

# The Effects of Population Ageing on Household Portfolio Choices in Italy

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## Abstract

Based on widely accepted evidence on the exceptional ageing of the Italian population, this paper contributes to the current debate on population ageing and financial markets by assessing the impact of the demographic structure on household portfolios in Italy. To this end, we use data taken by the Bank of Italy Survey of Household Income and Wealth (SHIW) over the over the period 1995 – 2004 and we analyse the average household portfolio in relation to demographic characteristics. In contrast to some results reported in the literature for the US, we find that financial choices of Italian households are sensibly affected by age. It follows that the current and projected ageing of the population in Italy, which is one of the most pronounced in the world, is going to have relevant consequences on the Italian financial market and eventually on the economy as a whole.

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**JEL: D1, D91, J11**

**Keywords:** population ageing, financial assets, household portfolio, survey data

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## **1. Introduction**

Ageing can sensibly affect financial markets, since elderly people usually have lower saving rates and higher average risk aversion. Thus, ageing is going to bring about a progressive evolution of financial needs and investment requirements, which may in turn translate into changes in prices and returns of existing financial instruments and in the need for new ones (e.g. Fornero and Luciano, 2006). A lively debate on the financial effects of ageing is ongoing among both academics and practitioners and has originated a vast literature constituted by both theoretical and empirical contributions. The latter in particular have sensibly increased over the last few years, also fostered by the increasing availability of suitable survey-datasets. Part of this empirical literature has focussed on the effects that demographic dynamics might have at a macroeconomic level (i.e. on growth or savings and interests rates): among others see Demery and Duck (2006), Miles (1999), Oliveira Martins et al. (2005), Visco (2002, 2005), Yakita (2006). On the other hand, a particular strand of the empirical literature has focussed on the effects that ageing may have on financial asset returns and portfolio allocations: see, e.g., Yoo (1994), Brooks (2000, 2002), Baldini and Onofri (2001), Davis and Li (2003), Ameriks and Zeldes (2004), Geanakoplos et al. (2004), Goyal (2004) and Poterba (2001, 2004). This literature is essentially based on the life-cycle hypothesis according to which individual saving behaviour and portfolio choices vary over the life cycle to smooth consumption. Although still limited, research on the demographic effects on financial portfolios and financial markets is of uttermost important for a correct development of the debate on the issue, which has at times taken extreme views, such as the so called “market meltdown” hypothesis associated to the retirement of the baby-boomers and the resulting selling pressures on some financial markets.

The existing literature is far from being homogeneous in terms of the methodology used and the results obtained. As for the methodology, the empirical investigations of these studies are carried out using different approaches, which in the present paper are grouped into three main categories and are addressed as follows: (i) the “explorative approach”, which analyses and interprets trends in survey data; (ii) the “econometric approach”, which essentially runs time-series or panel data analyses; and (iii) the “simulation approach”, which carries out empirical simulations

on suitably structured overlapping-generation models. As for the results, they range from significant effects of ageing on financial markets (e.g. Yoo, 1994) to only a weak, if any, relationship between demographic and financial variables (e.g. Poterba 2001, 2004). Moreover, up to date empirical studies analyse the Italian case only rarely and quite marginally and this despite Italy is, together with Japan, one of the countries where the ageing phenomenon is more marked.

Based on the latter observations and on the evidence of an exceptional ageing of the Italian population which can be found in many recent studies (e.g. Visco, 2005) and specifically provided in Brunetti (2006) and Brunetti and Torricelli (2007), the aim of this paper is to assess the impact of ageing on household portfolio allocation in Italy in the last decade also in the light of the pension system reform (known as the “Dini reform” which was introduced in 1995).

To this end, we employ data taken from subsequent issues of the Bank of Italy Survey of Household Income and Wealth (SHIW). Our analyses differ from the previous study by Guiso and Jappelli (2001) in three extents: first, we consider a subsequent period of time characterized by a different economic and institutional setting; second, we propose a different financial asset sorting based on their risk-profiles and third, we refine the analyses by separating households into both age-classes and Net Wealth quartiles, which allows testing the robustness of age-effect on financial choices.

The paper is structured as follows. The next Section briefly reviews the state of the art on the issue. Section 3 recalls main stylized facts on ageing in Italy stemming from a recent study by Brunetti (2006). The investigation over the effects of ageing on household portfolios in Italy is presented in the fourth Section. Last Section concludes. The Appendix discusses the clustering of assets made in this study according to the risk-profile.

## **2. Ageing and portfolio choices in Italy**

In order to test the relationship between demographic changes and household financial portfolio three different approaches are in principle possible: (i) the “explorative approach”, in which trends in survey data on household portfolios are analysed and interpreted; (ii) the “econometric approach”, which essentially runs time-

series or panel data analyses to assess the relationship between financial assets' returns and demographic variables; and (iii) the "simulation approach", which carries out empirical simulations on suitably structured overlapping-generation models. An extensive overview of the literature is provided by Bosworth et al. (2004).

In this paper we take the first approach since it allows to analyse the dynamics of the Italian households' financial portfolios and to assess whether changes can be traced back to demographic factors. The literature on the issue is not yet vast and, as far as we know, Guiso and Jappelli (2001) is the only empirical contribution specifically focussed on the Italian case. As a first step, the authors provide a detailed account of Italian household portfolio evolution since the beginning of 1990s, using data from the 1989, 1991, 1993, 1995, 1998 editions of the Bank of Italy Survey of Household Income and Wealth. Next, they analyse the main determinants and to this end they group the various financial assets in three main categories: safe (e.g. bank accounts), fairly safe (e.g. T-Bills and similar) and risky (e.g. stocks, long-term government bonds and mutual funds) and use this classification for both the "explorative" and the "econometric" approach. As for the former, they observe the trends of the portfolio shares invested in each category along the period under analysis and report that the Italian household portfolio has dramatically changed. More specifically, the share of safe and fairly safe assets has reduced from 45.7% to 25% while that of risky assets is higher than ever before: at the beginning of 1990s stocks represented around 16% of total financial wealth while at the end of the decade they represented around 47%. According to the authors, several "macroeconomic" circumstances may have taken part in these changes: the decline in short-term bonds nominal yield coupled with the increase in equity returns that characterized the entire 1990s, the liberalization of capital market which encouraged international diversification starting from 1989, the birth of mutual funds in 1984 and the privatisation in 1992 which most likely boosted market capitalization, as well as the social security reforms which fostered the development of life insurances and pension funds. Nevertheless, specific household features, such as wealth, education and age may also have affected these changes in portfolio allocation. Guiso and Jappelli (2001) thus focus on the 1989-1995 period and study whether or not these factors played a role in determining the riskier portfolio allocation. They distinguish between the decision concerning whether or not to hold risky assets, referred to as "participation decision",

and the (subsequent) one regarding the final portfolio allocation, named “allocation decision”. The authors report that that age, wealth and education may actually have determined the participation decision. As for age in particular, they report hump-shaped profile: the share of people investing in risky assets increases from around 15% of the young (i.e. those aged less than 30) to almost 20% of the middle-aged (between 30 and 59 years old) and then falls once again to around 10% for the 60-69 and to less than 7% for the over-70s. Conversely, the decision concerning the final portfolio allocation does not seem to be affected by any of these factors. Also the econometric analysis based on both cross-sectional and panel data provides similar results: age, together with wealth and education, may have a substantial influence on the choice concerning whether or not to invest in risky assets, while once this decision is taken these factors only slightly affect the final portfolio allocation.

### 3. The marked ageing dynamics of the Italian population

Although population ageing is a world-wide phenomenon, its size sensibly differs across countries. Brunetti (2006) assesses the magnitude of the phenomenon in Italy with respect to other developed countries and in particular to the European ones. Main findings of a comparative evaluation of the phenomenon are well illustrated by Table 1.

**Table 1:** Past, present and future demographic measures: major world-regions.

World-zone	Years	Median Age	Life Expectancy	Old - dependency Ratio	% Old	% Young
Africa	1950	19	38.4	6	5.3	42
	2005	18.9	50	6	5.2	41.5
	2050	18.6	65.3	8	6.2	43.6
Asia	1950	22	41.4	7	6.8	36.5
	2005	27.7	68.7	10	9.3	27.8
	2050	32.8	76.9	23	19	26.2
Europe	1950	29.7	65.6	13	12.1	26.2
	2005	39	74.3	23	20.7	15.9
	2050	50.1	80.7	51	37.2	12
Latin America	1950	20.2	51.4	7	6	40
	2005	25.9	72.9	10	8.8	30
	2050	33.1	79.4	25	19.7	25
North America	1950	29.8	68.8	13	12.4	27.2
	2005	36.3	78.2	18	16.8	20.5
	2050	40	82.7	33	26	18.3

<b>Oceania</b>	<i>1950</i>	28	60.4	12	11.1	29.9
	<i>2005</i>	32.3	75	15	13.9	24.8
	<i>2050</i>	35.9	80.5	28	21.8	23.5
<b>Japan</b>	<i>1950</i>	22.3	63.9	8	7.7	35.4
	<i>2005</i>	42.9	82.8	30	26.3	14
	<i>2050</i>	56.2	88.3	77	45.5	9.7

*Source: Brunetti (2006). Data Source: United Nations Population Prospects.*

The most severe population ageing is being experienced by Japan and Europe: in both countries median age and old-dependency ratios have increased much more than in the rest of the world. Given that this conclusion is consistent across all demographic measures considered, Brunetti (2006) focuses on these two areas and disaggregates the analysis for the 25 countries of the European Union to further focus on the case of Italy. Table 2 ranks countries according to the expected value for this demographic indicator in 2050.

**Table 2: Old-dependency ratios.**

<b>Country</b>	<b>1950</b>	<b>2005</b>	<b>2050</b>	<b>Country</b>	<b>1950</b>	<b>2005</b>	<b>2050</b>
Japan	8	30	77	Lithuania	15	23	52
Italy	13	30	75	Malta	10	20	52
Spain	11	24	72	Belgium	16	27	50
Czech Republic	12	20	64	France	17	25	48
Slovenia	11	22	64	Estonia	17	24	47
Austria	16	25	58	Finland	11	24	47
Greece	11	27	57	Netherlands	12	21	45
Portugal	11	25	57	Sweden	15	26	44
Slovakia	10	17	57	Ireland	18	16	43
Latvia	18	25	55	UK	16	24	40
Poland	8	18	55	Cyprus	10	18	38
Germany	14	28	54	Denmark	14	23	38
Hungary	11	22	53	Luxemburg	14	21	36

*Source: Brunetti (2006)*

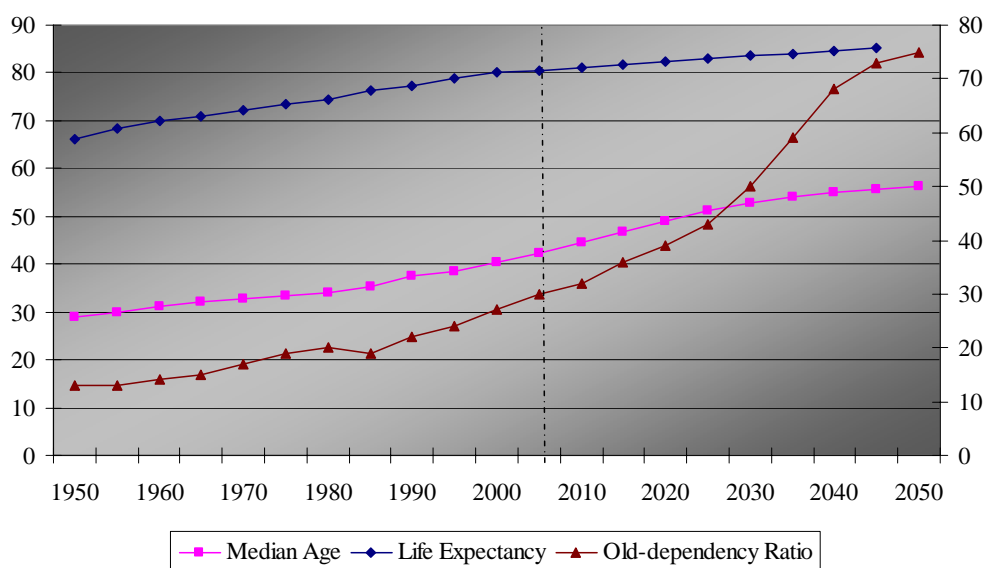
*Data Source: United Nations Population Prospects.*

Two observations are here in order. First, the process of population ageing seems to affect quite strongly several of the new EU members, and in particular Slovenia and Czech Republic.<sup>1</sup> Second, Italy is the sole country whose projections are as high as Japan's.

<sup>1</sup> Brunetti (2006) stresses that a huge debate is currently ongoing on the population ageing in the Eastern European countries and on the policy implications that it may have on the whole European Union. See, among others, Kucera et al. (2000) and the studies performed within the research program "Demographic

Brunetti (2006) further develops the analysis in order to better understand the peculiarity of the Italian case, which is apparent in Chart 1 and 2. Since the mid of last century, both Italian median age and life-expectancy at birth have sensibly increased, the former rising from 29 to 42.3 years and the latter from 66 to 80.6 years. Similarly, the old-dependency ratio has more than doubled, jumping from 13 to 30. As for the future, these dynamics are going to be even more pronounced: according to UN projections in fact by 2050 in Italy there will be around 75 retired every 100 working people (see Chart 1).

**Chart 1:** Main demographic measures in Italy: evolution and forecast.



Source: Brunetti (2006)

Note: values for median age and life expectancy can be read on the left scale, while those for old-dependency ratio are reported on the right-hand-side scale.

Data Source: United Nations Population Prospects.

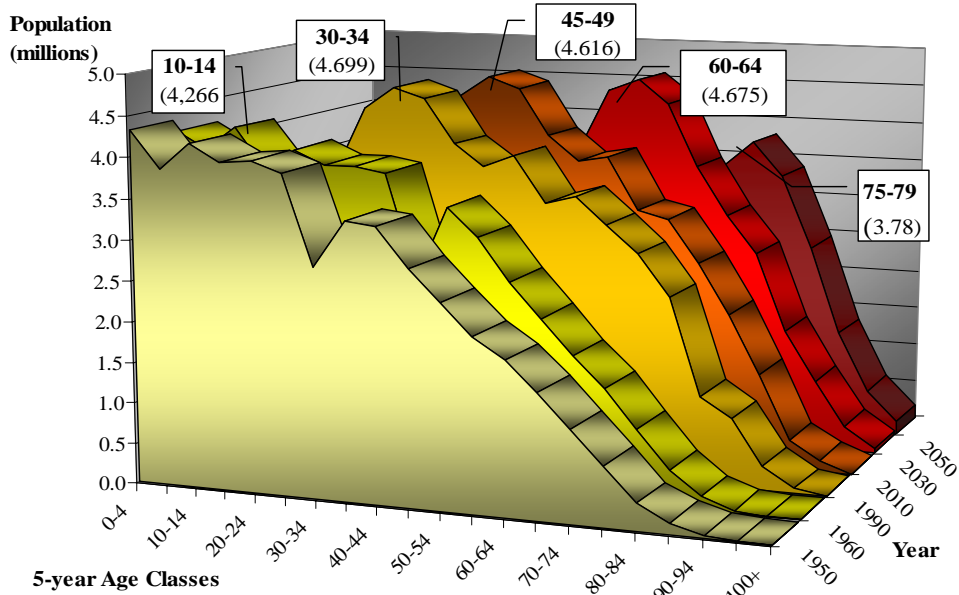
Chart 2 represents the distribution of Italian population by 5-year age-classes at six points in time (1950, 1970, 1990, 2005, 2025, 2050) and highlights the baby boom, occurred in Italy during the 1960s. The population peak, which represents the baby boomers generation, moves as a wave: from the 70s when it corresponds to the very young (around 10-14 years old) part of the population, to the end of 2050s when baby-

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& Social Change in Eastern Europe” carried out by Cornell University, Charles University of Prague and Bucharest University together with the Universities of Central Florida and Kansas State and the Echo Survey Sociological Research Institute (Hungary).

boomers by that time aged around 75-79 will still represent the most conspicuous age-class of the population, being almost 4 millions people.

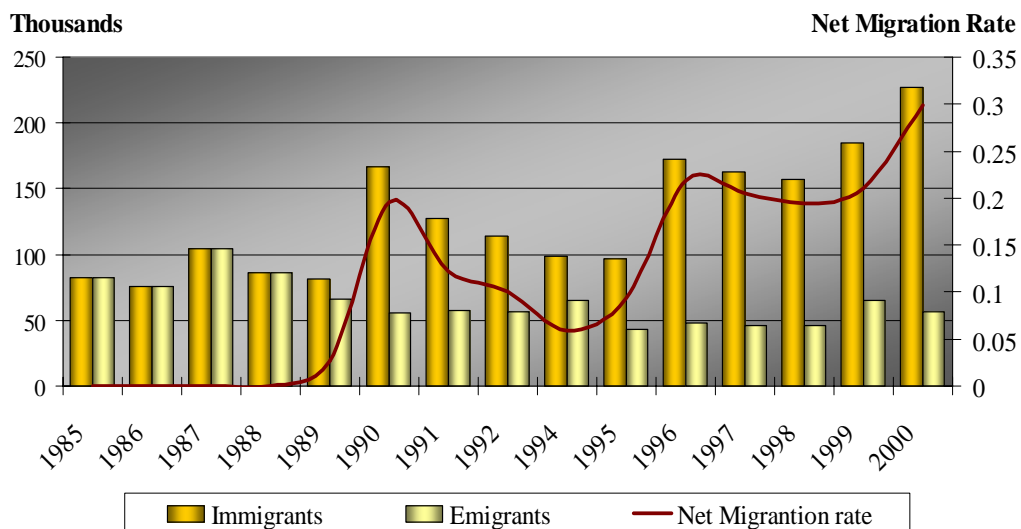
**Chart 2: Italian population distribution by age-classes: evolution.**



Source: Brunetti (2006)

Data Source: United Nations Population Prospects.

**Chart 3: Immigrants, emigrants and net migration rate in Italy, 1985-2000.**



Source: Brunetti (2006)

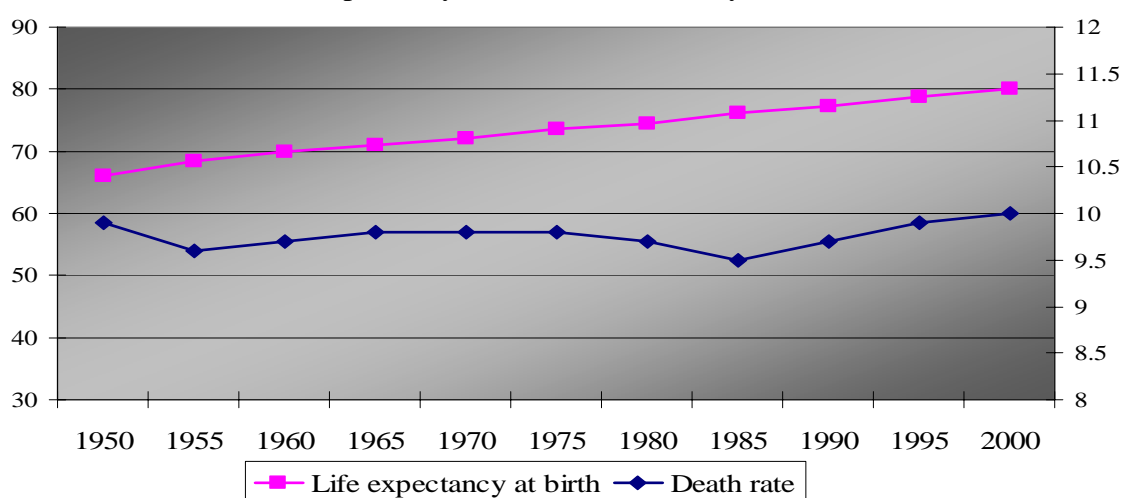
Note: values for immigrants and emigrants (columns) can be read on the left scale; those for the net migrants (line) on the right-hand-side one.

Data Source: Eurostat Demographic Database.



In sum, the Italian exceptional ageing dynamics can be traced back to the following facts, which are illustrated in Chart 3-5. In the last 50-year period (restricted to a 15-year period for migration) net migration flows have sensibly increased, mortality has undergone only a small decline (death rate has increased but life expectancy has also considerably lengthened) and fertility has recorded a significant drop. Based on this evidence, the reduced fertility is thus recognised as the main determinant for the unique Italian population ageing.

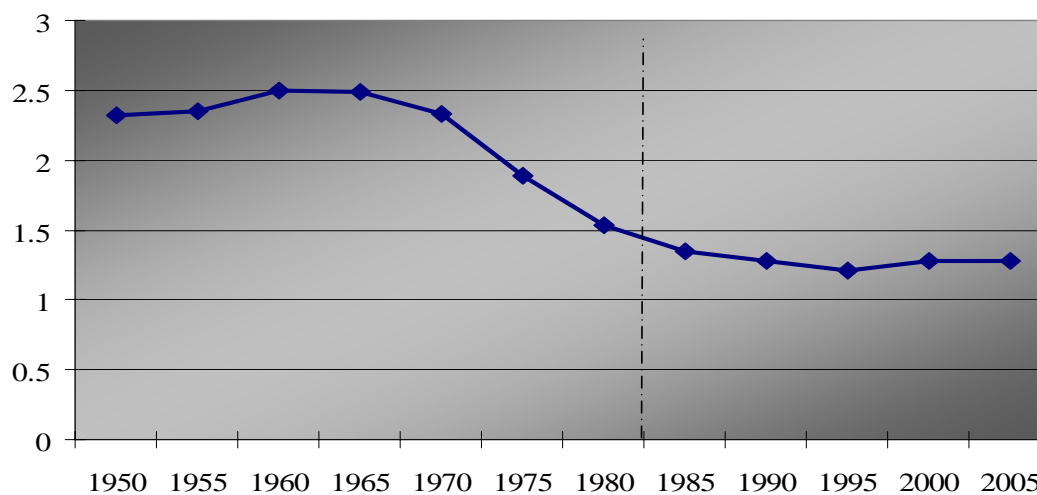
**Chart 4:** Life Expectancy and death rate in Italy, since 1950 to 2005.



Source: Brunetti (2006)

Data Source: Eurostat Demographic Database.

**Chart 5:** Total fertility rate in Italy, 1950-2005.



Source: Brunetti (2006)

Data Source: Eurostat Demographic Database.

#### **4. Ageing and portfolio choices of Italian Households**

In this section we present our analysis on the relationship between demographic dynamics and household financial portfolio in Italy. To this end, we first illustrate methodology and dataset and then we analyse the results obtained.

##### **4.1 Methodology**

Data are taken from the Historical Archive of the Bank of Italy Survey of Household Income and Wealth (HA-SHIW) and span over the 1995 – 2004 decade. Among many other kinds of information, the dataset offers a detailed picture of the financial portfolio held by the interviewed households, as it provides the amounts (expressed in Italian lira until 2000 and in Euro thereafter) invested in a variety of financial assets. In order to allow a better comparability across time, we translate amounts into percentages. Furthermore, all the assets are grouped into different classes according to their risk profiles, in order to avoid reporting residual items separately and to allow thus a clearer exposition. In the risk classification, the focus is centred on two kinds of risks only, namely credit risk and market risk.

As for the former, we distinguish two different levels. Specifically, the “Lower” level is assigned to financial assets issued by both the domestic sovereign (i.e. Italian government) and by banks, securities firms and cooperatives, based on the always more stringent supervising regulations introduced by the Basel II Accord and of the several security provisions provided for by the law specifically aimed to make banks and financial systems as safe as possible. The “Higher” level is instead associated to all the assets issued by the remaining agents, basically corporations. Foreign activities are treated separately as the amounts provided by the HA-SHIW do not distinguish non-residents issuers so that a more precise credit-risk classification for these assets is not possible.

As far as market risk is concerned, three main forms are considered, i.e.:

- Exchange-rate risk, which concerns the foreign activities only
- Interest-rate risk, associated with all bonds securities
- Price risk, associated to stocks and shareholdings

In addition, a fourth market-risk category, referred to as “mixed”, is created for those kinds of investments where bonds (interest-rate risk) and stocks (price risk) are mixed together (see Table 3).

**Table 3:** Financial assets classification, by credit and market risk

<i>Market</i>						
		-	<i>Interest Rate</i>	<i>Mixed</i>	<i>Price</i>	<i>Exchange Rate</i>
<i>Credit</i>						
<b>Lower</b>	Current accounts Savings deposits Certificate of deposits Postal deposits Cooperative loans	Postal bonds BOT CCT BTP CTZ Other Government Bonds	REPO Investment funds Personal assets managements Life insurances Non-life insurances Health-insurances Pension funds			
<b>Higher</b>		Bonds		Stocks SRL shares Partnership shares		
-						Foreign assets

*Note: Shaded cells indicate comparable risk-profiles: light grey denotes safer assets, more intense grey indicates fairly safe assets and dark grey gathers the risky ones.*

Six main financial-asset groups beside cash are thus identified<sup>2</sup>:

1. DEPOSITS: lower credit risk and no market risk
2. GOVERNMENT BONDS: lower credit risk and interest-rate risk
3. CORPORATE BONDS: higher credit risk and interest-rate risk
4. MANAGED INVESTMENTS: lower credit risk and mixed market-risk
5. STOCKS: higher credit risk and price-risk
6. FOREIGN ASSETS: exchange-rate risk

Two observations are in order. First, in the following analyses values for life-insurances and pension funds will be presented separately, as the focus of this study makes their single evolutions particularly interesting. Second, following Guiso and Jappelli (2001) financial assets will be in some cases further grouped in three risk-categories: “clearly safe”, “fairly safe” and “risky”. Differently from the previous study, clearly safe assets include cash and deposits, fairly safe assets include government bonds

<sup>2</sup> This classification is only indicative as it neglects all the other forms of risk that actually characterize financial assets, such as liquidity risk. On the other hand, a more rigorous classification was not possible because of lack of information. As an example, the risk profiles of government bonds may be higher or lower depending, among other things, on their time-to-maturity. The data however do not provide any information about the duration of these instruments, so that all government bonds have to be placed in the same risk-class. Nevertheless, this simplification seems consistent with the perceptions of the majority of households, which typically associate a comparable level of risk to all government bonds.

and managed investments and risky assets comprise corporate bonds, stocks and foreign activities (see Table 3).<sup>3</sup>

The survey data analysis will thus be articulated into three phases. As a first step, the evolution of the average portfolio of Italian households is observed across all the five waves considered. The aim of this first step is twofold: on one hand, it will highlight the main features of the average Italian household portfolio and in particular its low degree of diversification. On the other, it allows examining whether and to what extent the average allocation of financial wealth has actually changed over the last decade.

In order to depict a possible age-effect on Italian household portfolio, the households are then divided into six age-classes (<30, 30-39, 40-49, 50-59, 60-69 and >70) and for each of them the average portfolio is examined. The placement in the age-classes is made according to the age of the head-of-the-household.<sup>4</sup>

Household financial choices are affected by many other elements beside age: among these, the overall economic condition plays certainly a focal role. Based on this observation, we further refine the analysis in Guiso and Jappelli (2001) with the aim to check the robustness of the age-effect on household financial portfolio even under different economic conditions. Households are thus divided into quartiles according to their Net Wealth (NW), defined as the sum of real and financial activities net of the financial liabilities.<sup>5</sup> The households belonging to the first quartile are addressed to as “poorer”, those falling within the two central quartiles are referred to as “intermediate” and those above the third quartile as “richer”. In addition, the top 5% richest households are studied separately, in order to see whether the age-effect persists also in extremely favourable economic conditions. Dividing the households into quartiles has a twofold utility. On one hand it keeps the grouping comparable across time, without requiring adjustments for inflation or for the shift Italian lira - Euro occurred in the middle of the decade under analysis. On the other it creates four groups with the same sample size, so

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<sup>3</sup> Further details on the financial asset risk-classification and a comparison with Guiso and Jappelli (2001) are reported in the Appendix.

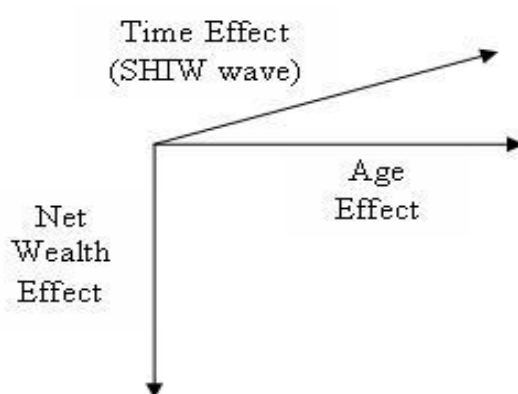
<sup>4</sup> According to the HA-SHIW, the head of the household could be either: the person who is the “most responsible of the financial and economic choices of the household” (“declared” definition), the person who earns the highest income (“income” definition), or the person who represents the reference point to establish the relationships among all members of the household (“Eurostat” definition). Here, the first definition is preferred as it is probably the most appropriate for the analyses performed.

<sup>5</sup> Alternatively, the “household income” could have been used, defined as the sum of the personal incomes of all the members, including capital and labour income as well as public transfers. Nevertheless, including real activities as well as eventual liabilities, the NW definitely provides a more complete measure of the actual economic condition of the household.

that the statistics computed on household average financial portfolios are all equally statistically significant. In sum, the last step of our analysis consists in examining the average portfolio allocation of all the interviewed households divided by age-classes and net wealth quartiles and to observe their evolution across the last decade.

The data presented in this phase of the study can be read in three directions (see Chart 6): (i) if read “vertically”, the data highlight the differences in financial allocations of households belonging to the same age-class but with different net wealth; (ii) reading the data “horizontally” allows instead depicting the possible effect of age on the household’s financial portfolio, since the allocations are compared across different age-classes but comparable economic conditions; (iii) finally, reading the data “transversally” across the SHIW waves might highlight whether the average portfolio allocation of households of the same age-class and net wealth quartile has modified or not, depicting in this way a possible time-effect. Specifically for the Italian case, this intertemporal reading can be particularly interesting as it might reveal “indirect” effects of ageing, e.g. those induced by the several radical reforms brought to the social security system during the last decade and called for by the striking ageing of the Italian population<sup>6</sup>.

**Chart 6:** SHIW data: effects depicted by different reading directions.



#### **4.2 The results along the three directions**

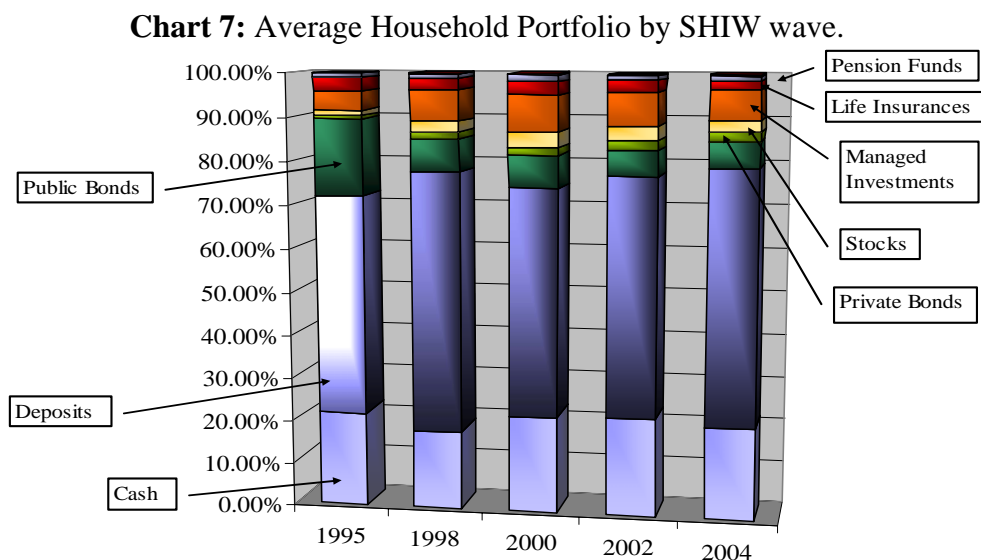
In this section we present the results of the survey data analysis. More specifically, Section 4.2.1 reports the main findings of the preliminary analysis on the evolution of the average Italian household portfolio as from all the five waves considered.

<sup>6</sup> An overview on the evolution of the Italian pension system can be found in e.g. Brugiavini and Galasso (2003).

In Section 4.2.2 the average portfolio is examined after having sorted the households into six different age-classes according to the age of the head-of-the-household. Finally, in Section 4.2.3 we examine the average portfolio of all the interviewed households divided by both age-classes and net wealth quartiles.

#### 4.2.1 The Italian household average portfolio in 1995-2004

As a first step, the survey data are used to determine the average portfolio of Italian households in each of the five waves available in the HA-SHIW for the decade 1995-2004. From this preliminary inspection, the scarce degree of diversification of Italian household portfolios immediately emerges: during the whole decade in fact Italian households hold on average more than 70% of their financial wealth in cash and deposits (see Chart 7).



Source: own elaborations on HA-SHIW data.

This peculiarity was already mentioned by Guiso and Jappelli (2001), who for the 1989-1995 period reported that “*the portfolios of Italian households span few assets. A large fraction of the sample holds very few types of financial instruments and tends to concentrate wealth in safe assets*”. This observation is also confirmed for the decade 1995-2004 (see Table 4).<sup>7</sup>

<sup>7</sup> Ameriks and Zeldes (2004) perform similar analyses on US household portfolio and discard those units with such a low degree of diversification. As the limited diversification is a typical feature of Italian

**Table 4:** Households holding liquidity only, by SHIW wave.

	<b>1995</b>	<b>1998</b>	<b>2000</b>	<b>2002</b>	<b>2004</b>
Total # Household	8,126	7,146	7,993	8,011	8,012
Of which holding:					
Cash only	1158 (14.25%)	875 (12.24%)	1318 (16.49%)	1360 (16.98%)	1286 (16.05%)
Cash and Deposits	3291 (40.49%)	3167 (44.31%)	3867 (48.38%)	4323 (53.96%)	4325 (53.98%)

*Data Source: HA-SHIW.*

Table 7 reports the average shares invested by Italian households in each financial-asset category as from the waves available in the HA-SHIW between 1995 and 2004.

**Table 5:** Average household portfolio by SHIW, various editions.

<b>Financial Assets</b>	<b>1995</b>	<b>1998</b>	<b>2000</b>	<b>2002</b>	<b>2004</b>
Cash	21.75	18.15	22.20	22.57	21.12
Deposits	50.41	59.80	52.45	54.90	58.41
Government bonds	17.51	7.43	7.29	5.88	5.88
Corporate bonds	0.83	1.54	1.72	2.07	2.10
Stocks	1.14	2.40	3.49	3.19	2.61
Managed Investments	4.20	6.95	8.22	7.46	6.78
Life-Insurances	3.14	2.67	2.88	2.65	1.79
Pensions Funds	0.97	0.91	1.49	0.99	1.03
Foreign Activities	0.10	0.14	0.25	0.29	0.28

*Note: for each asset group, the table reports the percentages of total financial assets. Shares are computed as weighed averages using sample weights as from HA-SHIW.*

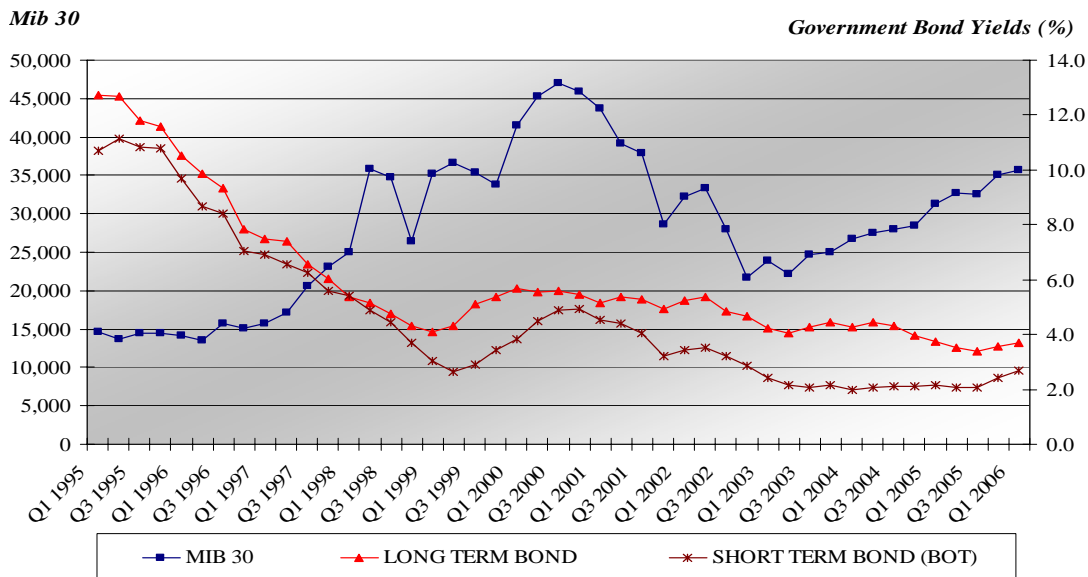
Several observations are here in order. First, the share of cash has remained almost unchanged over the entire decade (around one fifth of the average portfolio). By contrast, the incidence of government bonds has drastically reduced: in 2004 their share was only one third of the average value observed a decade before. Most likely, this change can be ascribed to the drastic reduction of Italian government bonds yields: in 1995 yields on short-term and long-term government bonds were respectively 10.7% and 12.7%, four years later they were respectively 2.7 and 3.7 (see Chart 8). Additionally, after a first recover around 2000-2001, the yields on government bonds kept decreasing, although more gradually, during all the following years. On the other

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household portfolios, in this study all households are kept into the sample in order to get the outline of the average portfolio as realistic as possible.

hand, investments in corporate bonds have progressively increased, especially starting from 1998. The privatization process in this case might have played an important role: although started in 1992, in effect, the peak of privatizations occurred at the end of 1990s.<sup>8</sup>

**Chart 8: Mib30 and Government Bond Yields over 1995-2005.**



*Note: values for Mib30 (left scale) are in index points while government yields (right scale) are percentages.*

*Data Source: Datastream*

Survey data also prove that the average investment in stocks has undergone several changes, which in large part occurred according with the major market fluctuations of the last decade. Stock share has progressively increased until 2000, up to more than doubling in 5-year time, and then it has shrunk again, along with the contraction of Italian stock market (see Mib30 trend in Chart 13).

The same holds for managed investments, whose share increase from 4.2% in 1995 to 8.22% in 2000 and then shrink back to 6.78% in 2004, although their weight has overall increased during the decade under analysis.

As far as precautionary savings are concerned, survey data highlight how the share invested in life-insurances has progressively reduced (from 3.14% in 1995 to 1.79% in 2004). The average share of pension funds shows instead a particular increase around 2000: in fact, although they were introduced by the Dini Reform in 1995, they were enforced by appropriate laws only a couple of years later. Nevertheless, the launch of this

<sup>8</sup> For more details on the Italian major privatization see, among others, Goldstein 2003.



form of complementary social security does not seem to have worked particularly well in Italy: after the initial increase, the pension fund share has reduced back to around 1%, i.e. the very same value recorded in the year of their introduction. Furthermore, although during the decade the gap between life insurances and pension funds has progressively thinned, the former are still somehow preferred with respect to the latter.

#### 4.2.2 The average portfolio by age

Tables 6 to 10 report the average Italian household portfolios by age-class of the head of the household for every wave available for the last decade in the HA-SHIW.

**Table 6: Average portfolio by age-class, 1995.**

	<30	30-39	40-49	50-59	60-69	>70
Cash	19,18	18,06	16,17	17,08	24,28	32,67
Deposits	58,45	52,55	50,20	51,59	47,18	48,96
Government bonds	11,01	15,35	18,59	18,96	21,05	14,98
Corporate bonds	0,84	0,65	0,94	0,99	0,92	0,62
Stocks	0,32	1,04	1,11	2,06	1,00	0,64
Managed Investments	5,01	5,75	5,62	4,67	3,52	1,57
Life-Insurances	3,53	4,97	5,48	3,51	1,57	0,38
Pension funds	1,66	1,59	1,73	0,96	0,42	0,11
Foreign Activities	0,00	0,04	0,17	0,16	0,06	0,08
	100,00	100,00	100,00	100,00	100,00	100,00

**Table 7: Average portfolio by age-class, 1998.**

	<30	30-39	40-49	50-59	60-69	>70
Cash	16,78	12,27	13,70	14,93	20,62	27,47
Deposits	67,09	62,02	61,08	59,81	56,31	58,67
Government bonds	3,23	5,42	7,43	7,82	9,26	7,79
Corporate bonds	2,49	1,84	1,54	1,42	2,06	0,86
Stocks	0,94	2,83	2,79	3,12	2,31	1,43
Managed Investments	4,93	8,73	7,85	8,79	7,47	3,13
Life-Insurances	3,79	4,57	4,04	3,04	1,48	0,52
Pension funds	0,76	2,05	1,42	0,87	0,41	0,08
Foreign Activities	0,00	0,28	0,15	0,21	0,07	0,06
	100,00	100,00	100,00	100,00	100,00	100,00

**Table 8: Average portfolio by age-class, 2000.**

	<30	30-39	40-49	50-59	60-69	>70
Cash	26,03	18,02	20,09	21,02	22,68	27,04
Deposits	47,28	55,31	53,40	50,64	50,83	53,34
Government bonds	5,61	5,93	6,65	8,04	8,64	7,30
Corporate bonds	0,93	1,92	1,80	1,91	2,30	1,00
Stocks	5,09	4,00	3,96	4,08	2,95	2,38
Managed Investments	9,02	8,38	8,19	9,61	8,86	6,28
Life-Insurances	3,11	3,83	3,90	2,88	2,33	1,77
Pension funds	2,38	2,30	1,71	1,52	1,22	0,77
Foreign Activities	0,56	0,31	0,31	0,30	0,18	0,11
	100,00	100,00	100,00	100,00	100,00	100,00

**Table 9: Average portfolio by age-class, 2002.**

	<30	30-39	40-49	50-59	60-69	>70
Cash	26,77	18,86	16,87	19,14	21,54	33,17
Deposits	57,45	58,13	56,73	52,99	55,61	51,54
Government bonds	3,43	3,97	4,42	7,09	7,48	6,76
Corporate bonds	1,65	1,64	2,04	2,81	2,24	1,76
Stocks	1,15	4,09	4,19	3,59	3,61	1,29
Managed Investments	4,49	6,72	9,03	10,26	7,92	4,48
Life-Insurances	4,32	4,37	4,59	2,66	0,97	0,71
Pension funds	0,74	1,83	1,61	1,28	0,30	0,17
Foreign Activities	0,00	0,39	0,52	0,18	0,33	0,12
	100,00	100,00	100,00	100,00	100,00	100,00

**Table 10: Average portfolio by age-class, 2004.**

	<30	30-39	40-49	50-59	60-69	>70
Cash	22,37	15,91	19,36	16,29	22,22	29,00
Deposits	66,41	63,96	58,85	57,96	54,40	56,07
Government bonds	2,27	3,80	4,87	7,39	6,11	7,42
Corporate bonds	1,04	1,80	1,88	2,34	3,09	1,80
Stocks	0,27	1,97	3,43	3,16	3,58	1,62
Managed Investments	4,32	7,12	7,28	8,68	8,83	3,63
Life-Insurances	1,25	3,64	2,42	2,16	1,08	0,27
Pension funds	2,07	1,60	1,62	1,28	0,51	0,11
Foreign Activities	0,00	0,20	0,28	0,73	0,17	0,08
	100,00	100,00	100,00	100,00	100,00	100,00

With no exception, the average shares invested in each asset category vary across the age-classes according with the risk-attitude changes suggested by the life-cycle theory. More specifically, the shares invested in the safest assets (i.e. cash and deposits) are particularly high for both very young and very old households: the former having not yet accumulated wealth enough to afford a more diversified portfolio, the latter preferring less risky and more liquid assets to finance their retirement

consumption. In addition, as households grow older the weights of government bonds tend to increase constantly, proving that older generally prefer fairly safe rather than risky assets.

Conversely, the path followed by corporate bonds across the age-classes is humped-shaped: their shares are smaller in both young and older household portfolios and higher in those of middle-aged. Note that the highest average investment in corporate bonds is reached in 1998, during the peak of the privatization process in Italy, and that in the same year, probably for the same reason, corporate bond shares are quite large also in older household portfolios. The age-effect is even more evident when even riskier financial activities are considered, namely stocks and foreign assets. The latter in fact appear in the financial portfolios of middle-aged household only. Similarly, the shares invested in stocks are almost negligible in younger household portfolios, peak instead in those of late-middle-age households, and shrink once again when the households reach the retirement age. The sole exception occurs in 2000, when the highest share invested in stocks does not belong to middle-aged rather to households aged 30 or less. The exceptional boom experienced by the Italian stock market in those years may have fostered the investments in these kinds of assets both at a general level and specifically for very young households.

Especially in the last years, managed investments seem to be the investment preferred by any age-class. They in fact provide a good compromise for the younger households and their typical trade-off between a higher risk-tolerance and a lower level of available wealth. On the other hand, the high diversification that they offer makes them quite appealing also to middle-aged households. Overall their shares gradually decrease only with the retirement age and in three out of five waves (i.e. 1990, 2000 and 2004) their average shares reduce substantially only in the very last age-class.

Life insurances and pension funds are particular forms of managed investments. Their specific precautionary motive however affects substantially their distribution across the different age-classes: their weights are in fact larger for young and middle-aged households and lower for older ones, who receive from rather than pay out contributions to these instruments. Besides, the predominance of life insurances on pension funds is generally maintained: with the sole exception of households aged 30 or less in 2004 life insurance shares can be from 2 to 5 times those of pension funds,

although the gap between the two forms of precautionary savings has significantly reduced in the last years.

In sum, the data provide evidence in favour of the life-cycle theory over the whole past decade. Risky assets are in fact preferred by middle-aged investors while older households tend to disinvest risky financial instruments, abandon specifically focussed managed investments, such as life insurances and pension funds, and turn to less risky assets, such as government bonds and liquidity. Thus, despite the several changes occurred in the last decade (e.g. the reduced profitability of both government bonds and deposits or the big fluctuations of the Italian stock market), the financial choices of Italian households are consistent with the life-cycle theory, proving the very important effect of age on the household financial portfolios.

Our results are not directly comparable with Guiso and Jappelli (2001) since, when analysing the age-effect on portfolio, they pool 1989-95 data and focus on risky assets sorted according to their classification. Overall, however, our conclusion is fully consistent with what observed by Guiso and Jappelli (2001), i.e. “*Over the life cycle the unconditional share of risky assets has a hump-shaped profile*”.

#### **4.2.3 The average portfolio by age and Net Wealth**

The last step of our study aims to take into account one of the aspects that, besides age, most significantly affect household portfolios: its overall economic situation, here measured by means of the Net Wealth (NW).

Tables 11 and 12 report the average household portfolios by age-class and NW quartile, for the 1995 and the 2004 wave respectively.<sup>9</sup> As expected, the net wealth plays a focal role in household portfolio choices. The average financial portfolio of households below the first NW quartile has quite low degrees of diversification and riskiness. In 1995 all age-classes held on average more than 80% of their financial wealth in pure liquidity, i.e. cash and deposits. The remaining 20% was invested mainly in government bonds and, to a lesser extent, in managed investments and precautionary savings. The same holds for 2004, with the sole difference that managed investments (around 3-4% depending on the age-class) tend to prevail on government bonds (2-3%). Riskier activities remain on average completely outside these portfolios. Most likely,

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<sup>9</sup> The intermediate waves have also been examined and generally lead to very similar conclusions. Missing tables are available upon request.

the financial choices of households in the first NW quartile are mainly shaped by the financial constraints they face, which force them towards very liquid financial activities.

**Table 11: Average portfolio by NW quartile and age-class, 1995.**

Quartile	Assets	<30	30-39	40-49	50-59	60-69	>70
Below 1st	Cash	28,19	35,84	35,26	41,60	47,23	47,37
	Deposits	61,21	50,43	49,53	48,04	41,24	46,89
	Government bonds	5,29	5,02	5,73	3,94	8,01	5,03
	Corporate bonds	0,00	0,29	0,00	0,17	0,00	0,00
	Stocks	0,00	0,07	0,20	0,85	0,37	0,00
	Managed Investments	1,96	1,53	2,00	2,21	0,72	0,61
	Life-Insurances	2,68	5,59	4,90	2,55	1,79	0,10
	Pension funds	0,67	1,23	2,38	0,63	0,64	0,00
	Foreign Activities	0,00	0,00	0,00	0,00	0,00	0,00
Between 1 <sup>st</sup> and 2 <sup>nd</sup>	Cash	18,86	14,81	19,67	24,77	32,38	36,51
	Deposits	44,02	54,31	52,62	52,79	50,07	45,32
	Government bonds	18,51	17,82	16,86	14,72	13,65	15,35
	Corporate bonds	3,58	0,60	0,15	1,36	1,27	0,78
	Stocks	0,36	1,13	0,13	0,14	0,16	0,69
	Managed Investments	8,55	4,82	2,50	1,66	1,07	1,19
	Life-Insurances	2,80	5,11	6,77	4,10	1,33	0,15
	Pension funds	3,32	1,31	1,31	0,47	0,07	0,02
	Foreign Activities	0,00	0,08	0,00	0,00	0,00	0,00
Between 2 <sup>nd</sup> and 3 <sup>rd</sup>	Cash	10,17	10,14	11,55	12,25	14,27	18,42
	Deposits	67,80	55,81	52,75	57,45	56,51	59,19
	Government bonds	9,99	19,74	20,67	19,57	24,07	18,92
	Corporate bonds	0,13	0,84	1,12	0,65	0,47	0,18
	Stocks	0,67	1,07	1,06	1,88	0,30	0,70
	Managed Investments	4,81	5,93	6,21	3,16	2,70	1,38
	Life-Insurances	4,53	4,62	5,05	3,47	1,02	0,59
	Pension funds	1,89	1,85	1,54	1,40	0,65	0,41
	Foreign Activities	0,00	0,00	0,06	0,17	0,01	0,22
Above 3 <sup>rd</sup>	Cash	2,85	6,35	5,01	5,48	7,63	7,13
	Deposits	57,77	49,33	47,84	50,12	43,54	49,56
	Government bonds	20,45	21,97	27,38	27,92	35,65	34,97
	Corporate bonds	0,00	1,06	1,05	1,13	1,65	1,36
	Stocks	1,03	2,15	1,79	2,82	1,45	1,38
	Managed Investments	10,42	12,61	9,75	7,76	7,48	3,73
	Life-Insurances	5,27	4,11	4,82	3,55	1,98	1,61
	Pension funds	2,20	2,29	1,81	1,07	0,41	0,17
	Foreign Activities	0,00	0,13	0,55	0,15	0,21	0,09

Data Source: HA-SHIW.

**Table 12:** Average portfolio by Net Wealth quartile and age-class, 2004.

Quartile	Assets	<30	30-39	40-49	50-59	60-69	>70
Below 1st	Cash	29,32	25,82	35,48	35,06	45,34	38,65
	Deposits	59,40	61,40	55,52	55,31	47,49	56,18
	Government bonds	3,07	1,82	1,76	2,80	1,99	3,07
	Corporate bonds	0,00	1,18	0,29	0,03	1,16	0,14
	Stocks	0,00	1,39	0,64	0,24	0,54	1,17
	Managed Investments	3,94	4,32	4,09	3,29	2,38	0,70
	Life-Insurances	0,87	3,05	1,43	2,34	0,76	0,04
	Pension funds	3,39	0,99	0,80	0,84	0,34	0,06
	Foreign Activities	0,00	0,03	0,00	0,09	0,00	0,00
Between 1 <sup>st</sup> and 2 <sup>nd</sup>	Cash	16,60	9,75	18,17	20,74	26,71	35,30
	Deposits	73,26	75,42	63,64	61,85	55,68	54,10
	Government bonds	0,63	2,89	3,81	7,45	4,89	7,10
	Corporate bonds	2,40	1,20	1,80	0,67	2,83	0,60
	Stocks	0,12	1,24	1,26	0,50	1,29	0,97
	Managed Investments	4,23	5,22	6,02	5,52	7,08	1,76
	Life-Insurances	1,84	2,07	3,30	1,51	1,13	0,09
	Pension funds	0,92	2,18	1,60	1,50	0,18	0,04
	Foreign Activities	0,00	0,02	0,40	0,25	0,22	0,04
Between 2 <sup>nd</sup> and 3 <sup>rd</sup>	Cash	21,89	9,48	15,77	12,70	15,82	24,38
	Deposits	72,17	63,48	61,50	64,89	60,45	59,04
	Government bonds	0,26	6,92	7,06	6,78	6,93	8,30
	Corporate bonds	0,52	1,54	1,96	2,43	2,73	2,11
	Stocks	1,28	1,50	2,75	2,52	4,18	0,71
	Managed Investments	2,97	11,03	6,05	6,86	7,64	4,71
	Life-Insurances	0,09	3,53	2,34	2,24	1,15	0,44
	Pension funds	0,82	1,95	2,17	1,48	0,94	0,23
	Foreign Activities	0,00	0,58	0,39	0,10	0,17	0,09
Above 3 <sup>rd</sup>	Cash	13,17	13,27	7,80	6,80	10,13	12,12
	Deposits	72,50	54,41	56,12	53,82	56,00	58,83
	Government bonds	1,94	4,80	6,37	11,13	9,10	11,78
	Corporate bonds	0,09	4,59	2,98	4,24	4,44	4,90
	Stocks	0,00	3,50	8,75	4,89	5,60	3,44
	Managed Investments	7,98	10,63	12,70	14,36	12,91	7,75
	Life-Insurances	3,08	6,60	2,97	2,42	1,00	0,83
	Pension funds	1,23	1,76	1,87	1,16	0,63	0,09
	Foreign Activities	0,00	0,45	0,44	1,19	0,19	0,27

Data Source: HA-SHIW.

Turning to intermediate NW households, i.e. those falling between the first and the third quartiles, both the average degree of diversification and riskiness progressively increase. In both waves reported the aggregate share of cash and deposits reduces of around 10 percentage points. Conversely, both government and corporate

bonds become more relevant: note however that while in 1995 government bonds were also the 18-20% of the total financial wealth, in 2004 they merely reach 6-8%.

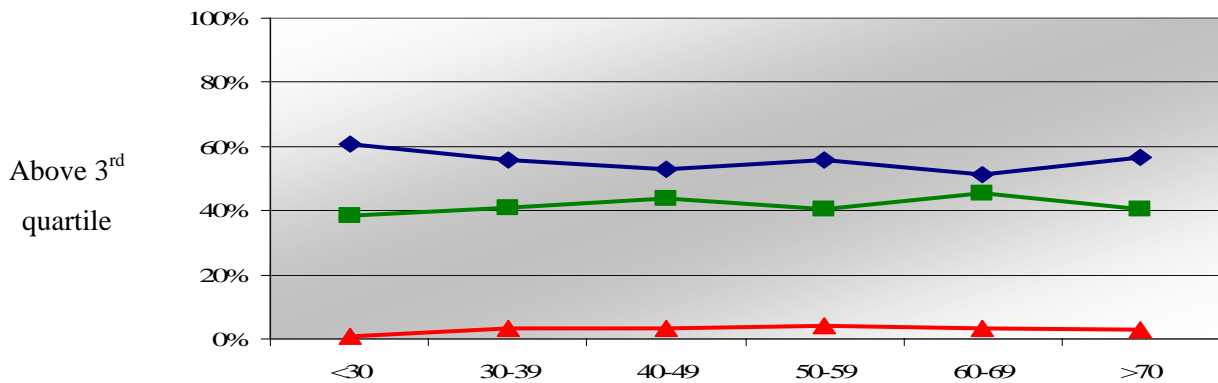
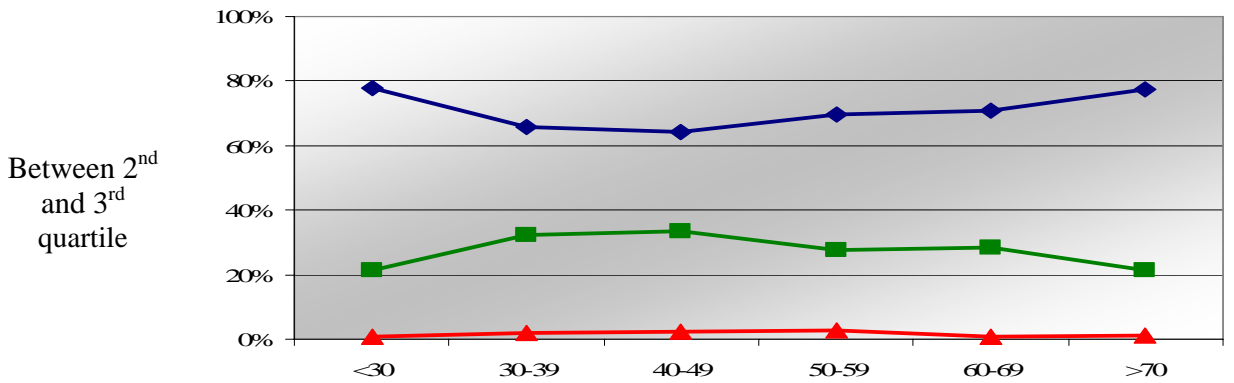
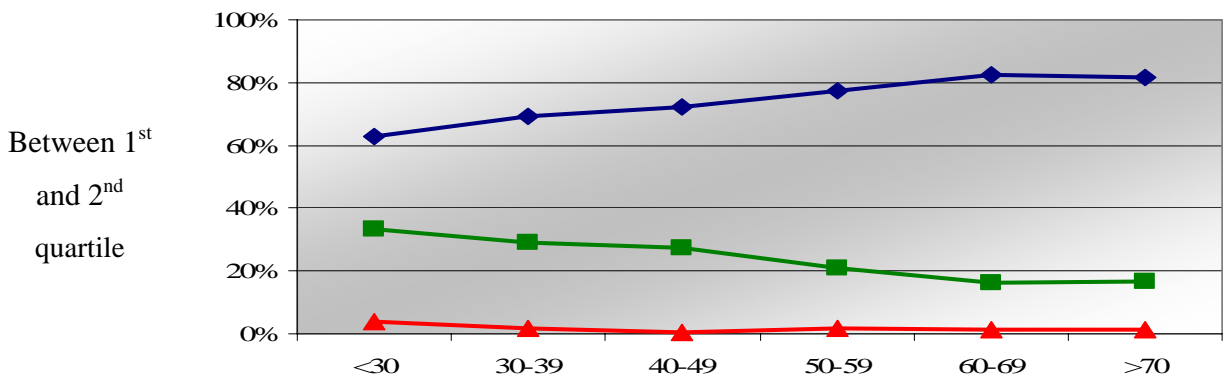
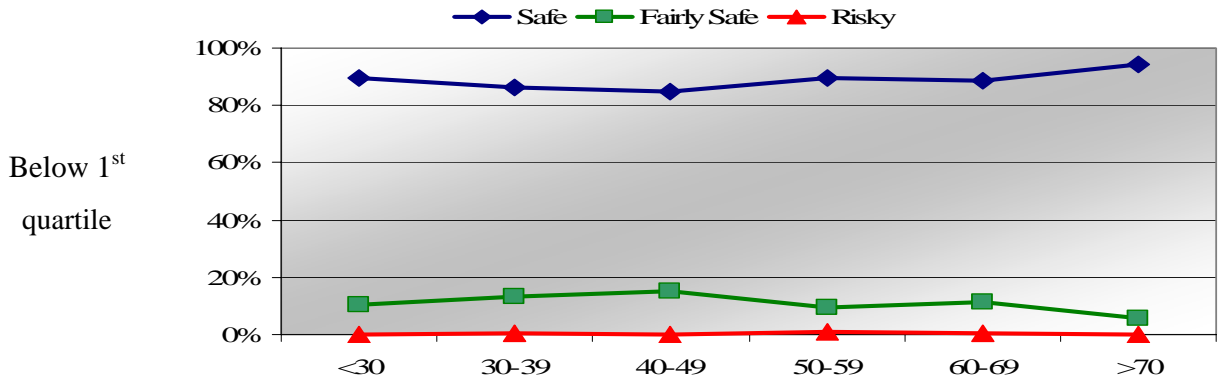
The incidence of managed investments also increases in the intermediate household portfolios, reaching for younger households peaks of 8% in 1995 and of 11% in 2004. Besides, the weight of the precautionary savings increases too: in both waves in fact, the aggregate share of life insurances and pension funds increases of a couple of percentage points with respect to the first quartile. Nevertheless, two important differences can be noted between the 1995 and the 2004: first, the gap between the average shares of life-insurances and pension funds has generally reduced; second, the aggregate share of these two forms of complementary social security has overall reduced (from around 6-7% in 1995 to no more than 3-4% in 2004).

The highest degree of diversification and riskiness is finally reached by the portfolios of households above the third quartile. Financial resources are in this case drained from totally safe activities, i.e. cash and deposits, and directed instead towards riskier activities, such as stocks, whose shares for the first time go beyond the 2%. Yet, managed investments are those that generally increase the most moving upward across NW, reaching for richer households also 10-14% of the total financial wealth. Finally, note that in the upper quartile, the relative weights of life insurances and pension funds turn back to be unbalanced: across the whole decade richer households seem thus to prefer life-insurances to pension funds.

Guiso and Jappelli (2001) also examined the wealth-effect on portfolio. However, they sort households into wealth (financial plus non-financial activities) rather than net wealth quartiles. In contrast to the present paper, on one hand they include into the portfolio also non-financial assets, on the other they focus on the effect of wealth only. Hence, a straight comparison between results is not really feasible. Yet, the evidence found is qualitatively consistent: financial allocation is affected by the level of wealth and, in particular, the wealthier the household, the riskier and more diversified the portfolio.

The “horizontal” reading of the data highlights how, despite the observed discrepancies due to different economic conditions, age can still have a relevant effect on the allocation of household financial wealth (see Charts 9 and 10).

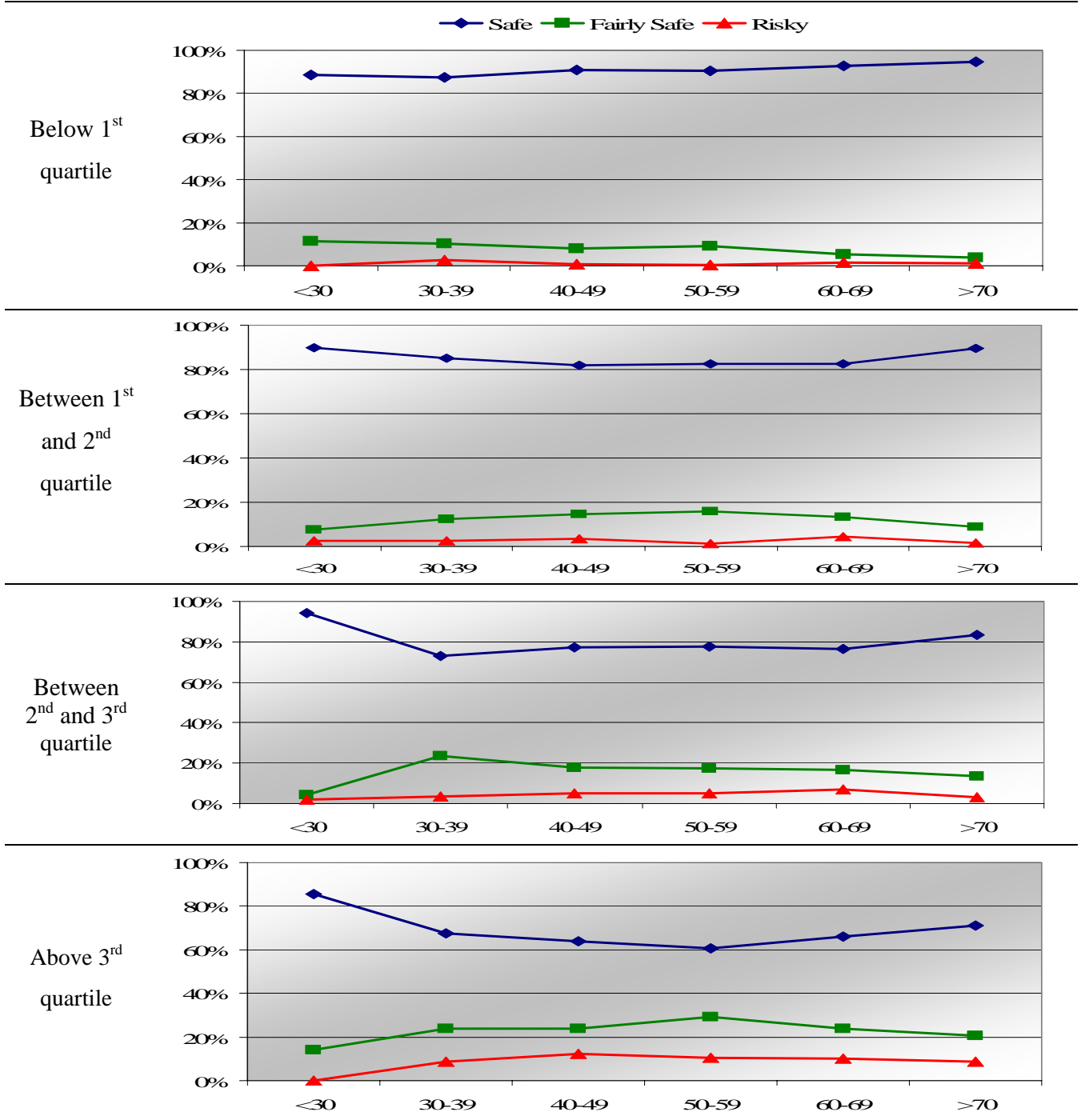
**Chart 9: Asset shares grouped by riskiness, by NW quartile and age-class, 1995.**



Source: own elaborations on HA-SHIW.



**Chart 10: Asset shares grouped by riskiness, by NW quartile and age-class, 2004.**



Source: own elaborations on HA-SHIW.

In both waves and regardless for the NW quartile, the aggregate share of the cash and deposits (safe assets) undergoes a decline during the middle-age, when resources are generally drained from safer assets to finance riskier and more rewarded investments. As from the retirement age-class (60-69) however the weights of safe

assets progressively increase. Consistently, the aggregate shares of riskier activities, such as corporate bonds, managed investments, stocks and foreign activities display a humped-shaped pattern. On the other hand, the average shares held in government bonds gradually increases along with the age-class, substantiating the stronger preference of these assets by older rather than younger households.

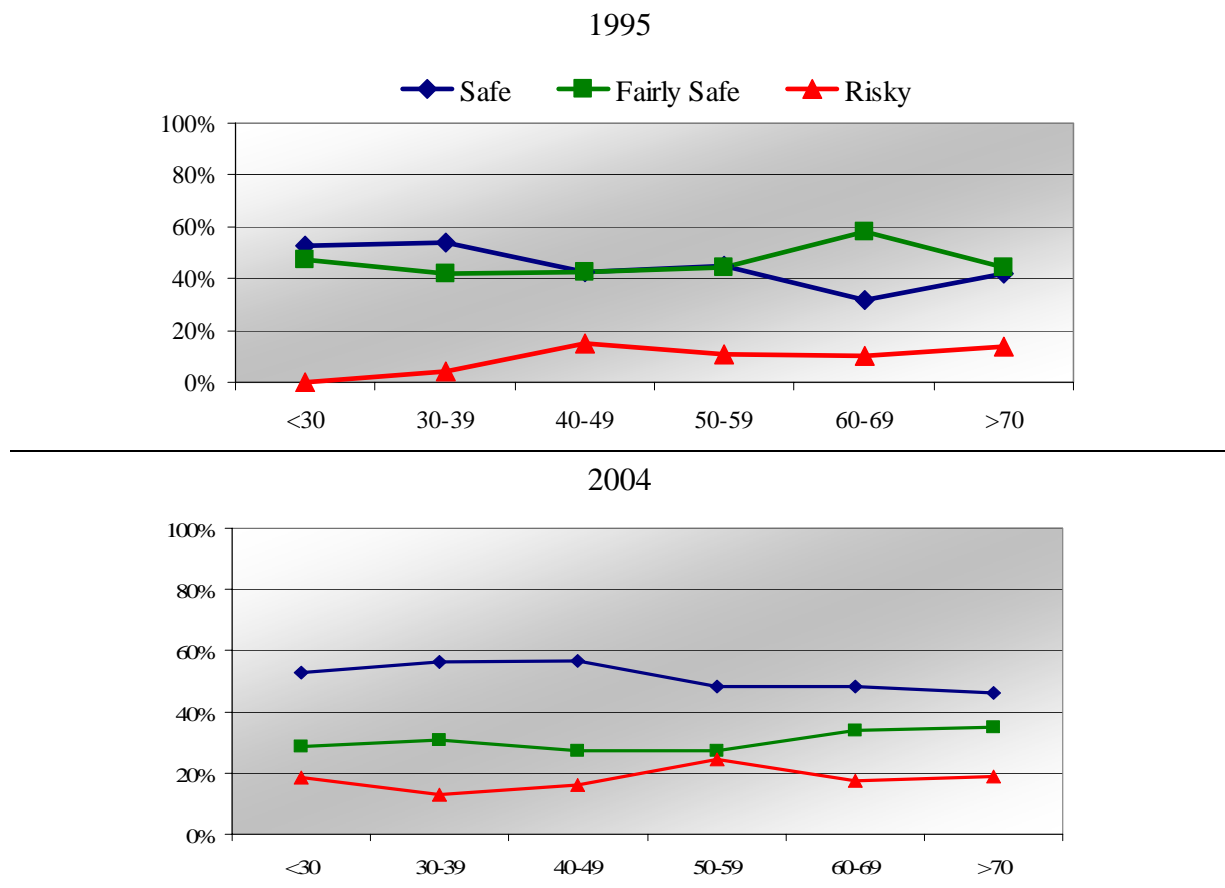
A separate situation arises instead for the top 5% richer households (see Table 13 and Chart 11). Their average portfolio does not reflect the predictions of life-cycle theory. As the household grows older cash, deposits and government bonds reduce rather than increase. Furthermore, corporate bond share behaves irregularly: in 1995 they literally boost in the portfolios of households aged 70 or more, and in 2004 they first drop between the first and second age-class and then progressively increase along with age. In addition, the shares of managed investments and stocks remain quite high during the whole life-cycle and do not significantly shrink with the retirement age.

**Table 13:** Top 5% richer households: average portfolio of by age-class in 1995 and 2004.

1995	<30	30-39	40-49	50-59	60-69	>70
Cash	1,11	3,87	5,64	3,68	1,80	2,34
Deposits	51,76	50,21	37,13	41,23	29,72	39,85
Government bonds	24,75	20,67	21,66	27,55	40,48	31,41
Corporate bonds	0,00	0,34	7,61	2,18	1,90	7,44
Stocks	0,00	3,65	6,90	7,45	8,18	5,32
Managed Investments	11,92	14,03	11,23	12,12	14,51	12,33
Life-Insurances	10,45	6,83	7,66	3,77	2,81	0,38
Pension funds	0,00	0,40	1,90	1,10	0,35	0,03
Foreign Activities	0,00	0,00	0,28	0,93	0,25	0,90
2004	<30	30-39	40-49	50-59	60-69	>70
Cash	3,00	1,93	3,67	3,55	6,84	2,45
Deposits	49,79	54,21	53,07	44,55	41,49	43,72
Government bonds	23,89	8,74	8,42	6,61	8,72	17,39
Corporate bonds	17,18	1,82	5,82	5,99	6,06	9,62
Stocks	1,38	11,19	10,04	14,45	11,19	9,05
Managed Investments	1,87	11,42	14,53	16,75	23,31	16,93
Life-Insurances	0,20	9,67	2,09	2,49	1,87	0,10
Pension funds	2,68	1,02	2,25	1,42	0,16	0,51
Foreign Activities	0,00	0,00	0,10	4,19	0,36	0,22

Data Source: HA-SHIW.

**Chart 11: Top 5% households: asset shares grouped by riskiness across age-classes.**



Source: own elaborations on HA-SHIW.

Most likely, for these households the net-wealth effect more than overcomes that of age on financial asset allocation. As highlighted by Table 14 in fact the NW of these households is extremely high: the top 5% household in 1995 (2004) had a NW of almost 950 millions lira (700.000 Euro).

**Table 14: Net wealth quartiles boundaries, by SHIW wave.**

Quartile	1995	1998	2000	2002	2004
	<i>In millions Lira</i>			<i>In thousands Euro</i>	
I	29.9	41.7	50.5	23.0	30.5
II	158.0	181.2	197.2	108.5	138.0
III	335.2	353.1	380.0	215.8	262.8
Top 5%	936.1	1,005.3	1,100.1	590.0	689.1

Data Source: HA-SHIW.

In sum, with the sole exception of top 5% richer households, for which most likely net-wealth affects financial choices more than age, the average allocation of

Italian household portfolios seems to be significantly influenced by age. Furthermore, the evidence suggests a double robustness of this result. On one hand, age-effect on financial asset allocation is maintained even under significantly different economic conditions, as it is observed across all the Net Wealth quartiles examined. On the other, it has endured through time despite the numerous changes occurred on the Italian financial market during the last decade, since the influence of age on the average portfolio is revealed by all the waves considered.

## **5. Conclusions**

Previous analyses show that Italian population is undergoing one of the most pronounced ageing in the world after Japan (projections for 2050 are of 75 retired every 100 working people). Based on this, in the present paper we have analyzed the impact of population ageing on the average portfolio of Italian households. In line with Guiso and Jappelli (2001) we take data from five waves of the Bank of Italy SHIW, but we depart from them in three extents: (i) a subsequent period of time is considered; (ii) a different risk-classification of financial assets is proposed; and (iii) the analysis is refined by separating households into age-classes and Net Wealth quartiles at a time, thereby testing the robustness of age-effect on financial choices under different economic conditions. Our analysis shows that several changes occurred over the period 1995-2004 in the average portfolio allocation: government bond share reduced while corporate bonds have generally increased, especially since 1998. Most likely, the reduction of Italian government bonds yields on one hand and the privatization process on the other might be at the basis of these portfolio adjustments. Besides, while the incidence of stocks and managed investments have in large part oscillated according to the major market fluctuations of the last decade, life-insurances and pension funds have recorded constant but opposite trends: the former have shrunk in favour of the latter, thereby reducing but not cancelling the gap between the two forms of complementary social security.

Examining the average portfolio by age-classes it turned out that the average shares invested in each asset category tend to be consistent with the risk-attitude changes suggested by the life-cycle theory. Middle-aged households hold riskier portfolios, while older ones tend to disinvest risky financial instruments and turn to safer assets, such as government bonds and liquidity. Thus, the financial choices of

Italian households remained significantly affected by age despite the numerous changes occurred between 1995 and 2004. If compared with Guiso and Jappelli (2001), our results are qualitatively consistent with theirs, although a few differences in the average allocations emerge as for shares invested in cash which are remarkably lower than in our study (up to 10 percentage points) and for life-insurance shares which are generally higher. In connection with this point, it should be stressed that the period considered in our study allows to analyse the role of pension funds, which were introduced by the Dini Reform in 1995 but enforced only a couple of years later. In fact, we observe that the average share of pension funds shows a particular increase around 2000. Nevertheless, the launch of this form of complementary social security does not seem to have worked particularly well in Italy: after the initial increase, the pension fund share has reduced to the same level recorded in the year of their introduction. Furthermore, although during the decade the gap between life insurances and pension funds has progressively thinned, the former are still somehow preferred with respect to the latter.

Finally, the average portfolio was further examined dividing the Italian households by both age-classes and NW quartiles, in order to take into account how the overall economic conditions of the household influence its financial choices. With the sole exception of extremely rich households (i.e. top 5% richer ones), the age-effect persists even under significantly different conditions. We thus conclude that the age-effect on financial choices is robust to both economic conditions and to the market changes occurred during the decade under analysis.

The results obtained in this paper highlight the challenges that Italian financial markets will have to face in the years to come. In particular, a progressive but substantial shift from risky assets towards safer ones is likely to take place, which in turn will entail consequences for the functioning of the financial market on one hand and, on the other, for the welfare of a progressively older population.

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**Appendix - Asset risk categories: differences between this study and Guiso-Jappelli (2001) .**

In analysing the Italian households’ portfolio over the period 1985-1998, Guiso and Jappelli (2001) group financial assets according to their risk-profile. In particular, they distinguish: (i) “clearly safe” financial assets, including currency, transaction accounts and certificates of deposit; (ii) “fairly safe” financial assets, gathering Treasury bills and the life insurances; and (iii) “risky” assets, including stocks, long-term government bonds, corporate bonds, defined contribution pension plans, mutual funds and other forms of managed investments.

Here, a different period is considered and a different sorting is proposed. In Table A.1 we recall the six major categories attained by joining together assets sharing similar credit and market risks (see Section 4.1), whereby cells are shaded so as to indicate the three different risk-profiles: light grey denotes “totally safe” assets, more intense grey “fairly safe” assets and dark grey “risky” assets.

**Table A.1:** Financial assets groups, by credit and market risk.

<i>Market</i> \ <i>Credit</i>	-	<i>Interest Rate</i>	<i>Mixed</i>	<i>Price</i>	<i>Exchange Rate</i>
<b>Lower</b>	Cash and Deposits	Government bonds	Managed Investments		
<b>Higher</b>		Corporate bonds		Stocks	
-					Foreign Assets

Cash and Deposits are considered “totally safe” because both are subject to a relatively lower level of credit risk and are free of market risk. Government bonds and Managed Investments are instead gathered into the “fairly safe” group, given that the credit risk is still relatively lower but they also are subjected to some market risk. The three remaining categories are grouped together and referred to as “risky”, as they are either subjected to a relatively higher credit risk (corporate bonds and stocks) or exposed to exchange rate risk (foreign assets).



**Table A.2:** Risk-categories of financial assets: comparison.

	<i>Guiso and Jappelli (2001)</i>	<i>Common</i>	<i>This Study</i>
<b>Clearly safe</b>		Currency Transaction accounts Certificate of deposits	
<b>Fairly safe</b>		Short-term government bonds Life-insurances	Long-term government bonds Investment funds and non-life insurances Integrative pensions
<b>Risky</b>	Long-term government bonds Investment funds and non-life insurances Integrative pensions	Stocks Corporate bonds Foreign assets	

Two are the main differences between the alternative classifications. First, long-term government bonds are here moved to the fairly safe category since their risk-profile has become safer in the decade under investigation due to fiscal stabilization policies. Second, while Guiso and Jappelli (2001) isolate life-insurances into the fairly safe category and gather all the remaining managed investments in the risky one, here all forms of managed investments are classified as fairly safe. Aggregate data split life-insurances from other kinds of insurances, including pension funds, only starting from 2003: a separate treatment for two forms of complementary social security is thus unfeasible over the whole decade examined. Furthermore, the choice in Guiso and Jappelli (2001) stemmed from the observation that “*until 1995 [...] most funds where in stocks*”. However, they admit that “*the availability of a large number of money market and balanced funds in the late ‘90s tends to blur our definition*”. Hence, considering also the high diversification that typically characterises managed investments, they are here classified as fairly safe.