Economics Bulletin

Volume 39, Issue 3

Housing and financial wealth effects on consumption: Evidence from the Spanish Survey of Household Finances

Juan I Martín-Legendre
University of A Coruña

Pablo Castellanos-García
University of A Coruña

José M Sánchez-Santos
University of A Coruña

Abstract

This paper estimates the consumption effects of housing and financial wealth using micro-data from the five available waves of the Spanish Survey of Household Finances (2002-2014), covering a marked boom-and-bust cycle. Our results suggest a significant positive relationship between household wealth and consumer spending. Disaggregating by asset type, the value of the main residence is the asset category with the highest estimated effect on consumption, whereas the remaining (other real assets, current accounts and deposits, and other financial assets), although still positive and generally significant, have much more limited effects on consumption.

This research was supported by the Xunta de Galicia (ED481A-2016/356) and the Ministerio de Economía y Competitividad (Government of Spain - Grant no. CSO2017-86178-R)

Citation: Juan I Martín-Legendre and Pablo Castellanos-García and José M Sánchez-Santos, (2019) "Housing and financial wealth effects on consumption: Evidence from the Spanish Survey of Household Finances", *Economics Bulletin*, Volume 39, Issue 3, pages 1930-1940

Contact: Juan I Martín-Legendre - juan.ignacio.martin.legendre@udc.es, Pablo Castellanos-García - pablo.castellanos@udc.es, José M Sánchez-Santos - jose.manuel.sanchez@udc.es.

Submitted: April 14, 2019. **Published:** August 22, 2019.

1. Introduction

In the aftermath of the 2008 economic crisis, the collapse of output and household consumption in Spain were so deep and lasting that pre-crisis levels had not yet been recovered by 2016 according to OECD data. After five years of recession, GDP per capita decreased by 10.6% and private consumption per capita dropped by 15.2%, ending an ever-growing trend that started back in the early 1990s.

In this context, it is particularly appropriate to analyze how changes in the distribution of wealth affected the consumption of Spanish households –particularly, in view of the fact that during the period under review the boom-and-bust cycle was extremely pronounced and combined with a rise and fall in the price of real and financial assets, and that house price variations are especially relevant to the Spanish economy, since most households own the house in which they live.

We will use the Survey of Household Finances –henceforth SHF– data to track changes in wealth inequality and then estimate the impact these changes may have on consumption distribution. The SHF, which is carried out every three years by the Bank of Spain, is the only survey including data on income, consumption and wealth for the same household in the Spanish National Statistic Plan.

Additionally, this survey provides a representative sample with stratification techniques and oversampling by wealth to ensure the inclusion of enough households with a large net wealth and a wide range of assets. It also includes a series of socio-demographic parameters to enrich the analysis (household size, education, age, employment status, gender, marital status, etc.). The SHF data allows us to evaluate the household responses to changes in wealth and differentiate between different consumption types and between real and financial assets.

There is a vast amount of literature analyzing the effects that wealth has on consumption, beginning with the seminal work of Ando & Modigliani (1963) and their formulation of the life-cycle hypothesis of saving. In recent years, this issue has been extensively addressed making cross-country comparisons (Barrell & Davies, 2007; Scalacek, 2009; Sousa, 2009; Aron et al, 2012, Barrell et al, 2015) or using micro data from household surveys (Grant & Peltonen, 2005; Bostic et al, 2009; Browning et al, 2013).

However, to our best knowledge, only one major study estimates the wealth effect in Spain using micro-data (Bover, 2005), and its results suggest that the marginal propensity to consume of housing wealth is 0.015. It must be noted, nevertheless, that only the data from the first wave of the survey was available at the time.

This paper is organized as follows. In section 2, we present and define the dependent and independent variables included in our model, and the characteristics of our data source, the SHF. In section 3, we make a descriptive analysis regarding income, wealth, and consumption in order to examine the changes in the distribution of these variables in the period considered in our study. In section 4, we present the main results derived from the econometric analysis and their implications. Finally, section 5 summarizes the conclusions of our paper.

2. Data and definition of the main variables

As explained in the introduction, our research uses data from the Survey of Household Finances (SHF) to assess the link between wealth and consumption in Spanish households. While with these data we could have assembled a panel to track the same group of households during the five survey waves, this would result in a loss of observations (households not included in all waves) that the resulting panel would not be representative. Therefore, in order to preserve the possibilities offered by the data, we decided to work with each cross-section separately.

All variables are defined using the guidelines provided by the Bank of Spain in the design of the SHF. Hereby, we define total household income as the sum of the pre-tax income of all household members; gross household wealth is the sum of all household members' real and financial assets (whereas net wealth is obtained by withdrawing from this sum the total of household members' debts); finally, total household consumption is defined as the sum of expenditure on durable and non-durable consumption.

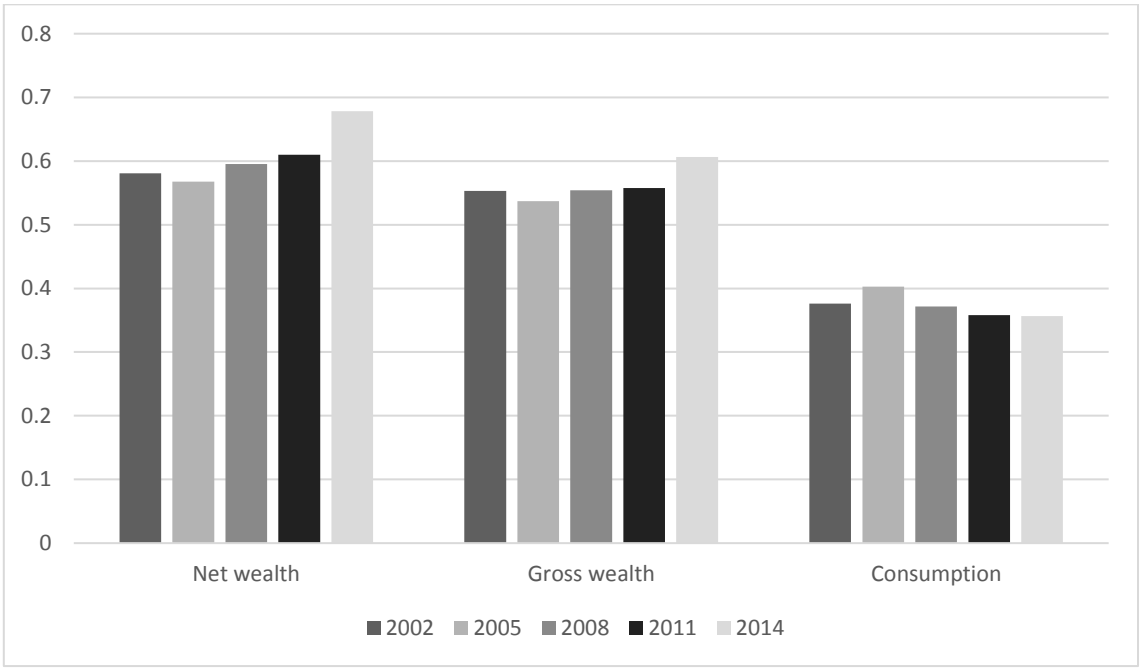
To reflect changes in purchasing power over time, all amounts of monetary variables were converted to 2014 euros.

Regarding the socio-demographic household variables, we will use the status of the main residence, number of household members, number of adult household members working and the following data of the household head: age, working status, educational level, gender, and marital status.

3. Descriptive analysis

We will first discuss several important empirical facts from the successive SHF waves. Figure 1 shows the changes of the Gini indices for gross and net wealth, and consumption.

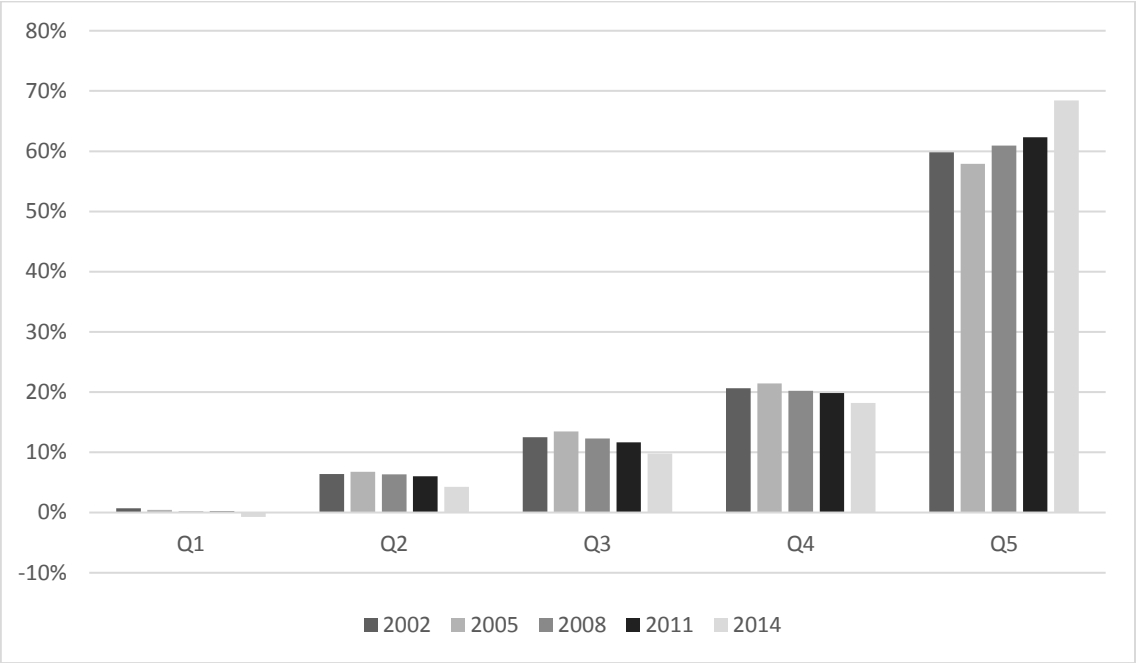
Figure 1. Gini indices for gross and net wealth, and consumption, 2002-2014



The increase in gross and net wealth inequality was accompanied by much stable levels of consumption inequality, which have consistently decreased since the mid-2000s. These results would provide an initial insight into the relationship between wealth and consumption during the period under review.

In order to try to find out the cause of the former changes in the Gini indices of wealth and consumption, we can split the wealth distribution into quintiles (for more details of the demographic characteristics of households by net wealth quintiles, see Annex 1). In doing so, we can see a scenario with very clear trends (Figure 2): households in the fifth quintile increased their share of gross and net wealth, while the remaining four were generally experiencing a contraction. Furthermore, as we move down throughout the distribution, this decline in the share of the total wealth is greater, with the households at the bottom even registering a negative net wealth in 2014.

Figure 2. Net wealth shares by quintiles, 2002-2014

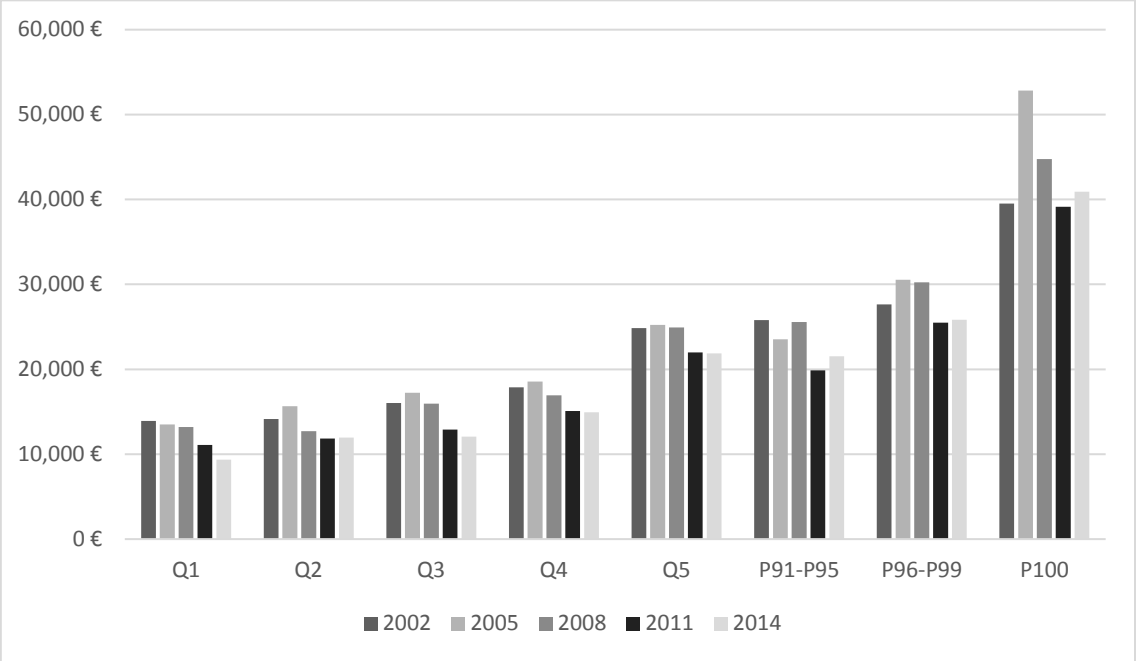


With the same breakdown by net wealth quintiles, it is possible to analyze consumer behavior to identify the potential cause of the decrease in consumer inequality.

Figure 3 shows that between the first and last available waves there was a drop in consumption, which was substantially more significant for households in the first and third quintiles. In addition, when we divided the distribution into percentiles, we found that this generalized drop in consumption expenditure affects all percentiles except the hundredth one.

It is especially interesting to analyze the changes in the growth period 2002-2008 and in the recession period 2008-2014 separately. During the years of growth, all groups experienced mild to moderate drops in consumption expenditure, with the exception of the fifth quintile, which showed significant increases. However, the decline in consumption spread to all households after the outbreak of the crisis, although it had more impact on the first and third quintiles.

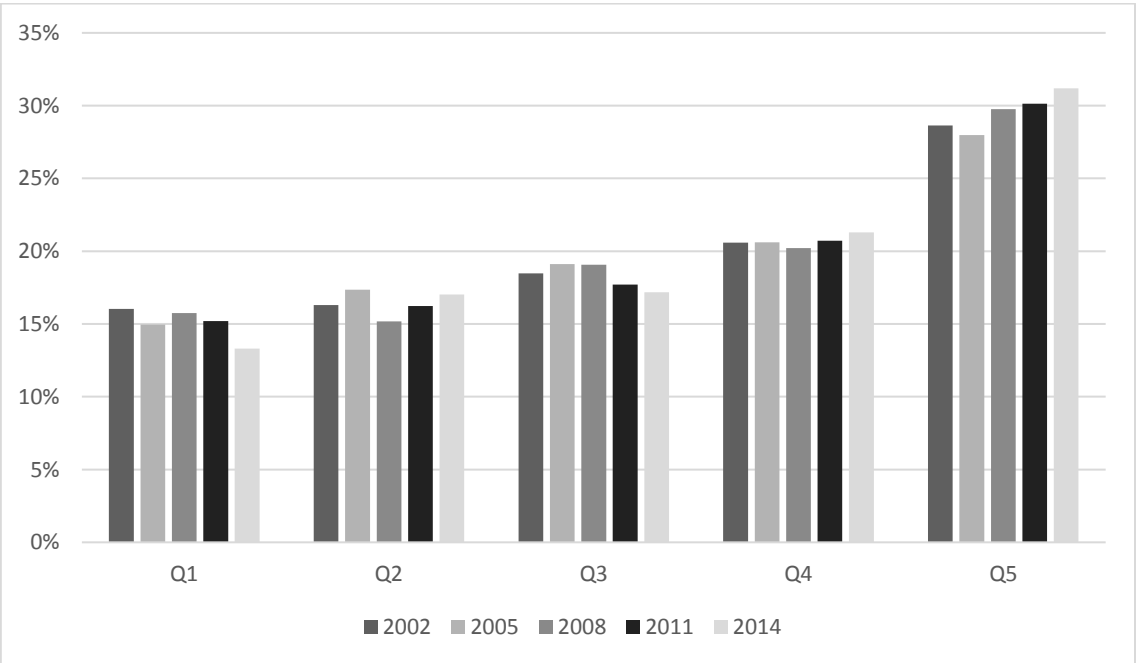
Figure 3. Mean consumption expenditure in 2014 euros by net wealth quintiles, 2002-2014



These results seem to be related to the fact that households with low incomes are forced to cut their consumption expenditures due to their increasing risk of unemployment during crises because they were not able to save money enough to smooth out consumption (Amromin, DeNardi & Schulze, 2017).

These changes led to a recomposition of consumption where the fourth and fifth quintile households play an increasingly predominant role in the distribution of consumption, whereas households with lower net wealth reduce their weight (Figure 4).

Figure 4. Consumption expenditure shares by net wealth quintiles, 2002-2014



4. Empirical model

With regard to the analysis of the relationship between consumption and wealth, the literature usually suggests models using different sub-divisions of wealth, as well as several controls such as household income and a series of socio-demographic variables.

Therefore, a first function would be as follows:

$$log(consump) = f[log(income), log(netwealth), V] \qquad [1]$$

Where *consump* stands for the sum of expenditure on durable and non-durable goods, *income* the total income of the household, *netwealth* its net wealth and *V* the set of socio-demographic variables (categorized by means of dummies) explained in section 2.

Given that net wealth can take negative values, which cause difficulties in transforming it into logarithms, it is convenient to divide it into gross wealth (*grwealth*) and total debt (*penddebt*). This way, the former function is now transformed into:

$$log(consump) = f[log(income), log(grwealth), log(penddebt), V] \qquad [2]$$

Once the heteroscedasticity problems have been corrected using a robust OLS estimator, the first estimate of a linear model of this function is as follows:

Table 1. Total consumption estimates, 2002-2014

	2002		***2005***		***2008***		***2011***		***2014***	
log(income)	0.1349	***	0.0362	**	0.1238	***	0.1382	***	0.2091	***
	(0.0092)		(0.0061)		(0.0064)		(0.0065)		(0.0073)	
log(grwealth)	0.0619	***	0.0720	***	0.0458	***	0.0435	***	0.0451	***
	(0.0058)		(0.0052)		(0.0041)		(0.0041)		(0.0037)	
log(penddebt)	0.0183	***	0.0268	***	0.0117	***	0.0004		0.0071	**
	(0.0022)		(0.0021)		(0.0018)		(0.0018)		(0.0017)	
R-squared	0.4382		0.4235		0.4638		0.4558		0.5150	
N	5143		5962		6197		6085		6117	

(*) Significant at 10%; (**) Significant at 5%; (***) Significant at 1%.

This first estimate reveals that, as the literature points out, income and wealth have a significant positive effect on consumer expenditure. However, during the period under analysis there are large variations in the effects that a change in these two variables may have on consumption. For instance, in 2005, income is less relevant to explain changes in consumption and, since then, the sensitivity of consumption to alterations in income increases with each successive wave of the SHF. On the other hand, the influence of gross wealth on household consumption seems to be much more stable.

In order to maximize the goodness-of-fit and to be able to derive nuanced results from the model estimation, we disaggregated the gross wealth into real and financial assets. In addition, we decided to separate, on the one hand, the real gross wealth into the value of the main residence (*mainresid*) and the value of other real assets (*oth_realassets*); and, on the other hand, the financial wealth into current accounts or deposits that can be used to make payments by card or check (*curracc*) and other financial assets (*oth_finassets*).

Similarly, since the composition of total income may vary significantly throughout the distribution affecting consumer behavior, we decomposed the total income into labor (*labor*), capital (*capital*) and other income, such unemployment benefits, welfare transfers, etc (*oth_income*).

Finally, in this model we detail the results for two sets of dummy variables that are potentially relevant to explain the results obtained: the number of people living in the household (*nph*) and the gender of the head of household (*female*).

With all these adjustments, our model would be as follows:

$$log(consump) = \beta_0 + \beta_1 log(labor) + \beta_2 log(capital) + \beta_3 log(oth\_income) + \beta_4 log(mainresid) + \beta_5 log(oth\_realassets) + \beta_6 log(curracc) + \beta_7 log(oth\_finassets) + \beta_8 log(penddebt) + V \quad [3]$$

Again, once corrected the heteroscedasticity problem found, the results of the OLS estimation are shown in Table 2.

Table 2. Total consumption estimates (gross wealth divided into four categories), 2002-2014

	2002		***2005***		***2008***		***2011***		***2014***	
log(labour)	0.0249	***	0.0150	***	0.0213	***	0.0201	***	0.0253	***
	(0.0053)		(0.0055)		(0.0049)		(0.0056)		(0.0054)	
log(capital)	0.0039		0.0147	***	0.0103	***	0.0149	***	0.0073	*
	(0.0039)		(0.0045)		(0.0036)		(0.0041)		(0.0044)	
log(oth_income)	0.0096	***	0.0065		0.0099	***	0.0022		0.0035	
	(0.0037)		(0.0042)		(0.0036)		(0.0036)		(0.0040)	
log(mainresid)	0.1261	***	0.1208	***	0.1933	***	0.1299	***	0.1237	***
	(0.0161)		(0.0175)		(0.0190)		(0.0173)		(0.0191)	
log(oth_realassets)	0.0038	*	0.0089	***	0.0086	***	0.0070	***	0.0059	**
	(0.0023)		(0.0028)		(0.0023)		(0.0022)		(0.0024)	
log(curracc)	0.0354	***	0.0219	***	0.0202	***	0.0265	***	0.0312	***
	(0.0064)		(0.0045)		(0.0046)		(0.0047)		(0.0052)	
log(oth_finassets)	0.0149	***	0.0079	***	-0.0011		0.0069	***	0.0121	***
	(0.0024)		(0.0028)		(0.0026)		(0.0024)		(0.0027)	
log(penddebt)	0.0223	***	0.0289	***	0.0129	***	0.0047		0.0136	***
	(0.0030)		(0.0035)		(0.0032)		(0.0033)		(0.0039)	
nph										
2	0.1213	***	0.2469	***	0.1842	***	0.2073	***	0.2382	***
	(0.0433)		(0.0447)		(0.0383)		(0.0382)		(0.0424)	
3	0.1828	***	0.3529	***	0.2992	***	0.2915	***	0.2879	***
	(0.0518)		(0.0520)		(0.0483)		(0.0494)		(0.0457)	
4	0.2313	***	0.4059	***	0.3833	***	0.4214	***	0.3998	***
	(0.0572)		(0.0579)		(0.0560)		(0.0520)		(0.0521)	
5 or more	0.3078	***	0.3997	***	0.4718	***	0.5069	***	0.4446	***
	(0.0657)		(0.0704)		(0.0694)		(0.0646)		(0.0685)	
female	-0.0174		-0.0017		-0.0693	***	-0.0092		-0.0573	**
	(0.0249)		(0.0260)		(0.0223)		(0.0229)		(0.0254)	
R-squared	0.4443		0.4398		0.4728		0.4612		0.4863	
N	5143		5962		6197		6085		6117	

(*) Significant at 10%; (**) Significant at 5%; (***) Significant at 1%.

This second model reveals several relevant nuances in relation to the first one. Overall, the estimated elasticity of consumer spending relative to labor income follows a pattern different to that described for the first model –with considerably smaller estimated elasticities and a

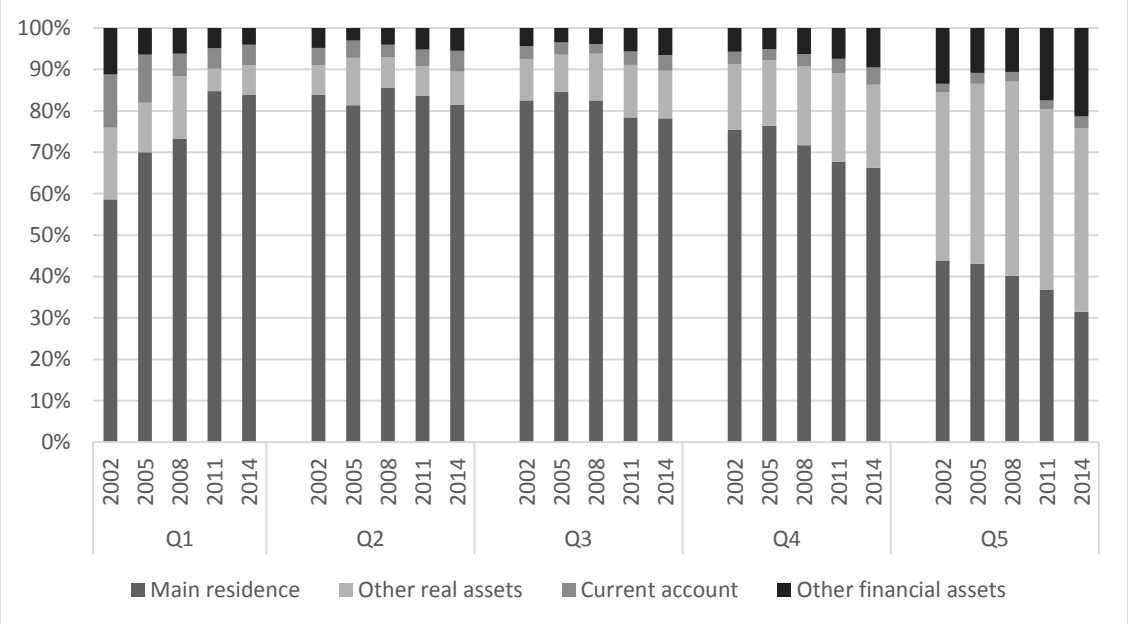
pattern of ups-and-downs that reaches its peak in 2014. The elasticity of capital income, on the other hand, shows a much more erratic trend, although with levels always below those of labor income. Finally, the remaining household earnings have an even lower estimated elasticity, which is not statistically significant in three of the five cross-sections.

Meanwhile, the relationship between consumption and the value of the main residence seems to mimic the behavior of house prices in Spain: the elasticity grew by 50% between 2002 and 2008, and plummeted during the following two waves. The remaining real assets owned by households (second residences, stores and offices, industrial warehouses, plots, etc.) have a significant but dwindling effect on consumption, although of residual importance.

Regarding financial assets, both categories have a much smaller effect on consumption than the value of the main residence. The elasticity of consumption relative to deposits in current accounts follows a U-shaped pattern, which can be considered the mirror image of house prices, with their highest points in the first and last year under analysis, and their lowest levels at the peak of the real estate bubble. The rest of the financial assets (fixed-term accounts, fixed-income and equity securities, investment fund shares, options, loans to third parties, etc.) draw a similar path, although with elasticities that are always lower and that even fail to be significantly different from zero in the central years of the sample.

Anyway, the interpretation of the results should be made bearing in mind the wealth composition by quintiles. Figure 5 shows that although real wealth always accounts for most of total wealth, its distribution is very different depending on the quintile in which each household is placed. The cases of real assets excluding the main residence and financial assets excluding current account savings are particularly remarkable, since they reveal an ever-increasing proportion of the wealth of the most affluent households.

Figure 5. Wealth composition by net wealth quintiles, 2002-2014



Finally, the outstanding household debt has a significant positive effect on consumption, but its magnitude seems to have diminished in the wake of the collapse of the housing bubble as compared with both labor income and the value of the main residence.

In addition, regarding the dummy variables, the number of household members has a very significant influence on consumption, although this influence follows a non-linear pattern. In contrast, the gender of the head of the households only significant (with a negative sign for females) for specific years –i.e. it does not affect persistently the consumption behavior of the household.

Compared to the results obtained by Bover (2005), we find a much higher estimated elasticity of value of the main residence to consumption expenditure in all waves of SHF. On the other hand, regarding other real estate, our results do not differ significantly from those presented in previous literature.

Conversely, our research indicates that financial assets, which in the previous study were found to be statistically non-significant, are indeed relevant for explaining the consumption behavior of households. This finding is particularly relevant considering that inequality in the holding of financial assets –other than bank deposits– is extremely high in Spanish households and whose ownership is increasingly concentrated in households at the very top of the distribution.

The differences in these results are undoubtedly due to the methodology used: Bover performs a screening process of the sample that in our case would not serve any purpose, uses a definition of the variables that deviates from ours, and includes a completely different of set of dummy control variables –some of which are not available to us.

Nevertheless, maybe the cause of the greatest divergence is her use of the method of non-parametric instrumental variables employing house prices as instrument. Her utilization of homogeneous per-square house prices for each municipality, without taking into account the extreme segmentation of the housing market within these areas might fail to provide accurate estimates. In our analysis, this problem was completely unsurmountable, since the anonymous nature of the survey prevented us from having information on the specific location of each household.

In any case, the purpose of our research was not to challenge the results obtained by Bover (2005) but to provide an extended analysis for a period of time that was not available in this reference, which only exploited the first wave of the survey.

5. Concluding remarks

Our findings suggest that there was an increase in wealth inequality (both gross and net) during the period 2002-2014 and, at the same time, a reduction in consumption inequality. Although households at the top of the distribution account for an increasing share of total wealth at the expense of the rest, the distribution of consumption is less and less unequal.

Regarding our estimates, we observed a significant positive effect of wealth on consumer expenditure. Disaggregating by categories, the primary source of real wealth, namely the main residence, had a considerable effect on consumption, with values ranging from 0.12 to 0.19 for the estimation performed using the whole sample. Its elasticity during the central years of the 2000s was higher than any other category of income. In addition, the changes in the elasticity of consumption with respect to the value of the main residence seems to mirror

the behavior of the Spanish housing price index –increasing until 2008 and falling thereafter–, which could be associated with the prevalence of home ownership in Spanish families.

In contrast, the effects of the other wealth categories (i.e., real assets except main residence, current account deposits, and other financial assets) on the consumption expenditure of Spanish households, although generally significant, seem to be much weaker, with elasticities between 0.005 and 0.03. A particularly interesting result is the case of financial assets, which behave exactly the opposite of the value of the main residence. Finally, outstanding debt also has a significant positive effect on consumption, albeit limited and decreasing in importance compared to other income and wealth categories.

Nonetheless, further research is needed on the decoupling of wealth and consumption inequality.

References

Amromin, G., De Nardi, M., & Schulze, K. (2017) "Household Inequality and the Consumption Response to Aggregate Real Shocks" National Bureau of Economic Research Working Paper w24073.

Ando, A., & Modigliani, F. (1963) "The "Life-Cycle" Hypothesis of Saving: Aggregate Implications and Rests" *The American Economic Review* **53**(1), 55-84.

Aron, J., Duca, J. V., Muellbauer, J., Murata, K., & Murphy, A. (2012) "Credit, Housing Collateral, and Consumption: Evidence from Japan, the UK, and the US" *Review of Income and Wealth* **58**(3), 397-423.

Barrell, R., Costantini, M., & Meco, I. (2015) "Housing Wealth, Financial Wealth, and Consumption: New Evidence for Italy and the UK" *International Review of Financial Analysis* **42**, 316-323.

Barrell, R., & Philip Davis, E. (2007) "Financial Liberalisation, Consumption and Wealth Effects in Seven OECD Countries" *Scottish Journal of Political Economy* **54**(2), 254-267.

Bostic, R., Gabriel, S., & Painter, G. (2009) "Housing Wealth, Financial Wealth, and Consumption: New Evidence from Micro Data" *Regional Science and Urban Economics* **39**(1), 79-89.

Bover, O. (2005) "Wealth Effects on Consumption: Microeconometric Estimates from the Spanish Survey of Household Finances" Bank of Spain Working Paper No. 0522.

Browning, M., Gørtz, M., & Leth-Petersen, S. (2013) "Housing Wealth and Consumption: A Micro Panel Study" *The Economic Journal* **123**(568), 401-428.

Grant C., & Peltonen, T. (2005) "Housing and Equity Wealth Effects of Italian Household" DNB Working Paper No. 43.

Slacalek, J. (2009) "What Drives Personal Consumption? The Role of Housing and Financial Wealth" *The BE Journal of Macroeconomics* **9**(1), 1-35.

Sousa, R. (2009) "Wealth Effects on Consumption: Evidence from the Euro Area" European Central Bank Working Paper No. 1050.

Annex 1

Socio-demographic characteristics of households by net wealth quintile, 2014

	Average age	*% Below secondary education*	*% Secondary education*	*% University education*
Q1 %share	45.21	63.36%	25.52%	11.13%
Q2 %share	53.26	64.22%	20.35%	15.43%
Q3 %share	56.70	66.68%	18.60%	14.72%
Q4 %share	57.77	51.60%	26.27%	22.12%
Q5 %share	59.67	33.60%	23.56%	42.85%
	% Employee	*% Self-employed*	*% Retired*	*% Unemployed*
Q1 %share	48.66%	4.19%	9.82%	37.33%
Q2 %share	42.58%	7.06%	22.40%	27.96%
Q3 %share	36.74%	7.08%	27.19%	29.00%
Q4 %share	36.87%	9.44%	34.37%	19.32%
Q5 %share	27.77%	19.86%	40.30%	12.08%
	Average number of members working	*Average household members*	*% Homeowner*	*% Holding financial assets*
Q1 %share	0.9128	2.4680	28.95%	21.49%
Q2 %share	0.8820	2.4234	86.07%	37.19%
Q3 %share	0.8552	2.4661	95.91%	50.74%
Q4 %share	0.8876	2.4529	95.36%	59.75%
Q5 %share	1.0240	2.6203	95.46%	81.59%