

The Household Wealth Distribution in Spain: The Role of Housing and Financial Wealth

(Preliminary version)

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Abstract

We analyze 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. Initially, the results regarding the contribution of housing wealth to wealth inequality are contradictory. However, once we impose the *uniform additions property* proposed by Morduch and Sicular (2002) to be satisfied, our results suggest that housing wealth contributes negatively to wealth inequality. This contribution is the result of two opposite forces: while gross housing contributes to reduce inequality, housing debt contributes to increase it. Finally, financial wealth is a disequalizing factor whatever the decomposition rule considered.

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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 indicators ignore certain crucial determinants of families' welfare. In particular, they do not consider the important contribution of household wealth to household well-being.¹ For instance, as Barrett and McPeak (2006) suggest, assets are the main instrument households have to insure themselves against risk. Thus, wealth is a source of liquidity for families in times of economic stress, such as those imposed by unemployment, sickness or family break-up. 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 on the distribution of well-being we need to investigate how the wealth dimension of welfare is distributed.

Empirical analysis on wealth distribution has evolved considerably since household surveys of assets and debts have become available. However, the first wave of the Spanish Survey of Household Finances (Encuesta Financiera de las Familias, EFF), conducted by the Bank of Spain in 2002, is the first household survey available in Spain for performing wealth distribution analysis.² As a consequence, previous research on the distribution of wealth in Spain is scarce. Bover (2005) is the first work that analyzes the distribution of wealth in Spain. She reports, using the EFF data base, the average and median wealth holdings as well as the asset portfolio composition for different types of households. Bover et al. (2005) compare the distribution of wealth in Spain with that in Italy, United States and United Kingdom. Their results suggest that, according to the relative difference between the 25th and 75th percentiles, the distribution of wealth among Spanish households is the most equal of the four countries. Finally, to our knowledge, the only work on wealth distribution not based on the first wave of the EFF corresponds to Alvaredo and Saez (2006). These authors estimate top net worth, financial wealth and gross income shares for the period 1933-2002 using the personal income and wealth tax return statistics. They

¹Wolff, Zacharias and Caner (2005) analyze the effect of including wealth and public consumption when measuring 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.

²This survey will be included in the Luxembourg Wealth Study (LWS) data base in the future. The aim of this project, launched in 2003, is to organize and to harmonise the existing micro-data on household wealth. Austria, Canada, Cyprus, Finland, Germany, Italy, Norway, Sweden, United States and United Kingdom are currently contributing with their national datasets.

find that the sharp increase in real state prices have been to a large extent offset by large stock price increases, leaving the overall wealth concentration relatively stable between 1982 and 2002.

An important goal of this work is to assess the impact that housing wealth has on overall wealth inequality. This type of wealth has a large presence in the portfolio of the Spanish households. As Bover (2005) reports, more than 80 percent of the households own their main residence, which is largest rate of ownership among the OECD countries. However, the Spanish housing market during the last decade has been characterized by a sharp rise in housing prices. Indeed, the accumulated growth of this price between 1998 and 2004 was around 160 percent. As a consequence, the wealth holdings of homeowners have risen sharply, while the access to housing has become difficult for large groups of the population, especially for young people. On the other hand, the increase in housing prices has been accompanied by a rise in indebtedness, which implies an important reduction in households' net wealth, given that debt represents negative wealth. Given these features, the effect of the net value of housing on the distribution of household wealth in Spain is not clear a priori.

The aim of this paper is twofold. First, we analyze, using the data from the first wave of the EFF, how wealth and its main components are distributed among Spanish households. We also compare the main features of these distributions with those of the income distribution. Second, 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, we are interested in assessing the role that housing and financial wealth have in explaining overall wealth inequality.

This paper is organized as follows. Section 2 describes the first wave of the EFF and the different wealth concepts we use in the analysis. Section 3 analyzes and compares the distributions of housing wealth, financial wealth, total wealth and income among the Spanish households. In this section we also study the correspondence between the distributions of income and wealth, determining the degree of mobility between the two distributions. In Section 4 we focus on the distribution of wealth components as well as the main differences in the portfolio composition among wealth classes. The results of the inequality decompositions by wealth components and population subgroups are presented in Section 5. Finally, Section 6 offers a brief conclusion.

2 Data Sources and Methods

The data source used for this study is the first wave of the Spanish Survey of Household Finances (EFF) conducted by the Bank of Spain in 2002. The primary purpose of this survey is to provide detailed information on Spanish households' wealth and financial decisions. Thus, in the EFF households are asked to report the value of a wide range of tangible and financial assets as well as the household's outstanding debts at the moment of the interview.³ In particular, the survey contains information about the ownership status and the value of the main residence and other real state properties, as well as the amount pending repayment of the loans related to the purchase of these assets. The EFF also provides us with the value of the means of transport, jewellery, works of art, antiques and businesses owned by a household member.⁴ Similarly, the survey includes information on the financial portfolio of the household. Thus, households report the value of all deposits and accounts in financial institutions, listed and unlisted stocks, mutual and investment funds, bonds, pension plans⁵, 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 state properties, including its type, motive and amount pending repayment of the loans held by the household.

The first wave of the EFF contains data 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 (*Impuesto sobre el Patrimonio*) collected in 1999.⁶ 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 the 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 method⁷ that provides five

³For a detailed description of the methodology used in the first wave of the EFF see Bover (2004).

⁴The value of all real assets corresponds to a self-assessed value reported by the head of the household at the moment of the interview.

⁵Households 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.

⁶In 1999, individuals liable to the wealth tax were those with taxable wealth over 104.000 Euros.

⁷The imputation method is the Federal Reserve Imputation Technique Zeta (Fritz). This is a stochastic

imputed values for each missing value, which allows for the construction of five complete data sets.

The information in the EFF allows us to construct four measures of wealth: total wealth, net worth (or fungible wealth), housing wealth and financial wealth. Total wealth is defined as the current value of total household assets minus the current value of debts, where total assets are the sum of real and financial assets. The real assets are defined as the sum of the gross value of owner-occupied housing, other real state properties, business equity related to self-employment, collectibles⁸, vehicles and other consumer durables. Financial assets are defined as the sum of 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, the value of total debt is the sum of principal residence debt, other real estate property debt, vehicle loans, installment debt and other debts. Thus, total wealth is a broad concept of wealth since it includes the value of all assets and debts.

The second measure of wealth, which we will call net worth, is slightly more restricted and approaches the idea of wealth as a store of value. It is defined as the current value of all marketable assets minus the current value of debts. This wealth concept only considers as assets those that can be readily converted to cash, which implies that consumer durables are not included. The idea behind this measure is to consider wealth as a store of value and therefore a source of potential consumption, which explains the exclusion of consumer durables, since these are usually acquired to provide needed consumption services rather than to serve as a store of value. Thus, net worth is equivalent to total wealth minus the value of vehicles and other consumer durables.

The last measures of wealth correspond to the two main components of net worth: 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.⁹ Thus, financial wealth is defined as net worth minus housing wealth. Therefore, financial wealth is the most liquid wealth concept, since it only includes those components of wealth that may be immediately converted in cash.

method with a sequential and iterative structure. For more details see Kennickell (1998 and 2000).

⁸This category includes the value of jewellery, works of art and antiques.

⁹Notice that mortgage debt is excluded from housing wealth, while debt on consumer durables are not excluded from net worth. The rationale is that mortgage debt is, in almost all cases, automatically liquidated when a household is sold. In contrast, consumer loans on a particular item are rarely repaid when the item is sold and usually they exceed their resale value after a short period of time after purchase.

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 analyzing the inequality of access to wealth across households, rather than the actual consumption of wealth by individual household members. Thus, we implicitly assume that households have perfect returns to scale in the use of wealth. In contrast with income distribution analysis, where income is converted to equivalent income due to the consideration of economies of scale, this is the usual method employed in the wealth distribution literature¹⁰ since there is no standard approach to account for different needs across households.

3 The Household Wealth Distribution

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 and the household total wealth, net worth, housing wealth and financial wealth in 2002.¹¹ Table 1 shows some descriptive statistics of these variables. By 2002 the average net worth of households was about 154,000 Euros, while the average housing wealth and financial wealth were around 90,000 and 64,000 Euros, respectively. Thus, housing wealth accounts for almost 60 percent of total net worth, which highlights the importance that equity in owner occupied housing has in Spanish households' portfolio. Indeed, when we move from net worth to housing wealth eliminating the most liquid assets, the median wealth reduces from 95,600 to 72,000 Euros, whereas when we move to financial wealth the median wealth reduces to less than 8,000 Euros. On the other hand, about 3 percent of the households in the sample have

¹⁰In fact this is the method employed in most country studies. For instance Kennickell (2002) and Wolff (1996,1998) for the US, Brandolini et al. (2004) for Italy and Morissette et al. (2002) for Canada follow this approach. In the case of income, we do consider an equivalence scale neither, 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).

¹¹The income and the wealth variables are all expressed in current Euros.

zero or negative net worth, over 18 percent have zero housing wealth and more than 10 percent have negative financial wealth.¹²

Table 1
Mean and Median Household Wealth and Income
(in thousands Euros)

	Total wealth	Net worth	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: Authors' calculation using EFF 2002

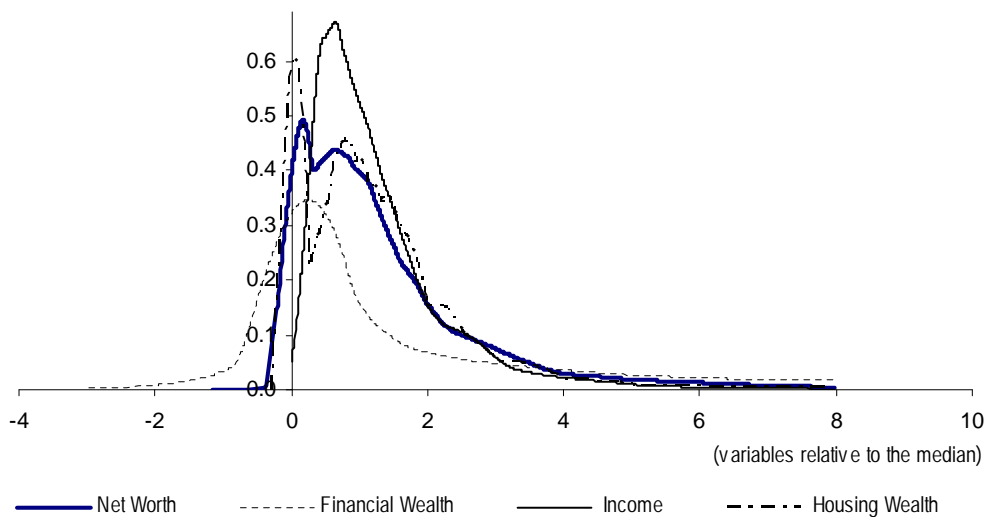
It is also interesting to note that when we consider a more liquid wealth concept the median value decreases much more than the mean does, as it is reflected by the mean-median ratio. This ratio, as a standard measure of asymmetry, suggests that financial wealth is by far the most right skewed of the four wealth variables considered, and that, 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 of wealth and income¹³ presented in Figure 1. The income distribution displays most of the population mass around the median value, whereas less density is accumulated around the tails. In particular more than 50 percent of the households have incomes between half and one point five the median income. Instead, in the case of net worth, housing wealth and financial wealth this percentage is around 38, 39 and 14 percent, respectively, which implies that, in general, wealth displays more mass at the extreme values. Thus, for housing wealth a substantial fraction of density mass lies close to zero. Indeed, there are marked spikes around this value which reflect the relatively larger fraction of the population with zero

¹²Sierminska et al. (2006) report some preliminary results for Italy, Canada, U.S., Finland and Sweden computed from the LWS database that show that the share of households with zero or negative net worth ranges between 10 percent, in Italy, and 33 percent in Sweden. Wolff (1998) reports that the share of households with zero or negative financial wealth in the U.S. in 1995 was about 30 percent.

¹³We 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 wealth is not included as it is almost identical to the density of net worth.

housing wealth (18.2 percent).¹⁴ Financial wealth displays more population mass below zero (about 10 percent) than housing wealth and also presents large and sparse right hand tails that reflect 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 suggest, first, that financial wealth is more unequally distributed than any other wealth variable; and second, that income is more equally distributed than wealth. In order to analyze these statements more formally Table 2 shows the percentage shares held by various percentiles of wealth and income. In 2002 the richest 10 percent of the families ranked by net worth, owned more than 40 percent of total net worth and the top quintile almost 60 percent, while the share held by the bottom quintile was less than 1 percent. The differences for financial wealth are even larger. The richest 20 percent of households ranked by financial wealth, owned more than 85 percent of total net worth, whereas the bottom 40 percent owned a negative amount of financial wealth. However, housing wealth was more evenly distributed than financial wealth. Thus, the top 1 percent of the households ranked by housing wealth accumulated

¹⁴Notice that net worth has clearly two modes: one close to zero and a second one around the the median value. This result must be explained by the distribution of housing wealth, given the large share of net worth it represents and the two modes that the housing wealth distribution presents. These are probably reflecting the existence of two groups of households: homeowners and non-homeowners.

only 6 percent of the total wealth.¹⁵ Indeed, the Gini index, the coefficient of variation and the percentiles ratios suggest that financial wealth presents the most unequal distribution, which implies that the liquid assets are more concentrated in the upper wealth classes than the illiquid ones.¹⁶

Table 2
The distribution of Household Wealth and Income

	Total Wealth	Net Worth	Housing Wealth	Financial Wealth	Income
<i>Percentage share held by</i>					
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
<i>Percentage share held by</i>					
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	0.5	0.6	0.5	0.8	0.4
Coefficient of Variation	5.0	5.6	1.0	13.3	1.0
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: Authors' calculation using EFF 2002

Note: For the computation of the percentile shares households are ranked according to the correspondent variable.

Table 2 also presents comparable results on wealth inequality and income inequality.¹⁷ The figures indicate that wealth is much more concentrated and less equally distributed

¹⁵However, notice that the share of housing wealth owned by the bottom quintile was smaller than in the case of net worth (0.2 and 0.9 percent, respectively), which can be explained by the number of households that do not own their homes.

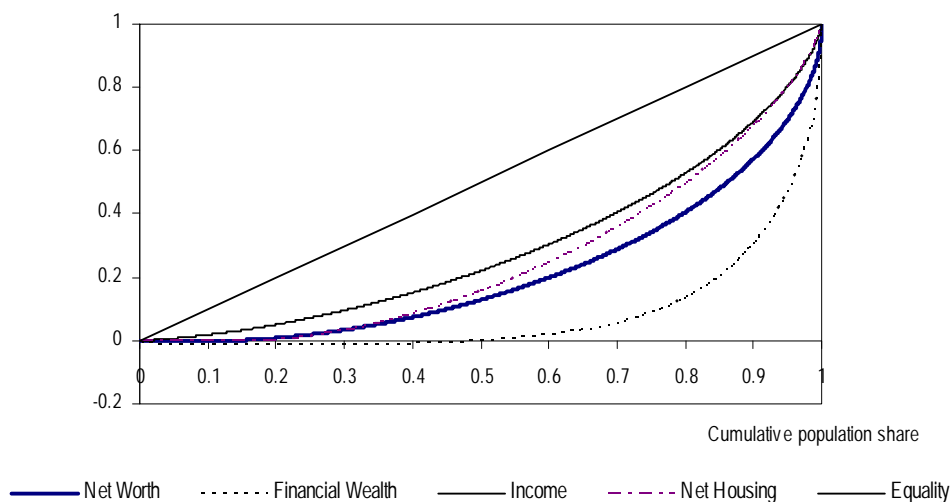
¹⁶Notice that when there are negative values, as in the case of wealth, this index may be greater than one, since the Lorenz curve may lie below the horizontal axis. Sierminska et al. (2006) measures net worth inequality in Canada, Finland, Italy, Sweden and United States using the LWS database. Among these countries Italy presents the lowest Gini index (0.6) while Sweden presents the largest one (0.89).

¹⁷However, note that the figures on income inequality are large. Recall that our measure of income is not adjusted to households needs and that it includes taxes and contributions to the Social Security System. Results not presented here, from the 2001 wave of the European Union Household Panel (EUHP),

than income. In general, the share of income owned by the bottom quintiles of the income distribution is larger than the share of wealth owned by these quintiles in any of the wealth distributions considered. However, the pattern for the upper percentiles is the reverse. The richest 1 percent, the top 10 percent and the top 20 percent of the income distribution owned less than 7 percent, almost 31 percent and less than 50 percent of total income respectively, which are significantly lower than the corresponding shares for wealth.¹⁸

In order to rank the wealth and income distributions according to the Lorenz criterion Figure 2 presents conventional Lorenz curves for household wealth and income. Notice that the curve for financial wealth lies below the horizontal axis up to more than the poorest 50 percent of the households. In fact, it is necessary to consider the bottom 52 percent to get a positive share. This stems from the important number of households that have negative financial wealth.

Figure 2 - Lorenz curves for household wealth and income



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 show that the household net income adjusted by the OECD equivalence scale displays less inequality than our income variable. In particular, the Gini index is equal to 0.3 and the S80/S20 ratio is about 5.

¹⁸Alvaredo and Saez (2006) estimate top net worth, financial wealth and gross income shares for the period 1933-2002 using the personal income and wealth tax return statistics. For the wealth variables the figures are very close to ours but their estimates for income are a bit larger, which may be due to that their measure of income includes capital income.

clearly dominates the net worth and financial wealth distributions, as it lies considerably inside the curves for net worth and financial wealth. The Lorenz criterion is not conclusive when comparing housing wealth with income and net worth.

There is a huge empirical and theoretical literature that tries to explain the large variance in asset-holdings among households¹⁹. In particular, this literature points to life cycle savings as one of the most important sources of wealth inequality²⁰. The theoretical support for this idea is the basic life cycle model proposed by Modigliani and Brumberg in 1954. This model predicts that individuals will save during their working years to provide for consumption during retirement. As a result, the age wealth profile should be hump-shaped, which implies that the inequality in wealth holdings observed in a point in time is partially due to age. In order to check if our data supports this theoretical hypothesis Table 3 shows the average wealth holdings for different age groups.

Table 3
Age – Wealth and Income profile
(ratio of mean wealth and mean income by age class to overall mean)

	Total wealth	Net worth	Housing	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: Authors' calculation using EFF 2002

Note: Households are classified into age groups according to the age of the household head.

The figures for total wealth, net worth and financial wealth show that mean wealth rises steadily with age reaching its peak for the 55-64 age group and then falling sharply among older age groups. This pattern is also observed for housing wealth and income but

¹⁹For an excellent survey of this literature see Davies and Shorrocks (2000).

²⁰There 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 the households wealth accumulation in the U.S.. For a good summary on this issue see Kessler and Masson (1989).

now the peak is reached at the 45-54 age cohort. Thus the cross-section age-wealth and income profiles exhibit the usual hump-shaped pattern.²¹

This point is confirmed when we look at the presence that each age cohort has in the different parts of the wealth distribution. Table 4 shows the age composition of the housing and financial wealth quintiles. For both variables, the bottom part of the distribution is composed mainly by the younger households. Thus, the households headed by a person aged below 45 years represent about 50 and 40 percent of the bottom quintile of housing wealth and financial wealth, respectively. Moreover, this type of household only represents around one quarter of the top 20 percent. On the contrary, in both distributions, the households whose head is between 45 and 64 years old represent around half of the top quintile and about one quarter of the bottom quintile. Finally, the older cohorts have a larger presence in the middle of the distributions than in the tails.

Table 4
The Age Composition of Wealth Quintiles

	Housing Wealth Quintile					Financial Wealth Quintile				
	Bottom 20 %	20 -40%	40-60%	60 -80%	Top 20 %	Bottom 20 %	20 -40%	40-60%	60 - 80%	Top 20 %
Under 35	25.6	15.3	12.7	11.4	5.2	17.6	19.5	14.7	11.6	6.8
35-44	25.1	20.7	24.2	23.9	16.5	26.3	20.7	23.9	20.1	19.5
45-54	16.8	12.8	18.0	23.1	27.9	19.8	14.8	16.9	21.3	25.8
55-64	11.0	16.6	16.1	16.8	22.1	15.3	11.5	12.6	17.8	25.4
65-74	11.2	21.1	17.5	15.6	20.2	12.8	19.1	18.2	19.0	16.6
75 and over	10.3	13.5	11.6	9.2	8.1	8.2	14.6	13.7	10.3	6.1
All	100	100	100	100	100	100	100	100	100	100

Source: Authors' calculation using EFF 2002

Note: Households are classified into age groups according to the age of the household head.

A very extended 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 analyze this issue by looking at the correspondence between the distributions of wealth and income. Table 5 shows the median and average wealth holdings within the quintiles of the income distribution. For the four types of

²¹Recall 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 biased. 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. We will analyze the role played by age in explaining wealth inequality in section 5.

wealth, both mean and median values increase with the household rank in the income distribution, which suggests a positive correlation between the household's position in the two distributions. This point is confirmed by the correlation coefficients presented also in Table 5. The correlation between income and the wealth variables is always below 0.2 except in the case of housing, for which it is 0.4.²² Similarly, the rank correlations are always below 0.5, which suggests a large mobility between income and wealth distributions.

Table 5
Mean and Median Wealth by Income Class and the Correlation Coefficients
(in thousands, 2002 Euros)

Quintile Gross Income	Total Wealth		Net Worth		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	193.6	149.0	120.0	174.0	53.5
Correlation of Income with	Total Wealth		Net Worth		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: Authors' calculation using EFF 2002

In order to assess this feature more formally we have constructed transition matrices based on the quintile distributions of income, net worth, housing wealth and financial wealth. We synthesize the information of these matrices with the diagonal index²³ $M(P)$ proposed by Shorrocks (1978). Table 6 shows the results for income and net worth. There is a high mobility across the two distributions: less than 30 percent of households remain in the same quintile when changing the ranking criterion. There are more movements within the middle quintiles than in the tails of the distributions. Moreover, there is a larger

²²Budria et al. (2006) 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 could be justified because of the retired households, because they are quite wealthy but their earnings are often zero.

²³This index is equal to $\frac{n-tr(P)}{n-1}$, 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 trace of the matrix is equal to n which implies that the index is equal to zero.

correspondence between the top part than between the bottom part 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 household in the top quintile of income remain in the same quintile of wealth.²⁴ On the other hand, long-range movements are frequent. Indeed, about 25 percent of the households in the bottom quintile moves up to positions above the median value when changing the criterion. Similarly, around one fifth of the households in the top quintile moves down to positions below the median when re-ranked. Thus, income and wealth, while positively correlated, are distributed rather differently among households.

Table 6
Re-Ranking in the Quintile Distribution of Income and Net Worth

Income Quintile	Net Worth 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

Mobility index M(P) = 0.88

Source: Authors' calculation using EFF 2002

As Table 7 shows the transitions matrices for housing and financial wealth are similar to that of net worth. In both cases less than 30 percent of households are in the same decile when re-ranking. The proportion of households with little housing or financial wealth but with high income is significant: about 10 percent of the households in bottom decile of housing and financial wealth is in the top 20 percent of the households in terms of income.

²⁴Radner and Vaughan (1987) construct the same matrix for the U.S.using data for 1979. They report a value of the mobility index equal to 0.85. Moreover, the correspondence between the bottom part of the distributions is larger than in our matrix (more than 40 percent), while the correspondence between the upper part is almost equal to that obtained here (about 45 percent).

Table 7
Re-Ranking in the Quintile Distribution of Income and Housing and Financial Wealth

Income Quintile	Housing Wealth Quintile					Income Quintile	Financial Wealth Quintile				
	1	2	3	4	5		1	2	3	4	5
1	30.2	29.9	19.6	12.5	7.8	1	27.8	29.8	21.8	15.1	5.6
2	23.3	23.5	22.9	18.9	11.4	2	23.2	23.7	21.5	18.9	12.8
3	21.5	19.0	21.0	21.3	17.2	3	21.7	22.6	21.5	19.7	14.6
4	15.4	18.8	21.6	22.6	21.6	4	19.5	16.4	17.8	24.9	21.4
5	10.0	8.3	15.3	24.6	41.9	5	9.8	6.2	17.1	21.4	45.6

Mobility index $M(P) = 0.90$

Mobility index $M(P) = 0.89$

Source: Authors' calculation using EFF 2002

4 The Components of Household Wealth

In this section we analyze the elements that conform the wealth of Spanish households. For this goal we decompose wealth in three main categories: real assets, financial assets and debts²⁵. Real assets include the value of the main residence, other real state properties, consumer durables and collectibles, business equity and the value of vehicles. Similarly, financial assets are the sum of the deposits and bank accounts, stocks, pension assets²⁶, 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 state properties, vehicle loans, installment debt and other debts²⁷.

The first column in Table 8 shows the relative importance of each component. Tangible assets constitute the bulk of the Spanish households' wealth as they account for more than 88 percent of total assets. Housing and other state properties are the most important household assets, accounting for about 50 and 20 percent of total assets, respectively. Business equity, durables and collectibles represent a similar share of total assets, around 7 percent; followed by the bank accounts, which represent less than 5 percent, and the

²⁵The decomposition of wealth selected is very close to that proposed in the Luxembourg Wealth Study (LWS). For detailed information on this project see the official web page <http://www.lisproject.org/lws.htm>.

²⁶Recall that pension assets only include the value of the private pension plans and do not include the entitlements to Social Security pensions.

²⁷Other 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 or any other .

stocks and the vehicles, which account for less than 4 percent. The share represented by each of the other assets do not exceed the 2 percent in any of the cases. On the other hand, debt is around 8 percent of total assets. Debts related to the main residence and to other state properties are the most relevant components, accounting for about 4 and 2 percent of total assets, respectively.

Table 8
The Composition of Household Wealth and the 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 state properties	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 state properties	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 state properties	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: Authors' calculation using EFF 2002

Note: For the computation of the percentiles households are ranked according to the value of net worth.

Also, Table 8 shows the portfolio composition of different wealth groups. There exist important differences in the asset portfolio among the wealth classes. Households in the top decile presents an asset portfolio much more diversificated than the rest of the households. Indeed, in this group the main residence represents about 35 percent of total assets, other state properties almost 30 percent, business equity around 13 percent and the

stocks account for more than 7 percent. Instead, for the middle class the main residence is by far the main individual asset. Thus, its weight in the portfolio of the middle quintiles ranges between 59 and 71 percent, reducing its weight as we move up in the wealth distribution. Moreover, the presence of stocks and business equity in the portfolio of this group is very reduced: they represent respectively less than 1 and 5 percent of total assets in all the middle quintiles. 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 equity and stocks is almost insignificant (1.3 and 0 percent, respectively).

The figures relative to the ownership of the different assets contributes to explain the differences in the portfolio composition. In 2002 more than 80 percent of Spanish households owned its principal residence.²⁸ However, the rate of ownership in the bottom decile was much more lower than in the other groups (6.4 percent), which explains the small share of total assets represented by this asset in the bottom part of the distribution. On the other hand, the rate of ownership of business equity related to self-employment and stocks was low except 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, more than 40 percent of the households has some kind of debt. The main residence is the main reason of indebtedness with more than 20 percent of households having debt for this motive. Moreover, most of the households with this kind of debt are in the middle percentiles, whereas this debt is less frequent in the tails of the distribution.²⁹ The importance of housing debt, measured as the share of total assets it represents, decreases as we move up in the wealth distribution. As a consequence, the difference between the gross value of housing and its net value is larger for households in the bottom part of the distribution, and it decreases as the level of wealth increases.

The portfolio composition varies significantly among wealth classes. As a consequence, some assets are more concentrated in the hands of the rich, and others are more dispersed among households with different wealth levels. Table 9 shows the Gini coefficient and the

²⁸According to the European Union Household Panel (ECHP) this percentage was 82 percent in 1998. In this year the rate of homeownership was 74 percent in Ireland and Greece, 71 percent in Italy, 69 in the United Kingdom, 59 in Sweden, 53 in France and 41 in Germany.

²⁹For the bottom tail, this result is coherent with the 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 indebt for the purchase of the main residence or they have already canceled out the whole debt.

share held by different percentiles of wealth for every asset type. Real assets are more equally distributed than financial assets as it is reflected by the differences in the Gini index (0.5 versus 0.8) and in the share owned by the richest decile (36 versus 57 percent). As expected, the main residence and consumer durables were the most evenly distributed assets, displaying gini index equal to 0.48 and 0.45, respectively. Also not surprising is that the main components of financial wealth are the most unequally distributed assets. Thus, almost 90 percent of the stocks and more than half of the pension assets and investment funds value was held by the richest 10 percent of households. Similarly, business equity and other state properties were highly concentrated: more than three quarters of the total business equity and over half of the state properties different to the main residence was held by the top 10 percent.

Table 9
Gini index and the percent of Wealth Component held by Wealth Class
(percent of the component)

	Gini (All)	Gini (Owners)	Net Worth Percentile						Total
			Bottom 10 %	Next 20 %	Next 20 %	Next 20 %	Next 20 %	Top 10 %	
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 state properties	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 state properties	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 state properties	0.89	0.58	-0.1	1.3	2.8	7.8	26.1	62.1	100

Source: Authors' calculation using EFF 2002

Note: For the computation of the percentiles households are ranked according to the value of net worth.

With regards housing debt, it is concentrated in the middle class. Indeed, the middle quintiles held almost 90 percent of total debt, the bottom decile about 2 percent and the top decile around 11 percent. However, for the low and middle classes the share of housing debt they accumulate 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 it is reflected in the increase of the Gini index. Another implication is that the importance of housing debt relative to the value of the main residence reduces as we move up in the wealth distribution. This result is consistent with the age-wealth profile obtained previously, as we expect the level of outstanding debt to decrease with the age of the head of the household.

5 The Decomposition of Wealth Inequality

An important conclusion from the previous section is that there are wealth components that are more even distributed than others. Therefore, it is reasonable to think that each factor has a different impact on wealth inequality. The aim of this section is to determine the contribution of the different wealth elements to overall wealth inequality. In particular, we are interested in assessing the contribution of the two components of net worth, that is, housing wealth and financial wealth. For this goal we will make use of the measures and the inequality decomposition methods usually employed in the income distribution literature.³⁰ The first measure we present is the *Gini variation*, which reflects the percentage change in the Gini index when the component is added to other wealth components. It can be easily expressed as

$$\Delta G = 100 \left(\frac{G(w) - G(w - w_k)}{G(w - w_k)} \right) \quad (1)$$

where a positive (negative) value indicates that the component k is a disequalizing (equalizing) factor. We also present the results of the *Nested-Shapley decomposition* proposed by Chantreuil -Trannoy (1999)³¹. According to this method the contribution of any factor

³⁰There is a huge literature concerning the income inequality decomposition by income source and population subgroups. However the works that use these methodologies to decompose wealth inequality are scarce. To our knowledge only Brandolini et al. (2004) decompose wealth inequality using these techniques.

³¹One important drawback of the standard Shapley decomposition rule is that it violates the principle of independence of the aggregation level. The Nested-Shapley method satisfy a milder independence re-

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. Regarding the elimination process, this can be carried out either by removing the component, which yields the *zero wealth decomposition*, or by removing the inequality from the component, which yields the *equalized decomposition*. Independently of the elimination method selected, the overall level of inequality can be expressed as

$$I(w) = \sum_{i=1}^K NShI_k \quad (2)$$

where $I(w)$ is the inequality index and $NShI_k$ is the shapley contribution of the factor k computed using the index I . The third measure we provide is the *Gini partial derivative* relative to the overall Gini, which expression was first proposed by Lerman and Yitzhaki (1985)

$$\frac{\partial G / \partial e_k}{G} = \frac{S_k R_k G_k}{G} - S_k \quad (3)$$

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 wealth³², G_k is the relative Gini of component k and G is the Gini index of total wealth. This partial derivative measures the effect on the Gini coefficient of an increase in the 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. The next results we present are those of the *Gini decomposition* proposed also by Lerman and Yitzhaki (1985). According to this decomposition the Gini index can be written as

$$G = \sum_{i=1}^K R_k G_k S_k \quad (4)$$

quirement, 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 it 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 (2001).

³²As 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.

where R_k , G_k , S_k and G are defined as before. Finally, we also report the *Shorrocks's decomposition* proposed by this author in his seminal article of 1982. According to this rule the relative contribution of component k to overall inequality is given by

$$s_k = \frac{Cov(w_k, w)}{\sigma^2(w)} \quad \text{with} \quad \sum_{i=1}^K s_k = 1 \quad (5)$$

where the numerator is simply the covariance between the wealth component and total wealth and the denominator is the variance of total wealth.³³

One desirable property a decomposition rule should satisfy is the uniform additions property proposed by Morduch and Sicular (2002). According to these authors, an inequality decomposition satisfies this property if it registers negative (positive) contributions to overall inequality for any positive (negative) wealth component that is equally distributed. The decompositions presented above are classified according to this criterion and the results are reported in Table 10. The main residence is considered as an equalizing asset by all the decomposition rules that satisfy the uniform addition property. Thus, when this item is added to the rest of the components the Gini index reduces almost 34 percent. Similarly, the zero Shapley decomposition suggests that if the contribution of gross housing would be omitted the value of the Gini index would be around 0.75 instead of 0.54. However, every decomposition that does not satisfy the uniform addition property register a positive contribution of gross housing to overall inequality. This contradiction comes from the fact that gross housing is one of the most equally distributed assets, which explains the different role assigned by the two types of decompositions. The same contradiction appears in the case of net housing. However, the contribution assigned by the decompositions satisfying the uniform addition is lower than in the case of gross housing. Thus, when this factor is added to the rest of the wealth components, the Gini index reduces about 24 percent. According to the zero Shapley decomposition the presence of net housing reduces the Gini index and the coefficient of variation by a factor of 1.2 and 2.5, respectively. Therefore, although net housing is also an equalizing factor its contribution to equality is smaller than the contribution of gross housing. This result is explained by the contribution of housing debt: six out of the eight inequality decompositions assign to this component a positive contribution to inequality.

³³Shorrocks (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 the minimum requirements that a decomposition rule ought to obey.

On the other hand, independently of the decomposition considered, the contribution of financial wealth³⁴ to overall inequality is always positive. However, the size of this contribution varies significantly across the decompositions. Thus, according to the zero Shapley decomposition the financial wealth components increase inequality either by a factor of 2.9 or by factor of 5.5, depending on the inequality index considered. The equal Shapley, the Gini and the Shorrocks decompositions assign to financial wealth a contribution to overall inequality that ranges between 49 and 96 percent.

Table 10
Inequality Decomposition by Wealth Component
(all variables in percentage)

	Uniform Additions satisfied				Uniform Additions not satisfied			
	Gini variation	Gini partial derivative	Zero Shapley Gini	Zero Shapley C.V	Equal Gini	Shapley C.V	Gini Share	Shorrocks
Real Assets	-83.3	-8.4	-102.5	-156.3	74.4	81.1	87.3	75.8
Principal residence	-33.9	-14.2	-54.6	-180.7	5.0	41.7	42.4	2.5
Other state properties	4.7	7.3	2.2	-105.1	6.4	25.9	27.5	3.1
Durables and collectibles	-4.3	-3.9	-34.9	-85.6	1.0	3.2	4.3	1.5
Business equity	3.4	4.0	4.4	280.2	62.0	9.4	11.2	68.5
Vehicles	-1.9	-1.7	-19.6	-65.0	0.0	0.9	1.9	0.1
Financial Assets	2.1	2.7	175.2	171.3	24.5	15.7	15.3	24.4
Bank accounts	-1.3	-0.9	2.5	-130.6	4.4	-20.8	4.1	0.6
Stocks	2.4	2.4	40.6	288.8	4.4	120.9	5.8	21.3
Private pension assets	0.3	0.4	28.2	-54.5	4.1	-24.1	2.3	0.2
Investment funds	0.4	0.5	34.3	-13.5	4.0	-22.6	1.7	0.2
Bonds	0.0	0.1	34.8	23.5	3.8	-25.2	0.3	0.0
Other financial assets	0.2	0.3	34.7	57.6	3.9	-12.4	1.1	2.1
Debts	3.9	5.7	27.3	85.0	1.0	3.2	-2.6	0.2
Principal residence debt	3.2	4.4	18.4	-20.9	1.0	5.1	-0.3	0.0
Other state properties debt	-0.3	0.0	1.5	20.0	0.8	1.3	-1.9	0.2
Vehicle loans	0.4	0.4	4.4	10.4	-0.4	-1.2	0.0	0.0
Installment debt	0.1	0.2	-1.1	59.5	-0.1	-1.2	-0.2	0.0
Other debts	0.6	0.7	4.1	16.0	-0.2	-0.8	-0.1	0.0
Total			100	100	100	100	100	100
Net equity principal residence	-23.75	-9.8	-23.3	-158.2	4.9	41.3	42.0	2.5
Net equity other state properties	5.64	7.4	31.0	-79.0	6.2	24.9	25.6	2.9

Source: Authors' calculation using EFF 2002

Notes: (1) We present the Nested-Shapley decomposition for the Gini index and the coefficient of variation (C.V.).

(2) The figures in columns (3) - (8) represent the share of the inequality measure accounted by each component.

³⁴Recall that financial wealth is composed by all assets and debts except the consumer durables, vehicles, the gross value of housing and and the housing debt.

Among the financial wealth components, other state properties, business equity and stocks are the individual assets that in most of the decompositions have the largest disequalizing impact. As in the case of financial wealth, the variability of the contributions is rather large. For instance, the contribution of other state properties is negative for the coefficient of variation zero Shapley decomposition, while it ranges between the 2.2 percent and the 28 percent for the rest of decompositions. In the case of the business equity and stocks the assigned contributions to overall inequality range between about 4 and more than 280 percent in both cases. Therefore, although the sign of the contributions is clear, the exact quantification of these contributions is difficult, given the large variability observed in the results from the different decompositions.

Another way of studying the factors underlying the overall wealth inequality is through the inequality decomposition by population subgroups. For doing so, the inequality measures we decompose are the half squared coefficient of variation (I_2)³⁵ and the Gini coefficient. As Mookherjee and Shorrocks (1982) show, the index I_2 can be decomposed as

$$I_2 = \sum_{i=1}^K v_k(\lambda_k)^2 I_{2k} + \sum_{i=1}^K v_k[(\lambda_k)^2 - 1] \quad (6)$$

where K is the number of subgroups, v_k is the population share of group k , λ_k is the group k 's mean wealth relative to the population mean and I_{2k} is the inequality within group k . Thus, this index satisfies the additive decomposability requirement, which implies that total inequality can be expressed as the sum of two contributions: the "within group" and the "between group" component, which correspond to the first and the second term in the decomposition, respectively. However, the Gini index is not exactly decomposable in these two contributions. Thus, according to the decomposition proposed by Rao (1969) the Gini index can be written as

$$G = \sum_{i=1}^K v_k(\lambda_k)^2 G_k + G_B + R \quad (7)$$

where K , v_k and λ_k are defined as above, G_k is the Gini index for group k , G_B is the Gini index obtained when all the individuals in a group own a wealth level equal

³⁵This index belongs to the Generalized Entropy family (I_α). The indices I_0 and I_1 are usually employed in the decomposition of income inequality but this is not possible for wealth, given the presence of negative values.

to his group’s average wealth and R is the residual term. The first two terms clearly correspond with the within and the between group inequality, whereas the interpretation of the residual term is not so clear. Aronson and Lambert (1993) proposed an overlap interpretation of this term. Thus, this residual would be zero if the subgroup wealth ranges do not overlap and it increases as overlapping increases. As these authors suggest, this residual simultaneously accounts for within and between groups effects, which disables this decomposition to assess the contribution of each type of inequality to overall inequality (except when $R = 0$). Table 11 contains the results of decompositions (6) and (7).

We sort the Spanish households according to the age and employment status of the household head and the home ownership regime. Regarding the decomposition (6), for all the classifications, the overall wealth inequality is almost entirely attributable to inequality within each group.³⁶ As seen in Section 3, disparities in mean wealth among the different age groups are significant. However, these disparities explain little of the overall wealth inequality. What matters is the inequality within each age group. Indeed, only the inequality in the 45-54 age cohort accounts for more than 90 percent of wealth inequality. A similar conclusion is reached for the other classifications. Thus, the inequality within the groups determined by the employment status of the household head accounts for almost the whole wealth inequality. As in the case of age, there is a group that stands out: the inequality among those households whose head is self-employed accounts for almost 95 percent of overall wealth inequality.³⁷

On the other hand, the Gini decomposition sheds light on the degree of stratification among the different socioeconomic groups. In particular, the lowest degree of stratification is observed in the age grouping. In this case the residual term represents more than half of total inequality, which indicates that there is overlapping among the wealth range of the different age cohorts. This result is consistent with that obtained with the decomposition (6), as it also suggests that the contribution of age to overall wealth inequality is reduced. On the contrary, for the self-employment and homeownership classifications the residual

³⁶Brandolini et al. (2004) obtain similar results for Italy. In particular, they classify the households according to the home ownership regime, household size, area of residence, sex, age, and education of the household head. In all the cases the within group inequality accounts for more than 90 percent of the overall wealth inequality.

³⁷However, a more detailed classification of the self-employed reveals that the inequality among those households whose 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, accounts for more than 90 percent of the wealth inequality, whereas the inequality among the group formed by independent professionals, sole proprietors of business and self employed workers represents only about 2 percent.

term only accounts for 2 and about 5 percent of the Gini index, respectively. This result indicates that the differences, in terms of wealth holdings, between homeowners and non-homeowners and between the sub-group of self-employed and the rest of the population are considerable.

Table 11
Inequality Decomposition by Population Subgroups
(all variables in percentage)

	I ₂			Gini			
	Within group inequality	Between group inequality	Overall inequality	Within group inequality	Between group inequality	Residual	Overall inequality
Age of the household head ^(I)	99.7	0.3	100	17.2	28.6	54.2	100
Employment status of the household head ^(II)	99.4	0.6	100	27.7	31.5	40.8	100
Self - employment ^(III)	99.4	0.6	100	87.0	11.0	2.0	100
Homeownership ^(IV)	99.5	0.5	100	69.8	24.7	5.4	100

Source: Authors' calculation using 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) The employment status of the household head can be: employee, self - employed, retired, other inactive or unemployed.

(III) The category self-employment divides the households into two groups: one that includes the households whose 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 a second group, that includes the other forms of self-employment (independent professional, sole proprietor of business and self employed worker) and rest of the households.

(IV) The classification homeownership refers to the possession of the main residence.

6 Conclusions

The development of household surveys of assets and debts in the last decades has allowed economists to analyze 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 have used data from this survey for analyzing how wealth and its components are distributed among Spanish households. We have also investigated the degree of contribution of housing wealth and financial wealth to overall wealth inequality.

Similar to results for other countries, we find that household income is much more evenly distributed than net worth. However, the main two components of net worth are distributed differently. Financial wealth is much more unequally distributed than housing wealth. There exists a high concentration of the most liquid assets in the upper wealth classes. Thus, there are certain assets such as stocks, business equity related to self-employment or real state properties different to the main residence that 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 mostly held by the middle class. As a consequence, the net value of housing is distributed more unequally than the gross value.

As regards the wealth inequality decomposition by wealth components, we consider the uniform additions property as a desirable property that a decomposition rule should satisfy. Every decomposition rule that satisfies this property registers a negative contribution of housing wealth to overall wealth inequality. However, the size of the contribution is smaller than in the case of gross housing wealth. The reason is that housing debt contributes positively to wealth inequality. Lastly, financial wealth is considered as a disequalizing factor for every decomposition rule. Among the elements that conform financial wealth, the value of the business related to self-employment, stocks and the state properties different to the main residence are those with a largest positive impact on overall wealth inequality.

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