International Journal of Research in Business Studies and Management
Volume 3, Issue 11, November 2016, 50-56
ISSN 2394-5923 (Print) & ISSN 2394-5931 (Online)

Determinants of Italian Households' Financial Asset Holdings: Some Empirical Evidence

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ABSTRACT

This paper provides empirical evidence about Italian households' financial behaviour. The aim of the research is to study the relationship between the ownership of assets and some households' social and economic characteristics, in order to find out the ones that can better explain the behavioural differences. A logistic regression is applied on the data from the Survey of Household Income and Wealth (SHIW) by the Bank of Italy, which provides information on household saving, income and wealth. Main results highlight that type of family, education and geographic factors are some of the variables that influence households' financial choices. The findings of this study may help financial planners and counsellors better understand the household behaviour in choosing various financial assets in order to effectively satisfy the needs of their clients

Keywords: Financial assets, Italian households, Investments, Logistic Regression, Financial behaviour

INTRODUCTION

Households' financial behaviour is an issue of increasing relevance. Economic researchers are seeking theoretical and empirical evidence to understand household financial decisions, in order to develop models that explain and predict observed portfolios or empirically identify factors explaining household asset allocations or some combination of the two [1]. Understanding the determinants of the financial assets ownership is a crucial topic in designing a number of policy interventions and financial players' strategies. It is therefore not surprising that the analysis of the financial behaviour has become one of the central issues in the empirical study [2], [3], [4]. This paper adds to this literature and contributes to this large and growing body of empirical researches by focusing on the Italian experience. In recent years, the processing of the banking system, the privatization policies and the asset management saving have modified the Italian households' financial asset a lot. In the 2006 data from the Survey of Household Income and Wealth by the Bank of Italy on households' financial behaviour point to considerable heterogeneity in the asset allocations. The majority of households hold neither common assets nor other risky financial securities, while among the ones that do, many do not hold a diversified portfolio. The distribution of assets is asymmetric. The share of households owning at least one of these financial assets has reduced, from 30 per cent in 2002 to 28 per cent in 2006. Figure 1 shows the proportions of households owning some financial assets.

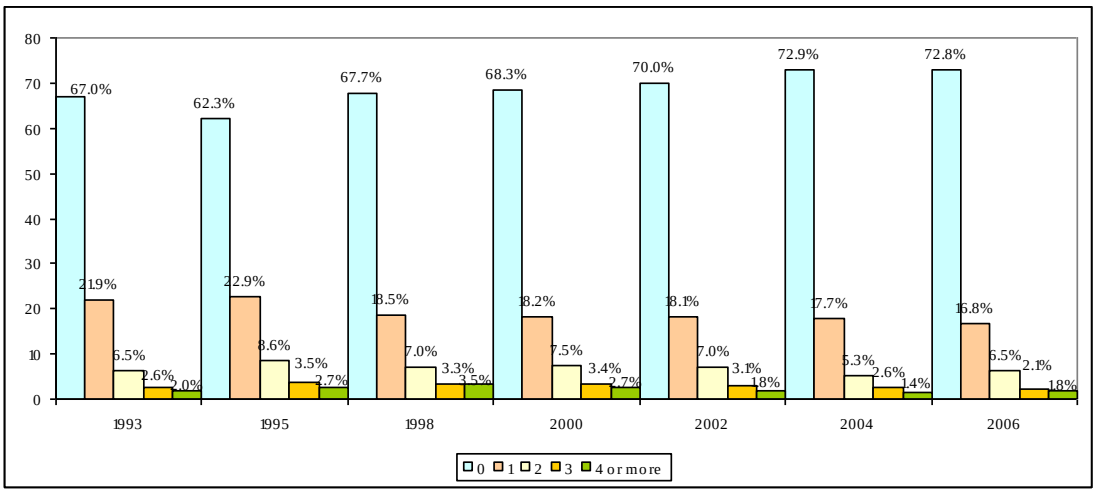

Figure1. Percentage of Italian households by number of financial assets. Elaboration on 2006 SHIW data

The households owning financial assets have different propensities to hold different type of assets. Table 1 shows that they invest most in bonds and mutual funds, Government securities, certificates of deposit, shares and Italian shareholdings, then co-operative loans, assets administrations, foreign bonds.

Table1. *The spread of the financial assets among Italian households owning financial assets –Elaborations on Bank of Italy SHIW 2006 data.*

Type of financial asset	**%**
Bonds and mutual funds	52.0
Government securities	43.1
Certificates of deposit	31.0
Shares and Italian shareholdings	24.2
Co-operative loans	7.9
Assets administrations	5.3
Foreign bonds	3.0

The spread of financial assets depends on many factors. Firstly, the special national and international economic and financial state; secondly, the complexity of financial instruments, the development of new and more sophisticated financial products. These factors are "exogenous" to the households. As well as these factors, other factors, such as demographic, social, and economic, "endogenous" to the households features may be of great weight. Several studies have investigated the factors related with household financial behaviour. Hira [5] examined ten household assets with reference to family demographic variables: income was a major factor, while age, education, employment status, household size and marital status influenced the ownership of some of the assets. Xiao [6] investigated the determinants of ownership of nine financial assets, and found that income, education, race, and some variables related to the life cycle (household size, marital status, and employment status) were major factors. Poterba [7] modelled this relationship in a simplified overlapping generation framework. Vissing-Jorgensen [8], [9] relied on transaction and information costs as the main explanation of the reason why some individuals choose zero holdings for financial assets. Participation costs act as a barrier to entry at low wealth and imply that participation increases with wealth; participation depends on background risk. But the exact nature of these costs is not well understood, and the aim of current research is to assess the impact that some households' social and economic characteristics may have on the ownership of financial assets, in order to identify the main variables which explain Italian households' financial behaviour. The rest of the paper is structured as follows. The section following this introduction describes the data set and the methodologies; the third section discusses the results; and the fourth section provides the principal conclusions and the strategic implications.

DATA SOURCE AND EMPIRICAL ANALYSIS

The main source of information on Italian households' features at the micro level is the Survey of Household Income and Wealth (SHIW), administered by the Bank of Italy every two years. The SHIW is a sample survey conducted by means of an interviewer-given questionnaire. This survey collects detailed information on Italian household income, consumption, and wealth as well as their portfolio allocation through financial instruments and their access to formal and informal credit. For each household, the data also contain information on some characteristics of the households' head, such as education, age, place of birth, and residence. Since 1987 financial assets have been recorded on a regular basis. The survey has a two-stage design (municipalities and households), with a stratification of the primary sampling units (municipalities) by region and demographic size. All the municipalities with a population of more than 40,000 inhabitants (self-representing municipalities) were included within each stratum, while the smaller ones were selected with a probability

proportional to their size. The individual households to be interviewed were then selected randomly. In the 2006 survey 7,768 households were selected in this way. Further methodological details on the SHIW are given in Bank of Italy [10].

In this paper the ownership of a generic financial asset has been taken into account, while the amount of financial assets has not been taken into account, because the sample estimates are uniformly below those of the Financial Accounts due to the unwillingness of the participants to the survey to disclose the actual value of the asset [11].

Not surprisingly, the most popular assets are postal and bank deposits, so they are not in analysis. The large number of zero holdings for different types of financial assets made it advisable to work with just one highly aggregated category of financial assets, including private bonds, stocks, mutual funds, foreign bonds and foreign equities.

To investigate the impact of the social, demographic and economic features on the ownership of financial assets, the statistical background refers to binomial logistic regression [12], [13]. The dependent variable (Y) of ownership of financial assets for household i-th (i = 1 … N) will have two values: y_i=1 if household i owns at least one financial asset and y_i=0 otherwise.

The estimated model takes the following form:

$$P(Y = 1 \mid x) = \pi(x) = \frac{e^{g(x)}}{1 + e^{g(x)}} \quad (1)$$

with $g(\mathbf{x})=\boldsymbol{\beta}'\mathbf{x}= \beta_0+\beta_1x_1+ \beta_2x_2+\ldots+ \beta_kx_k+$

where $\boldsymbol{\pi(x)}$ indicates the conditional probability that the outcome is present, **x** is the vector of the k explanatory variables, **β'** is the vector of slope parameters the reflect the impact of changes in **x** on the probability. Two sets of explanatory variables were used to investigate the factors associated with the ownership of financial assets. The first set includes variables, such as education and occupation, related to the head of a household features, i.e., the person who is primarily responsible for the household budget. The second set includes variables related to the household characteristics, such as family status, ownership of insurance, ownership of mortgage debt, ownership of home, area of residence, log household income. In this study, after a preliminary investigation, interviewed householders are classified into the following seven main categories that seem to be relevant for the analysis: single under 65 years old and over 65; couple without children under 65 years old and over; couple with one child; couple with more than one child; non-nuclear households (i.e., all residual families).

Table 2 displays the variables in the analysis. For the explanatory variables, log household income is the only continuous variable; the others are categorical. Since some of the categorical variables have several levels, identified by increasing integer numbers, a collection of design variables (or dummy variables) was needed to represent the data. One possible way of coding the dummy variables is to have k−1 design variables for the k levels of the nominal scale of that variable.

Table2. *Weighted descriptive statistics of Italian households in the 2006 SHIW (n= 7,768). Elaborations on Bank of Italy SHIW 2006 data.*

Variables	**Categories**	**Percentage**
Dependent variable		
Holding financial assets		26.6
Independent variables		
Types of household	Non-nuclear households	13.9
	Single under 65	11.9
	Single over 65	13.0

	Couple without children under 65	10.8
	Couple without children over 65	10.9
	Couple with 1 child	18.0
	Couple with more than 1 child	21.6
Education of the head of a household (ISCED classification*)	Low education (ISCED levels 0-2)	29.7
	Medium education (ISCED levels 3-4)	28.8
	High education (ISCED levels 5-6)	41.4
Occupation of the head of a household	Employed	39.5
	Self-employed	11.5
	Unemployed	49.0
Area of residence	North	48.4
	Centre	19.9
	South	31.7
Demographic size of residence city	Up to 20.000 inhabitants	46.8
	20.000-50.000 inhabitants	17.3
	More than 50.000 inhabitants	36.0
Ownership of home	Yes	68.7
	No	31.3
Ownership of insurance	No	82.3
	Yes	17.7
Ownership of mortgage debt	No	11.7
	Yes	88.3

The diagnostic tests used to determine how effective the model is in describing the response variable confirm its statistical validity. The omnibus test of model coefficients gives a Chi-Square of 1514.336, significant below 0.000, meaning that at least one of the coefficients is significant (Table 3).

Table3. *Omnibus Tests of Model Coefficients. Elaborations on Bank of Italy SHIW 2006 data.*

	Chi-square	**Sig.**
Step	1514.336	0.000
Block	1514.336	0.000
Model	1514.336	0.000

Table 4 shows that the estimated model adequately fits the data. In fact the p-value of the Hosmer-Lemershow goodness-of-fit test statistic is greater than 0.05, as it need for well-fitting models, so the null hypothesis that there is no difference between observed and model-predicted values is accepted. The model's estimates fit the data at an acceptable level.

Table4. *Hosmer-Lemershow Test*

Chi-square	Sig.
5.552	0.697

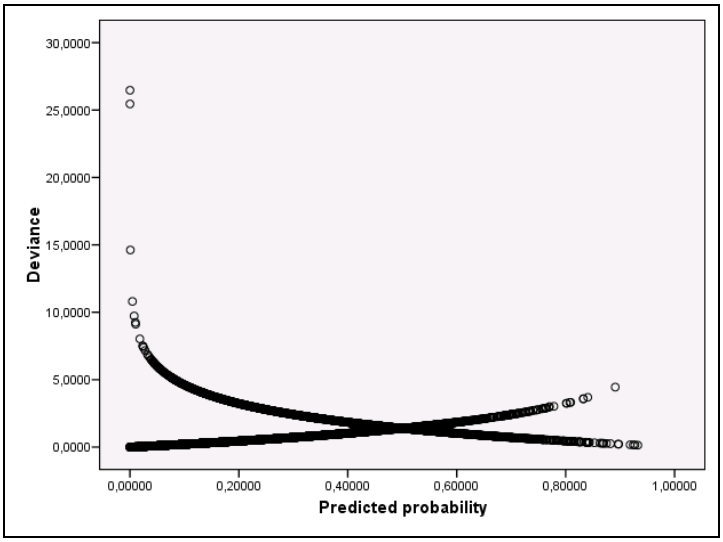

Figure2. *Plot of deviance versus predicted probability. Elaborations on Bank of Italy SHIW 2006 data.*

Other methods for assessing the fit of the estimated model are the plot of predicted probability versus deviance (Figure 2). It points out two outliers, that is two households with predicted probability lower, when the dependent variable is 1.

The classification table (Table 5) shows that the percentage of correctly predicted case is moderately good, with a discrete increase in overall success rate, from 73.4% to 77%. Using the threshold to 0.5, the sensitivity of prediction is 33.2 %, while the specificity of prediction is 92.7%. A false positive is 38% and a false negative is 21%.

Table5. *Classification table. Elaborations on Bank of Italy SHIW 2006 data.*

Observed		Predicted		Percentage correct
		Ownership of financial assets		
		0="No"	1="Yes"	
Ownership of financial assets	0="No"	5287	418	92.7
	1="Yes"	1378	685	33.2
Overall percentage				76.9

Other measure of discrimination is the plot of sensitivity versus 1-specificity over all possible cutpoints, which generate the Receiver Operating Characteristic (ROC) Curve. The area under the ROC Curve is equal to 0.775, so the model shows an acceptable predictive ability of the owning of the Italian households' financial assets (Figure 3).

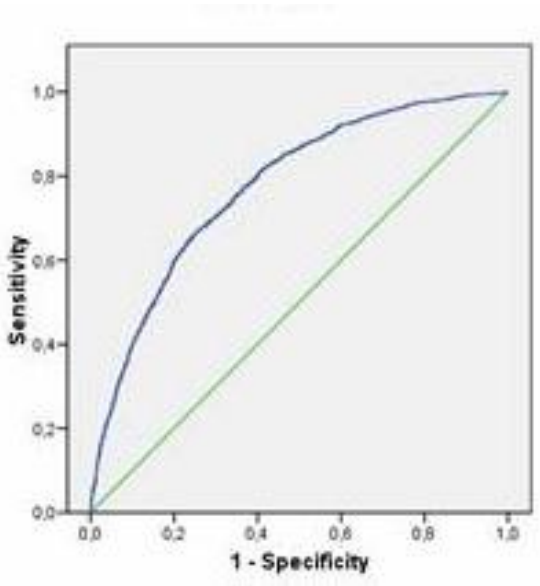

Figure3. *Plot of sensitivity versus 1-specificity for all possible cutpoints. Elaborations on Bank of Italy SHIW 2006 data.*

Table 6 shows the logistic regression coefficients, their significance established according to the Wald test, and odds ratios.

Table6. *Logistic model Results. Elaborations on Bank of Italy SHIW 2006 data.*

	B	S.E.	Wald	Exp(B)
Reference Couple with more than 1 child			52.145	
Non-nuclear households	-0.057	0.105	0.296	0.944
Single under 65	0.450***	0.114	15.610	1.569
Single over 65	0.630***	0.135	21.931	1.878
Couple without children under 65	0.240***	0.104	5.332	1.272
Couple without children over 65	0.624***	0.122	26.356	1.866
Couple with 1 child	0.147	0.090	2.669	1.158
Reference High education			89.792	

Medium education	-0.812***	0.091	79.211	0.444
Low education	-0.461***	0.071	41.806	0.630
Reference North			268.869	
Centre	-0.842***	0.076	123.620	0.431
South	-1.129***	0.079	204.330	0.323
Reference Municipalities with more than 20.000 inhabitants			19.984	
20.000-40.000 inhabitants	-0.209***	0.083	6.408	0.811
40.000-500.000 inhabitants	-0.286***	0.066	18.651	0.751
Reference Unemployed			18.680	
Employed	-0.341***	0.081	17.787	0.711
Self-employed	-0.311***	0.103	9.112	0.733
Ownership of home -Yes	-0.449***	0.074	36.931	0.638
Ownership of insurance -No	4.086***	1.390	8.638	59.509
Ownership of mortgage debt -No	-0.260***	0.088	8.728	0.771
Log income	1.153***	0.079	212.592	3.167
Constant	-11.982***	0.849	199.356	0.000

The estimate of the logistic model on the 2006 data shows that a lot of the estimated coefficients of the model are significant, except for the dummy variables: Non-nuclear household and Couple with one child. The odds ratios for type of family indicates that when holding all other variables constant, a single over 65 years old is 1.569 times more likely to own financial asset than is a couple with more than one child. So a single under 65, a couple without children over 65, couple without children under 65. The importance of two characteristics arose from these results: the age, in particular the people over 65 years old – both single and married but without children - and no children. The participation to financial market evidently depends on the household's income: increasing income, the probability to own financial assets increases. The likelihood of investing in financial assets is correlated with education levels. By decreasing the education level of the head of the household, the propensity to own financial assets reduces considerably. Thus it is supported the idea that managing financial assets is information intensive and requires a degree of intellectual ability [1]. The odds of owning a financial asset for both households with head employed and self-employed are estimated to be smaller than the odds for those with head unemployed. In Italy regional differentiation is a very important factor to be considered, both from an economic and a social point of view. Residents in the Centre and the South of Italy are much less likely to hold financial assets than residents in the North. The importance of the area of residence might indicate strong differences in the financial development among different areas of the country. Both households with mortgage debt and those without the ownership of home are more likely to own a financial asset.

CONCLUDING REMARKS

This paper was concerned with the distribution of household financial investments in Italy. The analysis was based on the Bank of Italy's Survey of Household Income and Wealth, a long-established sample survey which has gathered detailed and exhaustive information on Italian households since 1987. This research analyzes the impact of income and socio-demographic variables on the probability to own some financial assets in 2006. Empirical results indicate that household characteristics represent the most important factor for explaining differences in financial behaviour. The role of education recalls the importance of information costs for participation decisions. A majority of households possesses limited financial literacy. These results have revealed some characteristics of the household behaviour in owning financial assets, which could help practitioners in family financial counselling and planning services better understand their clients. They could help households to choose appropriate financial instruments to achieve their goals. So, if the financial institutions mean to be competitive, two strategies should be necessary. Firstly, they should increase and diversify financial literacy. In fact financial education programs are likely to be more effective

when targeted to specific groups of the population. Secondly, the financial players should go from a model based only on transactions to one based on relationships with consumers, in order to create and offer financial products in keeping with real and different requirements of Italian households. In fact, financial planners rarely give advice to their clients following the investment patterns of the typical consumer. They will make recommendations based on the needs of their clients, and the needs are outcomes of communications between the practitioners and clients. This paper has prefer an empirical approach, so different statistical techniques and more explicit variables related to the asset allocation process should be used to improve and to address these issues in future researches.

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