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Abstract

The aim of this paper is to analyse how different financial sources shape living standards' trends in Spain for different generations using a joint income and wealth perspective to the measurement of well-being. Our joint measure considers household's income and asset holdings' as a single yearly flow for fifteen years (2002-2017) and uses this new distribution to understand the role of the different components of inequality for different age cohorts using a RIF methodology and its Oaxaca-Blinder extension. We are particularly interested in studying the contribution of non-labour income and asset holdings to the widening of the gap in well-being between young and old cohorts in a Southern European country after the Great Recession. Our results show that there is an increasing well-being generational gap due to increasingly larger losses of real labour income of the youngest generation and the differences in the degree of wealth accumulation between cohorts.

Keywords: non-labour income, asset value, inequality, intergenerational, Great Recession.

JEL Codes: D63, I31

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1. Introduction

The growing disparities in the distribution of household incomes over the course of the past decades in most OECD countries (OECD, 2011), especially since the onset of the Great Recession, has pushed the attention of academic analysis towards explaining its main determinants (Jaimovich and Siu, 2012; Mian and Amir, 2014). A key issue in recessions is that households can smooth out consumption by relying on savings and asset holdings so that there are significant differences in the way they can overcome economic difficulties which will be strongly related to their previous asset holdings (Kuypers and Marx, 2016). Similarly, financial liabilities may imply that households are more economically vulnerable than what their income level would suggest once the crisis breaks out. Moreover, during recessions it is likely that households' asset holdings change value and only considering asset ownership would provide a limited information on the real market value of their assets (Rohwedder, 2010; Smeeding, 2012 and Amuedo-Dorantes and Borra, 2018). In this vein, Stiglitz et al. (2009) and OECD (2013) have argued in favour of constructing a joint income and wealth measure of well-being considering the real market value of assets to adequately approach the analysis of inequality trends in household living standards.

There are three approaches in the literature in attempting to measure inequality considering both income and wealth: an approach that integrates both resources jointly in one single dimension (Kuypers et al., 2018; Wolff et al., 2012; Wolff and Zacharias, 2009) another one that considers a two dimensional frameworks studying the dependence between marginal distributions (Kennickell, 2009; Janti et al., 2015) and identifying the individual position in each distribution (Chauvel et al., 2019; Janti et al., 2008), and finally the multidimensional affluence approach (Peichl and Pestel, 2013). Our paper is based on the first approach. We integrate income and wealth into one dimension for several reasons. The analysis of income in one dimension is insufficient to measure the different aspects of well-being (Stiglitz, 2009). Income is unstable, and households may use their asset values to maintain their living standards when they face unexpected events. Intuitively, the use of consumption information could arise to measure the real living standards. However, Kuypers and Marx (2016) point out that households may not use all resources for consumption. Moreover, the actual consumption does not reflect the level of debt of households to maintain their living standards. In this sense, wealth allows to make investments in the long terms, for instance such as collateral to borrow a mortgage (Azpitarte, 2012). Therefore, we should capture the potential consumption of households to best represent their well-being (Stiglitz, 2009; Wolff et al., 2012). To achieve

that purpose we create one dimension with all available resources they have: income and wealth. Compared with the two other approaches, the two dimensional framework provides an accurate approximation of the relationship between income and wealth, and multidimensional affluence allows to compute how are rich or poor from both dimensions, although they offer a partial perspective on the possibilities of households to overcome an adverse economic situation.

Household income inequality grew strongly in Spain since 2008 and reached its highest level in the last five decades in 2014. Given that the distribution of wealth is considerably more unequal than that of household income (OECD, 2018) and net wealth is likely to be strongly concentrated in households where individuals are older, we would like to know to which extent the large and rapid increase in income inequality is furtherly widening the inequality of living standards by generation and to what extent non-labour income is contributing to shape diverse inequality trends for different cohorts. The intrinsic divergence is that income is a flow variable and wealth is a stock, where the future stock will depend on current savings and future income will depend on the realization of that stock. To best identify the generational consequences of increasing inequality it is most advantageous to consider the two financial resources: income and wealth, into one single dimension by converting wealth into yearly annuities as in various previous studies (Kuypers et al., 2018; Wolff et al., 2012; Brandolini et al., 2010; Weisbrod and Hansen, 1968).We then decompose the role of labour income, wealth and public transfers on inequality for different age cohorts using a RIF methodology and the Oaxaca-Blinder extension based on the Spanish Survey of Household Finances (*Encuesta Financiera de las Familias, EFF*) from year 2002 to 2017.

Our contribution to the literature on inequality trends in Spain is twofold. First, we quantify the relevance of the structural well-being inequality for Spain from 2002 up to 2017 using a unique distribution of income and wealth. Second, we apply the RIF methodology to decompose the importance of each component in our new distribution, in shaping inequality across different generations. Hence, we complete the literature quantifying the contribution to inequality by sources and generations in a large Southern European country after the Great Recession.

The paper is organised as follows. The second section discusses the literature on joint income and wealth in measuring living standards and its relationship with the traditional income inequality literature. The data are described in Section 3 and in Section 4 we provide all the details of the methodology used in the construction of our measure of living standards and the

methodology for the decomposition of inequality. In Section 5, we present our main results and Section 6 discusses our main conclusions.

2. Background and literature review

The top income inequality literature has described the dramatic increase in income and wealth inequality in the recent decades (Alvaredo and Saez, 2009; Atkinson et al., 2011; Piketty and Saez, 2013). From those, it emerges the relevance of the study of relationship between income and wealth. Stiglitz et al. (2009) and OECD (2013) have argued in favour of constructing a joint income and wealth measure of well-being to adequately approach the analysis of inequality trends in household living standards. In this vein, there are two different approaches in the literature to measure the joint distribution of income and wealth. On one hand, an approach that consider a two dimensional frameworks searching for common elements which explain the shape of the two distributions (Kennickell, 2009; Janti et al., 2015; Chauvel et al. 2019). On the other hand, an approach that integrates both resources jointly in one single dimension (Kuypers et. al, 2018; Wolff et al., 2012; Smeeding and Thomson 2011). Finally, the study of Peichl and Pestel (2013), assess the relationship between income and wealth from multidimensional affluence perspective.

Regarding the two dimensional framework, we find several studies either in poverty or inequality analysis. In the first case, Azpitarte (2012), Headey (2008), Haveman and Wolff (2004) construct separate poverty lines for income and wealth. They conclude that poverty rates decline when wealth is included, especially for older households, compared with standard income-based measures. With respect to inequality, Jäntti et. al (2008) addressed the interdependence between income and wealth creating quartile groups of both measures for five OECD countries. They obtain that there is high correlation between net wealth and disposable income, but it is not perfect. Chauvel et. al (2019) use a graphical tool, isograph, to describe the importance top income tail in shaping income and wealth inequalities in 16 European countries and in the US. They find that for the top income quantile, the wealth-to-income ratios increase very fast with income. Moreover, Khun et. al (2019) analyse income and wealth growth of different parts of the wealth distribution for the US since 1971. They find that the middle class lost the share of income accumulated with respect to the top 10%, but they preserved their wealth share due to the gains in housing wealth. Other authors have estimated copula functions with univariate marginal distributions using parametric methods (Jäntti et. al, 2015) and non-parametric (Kennickell, 2009) to capture the dependence between both distributions. Jäntti et. al, (2015) show that the cross-country differences in five OED countries in the bivariate Gini is

explained only by a small contribution of the dependent parameter, while Kennickell (2009) concludes that there were no significant changes in the shape of both distributions in the US for 1989-2007.

Secondly, a variety of papers have considered incorporating asset value to the measurement of well-being either (the joint distribution) in the analysis of inequality (Wolff and Zacharias, 2009; Wolff et al., 2012; Smeeding and Thomson 2011; Gallusser and Krapf; 2019) or poverty (Brandolini et al., 2010; Kuypers and Marx, 2016; Short and Ruggles, 2005;) They convert the stock of wealth into a flow resource to construct the distribution of income and wealth in the same dimension, although they use this scope for different goals. Regarding poverty analysis, all the studies we found in this vein use Weisbord and Hansen (1968) approach to annualize wealth into income flows (Brandolini et al., 2010; Kuypers and Marx, 2016; Short and Ruggles, 2005; Zagorsky, 2005; Van den Bosch, 1998). These authors use a fixed interest rate across all asset types and life expectancies to compute the length of the annuities. Brandolini et al. (2010) show that higher interest rates reduce slightly the poverty rates for France, Italy, Germany and United States, but is the inclusion of non-liquid assets what reduce notably the poverty rates for those countries and also for Belgium (Kuypers and Marx, 2016; Van den Bosch, 1998). Moreover, the age structure of households is strongly related with poverty (Kuypers and Marx, 2016; Van den Bosch, 1998). The poverty rates among non-elderly households (younger than 65 years) are lower than elderly (older than 65 years). As home equity represents the major component of total wealth, older households typically have paid off their mortgage debts of their main residence, so they are better off than younger households who have larger mortgage debts.

On the other hand, with respect to inequality analysis, we find two approaches in the literature to compute the joint measure of income and wealth: Weisbord and Hansen (1968) approach (such as in poverty analysis) and the bond coupon method. Considering the first method, Wolff et al. (2012) estimate the income flow generated by wealth as a lifetime annuity, they impute rent to owner-occupied housing, public consumption, in-kind social benefits and household production. These authors conclude that well-being inequality has increased significantly in the US from 1959 to 2007, explained by the increase in inequality of standard income measures and the unequal distribution of real-state annuities (other than main residence) and financial annuities. Their estimation of wealth as an annuity similar to the procedure we use, although in their particular analysis they impute other variables that generate well-being which we do not consider due to the different purpose of our analysis. In our case, we are

interested in determining the contribution of each source of income and wealth to inequality through compositional and distributional effects by household type.

More recently, Gallusser and Krapf (2019) have also studied the joint distribution of income and wealth in the canton of Lucerne (Switzerland) using the Weisbord and Hansen (1968) approach. They compute the annuitized wealth and sum up the annual labour income flow to compare the results with the distribution of labour income and wealth separately. After that, they decompose the inequality using a copula function which accounts for more adequate estimations of the composition effects (Rothe, 2015). They obtain that inequality of joint measure is higher than taxable income, due to the higher dispersion of annuitized wealth. These authors use very rich information based on fiscal data of income and wealth which limits their estimation on individuals because they must assume that couples share half of the economic resources. Moreover, they have to assume that the male age establishes the life expectancy, as the survey only offers information on head of household, generally the male spouse. Finally, regarding the decomposition analysis, the estimation of interaction and dependence parameters between both distributions using the copula function does not disentangle the structural effect (what we call distributional effects), dividing between-group differences in the structural functions. To overcome this inconvenient, we use RIF-regressions combined with the Oaxaca-Blinder decomposition instead can perform this estimation

The bond coupon method basically consists of applying an interest rate to wealth obtaining the income that the sale of all assets would generate. In this vein, Smeeding and Thomson (2011) use historical interest rate for each type of assets to decompose the inequality trend during the Great Recession in US. They conclude that the increase of income from wealth for the top income households reveals a greater growth in inequality than observed in standard gross income. Finally, also for U.S., Armour et al (2014) and Larimore et al (2016) use the bond coupon method to estimate the top income shares and capital income, although they compute the imputed rents for the main home in contrast with Smeeding and Thomson (2011). The general conclusion of these authors set that top income shares were overrepresented by Piketty and Saez (2003) and their series are more stable and do not follow the rapid changes due to business cycle.

Thirdly, the multidimensional affluence approach of Peichl and Pestel (2013) develop the top inequality analysis using income and wealth based on Germany and US. They set two thresholds for income and wealth. Those individuals above the threshold in one dimension are considered as dimension-specific affluent. Then, they use the counting methodology (Atkinson,

2003) to compute, from those affluent in one dimension, who are affluent in a multidimensional sense. They obtain that those who are in the top of both distributions accumulate 1.5% of total income and 5.5% of total wealth in Germany, while in the US these results increase to one third and fifty percent respectively. Hence, they highlight that economic resources are much more concentrated in US than in Germany.

Considering the analysis of Spain, most of the studies that include that country in their analysis consider only one dimension, either income (Bonhomme and Hospido, 2013 and 2017; Ayala and Cantó, 2018; Gradin, 2020), wealth (Amuedo-Dorantes and Borra 2018; Artola et al, 2021) or describe the evolution of income and wealth independently (Alvaredo and Saez, 2009; Anghel et al, 2018, Martínez-Toledano et al., 2019). However, from two dimensional frameworks of income and wealth, Jäntti et al. (2015) estimate the copula function including Spain among other countries (Germany, Italy, Luxemburg and US). They obtain that income and wealth show the lowest correlation in Spain. These authors suggest that these results respond to significant differences in home-ownership patterns in Spain across the distribution of income, a similar result to that obtained later by Anghel et al. (2018). In this view, Martínez-Toledano et a. (2019) describe that households who own a house have higher income and wealth than households who do not own a house. Furthermore, we found only the study of Kuypers et. al (2018) that includes Spain from joint income-wealth perspective. Their purpose is to evaluate the redistribution effects of tax benefit system in a joint income-wealth perspective using EUROMOD. They find that the Gini index for standard market income (wages, self-employment and capital income) is higher than the market income in the joint framework (wages, self-employment and annuitized wealth). Finally, the Gini for disposable income is lower in the standard approach than in the joint framework (0.35 vs 0.38) such as in all other countries. These authors remarks that this happens because tax-benefit systems are focused on reducing income inequality, which is notably lower than wealth inequality.

Finally, our approach to measuring individuals living standards using a joint distribution of income and wealth aims to combine both distributions in a single one. The purpose is that of identifying the generational consequences of increasing inequality in living standards which have implications in both wellbeing dimensions. We are particularly interested in studying the contribution of non-labour income and asset holdings to the widening of the gap in well-being between young and old cohorts in a large Southern European country after the Great Recession. For this purpose, we aim to examine the evolution of households' income and wealth portfolio by using Weisbrod & Hansen (1968) approach. Furthermore, we use the RIF methodology to

decompose the importance of each component in our new distribution. Hence, we can measure the contribution to inequality by labour income, public transfers and wealth, across generations. Therefore, our procedure allows to compute the effects of higher concentration of wealth in older households to inequality, how the changes in labour market have affected different type of households or the cushioning effects of public transfers after the Great Recession. Different from other approaches and studies, we quantify the potential consumption for Spain, so that we can determine the available economic resources to face unexpected shocks by households whose all members are older than 40 years old, households younger than 40 years old, and households with members older and younger than 40 years old. To achieve that purpose our results rely on the information collected in the Spanish Survey of Household Finances (*Encuesta Financiera de las Familias,* EFF) from 2002 up to 2017, which provides a detailed data on income and wealth for Spain.

3. Data

We use the information collected in the Spanish Survey of Household Finances (*Encuesta Financiera de las Familias*, EFF). The EFF is a survey conducted by the Bank of Spain that collects information about self-reported values of income, assets, debts, and consumption at the household level. It started in year 2002 and is elaborated every 3 years. There are currently 6 waves of data, for years 2002, 2005, 2008, 2011, 2014 and 2017. The number of observations per year is around 6,000 (15,000 individuals approx.), -except for 2002 when there were we only have 5,400 observations- with a panel component which normally represents more than half of the observations (60% in the EFF 2011) since the second wave.

One of the most important characteristics of this survey is the oversampling of wealthy households. It is elaborated in collaboration with the National Statistics Institute (INE) and the State Agency of Fiscal Administration (*Agencia Tributaria*). The oversampling is conducted using wealth information from the individual wealth tax returns held by the Fiscal administration. This strategy addresses a key problem wealth underestimation at high wealth levels of those assets that are very concentrated at the top of the distribution (Alvaredo and Saez, 2009).

Our extended measure of well-being is based on a gross income definition that substitutes the value of capital income by an approximation to the value of individual annuitized wealth (in order to avoid double counting). Therefore, our concept of well-being or living standards is the sum of labour income, self-employment income, annuitized wealth (capital income for

standard gross income), pension transfers (both public and private), unemployment benefits, other public transfers and other household income (e.g. transfers from other households).[1]

Most of the research papers on inequality trends use the information on incomes from the European Union Statistics on Income and Living Conditions (EU-SILC). We have compared mean gross income levels and gross income inequality trends using from the Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV), conducted by the National Statistics Institute (INE) as part of the EU-SILC, with those we obtain using the EFF for income inequality. Our comparison covers four key years: 2008, 2011 2014 and 2017.[2] The results presented in Table A.1 in Appendix reveals that the mean equivalised gross household income is lower in the EFF than in the ECV for all years, indicating somewhat larger underestimation of real gross incomes in EFF data than in ECV. However, both sources report a similar trend in mean gross incomes and in inequality while the results for 2017 present show smaller differences between both surveys. By income components, capital income and self-employment income present higher values in the EFF than in the ECV at least in two years. On the other hand, the EFF shows lower mean values for labour income, unemployment, pension benefits. For imputed rents, our estimations represent lower values than in the ECV. We use the rent-to-value approach to calculate those values, while the INE estimates them using a combination of stratification and subjective methods. However, both procedures are related. We are based on the information of imputed rents for the main residence using the results from Household Budget Survey (EPF) published by INE, which consider that value for the estimation of imputed rents in the National Accounts[3]. At the end, INE uses the same procedure to estimate imputed rents for the EPF and the ECV (INE, 2011; INE, 2019), although we rely on the first survey, as those are used to calculate the imputed rents in the National Accounts.

[1] Labour income includes wages and payments in kind from employment. Self-employment income is the flow generated by managing household business or any other professional activity. Capital income is collected through various variables: Income from rental of a property, sole proprietorship, jewellery, financial assets, income from dividends, bank interests, profits from unincorporated business and other concepts related to capital concepts specified by the respondent. Pensions include public pensions (pay as you go system), income from private pension schemes and incapacity pensions and widow(er)'s and orphan's pensions. Unemployment benefits include both unemployment insurance and unemployment assistance together with redundancy payments. The concept of other income includes other public transfers, scholarships, family transfers, lottery awards, insurance policies, inheritance and income for belonging to the board of directors or a public limited company or similar entity.

[2] Even if there is available microdata for previous years, the ECV does not provide gross income concepts for 2005, while the EFF does not include net income variables.

[3] We do not use the value from National Accounts as that estimation also includes the imputed rents for other properties than the main residence.

Differences between the ECV and the EFF in labour incomes could be explained by the dispersion of the income values in both surveys, given that the EFF oversamples the top part of the distribution and interviews a significantly smaller number of households. Additionally, the ECV match the results with tax file returns, addressing the problem of underestimation. Finally, self-employment and capital income are more concentrated at the top which could explain those higher mean values in the EFF. Interestingly, the differences between the value of gross imputed owner-occupied that we construct in the EFF and those calculated in the ECV.

Tables A.2, A.3, A.4 and A.5 in Appendix show that the standard deviation (SD) for gross income for all years is higher in the EFF than in ECV. Although for some components such as labour income or pensions the SD is lower in the EFF, standard errors which consider the number of observations reveal the greater dispersion in all income components in the EFF in comparison to ECV. The Kernel density (Tables A.6, A.7, A.8 and A.9 in Appendix) function reveals that in the EFF there is less ceros, greater concentration of lower incomes (around 10.000 equivalised euros) and also for higher values (more than 30.000 equivalised euros). Therefore, ECV concentrates higher density around mean income values (20.000 equivalised euros).

In accordance to the higher dispersion in EFF incomes, all inequality indicators (Table A.10 in Appendix) show that inequality levels are higher in the EFF than in the ECV whatever the year we consider, even if the time trend is very similar in both surveys. One plausible explanation is that the EFF effectively captures much better the income information for households at the top of the income distribution (10% richest). These top income households, usually underrepresented in other income surveys, contribute significantly to the increase the levels of income inequality (Alvaredo and Saez, 2009; Atkinson, 2005; Piketty and Saez, 2014). The results for p-shares values describe the income accumulation across distribution. The fact that the top 10% households in the EFF accumulate more income share than those in the ECV would sustain this hypothesis. Thus, the oversampling of the rich changes the shape of the distribution and affects households mostly in the middle of the distribution who accumulate around three percentage points less income share than in the ECV, showed also in the Kernel graphs. The divergence between the surveys is smaller for the 50% poorest (one percentage point any year).

4. Methodology

To deepen the study of the evolution living standards inequality in Spain in a fifteen-year period we have decided to combine information on income and wealth in a single variable. This allows us to focus in our main interest in this paper: the analysis of the changes in the contribution of non-labour income and asset holdings to the widening of the gap in well-being between young and old cohorts. Using this new joint variable we can use a RIF regression approach together with the Oaxaca-Blinder decomposition to decompose the changes in inequality into compositional effects (CE) and structural or distributional effects (DE) (Firpo et al., 2007, 2009; Gradín, 2020). The first accounts for the contribution of different groups of populations to inequality and the latter for how these members are allocated across the distribution. For instance, if the change between two years reveals that the CE of older people increase the inequality and between that two years the proportion of older people in the total population has increased, it means that the relative higher number of older people increase the inequality. On the other hand, if the DE of older people decrease the inequality, shows that the way they are allocated in the distribution reduces the inequality. At the end, the total effect (TE) will determine which one is more relevant in the evolution of inequality.

4.1. How do we construct an extended measure of well-being using a combination of income and wealth distributions?

We follow the Weisbrod and Hansen (1968) approach as in the inequality literature to combine the distribution of income and wealth (Kuypers et.al, 2018; Gallusser and Krapf, 2019; Wolff et. al, 2012). We use the following formula (as in Wolff et. al, 2012):

$$Y_i = L_i + (H_i - M_i) + (W_i - D_i) + P_i$$

Where Y_i represents the level of well-being for household i. For each household i, we first calculate the labour income, L_i, (wages and self-employment), we then add the income flow from the imputed rent to owner-occupied housing, H_i, and we finally subtract the annuitized value of mortgage debt, M_i. We subsequently add the income flow from the annuity generated by wealth, W_i, and subtract the annuitized value of other debt (such as credit cards or loans). Finally, we add the value of public transfers, P_i. We then equivalise this level of household wellbeing, using the OECD equivalence scale, to allow for the comparison of individual well-being for those living in different cohabitation patterns. This equalised value of well-being is

then adjusted for inflation to obtain real values of our extended gross individual joint well-being distributions.

To account for the increase in living standards that the ownership of the main residence implies, we impute the rent for owner occupied housing using the rent-to-value approach, which formally expresses the capitalization rate C:

$$C = \frac{R_h}{V_h}$$

As the ratio of R_h, the value of gross imputed owner-occupied rent derived from the total amount of imputed rents published by INE, and V_h, the estimate of the gross value of the owner-occupied housing stock. Imputed rents are then obtained by applying the capitalization rate to the value of the property.

Weisbrod and Hansen (1968) approach allows to convert current wealth stock into an income flow so both income and wealth are measured in the same unit of analysis. One unit of wealth is thus transformed into one unit of income according to the following formula (Brandolini et al., 2010):

$$W_{i,j} = \left[\frac{\rho_j}{1-(1+\rho_j)^{-n}}\right] * A_{i,j}$$

Where $W_{i,j}$ refers to annuitised income for household i, of asset j, while ρ_j is the average of annual nominal rates[4] for asset j from 1998 until 2014. Then, A_j is the asset component for household i, and n represents the expected remaining years of life of the oldest person in the household (length of the annuity), expressed in years of life expectancy distinguishing age, gender and gender, and civil status: $n = T(for\ unmarried);\ T_1 + (T - T_1)b\ for\ married$; where T_1 refers to remaining years of life for the person who dies first, T remaining years of life of the survivor; b is the reduction in the equivalence scale after the death of the first person.

[4] In the Appendix we detail the methodology we use to determine the rates of return of all assets. We also include two tables with the detailed numbers: Tables A.11 and A.12. We assume that the total results in terms of wealth in the EFF match with the results in the NSA. Therefore, we can apply the revaluation observed in the NSA to the EFF such as interest rates for each type of assets

We annualise three types of assets and debt[5]: real estate, financial assets, business assets, mortgage debt and other debt.

One of the key limitations of this procedure arise when two individuals owe the same amount of wealth, the flow generated by this method would be higher for the older one. This happens because the remaining years of life is lower for older people so that the same wealth is concentrated in fewer years. Therefore, the value we obtain from the first part of the formula always will be higher for older people. Moreover, the wealth component becomes cero at the end of expected lifetime, so bequests are assumed to be cero (see Appendix B for the results if an expected bequest is assumed instead). The main notion of this computation is to provide the best predictor of potential consumption generated by wealth. Another limitation could be the use the same rate of return within asset component although, Saez and Zucman (2016) tested this assumption based on administrative fiscal data and showed that there are no significant differences in the rate of return among individuals within asset class for the United States.

4.2. Measuring well-being inequality for an extended measure of living standards

Once we have constructed an extended measure of well-being our main descriptive analysis will focus on describing the evolution of inequality in living standards considering income and wealth for different age cohorts from 2002 to 2017. We consider three groups of households: all members below 40, all members over 40, and mixed. We will use different inequality indices which are related with each other. First of all, the Gini index. This is one of the most used in distribution analysis and measures the deviation of households (in our case) from perfect equality. Therefore, a Gini index of 0 represent perfect equality while 1 perfect inequality. Even though, the Gini index present some limitations. For instance, two different distributions may have the same Gini index. We decompose the contribution of income sources and three group of households to the Gini index to understand the changes across the distribution as we will explain in part 4.3.

Secondly, to understand the changes across distribution we also use three percentile ratios: P90/P10, P90/50 and P50/P10. They measure the ratio between households' income/wealth at different position of the distribution. Moreover, we compute three different concentration ratios: top 10%, mid 40% and bottom 50%. These reflect how much percentage of total

[5] Real estate does not include the main household residence. Financial assets are computed as weighted average of rate of returns on fixed income, private pensions, stocks, investment funds, deposits and life insurance. The weight is the proportion of each asset in the total financial assets in National Accounts. *Mortgage debt* is calculated for the main residence while the mortgage borrowed for buying the rest of real estate assets is included in *other debt*. See Appendix for more details.

income/wealth owns households at different position in the distribution. Finally, we also estimate the Kernel density functions to understand the dispersion of our extended measure and standard gross income and wealth.

4.3. Searching for the sources of living standards inequality by age cohorts: a RIF decomposition of inequality

Once we have described how inequality in well-being using an extended measure for different age cohorts has evolved since the beginning of the century until 2017 the next step is to analyse in detail the drivers of such inequality and whether its importance has changed at different points of the economic cycle: the expansion from 2002 up to 2008, the Great Recession from 2008 up to 2014 and the subsequent recovery from 2014 up to 2017. To best analyse these determinants, we make use of the Recentered Influence Function approach (RIF) and the Oaxaca Blinder extension which as Gradín (2020) underlines allows us to decompose the changes in the Gini coefficient in a variety of different sources. In this sense, Rothe (2015) claims that this method is path dependent, so that the order of our variables should be natural. Our total living standards inequality has three different key sources: that linked to labour income inequality, to wealth annuitization dispersion (divided into imputed rents, real estate, financial and business income) and to public transfers inequality. We follow the traditional order to generate gross income, as we only replace capital income by annuatized wealth. Moreover, we will consider the decomposition separately for three household types as we did in the descriptive analysis: for individuals cohabiting in households where all members are younger than 40 years of age, those who cohabit in households where all members are over that age, and those who cohabit in households with members that are younger and older than 40.

Using the following influence function for the Gini coefficient we can measure the impact on inequality of an infitesimal increase of the population mass in source j (Essama-Nssah and Lambert, 2012):[6]

$$IF\left(y^j; T_G; F\right) = -\frac{\mu_F + y^j}{\mu_F} G_F + 1 - \frac{y}{\mu_F} + \frac{2}{\mu_F} \int_0^{y^j} F(x)dx$$

The RIF is thus obtained after recentering the influence function at the value of the Gini coefficient of source j (Firpo et al. 2007, Fortin et al. 2011):

[6] The expected value of this influence function is zero.

$$RIF\left(y^j; T_G; F\right) = -\frac{y^j}{\mu_F} G_F + 1 - \frac{y}{\mu_F} + \frac{2}{\mu_F} \int_0^{y^j} F(x)dx$$

Considering a matrix Y:

$$y = \begin{bmatrix} y_1^1 & \cdots & y_1^J \\ y_2^1 & \ldots & y_2^J \\ y_k^1 & \cdots & y_K^J \end{bmatrix},$$

such that, for instance, y_1^1, is the value for the extended well-being measure for those individuals living in households where all members are younger than 40 years of age, the decomposition is correctly defined if total group and total sources sum up the total value of well-being in a given year. The contribution to inequality of source j can be obtained by regressing the individual RIF values (RIF (y^j; G)) on group membership dummies ($\sigma_{ik} = 1$ if an individual i to group k; 0 otherwise). Considering the extension of RIF proposed by Gradín (2020), the final calculation of RIF values is:

$$\beta_k^j = \frac{1}{N_k} \sum i\epsilon k \ [RIF(\sum_{t=1}^{j} y_i^t, I(y^j)) - RIF(\sum_{t=1}^{j-1} y_i^t, G(y^{j-1}))], j = 2, \ldots j$$

Where β_k^j is the average marginal per capita contribution of members in group k to inequality when source j is added to the individual extended measure of well-being. These contributions can be obtained by the difference between the RIF regressions coefficients calculated on group membership dummies, before and after adding source j.

The corresponding contribution to inequality of each source of well-being sum up to total inequality, obtaining the same level of inequality as in y_K^J. Finally, we can decompose the changes in inequality into aggregate and detailed compositional and structural effects (Blinder 1973; Oaxaca 1973). According to the RIF decomposition described in Firpo et al. (2007, 2009), Fortin et. al (2011) and the modifications proposed by Gradin (2020)[7], the aggregate decomposition is given by:

[7] The RIF decomposition analysis is based on the linearity assumption, which set that per capita contributions are independent from group population size. We need to relax this assumption to measure correctly the changes that are accounted for compositional effects (change in the size of population) and structural effects. To achieve this, Firpo et. al (2007) proposed a framework to reweight the counterfactual distribution.

$$\Delta G = CE + DE = \sum_k \left(\frac{N'_k}{N'} - \frac{N_k}{N}\right)\beta'_k + \sum_k (\beta'_k - \beta_k)$$

This means that the increase in the Gini inequality index of total extended individual well-being is equal to a first term, CE, which is the aggregate compositional effect, i.e. the result of changes in population shares while keeping the final average group inequality contributions constant. The second term, DE, is the structural effect and it accounts for the impact on the Gini coefficient of changes in the per capita group contributions, maintaining the initial group of population shares constant. In our case, the structural effect indicates the impact of changes in group income distributions, and therefore will be considered as the distributional effect. This effect is crucial to measure how the individuals change their position in the distribution when each source of well-being is added.

5. Results

5.1. Extended gross income and standard gross income

Table 1 and Table 2 reveal the differences between both measures. Labour income and public transfers are exactly the same for each definition, so that annuatized wealth substitute capital income in our measure. It implies that extended well-being is around 23 percent higher than standard concept (the difference between relative weights). This is the potential consumption generated by wealth. Other authors such as Gallusser and Krapf (2019) obtain that their joint measure is 28 percent higher than traditional income concept for Switzerland between 2005 and 2015. Wolff et. al (2012) show that annuatized wealth represented 36 percent of standard gross income for US in 2007. In our case is 35 percent in 2008.

[Table 1 and Table 2 about here]

Those tables also show that both measures experienced a steady growth during the precrisis years (until 2008) but started to decline in 2011, reaching in 2014, lower levels than in 2005. The expansionary period after 2014 allowed to recover some of the income and wealth levels lost during the Great Recession, although it was insufficient to equalise the levels in 2008 nor

Given our context, the previous expression can be written: $CE_R = \sum_k \left(\frac{N'_k}{N'}\beta'_k - \frac{N_k}{N}\hat{\beta_k}\right) = \sum_k \left(\frac{N'_k}{N'} - \frac{N_k}{N}\right)\beta'_k + \sum_k \frac{N_k}{N}(\beta'_k - \hat{\beta_k}) = CE + e$; $DE_R = \sum_k \frac{N_k}{N}\left(\hat{\beta_k} - \beta_k\right) = \sum_k \frac{N_k}{N}(\beta'_k - \beta_k) - \sum_k \frac{N_k}{N}\left(\beta'_k - \hat{\beta_k}\right) = SE - e$; Therefore, only when $e = 0$, the RIF decomposition and the reweighting procedure will be the same. For our case, we obtain a reweighting error equal to cero.

2011. By components, labour income gained relevance in absolute terms during the expansionary years, although dropped sharply after 2008 due to the deteriorating conditions in the labour market and the dramatic increase of the unemployment rate. Although the unemployment rates fell after 2014, the recovery of wages and also in self-employment income in 2017 was weak to reach the levels in 2008 and 2014. In contrast, public transfers increased their contribution to the since 2005 until 2014. The unemployment benefits tried to compensate the fall in wages, although it highlights the great importance of public pensions in both measures after 2008, revealing such as the principal cushioning component of the crisis effects. The change in the business cycle reduced the importance of unemployment benefits in 2017, what diminish the relative importance of public transfers for both measures.

In terms of wealth annuities, their weight in our extended measure of well-being remain constant until 2011, when it declined slightly, following the general lost in net wealth experienced by Spanish households during the Great Recession (Amuedo-Dorantes and Borra 2018). The results by type of annuity, correspond to the evolution of each wealth component after the collapse of the housing market after 2008. The high rate of return of secondary housings and the preference for this type of assets, even for those individuals at the top of the distribution (Martínez-Toledano, 2017), rise the weight of real estate annuity up to 2008. The later fall of housing prices change the household wealth composition in favour of financial assets, mainly at the top of the distribution, trying to obtain higher returns (Amuedo-Dorantes and Borra 2018; Martínez-Toledano 2017), what stands out in the results of financial annuities for 2011, 2014 (in a lesser extent) and 2017. However, real estate annuities recovered their importance in relative and absolute terms in 2017, following the economic upward, revealing once again the preference for this type of assets. It highlights decrease of business annuities, which respond to the losses of business failure after 2008. Finally, the gradual increase of imputed rents during this period, expose the importance of this type of assets for the well-being of Spanish households. Even the fall of house prices could not diminish the cost effect of renting a house, standing out the predisposition to owe a house.

Despite the differences, both measures follow the same evolution from 2002 until 2017 (see Figure A.1). The weight of labour income and public transfers is still determinant in our extended measure (more than 70%). The rate of change of capital income (Figure A.2) is more cyclical with sharper changes while the evolution of annuitized wealth did not experience extreme changes observed in capital income, following the same pattern such as labour income. The Kernel density functions (from Figures A.3 to A.8) show that our extended measure

concentrate negatives and higher income values due to the effect of wealth. Low and medium incomes are more concentrated in standard gross income, as we expected.

5.2. A description of extended well-being and household characteristics

Table 3 (summary statistics) shows the sociodemographic changes by household type. We observe that households older and younger than 40 are the most important group in terms of population, although it is gradually decreased during this period. They present high levels of education; whose jobs qualification are mainly medium or high, although the number of members how are unemployed increase considerably after 2008. Those households older than 40 years are the unique group that increase their percentage in the total population, revealing the aging of Spanish society. They mostly have primary education, medium qualified jobs, and they are pensioners or inactive. In contrast, households younger than 40 years old, decreased their weight in total population, they have high level of education although the number of unemployed increased after the financial crisis.

[Table 3 about here]

We also decompose well-being sources by household types (see Figures A.9, A.10 and A.11 in Appendix section). The Great Recession affected considerably those households composed of members older and younger than 40 years old. Their total well-being increased during the economic boom with important increase in labour income and also in wealth. However, their well-being reached the lowest value of this period in 2014, with a dramatic decline in all sources. Their economic well-being did not improve in 2017. Labour income increased slightly especially due to self-employment income. As a consequence, the weight of public transfers declined due to lower mean values of unemployment benefits. Their value of wealth annuities was also lower in 2017, for each type of assets, which was offset by other income sources.

The gainers after the dramatic changes of the Great Recession are households older than 40 years old. They have the same levels of economic well-being in 2017 as in precrisis period. Their well-being increased since 2002 until 2011, but then they lost more than 3000 euros in 2014, although they still had the highest value of well-being. The recovery was sustained by the increase in wages, pensions and wealth annuities. Their main source of well-being are wealth annuities, which represent more than 40% of their total well-being. They were susceptible to the changes in the labour market conditions but they were able to change their well-being composition. They received more public transfers after the Great Recession and they

accumulated real estate and financial assets, which allowed them to smooth the consequences of the crisis.

In contrast, the economic well-being of households younger than 40 years old are clearly determined by labour income, which represented more than 80 percent of our total well-being measure. Therefore, their well-being increased before the financial crash in 2008, when they suffered a steep decline reaching their lowest value in 2014, slightly compensated by unemployment benefits. The decline in the unemployment rates, favoured the return to labour markets of these household members in 2017 (see table 3), which increased their total well-being. This group suffered the most the dramatic conditions of housing market after its collapse. The high amounts of mortgage debt had specific detrimental effects on the youngest households, especially in 2011, when the value of imputed rents was negative. The debt of these young households exceeded the benefits of owing a house, showing their difficulties to purchase the primary residence. The imputed rents for this group gained some relevance in 2014 and 2017, but it is still notably lower than in the rest households.

5.3.Our measure of well-being and inequality

During the last two decades the income distribution in Spain experienced dramatic changes determined clearly by the rapid growth that preceded the Great Recession and the consequences of the economic downturn after 2008. Ayala and Cantó (2018) point out that favourable macroeconomic conditions in the first period did not help to improve the distributional results due to the high incidence of low paid jobs and the lower impact of redistributive polices. Additionally, Alvaredo and Saez (2009) explain that top income earners have accumulated a higher share of total income as the result of the increase in top salaries and realized capital gains since 2000. The inequality increased substantially after the Great Recession, the unemployment growth, rising wage inequality, and the limited capacity of redistributive policies became Spain in one of the most unequal countries in the OECD, remark Ayala and Cantó (2018). These results are in line with the studies that highlights the great dispersion in salaries during the crisis (Bonhomme and Hospido, 2013 and 2017). They conclude that earnings inequality, as measured by the 90/10 percentile ratio, increased by 10 percentage points between 2007 and 2010.

On the other hand, Spanish households experienced also changes in their wealth composition which has also affected their well-being. Amuedo-Dorantes and Borra (2018) describe that wealth inequality had reduced until 2005, rising in 2008 and 2011 during the recession period.

On average, net wealth decreased by 15 percent between 2008 and 2011, and even the top quantile suffered on average a reduction of 20 percent. However, these households had the capability to increase their share of the total country's wealth as they were able to diversify their asset components, what at the end increased wealth inequality. In this vein, Martinez-Toledano (2017) clarify that people at the top distribution substituted financial for housing assets when the housing market collapsed, and compensated the fall in house prices with higher rate of return of financial assets. She concludes that due to the change in wealth composition, higher saving rates across groups and large capital gains, maintain the same high level of wealth concentration of the 1980s in the late 2000s. Another important aspect of wealth inequality is the household structure (Bover, 2010). According to this author, imposing Spanish structure to the U.S. wealth distribution has a limited impact on Gini although it has a significant effect at the top. Interestingly, the differences in wealth distribution between Spain ad U.S. emerges over the life-cycle. In Spain, young people (25-34) are better off at all quartiles, considerably worse off at all quartiles when old (older than 54) and better off in the bottom part of the distribution but worse off at the top when aged in between (35 and 54)

Our extended measure integrates both dimensions to disentangle the changes in households well-being during this convulse period. The inequality indicators reflect the interaction of the components of household income and wealth, so we can observe the changes across the unique distribution, analysing the results explained above and setting the most important factors to account for household well-being.

Table 4 shows the inequality indices obtained for our extended measure, standard gross income and net wealth. Firstly, the share of the bottom 50 percent of the distribution in our measure is not extremely low such as in net wealth, because labour income and public transfers alleviate their lack of wealth. However, they are worse off compared with standard gross income. Particularly concerning is their loss of accumulated wealth at the end of this period, while they maintain their share in standard gross income after 2008 and even they accumulate more extended well-being in 2017 than in 2011 and 2014. For those households at the middle 40% of the distribution, they accumulate more in terms of extended well-being than net wealth but lower than standard gross income. It followed a constant pattern and they did not lose a considerable share of well-being given our extended measure and standard gross income, but they suffer a reduction in net wealth during the Crisis. The top 10 percent of the distribution accumulate a percentage of total well-being lower in our extended measure than in the net wealth variable. We expect this result as the inclusion of labour income and public transfers

compress the distribution eliminating the extreme values observed in net wealth but obtaining higher share than the top 10 percent measured through the standard gross income. They maintain the share of well-being during the period crisis as they could keep their flow of labour income and diversify their wealth portfolio.

[Table 4 about here]

Furthermore, the results for the ratio p90/p10 show similar pattern for the extended measure and standard gross income although our measure represent higher values. The expansionary period (2002-2008) did not help to reduce the inequality as described by Ayala and Cantó (2018). It increased in 2005, and the values in 2008 were higher than in 2002. Moreover, the ratio p90/p10 increased notably in 2011 when the business cycle changed, as also remarked by Bonhomme and Hospido (2013 and 2017). The increase was more pronounced in our extended measure than in standard gross, even the results for net wealth did not change for the period 2008-2011. The recovery period in 2017 reduced the inequality for extended and standard gross income with largest drop in the extended measure, even the ratio p90/p10 increased almost 50% from 2014 until 2017, showing the problems of those at the bottom of the distribution to accumulate wealth, and the importance of debts. Moreover, the ratio p90/p50 show similar evolution for all measures until 2011, when the extended measure for those at the middle of the distribution improved their situation compared with those at the top, while for standard gross income decrease was observed in 2017. The p90/p10 ratio for net wealth increase after 2011, revealing that the recovery of wealth was a phenomenon for those at the top. Finally, the ratio p50/p10 reveals that there is a considerable gap between those in the middle of the distribution and at the bottom in terms of wealth. Also, that we observe only a recovery in 2017 for those at the bottom if we consider our extended measure.

Additionally, Gini index is higher in our extended measure than in standard gross income for all years. Our values of Gini for extended income are slightly higher than those obtained by Kuypers et. al (2019) (0.41). Although, their results are based on 2010, use a constant rate of return for wealth and different data source (HCFS). Regarding net wealth, there was a decrease in inequality from 2002 to 2005, probably associated with the rapid increase in the mean equivalised net wealth described above. This evolution changed dramatically during the Great Recession. The Gini index rise dramatically from 0.56 in 2005 to 0.69 in 2014 and 2017, although the differences between our extended measure and standard gross income did not increase at the same level, which means that there are income components that reduce these inequalities.

5.4.The inequality decomposition

We want to address how those inequality results have affected to households by age structure in Spain. We study the changes of wealth and gross income distributions, separating their influence through our extended measure of well-being. We decompose the evolution of Gini index our extended measure considering two periods: the transition to crisis (2005 and 2011) and from crisis to recovery (2011 and 2017) for each type of household and source of our extended measure. Our variables follow the order established by gross income, firstly by labour income (wages and self-employment), secondly by annuatized wealth (replacing capital income) and finally by public transfers.

The analysis by different sources of our extended measure of well-being reveals some relevant facts. Figure A.19 in the Appendix shows the Gini contribution of each source by year except for the labour income, as it is the first factor we only observe its contribution as the difference between two years. Firstly, we see the increase of labour income inequality since 2008 until 2014 following the results in the literature (Bonhomme and Hospido, 2013 and 2017; Canto and Ayala, 2018). The labour income Gini decreased in 2017, given the reduction in unemployment rates, although the inequality is higher than in 2011. Secondly, it highlights the positive contribution of financial annuities, especially after 2008 as households at the top of the distribution changed their wealth composition, after the real estate collapse, in favour of this type of assets searching for higher interest rates (Amuedo-Dorantes and Borra 2018; Martínez-Toledano 2017). In the opposite, the contribution to inequality of real estate annuities and business income decreased after the economic downturn in 2008. The negative contribution to inequality of imputed rents expose their importance in the composition of household wealth (Anghel et al, 2018; Martinez-Toledano, 2017) and also in the standard livings. This contribution was especially relevant since 2008, what illustrates housing as a secure asset to face unexpected shocks. Finally, table 5 shows the cushioning effects of public transfers since 2008, revealing their importance to reduce inequality. However, the role of automatic stabilizers should be more relevant to support living standards to face changes of business cycle.

On the other hand, the contribution to inequality by population groups (Appendix A, Figure A12), reveals that mixed households are the group with higher contribution to inequality explained partially by their largest proportion in the total population. Households older than 40 is the second group in terms of inequality contribution, and finally the youngest households. More interestingly is to study the changes observed in inequality contribution by households

older than 40 in 2017, the decrease in the contribution of the youngest households, and to address the inequality contribution of mixed households.

Moreover, the contribution of household type by income sources (see Appendix A, Figures A.13 to A.19) reveals interesting results. It is remarkable that the contribution to inequality of the imputed rents and public transfers (Appendix A, figures A.14 and A.17) for younger households are almost cero, compared with the rest groups, for which these sources reduce the inequality. These results stress the constraint of younger households to own their main residence, and also that public transfers do not protect those people. Additionally, the labour income of mixed households contributes considerably to the Gini index across all years, although there is a slight reduction in 2017. Also, the business income and financial income of those households increase the Gini index, while the imputed rents and public transfers reduces it. Interestingly, the imputed rents of older households reduce considerably more the Gini index than in the rest of the groups. This shows the importance of main residence for well-being and that the homeownership rates increase with age (Martinez-Toledano et al., 2019). Additionally, it highlights the increase of the contribution to the inequality of financial income of those households after 2011. Finally, the cushioning effects of the public transfers are perfectly represented by this group, as they are the most common recipients of public pensions, which reduce importantly the inequality.

5.4.1. Compositional and distributional effects

The decomposition by compositional and distributional effects provides more insight into those results. We estimate the contribution matrices for the counterfactual distributions keeping constant either the initial or final population shares. Table 5 and 6 shows the results for these calculations. First, the Gini index increased between 2005-2011 (table 5) by 0.012 points. That change was explained mainly by distributional effects irrespectively the initial group share or final group shares. By population groups, the increase of the proportion of older households (6%) in this period caused the major increase in inequality measured by the CE, partially offset by the decrease of the proportion of other groups. The DE for older households shows that their position in the distribution reduces slightly the inequality. However, the CE are more important than the DE of older households, so the total effect (TE) of this group contributes to the increase of inequality. Therefore, the fact that this group increase their weight in the total population mean is more important than how they are allocated across the distribution. Moreover, the DE of the rest of population groups reveals that their position in the distribution increase inequality, as their CE partially offset the high contribution in this view of older households. This means

that the dispersion of income and wealth of mixed households and younger households had an important influence in the increase of the inequality between 2005 and 2011.

By sources, labour income is the major source of inequality contribution considering both effects. Wealth contributes to the reduction in inequality through CE and DE. This result respond to equalizing effects of imputed rents and the lower importance of business and financial income in the total well-being measure. Finally, the DE for public transfers reveal that this source is equally distributed and, therefore reduces the inequality, although the CE increase slightly the Gini index.

[Table 5 about here]

The transition from crisis period (2011) to recovery period (2017) the Gini index increased by 0.014 points. As in the previous period, the changes were determined by DE. By population groups, the CE follow the same pattern as in the previous period although the reduction in population shares of younger and mixed households offset the positive contribution to inequality of older households. If we look at DE, it highlights the important contribution by younger households, which represented 10% of the total Gini index. This shows again that younger households are moving away from the population mean, what have important consequences for the overall inequality, as showed by the TE. In this period the contribution by older households is also relevant, explained by CE as they are increasing in the total population share. Mixed households reduces the inequality due to CE, which offset the increase of inequality considering DE.

Finally, by sources, labour income is the major source of inequality contribution considering especially DE, which reflects the high dispersion of this source. The total contribution of labour income represents 14% of the Gini index. Additionally, wealth reduces the inequality, for compositional and distributional effects. It is remarkable the importance of imputed rents to reduce the Gini index, and also the higher contribution of business income during the recovery period. Finally, public transfers reduced the Gini index due to distributional effects, while the size of this source, which could be interpreted as the coverage of this source, had no effect.

[Table 6 about here]

6. Conclusions

In this paper we use the joint distribution of income and wealth to assess the living standards' trends in Spain for different generations using the Spanish Survey of Household Finances

(*Encuesta Financiera de las Familias, EFF*) from year 2002 to 2017. We quantify the potential consumption for Spain, so that we can determine the available economic resources to face unexpected shocks by households whose all members are older than 40 years old, households younger than 40 years old, and households with members older and younger than 40 years old. Our extended well-being measure shows the importance of non-labour concepts since 2002 up to 2017, as this source represented more than 25% of the total well-being during this period. The constant increase of imputed rents confirms the relevance of the main residence as a constant flow of well-being in Spain. This growth has been steady even the dramatic context in the real estate market after the financial crisis. Additionally, the extraordinary importance of the rest of real estate assets shows that they act as one of the main investments of Spanish households. However, due to the drastic drop in the housing prices their weight in our extended well-being measure dropped to levels before the crisis. Therefore, Spanish households changed their wealth portfolio in favour of financial assets, which in 2017 represented almost 7% of total well-being. Moreover, we find that the drop of labour income as a result of the fall in employment and deterioration of the labour market conditions, was partially offset by the prominence of public transfers and the importance of imputed rents.

The gainers of this change in the composition of sources well-being have been the older generations, those households older than 40 years old. They have the same levels of economic well-being in 2017 as in precrisis period sustained by the recovery of wages, pensions and wealth annuities. Moreover, older households contribute most to the change in inequality, especially through compositional effects. The fact that this group increase their weight in the total population mean is more important than how they are allocated across the distribution.

In contrast, households younger than 40 years old suffered most the dramatic conditions of Great Recession. Their total well-being decreased more than 20% after 2008 due to the fall of labour income. Moreover, mortgage debt had specific detrimental effects on the youngest households, especially in 2011, when the value of imputed rents was negative. Additionally, younger households are moving away from the population mean, which increase the total inequality measured by distributional effects.

The total well-being of mixed households (members older and younger than 40 years old) increased during the economic boom with important rise in labour income and also in wealth. However, their well-being reached the lowest value of this period in 2014, with a dramatic decline in all sources. This group shows the highest contribution to inequality explained

partially their largest proportion in the total population. However, that contribution decreased after 2014.

By well-being source, we observe that public transfers contributed substantially to the change in inequality especially through distributional effects, so those who received this source was deviating from the population mean. Surprisingly, wealth has an equalizing effect between these two periods explained by the relevance of the main residence in the household well-being. These preliminary results show that there is an increasing gap between the young and old generations determined by the fall of labour income and the process of accumulation of wealth among older cohorts.

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Tables

Table 1. Weight of each source of well-being as percentage of our extended measure, 2002-2017

	2002	2005	2008	2011	2014	2017
Extended gross income	21691.61	24080.38	26125.75	25198.97	22770.54	24195.03
Labour income	59.3%	59.0%	58.8%	54.1%	52.5%	52.9%
Wages	47.90%	48.55%	47.35%	44.69%	44.41%	43.65%
Self-employment	11.38%	10.44%	11.44%	9.46%	8.12%	9.29%
Public transfers	10.1%	9.9%	11.7%	15.6%	19.1%	17.5%
Pensions	9.30%	8.73%	10.59%	12.38%	15.52%	15.42%
Unemployment	0.78%	1.18%	1.12%	3.19%	3.56%	2.07%
Wealth	27.4%	28.0%	27.1%	27.7%	26.3%	26.3%
Financial annuity	5.98%	4.53%	4.55%	6.88%	6.60%	6.83%
Imputed rents	5.14%	5.22%	5.71%	6.17%	8.05%	7.59%
Real estate annuity	11.27%	11.74%	11.67%	10.70%	8.49%	9.06%
Business income	5.05%	6.48%	5.15%	3.98%	3.20%	2.78%
Other income	3.19%	3.12%	2.41%	2.55%	2.05%	3.31%

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF)

Table 2. Weight of each source of well-being as percentage of standard gross income, 2002-2017

	2002	2005	2008	2011	2014	2017
Standard gross income	16237	18365	20000	19363	17542	18890
Labour income	79.2%	77.3%	76.8%	70.5%	68.2%	67.8%
Wages	64.0%	63.7%	61.9%	58.2%	57.6%	55.9%
Self-employment	15.2%	13.7%	14.9%	12.3%	10.5%	11.9%
Capital income	3.1%	5.6%	4.8%	5.9%	4.4%	5.5%
Public transfers	13.5%	13.0%	15.3%	20.3%	24.8%	22.4%
Pensions	12.4%	11.4%	13.8%	16.1%	20.2%	19.8%
Unemployment	1.0%	1.6%	1.5%	4.2%	4.6%	2.6%
Other income	4.3%	4.1%	3.1%	3.3%	2.7%	4.2%

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF)

Table 3. Summary statistics by household type

	Households < 40						Households >&< 40						Households >40					
Year	2002	2005	2008	2011	2014	2017	2002	2005	2008	2011	2014	2017	2002	2005	2008	2011	2014	2017
Education																		
Primary	0.17	0.15	0.17	0.21	0.16	0.16	0.33	0.25	0.28	0.25	0.24	0.20	0.69	0.63	0.60	0.58	0.56	0.49
Secondary	0.63	0.63	0.62	0.56	0.57	0.59	0.50	0.56	0.55	0.55	0.54	0.57	0.23	0.28	0.28	0.27	0.28	0.36
Tertiary	0.21	0.22	0.22	0.22	0.27	0.25	0.16	0.19	0.18	0.19	0.23	0.23	0.08	0.09	0.12	0.14	0.16	0.16
Job qualification																		
High	0.22	0.23	0.23	0.24	0.29	0.32	0.16	0.22	0.20	0.22	0.26	0.27	0.13	0.18	0.17	0.20	0.25	0.27
Medium	0.44	0.42	0.50	0.53	0.45	0.45	0.33	0.35	0.40	0.43	0.38	0.39	0.35	0.32	0.43	0.46	0.40	0.40
Low	0.25	0.31	0.24	0.20	0.24	0.21	0.25	0.26	0.22	0.21	0.21	0.20	0.26	0.27	0.23	0.22	0.23	0.24
Economic activity																		
Employed	0.60	0.66	0.64	0.61	0.63	0.68	0.40	0.48	0.47	0.43	0.43	0.48	0.14	0.16	0.19	0.17	0.17	0.19
Self-employed	0.11	0.09	0.10	0.14	0.07	0.09	0.08	0.09	0.10	0.08	0.10	0.10	0.04	0.04	0.05	0.07	0.05	0.07
Unemployed	0.10	0.09	0.16	0.19	0.25	0.20	0.09	0.07	0.12	0.20	0.21	0.15	0.04	0.03	0.05	0.08	0.10	0.08
Pensioner	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.06	0.06	0.05	0.06	0.41	0.43	0.39	0.46	0.44	0.43
Inactive	0.20	0.16	0.11	0.07	0.05	0.03	0.35	0.29	0.27	0.23	0.23	0.23	0.36	0.33	0.31	0.22	0.24	0.22
Household size	3.13	3.27	3.40	3.34	3.19	3.18	4.24	4.07	3.88	3.83	3.80	3.82	1.83	1.76	1.76	1.73	1.73	1.79
% Total population	0.22	0.23	0.23	0.21	0.18	0.16	0.6	0.57	0.56	0.55	0.56	0.56	0.18	0.19	0.22	0.25	0.27	0.28

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).
Notes: Education, job qualification and variables related with economic activity are proportions of adult members in each household with this particular characteristic. As it is equivalised measure, children lower than 16 years old have in their individual observation their parent's characteristics

Table 4. Inequality measures for equivalised extended well-being, standard gross and net wealth

	Extended well-being						Standard gross income						Net Wealth					
	2002	2005	2008	2011	2014	2017	2002	2005	2008	2011	2014	2017	2002	2005	2008	2011	2014	2017
Bottom 50%	0.23	0.22	0.23	0.21	0.21	0.22	0.26	0.25	0.25	0.23	0.23	0.23	0.13	0.13	0.11	0.10	0.07	0.06
Mid 40%	0.45	0.44	0.43	0.44	0.44	0.44	0.47	0.46	0.45	0.46	0.47	0.46	0.45	0.45	0.44	0.42	0.39	0.39
Top 10%	0.32	0.34	0.34	0.35	0.34	0.34	0.28	0.29	0.3	0.31	0.30	0.30	0.41	0.41	0.44	0.47	0.53	0.54
p90/p10	5.38	5.99	5.53	6.94	6.85	6.48	4.9	5.35	5.04	6.1	6.14	5.95	34.83	33.52	33.64	33.64	37.75	75.94
p90/p50	2.39	2.41	2.47	2.61	2.52	2.40	2.21	2.18	2.28	2.36	2.46	2.34	3.40	2.98	3.39	3.39	3.93	4.05
p50/p10	2.25	2.49	2.24	2.65	2.72	2.70	2.22	2.46	2.21	2.59	2.49	2.55	10.22	11.23	9.92	9.92	9.60	18.73
Gini	0.4	0.43	0.42	0.44	0.44	0.43	0.36	0.38	0.38	0.41	0.40	0.40	0.57	0.56	0.60	0.62	0.69	0.69

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Table 5: Oaxaca-Blinder RIF decomposition of changes in Gini (and contributions by groups and by sources): total, compositional (CE), and distributional (DE) effects, 2005-2011

	Initial group shares						Final group shares					
	CE	*Total change/Gini*	**DE**	*Total change/Gini*	**Total**	Total change/Gini	**CE**	*Total change/Gini*	**DE**	*Total change/Gini*	**Total**	*Total change/Gini*
Aggregate	0.004	*1%*	0.008	*2%*	0.012	*3%*	0.005	*1%*	0.007	2%	0.012	6%
By group												
Households >&< 40	-0.012	*-3%*	0.004	*1%*	-0.008	*-2%*	-0.012	*-3%*	0.004	*1%*	-0.008	*-2%*
Households>40	0.021	*5%*	-0.002	*0%*	0.019	*4%*	0.021	*5%*	-0.002	*-1%*	0.019	*4%*
Households <40	-0.005	*-1%*	0.005	*1%*	0.001	*0%*	-0.004	*-1%*	0.005	*1%*	0.001	*0%*
By source												
Labour income	0.015	*3%*	0.047	*10%*	0.062	*14%*	0.015	*3%*	-0.011	*-2%*	0.062	*14%*
Wealth	-0.006	*-1%*	-0.025	*-6%*	-0.031	*-7%*	-0.005	*-1%*	-0.026	*-6%*	-0.031	*-7%*
Imputed	-0.006	*-1%*	-0.010	*-2%*	-0.016	*-3%*	-0.005	*-1%*	-0.011	*-2%*	-0.016	*-3%*
Real estate	-0.001	*0%*	-0.009	*-2%*	-0.010	*-2%*	0.001	*0%*	-0.010	*-2%*	-0.010	*-2%*
Business	0.001	*0%*	0.005	*1%*	0.005	*1%*	-0.001	*0%*	0.006	*1%*	0.005	*1%*
Financial	0.000	*0%*	-0.010	*-2%*	-0.010	*-2%*	0.000	*0%*	-0.010	*-2%*	-0.010	*-2%*
Public transfers	-0.005	*-1%*	-0.014	*-3%*	-0.019	*-4%*	-0.005	*-1%*	-0.014	*-3%*	-0.019	*-4%*

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Table 6: Oaxaca-Blinder RIF decomposition of changes in Gini (and contributions by groups and by sources): total, compositional (CE), and distributional (DE) effects, 2011-2017

	Initial group shares						Final group shares					
	CE	*Total change/Gini*	**DE**	*Total change/Gini*	**Total**	*Total change/Gini*	**CE**	*Total change/Gini*	**DE**	*Total change/Gini*	**Total**	*Total change/Gini*
Aggregate	-0.039	*-9%*	0.054	*12%*	0.014	*3%*	-0.027	*-6%*	0.041	*9%*	0.014	*6%*
By group												
Households >&< 40	-0.018	*-4%*	0.009	*2%*	-0.010	*-2%*	-0.018	*-4%*	0.008	*2%*	-0.010	*-2%*
Households>40	0.012	*3%*	0.000	*0%*	0.012	*3%*	0.012	*3%*	0.000	*0%*	0.012	*3%*
Households <40	-0.033	*-7%*	0.045	*10%*	0.012	*3%*	-0.021	*-5%*	0.033	*7%*	0.012	*3%*
By source												
Labour income	-0.034	*-8%*	0.094	*21%*	0.059	*14%*	-0.020	*-5%*	-0.011	*-2%*	0.059	*14%*
Wealth	-0.005	*-1%*	0.023	*-5%*	-0.028	*-6%*	-0.005	*-1%*	0.023	*-5%*	-0.028	*-6%*
Imputed	-0.003	*-1%*	0.010	*-2%*	-0.013	*-3%*	-0.002	*-1%*	0.011	*-2%*	-0.013	*-3%*
Real estate	-0.001	*0%*	0.009	*-2%*	-0.009	*-2%*	0.000	*0%*	0.009	*-2%*	-0.009	*-2%*
Business	-0.001	*0%*	0.006	*1%*	0.005	*1%*	-0.002	*0%*	0.006	*1%*	0.005	*1%*
Financial	-0.001	*0%*	0.010	*-2%*	-0.010	*-2%*	-0.001	*0%*	0.009	*-2%*	-0.010	*-2%*
Public transfers	0.000	*0%*	0.018	*-4%*	-0.017	*-4%*	-0.001	*0%*	0.016	*-4%*	-0.017	*-4%*

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Appendix A. Tables.

Table A.1. Mean equivalised sources of income using EFF and ECV

	EFF				ECV			
	2008	2011	2014	2017	2008	2011	2014	2017
Gross income	20000.0	19362.8	17542.3	18890.2	21689.0	20746.2	18345.3	19597.3
Labour income	12371.5	11260.2	10112.1	10561.1	14626.0	13490.7	11235.1	12534.7
Self-employment	2901.2	2314.6	1795.8	2248.4	1925.3	1324.8	1200.3	1576.6
Capital income	923.9	1116.8	746.3	1046.9	1020.0	915.2	777.6	623.5
Unemployment benefits	283.1	780.8	786.1	500.2	608.0	1033.5	1035.9	609.0
Pensions	2687.2	3029.4	3431.7	3732.0	3173.3	3545.0	3728.1	4075.4
Imputed rents	1492.4	1554.7	1832.0	1836.4	2940.9	2801.6	2513.6	2683.0
Total observations	15850.0	15852.0	15536.0	16335.0	35970.0	33250.0	32380.0	34911.0

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV). We harmonise each source of income in the ECV, in order to be the same as in the EFF. We describe the results from 2008 because there is no gross concept in the ECV in previous waves.

Table A.2. Summary statistics based on mean values for 2008

	EFF					ECV				
	CI (LB)	CI(UB)	SD	Min	Max	CI (LB)	CI(UB)	SD	Min	Max
Gross income	19600	20400	24933	0	6641064	20970	21293	15595	-3972	310608
Labour income	12176	12567	12195	0	715900	14054	14345	14062	0	160077
Self-employment	2759	3218	14300	0	1092042	1861	1989	6189	-20008	159772
Capital income	703	1201	15534	0	6630744	937	1043	5083	0	198192
Unemployment	263	320	1760	0	335783	563	617	2572	0	89454
Pensions	2682	2854	5342	0	223710	3109	3238	6228	0	254548
Other income	50	512	709	6322	545102	156	176	962	0	29807
Imputed rents	1452	1532	2570	0	190465	2293	2332	1863	0	16131

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV). We harmonise each source of income in the ECV, in order to be the same as in the EFF.

Table A.3. Summary statistics based on mean values for 2011

	EFF					ECV				
	CI (LB)	CI(UB)	SD	Min	Max	CI (LB)	CI(UB)	SD	Min	Max
Gross income	19009	19717	22081	0	4002747	19991	20341	16654	-48497	318174
Labour income	11037	11484	13944	0	1169554	12943	13251	14667	0	215806
Self-employment	2235	2534	9319	0	1031960	1268	1382	5426	-64497	290768
Capital income	966	1335	11517	0	3776541	831	946	5434	0	244160
Unemployment	750	859	3407	0	343987	1004	1063	2815	0	126949
Pensions	3020	3220	6236	0	495341	3469	3620	7181	0	229191
Other income	552	697	4638	0	1031960	194	212	890	0	30959
Imputed rents	1512	1598	2755	0	307986	2784	2819	1669	0	14592

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida,* ECV). We harmonise each source of income in the ECV, in order to be the same as in the EFF.

Table A.4. Summary statistics based on mean values for 2014

	EFF					ECV				
	CI (LB)	CI(UB)	SD	Min	Max	CI (LB)	CI(UB)	SD	Min	Max
Gross income	17274	17810	16551	0	2062478	17760	18064	13804	-19962	203667
Labour income	9882	10342	14197	0	1925150	10768	11047	12681	0	145634
Self-employment	1746	1954	6414	0	641717	1150	1251	4579	-28166	132256
Capital income	679	859	5551	0	655835	725	785	2742	0	92239
Unemployment	751	869	3644	0	202045	1003	1069	3016	0	109545
Pensions	3426	3643	6712	0	463443	3654	3803	6768	0	74720
Other income	419	488	2173	0	577545	151	166	680	0	17095
Imputed rents	1785	1879	3013	0	160874	2498	2530	1449	0	19915

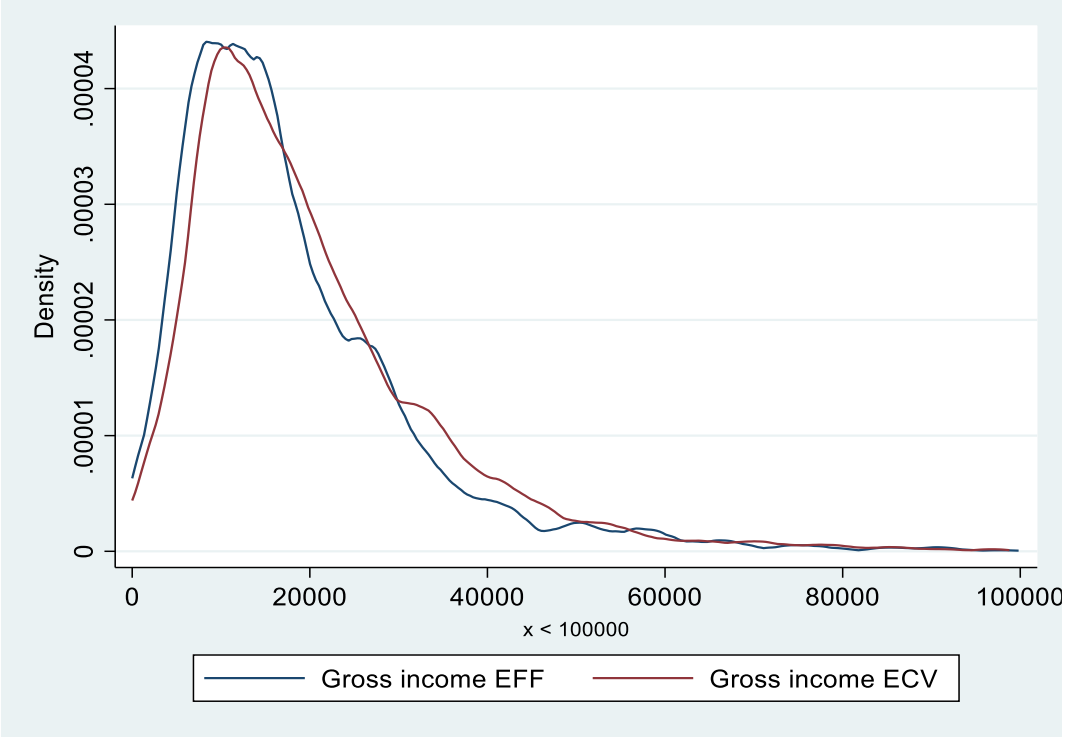
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida,* ECV). We harmonise each source of income in the ECV, in order to be the same as in the EFF

Table A.5. Summary statistics based on mean values for 2017

	EFF					ECV				
	CI (LB)	CI(UB)	SD	Min	Max	CI (LB)	CI(UB)	SD	Min	Max
Gross income	18517	19264	91173	0	3341311	19435	19760	15514.65	0	215427
Labour income	10335	10787	38363	0	2774534	12382	12687	14522.41	0	173259
Self-employment	2078	2419	24794	0	784652	1514	1638	5936	0	215427
Capital income	827	1267	75564	0	3337744	590	651	2708	0	71762
Unemployment	470	530	3050	0	129821	587	603	2067	0	75246
Pensions	3625	3839	5922	0	254031	3997	4152	7389	0	90727
Other income	689	914	7336.7	0	310918	160	174	7697	0	18000
Imputed rents	1788	1885	3174	0	136824	2665	2699	1615	0	12790

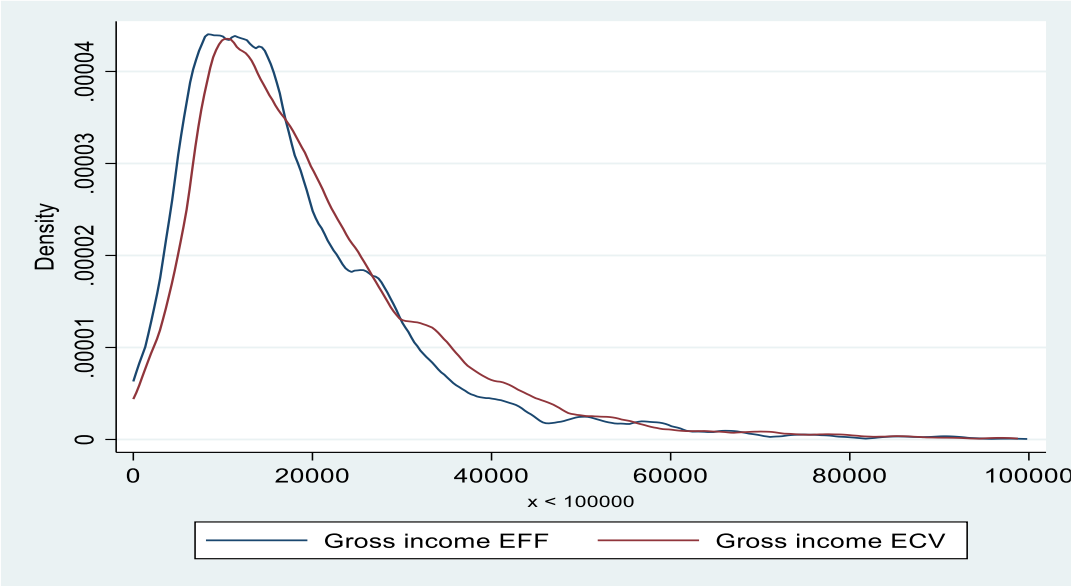
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV). We harmonise each source of income in the ECV, in order to be the same as in the EFF

Table A.6. Kernel density function for 2008



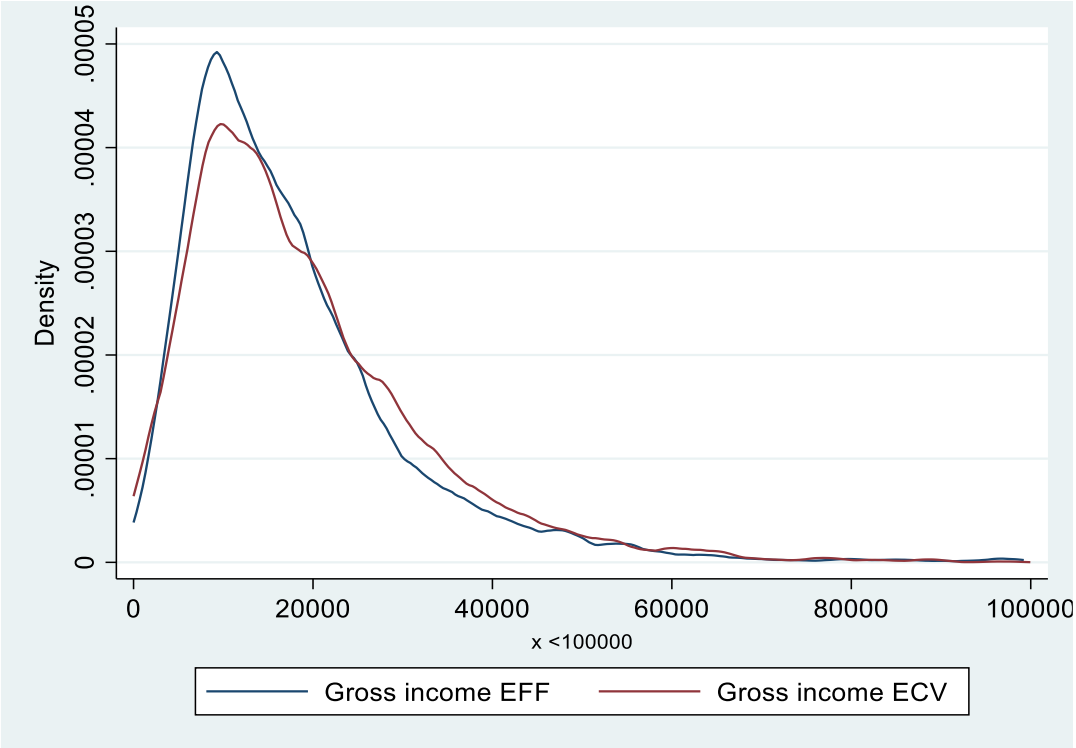
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV).

Table A.7. Kernel desity function for 2011



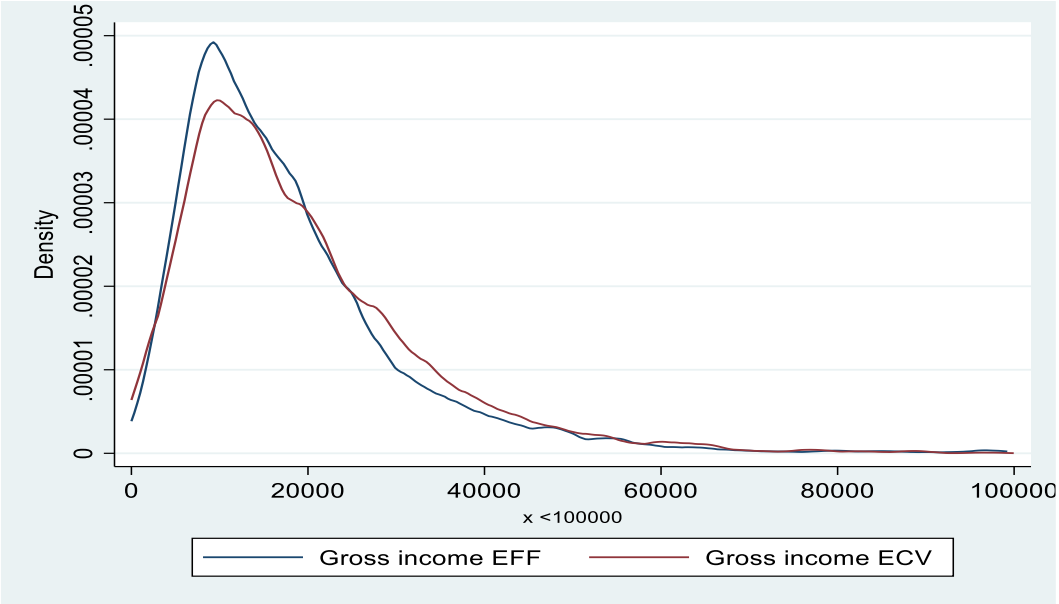
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV).

Table A.8. Kernel density function for 2014



Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV).

Table A.9. Kernel density function for 2017



Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV).

Table A.10. Inequality measures for equivalised gross income using EFF and ECV

	EFF				ECV			
	2008	2011	2014	2017	2008	2011	2014	2017
Bottom 50%	0.25	0.23	0.23	0.23	0.26	0.24	0.23	0.24
Mid 40%	0.45	0.46	0.47	0.46	0.48	0.48	0.49	0.49
Top 10%	0.3	0.31	0.30	0.30	0.26	0.27	0.27	0.27
p90/p10	5.04	6.1	6.14	5.95	5.24	5.62	6.83	6.32
p90/p50	2.28	2.36	2.46	2.34	2.29	2.27	2.38	2.3
p50/p10	2.21	2.59	2.49	2.55	2.35	2.46	2.86	2.73
Gini	0.38	0.41	0.40	0.40	0.35	0.37	0.38	0.37

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) and Spanish Living Conditions Survey (*Encuesta de Condiciones de Vida*, ECV).

Table A.11. Average rate of return by asset type (in percent)

	2002	2005	2008	2011	2014	2017
Real estate	3.3	3.7	2.7	1.8	1.5	1.4
Financial assets	2.6	2.7	2.9	2.4	2.3	2.2
Business assets	7.1	7.1	7.1	3	3	3
Mortgage debt	3.3	3.3	3.8	3.8	3.5	3.2
Other debt	8.0	7.9	8.6	8.6	8.5	8.2

Source: Own construction based on information published by Bank of Spain

We aim to capture the macroeconomic trend of wealth and its importance for household sector according to according to the System of National Accounts (SNA)[8]. The rate of return[9] is weighted by the importance of a particular asset in the household sector in National Accounts (code S.14). We exclude non-profit organisation sector (code S.15) following Martinez-Toledano (2019). There is a higher level of disaggregation when both sectors are included. For instance, we may know the weight of private pensions in the balance sheet of both sectors but it is not possible when they are treated separately. Therefore, such as the above-mentioned author, we assume that, following our example, they are proportional to the values of households' insurance systems and pensions in the balance sheet of households and non-profit institutions.

Real estate: is the result of the revaluation of household real-estate wealth (taken from Financial Accounts table 16_9.6) divided by the household real-estate wealth (taken from Financial Accounts table 16_6.4). The benchmark year for this calculation is 1998.Therefore, the outcome for 2002 is the average rate of return from 1998 up 2002, for 2005, is the average from 1998 until 2005, and so on.

Financial assets: the weighted average of rate of returns on deposits, governments bonds, stocks, non-listed shares, investment funds, life insurance, pensions funds and financial derivatives. The weight is the proportion of each asset in the total financial assets in National Accounts as explained in the data section. The changes in stock prices and the rate of return of investment funds are calculated from 1998 using the financial data published by the Bank of Spain. We use the same source for deposits but the data is available from 2003, so we assume this data for 2002. For pensions funds, the average rate of return is calculated from the data published by

[8] This information is published by Bank of Spain.

Directorate-General for Insurance and Pension Funds (*Dirección General de Seguros y Fondos de Pensiones*, DGSFP) from 2001 (the first year of data availability). For life insurance: 1+ rate of inflation. To calculate the rate of return of non-listed shares we assume that follows the revaluation of total financial assets in the National Accounts from 1998. Finally, we use the information of the Bank of Spain to set the rate of return of financial derivatives.

Business assets: we use the rate of return of business assets published by Martinez-Toledano (2019)

Mortgage debt: the average rate of return of the Annual Percentage Rate (APR) (*Tasa Anual Equivalente* (TAE)) of mortgage debt, data provided by the bank of Spain from 2003.

Other debt: the average rate of return of consumer credit, published by the bank of Spain from 2003.

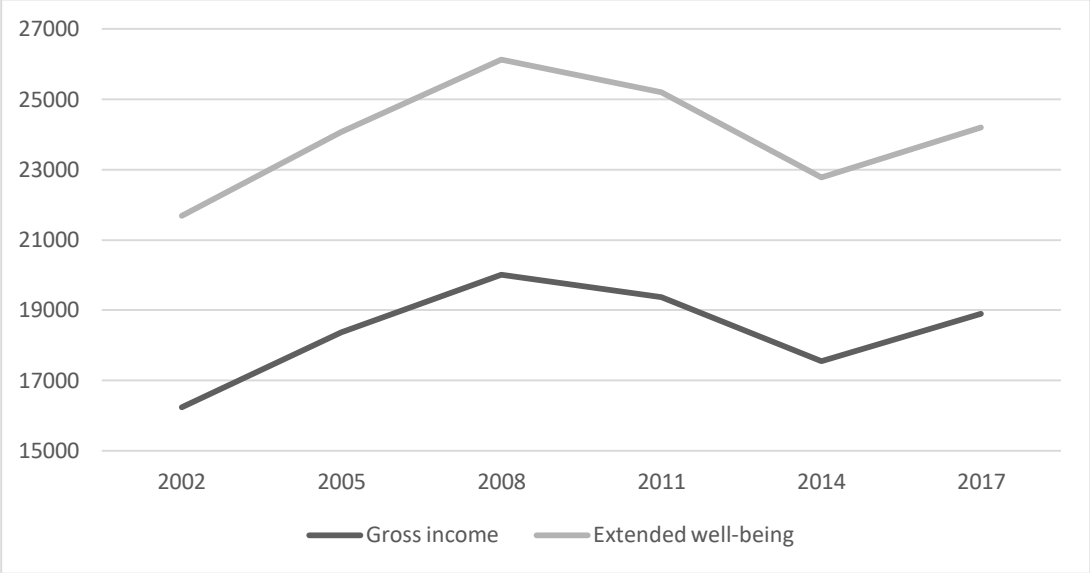
Table A.12. Rate of return of financial assets

	Deposits	Government Bonds -10 years	Listed shares	Non-listed shares	Investment funds	Life insurance	Pension funds	Financial derivatives
2002	1.9%	5.1%	6.1%	2.0%	2.8%	3.8%	1.0%	5.3%
2005	2.0%	4.5%	6.0%	1.9%	2.2%	4.0%	2.6%	2.9%
2008	2.8%	4.3%	9.9%	2.0%	2.8%	4.1%	1.8%	6.2%
2011	2.9%	4.3%	5.5%	1.8%	2.4%	3.8%	2.4%	4.8%
2014	2.7%	4.4%	4.7%	1.4%	2.7%	3.6%	2.6%	5.3%
2017	2.1%	3.8%	3.9%	1.4%	2.6%	3.2%	2.6%	5.2%

Source: Own construction based on information published by Bank of Spain

APPENDIX A. FIGURES

Figure A1. Household equivalized gross income and extended well-being, 2002-2017.

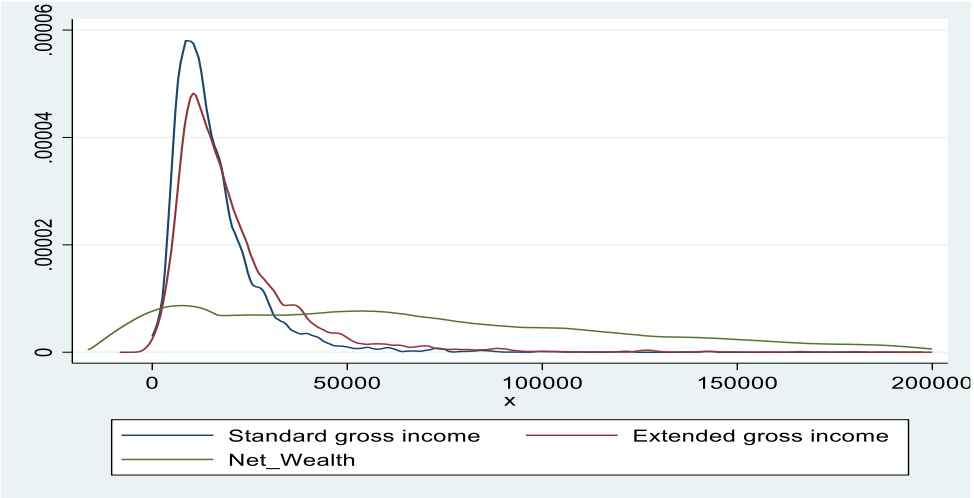


Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) from 2002 to 2017.
Notes: Extended well-being is the sum of labour income, self-employment, pensions, unemployment benefits, real estate annuities, financial annuities and imputed rents. Gross income includes the labour income, self-employment, capital income, pensions and unemployment benefits

Figure A2. Rate of change by income source

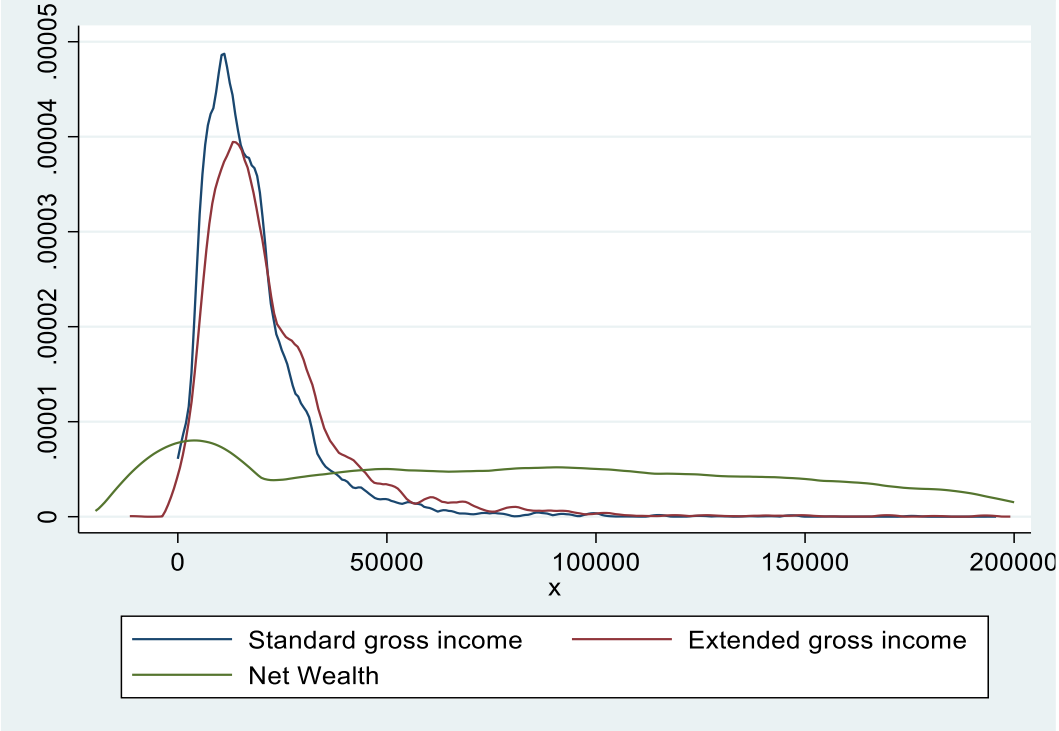
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF) from 2002 to 2017.
Notes: Annuitized wealth is the sum of real estate annuities, financial annuities and imputed rents. Labour income is the sum of wages and self-employment. Public transfers is the sum of unemployment benefits and pensions

Figure A.3. Kernel density function for 2002



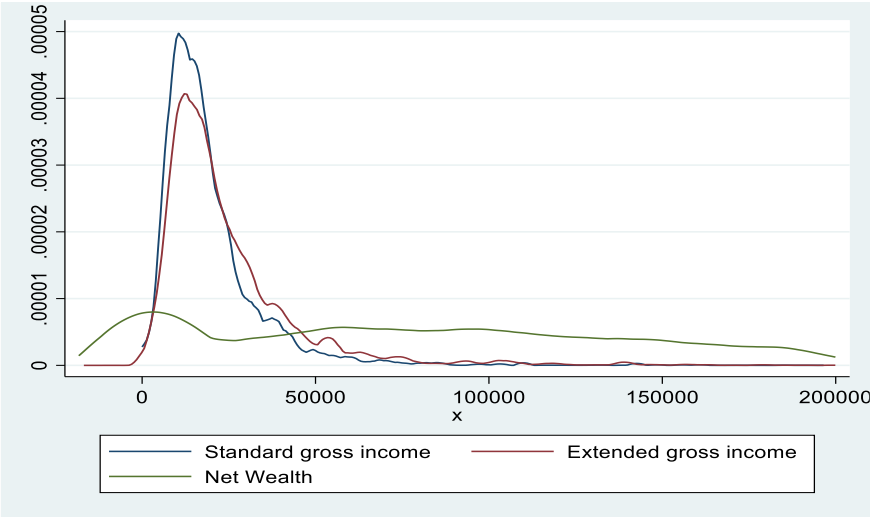
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure A.4. Kernel density function for 2005



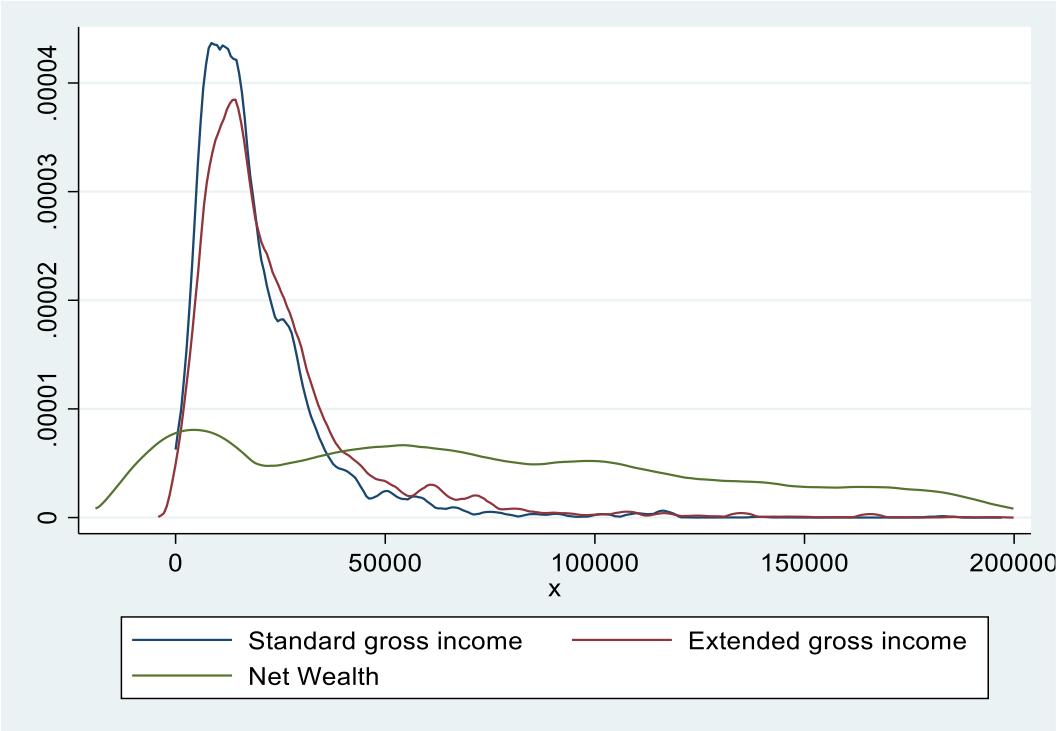
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure A.5. Kernel density function for 2008



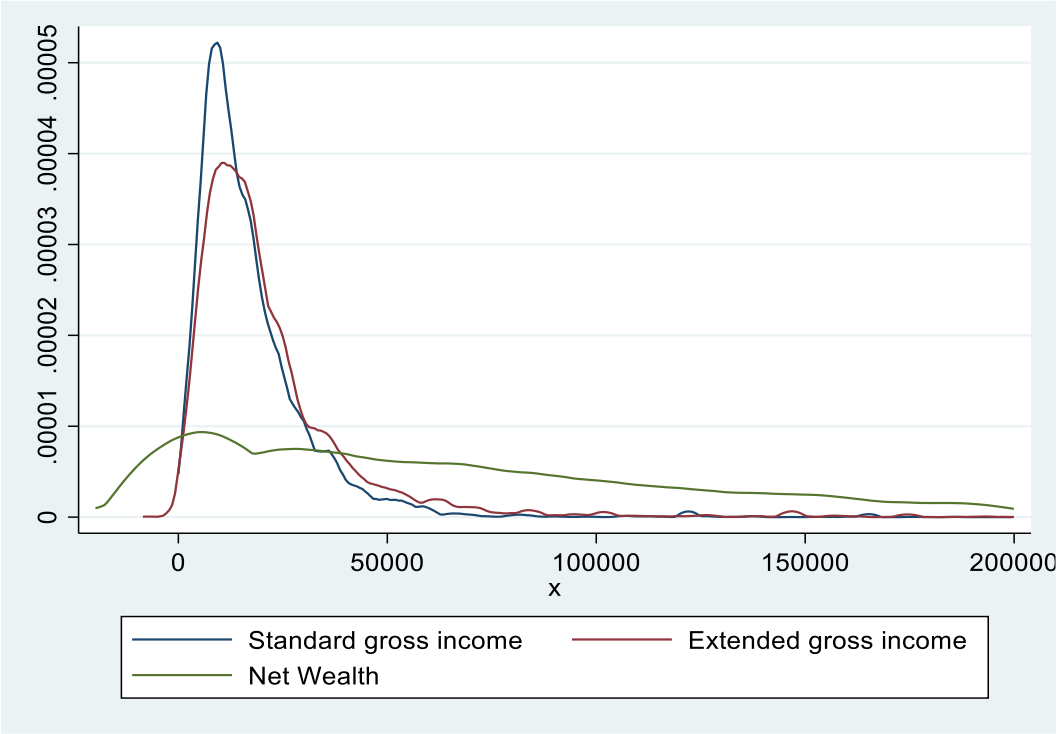
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure A.6. Kernel density function for 2011



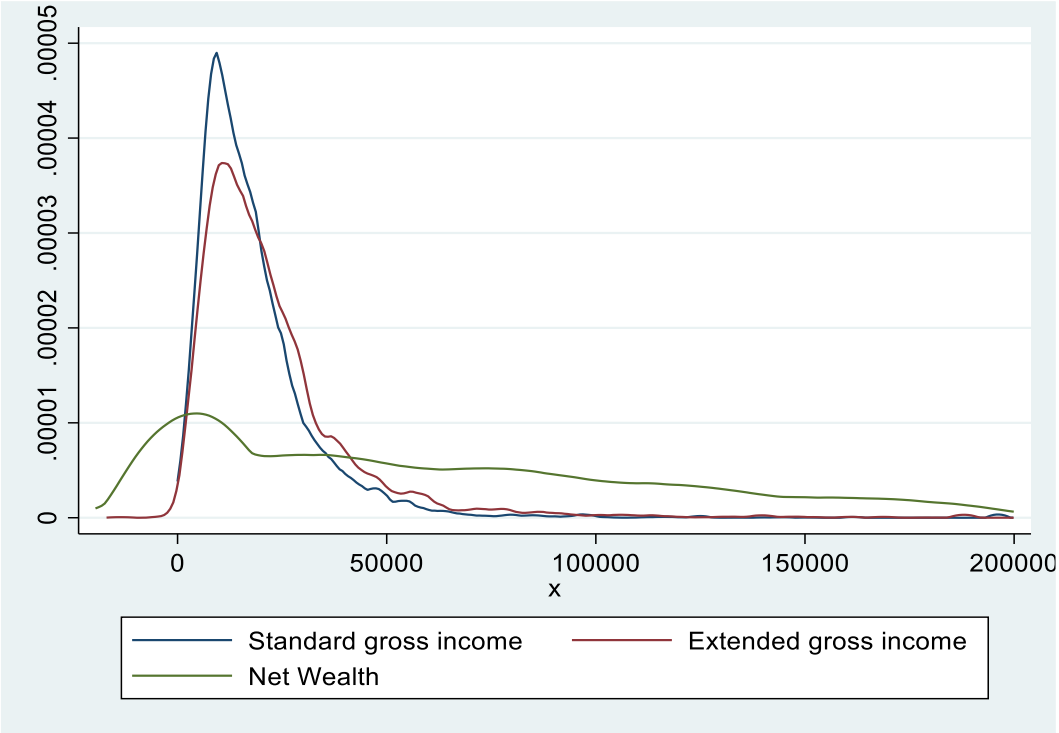
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF)

Figure A.7. Kernel density function for 2014



Source: Own construction using the *Encuesta Financiera de las Familias* (EFF)

Figure A.8. Kernel density function for 2017



Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 9. Extended household equivalized well-being by sources, 2002-2017. Household members younger than 40 years old

Household <40	2002	2005	2008	2011	2014	2017
Extended gross income	19151.0	19039.0	20038.2	18960.0	16778.9	18178.2
Labour income	87.6%	89.3%	86.1%	82.8%	86.3%	87.7%
Wages	72.6%	78.0%	75.3%	69.4%	77.2%	80.9%
Self-employment	15.0%	11.2%	10.9%	13.5%	9.0%	6.8%
Public transfers	1.4%	0.8%	2.3%	5.9%	6.4%	4.0%
Pensions	0.5%	0.3%	0.2%	0.3%	0.2%	0.4%
Desempleo	0.9%	0.5%	2.2%	5.6%	6.2%	3.6%
Wealth	10.0%	9.3%	7.8%	7.0%	4.8%	5.7%
Financial annuity	1.0%	0.9%	1.3%	2.0%	0.9%	0.8%
Impute rents	2.2%	1.5%	1.6%	-0.1%	1.6%	3.0%
Real estate annuity	2.7%	3.5%	2.3%	2.1%	0.4%	0.8%
Business income	4.1%	3.4%	2.6%	3.0%	1.9%	1.2%
Other income	1.1%	0.6%	3.7%	4.2%	2.5%	2.4%

Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 10. Extended household equivalized well-being by sources, 2002-2017. Household members older than 40 years old

Household >40	2002	2005	2008	2011	2014	2017
Extended gross income	24037.7	25471.5	31695.7	32732.5	29399.2	32601.5
Labour income	23.2%	25.3%	27.7%	24.2%	21.3%	24.6%
Wages	19.0%	20.2%	21.1%	18.9%	17.9%	19.2%
Self-employment	4.2%	5.2%	6.6%	5.2%	3.4%	5.4%
Public transfers	25.2%	25.8%	25.0%	28.8%	35.6%	31.4%
Pensions	24.2%	25.3%	24.4%	27.2%	33.1%	30.1%
Unemployment	1.0%	0.6%	0.6%	1.6%	2.5%	1.2%
Wealth	45.1%	42.6%	44.8%	44.9%	41.0%	40.8%
Financial annuity	11.6%	9.7%	8.9%	13.1%	11.5%	12.5%
Impute rents	7.5%	8.7%	9.0%	9.6%	11.4%	9.7%
Real estate annuity	20.4%	20.5%	21.6%	19.2%	15.3%	15.8%
Business income	5.5%	3.7%	5.2%	2.8%	2.8%	2.7%
Other income	6.5%	6.2%	2.5%	2.2%	2.1%	3.2%

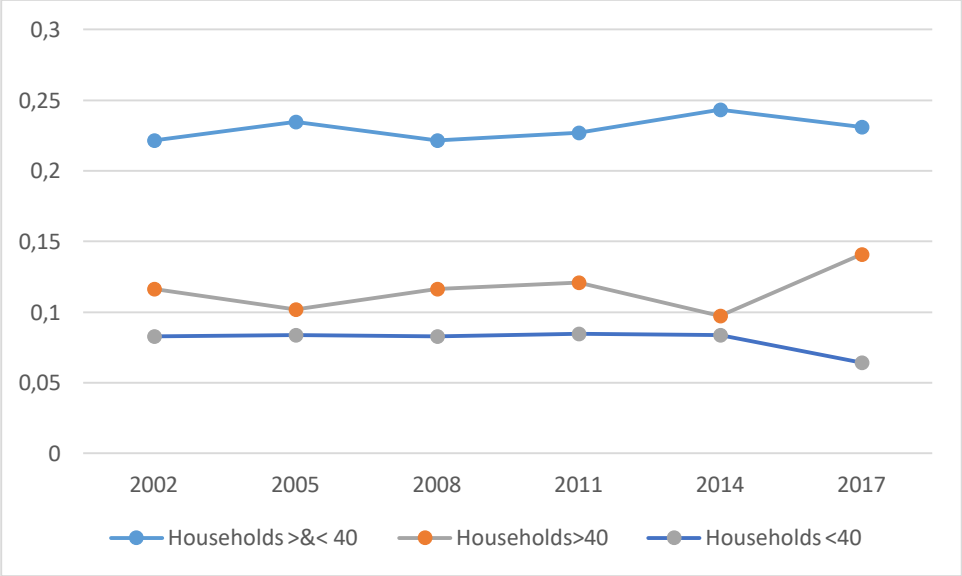
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 11. Extended household equivalized well-being by sources, 2002-2017. Household members older and younger than 40 years old

Household 40>&< 40	2002	2005	2008	2011	2014	2017
Extended gross income	21900.7	25531.9	26437.4	24187.3	21475.7	21618.5
Labour income	62.3%	61.8%	64.9%	63.8%	64.8%	66.4%
Wages	49.7%	49.8%	51.0%	53.0%	53.8%	53.6%
Self-employment	12.6%	12.0%	13.9%	10.8%	11.0%	12.8%
Public transfers	7.8%	7.1%	8.4%	10.4%	11.3%	10.1%
Pensions	7.1%	5.5%	7.4%	7.0%	7.7%	7.7%
Unemployment	0.7%	1.6%	1.0%	3.4%	3.6%	2.3%
Wealth	27.1%	28.3%	24.8%	23.5%	22.0%	20.0%
Financial annuity	5.7%	3.8%	3.5%	4.5%	4.8%	3.9%
Impute rents	5.3%	5.1%	5.4%	5.9%	7.4%	7.1%
Real estate annuity	10.9%	11.1%	9.9%	8.1%	6.0%	5.8%
Business income	5.2%	8.3%	5.9%	5.0%	3.8%	3.2%
Other income	2.8%	2.8%	2.0%	2.3%	1.9%	3.5%

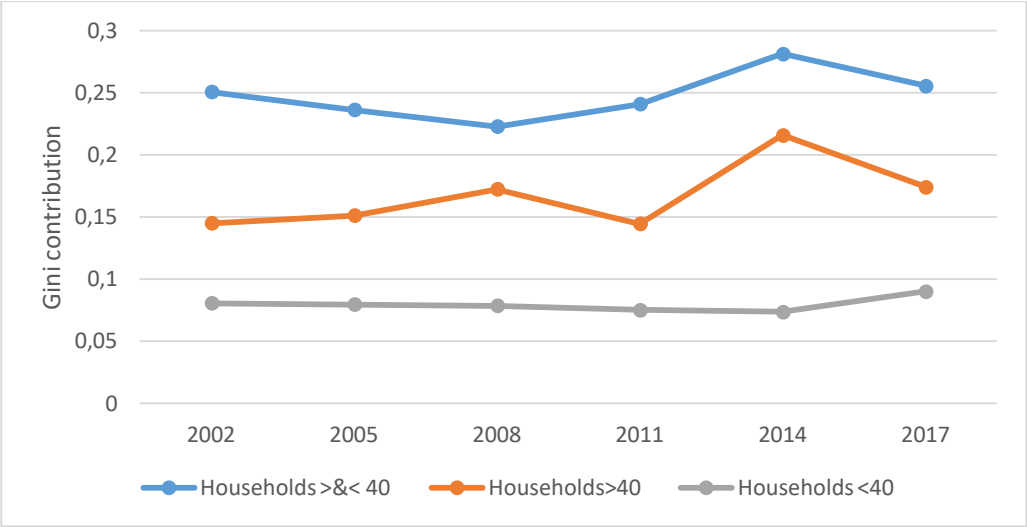
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 12. Contribution to inequality by population groups



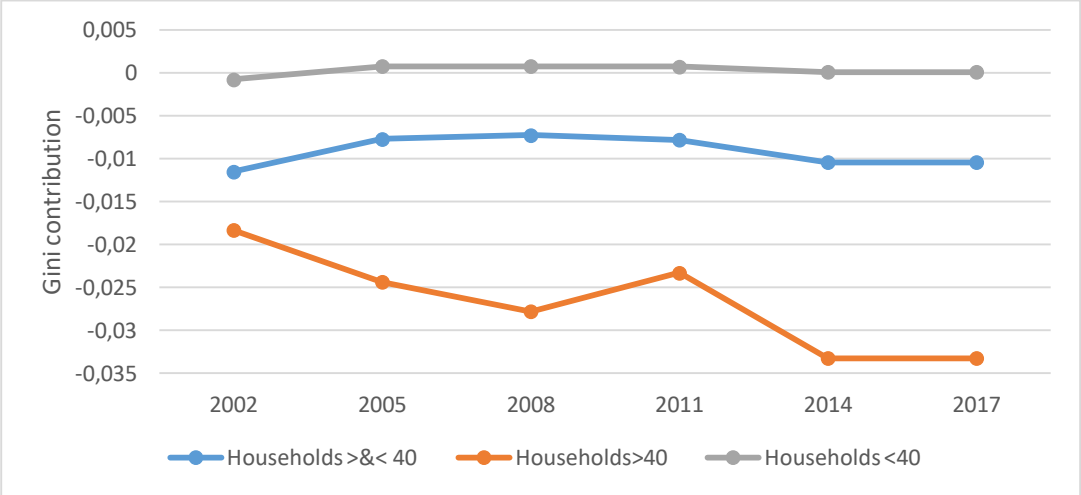
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 13. Contribution to inequality by population groups and labour income



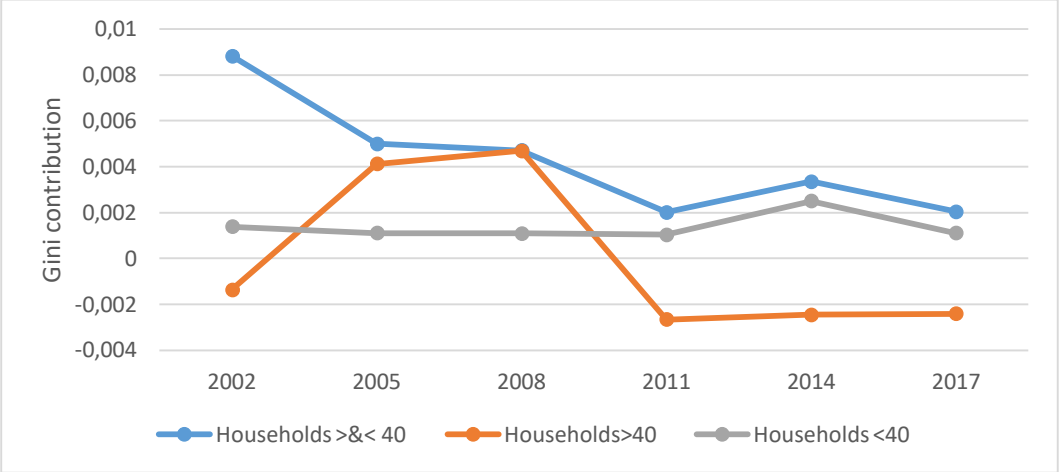
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 14. Contribution to inequality by population groups and imputed rents



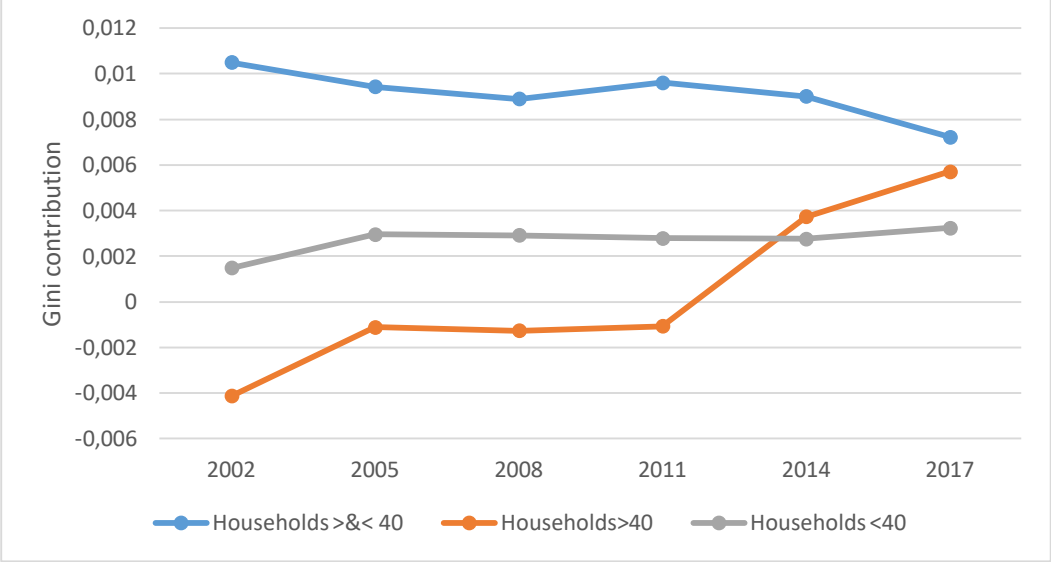
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 15. Contribution to inequality by population groups and real estate income



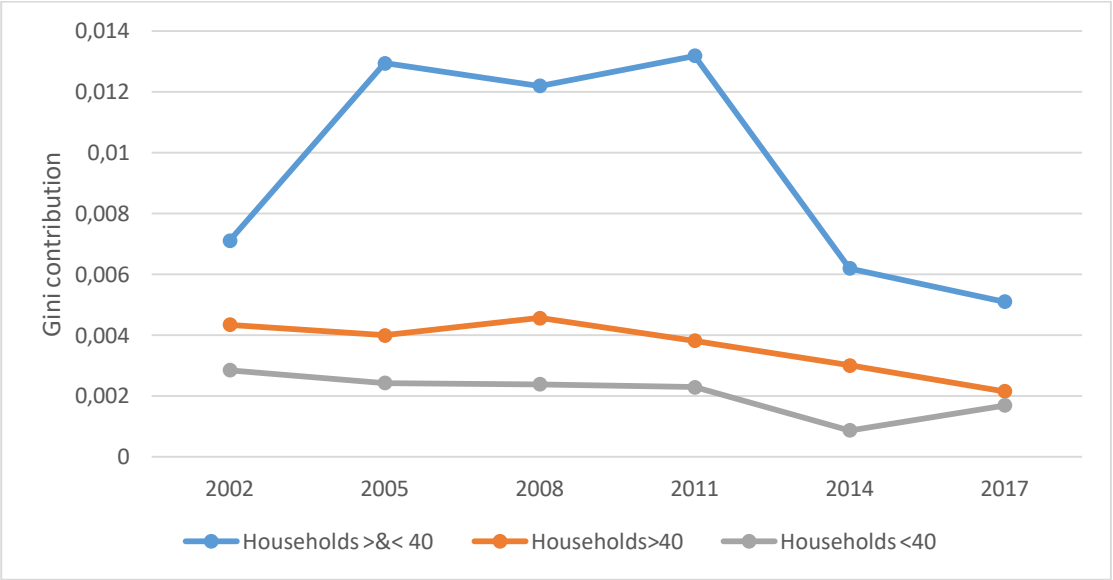
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 16. Contribution to inequality by population groups and financial income



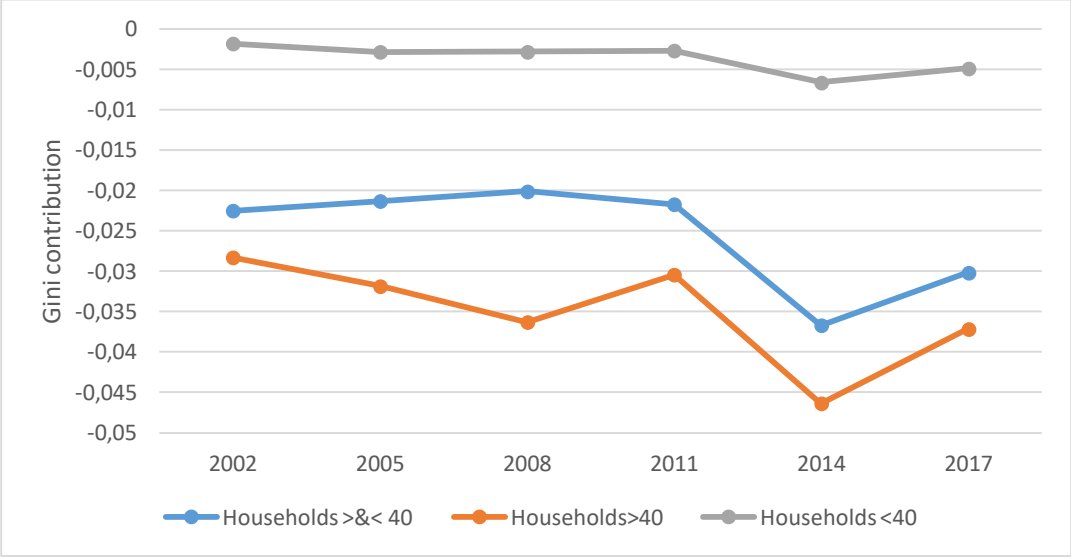
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 17. Contribution to inequality by population groups and business income



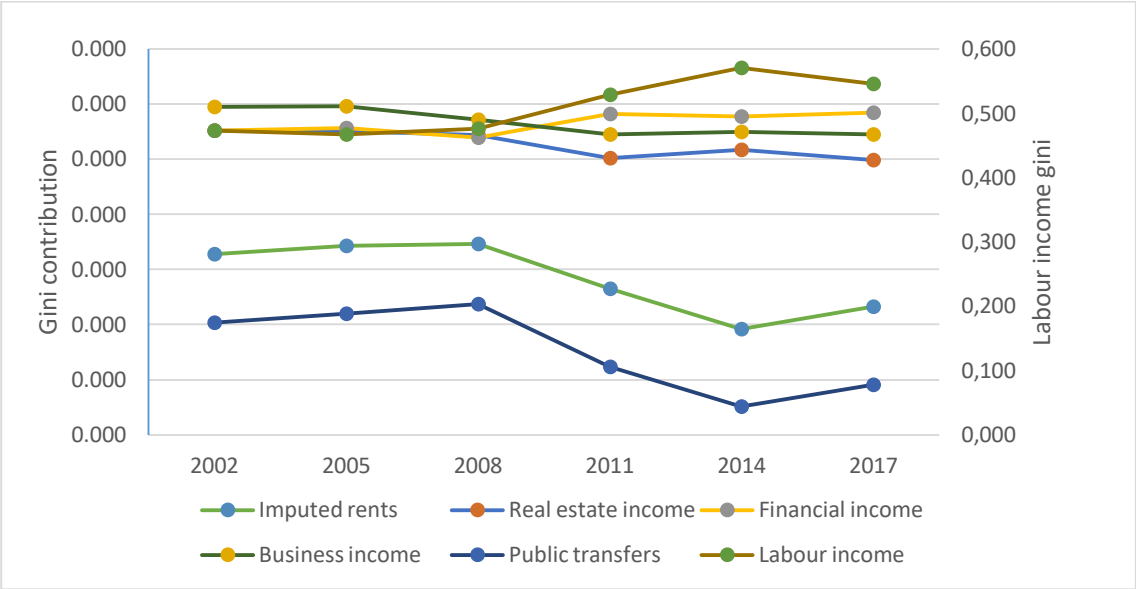
Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

Figure 18. Contribution to inequality by population groups and public transfers



Source: Own construction using the *Encuesta Financiera de las Familias* (EFF)

Figure 19. Contribution by income sources to gini inequality (except labour income)



Source: Own construction using the *Encuesta Financiera de las Familias* (EFF)

APPENDIX B. Estimation of expected bequest

Following Villanueva (2005), we calculate the expected bequest left by a household member, measured in dollars of the age of 86 of that person is defined as follows:

$$E(B_i) = \sum_{age=65}^{age=86} P(death = age) A_{i,j} \, (1 + r_j)^{86-age}$$

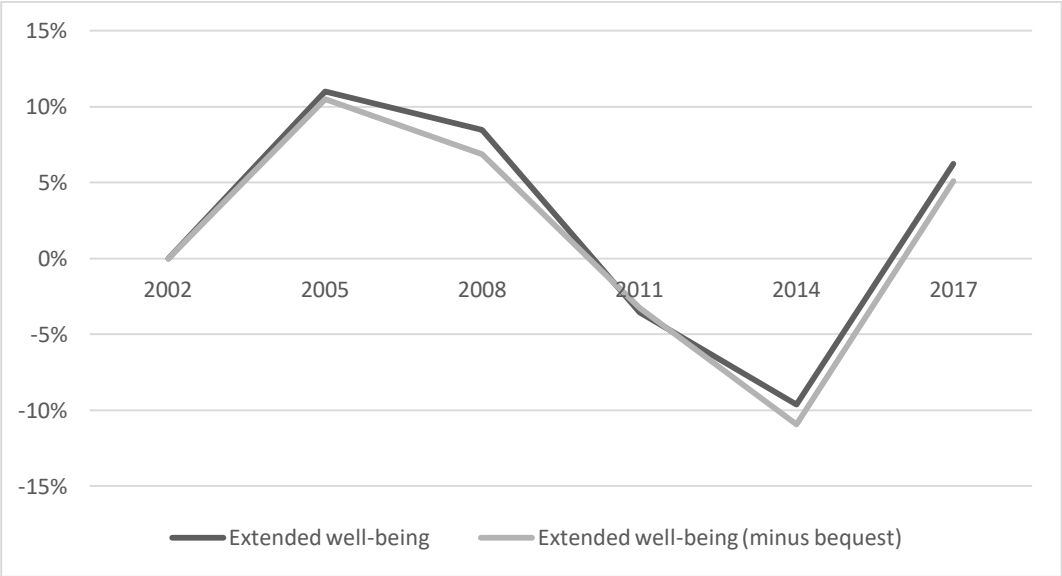
where P(death=age) denotes the mortality rate of the last member alive in a married couple or an individual who is head of household at age a (conditional on probability of surviving until the previous year), $A_{i,j}$ is the asset type j of household member i, and r_j denotes the interest rate of asset j. This procedure is consistent under two assumptions. The first is that the bequest left by an individual is similar to the amount of bequeathable wealth held close to the date of death. The second is that the probability an amount of wealth turns into a bequest is close to the mortality rate in the population at that age.

We estimate the probability of leaving a bequest of those older than 65 years old, as we do not have to calculate their expected labour earnings given a hypothetical life cycle, as they are retired, and also because their probability to leave a bequest is higher. Additionally, we consider the oldest household member at 86 years old, such as a benchmark, because is the last year for which the mortality rate and probability of surviving are published by Eurostat. Thus, the estimated bequest is subtracted to the annualized wealth. If the obtained amount of bequest is higher than the estimated annuity, we assume that those households do not leave a bequest and consume all annuities before they die. Then, the corresponding wealth, which account for current well-being, is equivalised among household member.

Table B.1. Weight of each source of well-being as percentage of our extended measure minus expected bequest

	2002	2005	2008	2011	2014	2017
Extended gross income	21691.61	24080.38	26125.75	25198.97	22770.54	24195.03
Labour	47.9%	48.5%	47.4%	44.7%	44.4%	43.6%
Self-employment	11.4%	10.4%	11.4%	9.5%	8.1%	9.3%
Pensions	9.3%	8.7%	10.6%	12.4%	15.5%	15.4%
Unemployment	0.8%	1.2%	1.1%	3.2%	3.6%	2.1%
Other income	3.2%	3.5%	2.9%	3.0%	2.2%	3.3%
Wealth	27.4%	28.0%	27.1%	27.7%	26.3%	26.3%

Figure B.1. Rate of growth by well-being measure, 2002-2014.



Source: Own construction using the *Encuesta Financiera de las Familias* (EFF).

References in Appendix section

Martínez-Toledano, C. (2017). House price cycles, wealth inequality and portfolio reshuffling, WID.world Working Paper 2017/19.

Villanueva, E. (2005). "Intervivos Transfers and Bequests in three OECD Countries". Economic Policy, 20 (43): 505-65.