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WEALTH INEQUALITY IN SPAIN (1984-2013)

Abstract. This paper combines different sources (tax records, national accounts, wealth surveys) and the capitalization method in order to deliver consistent, unified wealth distribution series for Spain over the 1984-2013 period, with detailed breakdowns by age over the 1999-2013 sub-period. My findings point out a moderate decrease in the top 10 percent wealth share from the mid-1980s until beginning of the 1990s, at the expense of the increase in both the middle 40 percent and the bottom 50 percent of the distribution. The top 10 percent wealth share increases from the mid-1990s until the burst of the housing bubble in 2008 and then it stabilizes at a similar level to the mid-1980s. The bulk in both housing and offshore assets have pushed toward rising wealth concentration in the last two decades.
Keywords: Wealth Inequality, Housing, Offshore Assets, Spain

1. INTRODUCTION

Both the evolution and determinants of wealth inequality are currently at the center of the academic and political sphere. This is largely due to the debate generated by Thomas Piketty's prominent book, *Capital in the Twenty-First Century* (2014), in which he warns that the tendency of returns on capital to exceed the rate of economic growth threatens to generate extreme inequalities. Moreover, he also emphasizes the importance of analyzing empirically the historical evolution of wealth distributions. Research on wealth inequality has, however, a long tradition which dates back to the late 19th century and beginning of the 20th century, in which a number of authors started to study wealth among the living using mainly French and British inheritance data.[1] Nonetheless, it is only after the first half of the 20th century that academics

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[1] See Piketty (2011) for the main references in this literature.

started to construct long run homogeneous historical series on top wealth shares (Lampman 1962 for the US, Atkinson and Harrison 1978 for the UK, Piketty *et al.* 2006 for France and Roine and Waldenström 2009 for Sweden).

There exist five main methods and or sources to analyze wealth inequality. The first is the estate multiplier method, that provides a snapshot of the wealth distribution at the time of death using estate tax records data. The main difficulty is how to generalize from decedents to the full population. The second possible approach is to use surveys of household finances. Contrary to the estate multiplier method, one advantage of using survey data is that it allows to characterize the middle and bottom of the wealth distribution. Nevertheless, even though most of these surveys oversample wealthy households, concentration at the top tends to be underestimated because of misreporting or top coding. The third available source are wealth tax returns. Wealth tax data cover very well the top of the distribution, but three main limitations remain. First, there are very few countries in the world which have a wealth tax (i.e. Spain, France, Norway, Uruguay, etc.). Second, only very wealthy individuals are subject to the tax, making it impossible to analyze the middle and bottom of the distribution. Third, many assets are exempted from this tax, so that it is not possible to have a whole picture of the wealth distribution. The fourth is the capitalization method, which consists of applying a capitalization factor to the capital income distribution to arrive to the wealth distribution. The main advantages of the capitalization technique are that it is based on income data, which are much easier to obtain than wealth data, and that the top is very well covered. The main limitation is, as in the case of the wealth tax, that there are also some assets whose generated income is not subject to the tax. Finally, one can also analyze the upper part of the distribution using lists of high-wealth individuals, such as the annual Forbes 400 list. The drawback in this case is that named lists are limited to the very small group of top wealth-holders and have non-systematic coverage.

Despite the immense literature on the analysis of wealth distributions, two important gaps remain. First, there is still no consensus on the method of analysis that should be adopted, since there are conflicting results depending on which of the techniques or sources are used. For instance, Saez and Zucman (2016) find that wealth considerably increased at the top 0.1 percent in the US over the last two decades using the income capitalization method, contrary to the results obtained by

Kopczuk and Saez (2004) using the estate multiplier method. Second, due to data limitations, empirical evidence on the determinants of wealth concentration is still scarce. There is some evidence that the surge in top incomes and offshore wealth (Saez and Zucman 2016, Alstadsæter *et al.* 2016), and the increase in saving and rates of return inequality (Garbinti *et al.* 2017, Saez and Zucman 2016) have pushed toward wealth concentration in the last two decades. However, it is still unclear which are the distributional effects of specific economic phenomena, such as housing bubbles.

The aim of this research is to analyze wealth inequality in Spain using a mixed survey-capitalization method from 1984 up to 2013, with a particular focus on the years of the housing boom and bust. By analyzing Spain I will contribute to the literature of wealth inequality in three ways. First, Spain experienced a unprecedented increase in aggregate wealth due to a boom in housing prices between 2000 and 2008. Hence, it is interesting to analyze which are the distributional effects of this economic phenomenon which has not been deeply studied so far. Second, Spain has high-quality personal income tax micro-files with detailed income for each tax unit and income category. They are constructed by the Spanish Institute of Fiscal Studies (Instituto de Estudios Fiscales) and they cover the period 1984-2013. Thus, they allow to provide a careful estimation of the evolution of Spanish wealth shares from bottom to the top. To my knowledge, the few studies that have analyzed wealth concentration in Spain using administrative data have only focused on the top 1 percent, and survey data (Survey of Household Finances, Bank of Spain) are only available for four waves since 2002. Third, Spain is one of the few countries in the world that has a wealth tax and for which micro-files from wealth tax records are available. Thus, from the methodological point of view, it is interesting to test the capitalization method by comparing the wealth shares using the income capitalization method with the shares using wealth tax returns and by calculating the distribution of the rates of return.

The starting point of the mixed capitalization-survey approach used in this work involves the application of a capitalization factor to the distribution of capital income to arrive to an estimate of the wealth distribution. Capitalization factors are computed for each asset in such a way as to map the total flow of taxable income to total wealth recorded in Financial and Non-financial accounts. When combining

taxable incomes and aggregate capitalization factors, it is assumed that within each asset class capitalization factors are the same for each individual. By using this methodology, I am able to obtain wealth distribution series consistent with official financial and non-financial household accounts. In Spain, as in most of countries, not all assets generate taxable income. We account for them by allocating them on the basis of how they are distributed, in such a way as to match the distribution of these assets in the Survey of Household Finances developed by the Bank of Spain. The assets which we account for are main owner-occupied housing, life insurance, investment and pension funds.

The wealth distribution in Spain has been analyzed in the past using three different data sources. Firstly, Alvaredo and Saez (2009) use wealth tax returns to construct long run series of wealth concentration for the period 1982 to 2007. The progressive wealth tax has high exemption levels and only the top 2 percent or 3 percent wealthiest individuals file wealth tax returns. Thus, they limit their analysis of wealth concentration to the top 1 percent and above. They find that top wealth concentration decreases at the top 1 percent from 19 percent in 1982 to 16 percent in 1992 and then increases to almost 20 percent in 2007. However, in contrast to the top 1 percent, they obtain that the 0.1 percent falls substantially from over 7 percent in 1982 to 5.6 percent in 2007. Durán-Cabré and Esteller-Moré (2010) also use wealth tax returns to analyze the distribution of wealth at the top and obtain similar results. Their approach complements theirs by offering a more precise treatment of the correction of fiscal underassessment and tax fraud in real estate, which is the main asset in Spaniards' portfolios.

Secondly, Azpitarte (2010) and Bover (2010) use the 2002 Survey of Household Finances developed by the Bank of Spain in order to analyze the distribution of wealth at the top. This analysis can be carried out because the survey is constructed doing an oversampling of wealthy households. Azpitarte (2010) presents results for the top 10-5 percent, 5-1 percent and 1 percent. Bover (2010) provides shares for the top 50 percent, top 10 percent, top 5 percent and top 1 percent. Their estimates for the top 1 percent are very similar, 13.6 percent and 13.2 percent, respectively. However, they are much lower than the results of Alvaredo and Saez (2009) using wealth tax returns, who obtain that the top 1 percent holds 20 percent of total wealth. The OECD has also published recently a report in which they analyze

wealth inequality across countries (OECD 2015) using household survey data. They find that the top 1 percent holds 15.2 percent in 2011 and that wealth inequality in Spain is lower relative to the average of other 16 OECD countries.

Finally, Alvaredo and Artola (2017) use inheritance tax statistics to estimate the concentration of personal wealth at death in Spain between 1901 and 1958. They compare their results with the estimates among the living of Alvaredo and Saez (2009) for the period between 1982 and 2007. They find that concentration of wealth at the top 1 percent of the distribution was approximately three times larger during the first half of the 20th century than at the end of the same century.

My findings point out a moderate decrease in the top 10 percent wealth share from the mid-1980s until beginning of the 1990s, at the expense of the increase in both the middle 40 percent and the bottom 50 percent of the distribution. The top 10 percent wealth share increases from the mid-1990s until the burst of the housing bubble in 2008 and then it stabilizes at a similar level to the mid-1980s. The bulk in both housing and offshore assets, together with rising inequality in rates of return, have pushed toward rising wealth concentration.

The trends and levels in the wealth shares are very similar to the ones obtained by Alvaredo and Saez (2009) using wealth tax returns. Moreover, I test the assumption underlying the capitalization technique, that within each asset class capitalization factors are the same for each individual and I find using the wealth tax micro-files, that rates of return for deposits and fixed-income securities are flat along the distribution. Hence, the mixed capitalization-survey approach seems to be quite a consistent method to analyze the full wealth distribution in Spain over time.

The layout of the paper is as follows. Section 2 discusses the wealth concept and data used, together with an analysis of the aggregate trends in wealth in the last three decades in Spain. In Section 3 I formalize and explain the procedure used in order to obtain wealth shares from income tax and survey data. Results for the period 1984-2013, derived from using the mixed survey-capitalization method, are presented in Section 4. In Section 5 I adjust the series for offshore assets and in Section 6 I test the capitalization method. Finally, Section 7 concludes. All Figures to which the text refers to are included in the appendix at the end of the paper.

2. WEALTH: CONCEPT, DATA AND AGGREGATE TRENDS

This section describes the wealth concept used and the trends in the evolution of aggregate wealth over the period of analysis (1984-2013).

2.1 Wealth concept and data sources

The wealth concept used is based upon national income categories and it is restricted to net personal wealth, that is, the current market value of all financial and non-financial assets owned by the household sector net of all debts. For net financial wealth, that is, for both financial assets and liabilities, the latest (ESA 2010, Bank of Spain) and previous (ESA 95, Bank of Spain) Financial Accounts are used for the period 1996-2013 and 1984-1995, respectively. Financial Accounts report wealth quarterly and I use mid-year values.

Households' financial assets include equities (stocks, investment funds and financial derivatives), debt assets, cash, deposits, life insurance and pensions. Households' financial liabilities are composed of loans and other debts. It is important to mention that pension wealth excludes Social Security pensions, since they are promises of future government transfers. As it is stated in Saez and Zucman (2016), including them in wealth would thus call for including the present value of future health care benefits, future government education spending for one's children, etc., net of future taxes. Hence, it would not be clear where to stop.

My wealth concept only considers the household sector (code S14, according to the System of National Accounts (SNA)) and excludes non-profit institutions serving households (NPISH, code S15). There are three reasons which explain this decision. First, due to lack of data, non-profit wealth is not easy attributable to individuals. Second, income from NPISH is not reported in personal income tax returns. Third, non-profit financial wealth amounts to around only 1 percent of household financial wealth between 1996 and 2014 in Spain. Hence, it is a negligible part of wealth and excluding it should not alter the results.

Spanish Financial Accounts report financial wealth for the household and NPISH sector and also for both households and NPISH isolated as separate sectors. However, the level of disaggregation of the Balance Sheets in the latter case is lower

than in the case in which households and NPISH are considered as one single sector. For instance, whereas the Balance Sheet of the sector of households and NPISH distinguishes among wealth held in investment funds and wealth held in stocks, the Balance Sheet of the household sector only provides an aggregate value with the sum of wealth held in these two assets. In order to have one value for household wealth held in investment funds and one value for household wealth held in stocks, I assume that they are proportional to the values of households' investment funds and stocks in the Balance Sheet of households and NPISH.

For non-financial wealth, it is not possible to rely on Non-financial Accounts based on the System of National Accounts. Even though there are some countries that have these accounts, such as France and United Kingdom, no institution has constructed these type of statistics for Spain yet. I need to use other statistics instead. My definition of household non-financial wealth consists of housing and unincorporated business assets and I rely on the series elaborated in Artola *et al.* (2017). Housing wealth is derived based on residential units and average surface from census data on the one hand, and average market prices from property appraisals, on the other hand. [2] Unincorporated business assets have been constructed using the four waves of the Survey of Household Finances (2002, 2005, 2008, 2011) elaborated by the Bank of Spain and extrapolated backwards using the series of non-financial assets held by non-financial corporations also constructed by the Bank of Spain.[3]

I exclude collectibles since they amount to only 1 percent of total household wealth and they are not subject to the personal income tax. Furthermore, consumer durables, which amount to approximately 10 percent of total household wealth, are also excluded, because they are not included in the definition of wealth by the System of National Accounts.[4]

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[2] Net housing wealth is the result of deducting mortgage loans from household real estate wealth. Note that mortgage debts are approximated by total household liabilities.

[3] A detailed explanation of the sources and methodology used in order to construct these two series can be found in data appendix of Artola *et al.* 2017.

[4] The shares of both collectibles and consumer durables over total household wealth are obtained using the Survey of Household Finances developed by the Bank of Spain.

2.2 Aggregate Wealth Stylized Facts (1984-2013)

Understanding how wealth has evolved in aggregate terms is crucial in order to later interpret the dynamics in the wealth distribution series.

From a historical perspective, the ratio of household wealth to national income has followed a U-shaped evolution over the past century, a pattern also seen in other advanced economies (Artola *et al.* 2017, Piketty and Zucman 2014). However, this process was initially delayed with respect to leading European countries. This finding is consistent with a long post-Civil war economic stagnation and the larger importance of agriculture in Spain. During my period of analysis, from 1984 onwards, I distinguish three stylized facts on the evolution of the level and composition of the stock of wealth in Spain.

The first stylized fact is that the household wealth to national income ratio has almost doubled during that period of time. Household wealth amounted to around 380 percent in the late 1980s and it grew up to around 470 percent in the mid-1990s. From 1995 onwards, it started to increase more rapidly reaching the peak of 728 percent of national income in 2007. After the burst of the crisis in 2008, it dropped and it has been decreasing since then. In 2014, the household wealth to national income ratio amounted to 646 percent, a level which is similar to the wealth to national income ratio of years 2004 and 2005, but much higher than the household wealth to national income ratios of the 1980s and 1990s (Fig. 1).

The second stylized fact determines the existence of temporal differences not only in the growth of total net wealth (as it was pointed out in the first stylized fact), but also in the growth of its components. In the late 1980s the growth in net housing was more than double the growth in financial assets. During the nineties this trend reversed and financial assets started to rise faster due mainly to the dot-com bubble. After the stock market crash of 2000, housing prices increased rapidly surpassing financial assets. The value of dwellings reached the peak in 2008, after which the housing bubble burst and the drop in housing wealth was larger than in financial assets (Figg. 1 and 2).

The third and last stylized fact points out the increase in the importance of net housing in the asset portfolio of households. Even though dwellings are during the whole period the most important asset held by households, always representing

more than 40 percent of total household net wealth, the composition of household wealth has not evolved homogeneously over time and it has lost importance in times when financial assets significantly increase (i.e. dot-com bubble). The increase in the fraction of housing in the total portfolio of households has also been exacerbated by the steady decrease in the fraction of unincorporated business assets (from 23 percent in 1984 up to 11 percent in 2014), due mainly to the reduction in the importance of agriculture (Fig. 2).

3. THE MIXED CAPITALIZATION-SURVEY APPROACH (1984-2013)

The main goal of this article is to construct wealth shares by allocating the total household wealth depicted in Figure 1 to the various groups of the distribution. For that, it is needed to proceed with the following three steps. First, I start by calculating the distribution of taxable capital income at the individual level. Second, the taxable capital income is capitalized. Third, I account for wealth that does not generate taxable income. This is a mixed method and not the pure capitalization technique, because the survey method is used in order to account for both wealth at bottom of the distribution and assets that do not generate taxable income.

3.1 The distribution of taxable capital income

The starting point is the taxable capital income reported on personal income tax returns. I use micro-files of personal income tax returns constructed by the Spanish Institute of Fiscal Studies (Instituto de Estudios Fiscales (IEF)) in collaboration with the State Agency of Fiscal Administration (Agencia Estatal de Administración Tributaria (AEAT)). They have three different types of files: two personal income tax panels that range from 1982-1998 and 1999-2012, respectively, and personal income tax samples for 2002-2013. I use the first income tax panel for 1984-1998[5], the second panel for 1999-2011 and all income tax samples for 2002-2013. The

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[5] Even though the first panel is available since 1982, I decided to start using it from 1984 since I found some inconsistencies between the files for 1982 and 1983 and subsequent years.

micro-files provide information for a large sample of taxpayers[6], with detailed income categories and an oversampling of the top. The income categories I use are interest, dividends, effective and imputed housing rents, as well as the profits of sole proprietorships.[7] The micro-files are drawn from 15 of the 17 autonomous communities of Spain, in addition to the two autonomous cities, Ceuta and Melilla. Two autonomous regions, Basque Country and Navarra, are excluded, as they do not belong to the Common Fiscal Regime (Régimen Fiscal Común), because they manage their income taxes directly. Combined these two regions represent about 6 percent and 8 percent of Spain in terms of population and gross domestic product, respectively.[8]

The unit of analysis used is the adult individual (aged 20 or above), rather than the tax unit. Splitting the data into individual units has on the one hand the advantage of increasing comparability as across units since individuals in a couple with income for example at the 90th percentile are not as well off as an individual with the same level of income. On the other hand, it is also more advantageous for making international comparisons, given that in some countries individual filing is possible (i.e. Spain, Italy) and in others (i.e. France, US) not.

Since in personal income tax returns the reporting unit is the tax unit, I need to transform it into an individual unit. A tax unit in Spain is defined as a married couple (with or without dependent children aged less than 18 or aged more than 18 if they are disabled) living together, or a single adult (with or without dependent children aged less than 18 or aged more than 18 if they are disabled). Hence, only the units for which the tax return has been jointly made by a married couple need to be transformed. For each of these units I split the joint tax returns into two separate individual returns. We assign half of the jointly reported capital income to each member of the couple.[9] For 2011, for instance, this operation converts 19.38 million

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[6] Personal income tax samples are more exhaustive (i.e. 2,161,647 tax units in 2013) than the panels (i.e. 390,613 tax units in 1999).

[7] Note that imputed housing rents exclude main residence from the period 1999-2013. I explain the way in which I account for main residence in the following subsection. Moreover, profits of sole proprietorships are considered as a mixed income, so that I assume as it is commonly done in the literature that 70% of profits are labor income and 30 percent capital income.

[8] These figures have been obtained using Regional National Accounts and the Census of Population of the Spanish Statistics Institute (Instituto Nacional de Estadística (INE)).

[9] Since business income from self-employment is a mixed income, only the part corresponding to capital income is split among the couple.

tax units into 23.07 million individual units in the population aged 20 or above, that is, approximately 19 percent of units are converted.[10]

One limitation of using personal income tax returns in order to construct income shares in the Spanish case is that not all individuals are obliged to file. There exist some labour income and capital income thresholds under which individuals are exempted from filing. In 2013, for instance, the labour income threshold when receiving labour income from one single source was 22,000 euros and 11,200 when receiving it from two or more sources. The capital income threshold was 1,600 euros for interest, dividends and/or capital gains and 1,000 for imputed rental income and/or Treasury bills.[11] Approximately one third of the population is exempted from filing.[12] I account for the missing adults using the Spanish Population Census for the period 1984-2013 by comparing the population totals by age and gender of the micro-files with the population totals of the Census excluding País Vasco and Navarra and I then create new observations for all the missing individuals by age and gender. By construction, my series perfectly match the Census population series by gender and age.[13] These new individuals, although being the poorest since they do not have to file the personal income tax, earn some labour and also some capital income in the form of interest from checking accounts or deposits. Hence, we need to account for this missing income, otherwise we would be overestimating the amount of wealth held by the middle and the top of the distribution. For that, I rely on the Survey of Household Finances for the period 1999-2013 and on the Household Budget Continuous Survey for the period 1984-1998.

The Spanish Survey of Household Finances (SHF) has been conducted by the Bank of Spain for four waves: 2002, 2005, 2008 and 2011. It is the only statistical source in Spain that allows the linking of incomes, assets, debts, and consumption at the

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[10] Given the incentives of the tax code to file separately whenever both individuals in the couple receive income, there are more married couples filing individually the further we move up in the income distribution. See AEAT (2013) for a more detailed explanation in Spanish of how personal income tax filing works in Spain.

[11] See AEAT (2013) for a more detailed explanation in Spanish of how personal income tax filing works in Spain.

[12] This figure has been obtained comparing the total number of personal income tax filers with the population totals of the Spanish Population Census.

[13] The oldest personal income tax panel that I use for the period 1984-1998 does not include information about age nor gender. Hence, for this period of time I simply adjust the micro-files to match the Census population totals excluding País Vasco and Navarra but without taking age and gender into consideration.

household level and that provides a representative picture of the structure of household incomes, assets and debts at the household level. Therefore, it is extremely suitable for our analysis. First, using the SHF I classify individuals into seven age groups: from 20-24, 25-29, 30-39, 40-49, 50-59, 60-69, and above 69. I then calculate the fraction of income by category (labor income, interest and dividends, rental income and business income) that each age group has in the P20-P50 percentiles with respect to the P50-P60 percentiles, for labor income, and P60-P70 percentiles, for capital income. Finally, I also compute the fraction of individuals that own each income category by age group and assign these fractions to the same groups in the personal income tax data. I linearly interpolate the fractions for the years in between in order to account for the missing income at the bottom across all years.

The Household Budget Continuous Survey (HBCS) was carried out during the 1985-2005 period, for the purpose of providing quarterly and annual information regarding the origin and amount of household income, and the way in which income is used for different consumption expenses. As of 2006, this survey was replaced by the Household Budget Survey (HBS). I calculate the fraction of income by category (labor income, interest and dividends, rental income and business income) that the P20-P70 percentiles have with respect to the P70-P80 percentiles. Since the shares using the HBCS differ substantially from the shares using the SHF, I stick to the SHF levels and I only use the growth rate in the HBCS shares to extrapolate the series backwards (1984-1998).

Finally, before capitalizing the capital income shares, it is important to check that income is distributed in a coherent way and that there are no significant breaks across years due to, for instance, tax reforms or the use of different data sources. If already the income data are not coherently distributed, neither the wealth distribution estimates will be. In appendix B, I explain in detail the particular aspects of the reforms, which could potentially affect my methodology and how I deal with them in order to ensure consistency in the series across the whole period of analysis.

3.2 The income capitalization method

In the second step of the analysis the investment income approach is used. In essence, this method involves the application of a capitalization factor to the distribution of taxable capital income to arrive to an estimate of the wealth distribution.

3.2.1 A formal setting

The income capitalization method used in this paper may be set out formally as follows. An individual *i* with wealth *w* invests an amount aij in assets of type *j*, where *j* is an index of the asset classification ($j = 1, ..., J$). If the return obtained by the individual on asset type *j* is r_j, his investment income by asset type is:

$$y_{ij} = r_j * a_{ij} \quad (1)$$

and his total investment income:

$$y_i = \sum_{j=1}^{J} r_j * a_{ij} \quad (2)$$

Rearranging equation (1), the wealth for each individual by asset type is, thus, the following:

$$a_{ij} = y_{ij}/r_j \quad (3)$$

By rearranging equation (2), the total wealth for each individual is:

$$w_i = \sum_{j=1}^{J} y_{ij} * r_j \quad (4)$$

In the next subsection, this formal setting is applied to the Spanish case in order to obtain the wealth distribution series.

3.2.2 How the capitalization technique works for the Spanish case

There are five categories of capital income in personal income tax data: effective and imputed (excluding main residence) rental income, business income from self-employment, interest and dividends. Tax return income for each category is weighted in order to match aggregate national income from National Accounts. I then map each income category (e.g. business income from self-employment) to a wealth category in the Financial Accounts from the Bank of Spain (e.g. business assets from self-employment).[14]

As it was mentioned in Section 3.1, income tax data exclude the regions of País Vasco and Navarra. Therefore, before mapping the taxable income to each wealth category, income and wealth in National Accounts need to be adjusted excluding the amounts corresponding to these two regions. Ideally, if one would know the amount of wealth and income in each category by region, one could simply discount the wealth and income corresponding to País Vasco and Navarra. Unfortunately, neither the Bank of Spain nor the National Statistics Institute have constructed Regional National Accounts with disaggregated information by asset type yet, so another methodology needs to be used. I assume that income and wealth in each category are proportional to total gross domestic product and housing wealth excluding these two regions, respectively.[15]

Once income and wealth have been adjusted accordingly, a capitalization factor is computed for each category as the ratio of aggregate wealth to tax return income, every year since 1984. This procedure ensures consistency with the Bank of Spain aggregate wealth data by construction. In 2013, for instance, there are about 19.4 billion euros of business income and 612.8 billion euros of business assets from self-employees generating taxable income. Hence, the rate of return on taxable

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[14] Capital gains are excluded from the analysis. The reason is that they are not an annual flow of income and consequently, they experience large aggregate variations from year to year depending on stock price variations. By including them, the trends in the wealth distribution series could be biased since we observe large variations in capital gains from year to year.

[15] Total gross domestic product in Spain excluding País Vasco and Navarra accounts for approximately 92 percent of total gross domestic product. This figure is obtained using Regional National Accounts constructed by the National Statistics Institute. The share of housing wealth excluding País Vasco and Navarra amounts to approximately 92 percent of total housing wealth. This figure has been obtained using a study elaborated by the financial institution La Caixa (Caixa Catalunya 2004), in which they provide the value of housing wealth by region.

business assets is 3.2 percent and the capitalization factor is equal to 31.6. As it is shown in Figure 3, rates of return (and thus capitalization factors) vary across asset types, being for instance higher for financial assets than for business assets.[16]

The capitalization method is well suited to estimating the Spanish wealth distribution because the Spanish income tax code is designed so that a large part of capital income flows are taxable. However, as it has been already mentioned, tax returns do not include all income categories. In Section 3.3, I carefully account for the assets that do not generate taxable income.

3.3 Accounting for Wealth that Does not Generate Taxable Income

The third and last step consists of dealing with the assets that do not generate taxable income. In Spain, there are four assets whose generated income is not subject to the personal income tax: Main owner-occupied housing[17], life insurance, investment and pension funds. Although these assets account for a large part of total household wealth, namely 32.8 percent for main residence and 8.1 percent for life insurance, investment and pension funds in 2013, the fact that they do not generate taxable income does not constitute a non-solvable problem for one main reason: Spain has a high quality Survey of Household Finances (SHF).

As it was mentioned in Section 3.1, this survey provides a representative picture of the structure of household incomes, assets and debts at the household level and does an oversampling at the top. This is achieved on the basis of the wealth tax through a blind system of collaboration between the National Statistics Institute and the State Agency of Fiscal Administration which preserves stringent tax confidentiality. The distribution of wealth is heavily skewed and some types of assets are held by only a small fraction of the population. Therefore, unless one is prepared to collect very large samples, oversampling is important to achieve

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[16] The rate of return on housing using National Accounts is very low for international standards, particularly during the most recent period (2002-2013). This can be explained by the fact that the differences in growth between housing wealth and housing rental income were much larger in Spain than in the rest of advanced economies. One potential explanation are the large differences in demand for renting (low) versus buying (high) dwellings in Spain, which have led to a larger increase in housing versus rental prices. In fact, the home-ownership ratio is approximately 80% at present (Census of dwellings, INE 2011). Nonetheless, one cannot fully disregard the existence of some type of measurement error in the construction of the rental income and/or housing wealth series.

[17] This is the case from 1999 onwards, since until 1998 imputed rents from main residence were subject to the personal income tax. Hence, we only need to impute main residence for the period 1999-2013.

representativeness of the population and of aggregate wealth and also, to enable the study of financial behavior at the top of the wealth distribution. Hence, this survey is extremely suitable for this analysis and it allows to allocate all the previous assets on the basis of how they are distributed, in such a way as to match the distribution of wealth for each of these assets in the survey.

The imputations are conducted using the four waves of the Survey of Household Finances and they are based on the methodology used by Garbinti *et al.* (2017) for France. I only consider individuals aged 20 or above in order to be consistent with the population of interest in the micro tax data, which are all individuals aged 20 or above. The unit of analysis used in the SHF is the household. Since data in the micro-files are rearranged in order to have individuals as units of analysis, I proceed in the same way with the survey in order to be as consistent as possible. Hence, if the head of the household is not married, I assume that all capital income belongs to him. However, if the head of the household is married, I create a new individual and split the capital income of the household among the two. The new individuals are the partners of the heads of the households that are married and become now head of households.

The first step of the imputation consists of constructing groups of individuals according to their age, labor and capital income. First, individuals are classified into ten age groups: from 20-24, 25-30, 31-40, 41-50, 51-54, 55-60, 61-65, 66-70, 71-80 and above 80. Second, they are also grouped according to their capital income into seven brackets of percentiles: P0-P39, P40-P49, P50-P59, P60-P89, P90-P94, P95-P97 and equal or above P98. In order for the imputations to be consistent, I only consider as capital income the one that is subject to the personal income tax. Finally, three groups of percentiles are formed according to the labour income the individuals have: P0-P49, P50-P89 and equal or above P90.

Once individuals are sorted by age, capital and labor income, I combine them and end up with 210 different groups. One can then calculate which is the share of main owner-occupied housing, life insurance, investment and pension funds that corresponds to each group, as well as the fraction of individuals that owns the asset within each group, that is, the within-group ownership shares.[18] The final aim is to

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[18] Since the survey is only available for four waves I linearly interpolate the shares for the years in between and I use the 2002 shares for imputing life insurance, pension and investment funds for the historical period. Ideally, we would have some waves of the wealth survey for the historical part, but unfortunately they do not

impute the value of these assets that do not generate taxable income to the capitalized distribution of income in order to obtain the distribution of total net wealth. For that, I need to construct with the data from the micro-files the same groups by age, capital and labor income. Once the individuals in the tax data are classified into the same 210 groups, the group shares and the within-group ownership shares that are obtained with the survey can be used in order to calculate which is the amount of main owner-occupied housing,[19] wealth from life insurance, investment and pension funds from National Accounts that corresponds to each group.[20]

In order to make sure that the imputations are correctly done, I conducted sensitivity tests and applied several alternative imputation methods for tax-exempt assets and I find that the overall impact on wealth distribution series is extremely small. Furthermore, I also calculate wealth shares with and without conducting my imputation method using the four waves of the wealth survey and I obtain very similar results (Fig. 4).

4. TRENDS IN THE DISTRIBUTION OF WEALTH (1984-2013)

4.1 Wealth inequality series

This section presents the benchmark unified series for wealth distribution in Spain over the period 1984-2013 and the breakdows by asset category (1984-2013) and age (1999-2013). Figure 9 displays the wealth distribution in Spain decomposed into three groups: top 10 percent, middle 40 percent and bottom 50 percent. The top 10 percent wealth share drops from the mid-1980s until beginning of the 1990s, at the expense of the increase in both the middle 40 percent and the bottom 50 percent of

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exist. Nonetheless, these assets were much less important in the asset portfolio of households during the 1980s and beginning of the 1990s and consequently, this assumption should not affect our results much.

[19] Individuals are not indebted in an homogeneous way along the distribution. Hence, I calculate the ratio of main residence indebtness for each of the 210 groups using the survey and I apply it to each group when doing the imputation.

[20] Due the limited information on negative net wealth holders in Spain and the small fraction of negative aggregate net wealth over total net wealth (3 percent according to Cowell and Kerm 2015) using the Eurosystem Household Finance and Consumption Survey (HFCS) I have decided to set minimum net wealth at zero.

the distribution. From the mid-1990s the top 10 percent wealth share starts to rise again until the burst of the housing bubble in 2008 and then it stabilizes at a similar level to the mid-1980s.

Spain has experienced substantial changes in the level and composition of personal wealth during this period (see Section II), which have significantly affected the evolution of wealth inequality. As it is shown on Figure 6, the most important asset for the bottom 50 percent is housing over the whole period of analysis. The middle 40 percent also owns mainly housing, but financial assets and unincorporated assets are more important than for the bottom 50 percent. On the contrary, for the top 10 percent financial assets are much more important accounting for approximately half of their total net wealth. For all groups, unincorporated assets have lost importance over time and this is mainly due to the reduction in agricultural activity among self-employees. One particularity of the Spanish case is that housing is a very important asset of the portfolio of households even at the top of the distribution. This has been the case during the whole period of analysis, but it has become more striking in the last fifteen years due to the increase in the value of dwellings. In fact, as Figure 7 displays, the share of housing wealth owned by the top 10 percent grew during the housing boom at the expense of the decrease in the middle 40 percent, even though housing represented a larger fraction of the portfolio of net wealth for the middle 40 percent. Hence, even though housing has acted as a smoothing factor of wealth concentration in the long-run, it has contributed to the rise in wealth concentration during the years of the housing bubble.

Moving to the analysis by age, I find that average wealth is always very small at age 20 (less than 10 percent of average adult wealth), then rises sharply with age until age 60-65 reaching 160-170 percent of average adult wealth, and moderately decreases (around 150-110 percent of average adult wealth) at ages 65-85 (Fig. 8). This age-wealth profile appears to be relatively stable over the 1999-2013.

When decomposing the wealth distribution series by age, I find that wealth inequality is more pronounced for the old (+60) and even more for the young (20-39) than for the middle-old (40-59), for which wealth inequality is almost as large than for the population taken as a whole (Fig. 9).

4.2 International comparison

When comparing the top 10 percent and top 1 percent wealth share in Spain versus the US, I observe that concentration in Spain is lower than in the US over the whole period, but that these these differences have increased in the last two decades due to the huge rise in wealth concentration in the US (Figg. 10 and 11). On the contrary, the levels of wealth inequality in Spain are quite similar to the ones observed in France and Sweden. Spain had a larger top 10 percent and top 1 percent during the 1980s, but since the nineties Spain has converged to the levels of the rest of European countries. Nonetheless, comparisons should be made carefully since there are important methodological differences across countries.

5. OFFSHORE ASSETS AND WEALTH INEQUALITY

In Spain, as in most countries, official financial data fail to capture a large part of the wealth held by households abroad such as the portfolios of equities, bonds, and mutual fund shares held by Spanish persons through offshore financial institutions in tax havens (Banco de España 2011). Zucman (2013) estimates that around 8 percent of households' financial wealth is held through tax havens, three-quarters of which goes unrecorded. Moreover, he also provides evidence that the share of offshore wealth has increased considerably since the 1970s. This fraction is even larger for Spain. According to Zucman (2015), wealth held by Spanish residents in tax havens amounted to approximately 80 billion euros in 2012, which accounts for more than 9 percent of household's net financial wealth. Furthermore, Alstadsæter *et al.* (2016) find using micro-data on the Norwegian tax amnesty, that the probability to disclose evading taxes rises steeply with wealth. Hence, by not incorporating offshore wealth in our wealth distribution series, both total assets and wealth concentration would be substantially underestimated.

In order to adjust the wealth distribution series for offshore assets I use the historical series of offshore wealth in Artola *et al.* (2017). They rely on two main data sources: Zucman (2013; 2014), whose series mainly come from the Swiss National Bank (SNB) statistics, and the unique information provided by the 720 tax-form.

Since 2012, Spanish residents holding more than 50,000 euros abroad are obliged to file this form specifying the type of asset (real estate, stocks, investment funds, deposits, etc.), value, and country of location. This new form aims to reduce evasion by imposing large fines in case taxpayers are caught not reporting or misreporting their wealth. In an attempt to increase future revenue and reduce further evasion, the Tax Agency also introduced a tax amnesty in 2012.

Artola *et al.* (2017) calculate separately reported assets, that is, claims held abroad by Spanish residents and declared to the Spanish tax authorities, from unreported offshore wealth. Given that the Spanish Tax Agency cross-checks across all taxes reported income and wealth by taxpayers, income generated by reported assets in the wealth tax and 720 tax-form should be included in personal income taxes. Hence, I will only correct the series for unreported offshore assets. Artola *et al.* (2017) derive the series of unreported financial offshore wealth by first comparing total wealth held in Switzerland by Spanish residents with assets declared in this country in the 720 tax form. In 2012, the comparison shows that 23 percent of offshore wealth was reported to tax authorities (Fig. 12). This figure is consistent with Zucman (2013) estimate that around

three quarters of offshore wealth held abroad goes unrecorded. According to the 720 tax form, Switzerland concentrated in 2012 24 percent of total offshore wealth held by Spanish residents in tax havens. They extrapolate this series by applying the fraction of unreported assets we observe in Switzerland to the rest of tax havens that appear in the 720 tax form.

The series ranges between 1999 and 2014, since the statistics on total offshore held in Switzerland are only available for this period of time. They extrapolate the series backwards using the total amount of offshore wealth that flourished in the 1991 Spanish tax amnesty (10,367 million euros) and the proportion of European financial wealth held in offshore havens estimated by Zucman (2014) for the years prior to 1991.[21]

Offshore assets increased rapidly during the 1980s, 1990s and beginning of the 2000s and stabilized after 2007, a period in which Spanish tax authorities have become stricter with tax evasion by introducing the 720 tax form and implementing

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[21] For a more detailed explanation of how the series of unreported and reported offshore assets are constructed, read the appendix in Artola *et al.* 2017.

a tax amnesty in 2012 (Fig. 13). Unreported offshore wealth amounted to 149,520 million euros in 2012, which represents 8.6 percent of personal financial wealth.[22] Investment funds represent 50 percent of total unreported offshore assets, followed by stocks with 30 percent, and deposits and life insurance with 18 percent and 2 percent, respectively (Fig. 14).

I correct the wealth distribution series by assigning proportionally to the top 1 percent the annual estimate of unreported offshore wealth. This is consistent with an official document of the Spanish Tax Agency (Ministerio de Hacienda y Administraciones Públicas 2016) stating that the majority of reported foreign assets by Spanish residents are held by top wealtholders and that these assets represent 12 percent and 31 percent of the total wealth tax base in 2007 and 2015, respectively.[23] Furthermore, Alstadsæter *et al.* (2016) also find that the top 1 percent in Norway accumulates almost all the disclosed assets of the tax amnesty.

Wealth concentration is larger during the 2000s than in the 1980s, contrary to what it is observed when offshore assets are not taken into account (see Fig. 15). The top 1 percent wealth share average over 2000-13 is 23.6 percent, versus 21.3 percent when disregarding offshore wealth. This increase is quite remarkable, taking into account that during that period of time the country experienced a housing boom and both non-financial and financial assets held in Spain grew considerably as it was discussed in section II. In line with Alstadsæter *et al.* (2016), this finding also suggests that the historical decline in wealth inequality over the twentieth century that happened in Spain and the rest of analyzed countries (Alvaredo and Artola 2017, Piketty 2014), may be much less spectacular in actual facts than suggested by tax data.

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[22] This figure is larger than the estimate of 80,000 million euros in Zucman 2015. Note that Zucman's estimate is an extrapolation using Swiss National Banks statistics, but that Artola *et al.* (2017) use administrative data on reported wealth held by Spanish residents abroad.

[23] Note that according to Alvaredo and Saez (2009) Spanish wealth tax filers belong approximately to the top 1 percent of the wealth distribution.

6. RECONCILIATION AND TEST OF THE CAPITALIZATION METHOD WITH OTHER SOURCES

6.1 Comparison with other methods and sources

6.1.1 Wealth Tax

The wealth tax in Spain was introduced for the first time in 1978 as by law 50/1977. Initially, it was meant to be "transitory" and "exceptional". The tax rate was relatively small, with a maximum of 2 percent. The aim of the Spanish wealth tax was basically to complement the Spanish personal income tax, which had limited redistributive goals. Tax filing was done on an individual basis, with the exception of married couples under joint tenancy. Since 1988, married couples can file individually.

In 1992, a major reform by the Law 19/1991 put an end to the transitory an exceptional character of the tax. It established a strictly individual filing and introduced changes in some of the included components as well as in their valuation rules. In year 2008, the tax was not abolished but a bonus of 100 percent was introduced by law 4/2008. Nevertheless, the economic crisis and the lack of funds of the Spanish Inland Revenue, reactivated the wealth tax from exercise 2011 (payable in 2012) up to 2015 (payable in 2016).

Alvaredo and Saez (2009) use wealth tax returns and the Pareto interpolation method to construct long run series of wealth concentration for the period 1982 to 2007. The progressive wealth tax has high exemption levels and only the top 2 percent or 3 percent wealthiest individuals file wealth tax returns. Thus, they limit their analysis of wealth concentration to the top 1 percent and above. This is a general limitation of using wealth tax data, the middle and bottom of the distribution can not be analyzed. They find that top wealth concentration decreases at the top 1 percent from 19 percent in 1982 to 16 percent in 1992 and then increases to almost 20 percent in 2007. However, in contrast to the top 1 percent, they obtain that the 0.1 percent falls substantially from over 7 percent in 1982 to 5.6 percent in 2007. Durán-Cabré and Esteller-Moré (2010) also use wealth tax returns to analyze the distribution of wealth at the top and obtain similar results to them.

Their approach complements theirs by offering a more precise treatment of the correction of fiscal underassessment and tax fraud in real estate, which is the main asset in Spaniards' portfolios.

Results using wealth tax data and the capitalization method are quite similar (Fig. 16). In line with the trends observed in Alvaredo and Saez (2009), my estimates also reveal a fall in concentration at the top 1 percent during the mid-1980s until beginning of the 1990s, and an increase in concentration from that date onwards. Concentration differs more across methods, being larger with capitalized income shares, at times in which asset prices significantly grow, namely the mid-1980s, the years of the dot-com bubble and the beginning of the 2000s.

There are several conceptual and methodological differences across the two methods which might explain these differences. First, Alvaredo and Saez (2009) use financial wealth from both households and non-profit institutions serving households in their wealth denominator, rather than only financial household wealth. Second, they exclude pensions and business assets from the wealth denominator. Hence, they use slightly different wealth aggregates as the ones used in this paper (Tab. 1). Third, they use real state wealth at cadastral value as reported in the wealth tax and update it based on the differences between real state wealth at market value. In contrast, I use a series of housing wealth at market prices and impute main residence housing wealth for the period 1999-2013 using the Survey of Household Finances. Another difference is that they use the Pareto interpolation method in order to obtain top wealth shares because they have tabulated data. Finally, they use the tax unit and not the individual unit as unit of analysis. The exclusion of business assets and pension funds, together with the different valuation of housing wealth seem to be the biggest determinants in the differences observed in the shares using the two methods, given that these disparities are more pronounced at times of large price movements.

6.1.2 The Survey of Household Finances

The Survey of Household Finances provides a representative picture of the structure of household incomes, assets and debts at the household level and does an oversampling at the top, as it was already pointed out in section III. It exists for

four waves (2002, 2005, 2008 and 2011) and it is elaborated by the Bank of Spain. Azpitarte (2010) and Bover (2010) use the 2002 survey in order to analyze the distribution of wealth at the top. Azpitarte (2010) presents results for the top 10-5 percent, 5-1 percent and 1 percent. Bover (2010) provides shares for the top 50 percent, top 10 percent, top 5 percent and top 1 percent. Their estimates for the top 1 percent are very similar, 13.6 percent and 13.2 percent, respectively. However, they are lower than the results of Alvaredo and Saez (2009) using wealth tax returns and the results using the capitalization method, which find that the top 1 percent holds approximately 20 percent of total net wealth.

The OECD has also published a paper (OECD 2015) in which they construct top wealth shares using the 2011 SHF. They find that concentration at the top is lower than the OECD average, considering other sixteen countries. Comparing their results with the ones using tax data, we find that the top 1 percent is lower than in the case wealth tax or capitalized income data are used. For instance, the top 1% in 2011 using capitalized income data is 22.1 percent and the one obtained by OECD (2015) is 15.2 percent.

There are notable differences in terms of definitions and methodology between our estimates and the studies using the SHF. First, we use individual units while the SHF uses households to define each fractile. Second, they use a different definition of wealth. Azpitarte (2010) includes collectibles, Bover (2010) also considers consumer durables on top of collectibles, and OECD (2015) excludes pension wealth and incorporates collectibles and consumer durables to its definition of wealth as well.

In an attempt to do a more consistent comparison across the two methods, I have also constructed the wealth distribution series with the SHF, under the same definition of wealth and splitting households and their wealth into two once they are married. Results are still quite different across the two methods (Fig. 17). Whereas the top 10 percent holds 55.8 percent using the capitalization method in 2011, it only concentrates 43.9 percent using the survey-method. Contrary to what happens at the top 10 percent, the middle 40 percent and the bottom 50 percent concentrate more wealth using the survey (44.2 percent and 12 percent, respectively) than the capitalization method (36.5 percent and 7.7 percent, respectively).

Apart from the differences in wealth totals, it is a challenge for the SHF, as with all wealth surveys, to accurately capture wealthy individuals because of limited sample size and low response rates at the very top, so as it is the case with income, wealth shares tend to be lower using survey data instead of tax data. This is also the case in the US, as documented by Saez and Zucman (2016). Nonetheless, it is important to emphasize the extreme usefulness of wealth surveys in order to analyze the bottom and middle of the distribution, which in many countries, in particular Spain, it is not entirely possible using only tax data.

6.2 Testing the capitalization method

As in Saez and Zucman (2016), I obtain the wealth estimates at the individual level by assuming that within a given asset class, everybody has the same capitalization factor. Computing wealth shares by capitalizing income consists of allocating the wealth for each asset recorded in the Non-financial and Financial Accounts to each group of the distribution based on how the income for this asset is distributed. Hence, this method does not require to know the exact rate of return for each asset type, as long as the distribution of each capital income category is similar to the distribution of its corresponding wealth category.

In an attempt to test whether rates of returns are flat along the distribution I use the microfiles from personal income tax records linked to wealth tax records for the period 2002-2007. This allows me to calculate the individual rate of return on deposits and fixed-income securities as the ratio of the interest they earn in these assets and the total value they hold in these assets. Whether ranking individuals by the total amount of deposits and fixed-income securities they owned or by total net wealth, rates of return are flat along the distribution (Fig. 18).[24]

As another robustness check, I use the SHF and compare the wealth shares using direct reported wealth, with the shares calculated by capitalizing the income from the survey. Results are very similar (Fig. 19).

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[24] Results presented here are only for 2005, but they are very similar for the rest of years available (2002-2007). Ideally, rates of return for all asset categories should be computed, but unfortunately for the rest of assets it is not possible to perfectly link the income with the wealth reported.

7. CONCLUSION

In this paper we have constructed wealth inequality series for the full distribution over the period 1984 to 2013 using a mixed capitalization-survey method. My findings point out a moderate decrease in the top 10 percent wealth share from the mid-1980s until beginning of the 1990s, at the expense of the increase in both the middle 40 percent and the bottom 50 percent of the distribution. The top 10 percent wealth share increases from the mid-1990s until the burst of the housing bubble in 2008 and then it stabilizes at a similar level to the mid-1980s. The bulk in both housing and offshore assets have pushed toward rising wealth concentration in the last two decades.

Further research is needed about the evolution of wealth inequality over time. There are conflicting results among studies that need to be better explained. Although sometimes it may be forgotten, how wealth is concentrated extremely matters from the policy point of view. It can help in the designing of policies aimed at achieving a more equitable system that at the same time could create new sources of economic growth.

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9. APPENDIX A. FIGURES

FIGURE 1 · LEVEL AND COMPOSITION OF PERSONAL WEALTH, SPAIN 1984-2014

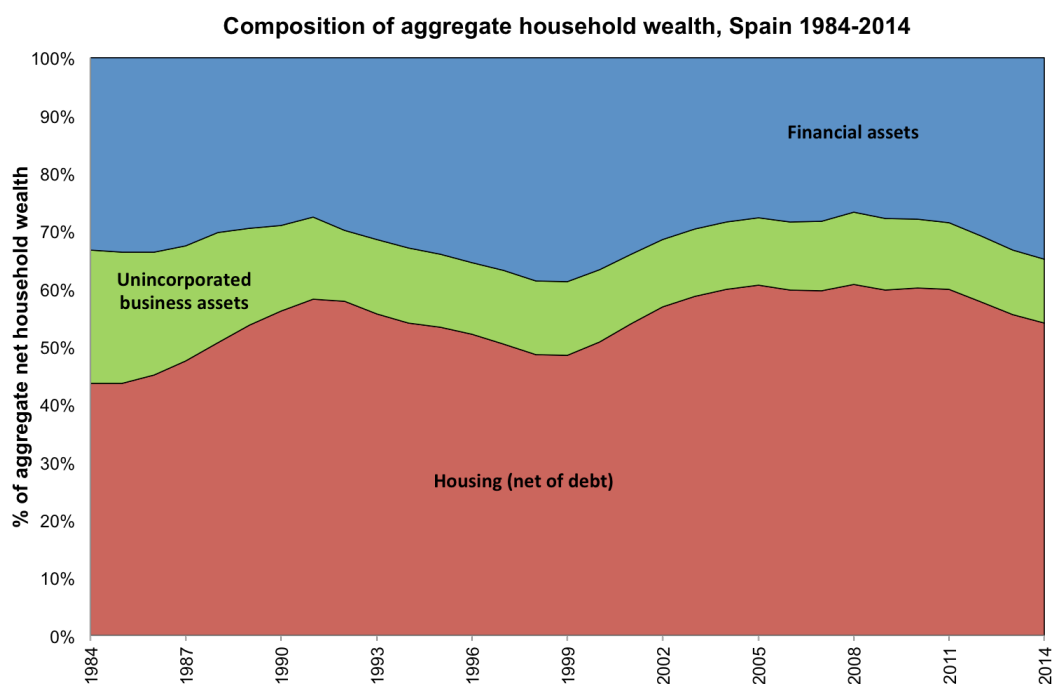**Level and composition of household wealth, Spain 1984-2014**
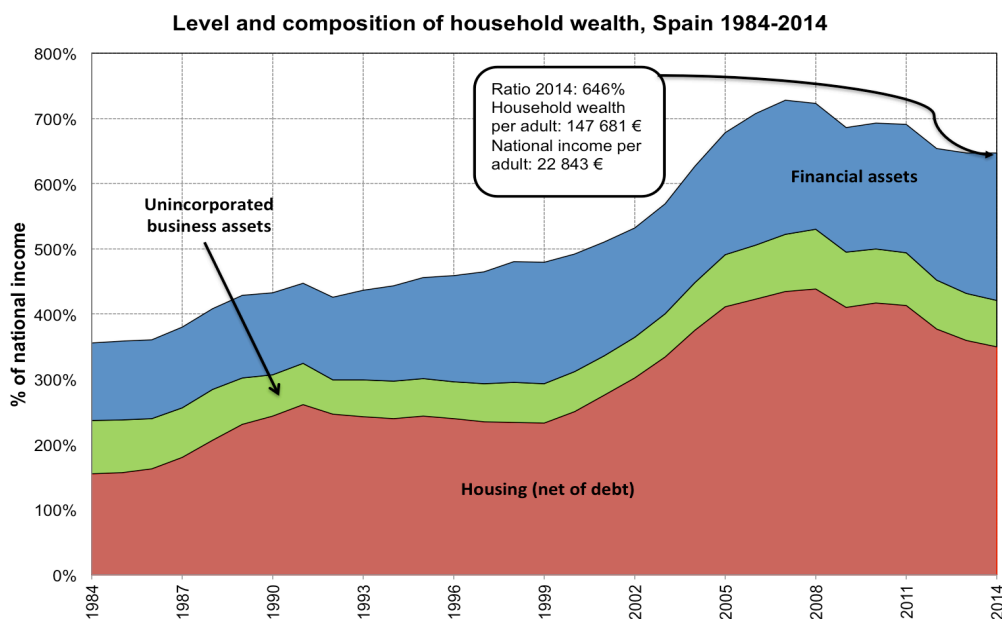
FIGURE 2 · COMPOSITION OF PERSONAL WEALTH, SPAIN 1984-2014

Composition of aggregate household wealth, Spain 1984-2014

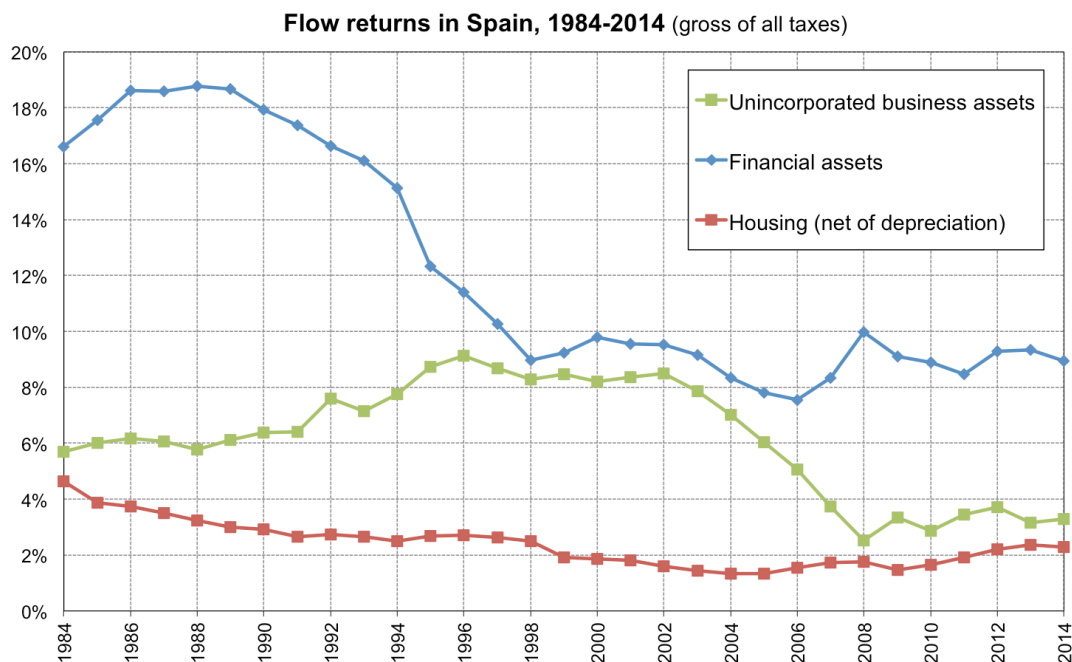FIGURE 3 · FLOW RETURNS IN SPAIN, 1984-2014 (GROSS OF ALL TAXES)

Flow returns in Spain, 1984-2014 (gross of all taxes)

FIGURE 4 · DIRECT VS. IMPUTED WEALTH

Direct vs. Imputed Wealth
(using Spanish Survey of Household Finances)
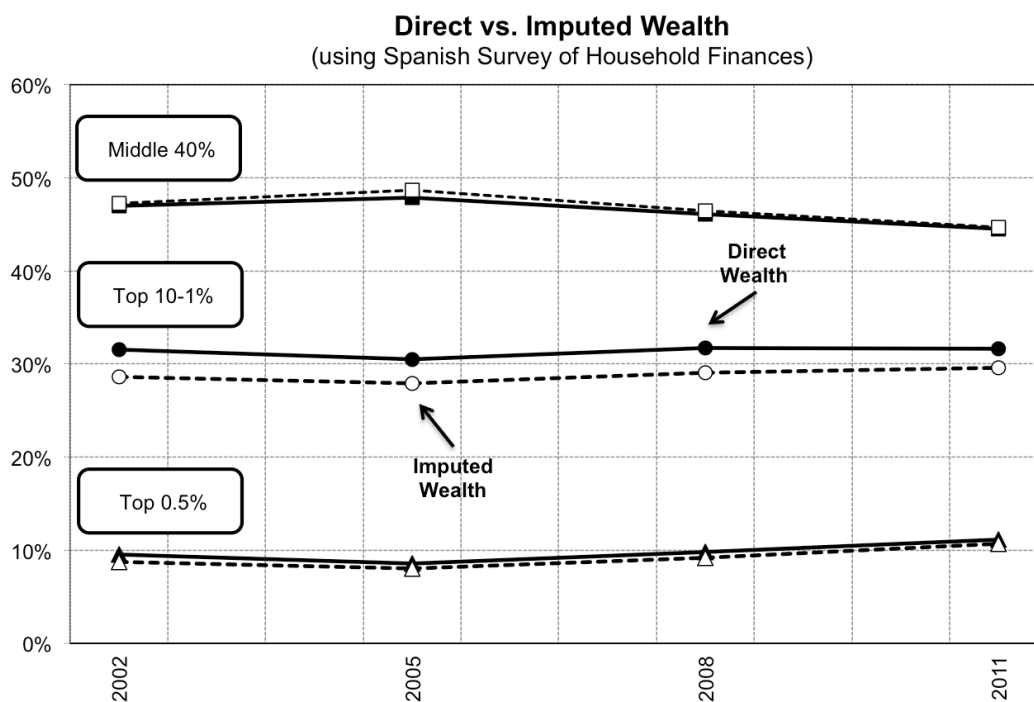
FIGURE 5 · WEALTH CONCENTRATION IN SPAIN, 1984-2013

Wealth concentration in Spain, 1984-2013 (wealth shares, % total wealth)
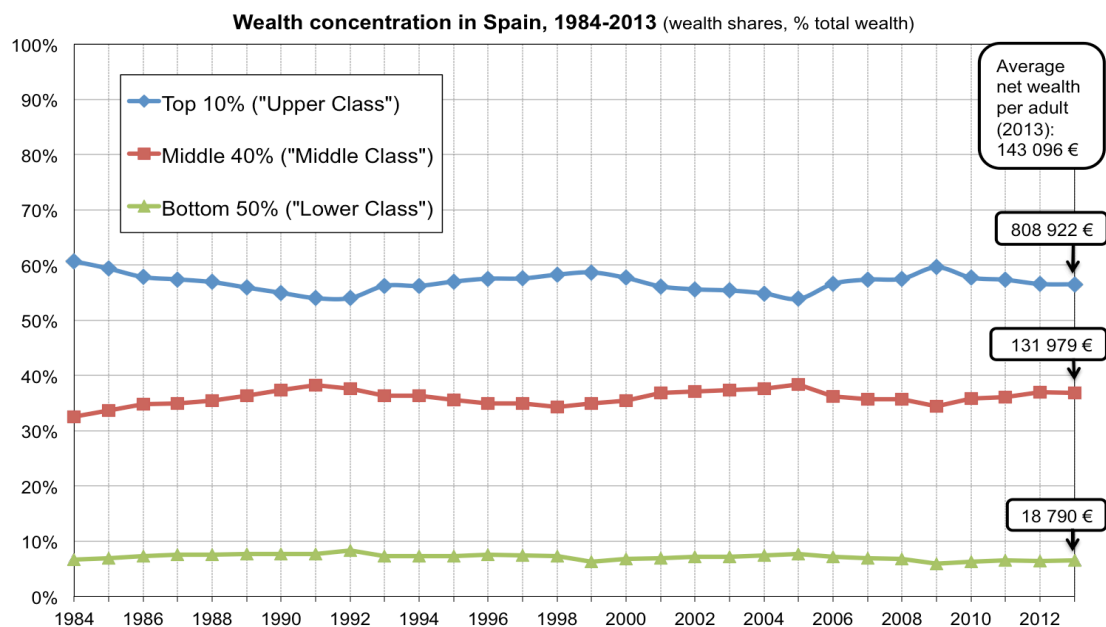
FIGURE 6A · COMPOSITION OF THE WEALTH DISTRIBUTION, SPAIN 1984-2013

Composition of top 10% wealth (% aggregate wealth)
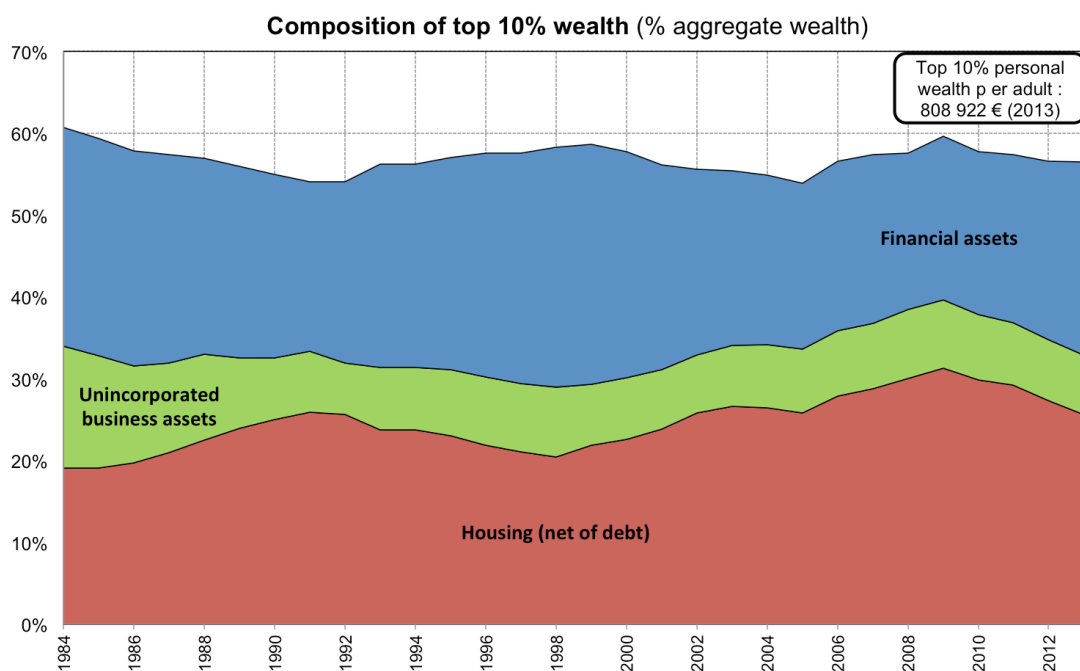
FIGURE 6B · COMPOSITION OF THE WEALTH DISTRIBUTION, SPAIN 1984-2013

Composition of middle 40% wealth (% aggregate wealth)

Middle 40% personal
wealth per adult :
131 979 € (2013)

Unincorporated
business assets

Financial assets

Housing (net of debt)
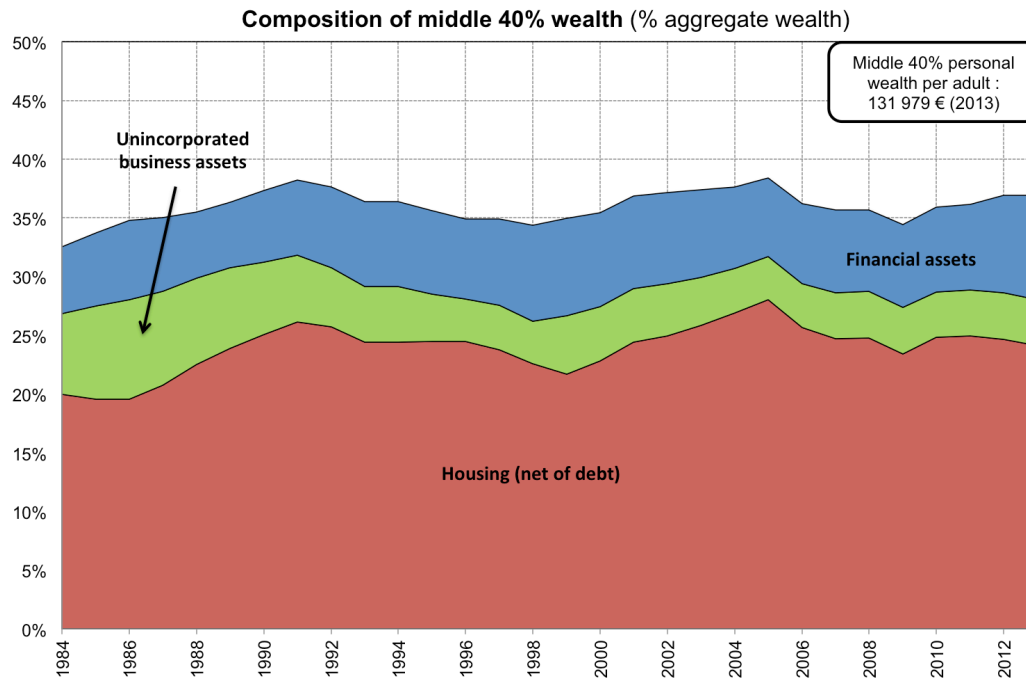
FIGURE 6C · COMPOSITION OF THE WEALTH DISTRIBUTION, SPAIN 1984-2013

Composition of bottom 50% wealth (% aggregate wealth)

Bottom 50% personal
wealth per adult :
18 790 € (2013)

Financial assets

Unincorporated
business assets

Housing (net of debt)

112
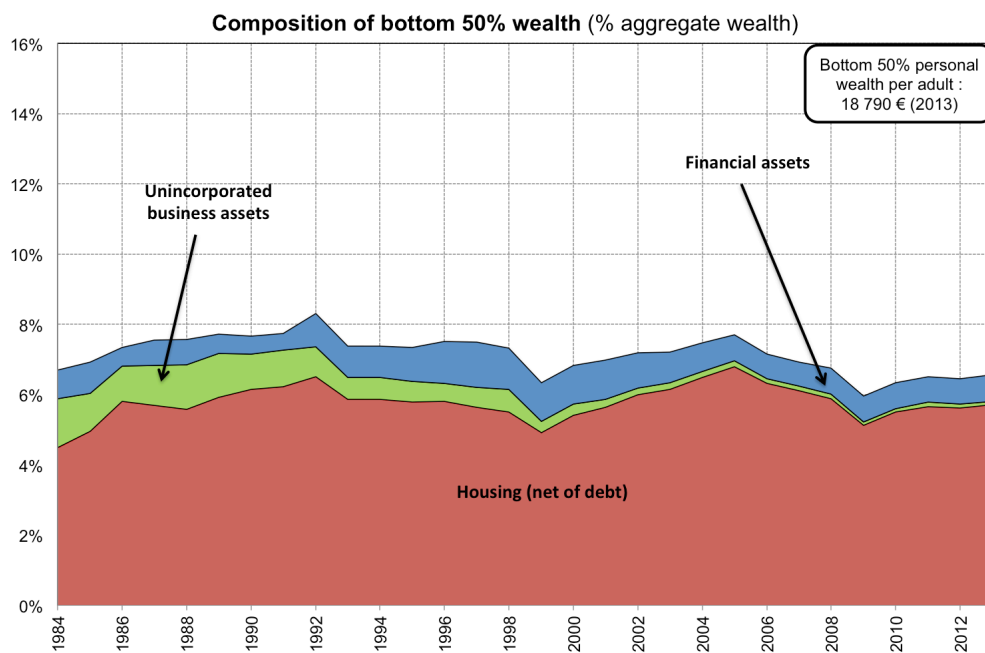
FIGURE 7 · COMPOSITION OF HOUSING BY WEALTH GROUP, SPAIN 1984-2013

Composition of housing by wealth group, Spain 1984-2013
(using capitalized shares)
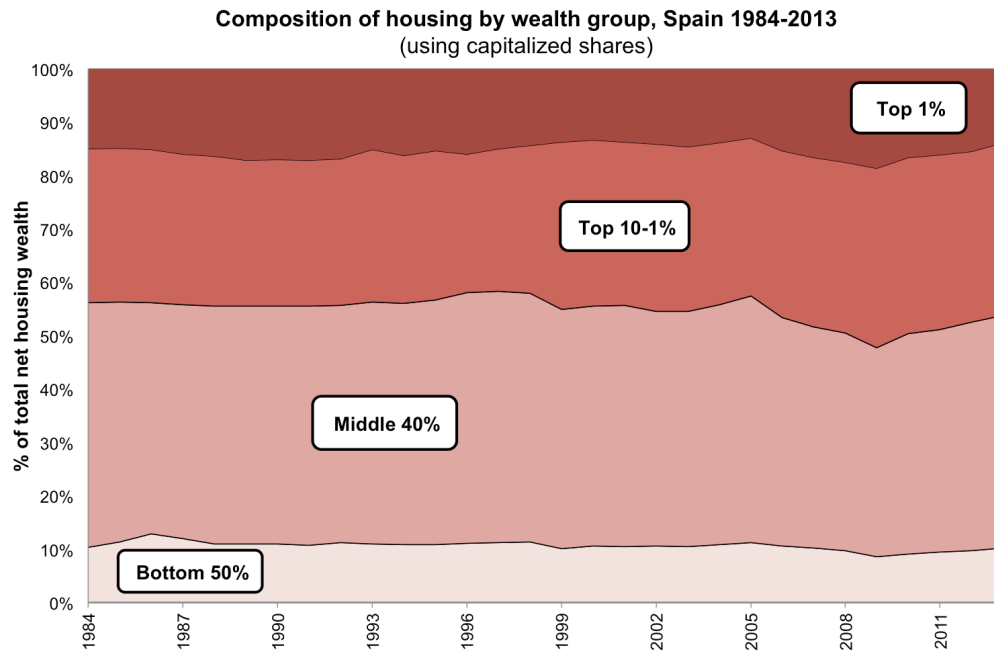
FIGURE 8 · AGE-WEALTH PROFILES IN SPAIN, 2001-2013

Age-wealth profiles in Spain, 2001-2013
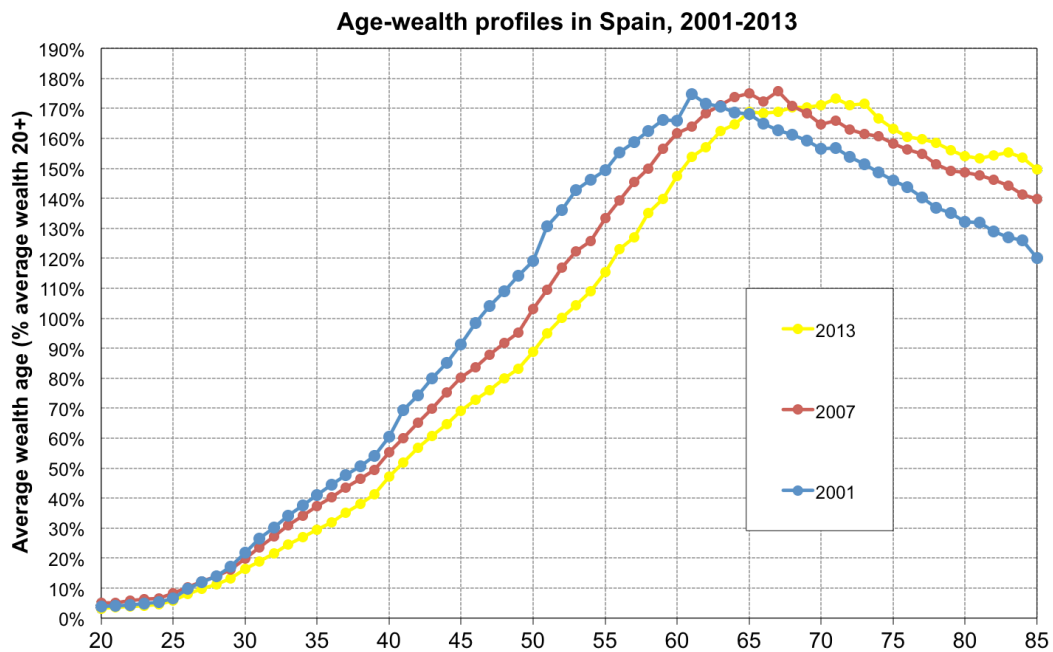
FIGURE 9 · WEALTH CONCENTRATION BY AGE GROUP, 1999-2013

Wealth concentration by age group, Spain 1999-2013
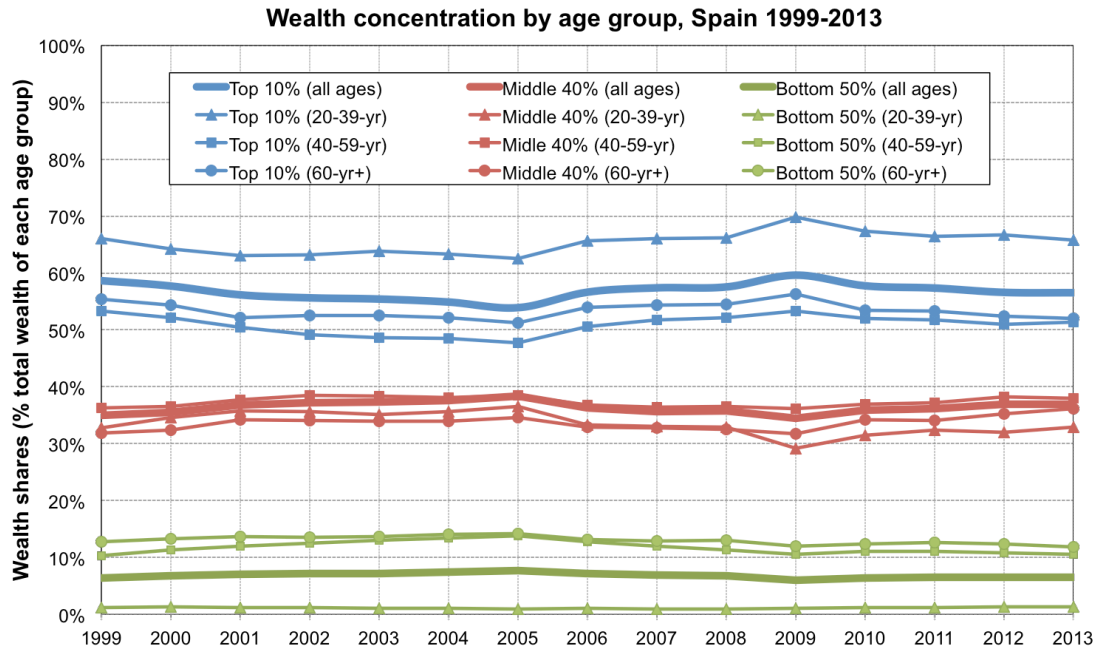
FIGURE 10 · TOP 10 % WEALTH SHARE: INTERNATIONAL COMPARISON, 1984-2013
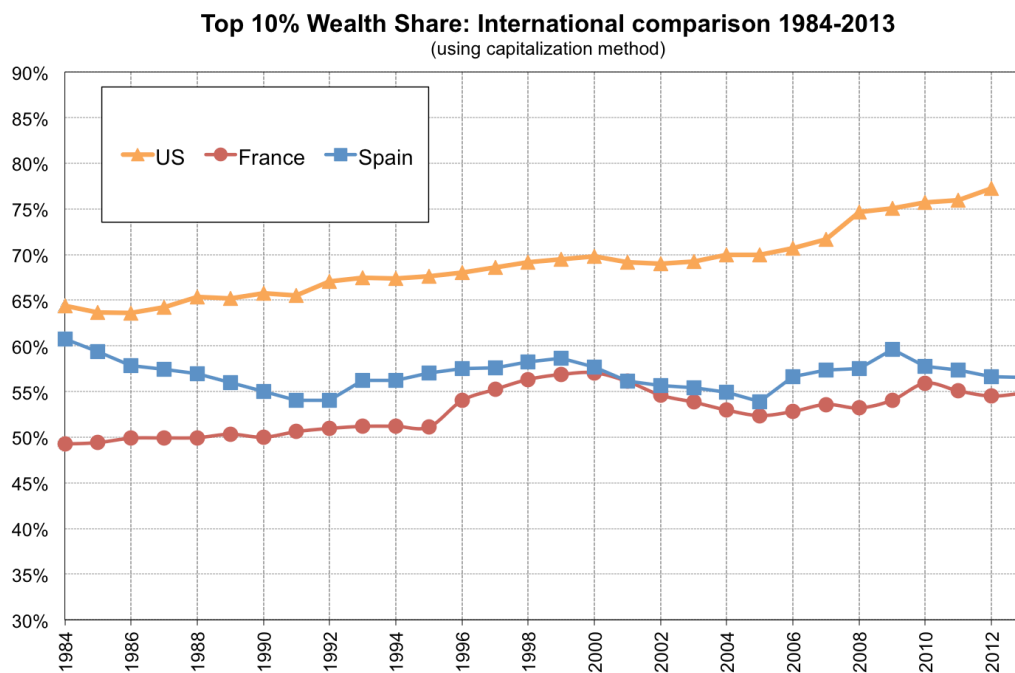(USING CAPITALIZATION METHOD)

Top 10% Wealth Share: International comparison 1984-2013
(using capitalization method)

FIGURE 11 · TOP 1% WEALTH SHARE: INTERNATIONAL COMPARISON, 1984-2013
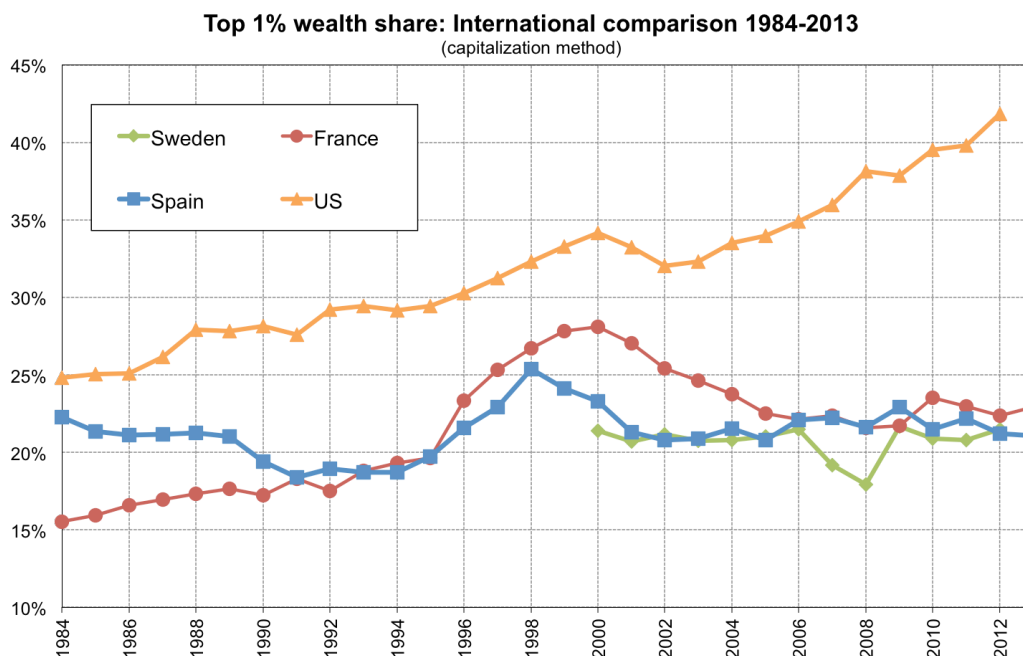
(USING CAPITALIZATION METHOD)

Top 1% wealth share: International comparison 1984-2013
(capitalization method)

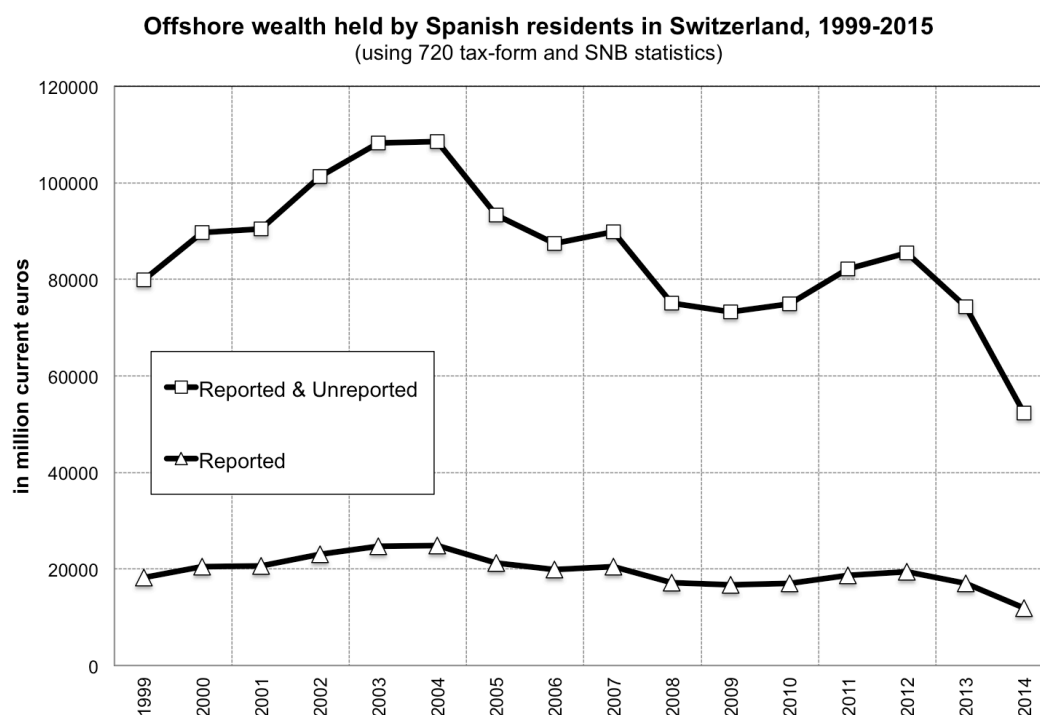FIGURE 12 · OFFSHORE ASSETS HELD BY SPANISH RESIDENTS IN SWITZERLAND, 1999-2015

Offshore wealth held by Spanish residents in Switzerland, 1999-2015
(using 720 tax-form and SNB statistics)

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FIGURE 13 · TOTAL UNREPORTED OFFSHORE ASSETS, SPAIN 1984-2015

Total unreported offshore wealth, Spain 1984-2015
(using 720 tax-form and SNB statistics)

> Unreported offshore wealth: 149,520 million euros (2012), 8.6% of personal financial wealth

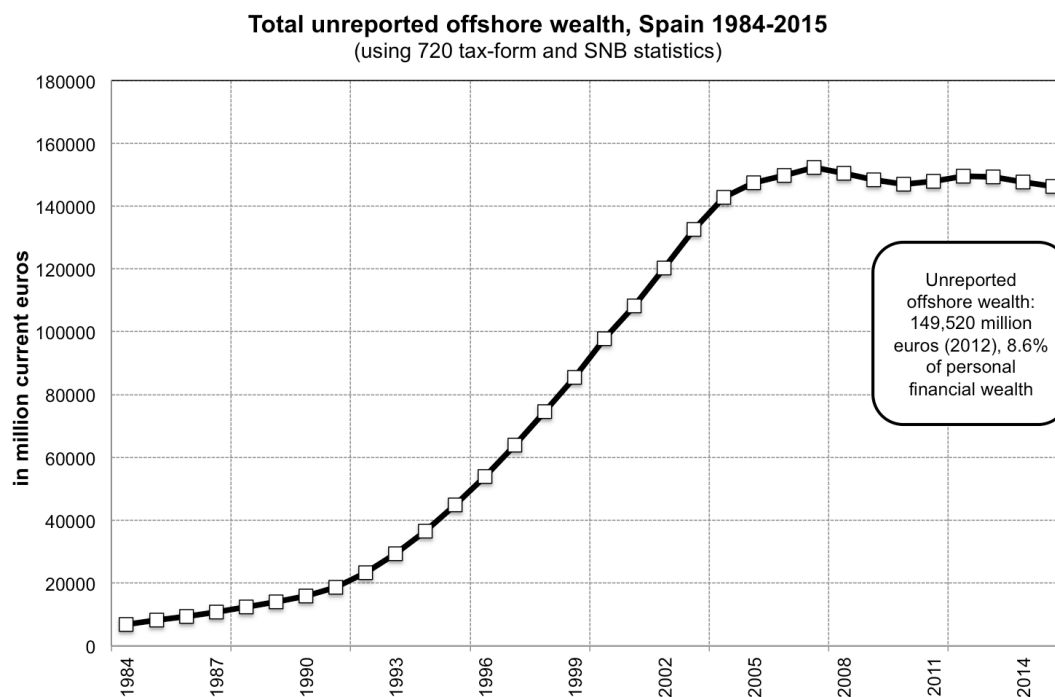FIGURE 14 · COMPOSITION OF UNREPORTED OFFSHORE ASSETS, SPAIN 2012

Composition of unreported offshore assets, Spain 2012
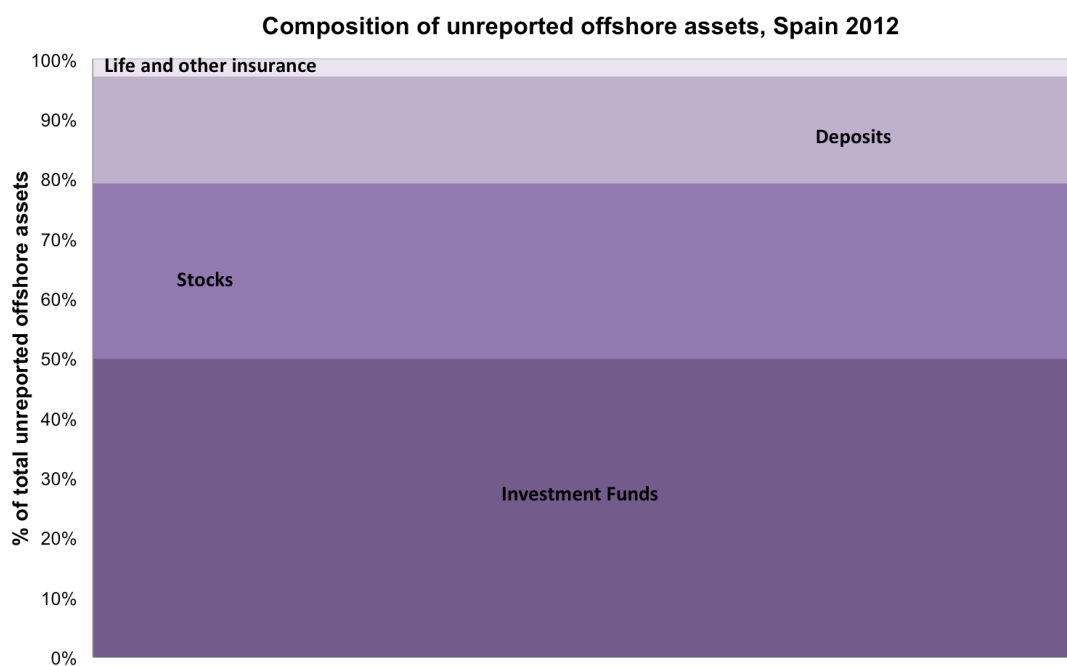
FIGURE 15 · COMPOSITION OF TOP 1 % WEALTH SHARE INCLUDING UNREPORTED OFFSHORE WEALTH,
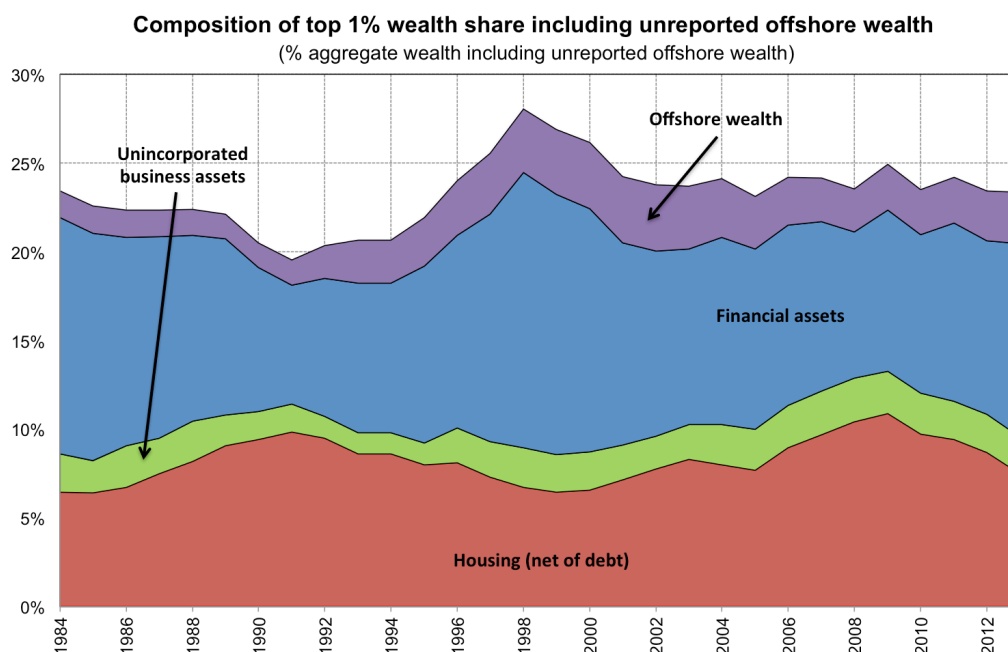SPAIN 1984-2013

Composition of top 1% wealth share including unreported offshore wealth
(% aggregate wealth including unreported offshore wealth)

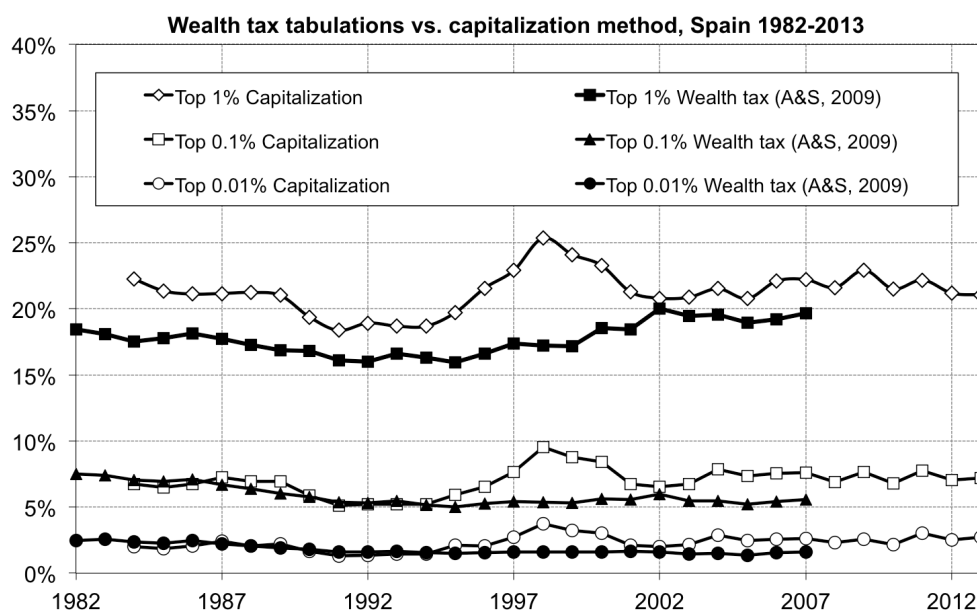FIGURE 16 · WEALTH TAX TABULATIONS VS. CAPITALIZATION METHOD, SPAIN 1982-2013

Wealth tax tabulations vs. capitalization method, Spain 1982-2013

FIGURE 17 · WEALTH SHARES (SHF VS. CAPITALIZATION METHOD), SPAIN 2001-2013

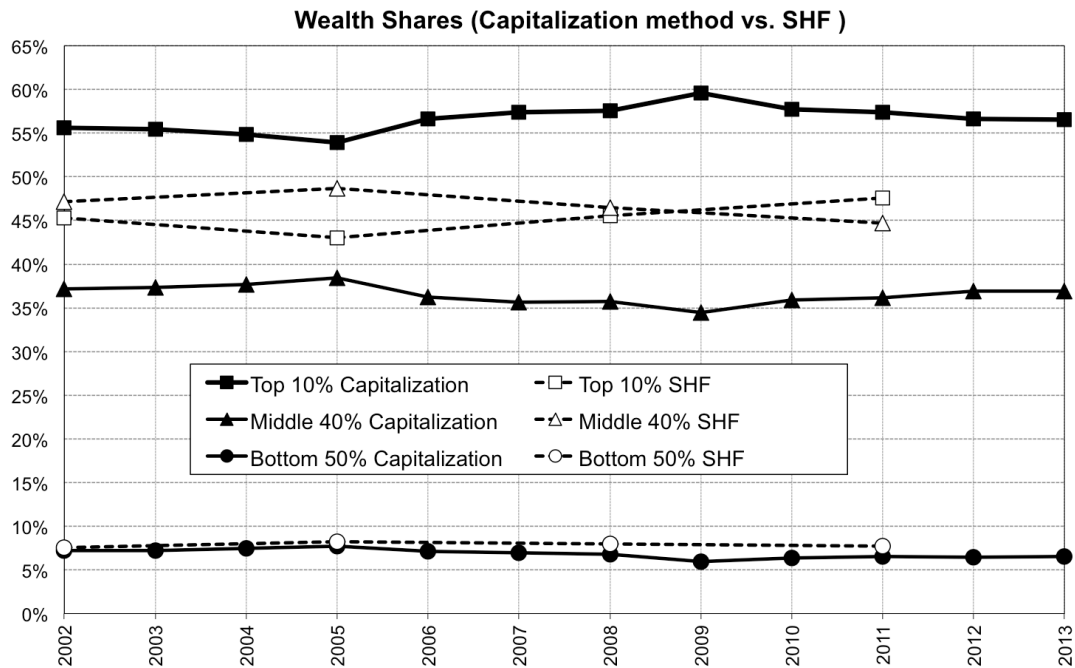**Wealth Shares (Capitalization method vs. SHF)**

FIGURE 18A · RETURNS ON DEPOSITS AND FIXED-INCOME SECURITIES, SPAIN 2005

Rate of return on deposits and fixed-income securities, 2005
(using Spanish wealth and personal income tax returns)

total deposits and fixed-income securities (thousands €)
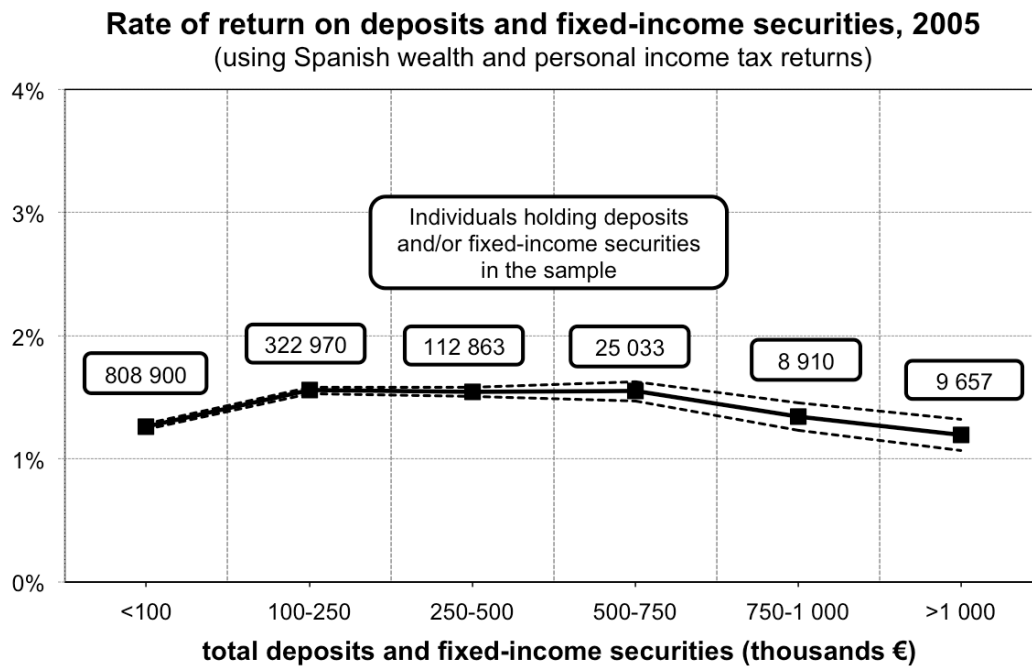
FIGURE 18B · RETURNS ON DEPOSITS AND FIXED-INCOME SECURITIES, SPAIN 2005

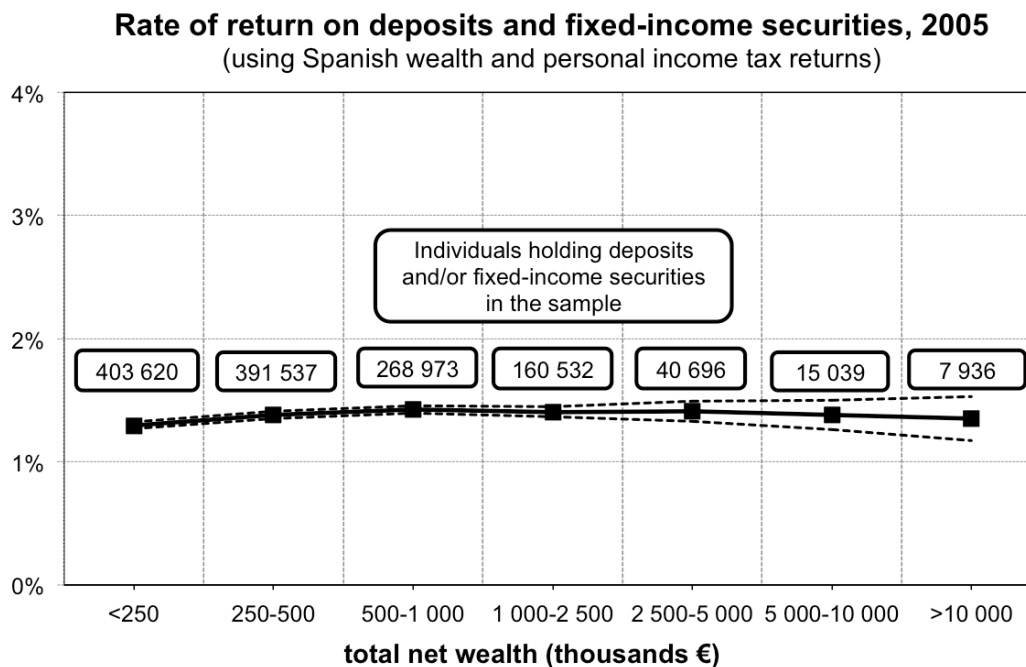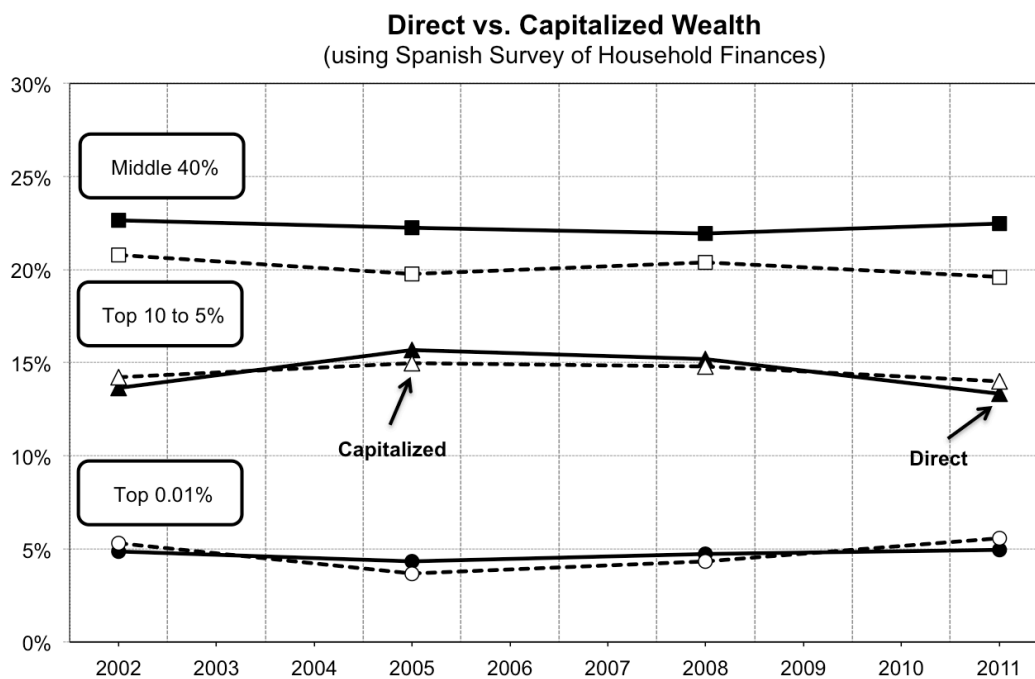**Rate of return on deposits and fixed-income securities, 2005**
(using Spanish wealth and personal income tax returns)

FIGURE 19 · DIRECT VS. CAPITALIZED WEALTH, SPAIN 2002-2011

Direct vs. Capitalized Wealth
(using Spanish Survey of Household Finances)

10. APPENDIX B. TABLES

TABLE 1 · COMPARISON OF WEALTH AGGREGATES, SPAIN 2005

Comparison of wealth aggregates, 2005 (in current billion euros)

	Capitalization method	Alvaredo & Saez (2009)	Survey of Household Finances
Net personal wealth	4 867	5 057	3 491
Net non-financial assets	3 518	3 778	3 118
Financial assets	1349	1 279	434

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