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The household wealth distribution in Spain: The role of housing and financial wealth*

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Abstract

We analyse the distribution of household wealth in Spain using the first wave of the Spanish Survey of Household Finances, conducted by the Bank of Spain in 2002. We study the distribution of the different wealth components and, using inequality decomposition techniques, we assess the contribution of each element to overall wealth inequality. We find that wealth is more unequally distributed than income, while housing wealth is much more evenly distributed than financial wealth. Moreover, we identify two groups of wealth components: one disequalizing group, which includes financial wealth, whose value and portfolio share increase with household wealth; and a second more equalizing one, including housing wealth, whose value increases with wealth, but their share in the portfolio does not. Finally, we show that differences between age groups do not explain why wealth is much more unequally distributed than income. Instead, business and home ownership are factors that clearly contribute to explain this feature.

Keywords: Wealth, income, distribution, inequality decomposition.

JEL classification: D14, D31

1. Introduction

The standard indicators of household economic well-being most commonly employed in welfare distribution analysis are based on money income. However, it is well known that these

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indicators ignore certain crucial determinants of families' welfare. Indeed, given the growing importance of short-term income uncertainty, current income may not be an appropriate measure to evaluate the distribution of welfare due to its low capacity to reflect expected lifetime resources (Gottschalk and Moffitt 1994, Blundell and Preston 1998). Further, changes on income inequality may have different effects on welfare distribution depending on the credit constraints and the insurance mechanisms available to households. Thus, the effect of income shocks on consumption and welfare inequality will depend to a large extent on the families' capacity to smooth consumption during low income periods. In this respect, household wealth contributes importantly to household well-being as assets are the main instrument households have to insure themselves against risk.[1] In fact, wealth is the principal source of liquidity for families in times of economic stress, such as those imposed by unemployment, sickness, or family break-up.(Wolff, 1998) Moreover, wealth is a source of consumption, independent of the income it provides, because assets can be converted into cash and thus can cover immediate consumption needs. Similarly, certain types of assets, like housing, provide services directly to owners. Therefore, if we want to improve our knowledge of the distribution of well-being we need to investigate how the wealth dimension of welfare is distributed.

In this paper we study the distribution of wealth in Spain using data from the first wave of the Spanish Survey of Household Finances (Encuesta Financiera de las Familias, EFF), conducted by the Bank of Spain in 2002. This is the first survey that provides detailed information on the wealth holdings of Spanish households.[2] Research on the distribution of wealth in Spain is scarce and, given the lack of survey data until 2003, mostly based on wealth tax data. Thus, Naredo (1993) and Arcarons and Calonge (2003) use information from the Spanish wealth tax (Impuesto sobre el Patrimonio) to analyse the distribution of the wealth tax base and tax burden and conclude that both these variables are highly concentrated. More recently, Alvaredo and Saez (2009) estimate top net worth and financial wealth shares for the period 1982-2005 also using personal wealth tax information.[3] These authors find that the sharp increase in real estate prices in Spain has been, to a large extent, offset by large stock price increases, leaving overall wealth concentration relatively stable between 1982 and 2002. Using a different approach, Perdiz (2004) uses data from the Spanish Household Expenditure Survey (Encuesta de Presupuestos Familiares, EPF) to estimate household wealth using reported income flows from different assets and finds that real estate assets are more equally distributed than the rest.

To date, only Bover (2005) and Bover *et al.* (2005) have used the information on wealth in the EFF database. The first of these papers reports average and median wealth holdings of Spanish households as well as asset portfolio composition for different household types. Bover *et al.* (2005) compare the distribution of wealth in Spain with that in Italy, United States, and United Kingdom using the relative difference between the 25th and 75th percentiles. Their results suggest that the distribution of wealth among Spanish households is the most equal of the four countries considered.

The aim of this paper is twofold. First, we apply the main instruments and techniques from wealth distribution analysis to study in detail how wealth and its main components are distributed among Spanish households using the data from the first wave of the EFF. In

addition, we study the relationship between household income and wealth looking at the correspondence between these two distributions. Second, to understand the factors underlying wealth inequality in Spain, we perform an inequality decomposition analysis in order to determine the contribution of the different wealth components and the different population subgroups to total inequality. In particular, an important goal of our work is to measure the contribution of housing wealth to overall wealth inequality. We argue this is a particularly relevant issue in the case of Spain, a country with one of the largest rates of homeownership among OECD countries and where this type of wealth constitutes the main component of the households' portfolio (Bover, 2005). Further, during the last decade Spain has experienced an intensive housing boom, where, despite of an extremely high rate of housing construction,[4] there has been one of the largest increases in housing prices among the OECD countries.[5] Importantly, fiscal policy in Spain may have contributed to increase the portfolio share of housing wealth, as well as, the pressure on housing prices. In particular, the net effect of taxes and subsidies implied a reduction in the cost of housing for the period 1986 and 2004, which clearly fostered the acquisition of housing assets over other type of wealth holdings (see Lopez-García 2004, García-Vaquero and Martínez 2005, Onrubia and Rodado 2010). Consequently, given that the fiscal policy has been biased towards the accumulation of housing wealth, we argue it is highly relevant to shed some light on its impact on the distribution of wealth by assessing the contribution of this type of wealth to overall wealth inequality.

This paper is organised as follows. Section 2 describes the first wave of the EFF and the different wealth concepts we use in the analysis. Section 3 analyses and compares the distributions of housing wealth, financial wealth, total wealth, and income among the Spanish households. In Section 4 we focus on the distribution of wealth components and portfolio composition. The results of the inequality decompositions by wealth components and population subgroups are presented in Section 5. Finally, Section 6 offers some conclusions.

2. Data Sources and Methods

The primary purpose of the first wave of the Spanish Survey of Household Finances (EFF) is to provide detailed information on Spanish households' wealth holdings.[6] The survey contains information about ownership status and value of the main residence and other real estate, as well as the amount pending repayment of the loans related to the purchase of these assets. The EFF also provides the value of the means of transport, jewellery, works of art, antiques, and businesses owned by any household member.[7] Similarly, households report the value of all deposits and accounts in financial institutions, listed and unlisted stocks, mutual and investment funds, bonds, pension plans,[8] life insurance, and other financial assets (such as loans to third parties) owned by household members. Finally, the EFF also contains information on debts not related to the purchase of real estate, including its type, motive, and amount pending repayment.

This information is provided for a sample of 5,143 households. An important feature of this survey is the oversampling of wealthy households. As Davies and Shorrocks (2000)

suggest, this is a necessary condition in order to obtain an accurate picture of aggregate wealth, given that an important share of total assets belongs to the richest households. Oversampling in the EFF is based on the individual information of the Spanish wealth tax collected in 1999.[9] As a result of the oversampling, the number of wealth tax payers included in the final sample is 25 times larger than it would be as a result of random sampling.

In wealth surveys, households usually fail to respond to a complete questionnaire. Ignoring this problem would induce severe bias in the results, as we expect the probability of providing a complete answer to be correlated with households characteristics. In the EFF this problem is corrected using a multiple imputation method[10] that provides five imputed values for each missing value, which allows for the construction of five complete datasets.[11]

The information in the EFF allows us to construct four measures of wealth: total net wealth, fungible wealth, housing wealth, and financial wealth. Total net wealth is defined as the current value of total household assets minus the current value of debts. Total assets is defined as the sum of the gross value of owner-occupied housing, other real estate, business equities related to self-employment, collectibles,[12] vehicles, and other consumer durables. Further, the asset category also includes multiple financial assets including the current value of transaction and saving accounts, total bonds, stocks, mutual and investment funds, private pension schemes, life insurance and other financial assets. Finally, total debt equals the sum of principal residence debt, other real estate property debt, vehicle loans, installment debt, and other debts.

The second measure of wealth, which we will call fungible wealth, is slightly more restricted and approaches the idea of wealth as a store of value. Indeed, this variable does not include the value of consumer durables as these assets are usually acquired to provide needed consumption services rather than to serve as a source of potential consumption. Thus, fungible wealth is equivalent to total net wealth minus the value of vehicles and other consumer durables.

The two last measures of wealth correspond to the two main components of fungible wealth: housing wealth and financial wealth. Housing wealth is equivalent to the net equity in owner-occupied housing, that is, the difference between the gross value and the outstanding debts related to the purchase of the main residence.[13] Thus, financial wealth is defined as fungible wealth minus housing wealth. Therefore, financial wealth is the most liquid wealth concept of those considered in the paper, as it excludes the value of the most illiquid assets such as the consumer durables and housing wealth.

On the other hand, the EFF also contains data on the different sources of income. In particular, we work through this analysis with household annual gross income (before taxes and contributions to the Social Security System) in 2001. This variable is the sum of capital income, wages and salaries, self-employment earnings, unemployment benefits, private and public retirement pensions, and other transfers received by any household member.

Lastly, the unit of analysis we use is the household since we are interested in analysing the inequality of access to wealth across households, rather than the actual consumption of

wealth by individual household members. In contrast with income distribution analysis, where income is converted to equivalent income due to the consideration of economies of scale, we implicitly assume that households have perfect returns to scale in the use of wealth. This is the usual method employed in the wealth distribution literature[14] since there is no standard approach to account for different wealth needs across households.[15]

3. The Household Wealth Distribution

3.1. How is wealth distributed?

The primary goal of this section is to determine the main features of the distribution of wealth in Spain and to compare them with those of the income distribution. In this analysis we use annual household gross income in 2001, household total net wealth, fungible wealth, housing wealth, and financial wealth in 2002.[16] Table 1 shows some descriptive statistics of these variables. In 2002 the average fungible wealth of households was about 154,000 Euros, while the average housing wealth and financial wealth were around 90,000 and 64,000 Euros, respectively. About 3 percent of the households have zero or negative fungible wealth, over 18 percent have zero housing wealth, and about 11 percent have zero or negative financial wealth. These figures are relatively low compared with other countries. Indeed, according to Sierminska *et al.* (2006), in Italy, Canada, U.S., Finland, and Sweden, the number of households with zero or negative fungible wealth ranges between 10 and 30 percent,[17] while Wolff (1998) reports that in 1995 the share of households with zero or negative financial wealth in the U.S. was about 30 percent.

Table 1
MEAN AND MEDIAN HOUSEHOLD WEALTH AND INCOME
(in thousands Euros)

	Total net wealth	Fungible wealth	Housing wealth	Financial wealth	Income
Mean	172.9	153.9	89.8	64.1	29.3
Median	114.1	95.6	72.0	7.8	22.1
Mean-median ratio	1.5	1.6	1.2	8.3	1.3
Percent of households with zero value	0.0	0.4	18.2	0.9	0.3
Percent of households with negative value	0.3	2.3	0.1	10.2	0.0

Source: Author's calculation using the EFF 2002.

It is worth noting that when we consider a more liquid wealth concept, the median value decreases much more than the mean does, as is reflected in the mean-median ratio. This ratio, as a standard measure of asymmetry, suggests two things: first, financial wealth is by far the most right skewed of the four wealth variables considered; second, except for housing wealth, wealth is more positively skewed than income. This feature can be viewed even more clearly by looking at the estimated density functions[18] presented in Figure 1. The income distribution displays most of the population mass around the median value. In particular, the share of

households with income between half and one point five the median income is greater than 50 percent. In contrast, in the case of fungible wealth, housing wealth, and financial wealth this percentage is around 38, 39, and 14 percent, respectively. Thus, for housing wealth a substantial fraction of density mass lies close to zero. Indeed, there are marked spikes around this value that reflect the relatively larger fraction of the population with zero housing wealth (18.2 percent).[19] Financial wealth displays more population mass below zero (about 10 percent) than housing wealth and also presents large and sparse right-hand tail reflecting the existence of households that accumulate a disproportionate amount of this type of wealth.

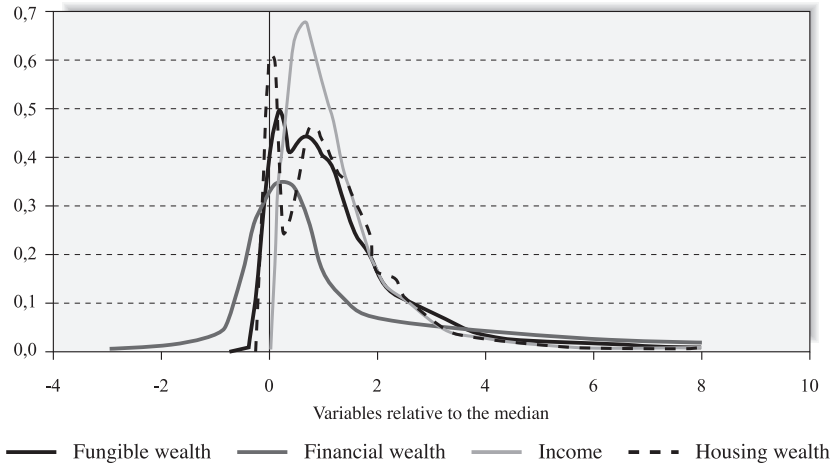

Figure 1. Estimated density functions for household wealth and income

The results from this graphical analysis already provide some insight about wealth and income inequality. To analyse this issue, Table 2 shows the percentage shares held by various percentiles of wealth and income. In 2002 the richest 10 percent of families ranked by fungible wealth, owned more than 40 percent of total fungible wealth while, the share held by the bottom quintile was less than 1 percent. The most liquid assets are the most concentrated ones. Thus, in the case of financial wealth, the richest 20 percent owned more than 85 percent, whereas the bottom 40 percent owned a negative amount of this type of wealth. In contrast, housing wealth was less concentrated than financial wealth. Thus, the top 1 percent of households ranked by housing wealth accumulated only 6 percent of the total wealth. The Gini index of fungible wealth is 0.6. Compared with other countries included in the LWS, this value is similar to that of Italy, while it is significantly lower than that of Canada, Finland, Sweden, and United States, where the index is above 0.7.[20] Finally, the figures reveal that wealth is much more concentrated than gross income.[21] Indeed, the bottom 20 percent in terms of income accumulated about 5 percent of total income, which is larger than for any of the wealth measures considered. In comparison, the richest 20 percent accumulated about 47 percent of total income, which is rather low compared with the figures for wealth.

Table 2
THE DISTRIBUTION OF HOUSEHOLD WEALTH AND INCOME

	Total net wealth	Fungible wealth	Housing wealth	Financial wealth	Income
Percentage share held by					
Bottom Quintile	1.9	0.9	0.2	–1.5	5.1
2nd Quintile	7.4	6.6	8.3	0.5	10.1
3rd Quintile	13.2	12.5	16.3	2.8	15.2
4th Quintile	20.8	20.6	24.9	11.9	22.6
Top Quintile	56.7	59.4	50.4	86.3	47.1
Percentage share held by					
Bottom 40%	9.4	7.5	8.4	–1.0	15.2
Next 50%	50.5	50.0	59.3	31.8	54.3
Top 10 %	40.2	42.6	32.3	69.2	30.5
Top 10-5%	12.1	12.5	12.2	16.2	11.1
Top 5-1%	15.6	16.4	14.0	25.5	12.8
Top 1%	12.4	13.6	6.2	27.4	6.7
Gini Index	0.54	0.58	0.84	0.50	0.42
Coefficient of Variation	5.03	5.64	13.25	1.05	1.00
p75/p25	3.9	4.5	4.2	56.0	2.8
p90/p50	3.1	3.3	2.5	20.9	2.6
p10/p50	0.1	0.02	0.0	–0.01	0.3
S80/S20	29.9	66.0	252.0	–57.6	9.2

Source: Author's calculation using the EFF 2002.
Note: For the computation of percentile shares households are ranked according to the correspondent variable.

In order to check the robustness of the previous results to the way inequality is measured, Figure 2 presents conventional Lorenz curves for household wealth and income. As can be observed, the Lorenz curve for financial wealth is dominated by the rest of the distributions as it lies significantly below the other Lorenz curves. Similarly, the Lorenz curve for income clearly dominates the fungible wealth and financial wealth distributions, as it lies considerably inside the curves for fungible wealth and financial wealth. The Lorenz criterion is not conclusive only when comparing housing wealth with income and fungible wealth.[22]

3.2. Why is wealth inequality so high?

There is a huge literature that tries to explain the large variance in asset holdings among households.[23] In particular, this literature points to life cycle savings as one of the most important sources of wealth inequality.[24] The theoretical support for this idea is the basic life cycle model proposed by Modigliani and Brumberg in 1954. According to this model, individuals will save during their working years to provide for consumption during retirement, which implies that age is a factor that contributes to wealth inequality. Table 3

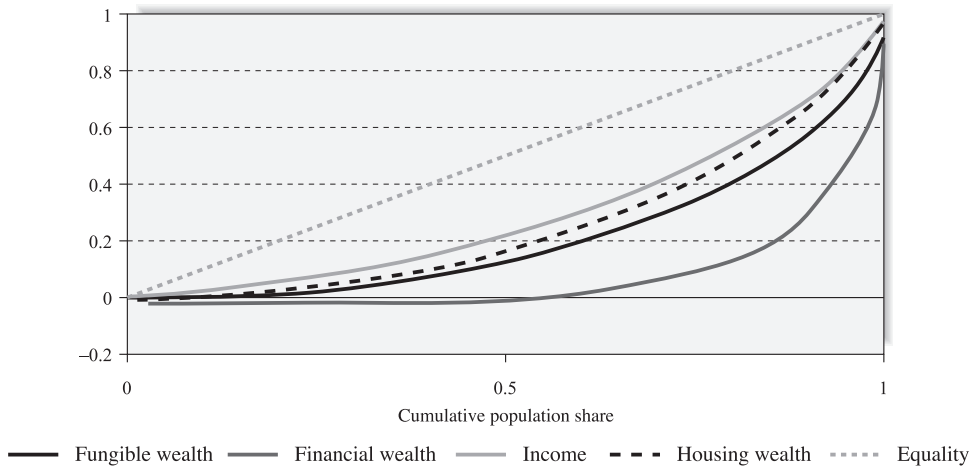

Figure 2. Lorenz curves for household Wealth and Income

shows average wealth for different age groups. As can be observed, the cross-section age-wealth and income profiles exhibit the expected hump-shaped pattern. Indeed, for total net wealth, fungible wealth, and financial wealth, the mean rises steadily with age, reaching its peak in the 55-64 age group, while for housing wealth and income the peak is reached among those aged 45-54.

Table 3
AGE–WEALTH AND INCOME PROFILE
(ratio of mean wealth and mean income by age class to overall mean)

	Total net wealth	Fungible wealth	Housing wealth	Financial wealth	Income
All	1.00	1.00	1.00	1.00	1.00
Under 35	0.60	0.55	0.60	0.47	0.94
35-44	0.85	0.81	0.87	0.73	1.04
45-54	1.29	1.29	1.27	1.32	1.31
55-64	1.39	1.42	1.20	1.73	1.20
65-74	0.97	1.00	1.07	0.91	0.76
75 and over	0.75	0.78	0.87	0.67	0.50

Source: Author's calculation using the EFF 2002.
Note: Household are classified into age groups according to the age of the household head.

The relationship between age and wealth holdings is confirmed when we look at the age composition of wealth quintiles. As Table 4 shows, for both fungible and financial wealth, the bottom part of the distribution is composed mainly of the younger households. In contrast, the age composition of the top 10 percent is hump-shaped, with middle-aged households having the largest presence in this group.

Table 4
THE AGE COMPOSITION OF WEALTH PERCENTILES, 2002

	Fungible wealth percentile						Financial wealth percentile					
	Bottom 10%	Next 20%	Next 20%	Next 20%	Next 20%	Top 10%	Bottom 10%	Next 20%	Next 20%	Next 20%	Next 20%	Top 10%
Under 35	26.8	21.2	14.6	11.7	5.8	6.6	18.6	18.9	16.4	15.3	6.2	7.9
35-44	26.1	21.5	24.6	22.2	21.6	15.2	30.3	20.8	21.4	21.9	22.7	17.0
45-54	18.3	12.2	14.3	23.7	25.0	28.9	23.9	14.9	16.5	18.8	23.1	27.0
55-64	10.7	12.6	15.4	15.0	20.5	27.4	18.4	11.4	12.5	14.3	21.8	26.7
65-74	10.4	17.2	18.2	18.0	19.1	15.8	8.1	18.8	18.3	18.2	18.4	15.7
75 and over	7.8	15.3	12.9	9.4	8.0	6.2	0.8	15.2	15.0	11.4	7.9	5.7
All	100	100	100	100	100	100	100	100	100	100	100	100

Source: Author's calculation using the EFF 2002.
Note: Household are classified into age groups according to the age of the household head.

Therefore, there is a clear age-wealth profile that may contribute to an explanation wealth inequality.[25] However, can this profile explain why wealth is so unequally distributed? Can it explain why wealth is more unequally distributed than income? To study these issues, we analyse the contribution to inequality of the different population subgroups. For doing so, we use the Gini index decomposition proposed by Rao (1969).[26] The Gini index can be written as

$$G = \sum_{i=1}^{K} v_k \left(\lambda_k\right)^2 G_k + G_B + R,$$

where G_k is the Gini index for group k, G_B is the Gini index obtained when every individual owns the average wealth of the group and R is the residual term. The terms v_k and λ_k are the population share of group k and group k's mean wealth relative to the population mean, respectively. The first two terms clearly correspond with the within– and between group inequality, whereas the residual term is related to the degree of overlap between groups (Lambert and Aronson, 1993) Thus, this residual would be zero if the subgroup wealth ranges do not overlap and it would increase as overlapping increases.

Table 5 shows the results of the wealth and income decompositions. The first row shows the results of the decomposition by age group. The figures suggest that differences between age groups, while important for explaining wealth inequality, do not explain why wealth is so unequally distributed. Indeed, the between-group inequality accounts for a larger share of income inequality than wealth inequality (32 versus 29 percent, respectively). This result may be due to the Spanish household structure. As Bover (2010) reports, the percent of individuals in Spain aged 25-29 living with their parents is large, which may diminish the role of age when explaining wealth inequality. A similar result is obtained when decomposing by employment status of the household head. As before, the share of inequality explained by the between-group component is larger for income than for wealth. The figures thus point to business and principal residence ownership as factors explaining why wealth is more unevenly distributed than income. Our results suggest that differences

in wealth holdings between owners and non-owners are larger than differences in income. Consequently, inequality between owners and non-owners accounts for 11 and 24 percent of wealth inequality,[27] while in the case of income these figures are about 4 and 11 percent, respectively.

Table 5
INEQUALITY DECOMPOSITION BY POPULATION SUBGROUPS
(all variables in percentage)

	Fungible wealth				Income			
	Within group inequality	Between group inequality	Residual	Total	Within group inequality	Between group inequality	Residual	Total
Age of household head (I)	17.2	28.6	54.2	100	17.0	32.2	50.8	100
Employment status of household head (II)	27.7	31.5	40.8	100	30.1	32.2	37.7	100
Self-employment (III)	87.0	11.0	2.0	100	93.0	4.4	2.6	100
Homeownership (IV)	69.8	24.7	5.4	100	73.4	11.7	14.9	100

Source: Author's calculation using the EFF 2002.

Notes: (I) Households are grouped by the age of the head in six groups: under 35, 35-44, 45-54, 55-64, 65-74, 75 and over.

(II) Employment status of household head can be: employee, self-employed, retired, other inactive, or unemployed.

(III) The category self-employment divides the households into two groups: those where the head is either an owner or a partner in a family business, or a partner in a non-family business with a role in the management; and those engaged in other forms of self-employment (independent professional, sole proprietor of business, and self employed worker) and the remaining households.

(IV) Homeownership refers to possession of the main residence.

3.3. Income and wealth holdings

A very widespread belief is that families with high incomes will most likely hold an important amount of wealth, while poor income families are most likely to hold very little wealth. To conclude this section we analyse this issue by looking at the correspondence between the distributions of wealth and income. As Table 6 shows, for the four types of wealth, both mean and median values increase with household rank in the income distribution. The figures suggest that, although wealth and income are positively correlated, this correlation is rather low. Indeed, the correlation coefficient is always below 0.2 except in the case of housing wealth, for which it reaches 0.4.[28] Similarly, the rank correlations are always below 0.5. These results point out a large re-ranking between income and wealth distributions. To assess this feature more formally, the transition matrix based on the quintile distributions of income and net worth is presented in Table 7. We synthesize information in the matrix with the diagonal index[29] *M(P)* proposed by Shorrocks (1978). The value of this index is 0.88, which reflects a high re-ranking across the two distributions. Indeed, less than 30 percent of households remain in the same quintile when the ranking criterion is changed. As usual, there are more movements within the middle quintiles than in the tails of the distributions. Moreover, there is a larger correspondence at the top than at the bottom of the distributions: about one third of the

households in the bottom quintile of income remain in the same quintile of wealth, whereas more than 45 percent of households in the top quintile of income remain in the same quintile of wealth. These results are similar to those obtained for other countries. For instance, in the U.S., the mobility index is equal to 0.85, while the correspondence at the bottom and at the top is around 40 and 45 percent, respectively (Radner and Vaughan, 1987).[30] On the other hand, long-range re-rankings are frequent in Spain. Indeed, about 25 percent of the households in the bottom quintile move up to positions above the median value when changing the criterion. Similarly, around one fifth of households in the top quintile move down to positions below the median when re-ranked. Thus, income and wealth, while positively correlated, are distributed rather differently among households.

Table 6
MEAN AND MEDIAN WEALTH BY INCOME CLASS
WITH CORRELATION COEFFICIENTS (in thousands, 2002 Euros)

Quintile Gross Income	Total net wealth		Fungible wealth		Housing wealth		Financial wealth	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Bottom Quintile	81.8	61.1	72.8	51.0	55.0	42.1	17.8	2.1
2nd Quintile	112.4	89.7	98.2	75.1	68.4	60.0	29.8	5.0
3rd Quintile	136.0	107.4	117.9	91.6	81.0	72.1	36.9	5.7
4th Quintile	179.3	135.6	157.0	111.9	95.6	84.0	61.4	12.5
Top Quintile	357.4	225.1	323.0	196.6	149.0	120.0	174.0	53.5
Correlation of Income	**Total net wealth**		**Fungible wealth**		**Housing wealth**		**Financial wealth**	
Correlation coefficient	0.18		0.17		0.40		0.13	
Rank correlation	0.48		0.44		0.36		0.36	

Source: Author's calculation using the EFF 2002.

Table 7
RE-RANKING IN THE QUINTILE DISTRIBUTION OF INCOME
AND WEALTH (mobility index M(P) = 0.88)

Income quintile	Fungible wealth quintile				
	1	2	3	4	5
1	32.7	29.4	19.2	13.7	4.9
2	23.4	25.3	21.2	19.8	10.4
3	22.5	19.8	21.3	21.1	15.4
4	16.1	16.0	23.2	21.9	22.8
5	5.3	9.6	15.3	23.3	46.5

Source: Author's calculation using the EFF 2002.

4. The Components of Household Wealth

In this section we analyse the elements that conform the wealth of Spanish households. For this goal we classify wealth into three main categories: real assets, financial assets, and

debts.[31] Real assets include the value of the main residence, other real estate, consumer durables and collectibles, business equity, and vehicles. Similarly, financial assets are the sum of the deposits and bank accounts, stocks, pension assets,[32] mutual and investment funds, bonds, and other financial assets. Finally, the debt component is the sum of the outstanding debt for the purchase of the main residence and other real estate, vehicle loans, installment debt, and other debts.[33]

The first column in Table 8 shows the relative importance of each component. Tangible assets constitute the bulk of Spanish households' wealth as they account for more than 88 percent of total assets. Housing and other real estate are the most important household assets, accounting for about 50 and 20 percent of assets, respectively. It is worth noting here the low importance of financial assets, which represent only around 12 percent of assets. On the other hand, debt is around 8 percent of total assets. Debts related to the main residence and to other real estate are the most relevant debt components, accounting for about 4 and 2 percent of assets, respectively.

As Table 8 shows, important differences exist in the asset portfolio among wealth groups. Households in the top decile present a much more diverse asset portfolio than that of other households. Indeed, other real estate, business equity, and stocks only have a significant weight in the portfolio of these households. For the middle class, by comparison, the main residence is by far the main asset. Thus, its weight in the portfolio of the middle quintiles ranges between 59 and 71 percent, with its weight reducing as we move up in the wealth distribution. Vehicles, consumer durables, and collectibles are the main assets of the households in the bottom decile, as they account for almost 60 percent of the total assets of this group. For these households, the share of total assets represented by the main residence is rather low (22 percent) compared with that of the other groups, whereas the importance of business equities and stocks is almost insignificant (under 1.5 percent).

Figures relative to the ownership of different assets contributes to explain differences in portfolio composition. In 2002 more than 80 percent of Spanish households owned their principal residence. As it has been already documented in the literature, this rate is high in comparison with that of other OECD countries (Arévalo and Otero, 2007). Indeed, it is larger than that in all the countries included in the LWS, where the percentage of homeowners ranges between 74 percent in Cyprus to 40 percent in Germany. Regarding those business equities related to self-employment and stocks, we can see that the owners of these assets are concentrated in the upper part of the distribution, which confirms the low presence of these assets in the portfolio of the bottom and middle classes.

On the other hand, investment in purchasing the main residence is the main reason of indebtedness, with more than 20 percent of households having debt for this reason. Most of the households with this kind of debt are situated in the middle percentiles, whereas indebtedness for this reason is less frequent in the tails of the distribution.[34]

Table 8
THE COMPOSITION OF HOUSEHOLD WEALTH AND PERCENT OF OWNERS BY WEALTH CLASS

	Portfolio composition (percent of total assets)							Percent of owners						
	All	Bottom 10%	Next 20%	Next 20%	Next 20%	Next 20%	Top 10%	All	Bottom 10%	Next 20%	Next 20%	Next 20%	Next 20%	Top 10%
Real Assets	***88.3***	***89.2***	***89.6***	***93.7***	***92.8***	***90.8***	***82.9***	***100***	***100***	***100***	***100***	***100***	***100***	***100***
Principal residence	52.2	21.8	59.6	71.1	69.2	58.7	34.2	81.9	6.4	68.9	95.3	96.7	97.7	95.8
Other real estate	18.6	7.6	6.0	5.6	9.2	17.5	29.2	30.1	2.7	12.1	18.5	29.4	50.4	77.8
Durables and collectibles	7.6	42.8	16.2	11.2	8.9	6.9	4.7	100	100	100	100	100	100	100
Business equity	6.6	1.3	0.5	1.2	1.5	4.3	12.9	11.5	2.1	2.7	6.7	9.0	20.0	35.5
Vehicles	3.3	15.7	7.3	4.6	4.1	3.3	1.9	73.7	46.8	60.6	71.5	80.1	86.9	92.6
Financial Assets	***11.7***	***10.8***	***10.4***	***6.3***	***7.2***	***9.2***	***17.1***	***98,5***	***92.7***	***98.8***	***98.6***	***99.1***	***99.6***	***99.9***
Bank accounts	4.6	8.8	8.4	4.3	4.3	4.6	4.1	98.2	91.6	98.7	98.3	99.0	99.4	99.6
Stocks	3.2	0.0	0.5	0.3	0.6	0.8	7.3	12.5	0.4	3.1	5.7	10.9	20.6	44.1
Private pension assets	1.7	1.5	0.7	0.9	1.1	1.9	2.3	23.1	5.1	8.0	18.5	24.7	36.1	51.0
Investment funds	1.1	0.0	0.4	0.2	0.5	1.0	1.9	7.2	0.0	2.3	2.9	6.4	12.5	24.2
Bonds	0.2	0.0	0.1	0.1	0.2	0.4	0.2	1.9	0.0	0.4	1.0	1.6	4.6	3.7
Other financial assets	0.8	0.5	0.3	0.5	0.4	0.4	1.4	5.4	4.0	3.4	4.4	3.8	5.4	16.1
Total	*100*	*100*	*100*	*100*	*100*	*100*	*100*							
Debts	***7.7***	***48.8***	***22.2***	***15.1***	***8.7***	***5.4***	***4.0***	***43.6***	***25.1***	***40.0***	***51.6***	***45.3***	***45.7***	***45.6***
Principal residence	4.3	14.2	16.6	10.8	5.9	2.6	1.2	21.6	3.0	21.9	29.2	26.4	20.3	17.1
Other real estate	1.8	9.4	2.0	1.4	1.3	1.5	2.2	6.5	1.0	2.2	3.3	5.3	10.7	20.9
Vehicle loans	0.4	3.9	1.5	1.0	0.5	0.3	0.1	11.6	7.7	11.8	16.0	10.0	12.4	7.4
Installment debt	0.4	8.6	0.2	0.2	0.3	0.4	0.3	1.9	0.7	0.6	1.1	1.8	3.4	4.6
Other debts	0.7	12.8	1.8	1.6	0.6	0.5	0.3	13.6	15.9	11.3	12.3	9.7	8.3	6.5
Net equity principal residence	47.8	7.7	43.0	60.3	63.2	56.2	33.0	81.9	6.4	68.9	95.3	96.7	97.7	95.8
Net equity other real estate	16.8	-1.8	4.0	4.2	7.9	16.0	27.0	30.1	2.7	12.1	18.5	29.4	50.4	77.8

Source: Author's calculation using the EFF 2002.
Note: For the computation of the percentiles households are ranked according to the value of the worth.

Given the observed degree of variance in portfolio composition by wealth group, we expect assets to be also distributed differently. As Table 9 shows, real assets are more equally distributed than financial assets, as is reflected in differences in the Gini index (0.51 versus 0.8). As expected, household's main residence and consumer durables are the most evenly distributed assets, with Gini index of 0.48 and 0.45, respectively.

Also, it is not surprising at this stage that the main components of financial wealth are the most unequally distributed assets. Thus, the top 10 percent hold about 90, 75, and 60 percent of stocks, business equities, and other real estate, respectively. In contrast, housing debt is highly concentrated in the middle class. Indeed, for the low and middle classes the share of housing debt accumulated is larger than their share of gross housing, whereas the reverse is true for the upper class. As a consequence, the net value of housing is more unequally distributed than the gross value, as is reflected in the relative increase of the Gini index.

Table 9
GINI INDEX AND PERCENT OF WEALTH COMPONENT HELD BY WEALTH CLASS
(percent of the component)

			Fungible wealth percentile						
	Gini (All)	Gini (Owners)	Bottom 10%	Next 20%	Next 20%	Next 20%	Next 20%	Top 10%	Total
Real Assets	***0.51***	***0.51***	***0.6***	***5.5***	***11.8***	***17.5***	***28.3***	***36.3***	***100***
Principal residence	0.48	0.36	0.2	6.2	15.2	22.0	31.0	25.4	100
Other real estate	0.87	0.57	0.2	1.7	3.4	8.2	25.9	60.6	100
Durables and collectibles	0.45	0.45	3.4	11.6	16.5	19.6	25.2	23.8	100
Business equity	0.97	0.74	0.1	0.4	2.0	3.7	18.1	75.7	100
Vehicles	0.64	0.51	2.8	12.0	15.3	20.3	27.1	22.5	100
Financial Assets	***0.80***	***0.80***	***0.6***	***4.8***	***6.1***	***10.2***	***21.6***	***56.8***	***100***
Bank accounts	0.73	0.73	1.1	10.0	10.5	15.7	27.8	34.9	100
Stocks	0.98	0.87	0.0	0.8	1.1	3.2	6.9	88.0	100
Private pension assets	0.92	0.64	0.5	2.1	5.8	10.4	30.8	50.5	100
Investment funds	0.97	0.62	0.0	2.0	2.3	8.0	24.0	63.8	100
Bonds	0.99	0.56	0.0	1.2	5.4	11.2	47.2	35.0	100
Other financial assets	0.99	0.75	0.4	2.3	6.9	9.0	13.3	68.0	100
Debts	***0.80***	***0.54***	***3.8***	***15.7***	***21.9***	***18.9***	***19.5***	***20.2***	***100***
Principal residence	0.87	0.40	1.9	20.8	27.8	22.7	16.4	10.4	100
Other real estate	0.97	0.48	3.1	6.0	8.6	12.2	23.5	46.7	100
Vehicle loans	0.93	0.42	5.1	18.6	25.0	19.7	20.7	10.9	100
Installment debt	0.99	0.55	13.9	3.0	6.0	14.7	33.0	29.3	100
Other debts	0.95	0.64	10.8	14.2	26.0	15.0	20.3	13.7	100
Net equity principal residence	0.50	0.39	0.1	4.9	14.1	22.0	32.3	26.7	100
Net equity other real estate	0.89	0.58	-0.1	1.3	2.8	7.8	26.1	62.1	100

Source: Author's calculation using the EFF 2002.
Note: For computation of percentiles households are ranked according to the value of fungible wealth. The Gini for owners measures the level of inequality among those who possess each particular asset.

5. The Decomposition of Wealth Inequality

Given that there are assets that are more evenly distributed than others, it is reasonable to think that each asset has a different impact on wealth distribution. The aim of this section is to determine the contribution of the different wealth components to overall wealth inequality. We start the analysis by looking at the relationship between each wealth component and total wealth. Figures 3 and 4 show the conditional mean and the conditional mean share of the wealth components by wealth percentile, respectively.[35] As the figures show, we can classify assets in two groups: factors whose absolute value increases both in absolute and relative terms as we move up in the distribution of wealth (Group I); and factors whose value increases with wealth, while their share in the portfolio is either a decreasing or non-monotonic function of

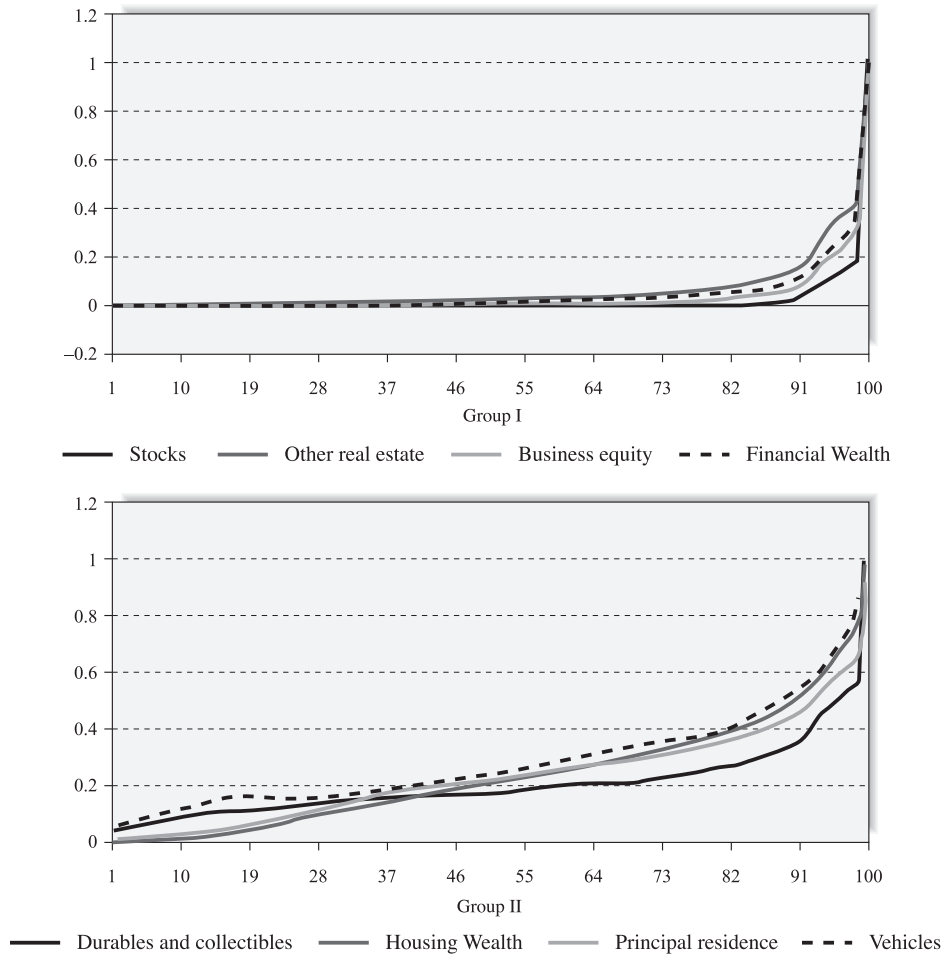

Figure 3. Mean wealth component by wealth percentile *(Variables relative to their maximum value)*

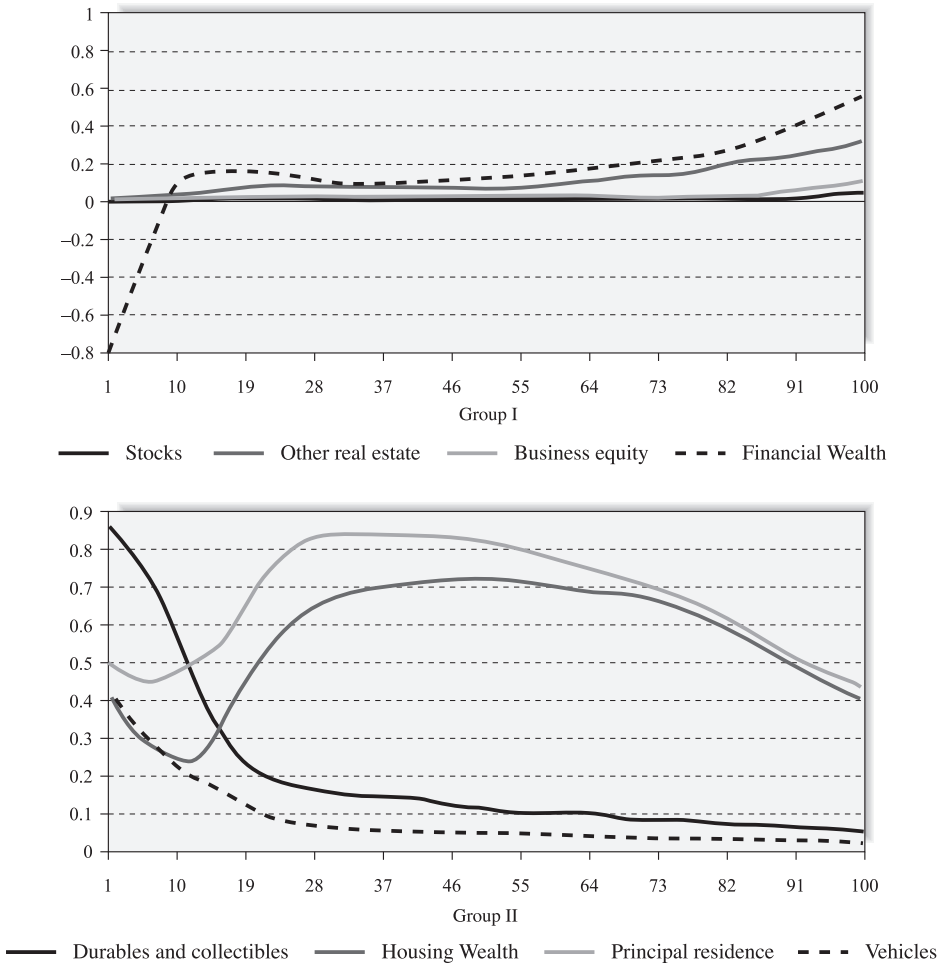

Figure 4. Mean wealth component share by wealth percentile
(Variables expressed as percentage of Total net wealth)

the level of wealth (Group II).[36] Most assets belong to the first group. Indeed, only the value of principal residence, vehicles, other consumer durables, bank accounts, housing wealth,[37] and the real assets category are included in the second one. In order to determine the contributions of different assets to inequality, we employ a set of decomposition methods commonly used in the income distribution literature. In particular, we use the *Gini variation*, the *Gini Nested-Shapley* decomposition proposed by *Chantreuil-Trannoy* (1999), the *Gini partial derivative* and *Gini* decomposition proposed by Lerman and Yitzhaki (1985), and the *Shorrocks* decomposition proposed by this author in his seminal article published in 1982.[38] The results of the decompositions are reported in Table 10. A positive (negative) value indicates that the component is defined as a disequalizing (equalizing) factor. Results indicate that most of

the assets are defined as disequalizing factors by every decomposition rule. In fact, this is the case for all assets included in Group I. Among these, business equities, other real estate, and stocks are found to be the most disequalizing assets, contributing to increase wealth inequality up to 68, 27, and 21 percent, respectively. Regarding assets included in Group II, their contribution depends on the particular decomposition considered. Thus, according to the equal Shapley, the Gini, and the Shorrocks decompositions[39] the principal residence, vehicles, other consumer durables, bank accounts, housing wealth, and the real assets category are defined as factors that promote wealth inequality. The reason is that the absolute value of each of these assets increases with wealth, which implies a positive correlation with total wealth. Instead, the zero Shapley decomposition, the Gini partial derivative, and the Gini variation define them as factors that contribute to wealth equality because their portfolio share is larger in poor and middle households than in households at the top of the distribution. Therefore, if we accept a "pure" relative notion of inequality, we can conclude that these wealth components contribute to reduce wealth inequality in Spain.[40] In particular, principal residence and housing wealth are the assets that most promote wealth equality, since according to some decompositions they contribute to reduce inequality up to 54 and 31 percent, respectively.[41]

Table 10
INEQUALITY DECOMPOSITION BY WEALTH COMPONENT
(Contributions to overall wealth inequality)

	Equal Shapley Gini	Shorrocks	Gini decomposition	Zero Shapley Gini	Gini partial derivative	Gini variation
Real Assets	***74.4***	***75.8***	***87.3***	***–102.5***	***–8.4***	***–498.5***
Principal residence	5.0	2.5	42.4	–54.6	–14.2	–51.2
Other real estate	6.4	3.1	27.5	2.2	7.3	4.5
Durables and collectibles	1.0	1.5	4.3	–34.9	–3.9	–4.5
Business equity	62.0	68.5	11.2	4.4	4.0	3.2
Vehicles	0.0	0.1	1.9	–19.6	–1.7	–1.9
Financial Assets	***24.5***	***24.4***	***15.3***	***175.2***	***2.7***	***2.1***
Bank accounts	4.4	0.6	4.1	2.5	–0.9	–1.3
Stocks	4.4	21.3	5.8	40.6	2.4	2.3
Private pension assets	4.1	0.2	2.3	28.2	0.4	0.3
Investment funds	4.0	0.2	1.7	34.3	0.5	0.4
Bonds	3.8	0.0	0.3	34.8	0.1	0.0
Other financial assets	3.9	2.1	1.1	34.7	0.3	0.2
Debts	***1.0***	***0.2***	***–2.6***	***27.3***	***5.7***	***3.8***
Principal residence debt	1.0	0.0	–0.3	18.4	4.4	3.1
Other real estate	0.8	0.2	–1.9	1.5	0.0	–0.3
Vehicle loans	0.4	0.0	0.0	4.4	0.4	0.4
Installment debt	–0.1	0.0	–0.2	–1.1	0.2	0.1
Other debts	–0.2	0.0	–0.1	4.1	0.7	0.6
Total	*100*	*100*	*100*	*100*		
Net equity principal residence	4.9	2.5	42.0	–23.3	-9.8	-31.1
Net equity other real estate	6.2	2.9	25.6	***31.0***	***7.4***	***5.3***

Source: Author's calculation using the EFF 2002.

6. Conclusions

The development of household surveys of assets and debts in the last decades has allowed economists to analyse how wealth and its main components are distributed among households. However, the first wave of the Spanish Survey of Household Finances, conducted by the Bank of Spain in 2002, is the first household survey available in Spain for performing wealth distribution analysis. In this paper we use data from this survey to analyse how wealth and its components are distributed among Spanish households. Further, we investigate the degree of contribution of housing wealth to overall wealth inequality using inequality decomposition techniques. We argue this a highly relevant issue in the case of Spain, where fiscal policy during last decades clearly promoted home ownership over other forms of housing tenure. In fact, fiscal exemptions and subsidies on home purchases implemented during the period 1986 and 2004 led to a reduction in the cost of housing in this country (see Lopez-García 2004, García-Vaquero and Martínez 2005, Onrubia and Rodado 2010), fostering the acquisition of housing assets over other type of wealth holdings.

Similar to results for other countries, we find that household income is much more evenly distributed than wealth. However, the main two components of wealth are distributed differently. Financial wealth is much more unequally distributed than housing wealth. A high concentration of the most liquid assets exists in the upper wealth classes. Thus, certain assets such as stocks, business equity related to self-employment, and real estate different from the main residence are almost exclusively held by households at the top of the wealth distribution. In contrast, housing wealth is more evenly distributed. This type of wealth is especially important for households at the middle of the distribution as it accounts for a large share of their asset portfolio. According to this result, we also find that housing debt is held mostly by the middle class. As a consequence, the net value of housing is distributed more unequally than the gross value.

Regarding the contributions to wealth inequality, we identify two groups of wealth components. One group of disequalizing factors, including financial wealth, whose value and portfolio share increase with the level of household wealth; Instead, housing wealth and other components can be considered as equalizing components, at least from a pure relative inequality approach, because, even though their value increases with wealth, their share in the portfolio tends to be smaller in rich households. Indeed, while these components are defined as equalizing factors by some decompositions, components in the first group are defined as disequalizing factors by every decomposition rule we present. Finally, we show that business and home ownership are factors that contribute to explain why wealth is more unequally distributed than income, while differences between age groups do not. We suggest this result is due to Spanish household structure. Thus, the percent of individuals in Spain aged 25-29 who live with their parents is large, which may diminish the role of age when explaining wealth inequality.

Notes

1. Wolff, Zacharias, and Caner (2005) analyse the effect of including wealth and public consumption in measures of household welfare. They find that measured inequality increases when imputed rent and annuities from wealth are added to income. In contrast, including public consumption reduces inequality.

2. This survey will be included in the Luxembourg Wealth Study (LWS) database in the future. The aim of this project, launched in 2003, is to organize and harmonise the existing micro-data on household wealth. Austria, Canada, Cyprus, Finland, Germany, Italy, Norway, Sweden, United States, and United Kingdom are currently contributing to the data base with their national datasets.
3. Importantly, as one referee rightly pointed out, comparisons of the estimates reported by these authors with the results presented in this paper must be made cautiously, given the different unit of analysis employed in these analysis. Thus, while Alvaredo and Saez (2009) estimate top wealth shares using individual wealth tax statistics, all our estimates are computed at household level.
4. For instance, the number of houses built in Spain in 2006 was larger than that in Italy, France, and Germany together (see "The pain in Spain", The Economist April 26th 2007).
5. In fact, the accumulated growth between 1997 and 2005 was around 120 percent. Overvaluation caused by optimism about future price increases is an important factor underlying this trend in Spain compared with other countries (OECD Economic Outlook, Volume 2005/2, No. 78, December).
6. For a detailed description of the methodology used in the first wave of the EFF see Bover (2004).
7. The value of all real assets corresponds to a self-assessed value reported by the head of the household at the moment of the interview.
8. Households are asked to report only the present value of the private pension plans, thus the entitlements to Social Security pensions are not included in this category.
9. In 1999, individuals liable to the wealth tax were those with taxable wealth over 104.000 Euros.
10. The imputation method is the Federal Reserve Imputation Technique Zeta (Fritz). This is a stochastic method with a sequential and iterative structure. For more details see Kennickell (1998 and 2000).
11. Following the recommendations in the EFF, we make inferences combining the information in the five imputed datasets. In particular, the estimates presented here correspond with the average of the five complete data estimates.
12. The category of collectibles includes the value of jewellery, works of art, and antiques.
13. Notice that debt on consumer durables is not excluded from fungible wealth. The rationale is that, while most of these goods can hardly contribute to provide liquidity due to the sharply reduction in their resale value, outstanding debts on consumer durables clearly reduce the stock of liquidity available to the household.
14. In fact this is the method employed in most country studies. For instance, Kennickell (2000) and Wolff (1996, 1998) for the U.S., Brandolini *et al.* (2004) for Italy, and Morissette *et al.* (2002) for Canada follow this approach. In the case of income, we do not consider an equivalence scale, since we are interested in assessing the correlation between asset holdings and total income flows to households. For a recent discussion on measurement issues, equivalence scales, and top and bottom coding practices in wealth distribution analysis, see Sierminska and Smeeding (2005).
15. The robustness of the results was checked assuming different equivalence scales. Importantly, the results from this analysis, which are available upon request, show that the main conclusions reached in the paper are not sensible to changes in the way household needs are measured.
16. Income and wealth variables are all expressed in current Euros. Notice that there is one period lag between income and wealth data. However, given the low short-term variability expected in the distribution of these two variables, we argue that this period lag has a limited influence on the results reported in the paper.
17. These authors report some preliminary results of the wealth distribution for Italy, Canada, U.S., Finland, and Sweden based on the LWS database.
18. We present a non-parametric estimation obtained using the adaptive Kernel method. In particular, we applied this method with the Gaussian Kernel function. For more details, see Silverman (1986). The density function of total net wealth is not included as it is almost identical to the density of fungible wealth.
19. Notice that fungible wealth clearly has two modes: one close to zero and a second one around the median value. This result must be explained by the two modes in the distribution of housing wealth, given the large

share of fungible wealth it represents. These modes clearly reflect the existence of two groups of households: homeowners and non-homeowners.

20. Notice that when there are negative values, as in the case of wealth, the Gini index may be greater than one, since the Lorenz curve may lie below the horizontal axis.

21. Note that our measure of income is not adjusted to households needs and that it is before taxes and contributions to the Social Security System. Results from the 2001 wave of the European Community Household Panel (ECHP) show that the household net income adjusted by the OECD equivalence scale displays much less inequality than our income variable: the Gini index is equal to 0.3 and the S80/S20 ratio is about 5.

22. A closer look at the Lorenz curves point estimates confirms all the results from the graphical analysis.

23. For an excellent survey of this literature see Davies and Shorrocks (2000).

24. There is no general agreement of the relative importance that life cycle savings have on wealth accumulation. In a recent article, Wolff (1999) finds that savings account for more than one quarter of household wealth accumulation in the U.S. For a good summary of this issue see Kessler and Masson (1989).

25. Recall that the life cycle model is a longitudinal model, which implies that the use of cross-sectional profiles as a test of the life cycle hypothesis may be wrong. Thus, as Shorrocks (1975) pointed out, because real income typically increases over time, the cross-sectional age-wealth profile may be hump shaped even though the longitudinal profile rises over time.

26. The Generalized Entropy family of indices (I_α)is also used in this type of analysis. However, in the case of wealth, the indices I_o and I_1 cannot be used, given the presence of negative values. Regarding I_2, we decompose it using the method proposed by Mookherjee and Shorrocks (1982). Results are not presented here, but suggest that within-group inequality explains almost all total inequality. This may be because the I_2 index is highly sensitive to the presence of extremely large values of the variable under analysis, common precisely in the case of wealth.

27. Notice that even if these factors contribute to explain why wealth is more unequally distributed than income, the share of wealth inequality they can explain is rather low. This suggests that other factors not considered in the analysis such as bequests, borrowing constraints, or saving attitudes must be considered for explaining the overall wealth inequality.

28. Budria *et al.* (2002) report a correlation between income and wealth in the U.S in 1998 equal to 0.6 and a correlation between wealth and earnings equal to 0.47. They suggest that this low correlation is driven by retired households, given that they are quite wealthy but their earnings are often zero.

29. This index is equal to *((n-tr(P))/(n-1))*, where n is the number of percentiles and *tr(P)* is the trace of the transition matrix. Notice that when there is no mobility the index is equal to zero, while in the case of maximal mobility it is equal to *(n/(n-1))*.

30. These authors construct the same matrix for the U.S. using data for 1979.

31. The decomposition of wealth selected is very close to that proposed in the LWS. For detailed information on this project see the official web page http://www.lisproject.org/lws.htm.

32. Recall that pension assets only include the value of the private pension plans and do not include the entitlements to Social Security pensions. The inclusion of this component may alter the results presented next significantly, given the compulsory character of the public pension system. This is an issue left for further research.

33. Other debts include indebtedness to finance household reforms, the acquisition of consumer durables and collectibles, and indebtedness for the acquisition of either financial assets, education courses or holiday packages, and the finance of ceremonies expenses and other consumption expenses.

34. For the bottom tail, this result is coherent with the reduced number of homeowners in this group. With respect to the upper tail, this may be explained because these households either do not need to go into debt to purchase a main residence or they have already paid the debt.

35. In particular, we present smooth variables obtained by applying kernel-weighted local polynomial smoothing technique to the original data.

36. Since it is not possible to construct figures including every wealth factor, we have selected, factors from each group that allow construction of the clearest possible figures.

37. Recall that housing wealth is just the net value of the principal residence.

38. We present two versions of the *Nested-Shapley* decomposition: the *zero wea*lth decomposition and the *equalized wealth* decomposition. For a detailed description of these and the other decomposition rules see the Appendix.

39. The results of these decompositions are very similar to those reported in Brandolini *et al.*(2004), who decompose wealth inequality in Italy using the Gini and Shorrocks decompositions. To the best of our knowledge this is the only work that applies decomposition techniques to wealth inequality.

40. There is a correspondence between the *absolute* and *relative* criteria and *uniform additions* criterion proposed by Morduch and Sicular (2002). According to these authors, an inequality decomposition satisfies the uniform additions property if it registers negative (positive) contributions to overall inequality for any positive (negative) wealth component that is equally distributed. Every *relative* decomposition rule satisfies this property, while no *absolute* decomposition does.

41. In their historical approach, Alvaredo and Saez (2009) conclude that the rise in real state prices in Spain contributed to reduce wealth concentration in this country during the period 1982-2005, compensating the large concentration of financial wealth due to the surge in stock prices in the 1990s.

42. An important advantage of this method is that the contributions of the various components do not depend on the order in which the components are eliminated. However, the Nested-Shapley decomposition rule violates the principle of independence of the aggregation level. Indeed, this method only satisfies a milder independence requirement, since the contribution assigned to a given component is independent of the level of aggregation of the components of other groups. Thus, for instance, the contribution of any real asset only depends on how the real assets are grouped and is independent of the level of disaggregation of financial assets and debts. For an application of the this method to the American and British income distributions see Sastre-Trannoy (2002).

43. Shorrocks (1982) demonstrated that there exists no unique way to decompose inequality, and that the contribution of any component to overall inequality can be made to give any value in the interval $(-\infty,+\infty)$. Finally, he shows that this decomposition rule is the unique satisfying a set of axioms a decomposition rule ought to obey.

44. As the Pearson's and the rank correlation the Gini correlation ranges between –1 and +1, where a value equal to 1 (-1) indicates that the wealth component is an increasing (decreasing) function of total wealth.

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Resumen

En este trabajo se analiza la distribución de la riqueza en España a partir de los datos incluidos en la primera ola de la Encuesta Financiera de las Familias elaborada por el Banco de España en el año 2002. Se estudia la distribución de los diferentes componentes de la cartera de activos y, mediante el uso de técnicas de descomposición, se evalúa la contribución de cada uno de estos componentes a la desigualdad total en la distribución de la riqueza. Nuestros resultados sugieren que la riqueza se encuentra distribuida de forma más desigual que la renta y, que de los componentes patrimoniales, la riqueza inmobiliaria se distribuye de forma más igualitaria que la riqueza financiera. Concretamente, identificamos dos grupos de elementos patrimoniales: aquellos que contribuyen a incrementar la desigualdad, y cuyo valor e importancia en la cartera de activos se incrementa con el nivel de riqueza; y un segundo grupo que incluye la riqueza inmobiliaria, que contribuyen a una distribución más igualitaria de la riqueza ya que su peso relativo en la cartera de activos no crece de forma monótona con la riqueza. Finalmente, los resultados sugieren que las diferencias entre grupos de edad no son suficientes para explicar porque la riqueza está distribuida de forma más desigual que la renta. En cambio, la posesión de negocios o propiedades inmobiliarias son factores que claramente contribuyen a explicar este hecho.

Palabras clave: Riqueza, renta, distribución, descomposición de la desigualdad

Clasificación JEL : D14, D31

Appendix

Inequality decomposition by wealth factors

The first measure we present is the equalized version of the Nested-Shapley decomposition proposed by Chantreuil-Trannoy (1999). According to the Nested-Shapley method the contribution of any factor to overall inequality is equivalent to the expected marginal impact when the component is eliminated, where the expectation is computed over all the possible elimination sequences.[42] Regarding the elimination process, in the equalized version this is carried out by removing the inequality from the component. Thus, the contribution of each component to overall inequality is

$$S_k = \frac{NShI_k^{Equal}}{G(W)} \quad with \quad \sum_{k=1}^{K} s_k = 1,$$

where $NShI_k^{Equal}$ is the equal Shapley contribution of component k and $G(W)$ is the Gini index. Next, we report the Shorrocks decompositon proposed in Shorrocks (1982). According to this rule the relative contribution of component k to overall inequality is given by

$$S_k = \frac{Cov(W_k, W)}{Var(W)} \quad with \quad \sum_{k=1}^{K} s_k = 1,$$

where the numerator is simply the covariance between the wealth component and total wealth and the denominator is the variance of total wealth.[43] Therefore, this rule follows an absolute

criterion when defining the contributions to inequality. Indeed, a sufficient condition for a component to be identified as a factor that contributes to increase (decrease) inequality is that it positively (negatively) correlates with the level of wealth. We also present the results of the Gini decomposition proposed by Lerman and Yitzhaki (1985). According to this decomposition the contribution of component *k* can be written as

$$S_k = \frac{R_k S_k G_k}{G(W)} \quad with \quad \sum_{k=1}^{K} s_k = 1,$$

where R_k is the "Gini correlation" between wealth component *k* and total wealth, G_k is the relative Gini of component *k*, and S_k is the component *k's* share of total wealth.[44] As in the previous case, any component whose value is positively (negatively) correlated with wealth is defined as a disequalizing (equalizing) factor.

The next decomposition we present is the zero version of the Nested-Shapley decomposition. Unlike the equalized version, the elimination process is carried out by completely removing the wealth component. The contribution of component *k* is given by

$$S_k = \frac{NShI_k^{Zero}}{G(W)} \quad with \quad \sum_{k=1}^{K} s_k = 1,$$

where $NShI_k^{Zero}$ is the zero Shapley contribution of component *k.* The next measure we provide is the Gini partial derivative relative to the overall Gini proposed also by Lerman and Yitzhaki (1985):

$$S_k = \frac{\partial G(W) / \partial e_k}{G(W)} = \frac{R_k G_k S_k}{G(W)} - S_k \ ,$$

where e_k represents a percentage change in wealth component *k*, S_k is the component *k*'s share of total wealth, R_k is the "Gini correlation" between wealth component k and total wealth and G_k is the relative Gini of component *k*. This partial derivative measures the effect on the Gini coefficient of an increase in wealth component *k* of all households equal to eW_k, where *e* is close to one. Thus, this derivative will be positive (negative) for those factors that have a positive (negative) contribution to inequality. Notice that according to this decomposition, a positive (negative) correlation between wealth component and total wealth is not sufficient for an element to be assigned a positive (negative) contribution to inequality. Finally, the last measure we provide is the Gini variation, which reflects the percentage change in the Gini index when the component is subtracted from total wealth. Thus, the contribution of each component can be easily expressed as

$$S_k = \frac{G(W) - G\left(W - W_k\right)}{G(W)} \ ,$$

where a positive (negative) value indicates that component *k* is a disequalizing (equalizing) factor.