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Measuring Poverty using both Income and Wealth: A Cross-Country Comparison between the U.S. and Spain

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Measuring Poverty using both Income and Wealth: A Cross-Country Comparison between the U.S. and Spain

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Abstract

In this paper we study the correspondence between a household's current income and its vulnerability to income shocks in two developed countries: the U.S. and Spain. Vulnerability is measured by the availability of wealth type resources to smooth consumption in a multidimensional approach to measuring poverty, which allows us to identify three groups of households. First, the *twice-poor* group which includes income-poor households who also lack of an adequate stock of wealth; second, the group of *protected-poor* households, which are all those income-poor families that have accumulated a buffer stock of wealth resources they can rely on; lastly, the *vulnerable-non-poor* group, which includes those households above the income-poverty line that do not hold any stock of wealth. The latter are, out of the group of non-poor, those who are more likely to be pushed into economic deprivation in times of economic hardship. Interestingly, the risk of belonging to one of these groups changes over the life-cycle in both countries while the size of the groups differs significantly between Spain and the U.S., although this result is quite sensible to whether one includes the housing wealth component in the wealth measure or not.

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1 Introduction

The definition of poverty and the identification of the poor is a complex issue. Until now, the main focus of poverty measurement has been on income flows. Indeed, most official statistics in industrialized countries use data on monthly or yearly household income to determine the incidence and characteristics of the poor. However, numerous contributions have recently remarked the inadequacy of this approach given the multidimensional character of well-being (Chakravarty and Silber 2007, Chakravarty *et al.* 2005, Bourguignon and Chakravarty 2003). These authors suggest that the standard poverty measures based on family income should be supplemented with information on other households' attributes in order to obtain a more comprehensive measure of household welfare. In particular, among the possible determinants of welfare, the contribution of wealth to households' well-being has received an increasing attention during the last years. Beyond the direct income flows provided by assets, wealth holdings are central to the measurement of vulnerability of households in times of economic crisis as they will determine the extent to which families can smooth consumption in periods of low income. Wealth contributes to the economic security to the families since assets can be converted directly into cash or can be used as collateral in order to provide liquidity during times of economic stress. Moreover, wealth determines the capacity that families have to participate in many of the opportunities offered by a market economy. In fact, the lack of assets may impose an important constraint on individuals when willing to take risky actions which could lead to an increase in the equilibrium standard of living of their household, such as running a new business, increasing their stock of human capital, or quitting a job in order to look for a more desirable one.

An important result derived from the income based poverty studies is that there exists a large low income turnover, with a significant number of households falling below the income threshold and experiencing low income spells (Jarvis and Jenkins, 1998). If this is the case, it is clear that the limited information on income flows may not be fully informative about the capacity that families have for sustaining a minimum standard of living during low income periods. Therefore, the joint analysis of income and wealth will clearly contribute to improve our knowledge about households' well-being, allowing us to study the correspondence between households' current income and their vulnerability to income shocks, measured by the availability of wealth type resources for maintaining consumption during an income-poverty spell. In particular, we here adopt a multidimensional approach to measure poverty in order to be able to distinguish three groups of vulnerable households. This distinction is crucial from a social policy point of view given

that poverty and vulnerability policies will need to be different for each of these groups. Within the *twice-poor* group, we would include those households in poverty who also lack an adequate stock of wealth, and therefore may be trapped in a low-welfare situation where they are unable to build-up financial assets given their current income flows. Secondly, the group of *protected-poor* would refer to all those families whose income is below the income-poverty threshold, but who have some capacity to cope with related liquidity problems, since they hold a buffer stock of wealth resources they can rely on. Lastly, the *vulnerable-non poor* group would include every household above the income-poverty line who, even if out of poverty, does not have a stock of economic resources that enables its members to smooth consumption in the absence of income flows, and this may push them into economic deprivation in times of economic crisis.

The aim of this paper to identify and characterize these three groups of households using data on income and wealth. This question has been so far addressed in various articles, mostly focused on the U.S., that investigate the effects of considering income and wealth in poverty measurement in this country (Zagorsky 2006, Short and Ruggles 2006, Van den Bosch 1998, Ruggles and Williams 1989). A common feature in all these works is that they apply the annuity method proposed by Weisbrod and Hansen (1968) to summarize the information on both dimensions into a single index of welfare defined as the sum of current income plus the lifetime annuity of its net worth, such that, every household whose annuity from wealth is not enough to compensate the income-poverty gap is identified as poor. This methodology, however, does not allow a clear description of households' vulnerability given that wealth holdings only matter for determining the poverty status of those households who are below the income-poverty line. For this reason, we depart from these studies and we treat the information on income and wealth separately, so the number of dimensions of welfare under analysis is not reduced. In particular, following the approach used by Wolff (1990) and Radner and Vaughan (1987),[1] we will specify a poverty line for each dimension, so that the levels of deprivation in income and wealth can be determined separately, which, in contrast with the annuity approach, will allow us to determine the vulnerability of households to income shocks independently of their current income situation.

The main contribution of this paper is that of quantifying and identifying the twice-poor, protected-poor, and vulnerable-non poor households in two industrialized countries:

[1] Our paper differentiates from these works as we quantify and characterize the different groups of poor households, while these authors applied this methodology only to measure the proportion of twice-poor households in the U.S.

the U.S. and Spain.[2] The comparison of these two countries is relevant for several reasons. First, the U.S. and Spain are both characterized by a welfare model typically catalogued as rather weak compared to that found in Nordic countries (Esping-Andersen, 2002). The measurement of vulnerability using wealth holdings especially is interesting in this context given the greater importance of assets as insurance mechanism in a low social protection situation. In any case, the U.S. and Spain present important differences that may condition the relationship between household income and wealth. Indeed, Bover (2008) shows that Spain and the U.S. exhibit important differences in the demographic structure and the household formation process, with Spain showing a larger share of young people living with their parents, which has important effects on the saving behavior and the stock of wealth accumulated over the life cycle. Also, Spain and the U.S. present important differences regarding the portfolio composition, with Spanish households showing a larger preference for housing wealth, while financial assets are relatively more important in the U.S.(Bover *et al.* 2005). Lastly, the generosity of the tax and benefit systems and the regulation of the labor market differs significantly in these two countries, with the U.S. usually seen as the prototype of a liberal market economy, whereas Spain presents a highly regulated labor market with a larger unemployment protection from the welfare state.

The paper is organized as follows. In Section 2, we present the data sources we use in the analysis. Section 3 describes the income sources and the portfolio composition of Spanish and U.S. households. We complete this section with the unidimensional analysis of income and wealth poverty, reporting the incidence and characteristics of those households that are poor in each dimension. Section 4 includes the results on the correlation and the correspondence between the distributions of income and wealth in the two countries. Also in this section, we present the main results of our multidimensional approach, describing the incidence and characteristics of the twice-poor, the protected-poor, and the vulnerable non-poor households in the U.S. and Spain. Finally, in Section 5 we detail our main conclusions.

[2]To the best of our knowledge, our work is the first attempt to analyze the incidence of poverty in Spain using both income and wealth. Indeed, the contribution of assets to families' welfare has received less attention than in the case of the U.S., mainly due to the fact that until 2002, there was an absolute lack of adequate data for undertaking this type of research.

2 Data Sources and Methods

In this paper we rely on data from two highly comparable wealth surveys in the Spain and the U.S. In particular, the data for the U.S. is from the 2001 Survey of Consumer Finances (SCF),[3] whereas for Spain we use the information in the first wave of the Spanish Survey of Household Finances (Encuesta Financiera de las Familias, EFF) conducted in 2002.[4] Both the SCF and the EFF are aimed at providing detailed information about the assets and liabilities held by households, as well as data on employment, income, and other demographic characteristics of the households.in the U.S. and Spain, respectively. Thus, the 2001 SCF provides all this information for a sample with more than 4,000 households, while the first wave of the EFF includes a sample with more than 5,000 households.

Importantly, the information provided in the SCF and the EFF is rather homogeneous, wich allows a high degree of comparability between the U.S. and Spain. With regard to the data on income, both the EFF and the SCF contain information on the different sources of income. In particular, in this paper we will use the annual household gross income (before taxes and contributions to the Social Security System).[5] This variable is the sum of wages and salaries, self-employment earnings, capital income, unemployment benefits, private and public retirement pensions, and other transfers received by any household member. In the case of wealth, in both the EFF and the SCF, 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.[6] In particular, the two surveys contain information about the ownership status and the value of the main residence and other real estate properties, as well as the amount pending repayment of the loans related to the purchase of these assets. The EFF and the SCF also provide us with the value of the businesses

[3] We use the data from the 2001 SCF included in the Luxembourg Wealth Study (LWS) database. The LWS is an international project launched in 2003, whose primary goal is to harmonize existing micro-data on wealth. At present, Austria, Canada, Cyprus, Finland, Germany, Italy, Norway, Sweden, United States and United Kingdom are contributing with their national data sets. A complete description of the LWS database can be found in http://www.lisproject.org.

[4] For a detailed description of the methodology used in the first wave of the EFF, see Bover (2004).

[5] In both surveys households are asked to report the income perceived during the year previous to the survey. Thus, income data for Spain correspond to 2001, while for the U.S. it measures the income households received in 2000. We decided to use a gross measure of income because the Spanish survey does not include any income measure net of taxes and contributions to the Social Security System.

[6] A complete description of the information on wealth holdings in the SCF 2001 and the EFF 2002 is included in the appendix. In particular, the interviews for the Spanish survey were performed between October 2002 and May 2003, whereas in the case of the SCF, the information was collected during the second half of 2001.

owned by any household member, as well as, the value of the means of transport, jewelry, works of art, antiques and other non-financial assets held by the household.[7] Regarding the financial portfolio, both surveys include information on the value of all deposits and accounts in financial institutions, 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 and the SCF 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. All this information allows us to construct a broad net worth measure for Spanish and U.S. households, which is defined as the total value of real and financial assets minus the current value of debts. Real assets are defined as the sum of the gross value of owner-occupied housing, other real estate, business equities related to self-employment, vehicles, jewelry, works of art and other non-financial assets.[9] Financial assets include 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 debt, vehicle and educational loans, and other debts.[10]

Additionally, the EFF and the SCF share relevant methodology features that make them especially suitable for comparative analysis.[11] Indeed, an important characteristic of these two samples is the over-sampling of wealthy households.[12] 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. Notice that, despite the over-sampling of the rich, the representativeness of the two samples is guaranteed by the use of appropriate sample weights. Another common feature in the EFF and in the SCF is that both surveys use the same imputation method

[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] The entitlements to Social Security pensions are not included in this category, given that households are asked to report only the present value of the private pension plans.

[9] This category includes the value of gold, silver, antiques, stamp collections, and other collectibles in the household.

[10] This category includes the value of installment debt, other loans from financial institutions, and informal debt.

[11] Indeed, the EFF was constructed following the model of the SCF (Bover, 2004).

[12] Over-sampling in the EFF is based on the individual information of the Spanish wealth tax (*Impuesto sobre el Patrimonio*), while in the SCF it is based on a supplementary high-income sample drawn from income tax records. For more information on these two procedures, see Bover (2004) and Kennickell (2008).

to provide complete information on households' income and wealth holdings even if a household fails to respond to the complete questionnaire.[13]

The unit of analysis we use in this paper is the household. In both surveys, a household is defined as including all individuals living together in the same dwelling, but additional requirements are considered in each survey. In the case of Spain, sharing expenses is a condition to form a household, while in the U.S., financial interdependence with the economically dominant person or couple is required. Lastly, as it is usual in regular income poverty analysis, we convert income to equivalent income taking into account the differences in needs across households due to the economies of scale in consumption.[14] In the case of wealth, since we are interested in the ability of families to overcome times of economic crisis using accumulated wealth holdings, we also consider differences in needs across households when measuring wealth.[15] Thus, we compute the equivalent values of both income and wealth variables using a consistent single parameter scale with a square-root-of-household-size scale factor. In particular, adjusted variables are equal to unadjusted variables divided by household size raised to an exponential value equal to 0.5.[16]

3 Unidimensional Analysis of Poverty

3.1 Income Components and the Wealth Portfolio

Before undertaking the multidimensional poverty analysis, in this section we study separately the income and wealth dimensions of welfare. For this purpose, we look first at the income sources and the asset portfolio composition of households in the U.S. and Spain. As Table 1 shows, there exist important differences regarding the income sources of Spanish and U.S. households. Labour earnings have a greater importance in the U.S. than in Spain. Indeed, the proportion of households where none of the members is an

[13] 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).

[14] For a comparative survey of income poverty and equivalence scales see Jäntti and Danziger (2000).

[15] In contrast with income distribution analysis, in the case of wealth there is no standard approach to account for different needs across households. In a recent discussion on the use of equivalence scales in wealth distribution analysis, Sierminska and Smeeding (2005) show that measures of wealth inequality are sensitive to equivalence scales, decreasing when higher economics of scale are assumed.

[16] This is a particular case of the family of equivalence scales proposed by Buhmann *et al.*(1988) widely used in regular inequality and poverty analysis, where household needs are equal to S^{θ}, where S is the size of the household and θ is the elasticity of the scale rate, which in our case is set equal to 0.5.

active earner in the U.S. is nine points lower than in Spain, where this type of households represents about 29 percent of the population. Instead, Spanish households have a larger dependence on the income from pensions and transfers than their U.S. counterparts: more than 48 ercent of Spanish households perceived some income from transfers or pension plans, while in the U.S. this percentage was below 40 percent, which explains the larger importance of this income source in total income in Spain compared with the U.S. (19 and 9 percent).

Table 1
Income sources in Spain and the U.S.
(all variables in percentage)

	Spain		U.S.	
Number of active earners (1)	**% households**		**% households**	
0	28.8		19.4	
1	38.4		48.3	
2 or more	32.8		32.3	
	100		100	
Income sources	**% households perceiving**	**% of total income**	**% households perceiving**	**% of total income**
Wage and salaries	66.0	62.3	77.3	74.4
Self-employment	16.5	14.7	8.0	9.7
Property income	25.3	3.5	35.6	6.2
Occupational pensions and transfers (2)	48.6	19.0	39.9	9.6
Other income	1.3	0.5	0.9	0.1
		100		100

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.
(1) Every household member who received income from wages, salaries or self-employment activities is considered an active earner.
(2) Transfers include social security pensions, social insurance transfers, and other private transfers.

In the case of wealth, the results in Table 2 highlight important differences in the portfolio composition of Spain and the U.S. Thus, as it has been already documented in the literature, Spain exhibits a large preference for less-liquid assets, especially for housing wealth, while the U.S. households show a significantly higher share of financial wealth (Bover *et al.*, 2005). Almost 82 percent of Spanish households own their main residence, and more than 30 percent own some other real estate, whereas in the U.S. these figures are around 68 and 16 percent, respectively. In fact, Spain presents the largest proportion of homeowners among OECD countries, where this proportion ranges from the 40 percent observed for Germany to the 80 percent observed for Spain, Greece, and Italy (Christensen *et al.* 2005). Consequently, real assets have a significantly larger importance in Spain, accounting for almost 87 percent of total assets, while in the U.S. they represent 58 percent. Clearly, the other side of the coin is that U.S. households reveal

a larger preference for more liquid assets in comparison with Spanish households. Indeed, for every financial asset for which information is reported in both surveys, the rate of ownership in the U.S. is larger than in Spain. For instance, only 12 percent of the Spanish households hold some type of share, while in the U.S., this proportion is about 21 percent. If compared with other countries included in the LWS, the figure for Spain is similar to that of another Mediterranean country like Italy, where the number of shareholders is around 11 percent. Meanwhile, the rate of ownership in the U.S. is more similar to that observed for the United Kingdom, and Nordic countries like Norway and Sweden, where the number of owners is about 30 percent. The low presence of financial assets in the Spanish households' portfolio explains the lower weight of financial assets have within total wealth compared with the U.S. (about 12 versus 42 percent). Finally, regarding the debt component, more than 75 percent of households in the U.S. hold some type of debt, compared with only 43 percent in Spain. Interestingly, despite the larger proportion of homeowners observed in Spain , the share of households that accumulate debt for this motive in the U.S. is more than twice the level in Spain (43 versus 21 percent).

Table 2
The wealth portfolio composition in Spain and the U.S.
(all variables in percentage)

	Spain		U.S.	
	% of households owning	% of total assets	% of households owning	% of total assets
Real assets		**87.5**		**58.0**
Principal residence	81.9	56.2	67.7	27.0
Other real state	30.1	20.1	16.4	10.0
Business equities	11.5	7.1	11.9	16.5
Vehicles	73.7	3.6	84.8	3.4
Other non-financial assets	18.2	0.5	7.5	1.1
Financial assets		**12.5**		**42.0**
Deposit accounts	97.7	4.9	91.1	6.2
Bonds	1.9	0.3	18.8	2.2
Stocks	12.5	3.4	21.3	9.0
Mutual and investment funds	7.2	1.2	17.7	5.1
Life insurance	1.1	0.2	28.0	2.2
Pension assets	23.1	1.9	54.0	16.4
Other financial assets	4.5	0.6	10.1	0.9
Debts	**43.6**	**8.3**	**75.3**	**12.8**
Principal residence mortgage	21.6	4.7	43.4	8.8
Other property mortgage	6.5	2.0	10.1	1.8
Vehicles loans	11.6	0.5	34.9	0.9
Educational loans	0.5	0.0	11.6	0.4
Other debts	14.9	1.1	52.0	1.0

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

3.2 Income Poverty

The official methods used to identify income-poor households in Spain and the U.S. differ regarding various methodological issues.[17] In particular, income-poverty measurement in the U.S. is based on a set of *absolute* income-poverty thresholds aimed to reflect the basic cost of living in this country, which vary according to the size and composition of the family. However, in Spain, as in other E.U. countries, a *relative* notion of income-poverty is adopted in the so called the "Laeken" indicators of poverty, which are computed using an income-poverty line equal to 60 percent of the median income. For the sake of comparability, in this paper we will follow a relative approach to measuring income-poverty in Spain and the U.S. In order to check for the sensitivity of results to a particular choice of threshold, we use three different income thresholds that correspond to the 40, 50, and 60 percent of the median income.[18] Income-poverty is larger in the U.S. than in Spain regardless of the income threshold and the poverty index considered. For instance, results in Table 3 show that about 20 percent of Spanish households are identified as income-poor with the 60 percent income threshold, while in the U.S. the incidence is around 29 percent. The larger incidence of income-poverty observed in the U.S. relative to other rich countries has been already documented in the literature (Notten and Neubourg 2007, Smeeding 2006, Jäntti and Danziger 2000). This differential in income-poverty rates is

Table 3
Income poverty rates in Spain and the U.S. (1)
(all variables in percentage)

	Income poverty rate (Z_y = Income poverty line expressed as % of the median equivalent household income)					
	Z_y =40%		Z_y =50%		Z_y =60%	
	Households	Individuals	Households	Individuals	Households	Individuals
Spain						
Headcount ratio	7.5	6.4	14.2	12.0	21.9	18.7
Poverty gap ratio	2.3	1.9	4.0	3.4	6.3	5.3
U.S.						
Headcount ratio	17.7	17.2	23.1	23.3	29.1	29.5
Poverty gap ratio	7.1	7.4	9.7	10.0	12.5	12.7

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.
(1) Income-poverty rates computed using annual equivalent household gross income. In the case of Spain the data on income is for 2001, while for the U.S. it refers to 2000.

[17] For an excellent discussion of the official methods used to measure income-poverty in the U.S. and in E.U. countries, see Notten and Neubourg (2007).

[18] Jesuit and Smeeding (2002) show that the U.S. absolute poverty line is close to the 40 percent threshold.

larger for lower income-poverty lines. In fact, the number of U.S. households identified as income-poor with the 40 percent income threshold is more than twice that in Spain (18 and 7 percent), while in the cases of the 50 and 60 percent thresholds this proportion is around 2 and 1.5 times larger in the U.S. than in Spain, respectively.

To the purpose of identifying income-poor households, Table 4 presents the incidence of income-poverty by households groups. In addition, to study the effect that different socioeconomic characteristics have on the probability of being poor, we use a logit model in which the dependent variable is an income-poverty indicator variable that assigns a value 1 if the household is identified as income-poor, and zero otherwise. Table 5 shows theestimation results computed taking the household as the reference unit and using the corresponding sample weights in order to run the regressions. Poverty rates reported in Table 4 show that the incidence in the U.S. is around twice that of Spain for every age group but those above 65, for which the difference is smaller.[19] However, the income-poverty profile appears to be rather similar in the two countries. Households at the beginning and at the end of the life cycle are clearly the most over-represented among the income-poor. Also, female headed, single, and lone-parent households, as well as households whose head is out of work or low educated are especially vulnerable to income-poverty in both countries. Interestingly, elderly and unemployed households face a greater relative risk in Spain compared with the U.S., whereas households headed by young, low educated or inactive people are apparently more vulnerable in the U.S. The estimates in Table 5 confirm most of the descriptive results. Young households with heads under 25 years face a greater relative risk of income-poverty, and this effect is larger in the U.S. than in Spain. Instead, old households, particularly those whose head is above 75 years of age, are more exposed to income-poverty only in Spain, which highlights the income constraints the elderly may face in this country. Education and inactivity are factors that conditions the possibility of income-poverty, especially in the U.S., where the difference in the risk of income-poverty between low and high educated households is particularly large, whereas unemployment implies a greater risk in the case of Spain. Interestingly, in Spain, in contrast with the U.S., female headed households face lower risk of income-poverty

[19] We identify the age of the household with the age of the household head. In the EFF the reference person is defined as the person responsible for the accommodation and household finances. In the SCF, for single-person households or households with only one economically dominant person, the head is identified with that person. In households where the economically dominant unit is a couple, the head is taken to be the male in a mixed-sex couple, or the older individual in the case of a same-sex couple.

Table 4

Socio-economic characteristics of income-poor households in Spain and the U.S. [1]

(all variables in percentage)

	Spain			U.S.		
	Population	Income-poor		Population	Income-poor	
		Incidence	R.R.[2]		Incidence	R.R.
All	100	14.2	1.0	100	23.1	1.0
Age, sex, race and marital status of the head						
<=25	2.0	18.3	1.3	7.1	39.6	1.7
(25-35]	14.2	10.4	0.7	17.4	22.5	0.9
(35-50]	32.5	9.8	0.7	34.0	18.3	0.8
(50-65]	25.7	10.1	0.7	21.4	19.0	0.8
(65-75]	16.6	21.7	1.5	11.1	31.4	1.3
>75	9.0	33.1	2.3	9.0	35.8	1.5
Male	66.1	12.2	0.9	45.6	16.8	0.7
Female	33.9	18.1	1.3	54.5	28.6	1.2
White [3]				53.5	19.4	0.8
Non white				46.5	27.7	1.2
Married	71.2	11.4	0.8	53.1	15.0	0.6
Divorced	5.1	17.7	1.2	18.3	27.4	1.2
Widowed	12.6	27.5	1.9	9.4	41.9	1.8
Never married	11.1	15.5	1.1	19.3	32.9	1.4
Household type						
Single	15.5	29.1	2.0	30.6	29.8	1.3
Lone parent	1.2	45.2	3.2	9.7	47.8	2.1
Couple, with children [4]	55.1	10.7	0.8	33.0	14.5	0.6
Couple, without children	28.2	11.5	0.8	26.7	17.6	0.8
Labour status and Education of the head [5]						
Working	57.1	6.3	0.4	71.7	14.8	0.6
Unemployed	5.1	31.7	2.2	3.4	46.5	2.0
Retired	25.4	17.6	1.2	18.0	34.6	1.5
Other inactive	12.5	36.5	2.6	7.0	69.4	3.0
Low	59.2	20.0	1.4	12.1	58.6	2.5
Medium	25.7	7.3	0.5	57.9	24.2	1.0
High	15.1	3.3	0.2	30.0	7.1	0.3
Housing tenure						
Owned outright	60.4	15.1	1.1	24.3	24.9	1.1
Buying with debt	21.6	6.2	0.4	43.4	9.8	0.4
Other	18.1	20.9	1.5	32.3	40.0	1.7

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included n the LWS database.

(1) Income-poor households are defined as those whose gross income is less or equal than 50 percent of the median equivalent household income. The main results do not change when the 40 and 60 percent thresholds are used

(2) R.R indicates the relative risk for each household type, defined as the ratio between the incidence of poverty among the group and the overall incidence.

(3) This information is not available in the Spanish survey.

(4) We consider children every household member below 15 years of age.

(5) Educational levels are defined according to the International Standard Classification of Education designed by UNESCO. For a more detailed description, see the appendix.

Table 5

Logit regression on the probability of income-poverty in Spain and the U.S. (1)

(standard errors in parenthesis)

	Spain		US	
	Coeff.	**t-ratio**	**Coeff.**	**t-ratio**
Constant	-2.1	-4.3	-3.8	-8.6
	(0.5)		(0.4)	
Age, sex, race of the head				
<=25	0.9	1.8	1.3	6.6
	(0.5)		(0.2)	
(25-35]	0.2	1.0	0.2	1.6
	(0.2)		(0.1)	
(50-65]	-0.2	-1.0	0.04	0.3
	(0.2)		(0.2)	
(65-75]	0.2	0.9	0.3	1.0
	(0.2)		(0.3)	
>75	0.5	1.7	-0.1	-0.2
	(0.3)		(0.3)	
Female	-0.5	-3.3	-0.01	-0.1
	(0.1)		(0.1)	
Non white (2)			0.7	5.1
			(0.1)	
Household type				
Size	-0.8	-3.3	0.2	1.0
	(0.2)		(0.2)	
Size ^2	0.1	3.0	0.02	0.6
	(0.0)		(0.03)	
Single	0.2	0.8	1.4	6.2
	(0.3)		(0.2)	
Lone parent	2.6	7.1	2.0	9.9
	(0.4)		(0.2)	
Couple with children (3)	1.0	5.2	0.1	0.5
	(0.2)		(0.2)	
Education and Labour status of the head (4)				
Unemployed	1.9	7.6	1.2	5.1
	(0.2)		(0.2)	
Retired	0.9	4.3	1.5	7.2
	(0.2)		(0.2)	
Other inactive	1.9	9.0	2.4	12.7
	(0.2)		(0.2)	
Low educated head	1.0	5.5	1.3	9.3
	(0.2)		(0.1)	
High educated head	-0.7	-2.0	-1.1	-7.1
	(0.3)		(0.2)	
Sample		5,143		4,442
Log pseudolikelihood		-1723.9		-1757.4
Pseudo R^2		0.18		0.27

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

(1) Income-poor households are defined as those whose gross income is less or equal than 50 percent of the median equivalent household income. The main results do not change when the 40 and 60 percent thresholds are used. The reference household is a household with a white male head between 36 and 50 years who lives with his spouse and without children, and where the head is working, with a medium educational level.

(2) This information is not available in the Spanish survey.

(3) We consider children every household member below 15 years of age.

(4) Educational levels are defined according to the International Standard Classification of Education designed by UNESCO. For a more detailed description, see the appendix.

than households with a male head. This may be related to differences in the women's performance in the national labor markets and its distributional consequences. Thus, although the female labor participation rate has steadily increased in Spain since the opening of the economy in the 60's, there still exists a substantial difference in participation rates between Spain and other rich countries, especially in the case of married mothers (Mumford and Parera 2001, Costa 2000). Moreover, despite the general increase in the number of lone-mothers due to divorce and teenage pregnancy observed in most developed countries (Reher, 1998), there exist important cross-country differences in the living arrangements of female headed households. Indeed, in Spain, about 30 percent of lone-mothers co-reside with their own family, while in the U.S. this percentage is about 15 percent (Reher 1998 and London 1998), which would contribute to explain the lower incidence of income-poverty among female households observed in Spain.

3.3 Wealth poverty

The idea of wealth-poverty relates to the security contribution of assets to household welfare, as it is concerned with the extent to which households have enough asset holdings to overcome periods of economic crisis with low income flows. To measure the incidence of asset-poverty we will compare households' wealth with some threshold value reflecting a minimum welfare level required to be maintained by means of wealth holdings (Caner and Wolff 2004, Hubbard *et al.* 1995). In particular, the variable we use to measure the incidence of asset-poverty is the equivalent net worth defined in Section 2. In addition, we compute the asset-poverty rates considering only the non-housing wealth component, which is equal to net worth minus the net value of the principal residence. We define the wealth-poverty threshold as a function of the relative annual income poverty line used in the previous section. This option slightly differs from that used by Caner and Wolff (2004) to quantify asset-poverty in the U.S., as they use a family-size conditioned minimum consumption threshold aimed to reflect the cost of satisfying basic needs. However, given the difficulty for constructing a comparable measure of basic needs for Spain, and given our interest in measuring the capacity of Spanish and U.S. households to overcome periods of income-poverty, we argue that the use of the income threshold as wealth-poverty line is especially suitable for comparing the incidence of asset-poverty in these two countries.[20]

[20] Our option also differs from that adopted by Hubbard *et al.* (1995) to analyze the relationship between asset-based, means-tested social welfare programs and the number of low-wealth households in the U.S. In particular, these authors use a household-specific wealth threshold that depends on household income, such that, every household with net-worth less than their annual current income is identified as

Furthermore, in order to check the robustness of the results, we propose three wealth-poverty lines that result from dividing the income threshold by 12, 4, or 2, where the idea is to check if the household could support itself with wealth holdings at the income-poverty line for one, three, or six months, respectively.

As Table 6 reports, the incidence of asset-poverty in the U.S. is significantly larger than in Spain. The proportion of Spanish households identified as asset-poor according to the net worth measure ranges between 3.4 and 9.1, depending on the threshold used, while the net worth poverty rate in the U.S. is around three times that of Spain regardless of the asset-poverty line considered. For instance, more than 20 percent of the U.S. households are identified as wealth-poor when the period is set equal to six months, whereas in Spain this number is below 10 percent. The figure for the U.S. is close to that reported in Caner and Wolff (2004), who found an incidence of asset-poverty in this country around 25 percent in 1999. However, the differential in poverty rates between these two countries is significantly reduced when we remove the housing wealth component, mainly because the measurement of asset-poverty in Spain is dramatically sensitive to the exclusion of this component. In particular, the proportion of wealth-poor in Spain increases by a factor of three when housing is removed, while in the U.S. the increase is rather small, thus reducing the wealth-poverty differential between the two countries. Consequently,

Table 6
Wealth poverty in Spain and the U.S.
(all variables in percentage)

	Poverty headcount ratio (Z_W = **w**ealth-poverty line expressed as a proportion of the income-poverty line Z_y[1])					
	Spain			**U.S.**		
	$Z_W = Z_y/12$	$Z_W = Z_y/4$	$Z_W = Z_y/2$	$Z_W = Z_y/12$	$Z_W = Z_y/4$	$Z_W = Z_y/2$
Z_y =60%						
Net worth [2]	4.3	7.2	9.1	13.9	18.9	24.0
Non-housing wealth	12.8	21.8	31.3	17.9	25.8	33.9
Z_y =50%						
Net worth	3.8	6.7	8.6	13.3	18.0	22.8
Non-housing wealth	11.7	20.2	28.0	17.1	24.1	31.7
Z_y =40%						
Net worth	3.4	6.1	8.0	12.7	16.8	20.7
Non-housing wealth	10.4	18.3	25.0	16.3	22.1	29.0

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.
(1) The income poverty line, Z_y, is defined as % of the median equivalent household income.
(2) The components included in the net worth measure are those described in Section 2. Non-housing wealth is equal to net worth minus the net value of the principal residence. In both cases, the values are equivalised dividing by the square root of the household size.

asset-poor. An important drawback of this methodology is that it is possible that households with low wealth holdings may not be considered as asset-poor if they also have low income, while households with a large amount of wealth may be identified as wealth-poor simply because their wealth is relatively low compared with their income.

Spanish households are markedly more vulnerable to house prices shocks than their U.S. counterparts. Indeed, the large share of housing in the Spanish portfolio join with the lower liquidity of houses relative to other assets, would make households in Spain more likely to face liquidity constraints in a context as the current one, where housing prices drop, given the credit restraints due to the reduction of the collateral available to home-owners and the difficulties for selling a house in a situation like this.

In order to identify the wealth-poor, Table 7 presents the incidence of asset-poverty for different groups. Moreover, Table 8 shows the estimation results of a logit model for the probability of wealth-poverty equal to that we used to analyze income-poverty, with the exception that now the dependent variable is an wealth-poverty indicator variable that assigns a value 1 if the household is identified as asset-poor, and zero otherwise. The poverty rates presented in Table 7 suggest that, similar to income-poverty, the incidence of asset-poverty in the U.S. is larger than in Spain in every age group, especially in the case of young households: more than 53 percent of those households under 25 and almost 30 percent of those between 25 and 35 are identified as asset-poor in the U.S., compared with about 30 and 9 percent in Spain. This result may be explained by the differences in the emancipation age and the household formation process across countries (Guiliano 2007, Becker *et al.* 2005, Reher 1998, Fernández-Cordón, 1997). In particular, following the Mediterranean pattern, in Spain youths tend to delay departure from parental home until marriage, using precisely this period to save up resources in order to have a safer transition to independence. In contrast, in the U.S., as in other Western European countries, young people settle for an independent life earlier as they reach maturity, which would contribute to explain the larger vulnerability of the young households in this country. Thus, for instance, more than 49 percent of the Spanish population between 25 and 34 was living at the home of origin in the year 2002, compared with less than 11 percent in the U.S.[21], which will explain the lower presence of households headed by young people in Spain (see Table 7). However, despite this difference, the age-poverty profile in this two countries is rather similar. In both countries the incidence of asset-poverty is maximal among households below 35 and then it decreases with the age of the head. In the case of the U.S., this pattern is also observed when the housing component is not included, while in Spain, the incidence of asset-poverty describes a clear U-shaped pattern when only

[21] These figures correspond to own calculations based on information included in the report elaborated by the Youth Observatory for Housing of the Spanish Youth Council (Observatorio Joven de Vivienda del Consejo de la Juventud de España, OBJOVI-CJE) for the fourth quarter of 2002, while the figures for the U.S. are based on the Historical Time Series on Families and Living Arrangements published by the U.S. Census Bureau.

Table 7

Socio-economic characteristics of wealth-poor households in Spain and the U.S. (1)

(all variables in percentage)

	Spain					U.S.				
	Population	Wealth-poor				Population	Wealth-poor			
		Net worth		Non-housing wealth			Net worth		Non-housing wealth	
		Incid.	R.R. (2)	Incid.	R.R.		Incid.	R.R.	Incid.	R.R.
All	100	6.7	1.0	20.2	1.0	100	18.0	1.0	24.1	1.0
Age, sex, race and marital status of the head										
<=25	2.0	30.9	4.6	35.3	1.7	7.1	53.3	3.0	55.4	2.3
(25-35]	14.2	9.6	1.4	16.5	0.8	17.4	29.8	1.7	36.9	1.5
(35-50]	32.5	6.0	0.9	17.8	0.9	34.0	15.2	0.8	22.1	0.9
(50-65]	25.7	5.2	0.8	17.0	0.8	21.4	9.5	0.5	14.7	0.6
(65-75]	16.6	5.4	0.8	25.5	1.3	11.1	8.5	0.5	15.2	0.6
>75	9.0	6.3	0.9	30.5	1.5	9.0	10.1	0.6	15.8	0.7
Male	66.1	5.7	0.8	17.1	0.8	45.6	13.0	0.7	17.6	0.7
Female	33.9	8.7	1.3	26.1	1.3	54.5	22.2	1.2	29.6	1.2
White (3)						53.5	13.3	0.7	18.5	0.8
Non white						46.5	23.5	1.3	30.6	1.3
Married	71.2	5.1	0.8	16.9	0.8	53.1	8.7	0.5	14.5	0.6
Divorced	5.1	14.0	2.1	30.6	1.5	18.3	24.7	1.4	30.7	1.3
Widowed	12.6	8.6	1.3	31.6	1.6	9.4	16.4	0.9	27.3	1.1
Never married	11.1	11.8	1.8	23.2	1.1	19.3	38.1	2.1	43.0	1.8
Household type										
Single	15.5	13.3	2.0	31.8	1.6	30.6	23.2	1.3	29.6	1.2
Lone parent	1.2	17.8	2.6	31.9	1.6	9.7	46.6	2.6	53.1	2.2
Couple, with children (4)	55.1	4.7	0.7	17.9	0.9	33.0	8.5	0.5	12.0	0.5
Couple, without children	28.2	6.6	1.0	17.8	0.9	26.7	13.5	0.7	22.3	0.9
Labour status and Education of the head (5)										
Working	57.1	5.6	0.8	14.6	0.7	71.7	16.6	0.9	21.8	0.9
Unemployed	5.1	16.4	2.5	32.3	1.6	3.4	41.9	2.3	54.3	2.3
Retired	25.4	4.1	0.6	21.0	1.0	18.0	9.0	0.5	15.7	0.6
Other inactive	12.5	13.3	2.0	38.8	1.9	7.0	43.9	2.4	55.2	2.3
Low	59.2	7.8	1.2	26.1	1.3	12.1	33.7	1.9	45.8	1.9
Medium	25.7	6.3	0.9	14.1	0.7	57.9	20.0	1.1	26.9	1.1
High	15.1	3.1	0.5	7.5	0.4	30.0	7.8	0.4	10.1	0.4
Housing tenure										
Owned outright	60.4	0.2	0.0	18.1	0.9	24.3	0.5	0.0	11.6	0.5
Buying with debt	21.6	0.6	0.1	12.8	0.6	43.4	4.0	0.2	11.9	0.5
Other	18.1	35.7	5.3	35.7	1.8	32.3	49.9	2.8	49.9	2.1

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

(1) Asset-poor households are defined as those whose wealth is less or equal than one fourth of the 50 percent of the median equivalent household income. The main results do not change when alternative thresholds are used.

(2) R.R indicates the relative risk for each household type, defined as the ratio between the incidence of poverty among the group and the overall incidence.

(3) This information is not available in the Spanish survey.

(4) We consider children every household member below 15 years of age.

(5) Educational levels are defined according to the International Standard Classification of Education designed by UNESCO. For a more detailed description, see the appendix.

Table 8
Logit regression on the probability of asset-poverty in Spain and the U.S. (1)
(standard errors in parenthesis)

	Spain				U.S.			
	Net worth		Non-housing wealth		Net worth		Non-housing wealth	
	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio
Constant	-2.9 (0.7)	-4.2	-1.5 (0.4)	-3.6	-3.0 (0.4)	-7.9	-2.4 (0.4)	-6.3
Age, sex, and race of the head								
<=25	2.0 (0.4)	4.8	0.9 (0.4)	2.6	1.9 (0.2)	10.2	1.5 (0.2)	8.3
(25-35]	0.8 (0.3)	2.9	0.1 (0.2)	0.5	1.0 (0.1)	6.9	0.8 (0.1)	6.3
(50-65]	-0.4 (0.3)	-1.6	-0.3 (0.2)	-2.1	-0.7 (0.2)	-4.0	-0.6 (0.2)	-3.9
(65-75]	-0.8 (0.4)	-2.4	-0.2 (0.2)	-0.8	-1.0 (0.3)	-3.6	-0.8 (0.3)	-3.2
>75	-1.1 (0.4)	-3.0	-0.2 (0.2)	-0.8	-1.1 (0.3)	-3.7	-1.1 (0.3)	-3.9
Female	0.05 (0.2)	0.3	0.1 (0.1)	1.3	0.03 (0.1)	0.2	0.1 (0.1)	0.6
Non white (2)					0.8 (0.1)	6.4	0.7 (0.1)	5.6
Household type								
Size	-0.5 (0.3)	-1.5	-0.5 (0.2)	-2.3	-0.03 (0.2)	-0.2	-0.1 (0.2)	-0.6
Size ^2	0.1 (0.03)	2.4	0.1 (0.02)	3.0	0.01 (0.02)	0.4	0.03 (0.02)	1.1
Single	0.9 (0.4)	2.3	0.2 (0.2)	1.0	1.2 (0.2)	5.9	1.1 (0.2)	5.6
Lone parent	0.9 (0.5)	1.7	0.6 (0.4)	1.5	1.7 (0.2)	8.3	1.6 (0.2)	8.2
Couple with children (3)	0.1 (0.3)	0.6	0.1 (0.2)	0.9	-0.02 (0.2)	-0.1	0.4 (0.2)	1.7
Education and Labour status (4)								
Unemployed	1.1 (0.3)	3.8	0.9 (0.2)	4.4	0.9 (0.2)	3.9	1.2 (0.2)	5.6
Retired	0.4 (0.3)	1.4	0.3 (0.2)	1.8	0.4 (0.2)	1.7	0.5 (0.2)	2.2
Other inactive	1.1 (0.3)	3.8	0.9 (0.2)	5.2	1.3 (0.2)	7.3	1.4 (0.2)	8.1
Low educated head	0.5 (0.2)	2.3	0.7 (0.1)	5.1	1.0 (0.2)	6.6	1.1 (0.1)	7.6
High educated head	-0.8 (0.4)	-2.3	-0.7 (0.2)	-3.1	-0.7 (0.1)	-5.0	-0.9 (0.1)	-6.7
Sample		5,143		5,143		4,442		4,442
Log pseudolikelihood		-1,132.2		-2,379.8		-1,580.1		-1,900.6
Pseudo R^2		0.11		0.08		0.24		0.21

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.
(1) Asset-poor households are defined as those whose wealth is less or equal than one fourth of the 50 percent of the median equivalent household income. The main results do not change when alternative thresholds are used. The reference household is a household with a white male head between 36 and 50 years who lives with his spouse and without children, and where the head is working, with a medium educational level. (2) This information is not available in the Spanish survey. (3) We consider children every household member below 15 years of age. (4) Educational levels are defined according to the International Standard Classification of Education designed by UNESCO described in the appendix.

non-housing wealth is considered. Indeed, Spanish households above 50 years of age are markedly more vulnerable than their U.S. counterparts when home equity is omitted, which shows the lack of diversification and the importance that this asset has in the asset-

portfolio of households at the end of the life cycle in Spain. Importantly, the estimation results in Table 8.support the idea that households under 35 years are the most vulnerable to wealth-poverty, and that the risk of poverty decreases for households whose head is over50 years of age, although in Spain, in contrast with the U.S., this effect disappears when housing wealth is removed. Also, single and lone-parent households face a greater risk of wealth-poverty, and this effect is more important in the U.S., as suggested by the difference in the value of the dummies across countries. Certain factors such as the income problems that usually affect this type of families, the absence of consumption economies of scale, as well as the larger liquidity constraints these households face (Jappelli, 1990) clearly contribute to the larger vulnerability of these groups. Lastly, similar to the results obtained for income-poverty, we find that having a head who is low-educated or inactive non-retired implies a larger risk in the U.S., while households headed by unemployed individuals are relatively more vulnerable in Spain.

4 The Joint Analysis of Poverty Based on Income and Wealth

4.1 The Relationship between Income and Wealth Holdings

Income and wealth are both essential in determining the economic well-being and ill-being of individuals (Headey and Wooden 2005, 2004). Therefore, the analysis of the correspondence between income and wealth is central in order to understand the distribution of economic resources and welfare in any society. Indeed, a high correlation between income and wealth indicates a close association between an individual's current and past economic position in society, which may be interpreted as a signal of unequal opportunities and large permanent inequality. In the case of Spain and the U.S., the figures shown in Table 9 suggest a positive correlation between income and wealth in both countries. However, the association between these two variables in the U.S. is markedly larger than in Spain, as suggested by the difference in the values of the correlation coefficient (0.18 versus 0.5). This difference is mainly attributable to the non-housing component of wealth, since the correlation between this component and income in the U.S. is more than three times that in Spain, whereas the association between income and housing wealth is similar in the two countries. Furthermore, the larger correlation found in the U.S. for the entire population is also observed within race groups, which means that factors other than the race need to be considered in order to explain the large association between income and wealth in

this country.[22] Moreover, the results for housing wealth suggest that the association of this wealth component with other assets is significantly lower in Spain than in the U.S. Indeed, the correlation of the housing component with total net worth and non-housing wealth in Spain is about 0.2 and 0.11, whereas in the U.S. these figures are around 0.5 and 0.4, respectively.

The results regarding the correlation between income and wealth are confirmed by the lower re-ranking between the two distributions in the U.S. compared with Spain, as shown by the transition matrices based on the quartile distributions of income and net worth presented in Table 9. Information in each matrix is synthesized with the diagonal index $M(P)$ proposed by Shorrocks (1978) (0.9 for Spain, 0.83 for the U.S.). The figures indicate a larger upward mobility in Spain, where about 33 and 32 percent of the households in the bottom quartile of income and wealth, respectively, are in the third or fourth quartile of the other dimension when there is re-ranking, compared with 24 and 17 percent in the U.S. Consistent with this result, we find that the U.S. presents a greater correspondence at the bottom and the top of the distributions: 52 and 55 percent of U.S. households in the bottom and top quartile of income, respectively, remain in the same quartile of net worth after re-ranking, compared with 39 and 47 percent in Spain.[23] Jäntti *et al.* (2008) described the quartile distribution of income and wealth in the U.S., Canada, Italy, and Sweden using information in the LWS database, and they found that within this group of countries, the U.S. has the highest concentration of population in the bottom and the top income-wealth quartile groups. Our figures for Spain are similar to those reported by these authors for Italy and Canada, while their results for Sweden show that the correspondence at the bottom of the distributions in this country is lower than in Spain, given that less than 30 percent of Swedish households at the bottom quartile of income are also in the same quartile of wealth. Lastly, the different association between income and wealth found for Spain and the U.S. already indicates that we should expect the financial situation of income-poor households will be quite different in these two countries. In particular, the results at the bottom of Table 9 show that the difference in wealth holdings between the households below and above the income-poverty line in Spain is significantly smaller than in the U.S. In fact, the average value of non-housing and housing wealth of the income-

[22] This result for the U.S. is similar to that found for this country by Budria et al. (2002). These authors report that the correlation coefficient between income and wealth in the U.S. in 1998 was equal to 0.6.

[23] Our results for the U.S. are similar to those found by Radner and Vaughan (1987). These authors computed a transition matrix for U.S. using data for 1979, and they reported a value of the mobility index equal to 0.85.

poor in Spain accounts for about 26 and 62 percent of those above the income-poverty threshold, while in the U.S. they represent 13 and less than 32 percent, respectively.

Table 9
Correlation and re-ranking in the distribution of income and wealth in Spain and the U.S. (1)

Correlation coefficient between income and wealth (2)

	Spain	U.S.		
	All	All	Whites	Non-whites
Income - Net worth	0.18	0.50	0.52	0.48
Income - Non-housing	0.15	0.48	0.52	0.46
Income - Housing wealth	0.32	0.36	0.35	0.40
Net worth - Non-housing	0.99	0.99	0.99	0.99
Net worth - Housing wealth	0.20	0.51	0.52	0.46
Non-housing - Housing wealth	0.11	0.44	0.46	0.37

Re-ranking in the quartile distribution of income and wealth

Spain

Income \ Net worth	1	2	3	4
1	39	29	21	12
2	29	29	25	18
3	21	26	28	24
4	11	16	26	47

Mobility index M(P) (3) = 0.9

U.S.

Income \ Net worth	1	2	3	4
1	52	24	17	7
2	30	32	23	15
3	13	33	30	23
4	4	11	29	55

Mobility index M(P) = 0.83

Mean values of the income-poor expressed as percentage of those of the non-income poor (4)

	Spain	U.S.
Income	25.7	12.8
Net worth	46.3	16.9
Non-housing wealth	26.5	13.0
Housing wealth	62.0	31.9

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

(1) Income and wealth variables are adjusted using the square root equivalence scale according to which each variable is divided by the square root of the household size.

(2) In the case of Spain the information about the ethnicity of the head is not reported in the EFF.

(3) The diagonal index *M(P)* 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)).

(4) Income-poor households are defined as those whose gross income is less or equal than 50 percent of the median equivalent household income.

4.2 Income and Wealth Poverty

An imporant drawback of the converntional income-poverty approach is that data on income flows are not informative about the capacity families have for sustaining a minimum standard of living during income crisis. The multidimensional approach to poverty using information on income and wealth clearly helps to overcome this problem, as it

allows us to study the correspondence between households' current income and their vulnerability to income shocks, measured by the availability of wealth type resources for maintaining consumption during an income-poverty spell. Now, if income and wealth would be perfectly correlated, the simultaneous consideration of income and wealth will not provide any additional information respect to the unidimensional analysis of these dimensions. However, as we have seen in the previous section, the correlation between these two variables is far from perfect, especially in the case of Spain, which means that the multidimensional approach to poverty will contribute to improve our knowledge about people's living conditions and poverty.

An important problem that needs to be faced when taking a multidimensional approach to poverty is how to integrate the different dimensions (Silber, 2007). In the case of income and wealth, two alternative approaches have been proposed in the literature. In the first approach, the annuity method is used to aggregate the two variables into a single indicator of welfare, converting household net worth into a flow of resources, such that, every household whose annuity from wealth is not enough to compensate the income poverty gap is considered as poor (Zagorsky 2006, Short and Ruggles 2006, Van den Bosch 1998, Wolff 1990, Weisbrod and Hansen 1968). Alternatively, in the second approach a poverty line is specified for each dimension, identifying as poor all those households that have an insufficiency in either income or wealth (Wolff 1990, Radner and Vaughan 1987). We argue that this method implies a more efficient use of the information on income and wealth than the annuity method, as it allows us to measure the vulnerability of households to negative income shocks independently of their current position in the income distribution, which enables a better description of the different poverty status. Indeed, this methodology, in contrast with the annuity approach, permits to characterize *vulnerable-non poor* households, that is, households whose incomes are above the poverty line but that hold few assets, which makes them vulnerable if current income were to be reduced or to cease entirely. In addition, it also allows us to identify *protected-poor*, as well as, *twice-poor* households, where the former refers to households with incomes below the income threshold but with sufficient wealth holdings to maintain a minimum standard of living, whereas the second category includes all the households that are deprived in both dimensions.

Table 10 shows the relative size of these groups of households in Spain and the U.S. Interestingly, the total number of households identified as poor in some of the dimensions in the U.S. is larger than in Spain regardless of the combination of poverty lines considered. In particular, the most striking difference between these two countries is found

in the proportion of households that are identified as poor in both dimensions, which is significantly greater in the case of the U.S. (between 6 and 14 percent depending on the thresholds considered).[24] Similarly, the number of vulnerable-non poor households in the U.S. is greater than in Spain for every poverty line. For example, using the 50 percent income-poverty line, we find that the proportion of households that do not hold a minimum amount of wealth even if they are above the income threshold in Spain is between 2 and 6 percent, meanwhile in the U.S. this proportion lies between 5 and 11 percent.

Table 10
Income-wealth poverty rates in Spain and the U.S.
(all variables in percentage)

	Poverty headcount ratio (Z_W = wealth-poverty line expressed as a proportion of the income-poverty line Z_y[(1)])							
	Spain				**U.S.**			
	Twice-poor	Protected poor	Vulnerable non-poor	Non-poor	Twice-poor	Protected poor	Vulnerable non-poor	Non-poor
Income & Net worth [(2)]								
Z_y =60%								
$Z_W = Z_y/12$	2.2	19.7	2.1	76.0	9.4	20.2	4.5	65.9
$Z_W = Z_y/4$	3.5	18.5	3.7	74.4	12.2	17.4	6.8	63.6
$Z_W = Z_y/2$	4.1	17.8	5.0	73.1	14.4	15.2	9.6	60.8
Z_y =50%								
$Z_W = Z_y/12$	1.5	12.7	2.3	83.5	7.9	15.9	5.4	70.9
$Z_W = Z_y/4$	2.2	12.0	4.5	81.3	10.2	13.6	7.9	68.4
$Z_W = Z_y/2$	2.7	11.5	5.9	79.9	11.9	11.8	10.9	65.4
Z_y =40%								
$Z_W = Z_y/12$	0.9	6.6	2.5	90.0	6.3	11.5	6.4	75.9
$Z_W = Z_y/4$	1.2	6.4	4.9	87.6	7.9	9.9	8.9	73.4
$Z_W = Z_y/2$	1.6	5.9	6.4	86.1	8.9	8.8	11.7	70.5
Income & Non-housing wealth								
Z_y =60%								
$Z_W = Z_y/12$	5.4	16.5	7.4	70.7	11.4	18.2	6.5	63.9
$Z_W = Z_y/4$	8.7	13.2	13.1	65.0	15.7	13.9	10.0	60.4
$Z_W = Z_y/2$	11.9	10.0	19.4	58.7	19.4	10.2	14.5	55.9
Z_y =50%								
$Z_W = Z_y/12$	3.6	10.6	8.1	77.7	9.5	14.2	7.6	68.7
$Z_W = Z_y/4$	5.6	8.6	14.6	71.2	12.9	10.8	11.2	65.1
$Z_W = Z_y/2$	7.4	6.8	20.6	65.2	15.7	8.0	16.0	60.3
Z_y =40%								
$Z_W = Z_y/12$	1.7	5.8	8.7	83.8	7.5	10.2	8.8	73.5
$Z_W = Z_y/4$	2.5	5.0	15.8	76.8	9.8	7.9	12.3	70.0
$Z_W = Z_y/2$	3.7	3.8	21.3	71.2	11.7	6.1	17.3	65.0

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.
(1) The income poverty line, Z_y, is defined as % of the median equivalent household income.
(2) The components included in the net worth measure are described in Section 2. Non-housing wealth is equal to net worth minus the net value of the principal residence. In both cases, the values are equivalised dividing by the square root of the household size.

[24] Wolff (1990) computed this poverty rate for the U.S. using the official income-poverty line and different wealth percentiles as wealth-poverty thresholds, and he found that between 7 and 11 percent of U.S. households were poor in both dimensions in 1983.

In contrast with the other two groups, the proportion of protected-poor households is rather similar in the two countries, even when the housing component is removed. However, the exclusion of this component significantly affects the number of twice-poor and vulnerable-non poor households, especially in Spain. Indeed, the number of twice-poor households in this country more than doubles when housing is not included and, unlike the case of the net worth, the size of the vulnerable-non poor group becomes larger in Spain than in the U.S., which indicates the greater importance that home-equity has on the portfolio of Spanish households, and consequently, the important problems of liquidity households in this country may have in periods like the current one, where there are several difficulties for converting the home-equity into liquid assets.

In order to characterize the three groups of poor households in Spain and the U.S., Table 11 shows their incidence by age and household type computed using net worth as a measure of wealth. In addition, to further assess the impact that socioeconomic characteristics have on the probability of belonging to the different groups, Table 12 reports the estimates of a multinomial model of the probability of each category of poverty.[25] In particular, we propose a multinomial logit model in which the dependent variable is a discrete variable y_i that takes value 1, 2, 3, or 4 depending on which of the four groups- twice-poor, protected-poor, vulnerable- non poor, and never-poor- the household belongs to.[26] Thus, the probability of the household i being included in group j is equal to

$$p_{ij} = \frac{e^{(x_i'\beta_j)}}{\sum_{l=1}^{4} e^{(x_i'\beta_l)}}, \qquad j = 1, .., 4, \quad with \quad \sum_{j=1}^{4} p_{ij} = 1 \tag{1}$$

where x_i' is the set of covariates, and β_j includes the parameters associated to state j to be estimated. We decide to set the never-poor group as base category so that the restriction $\beta_4 = 0$ is imposed in order to ensure model identification (Cameron and Trivedi 2005, pp. 500-502). Thus, the parameter β_j can be interpreted in terms of the relative risk of being in state j rather than in the base group given that

[25] Notice that this exercise does not constitute an attempt to provide a casual model for income and asset poverty. Instead, this model is thought to serve simply as a statistical description of the association between the poverty status and households' characteristics, such as the sex, age, educational level, and labour status of the head, as well as other variables regarding living arrangements.

[26] To check the robustness of the results we estimated alternative models that consider different functional forms for the probabilities, such as the multinomial probit, as well as, models that consider two discrete indicator variables (y_{i1}, y_{i2}) for income and wealth poverty, such as the bivariate probit or bivariate logit model. The results of these models, available upon request, are essentially the same that those presented here.

$$\frac{p_{ij}}{p_{i4}} = \frac{\Pr[y_i = j]}{\Pr[y_i = 4]} = e^{x_i' \beta_j}. \tag{2}$$

Consistent with the results from the unidimensional analysis of poverty, the figures in Table 11 indicates that the proportion of twice-poor households is greater among those at early stages of the life-cycle, with households under 35 being clearly over-represented in this group. Moreover, the share of twice-poor households declines with the age of the head, even though the incidence slightly increases among the elderly, especially in the case of Spain. The figures by household type suggest that the share of female headed households in the twice-poor group is larger than in the case of males. In particular, elder females living alone, middle-age singles, especially lone-mother households, as well as, single females under 35 are more likely to be simultaneously income and wealth poor. However, the incidence among these households differs quantitatively in the two countries: more than 28 percent of lone-mother households above 35, and more than 38 percent of single females under 35 are below the two poverty thresholds in the U.S., compared with 5 and 15 percent in Spain, respectively. The estimation results in Table 12 confirm the age profile of the twice-poor group, with households under 35 facing the largest relative risk of being included in this group, while this risk decreases for households who are above 50, even though this reduction is only statistically significant in the case of the U.S. Furthermore, while the sex of the head does not matter, the type of living arrangement highly conditions the chances of being in the twice-poor group: single and lone parent households are the most exposed to this type of poverty in both countries, although people living alone are significantly more vulnerable in the case of the U.S.

Regarding the protected-poor group, we find that two types of households generally identified as vulnerable to income-poverty, such as elder females in single households, usually widows, as well as lone-mother families, have a larger presence in this group: almost 40 percent of elder females living alone in Spain and the U.S. are in this situation, whereas the incidence among middle-age lone-mothers is slightly larger in Spain than in the U.S. (34 versus 23 percent). The incidence of the protected-poor increases with the age of the head, so that households above 75 years of age, who despite of being currently income constrained have accumulated a significant amount of wealth over the life cycle, are clearly the most over-represented in this group. However, the larger relative risk faced by the elderly is only confirmed by the regression results in the case of Spain, as suggested by the value and significance of the dummy variable obtained for this country. Moreover, the estimates suggest that lone-parent families in Spain have more chances of being in the protected-poor group than their U.S. counterparts, while the opposite is true in the case

of single households.

Coherent with the pattern of wealth-poverty described in Section 3, both descriptive and estimation results indicate that young households at early stages of the life cycle have the greatest presence in the vulnerable-non poor group. Thus, households under 35 years of age that have not started their wealth accumulation process are the most vulnerable to negative income shocks among those that are above the income threshold. In addition, the incidence of this group clearly declines with the age of the head in both countries, although the share of elderly in this situation is slightly larger in Spain than in the U.S. In fact, similarly to the twice-poor group, the value of the dummies for households above 50 suggests that middle-age and old households have a lower relative risk of belonging to the vulnerable-non poor group in the U.S. than in Spain. Among people under 35, those who are living alone are the most over-represented in the vulnerable-non poor group in both countries (around 20 and 30 percent in the case of females and males, respectively), which highlights the financial constraints these type of households may face to accumulate wealth holdings even if they have income levels above the income-poverty line. Lastly, the figures relative to education and labour status in the bottom of Table 12, show that having a low-educated head increases the chances of being included in any of the poor groups. However, decisions about education seem to have a larger impact in the U.S. than in Spain, given the large difference in the relative risk between low and high educated households obtained for this country, especially in the case of the twice-poor group. Unemployment and inactivity implies a larger risk of poverty in both countries, mainly in the case of the twice-poor and protected-poor groups. In particular, as one would expect from the unidimensional analysis, we find that households headed by unemployed individuals face a larger relative risk in Spain than in the U.S., while having a non-active head is more problematic in the case of the U.S.

Finally, the characterization of the poor groups is slightly modified when only non-housing wealth is considered. In fact, the figures reported in Tables A.2 and A.3 in the appendix, suggest that the number of twice-poor and vulnerable non-poor households increases in all the age groups, especially among middle-age and old households. Moreover, the impact is more significant in the case of Spain, where the proportion of twice-poor and vulnerable-non poor among households above 50 is more than four times larger after eliminating housing wealth. Indeed, the age-profile of these two groups of poor in this country now displays a clear U-shaped pattern, although this pattern is not confirmed by the estimation results. Additionally, the results for Spain show that households headed

Table 11

Socio-economic characteristics of income and net worth -poor households in Spain and the U.S. (1)

(all variables in percentage)

	Spain							US						
	Population	Twice-poor	R.R. (2)	Protected poor	R.R.	Vulnerable non-poor	R.R.	Population	Twice-poor	R.R.	Protected poor	R.R.	Vulnerable non-poor	R.R.
Age of the head														
<=25	2.0	6.3	2.9	12.0	1.0	24.6	5.4	7.1	29.0	2.8	10.6	0.8	24.3	3.1
(25-35]	14.2	3.8	1.8	6.6	0.5	5.7	1.3	17.4	13.3	1.3	9.2	0.7	16.5	2.1
(35-50]	32.5	1.4	0.6	8.4	0.7	4.6	1.0	34.0	8.6	0.8	9.7	0.7	6.6	0.8
(50-65]	25.7	1.4	0.6	8.7	0.7	3.8	0.8	21.4	6.1	0.6	12.9	0.9	3.4	0.4
(65-75]	16.6	2.6	1.2	19.2	1.6	2.9	0.6	11.1	7.4	0.7	24.0	1.8	1.2	0.1
>75	9.0	3.1	1.4	30.1	2.5	3.2	0.7	9.0	8.2	0.8	27.6	2.0	1.9	0.2
Household type														
Age >=65														
Female														
Single,	6.6	5.8	2.6	38.1	3.2	4.1	0.9	7.0	15.1	1.5	37.6	2.8	1.9	0.2
Non-single	6.0	1.7	0.8	12.0	1.0	5.6	1.2	4.7	2.0	0.2	22.1	1.6	2.6	0.3
Male														
Single,	1.7	3.7	1.7	16.0	1.3	9.2	2.0	2.8	8.5	0.8	21.5	1.6	1.7	0.2
Non-single	13.3	1.1	0.5	19.7	1.6	0.4	0.1	6.6	4.6	0.5	16.1	1.2	0.0	0.0
Age [35,65)														
Female														
Single, no-kids (3)	2.3	6.0	2.7	17.3	1.4	3.5	0.8	6.6	8.7	0.9	13.5	1.0	10.9	1.4
Single, kids	1.0	5.3	2.5	34.4	2.9	4.0	0.9	2.6	28.8	2.8	23.0	1.7	10.3	1.3
Non-single	13.0	0.8	0.4	6.5	0.5	5.5	1.2	20.9	7.6	0.7	10.4	0.8	5.1	0.7
Male														
Single, no-kids	2.9	4.7	2.2	12.3	1.0	7.4	1.6	5.9	12.2	1.2	9.4	0.7	6.7	0.9
Single, kids	0.0	0.0	0.0	0.0	0.0	3.5	1.0	0.5	3.4	0.3	7.2	0.5	7.6	1.0
Non-single	39.0	1.3	0.6	7.3	0.6	3.6	0.8	19.6	3.0	0.3	8.9	0.7	3.1	0.4
Age <35														
Female														
Single,	1.1	14.7	6.7	18.6	1.5	21.7	4.8	5.6	38.8	3.8	12.2	0.9	20.7	2.6
Non-single	3.9	3.5	1.6	1.1	0.1	4.9	1.1	7.0	15.1	1.5	10.6	0.8	18.9	2.4
Male														
Single,	1.2	0.0	0.0	4.5	0.4	29.4	6.5	3.9	10.5	1.0	11.5	0.8	28.4	3.6
Non-single	8.1	3.2	1.5	10.2	0.8	6.0	1.3	6.2	9.7	1.0	5.3	0.4	13.8	1.8

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

(1) The income poverty line is set equal to 50 percent of the median equivalent household gross income, while the asset-poverty threshold is equal to one fourth of income-poverty line. The main results do not change when alternative thresholds are used. (2) R.R. indicates the relative risk for each household type, defined as the ratio between the incidence of poverty among the group and the overall incidence. (3) We consider children every household member below 15 years of age.

Table 12
Multinomial logit regression on the probability of income and net worth-poverty in Spain and the U.S. (1)
(standard errors in parenthesis)

	Spain			US		
	Twice-poor	**Protected poor**	**Vulnerable non-poor**	**Twice-poor**	**Protected poor**	**Vulnerable non-poor**
Constant	-3.8 **	-1.6 **	-1.8 **	-3.9 **	-2.6 **	-1.7 **
	(0.6)	(0.4)	(0.5)	(0.4)	(0.4)	(0.4)
Age, sex, and race of the head						
<=25	1.7 **	0.9 **	1.4 **	1.7 **	1.0 **	1.4 **
	(0.5)	(0.4)	(0.3)	(0.2)	(0.2)	(0.2)
(25-35]	1.0 **	-0.04	0.2	0.5 **	0.2 *	0.9 **
	(0.2)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)
(50-65]	-0.3	-0.1	-0.2	-0.4 **	0.2	-0.4 **
	(0.3)	(0.2)	(0.2)	(0.2)	(0.1)	(0.2)
(65-75]	-0.2	0.3	-0.5 *	-0.4 *	0.3	-1.0 **
	(0.3)	(0.2)	(0.3)	(0.3)	(0.2)	(0.3)
>75	-0.2	0.5 **	-0.5 *	-0.6 **	0.1	-0.9 **
	(0.4)	(0.2)	(0.3)	(0.3)	(0.2)	(0.3)
Female	-0.3	-0.3 **	0.1	-0.1	0.1	0.1
	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Non white (2)				0.9 **	0.2 **	0.4 **
				(0.1)	(0.1)	(0.1)
Household type						
Size	-0.3	-0.6 **	-0.5 **	0.2	-0.1	-0.4
	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Size ^2	0.1 *	0.1 **	0.1 **	0.003	0.03 *	0.04 *
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Single	0.9 **	0.2	0.5 *	1.5 **	0.7 **	0.5 **
	(0.4)	(0.2)	(0.3)	(0.2)	(0.2)	(0.2)
Lone parent	2.2 **	1.8 **	0.3	2.1 **	1.4 **	1.1 **
	(0.4)	(0.3)	(0.6)	(0.2)	(0.2)	(0.2)
Couple with children (3)	0.5 *	0.8 **	0.2	0.05	0.3	0.2
	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Education and Labour status (4)						
Low educated head	0.6 **	0.7 **	0.4 **	1.3 **	0.8 **	0.4 **
	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)
High educated head	-0.3	-0.6 **	-0.7 **	-0.8 **	-0.8 **	-0.5 **
	(0.4)	(0.2)	(0.3)	(0.2)	(0.1)	(0.1)
Unemployed	1.5 **	1.5 **	1.0 **	1.2 **	0.8 **	0.5 **
	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Retired	1.0 **	0.5 **	0.1	1.0 **	1.1 **	0.2
	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Other inactive	2.0 **	1.2 **	0.5 **	2.1 **	1.7 **	0.6 **
	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

(1) The income-poverty line is set equal to 50 percent of the median equivalent household gross income, while the asset-poverty threshold is equal to one fourth of income-poverty line. The main results do not change when alternative thresholds are used. The reference household is a household with a white male head between 36 and 50 years who lives with his spouse and without children, and where the head is working, with a medium educational level. (2) This information is not available in the Spanish survey. (3) We consider children every household member below 15 years of age. (4) Educational levels are defined according to the International Standard Classification of Education designed by UNESCO described in the appendix. (5) * and ** indicates that the estimates are significant at 5 % and 1%, respectively.

by elder females are the most affected by the elimination of the home-equity. Thus, the presence of elder females living alone in the twice-poor and the vulnerable non-poor groups increases by a factor of four when the home-equity is removed (from 5.8 to 23.4 percent, and from 4.1 to 16.5 percent, respectively), which indicates the vulnerability of

these households to a negative income shock in Spain in the case that housing wealth cannot be easily converted into cash.

5 Conclusions

In this paper we have used two highly comparable surveys such as the SCF 2001 and the EFF 2002 to quantify and to characterize households that are poor in income and wealth in the U.S. and Spain. We complement the standard income-poverty approach in which poverty is identified with the lack of adequate income, using information on households' wealth holdings in order to identify those households that are more vulnerable in periods of economic crisis where households income falls. For doing so, we depart from the annuity approach that combines information on income and wealth into a single welfare index, and we specify a poverty line for each dimension, so that households that hold an insufficient level of either income or wealth are identified. Thus, this methodology, in contrast with the annuity method, allows us to characterize *vulnerable-non poor* households, that is, households whose incomes are above the poverty line but hold few assets, which makes them vulnerable if current income were to be reduced or disappeared entirely. Moreover, it also allows us to identify *protected-poor*, as well as, *twice-poor* households. The former refers to households with incomes below the income threshold but with sufficient wealth holdings to maintain a minimum standard of living, while the latter category includes all the households that are deprived in both dimensions.

We quantify and characterize these groups of poor households in the U.S. and in Spain, two countries whose social protection systems are usually catalogued as rather weak, which makes the consideration of wealth holdings in poverty measurement in these countries even more relevant, given the importance that private insurance mechanisms have for households in order to protect themselves against income shocks in a context with low social protection. We find that the proportion of households that are either affected by income or wealth poverty is larger in the U.S. than in Spain, and this result is robust to the poverty thresholds considered. Moreover, income and wealth are more correlated in the U.S., which clearly contributes to explain the larger proportion of households that are simultaneously deprived in income and wealth in this country. Similarly, the number of households above the income-poverty line that are vulnerable to income fluctuations as they lack sufficient wealth holdings is also larger in the U.S. than in Spain. However, the differential in the incidence of twice-poor and vulnerable-non poor households between these two countries is mostly attributable to the housing wealth component: more than 60

percent of households in Spain own their homes outright and about 22 percent are buying it with debt, compared with 24 and 43 percent in the U.S. In fact, the vulnerability of Spanish households, measured by the lack of adequate wealth, increases importantly when the home-equity is removed, so that, for instance, the incidence of vulnerable-non poor households becomes greater in Spain than in the U.S. when this component is not taken into account. This, in turn, highlights the larger vulnerability of Spanish households to house prices shocks, given the important liquidity constraints households in this country may face in a context where housing prices drop. These constraints would come about due to the difficulties for selling houses in such a context, as well as, due to the larger credit constraints imposed by the reduction of the value of collateral to homeowners in such a situation.

Despite the difference in quantities, we find that the characteristics of the groups of poor households are remarkably similar in the two countries. Our results indicate that, among households situated above the income poverty line, those at early stages of the life cycle are particularly more vulnerable to negative income shocks, as they are less likely to hold some assets that allow them to overcome low-income periods. In particular, households headed by individuals under 35 years of age face a larger relative risk of being in the vulnerable-non poor group in both countries. Moreover, the fact of living alone increases the risk of belonging to this group, especially when there are children in the household, which shows the important financial constraints this type of households may face to accumulate wealth holdings even when they are above the income-poverty threshold. Additionally, we find that the probability that an income-poor household will have enough wealth holdings to smooth consumption increases with the age of head, so that, households with heads above 65 years of age are clearly over-represented in the protected-poor group in both Spain and the U.S. In particular, old-age females living alone have a larger presence in this group (around 40 percent), even though, in the case of Spain, the vulnerability of this type of household increases significantly when home-equity is removed. In contrast, among those that are income constrained, households headed by young individuals are more likely to be also wealth-poor, so that, the incidence of twice-poor households is greater among those under 35. Lastly, having a low-educated or non-working head increases the chances of being included in any of the poor groups, mainly in the case of the twice-poor group. However, households headed by low educated or non-active people face a larger relative risk in the U.S. than in Spain, whereas unemployment implies a greater risk in the case of Spain.

6 Appendix

6.1 Information in the EFF and the SCF

Table A.1
Information included in the EFF 2002 and the in the LWS database from the SCF 2001
(A=available, NA= not available)

	EFF 2002		SCF 2001	
	Ownership	Value	Ownership	Value
Real assets				
Principal residence	A	A	A	A
Other real state properties	A	A	A	A
Vehicles	A	A	A	A
Business equities	A	A	A	A
Durables and Collectibles (1)	A	A	A	A
Financial assets				
Saving and deposits	A	A	A	A
Fixed income securities	A	A	A	A
Mutual funds	A	A	A	A
Shares	A	A	A	A
Private pension schemes	A	A	A	A
Life Insurance	A	A	A	A
Other financial assets	A	A	A	A
Debts				
Principal residence	A	A	A	A
Other real state properties	A	A	A	A
Vehicles and educational loans	A	A	A	A
Other debts	A	A	A	A

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

(1) This category includes gold, silver, works of art, jewelry, antiques, stamps collections, and other miscellaneous assets in the household.

6.2 Education Coding

To group households according the educational level of the head we follow the International Standard Classification of Education (ISCED) provided by the UNESCO:

- LOW includes no education, pre-primary, primary, lower secondary, compulsory and initial vocational education.

- MEDIUM includes upper secondary general education, basic vocational education, and post-secondary education.

- HIGH includes specialized vocational education, university/college education and (post)-doctorate and equivalent degrees.

Table A.2

Socio-economic characteristics of income and non-housing wealth-poor households in Spain and the U.S. (1)

(all variables in percentage)

	Spain							US						
	Population	Twice-poor	R.R. (2)	Protected poor	R.R.	Vulnerable non-poor	R.R.	Population	Twice-poor	R.R.	Protected poor	R.R.	Vulnerable non-poor	R.R.
Age of the head														
<=25	2.0	8.3	1.5	10.0	1.2	27.0	1.9	7.1	29.5	2.3	10.1	0.9	25.9	2.3
(25-35]	14.2	4.6	0.8	5.8	0.7	11.8	0.8	17.4	14.9	1.1	7.6	0.7	22.1	2.0
(35-50]	32.5	3.0	0.5	6.8	0.8	14.8	1.0	34.0	11.4	0.9	6.9	0.6	10.6	1.0
(50-65]	25.7	3.9	0.7	6.2	0.7	13.1	0.9	21.4	8.8	0.7	10.2	0.9	5.9	0.5
(65-75]	16.6	9.3	1.6	12.4	1.5	16.2	1.1	11.1	12.6	1.0	18.8	1.7	2.6	0.2
>75	9.0	14.2	2.5	18.9	2.2	16.3	1.1	9.0	12.2	0.9	23.6	2.2	3.7	0.3
Household type														
Age >=65														
Female														
Single,	6.6	23.4	4.2	20.5	2.4	16.5	1.1	7.0	24.3	1.9	28.5	2.6	3.7	0.3
Non-single	6.0	3.9	0.7	9.8	1.1	27.3	1.9	4.7	6.2	0.5	17.9	1.7	3.2	0.3
Male														
Single,	1.7	7.7	1.4	12.0	1.4	16.0	1.1	2.8	11.8	0.9	18.1	1.7	6.3	0.6
Non-single	13.3	7.5	1.3	13.3	1.6	11.1	0.8	6.6	6.4	0.5	14.3	1.3	0.6	0.1
Age [35,65)														
Female														
Single, no-kids (3)	2.3	10.8	1.9	12.5	1.5	12.5	0.9	6.6	10.5	0.8	11.7	1.1	13.4	1.2
Single, kids	1.0	7.4	1.3	32.3	3.8	10.3	0.7	2.6	34.6	2.7	17.2	1.6	14.3	1.3
Non-single	13.0	2.6	0.5	4.7	0.5	15.8	1.1	20.9	11.3	0.9	6.7	0.6	9.6	0.9
Male														
Single, no-kids	2.9	7.0	1.2	10.1	1.2	15.5	1.1	5.9	13.3	1.0	8.3	0.8	11.5	1.0
Single, kids	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.5	3.4	0.3	7.2	0.7	0.8	0.1
Non-single	39.0	3.1	0.5	5.5	0.6	13.3	0.9	19.6	4.5	0.3	7.4	0.7	6.1	0.5
Age <35														
Female														
Single,	1.1	21.0	3.7	12.3	1.4	29.9	2.1	5.6	39.9	3.1	11.0	1.0	22.7	2.0
Non-single	3.9	3.5	0.6	1.1	0.1	13.8	0.9	7.0	16.6	1.3	9.1	0.8	25.9	2.3
Male														
Single,	1.2	0.0	0.0	4.5	0.5	29.9	2.1	3.9	12.1	0.9	9.9	0.9	28.2	2.5
Non-single	8.1	3.7	0.6	9.7	1.1	9.4	0.6	6.2	10.8	0.8	4.1	0.4	19.7	1.8

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

(1) The income poverty line is set equal to 50 percent of the median equivalent household gross income, while the asset-poverty threshold is equal to one fourth of income-poverty line. The main results do not change when alternative thresholds are used. (2) R.R. indicates the relative risk for each household type, defined as the ratio between the incidence of poverty among the group and the overall incidence. (3) We consider children every household member below 15 years of age.

Table A.3

Multinomial logit regression on the probability of income and non-housing wealth-poverty in Spain and the U.S. (1)

(standard errors in parenthesis)

	Spain			US		
	Twice-poor	**Protected poor**	**Vulnerable non-poor**	**Twice-poor**	**Protected poor**	**Vulnerable non-poor**
Constant	-2.7 **	-1.8 **	-1.2 **	-3.5 **	-2.5 **	-1.2 **
	(0.5)	(0.4)	(0.3)	(0.4)	(0.4)	(0.4)
Age, sex, and race of the head						
<=25	1.3 **	0.7 **	0.7 **	1.5 **	1.0 **	1.2 **
	(0.4)	(0.4)	(0.3)	(0.2)	(0.2)	(0.2)
(25-35]	0.6 **	-0.1	-0.1	0.4 **	0.4 **	0.8 **
	(0.2)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)
(50-65]	-0.2	-0.2	-0.3	-0.4 **	0.2 *	-0.4 **
	(0.2)	(0.2)	(0.1)	(0.2)	(0.1)	(0.1)
(65-75]	0.1	0.2	-0.2 *	-0.3 *	0.3 *	-0.7 **
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)
>75	0.2	0.4 *	-0.1	-0.7 **	0.2	-0.6 *
	(0.3)	(0.2)	(0.2)	(0.3)	(0.2)	(0.3)
Female	-0.3 *	-0.2 **	0.2 *	-0.01	0.01	0.1
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Non white (2)				0.8 **	0.3 *	0.4 **
				(0.1)	(0.1)	(0.1)
Household type						
Size	-0.6 **	-0.4 *	-0.3 *	0.1	-0.1	-0.5
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Size ^2	0.1 **	0.02	0.04 **	0.02	0.04 *	0.1 *
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)
Single	0.5 *	0.2	0.1 *	1.4 **	0.7 **	0.4 **
	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Lone parent	2.0 **	1.7 **	0.3	2.0 **	1.3 **	1.0 **
	(0.4)	(0.3)	(0.4)	(0.2)	(0.2)	(0.2)
Couple with children (3)	0.7 **	0.7 **	0.1	0.2	0.3 *	0.6 **
	(0.2)	(0.2)	(0.1)	(0.2)	(0.2)	(0.2)
Education and Labour status (4)						
Low educated head	0.9 **	0.7 **	0.5 **	1.4 **	0.6 **	0.3 *
	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)
High educated head	-0.4	-0.5 **	-0.5 **	-0.9 **	-0.8 **	-0.7 **
	(0.3)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)
Unemployed	1.7 **	1.4 **	0.8 **	1.4 **	0.7 **	0.8 **
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Retired	0.9 **	0.4**	0.1	1.1 **	1.0 **	0.1
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Other inactive	1.9 **	1.0 **	0.5 **	2.2 **	1.5 **	0.5 *
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)

Source: Author's calculations using EFF 2002 and data from the SCF 2001 included in the LWS database.

(1) The income poverty line is set equal to 50 percent of the median equivalent household gross income, while the asset-poverty threshold is equal to one fourth of income-poverty line. The main results do not change when alternative thresholds are used. The reference household is a household with a white male head between 36 and 50 years who lives with his spouse and without children, and where the head is working, with a medium educational level. (2) This information is not available in the Spanish survey. (3) We consider children every household member below 15 years of age. (4) Educational levels are defined according to the International Standard Classification of Education designed by UNESCO described in the appendix. (5) * and ** indicates that the estimates are significant at 5 % and 1%, respectively.

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