited solution would be to study the joint distribution of income and wealth from a lifecycle perspective. In this respect it would be particularly interesting to study transitions in and exits out of joint income-wealth poverty and its determinants as well as the redistributive effects of taxes and benefits throughout the lifetime. Such analyses would be possible either by using actual long-term panel data or a dynamic micro-simulation model (see e.g. Creedy & van de Ven, 2001; Nelissen, 1998).

Besides lifetime considerations, the transmission of material conditions and status across generations is also an important function of wealth. In many cases wealth does not diminish as drastically after retirement as predicted in the lifecycle hypothesis, which implies that often substantial amounts of wealth are bequeathed. Indeed, there is a positive and relatively strong correlation between wealth across successive and even multiple generations. The effect of inheritances and gifts is an important determinant of this correlation, although other factors such as parental investments in education, intergenerational earnings correlation and mimicking parents' saving and risk taking behaviour matter too (Adermon et al., 2016; Black et al., 2015; Fagereng et al., 2015). In principle bequests can have equalising as well as disequalising effects on the distribution of wealth; they may reduce inequality because bequests represent a larger proportion of poor households' current wealth levels, but as the size of transfers increases with wealth levels, those who are already wealthy become even more so, exacerbating inequality (Cowell et al., 2017). Going forward it might be worthwhile to take into account these intergenerational links when studying the joint distribution of income and wealth and the redistributive effects of tax-benefit instruments. As the study of Halvorsen & Thoresen (2017) shows using a dynastic and lifetime framework compared to an annual perspective results in a much more favourable evaluation of the redistributive effects of a general net wealth tax.

Behavioural analyses

The analyses in this dissertation also only take into account how redistributive policies directly impact on the distribution of income and wealth. Yet, taxes and benefits may also have an indirect effect as they imply incentives and constraints which may influence people's labour supply, consumption, family formation as well as housing and financial investment decisions. Whether or not it makes sense to incorporate the indirect effects largely depends on the expected importance of these behavioural reactions (Bourguignon & Spadaro, 2006). In the case of wealth I expect its level and composition to be strongly responsive to taxation and subsidisation of wealth itself as well as to other redistributive

instruments (cfr. the displacement effect of public wealth provision discussed above). Yet, although a large literature focuses on behavioural responses related to personal income and corporate taxation, there is still comparatively little evidence on how wealth taxation affects individuals' behaviour (except for some recent contributions; see e.g. Brülhart et al., 2016; Durán-Cabré et al., 2017; Seim, 2017; Zoutman, 2015). Furthermore, existing pro-poor asset building programmes have only been evaluated ex-post, it is currently not possible to simulate potential behavioural changes in an ex-ante way.

Hence, it would be an interesting direction for future research to include the indirect effects of redistributive instruments on investment decisions, in particular for the two policy directions discussed above. Asset-building policies are of course specifically designed to encourage vulnerable households to alter their behaviour, namely to save more. It is, however, also possible that they do not increase their total savings but just shift savings away from other accumulation vehicles. In the case of wealth taxation behavioural responses may reflect tax avoidance motives; when taxes on wealth increase, people may start to consume more and save less, while the different tax treatment of different asset types (which is the case in most countries) might result in wealth portfolios with large shares invested in tax-preferred assets. Behavioural effects are also likely to be different across the distribution, as it may be easier for rich individuals to change wealth levels and portfolio compositions because they can afford the transaction costs associated with it.

In short, the joint income-wealth framework for analysing socio-economic issues such as poverty, inequality and redistribution set forth in this dissertation paves the way for interesting future research. The framework is sufficiently transparent and flexible such that future research should be able to include the discussed missing pieces to improve the precision of estimation (through the incorporation of public wealth and behavioural effects) as well as to broaden the perspective (by adopting a life cycle and intergenerational perspective).

References

Aaberge, R., Björklund, A. J., Palme, M., Pedersen, P., Smith, N., & Wenemo, T. (2002). Income inequality and income mobility in the Scandinavian countries compared to the United States. *Review of Income and Wealth, 48*(4), 443-469.

Ackermann, B., & Alstott, A. (1999). *The stakeholder society.* Yale University Press.

Ackermann, B., & Alstott, A. (2004). Why stakeholding? *Politics & Society, 32*(1), 41-60.

Adermon, A., Lindahl, M., & Waldenström, D. (2016). *Intergenerational wealth mobility and the role of inheritance: Evidence from multiple generations.* IZA Discussion Paper No. 10126.

Alcock, P., & Pearson, S. (1999). Raising the poverty plateau: The impact of means-tested rebates from local authority charges on low income households. *Journal of Social Policy, 28*(3), 497-516.

Almås, I., & Mogstad, M. (2012). Older or wealthier? The impact of age adjustment on wealth inequality. *The Scandinavian Journal of Economics, 114*(1), 24-54.

Alstadsæter, A., Johannesen, N., & Zucman, G. (2018). Who owns the wealth in tax havens? Macro evidence and implications for global inequality. *Journal of Public Economics, 162*, 89-100.

Alvaredo, F., Atkinson, A. B., Piketty, T., & Saez, E. (2013). The top 1 percent in international and historical perspective. *Journal of Economic Perspectives, 27*(3), 3-20.

Alvaredo, F., Chancel, L., Piketty, T., Saez, E., & Zucman, G. (2018). *World inequality report 2018.* WID.world.

Ampudia, M., & Ehrmann, M. (2017). *Financial inclusion: what's it worth?* ECB Working Paper No. 1990.

Ampudia, M., van Vlokhoven, H., & Zochowski, D. (2016). Financial fragility of euro area households. *Journal of Financial Stability, 27*, 250-262.

Anand, S., & Segal, P. (2008). What do we know about global income inequality? *Journal of Economic Literature, 46*(1), 57-94.

Anand, S., & Segal, P. (2015). The global distribution of income. In A. B. Atkinson, & F. Bourguignon, *Handbook of income distribution* (pp. 937-979). Amsterdam: North Holland.

Ando, A., & Modigliani, F. (1963). The 'life cycle' hypothesis of saving: Aggregate implications and tests. *American Economic Review, 53*(1), 55-84.

Apgar, W. (2004). *Rethinking rental housing: Expanding the ability of rental housing to serve as a pathway to economic and social opportunity.* Joint Center for Housing Studies, Harvard University.

Aratani, Y., & Chau, M. (2010). *Asset poverty and debt among families with children.* New York: National Center for Children in Poverty, Columbia University Mailman School of Public Health, 11p.

Arrondel, L., Bartiloro, L., Fessler, P., Linder, P., Mathä, T. Y., Rampazzi, C., . . . Vermeulen, P. (2014a). *How do households allocate their assets? Stylised facts from the Eurosystem Household Finance and Consumption Survey.* ECB Working Paper No.1722.

Arrondel, L., Roger, M., & Savignac, F. (2014b). *Wealth and income in the euro area. Heterogeneity in households' behaviours?* ECB Working Paper No.1709.

Astarita, C., Bauger, L., Fatica, S., Kalyva, A., Mourre, G., & Wöhlbier, F. (2014). *Tax expenditures in direct taxation in EU Member States.* European Economy Occasional Papers No.207. European Commission, Directorate-General for Economic and Financial Affairs.

Atkinson, A. B. (1971). The distribution of wealth and the individual life-cycle. *Oxford Economic Papers, 23*(2), 239-254.

Atkinson, A. B. (1974). *Unequal shares: Wealth in Britain.* Harmondsworth: Penguin Books.

Atkinson, A. B. (1980). Horizontal inequity and the distribution of the tax burden. In H. Aaron, & M. Boskin, *The Economics of Taxation.* Washington D.C.: The Brookings Institution.

Atkinson, A. B. (2015). *Inequality. What can be done?* Harvard University Press.

Atkinson, A. B., & Bourguignon, F. (2015). *Handbook of Income Distribution, Volume 2A-2B.* Amsterdam: North Holland.

Atkinson, A. B., & Harrison, A. J. (1978). *Distribution of personal wealth in Britain, 1923-1972.* Cambridge: Cambridge University Press.

Atkinson, A. B., & Stiglitz, J. E. (1976). The design of tax structure: direct versus indirect taxation. *Journal of Public Economics, 6*(1-2), 55-75.

Atkinson, A. B., Cantillon, B., Marlier, E., & Nolan, B. (2002). *Social Indicators: The EU and social inclusion.* Oxford: Oxford University Press.

Avram, S., Levy, H., & Sutherland, H. (2014). Income redistribution in the European Union. *IZA Journal of European Labor Studies, 3*(22), 1-29.

Azpitarte, F. (2011). Measurement and identification of asset poor households: a cross-national comparison of Spain and the United Kingdom. *Journal of Economic Inequality, 9*(1), 87-110.

Azpitarte, F. (2012). Measuring poverty using both income and wealth: A cross-country comparison between the U.S. and Spain. *Review of Income and Wealth, 58*(1), 24-50.

Bach, S., Beznoska, M., & Steiner, V. (2014). A wealth tax on the rich to bring down public debt? Revenue and distribution effects of a capital levy in Germany. *Fiscal Studies, 35*(1), 67-89.

Bach, S., Thiemann, A., & Zucco, A. (2018). *Looking for the missing rich: Tracing the top tail of the wealth distribution.* DIW Discussion Paper No.1717.

Bagchi, S., & Svejnar, J. (2015). Does wealth inequality matter for growth? The effect of billonaire wealth, income distribution and poverty. *Journal of Comparative Economics, 43*(3), 505-530.

Barberet, J., & Larquey, C. (2017). *Taux d'imposition 2017 des grandes collectivités locales.* Observatoire SFL-FORUM.

Bastani, S., & Waldenström, D. (2018). *How should capital be taxed? Theory and evidence from Sweden.* IZA Discussion Paper No.11475.

Bengtsson, N., Holmlund, B., & Waldenström, D. (2016). Lifetime versus annual tax-and-transfer progressivity: Sweden, 1968-2009. *Journal of Economics, 118*(4), 619-645.

Bergh, A. (2005). On the counterfactual problem of welfare state research: How can we measure redistribution? *European Sociological Review, 21*(4), 345-357.

Bernheim, B. D., Shleifer, A., & Summers, L. H. (1985). The strategic bequest motive. *Journal of Political Economy, 93*(6), 1045-1076.

Berthoud, R., & Bryan, M. (2011). Income, deprivation and poverty: A longitudinal analysis. *Journal of Social Policy, 40*(11), 135-156.

Beverly, S., Sherraden, M., Cramer, R., Williams, T. R., Nam, Y., & Zhan, M. (2008). Determinants of asset holdings. In S.-M. McKernan, & M. Sherraden, *Asset building and low-income families* (pp. 89-151). Washington D.C.: The Urban Institute Press.

Bi, L., & Montalto, C. P. (2004). Emergency funds and alternative forms of saving. *Financial Services Review, 13*(2), 93-109.

Black, S. E., Devereux, P. J., Lundborg, P., & Majlesi, K. (2015). *Poor little rich kids? The determinants of the intergenerational transmission of wealth.* IZA Discussion Paper No. 9227.

Boadway, R., & Keen, M. (2000). Redistribution. In A. B. Atkinson, *Handbook of Income Distribution, vol. 1* (pp. 677-789). Amsterdam: North-Holland.

Boadway, R., Chamberlain, E., & Emmerson, C. (2010). Taxation of wealth and wealth transfers. In J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, . . . J. Poterba, *Dimensions of tax design: the Mirrlees Review* (pp. 737-814). Oxford: Oxford University Press.

Bönke, T., Grabka, M. M., Schröder, C., Wolff, E. N., & Zyska, L. (2016). *The joint distribution of net worth and pension wealth in Germany.* SOEP paper n.853.

Boone, J., Derboven, J., Figari, F., Kuypers, S., Van Cant, L., & Verbist, G. (2018 forthcoming). *EWIGE 2 - Update and extension of the EUROMOD wealth taxation project.* Report prepared for the Joint Research Centre, European Commission.

Bourguignon, F., & Spadaro, A. (2006). Microsimulation as a tool for evaluating redistribution policies. *Journal of Economic Inequality, 4*(1), 77-106.

Bover, O. (2008). Oversampling of the wealthy in the Spanish Survey of Household Finances (EFF). *Irving Fisher Committee Bulletin*, *28*, pp. 399-402.

Bradley, D., Huber, E., Moller, S., Nielsen, F., & Stephens, J. (2003). Distribution and redistribution in postindustrial democracies. *World Politics, 55*(2), 193-228.

Brandolini, A., Magri, S., & Smeeding, T. (2010). Asset-based measurement of poverty. *Journal of Policy Analysis and Management, 29*(2), 267-284.

Brülhart, M., Gruber, J., Krapf, M., & Schmidheiny, K. (2016). *Taxing wealth: evidence from Switzerland.* NBER Working Paper No. 22376.

Brunetti, M., Giarda, E., & Torricelli, C. (2016). Is financial fragility a matter of illiquidity? An appraisel for Italian households. *Review of Income and Wealth, 62*(4), 628-649.

Brzozowski, M., Gervais, M., Klein, P., & Suzuki, M. (2010). Consumption, income and wealth inequality in Canada. *Review of Economic Dynamics, 13*(1), 52-75.

Bucks, B. (2011). *Economic vulnerability in the United States: Measurement and trends.* Paper prepared for the IARIW-OECD Conference on Economic Insecurity, Paris, France, 22-23 November 2011.

Buhmann, B., Rainwater, L., Schmaus, G., & Smeeding, T. (1988). Equivalence scales, well-being, inequality, and poverty: Sensitivity estimates across ten countries using the Luxembourg Income Study (LIS) database. *Review of Income and Wealth, 34*(2), 115-142.

Campbell, J. Y. (2006). Household finance. *Journal of Finance, 61*(4), 1553-1604.

Canberra Group. (2011). *Canberra Group Handbook on Household Income Statistics (Second edition).* Geneva: United Nations.

Caner, A., & Wolff, E. N. (2004). Asset poverty in the United States, 1984-99: Evidence from the Panel Study of Income Dynamics. *Review of Income and Wealth, 50*(4), 493-518.

Cantillon, B. (2011). The paradox of the social investment state: growth, employment and poverty in the Lisbon era. *Journal of European Social Policy, 21*(5), 432-449.

Cantillon, B., & Vandenbroucke, F. (2014). *Reconciling work and poverty reduction. How succesful are European welfare states?* Oxford: Oxford University Press.

Carpantier, J.-F., Olivera, J., & Van Kerm, P. (2018). Macroprudential policy and household wealth inequality. *Journal of International Money and Finance, 85*, 262-277.

Ceriani, L., Fiorio, C., & Gigliarano, C. (2013). The importance of choosing the data set for tax-benefit analysis. *International Journal of Microsimulation 6(1)*, 86-121.

Chamley, C. (1986). Optimal taxation of capital income in general equilibrium with infinite lives. *Econometrica, 54*(3), 607-622.

Cornell, R. (2003). *Asset building and the escape from poverty: A new welfare policy debate.* OECD.

Coulter, F., Cowell, F., & Jenkins, S. (1992). Equivalence scale relativities and the extent of inequality and poverty. *Economic Journal, 102*(414), 1067-1082.

Cowell, F., & Van de gaer, D. (2017). *Condorcet was wrong, Pareto was right: Families, inheritance and inequality.* Mimeo.

Cowell, F., & Van Kerm, P. (2015). Wealth inequality: A survey. *Journal of Economic Surveys, 29*(4), 671-710.

Cowell, F., Nolan, B., Olivera, J., & Van Kerm, P. (2017). Wealth, top incomes and inequality. In K. Hamilton, & C. Hepburn, *National wealth: What is missing, why it matters* (pp. 175-206). Oxford: Oxford University Press.

Cramer, R., Sherraden, M., & McKernan, S.-M. (2008). Policy implications. In S.-M. McKernan, & M. Sherraden, *Asset building and low income families* (pp. 221-237). Washington D.C.: The Urban Institute Press.

Credit Suisse Research Institute. (yearly between 2010 and 2017). *Global Wealth Report.* Zurich.

Creedy, J., & van de Ven, J. (2001). Decomposing redistributive effects of taxes and transfers in Australia: Annual and lifetime measures. *Australian Economic Papers, 40*(2), 185-198.

Cremer, H., & Pestieau, P. (2006). Wealth transfer taxation: a survey of the theoretical literature. In S. C. Kolm, & J. Mercier Ythier, *Handbook on altruism, giving and reciprocity (vol. 2)* (pp. 1108-1134). Amsterdam: North Holland.

Cremer, H., & Pestieau, P. (2011). Wealth and wealth transfer taxation: A survey. In E. Albi, & J. Martinez-Vazquez, *The Elgar guide to tax systems* (pp. 183-217). Cheltenham: Edward Elgar Publishing.

Cunha, M. R., Lambrecht, B. M., & Pawlina, G. (2011). Household liquidity and incremental financing decisions: Theory and evidence. *Journal of Business Finance & Accounting, 38*(7&8), 1016-1052.

D'Ambrosio, C., Frick, J. R., & Jäntti, M. (2009). Satisfaction with life and economic well-being: Evidence from Germany. *Schmollers Jahrbuch: Journal of Applied Social Science Studies / Zeitschrift für Wirtschafts- und Sozialwissenschaften, 192*(2), 283-295.

Davies, J. B. (2009). Wealth and economic inequality. In W. Salverda, B. Nolan, & T. M. Smeeding, *The Oxford Handbook of Economic Inequality* (pp. 127-149). Oxford: Oxford University Press.

Davies, J. B., Lluberas, R., & Shorrocks, A. F. (2017). Estimating the level and distribution of global wealth, 2000-2014. *Review of Income and Wealth, 63*(4), 731-759.

Davies, J. B., Sandström, S., Shorrocks, A., & Wolff, E. N. (2008). The world distribution of household wealth. In J. B. Davies, *Personal wealth from a global perspective* (pp. 395-418). Oxford: Oxford University Press.

Davies, J. B., Sandström, S., Shorrocks, A., & Wolff, E. N. (2011). The level and distribution of global household wealth. *The Economic Journal, 121*(551), 223-254.

De Decker, P. (2011). Understanding housing sprawl: the case of Flanders, Belgium. *Environment and Planning - Part A, 43*(7), 1634-1654.

De Decker, P., & Dewilde, C. (2010). Home-ownership and asset-based welfare: the case of Belgium. *Journal of Housing and the Built Environment, 25*(2), 243-262.

de Vos, K., & Zaidi, A. (1997). Equivalence scale sensitivity of poverty statistics for the member states of the European Community. *Review of Income and Wealth, 43*(3), 319-333.

Decoster, A., & Van Camp, G. (2001). Redistributive effects of the shift from personal income taxes to indirect taxes: Belgium 1988-93. *Fiscal Studies, 22*(1), 79-106.

Directorate-General Statistics, Department Economics of the Belgian Federal Government. (2014). *Sterftetafels jaarlijks in exacte leeftijd (1994-2012).* Retrieved June 19, 2014, from http://statbel.fgiv.be/nl/modules/publications/statistiques/bevolking/downloads/bevolking_sterftetafels.jsp

Directorate-General Statistics, Department Economics of the Belgian Federal Government. (2015). *Income tax statistics 2005-2013.* Retrieved November 6, 2015, from http://statbel.fgov.be/nl/modules/publications/statistiques/arbeidsmarkt_levensomstandigheden/Statistique_fiscale_des_revenus.jsp

Disney, R. (2006). Household saving rates and the design of public pension programmes: cross-country evidence. *National Institute Economic Review, 198*, 61-74.

Doling, J., & Ronald, R. (2010). Home ownership and asset-based welfare. *Journal of Housing and the Built Environment, 25*(2), 165-173.

Donaldson, D., & Weymark, J. (1980). A single-parameter generalization of the Gini indices of inequality. *Journal of Economic Theory, 22*(1), 67-86.

Donaldson, D., & Weymark, J. (1983). Ethically flexible gini indices for income distributions in the continuum. *Journal of Economic Theory, 29*(2), 353-358.

Duclos, J.-Y. (1993). Progressivity, redistribution and equity, with application to British tax and benefit system. *Public Finance/Finaces Publiques, 48*(3), 350-365.

Durán-Cabré, J. M., Esteller-Moré, A., & Mas-Montserrat, M. (2017). *Behavioural responses to the (re)introduction of wealth taxes. Evidence from Spain.* mimeo.

Eckerstorfer, P., Halak, J., Kapeller, J., Schütz, B., Springholz, F., & Wildauer, R. (2016). Correcting for the missing rich: An application to wealth survey data. *Review of Income and Wealth, 62*(4), 605-627.

Ernst & Young. (2014). *Cross-country review of taxes on wealth and transfers of wealth.* European Commission.

European Central Bank. (n.d.). *European Household Finance and Consumption Survey (HFCS) Wave 1.* Retrieved from https://www.ecb.europa.eu/secure/hfcs/login.html

Eurostat. (2013). *Data matching - Final report ESTAT study. Case study on income and wealth (SILC-HFCS).* Document LC-LEGAL/19/13 presented at the 7th meeting of the Task force on the revision of the EU-SILC legal basis 5-6 december 2013.

Eurostat. (2014). *Working paper with the description of the 'Income and Living Conditions dataset'.* Luxembourg: Eurostat, Unit F4.

Eurostat. (2016). *Census data.* Retrieved from European Statistical System: https://ec.europa.eu/CensusHub2/query.do?step=selectHyperCube&qhc=false

Eurosystem Household Finance and Consumption Network (HFCN). (2013a). *The Eurosystem Household Finance and Consumption Survey - Methodological report for the first wave.* ECB Statistics Paper No.1, 112p.

Eurosystem Household Finance and Consumption Network (HFCN). (2013b). *The Eurosystem Household Finance and Consumption Survey - Results from the first wave.* ECB Statistics Paper No.2, 112p.

Fagereng, A., Mogstad, M., & RØnning, M. (2015). *Why do wealthy parents have wealthy children?* Statistics Norway Discussion Paper No. 813.

Federal Public Service Finance. (2017). *Tax Survey no.29.*

Federal Statistical Office Germany. (2017). *Durchschnittshebesätze der Realsteuern: Bundesländer, Jahre, Realsteuerart.*

Fehr, H., & Uhde, J. (2013). Means-testing retirement benefits in the UK: Is it effcient? *Working Paper, University of Wuerzburg.*

Fessler, P., & Schürz, M. (2017). *The functions of wealth: Renters, owners and capitalists across Europe.* Paper prepared for the first WID.world conference, Paris, 14-15 December 2017.

Figari, F. (2013). Should we make the richest pay to meet fiscal adjustment needs? - Discussion. *The role of tax policy in times of fiscal consolidation* (pp. 103-107). European Economy, Economic Papers 502.

Figari, F., & Paulus, A. (2015). The distributional effects of taxes and tranfers under alternative income concepts: The importance of the three 'I"s. *Public Finance Review, 43*(3), 347-372.

Figari, F., Hollan, K., Matsaganis, M., & Zolyomi, E. (2016). *Recent changes in housing policies and their distributional impact across Europe.* Research note 10/2016, Social Situation Monitor, European Commission.

Figari, F., Levy, H., & Sutherland, H. (2013). Using the EU-SILC for policy simulation: Prospects, some limitations and some suggestions. *Comparative EU Statistics on Income and Living Conditions: Issues and challenges* (pp. 345-373). Eurostat Methodologies and Working Papers, European Communities.

Figari, F., Paulus, A., & Sutherland, H. (2015). Microsimulation and policy analysis. In A. B. Atkinson, & F. Bourguignon, *Handbook of Income Distribution Volume 2B.* Amsterdam: Elsevier-North Holland.

Figari, F., Paulus, A., Sutherland, H., Tsakloglou, P., Verbist, G., & Zantomio, F. (2017). Removing homeownership bias in taxation: the distributional effects of including net imputed rent in taxable income. *Fiscal Studies, 38*(4), 525-557.

Fleischer, M. P. (2016). *Not so fast: The hidden difficulties of taxing wealth.* University of San Diego Legal Studies Paper No.16-213.

Förster, M., Llena-Nozal, A., & Nafilyan, V. (2014). Trends in top incomes and their taxation in OECD countries. *OECD Social, Employment and Migration Working Paper No. 159.* Paris: OECD Publishing.

Friedman, M., & Savage, L. J. (1948). The utility analysis of choices involving risk. *Journal of Political Economy, 56*(4), 279-304.

Fuest, C., Niehues, J., & Peichl, A. (2010). The redistributive effects of tax benefit systems in the enlarged EU. *Public Finance Review, 38*(4), 473-500.

Godar, S., Paetz, C., & Truger, A. (2015). The scope for progressive tax reform in the OECD countries. A macroeconomic perspective with a case study for Germany. *Revue de l'OFCE, 141*(5), 79-117.

Gornick, J., Sierminska, E., & Smeeding, T. (2009). The income and wealth packages of older women in cross-national perspective. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 64B*(3), 402-414.

Gould, E. D., & Hijzen, A. (2016). *Growing apart, losing trust? The impact of inequality on social capital.* IMF Working Paper No.16/176.

Gouskova, E., Juster, F. T., & Stafford, F. P. (2006). Trends and turbulence: allocations and dynamics of American family portfolios, 1984-2001. In E. N. Wolff, *International Perspectives on Household Wealth* (pp. 295-326). Cheltenham: Edward Elgar.

Guisse, N., & Gilles, L. (2013). *Social innovation and mutual learning on micro-saving in Europe (SIMS) - Global assessment report.* Centre de recherche pour l'étude et l'observation des conditions de vie (Crédoc)/ European Commission .

Guvenen, F., Kambourov, G., Kuruscu, B., Ocampo-Diaz, S., & Chen, D. (2017). *Use it or lose it: Efficiency gains from wealth taxation.* Mimeo.

Halvorsen, E., & Thoresen, T. O. (2017). *Distributional effects of the wealth tax under a lifetime-dynastic income concept.* Cesifo Working Paper No. 6614.

Haveman, R., & Wolff, E. N. (2004). The concept and measurement of asset poverty: Levels, trends and composition for the U.S., 1983-2001. *Journal of Economic Inequality, 2*(2), 145-169.

Headey, B. (2008). Poverty is low consumption and low wealth, not just low income. *Social Indicators Research, 89*(1), 23-39.

Headey, B., & Wooden, M. (2004). The effects of wealth and income on subjective well-being and ill-being. *The Economic Record, 80*(S1), S24-S33.

Headey, B., Muffels, R., & Wooden, M. (2008). Money does not buy happiness: Or does it? A reassessment based on the combined effects of wealth, income and consumption. *Social Indicators Research, 87*(1), 65-82.

Hills, J. (2013). Safeguarding social equity during fiscal consolidation: which tax bases to use? In *The role of tax policy in times of fiscal consolidation* (pp. 80-91). European Economy: Economic Papers 502.

Huang, J. (2010). Effects of individual development accounts (IDAs) on household wealth and saving taste. *Research in Social Work Practice, 20*(6), 582-590.

Hubbard, R., Skinner, J., & Zeldes, S. (1994). Expanding the life-cycle model: Precautionary saving and public policy. *American Economic Review, 84*(2), 174-179.

Huber, E., & Stephens, J. D. (2014). Income inequality and redistribution in post-industrial democracies: demographic, economic and political determinants. *Socio-Economic Review, 12*(2), 245-267.

Iara, A. (2015). *Wealth distribution and taxation in EU members.* European Commission Taxation Working Paper No. 60.

IMF. (2013). *Fiscal Monitor. Taxing times.* Washington D.C.

IMF. (2017). Household debt and financial stability. In *Global financial stability report: Is growth at risk?* (pp. 53-89).

Immervoll, H., & Richardson, L. (2011). Redistribution policy and inequality reduction in OECD countries: What has changed in two decades? *OECD Social, Employment and Migration Working Papers No.122*. Paris: OECD.

Immervoll, H., Levy, H., Lietz, C., Mantovani, D., O'Donoghue, C., Sutherland, H., & Verbist, G. (2006). Household incomes and redistribution in the European Union: Quantifying the equalising properties of taxes and benefits. In D. Papadimitrou, *The distributional effects of government spending and taxation* (pp. 135-165). London: Palgrave Macmillan.

Jakobsen, K., Jakobsen, K., Kleven, H., & Zucman, G. (2018). *Wealth taxation and wealth accumulation: Theory and evidence from Denmark.* NBER Working Paper No.24371.

Jäntti, M., & Jenkins, S. (2015). Income mobility. In A. Atkinson, & F. Bourguignon, *Handbook of Income Distribution* (pp. 807-935). North Holland.

Jäntti, M., Sierminska, E., & Smeeding, T. (2008). The joint distribution of household income and wealth. Evidence from the Luxembourg Wealth Study. *OECD Social, Employment and Migration Working Papers No.65.* Paris: OECD Publishing.

Jäntti, M., Sierminska, E., & Van Kerm, P. (2013). The joint distribution of income and wealth. In J. C. Gornick, & M. Jäntti, *Income inequality. Economic disparities and the middle class in affluent countries* (pp. 312-333). Stanford: Stanford University Press.

Jäntti, M., Sierminska, E., & Van Kerm, P. (2015). Modelling the joint distribution of income and wealth. *Research on Economic Inequality, 23*, 301-327.

Jappelli, T., & Padula, M. (2013). Investment in financial literacy and saving decisions. *Journal of Banking & Finance, 37*(8), 2779-2792.

Jenkins, S., & Van Kerm, P. (2006). Trends in income inequality, pro-poor income growth, and income mobility. *Oxford Economic Papers, 58*(3), 531-548.

Judd, K. (1985). Redistributive taxation in a simple perfect foresight model. *Journal of Public Economics, 28*(1), 59-83.

Kakwani, N. (1977a). Measurement of tax progressivity: an international comparison. *Economic Journal, 87*, 71-80.

Kakwani, N. (1977b). Application of Lorenz curves in economic analysis. *Econometrica, 45*(3), 719-727.

Kaplow, L. (2001). A framework for assessing estate and gift taxation. In W. Gale, J. R. Hines, & J. Slemrod, *Rethinking estate and gift taxation.* Washington D.C.: Brooking Institution Press.

Karabarbounis, L., & Neiman, B. (2013). *The global decline of the labor share.* NBER Working Paper No.19136, National Bureau of Economic Research.

Keister, A. (2000). *Wealth in America: Trends in wealth inequality.* New York: Cambridge University Press.

Kennickell, A. B. (2008). The role of oversampling of the wealthy in the Survey of Consumer Finances. *Irving Fisher Committee Bulletin*, *28*, pp. 403-408.

Kim, K. S., & Kim, Y. M. (2013). Asset poverty in Korea: Levels and composition based on Wolff's definition. *International Journal of Social Welfare, 22*(2), 175-185.

Knight, K. W., Schor, J. B., & Jorgenson, A. K. (2017). Wealth inequality and carbon emissions in high-income countries. *Social Currents, 4*(5), 403-412.

Kontbay-Busun, S., & Peichl, A. (2014). *Multidimensional affluence in income and wealth - A cross-country comparison using the HFCS.* ZEW Discussion Paper 14-124.

Kopczuk, W. (2001). *Optimal estate taxation in the steady state.* Mimeo.

Kopczuk, W. (2013). Taxation of intergenerational transfers and wealth. In A. Auerbach, R. Chetty, M. Feldstein, & E. Saez, *Handbook of Public Economics, Volume 5* (pp. 329-390). Amsterdam: North Holland.

Kopczuk, W., & Lupton, J. P. (2007). To leave or not to leave: The distribution of bequest motives. *Review of Economic Studies, 74*(1), 207-235.

Krenek, A., & Schratzenstaller, M. (2018). *A European net wealth tax.* WIFO Working Paper No. 561.

Krueger, D., & Perri, F. (2006). Does income inequality lead to consumption inequality? Evidence and theory. *Review of Economic Studies, 73*(1), 163-193.

Kus, B., Nolan, B., & Whelan, C. T. (2016). Material deprivation and consumption. In D. Brady, & L. M. Burtin, *The Oxford Handbook of the Social Science of Poverty* (pp. 577-601). New York: Oxford University Press.

Kuypers, S. (2018). *Financial inclusion for all? A distributional analysis of asset-building policies in Europe.* Mimeo.

Kuypers, S., & Marx, I. (2016). Social concertation and middle class stability in Belgium. In D. Vaughan-Whitehead, *Europe's disappearing middle class? Evidence from the world of work* (pp. 112-159). Edward Elgar.

Kuypers, S., & Marx, I. (2018a). The truly vulnerable: integrating wealth into the measurement of poverty and social policy effectiveness. *Social Indicators Research Online First*.

Kuypers, S., & Marx, I. (2018b). Estimation of joint income-wealth poverty: A sensitivity analysis. *Social Indicators Research, 136*(1), 117-137.

Kuypers, S., Figari, F., & Verbist, G. (2016). The Eurosystem Household Finance and Consumption Survey: a new underlying database for EUROMOD. *International Journal of Microsimulation, 9*(3), 35-65.

Kuypers, S., Figari, F., & Verbist, G. (2018a). *Redistribution in a joint income-wealth perspective. A cross-country analysis.* CSB Working Paper No. 18.05.

Kuypers, S., Figari, F., & Verbist, G. (2018b). *An assessment of wealth taxes in a joint income-wealth perspective.* Paper prepared for the 35th IARIW General Conference, Copenhagen, Denmark, 20-25 August 2018.

Kuypers, S., Figari, F., Verbist, G., & Verckist, D. (2017). *EWIGE - European Wealth data InteGration in EUROMOD.* JRC Working Papers on Taxation and Structural Reforms No. 4/2017: European Commission, Joint Research Centre, Seville.

Kuypers, S., Marx, I., & Verbist, G. (2015). *Joint patterns of income and wealth inequality in Belgium.* Report prepared for the National Bank of Belgium.

Lambert, P. J., & Aronson, J. R. (1993). Inequality decomposition analysis and the Gini coefficient revisited. *Economic Journal, 103*(420), 1221-1227.

Lambert, P., & Pfähler, W. (1988). On aggregate measures of the net redistributive impact of taxation and government expenditure. *Public Finance Quarterly, 16*(2), 178-202.

Lampman, R. (1962). *The share of top wealth-holders in national wealth, 1922-1956.* Princeton: Princeton University Press.

Laurinavičius, A., & Galinienė, B. (2013). Asset-based approach to poverty reduction in Lithuania. *Technological and Economic Development of Economy, 19*(2), 203-223.

Lawless, M., & Lynch, D. (2016). *Scenarios and distributional implications of a household wealth tax in Ireland.* ESRI Working Paper No.549.

Leland, H. (1968). Saving and uncertainty: The precautionary demand for saving. *Quarterly Journal of Economics, 82*(3), 465-73.

Lennartz, C., & Ronald, R. (2017). Asset-based welfare and social investment: Competing, compatible or complementary social policy strategies for the new welfare state? *Housing, Theory and Society, 34*(2), 201-220.

Lerman, D. L., & Mikesell, J. J. (1988). Impacts of adding net worth to the poverty definition. *Eastern Economic Journal, 15*(2), 357-370.

Lohmann, H., & Marx, I. (2018). *Handbook on in-work poverty.* Edward Elgar.

Mahler, V., & Jesuit, D. (2006). Fiscal redistribution in the developed countries: new insights from the Luxembourg Income Study. *Socio-Economic Review, 4*(3), 483-511.

Marchal, S., Kuypers, S., Marx, I., & Verbist, G. (2018). *The impact of asset tests in two European minimum income schemes.* Paper prepared for the 35th IARIW General Conference, Copenhagen, August 20-25 2018.

Marx, I., Nolan, B., & Olivera, J. (2015). The welfare state and antipoverty policy in rich countries. In A. Atkinson, & F. Bourguignon, *Handbook of Income Distribution* (pp. 2063-2139). Amsterdam: Elsevier.

Masson, A. (2015). Taxing more post morten family bequest. In C. Astarita (Ed.), *Taxing wealth: past, present, future* (pp. 48-58). European Economy Discussion Paper No.003, European Commission.

Matsaganis, M., & Flevotomou, M. (2007). *The impact of mortgage interest tax relief in the Netherlands, Sweden, Finland, Italy and Greece.* EUROMOD Working Paper No.EM2/07. Essex: Institute for Social and Economic Research (ISER).

Mattonetti, M. (2013). *European household income by groups of households.* Eurostat Methodologies and Working Papers.

McDonnell, T. A. (2013). *Wealth tax: Options for its implementation in the republic of Ireland.* NERI Working Paper No. 2013/6.

McKernan, S.-M., & Sherraden, M. (2008). *Asset building and low income families.* Washington D.C.: The Urban Institute Press.

McKernan, S.-M., Ratcliffe, C., & Williams Shanks, T. (2012). Is poverty incompatible with asset accumulation? In P. N. Jefferson, *The Oxford Handbook of the Economics of Poverty* (pp. 463-493). Oxford: Oxford University Press.

Meade, J. E. (1978). *The structure and reform of direct taxation.* London: The Institute for Fiscal Studies .

Mendelson, M. (2007). *Asset-based social programs: A critical analysis of current initiatives.* Presented at the OECD seminar 'Life risks, life course and social policy', Paris, 31 May-1 June: Caledon Institute of Social Policy.

Menon, M., Perali, F., & Sierminska, E. (2016). *An asset-based indicator of well-being for a unified means testing tool: money metric or counting approach.* LISER Working Paper No.2016-09.

Mertens, D. (2017). Borrowing for social security? Credit, asset-based welfare and the decline of the German savings regime. *Journal of European Social Policy, 27*(5), 474-490.

Milanovic, B. (2006). *Global income inequality: What it is and why it matters.* World Bank Policy Research Working Paper 3865.

Milanovic, B. (2016). *Global inequality. A new approach for the age of globalization.* Harvard University Press.

Mirrlees, J., Adam, S., Besley, T., Blundell, R., Bond, S., Chote, R., . . . Poterba, J. (2011). *Tax by design: the Mirrlees Review.* Oxford: Oxford University Press.

Musgrave, R., & Thin, T. (1948). Income tax progression, 1929-48. *Journal of Political Economy, 56*(6), 498-514.

Nam, Y., Huang, J., & Sherraden, M. (2008a). Asset definitions. In S.-M. McKernan, & M. Sherraden, *Asset-building and low-income families* (pp. 1-31). Washington: The Urban Institute Press.

Nam, Y., Ratcliffe, C., & McKernan, S.-M. (2008b). Effects of asset tests and IDA programs. In S.-M. McKernan, & M. Sherraden, *Asset building and low-income families* (pp. 153-173). Washington: The Urban Institute Press.

Nelissen, J. H. (1998). Annual versus lifetime income redistribution by social security. *Journal of Public Economics, 68*(2), 223-249.

Nolan, B., & Whelan, C. T. (2011). *Poverty and deprivation in Europe.* Oxford: Oxford University Press.

OECD. (2007). *OECD Framework for the Evaluation of SME and Entrepreneurship Policies and Programmes.* Paris: OECD Publishing .

OECD. (2008). *Growing Unequal? Income distribution and poverty in OECD countries.* Paris: OECD Publishing.

OECD. (2010). *Tax expenditures in OECD Countries.* Paris: OECD Publishing.

OECD. (2011). *Divided we stand. Why inequality keeps rising.* Paris: OECD Publishing.

OECD. (2013a). *OECD Guidelines for Micro Statistics on Household Wealth.* Paris: OECD Publishing.

OECD. (2013b). *OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth.* Paris: OECD Publishing.

OECD. (2014). *OECD Employment Outlook 2014.* Paris: OECD Publishing.

OECD. (2015). *In it together. Why less inequality benefits all.* Paris: OECD Publishing.

OECD. (2016). *Revenue Statistics - Comparative tables*. Retrieved from Revenue Statistics: https://stats.oecd.org/Index.aspx?DataSetCode=REV

OECD. (2018a). *Taxation of household savings.* OECD Tax Policy Studies No.25. Paris: OECD Publishing.

OECD. (2018b). *The role and the design of net wealth taxes in the OECD.* OECD Tax Policy Studies No.26. Paris: OECD Publishing.

Paetzold, J., & Tiefenbacher, M. (2018). Distributional and revenue effects of a tax shift from labor to property. *International Tax and Public Finance*, https://doi.org/10.1007/s10797-018-9484-5.

Philiponnet, N., & Turrini, A. (2017). *Assessing house price developments in the EU.* European Economy Discussion Paper No.48, European Commission.

Piketty, T. (2011). On the long-run evolution of inheritance: France 1820-2050. *The Quarterly Journal of Economics, 126*(3), 1071-1131.

Piketty, T. (2014). *Capital in the Twenty-First Century.* Harvard University Press.

Piketty, T., & Saez, E. (2007). How progressive is the U.S. federal tax system? A historical and international perspective. *Journal of Economic Perspectives, 21*(1), 1-24.

Piketty, T., & Saez, E. (2012). A theory of optimal capital taxation. *NBER Working Papers 17989.* National Bureau of Economic Research.

Piketty, T., & Saez, E. (2013). Top Incomes and the Great Recession: Recent evolutions and policy implications. *IMF Economic Review, 61*, 456-478.

Piketty, T., & Zucman, G. (2014). Capital is back: Wealth-income ratios in rich countries, 1700-2010. *The Quarterly Journal of Economics, 129*(3), 1255-1310.

Piketty, T., & Zucman, G. (2015). Wealth and inheritance in the long run. In A. B. Atkinson, & F. Bourguignon, *Handbook of Income Distribution* (pp. 1303-1368). Amsterdam: Elsevier - North Holland.

Piketty, T., Saez, E., & Zucman, G. (2013). *Rethinking capital and wealth taxation.* Mimeo.

Plotnick, R. (1981). A measure of horizontal inequity. *Review of Economics and Statistics, 63*(2), 283-288.

Poterba, J. (2007). Income inequality and income taxation. *Journal of Policy Modeling, 29*(4), 623-633.

Radner, D. B. (1990). Assessing the economic status of the aged and nonaged using alternative income-wealth measures. *Social Security Bulletin March, 53*(3), 2-14.

Rakowski, E. (2006). The estate tax compromise. *Economists' Voice, 3*(1), 1-6.

Rendall, M. S., & Speare, A. (1993). Comparing economic well-being among elderly americans. *Review of Income and Wealth, 39*(1), 1-21.

Reynolds, M., & Smolensky, E. (1977). *Public expenditures, taxes and the distribution of income: the United States, 1950, 1961, 1970.* New York: Academic Press.

Ringen, S. (1988). Direct and indirect measures of poverty. *Journal of Social Policy, 17*(3), 351-365.

Saez, E. (2002). The desirability of commodity taxation under non-linear income taxation and heterogeneous tastes. *Journal of Public Economics, 83*(2), 217-230.

Saez, E., & Zucman, G. (2016). Wealth inequality in the United States: Evidence from capitalized income tax data. *Quarterly Journal of Economics, 131*(2), 519-578.

Salvi del Pero, A., Adema, W., Ferraro, V., & Frey, V. (2016). *Policies to promote access to good-quality affordable housing in OECD countries.* OECD Social, Employment and Migration Working Papers, No.176,. Paris: OECD Publishing.

Scheidel, W. (2017). *The great leveler. Violence and the history of inequality from the Stone Age to the Twenty-First Century.* Princeton University Press.

Scheve, K., & Stasavage, D. (2016). *Taxing the rich. A history of fiscal fairness in the United States and Europe.* Princeton: Princeton University Press.

Sefton, J., van de Ven, J., & Weale, M. (2008). Means-testing retirement benefits: Fostering equity or discouraging savings? *The Economic Journal, 118*(528), 556-590.

Seim, D. (2017). Behavioral responses to wealth taxes: Evidence from Sweden. *American Economic Journal: Economic Policy, 9*(4), 395-421.

Sen, A. (1985). *Commodities and Capabilties.* Amsterdam: North-Holland.

Sen, A. (1997). From income inequality to economic inequality. *Southern Economic Journal, 64*(2), 384-401.

Sen, A. (1999). *Development as freedom.* New York: Knopf.

Serafino, P., & Tonkin, R. (2017). Comparing poverty estimates using income, expenditures and material deprivation. In A. B. Atkinson, A.-C. Guio, & E. Marlier, *Monitoring social inclusion in Europe* (pp. 241-258). Eurostat Statistical Books.

Shapiro, T. M., & Wolff, E. N. (2001). *Assets for the poor. The benefits of spreading asset ownership.* New York: Russell Sage Foundation.

Shefrin, H. M., & Thaler, R. H. (1988). The behavioral life-cycle hypothesis. *Economic Inquiry, 26*(4), 609-643.

Shefrin, H. M., & Thaler, R. H. (1992). Mental accounting, saving, and self-control. In G. Loewenstein, & J. Elster, *Choice over time* (pp. 287-330). New York: RussellSage Foundation.

Sherraden, M. (1991). *Assets and the poor. A new American welfare policy.* Armonk, New York: M.E. Sharpe Inc.

Sherraden, M. (2001). Asset-building policy and programs for the poor. In T. Shapiro, & E. Wolff, *Assets for the poor. The benefits of spreading asset ownership* (pp. 302-323). New York: Russel Sage Foundation.

Sherraden, M., Schreiner, M., & Beverly, S. (2003). Income, institutions and saving performance in Individual Development Accounts. *Economic Development Quarterly, 17*(1), 95-112.

Short, K., & Ruggles, P. (2005). Experimental measures of poverty and net worth: 1996. *Journal of Income Distribution Special Issue on Assets and Poverty, 13*(3-4), 8-21.

Sierminska, E., & Medgyesi, M. (2013). *The distribution of wealth between households.* Social Situation Monitor European Commission, Research note 11/2013.

Skopek, N. (2015). *Wealth as a distinct dimension of social inequality.* PhD Thesis, University of Bamberg.

Skopek, N., Kolb, K., Buchholz, S., & Blossfeld, H. P. (2012). Income rich - asset poor? The composition of wealth and the meaning of different wealth components in a European comparison. *Berliner Journal für Soziologie, 22*(2), 163-187.

Spilerman, S. (2000). Wealth and stratification processes. *Annual Review of Sociology, 26*(1), 497-524.

Spiritus, K. (2017). *Optimizing feasible tax systems with heterogeneous populations.* PhD dissertation: KU Leuven.

Statistisches Bundesamt. (2012). *Periodensterbetafeln für Deutschland.*

Stiglitz, J. (2013). *The price of inequality. How today's divided society endangers our future.* New York: W.W. Norton & Company.

Stiglitz, J. (2015). *The great divide. Unequal societies and what we can do about them.* New York: W.W. Norton & Company.

Stiglitz, J. (2016). Inequality and economic growth. In M. Jacobs, & M. Mazzucato, *Rethinking capitalism* (pp. 134-155). New Jersey: Wiley-Blackwell.

Stiglitz, J. E., Sen, A., & Fitoussi, J.-P. (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress.*

Sullivan, J. X. (2008). Borrowing during unemployment: Unsecured debt as a safety net. *Journal of Human Resources, 43*(2), 383-412.

Sutherland, H., & Figari, F. (2013). EUROMOD: the European Union tax-benefit microsimulation model. *International Journal of Microsimulation, 6*(1), 4-26.

Szydlik, M. (2011). Inheritance in Europe. *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 63*(4), 543-565.

Thaler, R. H. (1990). Saving, fungibility and mental accounts. *Journal of Economic Perspectives, 4*(1), 193-205.

Tiefensee, A., & Grabka, M. (2014). Comparing wealth - Data quality of the HFCS. *DIW Berlin Discussion Paper No.1427*.

Törmälehto, V.-M., Kannas, O., & Säylä, M. (2013). *Integrated measurement of household-level income, wealth and non-monetary well-being in Finland.* Statistics Finland Working Paper No.1/2013.

Van den Bosch, K. (1998). Poverty and assets in Belgium. *Review of Income and Wealth, 44*(2), 215-228.

Vaughan-Whitehead, D. (2016). *Europe's disappearing middle class? Evidence from the world of work.* Edward Elgar.

Verbist, G. (2004). *Redistributive effect and progressivity of taxes: An international comparison across the EU using EUROMOD.* EUROMOD Working Paper No. EM5/04. Essex: Institute for Social and Economic Research (ISER).

Verbist, G., & Figari, F. (2014). The redistributive effect and progressivity of taxes revisited: An international comparison across the European Union. *Finanz Archiv/Public Finance Analysis, 70*(3), 405-429.

Vermeulen, P. (2014). How fat is the top tail of the wealth distribution? *ECB Working Paper No.1692*.

Vermeulen, P. (2016). Estimating the top tail of the wealth distribution. *American Economic Review, 106*(5), 646-650.

Vuchelen, J. (1991). De beleggingen van de Belgische gezinnen, 1960-88 (The investments of Belgian households, 1960-88). *Brussels Economic Review*(130), 189-217.

Wagner, G., & Grabka, M. (1999). *Robustness assessment report (RAR) Socio-Economic Panel 1984-1998.* Berlin: German Socio-Economic Panel.

Weisbrod, B. A., & Hansen, W. L. (1968). An income-net worth approach to measuring economic welfare. *American Economic Review, 58*(5), 1315-1329.

Westermeier, C., & Grabka, M. M. (2015). *Significant statistical uncertainty over share of high net worth households.* DIW Economic Bulletin 14+15.

Whelan, C. T., Layte, R., & Maître, B. (2004). Understanding the mismatch between income poverty and deprivation: A dynamic comparative analysis. *European Sociological Review, 20*(4), 287-302.

Wolff, E. N. (1990). Methodological issues in the estimation of the size distribution of household wealth. *Journal of Econometrics, 25*(2), 179-195.

Yates, J., & Bradbury, B. (2010). Home ownership as a (crumbling) fourth pillar of social insurance in Australia. *Journal of Housing and the Built Environment, 25*(2), 193-211.

Yitzhaki, S. (1983). On an extension of the Gini inequality index. *International Economic Review, 24*(3), 617-628.

Yunker, J. A. (2010). Capital wealth taxation as a potential remedy for excessive capital wealth inequality. *Journal of Post Keynesian Economics, 33*(1), 83-104.

Zagorsky, J. L. (2005). Measuring poverty using both income and wealth. *Journal of Income Distribution Special Issue on Assets and Poverty, 13*(3-4), 22-40.

Zandvakili, S. (1994). Income distribution and redistribution through taxation: An international comparison. *Empirical Economics, 19*(3), 473-491.

Zoutman, F. T. (2015). *The effect of capital taxation on households' portfolio composition and intertemporal choice.* mimeo.

Zucman, G. (2013). The missing wealth of nations: Are Europe and the US net debtors or net creditors? *Quarterly Journal of Economics, 128*(3), 1321-1364.

Zucman, G. (2015). *The hidden wealth of nations. The scourge of tax havens.* University of Chicago Press.

Nederlandstalige samenvatting (Summary in Dutch)

Twee zijden van dezelfde munt? Een onderzoek naar de gezamenlijke verdeling van inkomen en vermogen en de toepassing ervan op de analyse van armoede, ongelijkheid en herverdeling

Inleiding en achtergrond

Intuïtief worden inkomen en vermogen vaak aanzien als twee zijden van dezelfde munt omdat vermogen vaak wordt opgebouwd door inkomen te sparen in plaats van te consumeren. Hun onderlinge relatie is echter een stuk complexer dan dat; vermogen kan eveneens worden opgebouwd door het verkrijgen van erfenissen en giften, door hypotheken en leningen af te sluiten, als gevolg van stijgende prijzen en door het inkomen dat gegenereerd wordt door het vermogen zelf. Met andere woorden, de relatie tussen de inkomens- en vermogensverdeling is sterk, maar verre van perfect. Dit betekent onder meer dat diegenen met het hoogste (laagste) inkomen niet noodzakelijk ook het hoogste (laagste) vermogen bezitten. Bijgevolg leidt de studie van slechts één van beide verdelingen tot gedeeltelijke bevindingen die mogelijk tegenstrijdig zijn met elkaar.

Het belang van de gezamenlijke studie van inkomen en vermogen wordt pas recent erkend in de literatuur, in het verleden werd er steeds gefocust op slechts één van beide. Tot aan het begin van de 20e eeuw onderzocht men voornamelijk het niveau en de verdeling van vermogen, met name om praktische redenen. Het vermogen bestond namelijk grotendeels uit land en onroerend goed en dat was duidelijk zichtbaar en meetbaar. Inkomen, daarentegen, was moeilijker te meten. Bijgevolg werden de eerste belastingen geheven op basis van vermogen en werden er meer cijfers verzameld over vermogen dan over inkomen. Ten tijde van de twee wereldoorlogen en de Grote Depressie verschoof de focus echter naar inkomen. In deze periode werd een groot deel van het vermogen vernietigd of gebruikt om de oorlog te betalen en voor het resterende vermogen was het zeer moeilijk om de waarde ervan te bepalen door sterk fluctuerende prijzen. Rond de Eerste Wereldoorlog werden ook voor de eerste keer inkomensbelastingen ingevoerd en deze werden verhoogd en progressiever gemaakt na de Tweede Wereldoorlog. In deze context werd het dus evident om levensstandaard, ongelijkheid en armoede uit te drukken in termen van inkomen. In de naoorlogse decennia was er sterke economische groei wat er mee voor zorgde dat het vermogen opnieuw in belang toenam en daarnaast ook breder werd verspreid onder de bevolking. Hoewel de realiteit dus opnieuw veranderde waarin zowel inkomen als vermogen belangrijk werden voor de levensstandaard van een gemiddeld gezin, bleef de economische en sociologische literatuur echter hoofdzakelijk gericht op de studie van de inkomensverdeling. Dit heeft als gevolg dat er in de literatuur vandaag vrij veel geweten is over de inkomensverdeling, terwijl er weinig of geen kennis is over hoe vermogen verdeeld is en hoe dit correleert met de inkomensverdeling. Eén van de mogelijke verklaringen voor de afwezigheid van vermogen is dat het veel moeilijker is geworden om vermogen te meten. Er bestaat vandaag een grote variëteit aan vermogenscomponenten, waarvan een aantal moeilijk in waarde uit te drukken, en het is ook gemakkelijker geworden om vermogen in het buitenland te bezitten en te verbergen.

Het is pas gedurende de laatste twee decennia dat vermogen en zijn verdeling weer bovenaan de onderzoeksagenda staan. Deze hernieuwde interesse vloeit voort uit het feit dat sociale en economische vraagstukken in de 21^e eeuw vaak niet meer voldoende kunnen beantwoord worden op basis van inkomen alleen. De eerste reden hiervoor is dat de financiële levensstandaard van de

bevolking steeds meer afhangt van het vermogen dat men bezit. Als gevolg van onder meer globalisering, automatisering en robotisering is arbeidsinkomen onzekerder geworden dan vroeger. Cijfers tonen bijvoorbeeld dat er steeds meer mensen tewerkgesteld zijn in niet-standaard jobs en er is ook een stijgend aantal werkende armen. Vermogen, daarentegen, stijgt gestaag sinds de Tweede Wereldoorlog, zowel door natuurlijke accumulatieprocessen als het ontstaan van nieuwe vermogenscomponenten (zoals robots) en stijgende prijzen (bv. van huizen). Met andere woorden, vermogen lijkt stilletjes aan de rol van inkomen over te nemen in het bepalen van de financiële situatie van de bevolking. In de literatuur onderscheidt men verschillende manieren waarop vermogen een effect kan hebben op de levensstandaard. In de eerste plaats draagt het bij tot consumptiemogelijkheden, enerzijds omdat het een inkomen genereert zonder dat je er (al te veel) tijd in moet investeren en anderzijds omdat het vermogen zelf ook kan verkocht worden om daarna te consumeren. Deze laatste functie is voornamelijk van belang om consumptie op hetzelfde niveau te kunnen houden tijdens moeilijke periodes van laag inkomen of onverwachte kosten (om met andere woorden een vangnet te hebben) alsook na het pensioen. In de tweede plaats wordt vermogensbezit ook belangrijk geacht voor persoonlijke sociale en economische ontwikkeling. Eigenaars van vermogen hebben meer keuzemogelijkheden in het leven en dat brengt autonomie, onafhankelijkheid en toekomstperspectief met zich mee. In de derde plaats hangt het bezit van vermogen eveneens samen met sociale status alsook economische en politieke macht. Tot slot kunnen al deze voordelen van vermogensbezit eveneens worden doorgeven van generatie op generatie via erfenissen en giften.

Een tweede reden voor de hernieuwde interesse in vermogen is dat in de meeste ontwikkelde landen ongelijkheid gestegen is tijdens de laatste decennia. Een hoog niveau van ongelijkheid heeft niet alleen nadelige sociale, maar ook economische en politieke gevolgen. Daarom wordt de rol die de overheid speelt in het herverdelen van middelen tussen rijken en armen steeds belangrijker. Aangezien vermogen aan belang toeneemt en ook ongelijker verdeeld is dan inkomen lijkt het niet meer dan logisch dat herverdeling zich meer zal moeten toespitsen op vermogen. Ten slotte dragen ook demografische evoluties zoals de veroudering van de bevolking toe tot de hernieuwde interesse in de vermogensverdeling. Zoals eerder vermeld is één van de functies van vermogen namelijk dat het gebruikt kan worden om consumptie op peil te houden na pensionering en dit zal waarschijnlijk steeds belangrijker worden in de toekomst. Aangezien pensioenen vaak een stuk lager liggen dan arbeidsinkomens en er meer druk komt op de garantie van deze pensioenen in de toekomst, zal het bezit van vermogen en dan voornamelijk privaat pensioensparen aan belang toenemen. Daarnaast kan de veroudering van de bevolking mogelijk ook een rol spelen in de stijging van vermogensongelijkheid omdat ouderen meestal het hoogste vermogen bezitten en hun nakomelingen zullen erfenissen ontvangen later in hun leven wanneer ze vaak zelf al een vermogen hebben opgebouwd.

Hoewel de onderzoeksinteresse in de vermogensverdeling sterk is toegenomen gedurende de laatste twee decennia, is er nog steeds verbazend weinig aandacht voor de gezamenlijke verdeling van vermogen en inkomen. Daarnaast ligt de nadruk ook voornamelijk op het vermogen van de allerrijksten, terwijl indicatoren van armoede, ongelijkheid en herverdeling enkel in inkomenstermen blijven gedefinieerd. Kortom, er is nog slechts weinig geweten over de gezamenlijke verdeling van inkomen en vermogen vanuit een sociaal standpunt. In deze doctoraatsthesis probeer ik hierop een antwoord te bieden.

Onderzoeksvragen en belangrijkste resultaten

Deze doctoraatsthesis bestaat uit vier delen. Elk deel beschrijft een opeenvolgende stap in het proces naar een grondig begrip van armoede, ongelijkheid en herverdeling vanuit het perspectief van de gezamenlijke verdeling van inkomen en vermogen. Concreet worden de volgende vragen onderzocht: 1) Op welke manier zijn de inkomens- en vermogensverdeling met elkaar gecorreleerd? 2) Hoe kunnen we de beschikbare data en methoden aanwenden voor de gezamenlijke analyse van inkomen en vermogen? 3) Op welke manier kunnen we informatie over beide integreren in indicatoren van armoede, ongelijkheid en herverdeling? 4) Wat leren de resultaten van het voorgaande ons met betrekking tot fiscaal en sociaal beleid?

In het eerste hoofdstuk van de thesis (geschreven samen met Ive Marx) wordt aangetoond dat vermogensinformatie niet enkel van belang is om te bepalen wie rijk is, maar dat het eveneens relevant is voor de studie van armoede, ongelijkheid en herverdeling. Een descriptieve analyse toont aan dat inkomen en vermogen positief gecorreleerd zijn, maar niet in die mate dat men kan spreken van twee zijden van dezelfde munt. Gezinnen met een laag inkomen hebben over het algemeen een lager vermogen dan gezinnen met een gemiddeld of hoog inkomen, maar daarnaast bestaan er ook enorme verschillen in vermogensopbouw binnen deze inkomensgroepen en deze verschillen zijn voornamelijk groot in de groep met lage inkomens. Daarom maken we in het hoofdstuk een onderscheid tussen inkomensarme gezinnen die zelf voldoende (liquide) middelen bezitten om in hun behoeften te voorzien aan de ene kant en inkomensarme gezinnen die deze opties niet hebben aan de andere kant. Deze laatsten worden beschouwd als de meest kwetsbare gezinnen, waarvoor we het concept van 'drievoudige precaire situatie' introduceren. Hiermee verwijzen we naar de situatie waarin een laag inkomen wordt gecombineerd met een laag vermogen in het algemeen en onvoldoende liquide middelen in het bijzonder. Wanneer we deze situatie vergelijken met deze van inkomensarmoede vinden we dat met name laagopgeleide gezinnen en gezinnen die huren een zeer hoog risico lopen om in de 'drievoudige precaire situatie' te belanden. Gepensioneerde huishoudens, daarentegen, hebben over het algemeen een hoog risico op inkomensarmoede, maar bezitten vaak gemiddelde tot hoge vermogens. Hoewel de analyse in dit eerste hoofdstuk enkel voor België wordt uitgevoerd, tonen daaropvolgende hoofdstukken aan dat de resultaten ook gelden in andere landen, zij het in verschillende mate.

De analyses van het eerste hoofdstuk zijn gebaseerd op de originele data van de 'Eurosystem Household Finance and Consumption Survey (HFCS)' en deze hebben één belangrijke tekortkoming: ze bevatten enkel bruto inkomens (dit zijn inkomens vóór belastingen en sociale bijdragen). Officiële armoede- en ongelijkheidsindicatoren worden daarentegen berekend op basis van netto beschikbare inkomens. In het tweede deel van deze doctoraatsthesis bekijk ik daarom samen met Francesco Figari en Gerlinde Verbist de mogelijkheden om de HFCS data te combineren met EUROMOD. Dit is een microsimulatie model dat op basis van de wettelijke beleidsregels voor elk land van de Europese Unie berekent hoeveel belastingen en sociale bijdragen gezinnen moeten betalen en op welke sociale uitkeringen zij recht hebben. Het toepassen van deze simulaties op de HFCS data heeft twee voordelen. In de eerste plaats kunnen we de netto beschikbare inkomens van de gezinnen in de HFCS dataset berekenen. Dit proces wordt in detail besproken in hoofdstuk 2. Daarnaast laat het ons eveneens toe om de simulaties in EUROMOD uit te breiden. In zijn standaard vorm berekent EUROMOD voornamelijk belastingen en bijdragen die betaald moeten worden op het inkomen. Op basis van de HFCS data werd dit uitgebreid door ook vermogensbelastingen te simuleren. Meer bepaald wordt er berekend hoeveel

gezinnen betalen aan roerende en onroerende voorheffing, registratierechten bij de aankoop van een onroerend goed alsook successie- en schenkingsrechten (zie hoofdstuk 3 voor meer informatie).

In hoofdstuk 4 wordt het eerste voordeel van de HFCS-EUROMOD combinatie toegepast, namelijk de berekening van netto beschikbare inkomens, die worden gebruikt om armoede te definiëren. Meer bepaald vergelijken we het armoedepercentage zoals berekent volgens de standaard manier (enkel op basis van inkomen) met het armoedepercentage wanneer ook rekening wordt gehouden met het vermogen. Enkele voorgaande studies hebben twee manieren voorgesteld om armoede te meten op gezamenlijke basis van inkomen en vermogen. De eerste manier behoudt inkomen en vermogen als aparte dimensies en past een afzonderlijke armoedelijn toe op elk van beide. De tweede manier zet het vermogen om in een jaarlijkse annuïteit, telt dit bedrag op bij het inkomen en past dan slechts één armoedelijn toe op dit totaal. De annuïteit vertegenwoordigt het bedrag van je vermogen dat je in principe elk jaar tot aan je dood zou kunnen gebruiken om te consumeren. De toepassing van deze twee manieren resulteert over het algemeen in de volgende bevindingen: (1) armoedepercentages zijn lager wanneer rekening wordt gehouden met vermogen, (2) armoedepercentages dalen sterker bij ouderen dan bij de bevolking op arbeidsleeftijd en (3) armoedepercentages dalen voornamelijk wanneer rekening wordt gehouden met de waarde van de eigen woning. In hoofdstuk 4 bekijk ik samen met Ive Marx of deze bevindingen ook overeind blijven als er andere assumpties worden gemaakt in de berekening van de armoede indicator. De resultaten tonen aan dat armoedepercentages inderdaad sterk worden beïnvloed door het in rekening brengen van vermogensinformatie en dit voornamelijk voor ouderen, maar de omvang van deze effecten hangt sterk samen met bepaalde analytische keuzes. Met name de definitie van de armoedelijn is van essentieel belang; als de armoedelijn wordt behouden op het bestaande niveau dan leidt de toevoeging van vermogensinformatie inderdaad tot een daling van het armoedecijfer, maar wanneer de armoedelijn zou aangepast worden aan het feit dat vermogen wordt opgenomen dan kan het armoedepercentage evengoed stijgen. In het hoofdstuk tonen we eveneens aan dat het in rekening nemen van vermogensinformatie verschillende effecten kan hebben tussen landen. Hiervoor vergelijken we België en Duitsland. Uitgedrukt in inkomen hebben de twee buurlanden ongeveer hetzelfde niveau van levensstandaard en armoede, maar het vermogen is gemiddeld veel hoger in België en ook minder ongelijk verdeeld. Door deze verschillen vinden we dus een grotere impact op armoedecijfers in België dan in Duitsland, wat mogelijk een effect heeft op de landenrangschikking voor armoede.

In hoofdstuk 5 wordt de analyse uitgebreid op verschillende vlakken. Eerst en vooral focussen we niet langer op slechts één deel van de bevolking (diegenen in armoede), maar kijken we nu naar de volledige gezamenlijke verdeling van inkomen en vermogen. Daarvoor breiden we de toepassing van de vermogensannuïteit uit het vorige hoofdstuk uit van armoede naar de volledige bevolking. Bovendien werken we nu ook met de tweede toepassing van de HFCS-EUROMOD combinatie, namelijk de simulatie van vermogensbelastingen. Ten slotte wordt de analyse nu ook toegepast op zes Europese landen: België, Duitsland, Frankrijk, Finland, Spanje en Italië. In dit hoofdstuk argumenteer ik samen met Francesco Figari en Gerlinde Verbist dat de gezamenlijke verdeling van inkomen en vermogen een betere maatstaf vormt om ongelijkheid en herverdeling te analyseren. De resultaten tonen aan dat wanneer je rekening houdt met het feit dat een relatief groot aantal gezinnen een heel andere plaats hebben in de vermogensverdeling dan in de verdeling van inkomens, ongelijkheid een pak hoger is en herverdeling een stuk lager. De analyse toont dat vermogensbelastingen weinig of geen herverdelende impact hebben, maar ook de 'traditionele' herverdelende instrumenten zoals inkomensbelastingen en

sociale bijdragen zijn minder herverdelend als je rekening houdt met vermogen, omdat deze worden betaald door diegene met de hoogste inkomens, terwijl die niet altijd de hoogste vermogens hebben. De sociale uitkeringen blijven wel sterk herverdelend als je ze evalueert ten opzichte van de gezamenlijke verdeling van inkomen en vermogen, wat betekent dat zij – zoals gewenst – voornamelijk terecht komen bij gezinnen die zowel inkomensarm als vermogensarm zijn. Op basis van de resultaten concluderen we dat Europese welvaarsstaten voornamelijk gericht zijn op het verlagen van inkomensongelijkheid, terwijl er weinig wordt gedaan om vermogensongelijkheid aan te pakken.

In hoofdstuk 6 bekijk ik samen met Francesco Figari en Gerlinde Verbist in meer detail de herverdelende impact van vermogensbelastingen, waarbij er nu ook een opsplitsing wordt gemaakt naar het type vermogensbelasting: belastingen op het inkomen van vermogen, op het bezit van het vermogen of de overdracht van het vermogen. In een eerste stap bestuderen we deze vermogensbelastingen vanuit het perspectief van verticale rechtvaardigheid. Met dit concept wordt aangeduid in hoeverre rijke gezinnen meer belastingen betalen dan arme gezinnen. De resultaten tonen aan dat dit voor de meeste soorten vermogensbelastingen inderdaad het geval is. Met name algemene netto vermogensbelastingen zoals deze bestaan in Frankrijk en Spanje alsook belastingen op kapitaalinkomsten worden grotendeels door de allerrijksten betaald. Nochtans blijken vermogensbelastingen in hun huidige vorm weinig of niet herverdelend en dat is hoofdzakelijk te wijten aan hun zeer kleine omvang. In een tweede stap bestuderen we vermogensbelastingen dan samen met inkomensbelastingen. Hierbij focussen we op het concept van horizontale rechtvaardigheid, wat staat voor de mate waarin gezinnen die even rijk zijn ook evenveel belastingen betalen. Deze analyse toont aan dat gezinnen met een eenzelfde niveau van inkomen + vermogensannuïteit een veel hogere belasting betalen wanneer dit niveau hoofdzakelijk uit inkomen bestaat dan wanneer dit voornamelijk voortvloeit uit de vermogensannuïteit. Met andere woorden, inkomensbelastingen zijn veel hoger dan vermogensbelastingen. Bovendien is er zelfs tussen de verschillende soorten vermogenscomponenten weinig of geen sprake van horizontale rechtvaardigheid. Terwijl de meeste landen een belasting heffen op onroerende goederen, worden financiële vermogens slechts in enkele landen aan een belasting onderworpen en dan nog aan zeer lage belastingvoeten en met grote vrijstellingen. Met andere woorden, huidige belastingsystemen zijn niet neutraal met betrekking tot de manier waarop gezinnen hun levensstandaard bekomen.

Het belastingsysteem wordt echter niet alleen gebruikt voor het belasten van vermogen, maar ook om de opbouw van vermogen te stimuleren via belastingvoordelen en deze bestudeer ik in het laatste hoofdstuk. Uit een vergelijking van het beleid in de zes bestudeerde Europese landen blijkt dat deze belastingvoordelen over het algemeen betrekking hebben op de aankoop van een eigen woning (via hypotheekaftrek), privaat pensioensparen en bepaalde financiële inkomens (vaak dividenden). De analyse toont aan dat vooral middenklasse en rijke gezinnen profiteren van deze belastingvoordelen, terwijl diegenen die het meeste nood hebben aan vermogensopbouw vaak uit de boot vallen. Dit is onder meer zo omdat de armste gezinnen vaak meer nood hebben aan andere vermogenscomponenten dan diegene die aangemoedigd worden. Zo hebben ze bijvoorbeeld nood aan financiële middelen die gemakkelijk beschikbaar zijn om moeilijke periodes te overbruggen, terwijl investeringen in een huis of pensioensparen normaal voor lange tijd vaststaan. Zelfs wanneer ze wel investeren in dit soort vermogenscomponenten betalen ze vaak weinig of geen belastingen en kunnen ze dus niet profiteren van de belastingvoordelen. Bovendien wordt inkomensbescherming soms alleen toegekend als men zelf niet over de nodige middelen beschikt, waardoor een ander aspect van het

beleid dus vermogensopbouw juist ontmoedigd. Daarom stel ik in dit hoofdstuk een nieuw soort beleid voor dat specifiek gericht is op het helpen van de meest kwetsbaren in de opbouw van vermogen. De doelgroep bestaat uit gezinnen die vermogensarm zijn alsook inkomensarm of een inkomen hebben net boven de armoedelijn. Het beleid focust in de eerste plaats op de opbouw van liquide middelen door elke euro die ze sparen te matchen met een extra euro, met andere woorden hun spaargeld wordt verdubbeld.

Kortom, op basis van mijn resultaten concludeer ik dat het combineren van de inkomens- en vermogensverdeling zeer relevant is voor de analyse van armoede, ongelijkheid en herverdeling. De voornaamste reden hiervoor is dat in de rangschikking van arm naar rijk gezinnen soms een heel andere plaats hebben wanneer je de rangschikking baseert op hun vermogen in plaats van op hun inkomen. Ongelijkheid (en mogelijk ook armoede afhankelijk van welke armoedelijn wordt gebruikt) is een stuk hoger wanneer je rekening houdt met zowel inkomen als vermogen, terwijl de welvaartsstaat veel minder herverdelend is in dit opzicht. Dit is omdat ze er voornamelijk op gericht is inkomensongelijkheid te verlagen, terwijl er weinig wordt gedaan om vermogensongelijkheid aan te pakken. Bovendien blijkt het beleid dat wel rechtstreeks gericht is op vermogen een onwenselijke sociale impact te hebben. Aan de ene kant zijn er de vermogensbelastingen die een te kleine omvang hebben om te kunnen herverdelen van rijk naar arm en aan de andere kant kunnen mensen die er het meeste nood aan hebben niet profiteren van de belastingvoordelen voor de opbouw van vermogen.

Beleidsaanbevelingen

De bovenstaande resultaten inspireren tot twee aanbevelingen; (1) indicatoren van levensstandaard, armoede, ongelijkheid en herverdeling zouden zo veel mogelijk moeten gedefinieerd worden op basis van zowel inkomen als vermogen en (2) deze indicatoren zouden dan moeten gebruikt worden om het herverdelend beleid te evalueren en aan te passen waar nodig.

De eerste aanbeveling is gebaseerd op het feit dat de bestaande sociale indicatoren slechts een gedeeltelijk beeld schetsen. De resultaten van hoofdstuk 4 en 5 tonen aan dat het niveau van armoede, ongelijkheid en herverdeling anders is wanneer ook rekening wordt gehouden met vermogen. Aangezien het beleid afgestemd wordt op deze indicatoren, leidt het feit dat ze enkel in inkomenstermen zijn gedefinieerd er bovendien toe dat het beleid gefocust blijft op het herverdelen van inkomen door het belasten van diegene met de hoogste inkomens en deze middelen te gebruiken voor het garanderen van minimum inkomensbescherming.

Met betrekking tot de tweede aanbeveling tonen mijn resultaten aan dat het herverdelend beleid in zijn huidige vorm niet voldoende rekening houdt met de sociaaleconomische realiteit. Het feit dat vermogen stilaan even belangrijk is, of misschien zelfs belangrijker, dan inkomen voor de financiële levenstandaard van gezinnen zou sterker in het herverdelend beleid moeten weerspiegeld worden en dit zowel aan de bijdrage- als de uitkeringszijde. Het zwaarder belasten van vermogen van de allerrijksten is belangrijk om de afstand met de middenklasse te verkleinen, terwijl de aanmoediging van vermogensopbouw bij de meest kwetsbare gezinnen cruciaal is om ervoor te zorgen dat iedereen van de voordelen van vermogensbezit kan genieten.