Università degli Studi di Modena e Reggio Emilia
Dipartimento di Economia Politica

Materiali di discussione

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Marriage and Other Risky Assets: A Portfolio Approach

Graziella Bertocchi*
Marianna Brunetti**
Costanza Torricelli***

December 2008

*University of Modena and Reggio Emilia, CEPR, CHILD and IZA, Viale Berengario 51, 41100
Modena, Italy, Phone +39 59 2056856, Fax +39 59 2056947,
graziella.bertocchi@unimore.it

**University of Rome Tor Vergata and CEFIN, Via Columbia 2, 00133 Roma, Italy, Phone +39 6
72595913, marianna.brunetti@uniroma2.it

***University of Modena and Reggio Emilia and CEFIN, Viale Berengario 51, 41100 Modena, Italy,
Phone +39 59 2056733, Fax +39 59 2056947, costanza.torricelli@unimore.it

Marriage and Other Risky Assets: A Portfolio Approach

Graziella Bertocchi[*]
Marianna Brunetti[**]
Costanza Torricelli[***]

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ABSTRACT

We study the joint impact of gender and marital status on financial decisions. First, we test the hypothesis that marriage represents - in a portfolio framework - a sort of safe asset, and that this effect is stronger for women. Controlling for a number of observable characteristics, we show that single women have a lower propensity to invest in risky assets than married females and males. Second, we show that the differential behavior of single women evolves over time, reflecting the increasing incidence of divorce and the expansion of female labor market participation. In particular, towards the end of our sample period, we observe a reduction in the gap between women with different family status, which can be attributed to the gradual erosion of the perception of marriage as a sort of safe asset. Our results therefore suggest that the differential behavior of single vs. married women is explained more accurately by the evolution of gender roles in society, rather than by exogenous and time invariant risk attitudes. Our empirical investigation is based on a dataset drawn from the 1989-2006 Bank of Italy Survey of Household Income and Wealth.

JEL classification codes: G11, E21, J12, J21.

Keywords: Portfolio choice, marriage, divorce, labor force participation.

[*]University of Modena and Reggio Emilia, CEPR, CHILD and IZA, Viale Berengario 51, 41100 Modena, Italy, Phone +39 59 2056856, Fax +39 59 2056947, graziella.bertocchi@unimore.it
[**]University of Rome Tor Vergata and CEFIN, Via Columbia 2, 00133 Roma, Italy, Phone +39 6 72595913, marianna.brunetti@uniroma2.it
[***]University of Modena and Reggio Emilia and CEFIN, Viale Berengario 51, 41100 Modena, Italy, Phone +39 59 2056733, Fax +39 59 2056947, costanza.torricelli@unimore.it

1. Introduction

The goal of this paper is to investigate the joint impact of gender and marital status on portfolio decisions, as well as its evolution. The relevance of gender and marital status has been established for a variety of related issues, ranging from wealth accumulation and savings behavior to political choices and preferences toward the size of government. Nevertheless, only a few studies consider marital status and gender jointly when analyzing their implications for portfolio decisions. In the present paper, we focus on these implications, and on how they are shaped by the transformation of family structure and gender roles in society.

In more detail, we test the hypothesis that marriage represents - in a broad portfolio framework - a sort of safe asset, and that this effect is stronger for women. Moreover, we test the hypothesis of marriage as a safe asset along a time dimension, taking into account the increased incidence of divorce, with the consequent breakdown of the traditional family, and the parallel expansion of female labor force participation, which has redefined the role of women in society.

The idea of marriage as a source of financial security, particularly for women, is based on the fact that women tend to have a more insecure societal role. Compare the asset position of a single woman with that of a married one. To simplify, focus on two component of wealths: financial assets and the present value of labor earnings. By getting married, a woman becomes entitled to at least a portion of the gender gap in labor earnings. When no risks are associated with the married status and with the size of the gender earnings gap, or when such risks are uncorrelated with the risks on financial returns, marriage can indeed be viewed as a sort of safe asset that decreases the overall variance of a married woman's asset position. As an implication, the propensity to invest in risky financial assets should be lower for a single woman.

However, it has to be reckoned that, in recent times, the perception of being married as a risk free status must have changed in the face of the observed evolution of family structure, with the progressive dissolution of the traditional family and the increasing diffusion of divorce. Likewise, the increasing participation of women to the labor market must have caused a parallel gradual reduction in the gender earnings gap. Therefore, both developments must have eroded women's view of marriage as a valuable and safe asset. As an implication, the marital status gap in the propensity to invest in risky assets should be on the decline.

On the basis of the above considerations, we test the hypothesis that the portfolio decisions of single women should reflect a lower propensity to invest in risky assets, if compared to married females and males. Moreover, we argue that the differential behavior of single women does not simply reflect a higher, exogenously-given, and invariant degree of risk aversion, but is largely driven by the evolution of gender and family roles in society. Consequently, the marital status differential in portfolio choices should not be time invariant, but should react to indicators such as the increased diffusion of divorce and the expanded participation of women into the labor market.

Our empirical analysis tests the above predictions on a dataset drawn from the 1989-2006 Bank of Italy Survey of Household Income and Wealth. Italy provides an ideal setting for our investigation. On the one hand, the last decade has witnessed significant developments, along both the gender and the marital status dimensions, in the financial behavior of Italian households: the number of females in charge of financial decisions has registered a substantial increase, while figures for marital status have displayed a parallel increase in single decision makers. On the other hand, the Italian society has experienced a particularly fast evolution, with a pronounced transformation of its family structure: while divorce became legal in Italy only in 1974, divorce figures have boosted in the last ten years. At the same time, the post-war period has witnessed an almost uninterrupted expansion of

women's participation in the labor market, which has profoundly altered the role of women in the Italian society. As a consequence, our sample can fully capture the evolving role of gender and marital status for financial choices.

To test our hypotheses, we estimate a probit model for the decision to participate, i.e., for the probability of investing in risky assets. For this model, we first run a set of pooled regressions including standard explanatory variables such as household income and wealth, family size, number of children, and age and education of the household head. To these regressors, we add a set of dummies jointly capturing the household head gender and marital status, to gauge how the participation decision of single women differs from that of the other groups, i.e., married women, single men and married men. The reason we focus on single women is two-fold: first, the decisions of married individuals, of either gender, may be influenced by the spouse and, second, we expect women to be more directly affected than men by the evolution of family and society. Regression results show that the gender-marital status dummies all exert a positive impact, which indicates that single women are the least inclined to participate in risky investment. Married women come next, while married men score at the top. This holds true even controlling for time and for the divorce rate and the female lavor force participation rate at the regional level, where the latter two variables should capture the potential impact of background factors related to the structure of family and society. These preliminary results confirm, as from previous studies, that female and single investors are less inclined to take risk. However, they do not reveal a link between the specific behavior of single women, the structure of the Italian family and that of the Italian labor market. Therefore, to further investigate whether the impact of gender and marital status for portfolio decisions has evolved throughout the period under consideration in connection with the evolution of family and society, we reestimate the above regressions including a set of interactions between the time dummies and the married female dummy. Regression results show that indeed the differential behavior of married vs. single women has significantly evolved over time, displaying an inverted-U shape: the difference tends to be lower at the beginning of the sample, peaks during the intermediate years, and declines afterwards. We argue that these trends, rather than by exogenous variations in risk attitudes, are largely driven by the evolution of gender roles in society. In other words, the increased diffusion of divorce on the one hand, and the expanded participation of women into the labor market on the other, are among the determinants of the facts we document. We base our claim on the following further evidence: when, in the augmented regressions including time interactions, we also control for the divorce rate and the female labor force participation rate, the significance of the time interactions vanishes, suggesting that the evolution of family and society can explain a significant portion of the differential behavior of single women.

In particular, the increase in labor participation is likely to have acted, at the initial stage, in the direction of widening the participation of married women to financial decision making. It is the lagged, cumulative impact of this force that presumably can explain why, at some point at the beginning of the 1990s, the difference between married and single women starts to emerge: before that time, the vast majority of female financial decision makers were in fact single. As women, and particularly married women, had by that time entered the labor market, economic independence began to translate into financial independence. Later on, after the 1998-2000 peak is reached, another, new and opposing force comes into the picture. Gradually, the previous decade had in fact shaken the foundations of the Italian family, with an increase in the number of divorces which must have gradually eroded the perception of marriage as a safe asset, thus reducing the differential risk behavior of women with different family status.

The evolving role of society and family structure for financial decisions which emerges from our pooled regressions is confirmed by a set of repeated cross sections, one for each wave. The repeated cross section analysis allows, for the most recent waves of 2004 and 2006, further investigation

regarding the role of risk aversion. In principle, it could be the case that exogenous differences in risk aversion can fully explain the gender and marital status gap in making financial decisions. However, cross section regressions which include a measure of risk aversion confirm the explanatory power of our gender-status dummies. Further robustness checks include variants of the pooled regressions involving the Guiso and Jappelli (2002) alternative definition of risky assets, wealth quantiles, a finer classification of marital status, an employed household heads subsample, and a dummy controlling for the employment status of the household head.

The rest of the paper is organized as follows. Section 2 introduces the related literature. Section 3 presents background information on the evolution of marriage, divorce and female labor force participation in Italy. Section 4 describes our dataset. Section 5 presents our empirical findings and Section 6 tests robustness. Section 7 concludes and suggests directions for future research. The Data Appendix collects information about the data we employed. The tables discussed in Section 6 are relegated to the Robustness Appendix.

2. Related literature

Our results can be related to three separate streams of the literature. First, within the financial literature, the link between gender, risk aversion and a variety of economic decisions has been assessed in various contexts. Examples are Hinz et al. (1997), Schubert et al. (1999), Croson and Gneezy (2004), Dohmen et al. (2005), Fellner and Maciejovsky (2007), and Lusardi and Mitchell (2008). This mainly empirical research generally reveals for women a higher degree of risk aversion and a lower propensity to undertake risky projects. Besides, a parallel strand has focused on the impact of marital status on financial choices (see, among others, Waite and Gallagher, 2000 and Lupton and Smith, 2003). Nevertheless, only a few studies consider marital status and gender jointly when analysing their implications on financial decisions. Noteworthy exceptions are the following. Sundén and Surette (1998) point to the interaction between gender and marital status in determining the allocation of assets in retirement savings plans, with single women exhibiting a more cautious attitude. Jianakoplos and Bernasek (1998) find that single women exhibit relatively more risk aversion in financial decision making than single men. Barber and Odean (2001) report that the differences in portfolio turnover and net return performance are larger between the accounts of single men and single women than between the accounts of married men and married women. Schmidt and Sevak (2006) document large differences in American households' wealth accumulation by gender and marital status. Zissimopoulos et al. (2008) show that the large differences in wealth accumulation between single and married women cannot be explained by observable characteristics. While the above studies focus on the United States, for the Italian case Guiso and Jappelli (2002) gauge the relevance of gender and marital status, as separate dimensions, for portfolio decisions, while for Denmark Christiansen et al. (2006) show that single females have a lower propensity to invest in risky assets.

Second, the macroeconomic literature has studied the importance of the process that determines changes in marital status for macroeconomic aggregates. For the U.S. experience of the past twenty-five years, Cubeddu and Rios-Rull (2003) study the quantitative importance of the process that determines changes in family composition for consumption and savings decisions and find that marital events affect men and women differently. Over this period the share of single households has grown dramatically, introducing marital risk among the determinants of saving. Rendall (2007) endogenizes the rise in divorce rates and the fall in marriage rates, by assuming that these demographic changes are driven by the shrinking gender wage gap and the relaxation of divorce laws. Love (2007) studies the impact of changes in marital status on household savings and

portfolio decisions and shows that divorce affects men and women differently, with men reallocating toward stocks and women shifting their portfolios toward safer assets.

Third, a political-economic literature has studied the discrepancy between men's and women's preferences for political parties and government programs, again focusing on the role of societal modernization and the associated increase in marital instability: the diffusion of divorce and the decline in marriage have been found responsible for the observed changes in the political gender gap and the size of government, by shifting women's choices toward more leftist political parties and a higher level of welfare expenditures. Edlund and Pande (2002) trace the evolution of the political gender gap during the last three decades in the United States to the decline in marriage and show a strong correlation between state divorce prevalence and the political gender gap, with higher divorce prevalence reducing support for the Democrats among men but not women.[1] In their analysis of government size in United States during the 1870-1940 period, Lott and Kenny (1999) show that women suffrage has a positive effect on government size and conjecture that the gender gap can be attributed to women's financial insecurity and societal role, so that government size is in turn affected by family breakdown and increasing divorce rates.

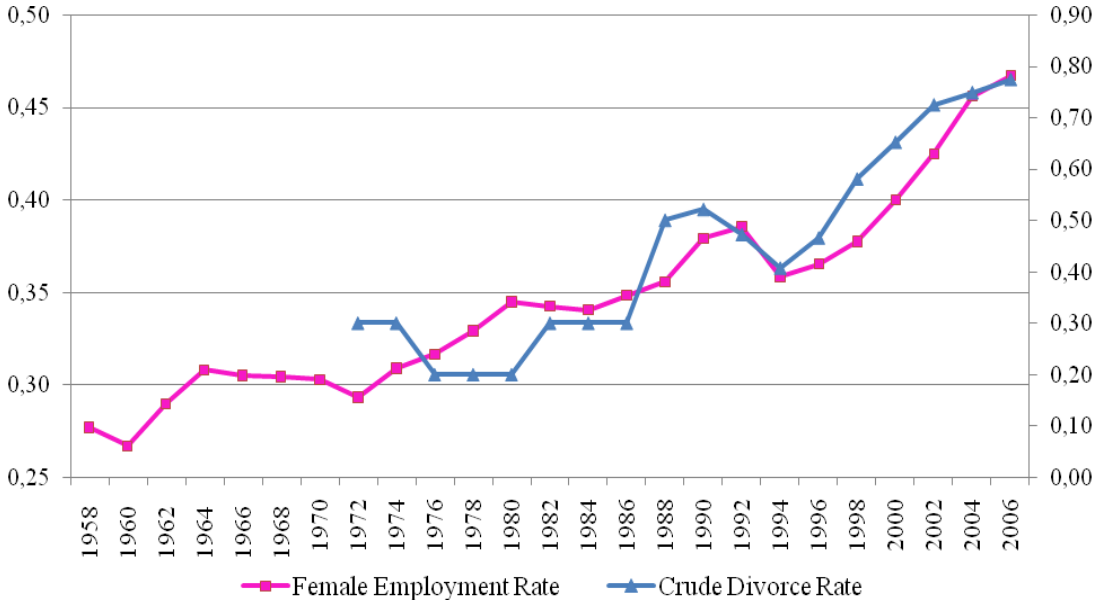
3. Background

3.1. Marriage, divorce and female labor supply in Italy

The decline of marriage and the increasing diffusion of divorce represent a common tendency among industrialized countries. Within this broader picture, the Italian society has experienced a particularly fast evolution, with a pronounced transformation of its family structure. The standard reference for the history of divorce is Phillips (1988), who studies the way divorce laws have been transformed since the nineteenth century. Up to the 1960s, divorce was not even legal and Italy was still exhibiting a traditional family structure, if compared to other Western countries. The introduction of divorce legislation in 1970 was followed by a failed attempt to abolish it, with the support of the Roman Catholic church. In 1974 opponents of divorce called a referendum to outlaw it, but they did not achieve their goal. The original form of the legislation was very conservative, and allowed couples to obtain a divorce only five years after their legal separation. Still, this legal innovation confirmed an emerging trend toward societal modernization and an ongoing evolution of traditional gender roles. During the first few years after its introduction, divorce figures reflected the existing backlog, and decreased immediately afterwards, as reflected in Chart 1. The beginning of the 1980s marked a moderate increase of the crude divorce rate. In 1987 the legislation went through an important reform which reduced the waiting period to three years, thus provoking a sudden jump of the divorce rate. However, this increase was subsequently absorbed with a temporary decline, even though the divorce rate never returns to its pre-reform level. In fact, since 1995, a quick increase has occurred. Chart 2 reports the number of marriages, divorces and separation during our sample period, i.e., between 1989 and 2006, and shows that divorces and separations have increased by 46.7% and 93.1%, respectively, while marriages have recorded an opposite trend (-23%). As a result, over our sample, separated/divorced households have more than doubled. Even discounting the impact of the 1987 reform, the data clearly show a structural break, which can be dated at around the beginning of the 1990s and marks the end of the Italian traditionally stable family structure. These trends document a significant increase in marital instability, with a consequent increase in the risks of marriage breakdown.

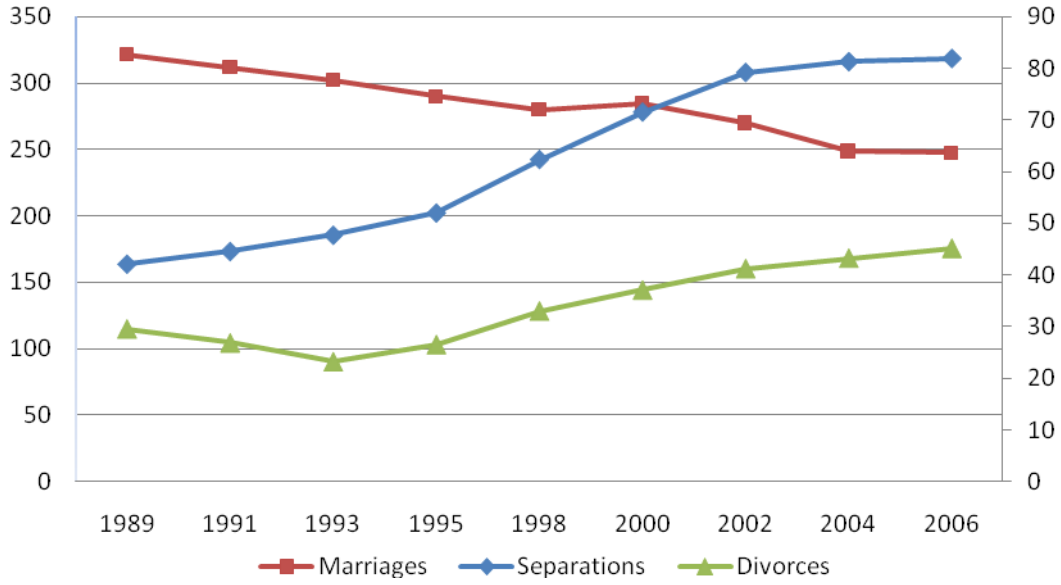
[1] Friedberg (1998) also explores the impact of unilateral divorce laws on divorce rates, while Stevenson and Wolfers (2007) study the influence of divorce reforms on family formation decisions.

Chart 1. Crude divorce and female employment rates in Italy, 1958-2006



Note: Authors' elaborations based on data from Istat and OECD. The female employment rate (left scale) is computed as female employment over female working age population (OECD), while the crude divorce rate (right scale) is defined as the number of divorces every 1000 individuals (OECD data up to 1990, Istat thereafter).

Chart 2. Marriages, separations and divorces in Italy, 1989–2006



Note: The data source is Istat, "Marriage, Separations and Divorces in Italy", various editions. Marriages on the left scale, Separations and Divorces on the right scale.

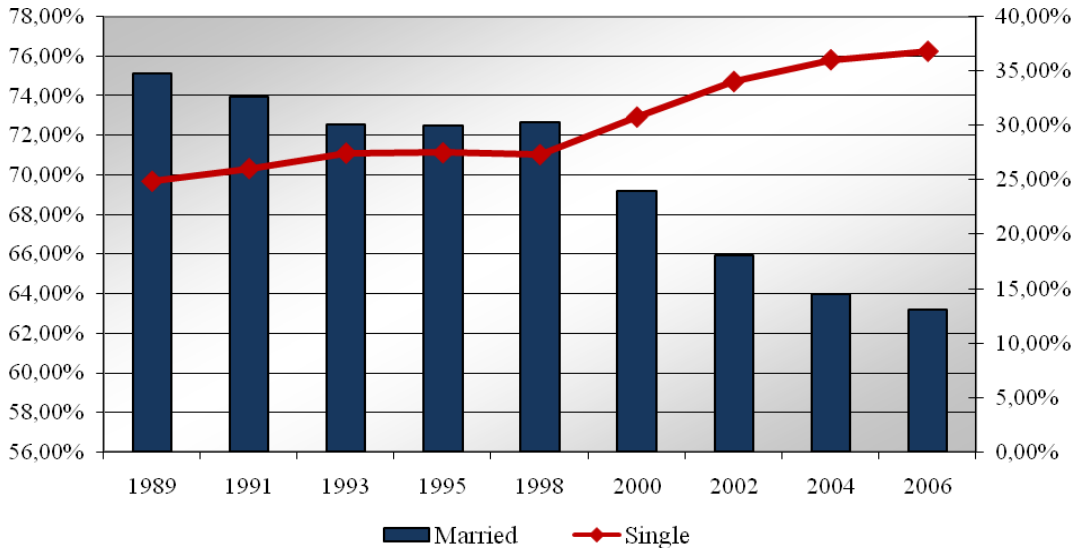
The role of women in society is directly influenced by women's position in the labor market. As illustrated in Chart 1, the Italian female employment rate is 0.28 in 1950. This is a bit higher than in the other Mediterranean countries, and below the US, the UK and France (see, e.g., Fernandez and Fogli, 2007, for an international comparison of female labor force participation rates). During the next decades, however, the Italian figures witness a steady increase, with the female employment rate reaching 0.47 in 2006. With reference to our sample period, however, we actually observe a decline in the early 1990s, which can be linked to the 1992 recession.

To sum up, Italy combines, on the one hand, the legacy of a very traditional view of gender roles within the family and, on the other, a very fast evolution away from this legacy. This suggests that marriage may indeed has worked, at least at the beginning of the sample, as a safe asset, but also that this role might have become less pronounced over time as marriage becomes riskier. Moreover, the post-war period witnesses an almost uninterrupted expansion of women's role in the labor market. These developments may well be interconnected with the evolution of family structure previously outlined. Indeed Chart 1 shows a positive correlation between divorce and female employment, a pattern which is common to most developed countries.[2]

3.2. Financial markets and household portfolios in Italy

In the 1989-2006 period covered by our investigation, household portfolios have witnessed a significant evolution in Italy, as described by Guiso and Jappelli (2002) and Brunetti and Torricelli (2007). Participation in the equity market has increased sharply, with a parallel decline of transaction accounts and government bonds. These trends can be explained by a number of factors, including the evolution of the yield differential between stock and bonds, the development of mutual funds, subsequent waves of privatization, reforms of the social security system, the lifting of capital controls in 1989, and the pre-2000 stock market boom. More specifically, the last decade has also experienced significant developments along the gender and the marital status dimensions: women as financial decision makers have registered a substantial increase, while figures for marital status display a parallel increase of the number of single decision makers. Chart 3 reports from each SHIW wave available between 1989 and 2006 the weighted percentage of households by marital status of the the household financial head. By household financial head we mean the most responsible for the financial and economic choices of the household (see also the following Data section and footnote 5). Chart 4 reports the weighted percentage of households by marital status and gender.

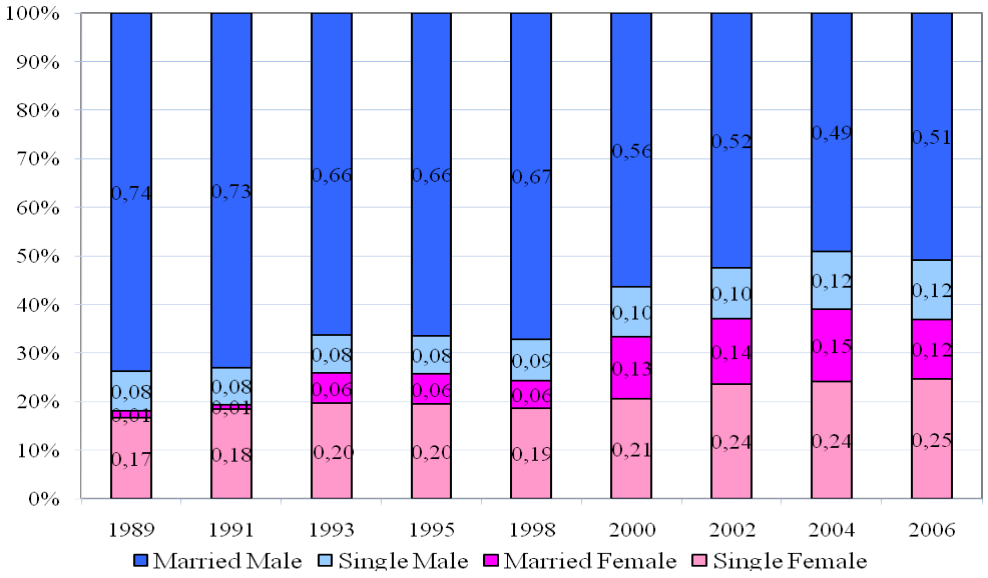
Chart 3. Household financial heads by marital status, 1989-2006



Note: The chart reports the weighted percentage of households by marital status of the household financial head as from each SHIW wave available between 1989 and 2006. Columns refer to the left scale, while the line refers to the right scale.

[2] A notable exception is represented by the US, which have experienced a reversal since the mid-1980s, with a continuing rise in female labor force participation and a fall of divorce rates. See Neeman et al. (2008) for a discussion and a survey of the related literature.

Chart 4. Household financial heads by gender and marital status, 1989-2006

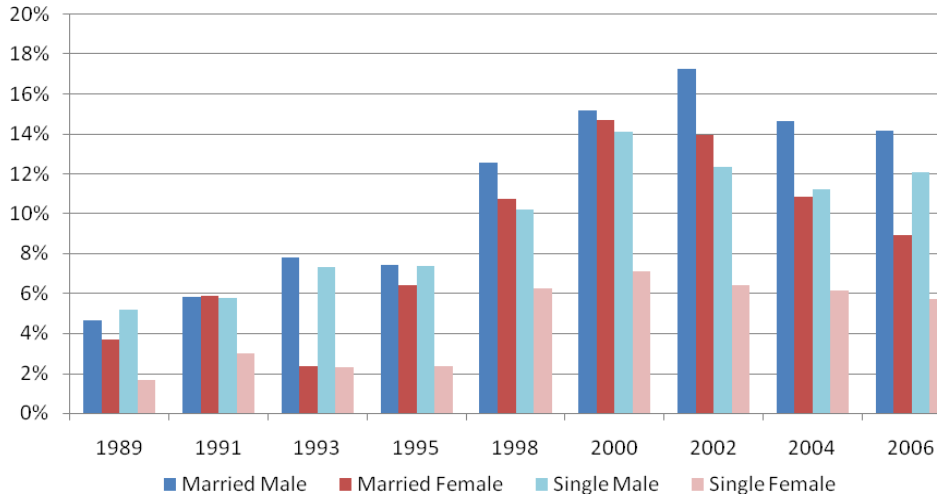


Note: The chart reports the weighted percentage of households by gender and marital status of the household financial head as from each SHIW wave available between 1989 and 2006.

The data clearly show that during the period under consideration the structure of the average Italian family has sensibly changed. Along the marital status dimension, figures display a decline of the proportion of married individuals that take financial decisions and a parallel increase in singles, i.e., never married, separated/divorced and widowed (from 25% in 1989 to 37% in 2006). As for gender, women who are household financial head register a substantial increase (from 18% in 1989 to 37% in 2006). In more detail, in 1989 married males represent 74% of the household heads, single males 8%, married women 1%, and single women 17%. By 2006, the share of married males has declined to 51%, the share of single males has increased to 12%, the share of married females has reached 12%, with a spectacular jump especially around 2000, and the share of single females has reached 25%. Therefore, by the end of the sample, we observe a dramatic change in the composition of household financial heads along the gender and status dimension.

Turning to the financial decisions of the household financial head that enter our sample, a comparison of the rate of participation in risky financial assets in 1989 and 2006 is illustrated in Chart 5. Overall, participation has sensibly increased between 1989 and 2006. It peaks between 2000 and 2002, reflecting the stock market boom and it subsequent crash. Moreover, the chart reveals a considerable gender and marital status gap in participation. Males generally participate more than females, both in 1989 and 2006, independently of their marital status. Likewise, independently of gender, married individuals participate more than non married in all waves except 1989. For males, the gap between married and single is moderate in the initial waves and intensifies in recent ones with the increase in participation. For females, the difference between married and single is marked from the beginning of the sample, and tends to decline in the last two waves.

Chart 5. Participation rate by gender and marital status, 1989-2006

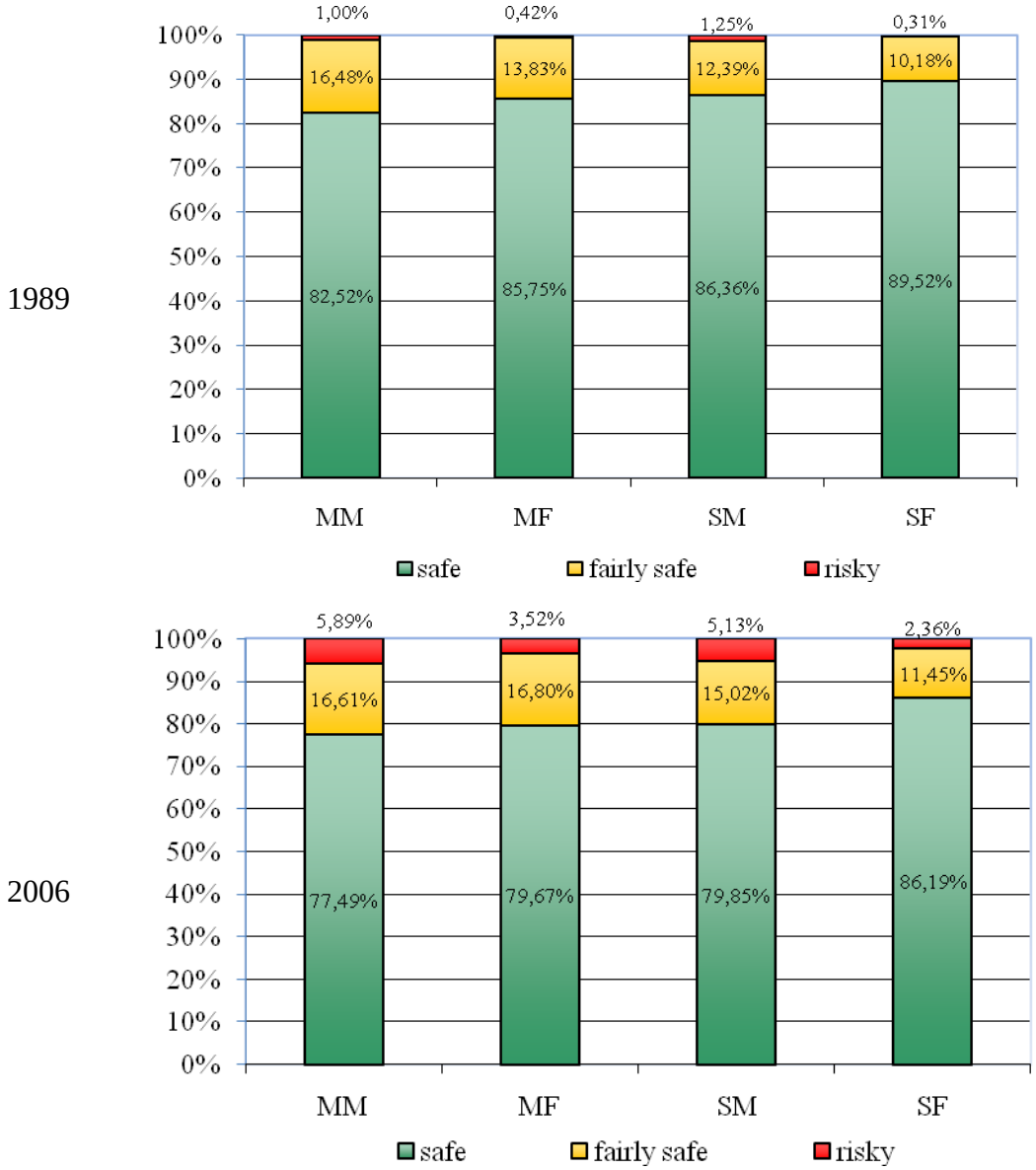


Note: Percentage of households participating to the risky market by gender and marital status of the household financial head from each SHIW wave available between 1989 and 2006.

To sum up, the stylized facts we document confirm the relevance of both gender and marital status for portfolio choices, and that these factors have had an evolving impact during the period under consideration. In other words, the transformation of the family structure, driven by the increase in divorce and the decline in marriage, and the increasing participation of women into the labor market, manifest themselves through their consequences for risk taking and hence for financial decisions.

Additional information can be drawn from the composition of the average financial portfolio. A comparison between 1989 and 2006, illustrated in Chart 6, shows a general increase in the proportion of risky assets, which is explained by several factors including the reduced profitability of government bonds, the development of mutual funds and the lifting of capital controls. Chart 6 also confirms that gender and family status both matter. In 1989 the average financial portfolio of females has a definitely safer profile than that of males, with almost 90% in totally safe assets and a negligible amount is in risky assets. Married individuals tend to hold riskier portfolios, within the general tendency to increased diversification over our sample period. When we combine the gender and marital status dimensions, we find that, both in 1989 and in 2006, single women show the highest proportion in safe assets and the lowest in risky assets. Again, these data do suggest that marriage may work as a safe asset, particularly for women.

Chart 6. Average financial portfolio of households by gender and marital status, 1989 and 2006



Note: Authors' elaborations on data from the 1989 and 2006 SHIW.

4. Data

Our dataset spans over the period 1989 – 2006 and draws from the Historical Archive of the Bank of Italy Survey of Household Income and Wealth (HA-SHIW) [3], which specifically provides over that period nine waves (1989, 1991, 1993, 1995, 1998, 2000, 2002, 2004, 2006) and from Istat (the Italian National Institute of Statistics). The Bank of Italy Survey provides plenty of demographic information on each household [4] and in this paper we have used the following: number of household components, number of children, as well as age, level of education, gender and marital status of the head of the household.[5] As for education, the survey provides a categorical variable assuming

[3] For more details on the survey HA-SHIW see http://www.bancaditalia.it/statistiche/indcamp/bilfait.
[4] The SHIW basic sample unit is the household defined as "a group of people, linked by ties of blood, marriage or other relationships, sharing the same dwelling and pooling all or part of their incomes".
[5] The HA-SHIW reports three different definitions for the head of the household, namely: (i) the "most responsible for the financial and economic choices of the household" ("declared" definition); (ii) the person who earns the highest

values between 1 and 6, whereby 1 is no education title and 6 is post-graduate title. As far as marital status is concerned, the survey distinguishes among married, never married, separated/divorced, and widowed. Since in what follows we are specifically interested in the implicit value of the asset marriage, we distinguish between married and non married heads of household, where the latter group includes those households whose head is never married, separated, divorced, or widowed.

Beside these demographic information, the SHIW also provides economic information about the households, including the income, the net wealth (real and financial assets net of financial liabilities) as well as the amounts (expressed in Italian lira until 2000 and in Euro thereafter) invested in a variety of financial assets. Given the focus of this paper on risky assets as opposed to non-risky ones, we have first grouped financial assets into different classes according to their risk profiles.[6] Our risk classification is based on the joint consideration of 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., the Italian government) and by banks, securities firms and cooperatives. The "Higher" level is 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 are not distinguished by resident and 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, concerning the foreign activities only, interest-rate risk, associated with all bonds securities and 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 1). Six main financial-asset groups beside cash are thus identified [7]:

1. Deposits: lower credit risk and no market risk
2. Goverment 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

In order to single out risky assets, we make a further aggregation in three risk-categories (as highlighted in Table 1): "clearly safe", "fairly safe" and "risky", with two main differences with respect to the Guiso and Jappelli (2002) risk classification. First, we move long-term government bonds from the risky to the fairly safe category. As argued by Guiso and Jappelli (2002), "*the large and increasing government debt leads investors to attach a non-zero probability of default even on short-term government bonds. But this has changed after the dramatic fiscal stabilization started in 1996*". Based on this reduced risk-profile, the shift from risky to fairly safe assets appears reasonable. Second, while Guiso and Jappelli (2002) place life-insurances into the fairly safe

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income ("income" definition); and (iii) the reference point to establish the relationships among all members of the household ("Eurostat" definition). Here, the first definition is preferred. Nevertheless, the three definitions exibit a high degree of overlapping: the "declared" corresponds to the "income" ("Eurostat") head of the household in 80% (96%) of the cases.

[6] Since we focus on financial portfolios, we do not consider investment decisions in housing. However, housing enters our definition of wealth.

[7] The asset classification we present is sufficient to the scope of the present analysis, although from a financial viewpoint it is not precise and neglects some sources of risk (e.g., liquidity). A more rigorous classification would not be anyhow possible because of lack of information. As an example, the risk profiles of government bonds may be high or low depending, among other things, on their time-to-maturity. The survey however does 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.

category and gather all the remaining managed investments in the risky one, here all forms of managed investments are classified as fairly safe. The choice of Guiso and Jappelli (2002) 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, also considering the high diversification that typically characterises managed investments, we classify them as fairly safe. Since this paper focuses on the household decision to make a risky investment, we believe it is very important not to define the class "Risky" so as it contains only assets that are surely so. The presence into this class of assets which might not have a definitely risky feature would blur the participation decision and essentially overestimate it. Besides, the most recent waves of the SHIW, 2004 and 2006, provide information on household heads' risk aversion, based on a subjective question in which the respondent is asked to indicate the characteristics of the preferred financial investments among the following: 1 = high risk of losing part or all the capital, high returns; 2 = reasonable risk losing part of the capital, good returns; 3 = low risk of losing part of the capital, reasonable returns; 4 = no risk for the capital, low returns. This question, which allows to rank individuals with respect to their risk aversion without having to assume a particular functional form for the utility function, is asked only to people with financial assets other than bank or postal current account (that is, about 35,05% of the sample) in 2004 and to all household financial heads in 2006.

Table 1. Financial assets classification, by credit and market risk

Market / ***Credit***	***-***	***Interest Rate***	***Mixed***	***Price***	***Exchange Rate***
Lower	Current accounts Savings deposits Certificate of deposits Postal deposits Cooperative loans	Postal bonds Government Bonds (BOT CCT, BTP, CTZ and Others)	Repo Investment funds Personal assets managements Life insurances Non-life insurances Health-insurances Pension funds		
Higher		Bonds		Stocks Shares in LLC Partnerships' 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.

Some of the variables we use in our analysis are not provided by the HA-SHIW and hence are calculated based on data provided by Istat [8]: this is the case for the crude divorce rate, the crude separation rate, the female labor force participation (FLFP) rate and the female employment rate, all computed at the regional level. The crude divorce (separation) rate is the number of divorces (separations) in each region every 1000 region residents. The female labor force participation rate is obtained as the sum of women occupied and those actively looking for an occupation divided by the total female working-age population resident in the region, while the female employment rate is obtained as the ratio between the women occupied over the total female working-age (15-64) population in the region of residence.

Table 2 provides the summary statistics for the variables included into the dataset, both on the whole pooled sample and in each single wave considered.

[8] Data are downloadable from http://www.istat.it/lavoro/.

Table 2. Descriptive Statistics

Variable	Pooled	1989	1991	1993	1995	1998	2000	2002	2004	2006
PARTICIPATION	0.09	0.04	0.05	0.06	0.06	0.11	0.13	0.14	0.12	0.11
	(0.29)	*(0.20)*	*(0.22)*	*(0.24)*	*(0.24)*	*(0.31)*	*(0.34)*	*(0.34)*	*(0.32)*	*(0.32)*
$PARTICIPATION_{GJ}$	0.37	0.24	0.31	0.35	0.47	0.43	0.42	0.38	0.39	0.35
	(0.48)	*(0.43)*	*(0.46)*	*(0.48)*	*(0.50)*	*(0.50)*	*(0.49)*	*(0.49)*	*(0.49)*	*(0.48)*
AGE	54.70	53.28	54.15	53.72	54.50	55.10	55.14	55.33	55.18	55.52
	(16.07)	*(15.70)*	*(15.89)*	*(15.90)*	*(15.80)*	*(15.99)*	*(16.29)*	*(16.27)*	*(16.33)*	*(16.21)*
INCOME	22.45	21.75	21.88	21.43	21.06	22.31	22.46	22.80	23.42	24.46
	(18.90)	*(15.38)*	*(14.41)*	*(16.41)*	*(17.02)*	*(19.87)*	*(18.16)*	*(17.99)*	*(21.68)*	*(24.91)*
WEALTH	154.84	95.94	112.63	131.40	251.29	140.31	146.66	150.89	164.82	191.32
	(298.23)	*(147.64)*	*(157.13)*	*(232.39)*	*(404.41)*	*(298.30)*	*(283.64)*	*(264.59)*	*(281.96)*	*(430.54)*
FAMILY SIZE	2.73	2.90	2.89	2.90	2.84	2.72	2.69	2.65	2.54	2.54
	(1.33)	*(1.37)*	*(1.36)*	*(1.36)*	*(1.34)*	*(1.30)*	*(1.30)*	*(1.30)*	*(1.29)*	*(1.28)*
CHILDREN	0.93	1.04	1.05	1.05	1.01	0.93	0.89	0.87	0.79	0.80
	(1.03)	*(1.08)*	*(1.07)*	*(1.08)*	*(1.05)*	*(1.02)*	*(1.01)*	*(1.00)*	*(0.97)*	*(0.98)*
EDU = 1	0.08	0.09	0.09	0.11	0.10	0.09	0.09	0.08	0.06	0.05
	(0.28)	*(0.29)*	*(0.29)*	*(0.31)*	*(0.30)*	*(0.29)*	*(0.29)*	*(0.27)*	*(0.25)*	*(0.23)*
EDU = 2	0.31	0.38	0.38	0.35	0.33	0.29	0.29	0.29	0.26	0.24
	(0.46)	*(0.49)*	*(0.48)*	*(0.48)*	*(0.47)*	*(0.46)*	*(0.45)*	*(0.45)*	*(0.44)*	*(0.43)*
EDU = 3	0.27	0.24	0.24	0.28	0.27	0.27	0.26	0.27	0.28	0.29
	(0.44)	*(0.43)*	*(0.43)*	*(0.45)*	*(0.44)*	*(0.44)*	*(0.44)*	*(0.45)*	*(0.45)*	*(0.45)*
EDU = 4	0.26	0.21	0.22	0.21	0.23	0.27	0.27	0.29	0.30	0.32
	(0.44)	*(0.41)*	*(0.42)*	*(0.41)*	*(0.42)*	*(0.45)*	*(0.45)*	*(0.45)*	*(0.46)*	*(0.47)*
EDU = 5	0.07	0.07	0.06	0.06	0.06	0.08	0.08	0.08	0.09	0.09
	(0.26)	*(0.25)*	*(0.24)*	*(0.24)*	*(0.24)*	*(0.26)*	*(0.27)*	*(0.27)*	*(0.28)*	*(0.29)*
EDU = 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.05)	*(0.06)*	*(0.04)*	*(0.05)*	*(0.05)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.06)*	*(0.07)*
FEMALE	0.30	0.20	0.21	0.28	0.28	0.28	0.35	0.37	0.39	0.35
	(0.46)	*(0.40)*	*(0.41)*	*(0.45)*	*(0.45)*	*(0.45)*	*(0.48)*	*(0.48)*	*(0.49)*	*(0.48)*
SINGLE	0.33	0.27	0.29	0.30	0.30	0.33	0.33	0.35	0.38	0.37
	(0.47)	*(0.45)*	*(0.45)*	*(0.46)*	*(0.46)*	*(0.47)*	*(0.47)*	*(0.48)*	*(0.49)*	*(0.48)*
MM	0.59	0.72	0.71	0.64	0.63	0.62	0.54	0.52	0.48	0.52
	(0.49)	*(0.45)*	*(0.46)*	*(0.48)*	*(0.48)*	*(0.48)*	*(0.50)*	*(0.50)*	*(0.50)*	*(0.50)*
MF	0.08	0.01	0.01	0.07	0.07	0.05	0.13	0.13	0.14	0.11
	(0.27)	*(0.11)*	*(0.09)*	*(0.25)*	*(0.25)*	*(0.22)*	*(0.33)*	*(0.34)*	*(0.34)*	*(0.31)*
SM	0.10	0.09	0.08	0.08	0.08	0.10	0.11	0.12	0.13	0.13
	(0.30)	*(0.29)*	*(0.28)*	*(0.28)*	*(0.28)*	*(0.30)*	*(0.31)*	*(0.32)*	*(0.34)*	*(0.33)*
SF	0.22	0.18	0.20	0.21	0.22	0.23	0.23	0.23	0.25	0.24
	(0.42)	*(0.39)*	*(0.40)*	*(0.41)*	*(0.41)*	*(0.42)*	*(0.42)*	*(0.42)*	*(0.43)*	*(0.43)*
DIVORCE	6.16	5.34	4.87	4.23	4.79	5.98	6.70	7.38	7.70	7.80
	(2.54)	*(2.21)*	*(1.89)*	*(1.64)*	*(1.83)*	*(2.20)*	*(2.71)*	*(2.73)*	*(2.71)*	*(1.14)*
SEPARATION	11.30	7.60	8.02	8.58	9.38	11.22	12.87	14.07	14.35	14.23
	(4.43)	*(2.76)*	*(2.84)*	*(3.26)*	*(3.20)*	*(3.29)*	*(4.32)*	*(4.29)*	*(4.00)*	*(3.38)*
FLFP	0.35	0.30	0.31	0.34	0.34	0.35	0.36	0.37	0.39	0.39
	(0.06)	*(0.04)*	*(0.04)*	*(0.05)*	*(0.06)*	*(0.05)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.07)*
FER	0.30	0.25	0.26	0.29	0.28	0.29	0.31	0.32	0.35	0.35
	(0.08)	*(0.06)*	*(0.06)*	*(0.07)*	*(0.07)*	*(0.08)*	*(0.08)*	*(0.08)*	*(0.08)*	*(0.08)*
RISK AVERSION	0.49								0.49	0.49
	(0.50)								*(0.50)*	*(0.50)*
Observations	71625	8274	8188	8089	8135	7147	8001	8011	8012	7768

Notes: PARTICIPATION and $PARTICIPATION_{GJ}$ are dummy variables assuming value 1 if the household holds in its financial portfolio risky activities, according to the definitions adopted in this study and Guiso and Jappelli

(2002), respectively. AGE is the age of the household financial head, INCOME and WEALTH are respectively the total income and net wealth of the households (expressed in € at 1995 values for the pooled sample), FAMILY SIZE is the number of components of the household, CHILDREN is the number of children in the household, EDU is a categorical variable indicating the highest education title achieved, FEMALE, SINGLE, MM, MF, SM, SF are dummy variables assuming value 1 if the household financialhead is respectively female, non married (i.e. never married, separated, divorced or widowed), married male, married female, single male or single female. DIVORCE and SEPARATION are respectively the divorce and the separation rates in the region of residence, FLFP and FER represent the female labor force participation and the female employment rate, RISK AVERSION is a dummy variable with value 1 if the financial decisor is risk-averse. For additional details see data Appendix. All statistics are computed using sampling weights (pesofl2 in the SHIW).

5. Results

To test our hypotheses, we estimate a probit model for the decision to partecipate, i.e., for the probability of investing in risky assets. For this model, we run a set of pooled regressions with robust standard errors clustered at the regional level. In order to provide a baseline against which we can compare subsequent findings, the first specification we select is given by:

$$P_{hkt} = \beta_1 X_{hkt} + \beta_2 MM_{hkt} + \beta_3 MF_{hkt} + \beta_4 SM_{hkt} + \beta_5 \tau_t + \beta_6 D_{kt} + \beta_7 A_{kt} + \varepsilon_{hkt} \quad (1)$$

where P_{hkt} is a binary variable with value 1 if household *h* in region *k* at time *t* holds any risky assets, 0 otherwise. The vector X_{hkt} includes standard explanatory variables, i.e., household income and wealth (linear and quadratic terms), household characteristics (family size and number of children), and variables related to the household head (age, age square and education). The dummy variables MM, MF and SM jointly capture the household financial head gender and marital status and stand, respectively, for married males, married females and single males. In particular, MM is a dummy taking value 1 if for household *h* the household financial head is a married male and 0 otherwise. The dummies MF and SM are analogously defined for married females and single males. This set of dummies is meant to gauge how gender and marital status jointly affect the participation decision, highlighting how the participation decision of single women differs from that of the other groups, i.e., married women, single men and married men. Each regression also includes a set of year dummies τ_t, one for each subsequent available wave, except 1989 which is our reference point. The variable D_{kt} is the divorce rate in region *k* at time *t*, while A_{kt} is the female labor force participation rate in region *k* at time *t* . Finally, ε_{hkt} is the error term.

Table 3 reports the results obtained using the pooled sample including 71.652 observations. In the most parsimonious specification presented in column 1, the propensity to invest in risky assets appears to increase with age, income, wealth, and education, with highly significant marginal effects for all regressors. Therefore, the impact of the standard determinants of participation is confirmed. The regression results also indicate that large households are less likely to invest in risky financial assets, while the number of children has a positive impact, possibly because this characteristic induces a longer time horizon and thus investment choices that are riskier and more rewarding over the long run. The time dummies indicate that the probability of choosing risky investments tends to increase over time, consistently with the observed evolution of capital markets in the sample period. In particular, across the different specifications, the time dummies display a significantly positive impact between 1998 and 2002, i.e., the years that witnessed a sharp increase of participation in the equity market. Turning to the gender-marital status dummies, they all display positive marginal effects, which indicate that single women are the least inclined to participate in risky investment. Married women come next, while married men score at the top. In columns 2, 3,

and 4, we add to the regression the divorce rate and the female labor force participation rate in the region of residence, first individually and then jointly, in order to capture the potential impact of background factors related to the structure of family and society: the effect of both regressors is significantly positive, but their inclusion does not alter the conclusions we reached for the impact of gender and marital status. In particular, the effect of MF is substantially unaltered. The positive impact of these regressors could be explained by their high correlation with the local level of income and financial development. More broadly, however, it also signals the fact that a society where family structure is less conservative and women are more emancipated tends to display a more optimistic attitude and thus a higher risk tolerance.

Table 3. The determinants of the participation decision, 1989-2006

Variable	***1***	***2***	***3***	***4***
AGE	0.0033 ***	0.0032 ***	0.0031 ***	0.0031 ***
AGE^2 /1000	-0.0299 ***	-0.0281 ***	-0.0272 ***	-0.0270 ***
INCOME	0.0027 ***	0.0023 ***	0.0021 ***	0.0021 ***
$INCOME^2$/1000	-0.0053 ***	-0.0045 ***	-0.0040 ***	-0.0039 ***
WEALTH	0.0001 ***	0.0001 ***	0.0001 ***	0.0001 ***
$WEALTH^2$/1000	-0.000005 ***	-0.00001 ***	-0.00001 ***	-0.000005 ***
FAMILY SIZE	-0.0174 ***	-0.0137 ***	-0.0130 ***	-0.0124 ***
CHILDREN	0.0052 **	0.0060 **	0.0066 ***	0.0066 ***
EDU=2	0.0634 ***	0.0505 ***	0.0459 ***	0.0443 ***
EDU=3	0.1112 ***	0.0925 ***	0.0900 ***	0.0869 ***
EDU=4	0.1715 ***	0.1506 ***	0.1489 ***	0.1452 ***
EDU=5	0.2156 ***	0.2008 ***	0.2064 ***	0.2028 ***
EDU=6	0.2189 ***	0.2129 ***	0.2271 ***	0.2238 ***
MM	0.0309 ***	0.0303 ***	0.0293 ***	0.0292 ***
MF	0.0213 ***	0.0195 ***	0.0196 ***	0.0192 ***
SM	0.0246 ***	0.0253 ***	0.0245 ***	0.0247 ***
1991	0.0071	0.0133	0.0033	0.0058
1993	0.0263 *	0.0415 ***	0.0054	0.0127
1995	0.0090	0.0152	-0.0096	-0.0053
1998	0.0797 ***	0.0733 ***	0.0395 ***	0.0427 ***
2000	0.1089 ***	0.0867 ***	0.0518 ***	0.0525 ***
2002	0.0954 ***	0.0643 ***	0.0349 **	0.0335 **
2004	0.0817 ***	0.0501 ***	0.0171	0.0166
2006	0.0637 ***	0.0392 **	0.0044	0.0057
DIVORCE		0.0077 ***		0.0028 ***
FLFP			0.4379 ***	0.3673 ***
Adjusted R square	0.2146	0.2247	0.2322	0.2331
Log	-17187.63	-16966.83	-16801.88	-16782.63
Wald	4498.81	4247.54	4247.12	4262.73

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. significant at 10%; ** significant at 5%; *** significant at 1%.*

In sum, these preliminary results confirm, as from previous studies, that female and single investors are less inclined to take risks. Moreover, they suggest that the structure of the Italian family and that of the Italian labor market do have an impact on financial participation decisions. However, there is no evidence, as of yet, that the impact of the latter factors falls more heavily on women rather than men, or single rather than married individuals. It follows that the explanation of the differential behavior of men vs. women, and married vs. single individuals, and their evolution over time, must be left to other factors. Risk attitudes have been suggested as a potential, exogenous determinant of such patterns.

To further investigate whether the role of gender and marital status for portfolio decisions has evolved throughout the period under consideration, in connection with the evolution of family and society, we reestimate the above regressions including a set of interactions. Our final set of regressions are of the following form:

$$P_{hkt} = \beta_1 X_{hkt} + \beta_2 MM_{hkt} + \beta_3 MF_{hkt} + \beta_4 SM_{hkt} + \beta_5 \tau_t + \beta_6 D_{kt} + \beta_7 A_{kt} + \beta_8 (\tau_t * MF_{hkt}) + \varepsilon_{hkt} \qquad (2)$$

where the interactions between the time and the MF dummies aim at capturing how the behavior of married women has evolved with time, relative to the behavior of single women. Results are reported in Table 4. In column 1 we add the interactions involving time and MF to the basic specification of Table 3, column 1. The significance of the standard determinants of participation is confirmed. However, the new regressors reveal that the differential behavior of married women has significantly evolved over time. In particular, while the interactions involving the years 1998 and 2000 are insignificant, the years immediately before and after are significantly negative, with the absolute value of each marginal effect increasing with the distance from the intermediate years. At the same time, the impact of MF almost doubles, while the other gender-status marginal effects are substantially unaltered. We interpret these results as follows. Consider first the intermediate years 1998 and 2000: since the interaction terms in these two cases are not significant, it follows that for 1998 and 2000 the marginal effect of MF fully captures the difference between married and single women. In other words, this evidence suggests that the difference between the decision of married and single women peaks in the central years of our sample. On the other hand, at the beginning of the sample, i.e., in 1995 and 1993, the interactions display negative marginal effects, which increase in absolute size and significance with the distance from the intermediate years. We can therefore conclude that, at the beginning of our sample, the difference between the decision of single and married women is small, then it tends to increase in 1993 and 1995, until it reaches its peak in 1998 and 2000. Next, from 2002, the absolute value of the negative marginal effect of the interaction increases monotonically until 2006: this means that the difference between married and single women starts to decline. To sum up, the difference between married and single women displays an inverted-U shape: it tends to be lower at the beginning of the sample, peaks during the intermediate years, and declines afterwards.[9]

[9] To be noticed is that when the interactions are included the coefficient of MF becomes larger than that of MM: this is explained by the fact that the latter captures the average behavior over all waves, while the former applies only for those years where the interactions are insignificant.

Table 4. The determinants of the participation decision, 1989-2006: time interactions.

Variable	***1***	***2***	***3***	***4***
AGE	0.0033 ***	0.0032 ***	0.0032 ***	0.0031 ***
AGE^2 /1000	-0.0301 ***	-0.0284 ***	-0.0274 ***	-0.0272 ***
INCOME	0.0027 ***	0.0023 ***	0.0021 ***	0.0021 ***
$INCOME^2$/1000	-0.0053 ***	-0.0045 ***	-0.0040 ***	-0.0039 ***
WEALTH	0.0001 ***	0.0001 ***	0.0001 ***	0.0001 ***
$WEALTH^2$/1000	-0.000005 ***	-0.000005 ***	-0.000005 ***	-0.000005 ***
FAMILY SIZE	-0.0172 ***	-0.0136 ***	-0.0129 ***	-0.0122 ***
CHILDREN	0.0051 *	0.0059 **	0.0065 ***	0.0065 ***
EDU=2	0.0630 ***	0.0502 ***	0.0457 ***	0.0441 ***
EDU=3	0.1108 ***	0.0921 ***	0.0897 ***	0.0866 ***
EDU=4	0.1711 ***	0.1503 ***	0.1486 ***	0.1449 ***
EDU=5	0.2152 ***	0.2006 ***	0.2062 ***	0.2025 ***
EDU=6	0.2191 ***	0.2133 ***	0.2275 ***	0.2242 ***
MM	0.0307 ***	0.0301 ***	0.0291 ***	0.0291 ***
MF	0.0450 ***	0.0412 **	0.0433 **	0.0427 **
SM	0.0244 ***	0.0251 ***	0.0244 ***	0.0245 ***
1991	0.0070	0.0132	0.0032	0.0057
1993	0.0288 *	0.0445 ***	0.0075	0.0150
1995	0.0099	0.0163	-0.0088	-0.0044
1998	0.0781 ***	0.0719 ***	0.0385 ***	0.0416 ***
2000	0.1037 ***	0.0821 ***	0.0482 ***	0.0489 ***
2002	0.0958 ***	0.0648 ***	0.0355 **	0.0341 ***
2004	0.0841 ***	0.0520 ***	0.0187	0.0182
2006	0.0659 ***	0.0408 **	0.0054	0.0067
1991*MF	0.0152	0.0174	0.0161	0.0162
1993*MF	-0.0369 ***	-0.0362 ***	-0.0350 ***	-0.0350 ***
1995*MF	-0.0234 **	-0.0228	-0.0228	-0.0228
1998*MF	0.0035	0.0005	-0.0011	-0.0013
2000*MF	0.0015	0.0034	0.0010	0.0011
2002*MF	-0.0164 **	-0.0150	-0.0163	-0.0162
2004*MF	-0.0220 ***	-0.0196	-0.0205	-0.0202
2006*MF	-0.0228 ***	-0.0201	-0.0190	-0.0189
DIVORCE		0.0077 ***		0.0028 ***
FLFP			0.4368 ***	0.3662 ***
Adjusted R square	0.2153	0.2254	0.2329	0.2337
Log	-17172.72		-16787.426	
Wald	4714.28	4513.16	4621.07	4598.66

*Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. * significant at 10%; ** significant at 5%; *** significant at 1%.*

But what is the explanation for this trend? Is it simply related to exogenous variations in risk attitudes? Or else by the evolution of gender roles in family and society? We believe that the latter explanation can account for at least a portion of the observed trend and we base our claim on the following further evidence. In particular, we argue that the the increased diffusion of divorce on the one hand, and the increased participation of women into the labor market on the other, can be the causes behind it. Therefore, in columns 2, 3, and 4, we add to our regressions the divorce rate and the female labor market participation rate, first individually and then jointly. Strikingly, the significance of the interactions involving time almost vanishes, with the only exception of the year

1993. At the same time the impact of all the other regressors is confirmed, even though the marginal effect of MF is slightly lower and less significant, thus pointing to a reduced difference between the behavior of married and single women.[10] This suggests that indeed the evolution of family and society, through its negative impact on the perception of marriage as a safe asset, explains a significant portion of the differential behavior of single and married women. In particular, the increase in labor participation is likely to have acted, at the initial stage, in the direction of widening the participation of married women to financial decision making. It is the lagged, cumulative impact of this force that presumably can explain why, at some point at the beginning of the 1990s, the difference between married and single women starts to emerge: before that time, the vast majority of female who were household financial heads were in fact single. As women, and particularly married women, had by that time entered the labor market, economic independence began to translate into financial independence. Later on, after the 1998-2000 peak is reached, another, new and opposing force comes into the picture. Gradually, the previous decade had in fact shaken the foundations of the Italian family, with an increase in the number of divorces which must have gradually eroded the perception of marriage as a safe asset, thus reducing the differential risk behavior of women with different marital status.

To sum up, our results show that the financial participation decision of single women, relatively to other groups, far from being time invariant, evolves over time. Moreover, we identify factors that can explain its evolution. These factors are the evolution of the structure of family and society as reflected by decline of marriage as a valuable safe asset.

The evolving role of family and society for financial decisions can further be confirmed through a set of repeated cross sections, one for each wave. These set of regressions is summarized in Table 5. The impact of household characteristics is confirmed, and so are the positive coefficients of MM and SM, while MF displays an unambiguously positive and significant coefficient only in 1998-2002. The coefficients of the divorce rate and the female labor force participation rate retain their positive signs in most of the waves even though, especially for the former, the estimates are less precise than in the pooled case.

The repeated cross section analysis allows, for the most recent waves of 2004 and 2006, further investigation regarding the role of a household head's risk aversion. To evaluate the impact of risk aversion is important, since it could be the case that exogenous differences in risk aversion can fully explain the gender and marital status gap in making financial decisions. Therefore, for 2004 and 2006, we rerun our cross section regressions adding the SHIW risk aversion measure. In both years, a higher risk aversion has a highly significant negative impact on the probability of holding risk assets. Moreover, in 2004 controlling for risk aversion lowers the significance of some standard characteristics such as age squared, income and income squared, and education. These differences, however, nearly disappear in 2006. These findings confirm that controlling for risk aversion allows a better understanding of the determinants of participation. However, turning to the gender-status dummies, we find that their impact is substantially retained: the marginal effect of MM remains highly significant, while its size is reduced in 2004, increased in 2006. The effect of SM is also very robust to the inclusion of risk aversion. The coefficient of MF loses significance in 2004, while remains insignificant in 2006. Overall, for the three dummies, including risk aversion makes the size of the coefficients larger in 2004, smaller in 2006. The impact of divorce and female labor participation is substantially unaltered. To conclude, including risk aversion does not modify the conclusions previously outlined.

[10]As an alternative to the female labor force participation rate, we run our regressions including the female employment rate. We also run regressions where the separation rate replaces the divorce rate. All our previous results hold under both alternative specifications.

Table 5. Summary of cross-section regressions, 1989-2006

	1989	***1991***	***1993***	***1995***	***1998***	***2000***	***2002***	***2004***		***2006***	
AGE	0.001	0.000	0.001	0.002	0.003	0.004	0.004	0.006	0.011	0.006	0.006
	(0.512)	*(0.323)*	*(0.109)*	*(0.010)*	*(0.084)*	*(0.000)*	*(0.006)*	*(0.000)*	*(0.006)*	*(0.000)*	*(0.000)*
AGE^2 /1000	-0.006	0.003	-0.006	-0.016	-0.035	-0.042	-0.034	-0.042	-0.083	-0.054	-0.048
	(0.611)	*(0.439)*	*(0.095)*	*(0.003)*	*(0.058)*	*(0.000)*	*(0.004)*	*(0.000)*	*(0.034)*	*(0.000)*	*(0.000)*
$INCOME_{CURR}$	0.001	0.002	0.001	0.001	0.004	0.004	0.002	0.001	0.002	0.002	0.001
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.012)*	*(0.000)*	*(0.000)*
$INCOME_{CURR}^2$ /1000	-0.004	-0.006	-0.003	-0.003	-0.007	-0.011	-0.006	-0.001	-0.001	-0.002	-0.002
	(0.082)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*	*(0.039)*	*(0.000)*	*(0.000)*
$WEALTH_{CURR}$	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.001)*	*(0.000)*	*(0.001)*	*(0.033)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
$WEALTH_{CURR}^2$ /1000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.465)*	*(0.003)*	*(0.004)*	*(0.078)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
FAMILY SIZE	-0.010	-0.007	-0.006	-0.011	-0.023	-0.016	-0.020	-0.012	-0.037	-0.009	-0.005
	(0.017)	*(0.138)*	*(0.000)*	*(0.000)*	*(0.022)*	*(0.120)*	*(0.007)*	*(0.228)*	*(0.156)*	*(0.258)*	*(0.534)*
CHILDREN	0.010	0.005	0.004	0.007	0.008	0.002	0.010	0.007	0.036	-0.001	-0.003
	(0.018)	*(0.345)*	*(0.001)*	*(0.015)*	*(0.467)*	*(0.876)*	*(0.160)*	*(0.527)*	*(0.206)*	*(0.915)*	*(0.780)*
EDU=2	0.011	0.012	0.848	0.036	0.057	0.107	0.042	0.029	0.097	0.025	0.021
	(0.429)	*(0.275)*	*(0.000)*	*(0.067)*	*(0.061)*	*(0.024)*	*(0.072)*	*(0.351)*	*(0.330)*	*(0.404)*	*(0.454)*
EDU=3	0.031	0.023	0.940	0.055	0.099	0.165	0.100	0.087	0.200	0.068	0.056
	(0.080)	*(0.102)*	*(0.000)*	*(0.013)*	*(0.009)*	*(0.000)*	*(0.000)*	*(0.008)*	*(0.033)*	*(0.008)*	*(0.023)*
EDU=4	0.071	0.046	0.982	0.094	0.145	0.230	0.166	0.163	0.292	0.124	0.102
	(0.006)	*(0.004)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*
EDU=5	0.104	0.047	0.995	0.136	0.205	0.314	0.201	0.240	0.359	0.169	0.132
	(0.004)	*(0.031)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
EDU=6	0.122	0.055	0.991	0.138	0.427	0.183	0.455	0.270	0.414	0.041	0.020
	(0.015)	*(0.087)*	*(0.000)*	*(0.048)*	*(0.003)*	*(0.119)*	*(0.000)*	*(0.003)*	*(0.022)*	*(0.473)*	*(0.671)*
MM	0.008	0.005	0.008	0.018	0.033	0.044	0.050	0.058	0.134	0.032	0.025
	(0.029)	*(0.356)*	*(0.000)*	*(0.007)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*
MF	0.016	0.021	-0.003	0.005	0.044	0.056	0.028	0.031	0.057	0.009	0.006
	(0.146)	*(0.207)*	*(0.009)*	*(0.681)*	*(0.010)*	*(0.001)*	*(0.002)*	*(0.019)*	*(0.156)*	*(0.460)*	*(0.615)*
SM	0.014	-0.004	0.011	0.030	0.015	0.042	0.024	0.033	0.080	0.032	0.025
	(0.027)	*(0.669)*	*(0.000)*	*(0.000)*	*(0.152)*	*(0.000)*	*(0.053)*	*(0.005)*	*(0.078)*	*(0.000)*	*(0.000)*
DIVORCE	0.002	0.001	0.000	0.002	-0.002	0.002	0.006	0.005	0.009	0.003	0.003
	(0.096)	*(0.577)*	*(0.429)*	*(0.059)*	*(0.653)*	*(0.357)*	*(0.070)*	*(0.023)*	*(0.012)*	*(0.552)*	*(0.578)*
FLFP	0.142	0.113	0.065	0.211	0.519	0.569	0.463	0.641	0.930	0.616	0.595
	(0.071)	*(0.144)*	*(0.003)*	*(0.000)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*
RISK AVERSION									-0.183		-0.064
									(0.000)		*(0.000)*
Observations	8274	8188	8089	8135	7147	8001	8011	8012	2808	7768	7768
Adjusted R^2	0.2814	0.2340	0.2538	0.2467	0.2082	0.1989	0.2341	0.2119	0.1479	0.2038	0.2262
Log-likelihood	-1032.6	-1142.9	-1422.1	-1386.6	-2040.5	-2614.4	-2335.0	-2330.2	-1542.3	-2178.7	-2117.6

*Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. * significant at 10%; ** significant at 5%; *** significant at 1%.*

6. Robustness

In this section we summarize results from a number of alternatives to our benchmark regressions, to investigate their robustness. All tables are relegated to the Robustness Appendix. Overall, the results presented below provide additional insights but do not alter our general conclusions.

a) An alternative definition of risky assets

Guiso and Jappelli (2002) first investigate the determinants of the participation decision over SHIW data for the 1989-1995 period. However, as discussed in the Data Section, they employ a different definition of risky assets, including a larger set of financial instruments. We rerun our regressions under the Guiso and Jappelli's (2002) definition for the dependent variable. Results without and with time interactions are presented in Table A.1. While our findings concerning standard determinants and the divorce and activity rates are confirmed, MF remains significant only in the basic regressions without time interactions. Both the dummy and its interactions with time lose significance when entered together. Notice, however, that Guiso and Jappelli (2002) limit their investigation to the 1989-1995 period, and do acknowledge themselves that the meaning of their asset classification is likely to have changed in most recent years.

b) Wealth quantile regressions

To investigate how our results vary across wealth quantiles, we run quantile regressions for five different classes, namely one for each quartile (I, II, III, and IV quartiles) as well as for the top 5% (see Table A.2).[11] We find that MM is always highly significant, while SM is not significant for the extreme classes. Similarly, without time interactions MF is significant only for the middle quantiles, while for all classes except the second there is evidence of time variability. However, the significance of the time interactions is not affected by the inclusion of the divorce rate and the female labor force participation rate. Interestingly, the divorce rate is not significantly affecting the decision of households belonging to the two lowest classes.

c) Family structure

While our previous results are based on a distinction between married and single household heads, it is possible to investigate the effect of a finer definition of marital status. To this end, we separate singles among separated/divorced, widowed, and never married, by introducing an appropriate set of redefined dummy variables. In Table A.3 we show that, in a specifications including time interactions, widowed and separated/divorced women tend to behave like never married ones, while married women retain a higher propensity to participate if compared with never married ones, even if the precision of the estimates declines. Interestingly, however, separated/divorced men tend to behave more like married men than never married. Similar results emerge in a specification without time interactions, which we omit for brevity. Moreover, the time variability of the MF dummy is absent and unaffected by the inclusion of divorce and female labor force participation. This suggests that, for women, a distinction among the causes of non marriage does not make a difference for their financial choices: all unmarried women appear to behave similarly, independently of the circumstances that led them to this status.

[11] Over the pooled sample, the first quartile is about 17.500€, the median 86.000€, the upper 182.400€ while the richest 5% households have a net wealth higher than 517.000€.

d) Divorce vs. work

While our analysis has so far highlighted the role of two factors – the divorce rate and the female labor force participation rate - in shaping the investment behavior of female household heads, it should be noticed that the rise in female labor force participation has sometimes been mentioned in the literature as an alternative explanation for the evolution of women's decisions, if compared with the rise of divorce. For example, Edlund and Pande (2002) test the hypothesis that womes' mobilization into the labor force may obscure the effect of divorce on the political gender gap, but find that the effect of divorce remains robust to the inclusion of labor force participation variables. Our results from Tables 3 and 4 show that these two variables are equally relevant in our regressions. In the attempt to disentangle their impact, we take a first step by running our set of regressions over a subsample of employed household heads (see Table A.4, where we presents a specification with time interactions, since results without interactions are very similar). The marginal effect of age, for this subsample, becomes larger, while no relevant difference emerges for the other standard determinants of the investment decision. The marginal effects of MM and SM are now larger, while there is no significant difference between the behavior of married and single females. Likewise, there is no significant evidence of an evolution of such difference. These results suggest that, as long as a woman is employed, her perception of the risk associated with the rise of divorce tends to fade away. Following the lead of Edlund and Pande (2002), we also run an alternative set of regressions, over the full sample, where we introduce as an additional control a dummy that captures the fact that the houselhold head is employed (see Table A.5, again for a specification with time interactions). The marginal effect of the dummy is negative, which can be explained by the fact that bearing undiversifiable labor risks can riduce the propensity to partecipate in risky financial assets. Once we control for this factor, however, the marginal effect of MF remains highly significant, even if its size is somewhat smaller. If compared to our main regressions in Table 4, what is lost is the time variability of MF, since most of the time interactions are insignificant. These results are confirmed even taking into account an interaction between MF and the employment dummy, and are in line with those obtained over the subsample of employed household heads. To sum up, we can conclude that both divorce and female employment are important in determining the evolution of women's portfolios.

7. Conclusion

Based on a dataset drawn from the 1989-2006 Bank of Italy Survey of Household Income and Wealth, we have studied to joint impact of gender and marital status on financial decisions, its time evolution, and the determinants of this evolution. Controlling for a number of observable characteristics, we have shown that single women have a lower propensity to invest in risky assets than married females and males. These findings confirms our hypothesis that marriage may work as a sort of safe asset when women make portfolio decisions. Moreover, we have presented empirical evidence showing that the differential behavior of single women has evolved over time, and that this evolution, rather than being determined by exogenous variations in risk attitudes, can be related to the increased incidence of divorce and the expansion of female labor market participation. Our results therefore suggest that women's perception of marriage as a safe asset, as reflected by their portfolio choices, has been shaped by the transformation of the structure of family and society.

More generally, our investigation leads us to conclude the evolution of gender roles will continue to affect household financial decisions as well as macroeconomic aggregates. In particular, beside the increased incidence of divorce we have focused on, we have also witnessed a fall of formal marriages and a parallel increase of cohabitations, some of which have represented a preliminary step on the path to marriage. At the same, among marriages, we have observed a huge increase of the proportion of non-religious ones. We plan to evaluate these factors in future work.

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DATA APPENDIX

VARIABLE	Description
	SHIW DATA Source: http://www.bancaditalia.it/statistiche/indcamp/bilfait
PARTICIPATION	Binary variable assuming value 1 in case of risky assets holdings in financial portfolios, 0 otherwise.
AGE	Integer variable assuming values between 16 and 114
$INCOME_{CURR}$	Continuous variable representing household income at current values in thousand €
$WEALTH_{CURR}$	Continuous variable representing household Net Wealth, defined as financial and real activities net of financial liabilities, at current values in thousand €
INCOME	Continuous variable representing household income at 1995 value expressed in thousand €; obtained discounting Y by CPI with base 1995, as from Istat
WEALTH	Continuous variable representing household Net Wealth at 1995 value expressed in thousand €; obtained discounting W by CPI with base 1995, as from Istat
FAMILY SIZE	Number of household components ranging between 1 and 9
CHILDREN	Number of children in the household (no age limit, children living in the household) ranging from 0 to 7
EDU	Categorical variable representing the highest education level achieved: 1 = no education 2 = primary school 3 = secondary school 4 = college 5= graduate level 6 = post-graduate level
MALE	Binary variable assuming value 1 for male, 0 for female
MARRIED	Binary variable assuming value 1 for married, 0 otherwise, i.e. for never married, widowed or separated/divorced
RISKFIN	Categorical variable representing the preferred risk profile of financial investments: 1 = high risk, high returns 2 = reasonable risk, good returns 3 = low risk, reasonable returns 4 = no risk, low returns
RISKAVERSION	Binary variable set to 1 if RISKFIN = 4, 0 otherwise
	Istat DATA Source: http://www.istat.it/
CPI	Consumer Price Index for whole collectivity

MARRIAGES	Number of celebrated marriages at the regional level.
SEPARATIONS	Number of separations passed with sentence or validated without sentence during the year at the regional level.
DIVORCES	Number of divorces approved during the year at the regional level.
POPULATION	Total resident population at the regional level, in thousands
DIVORCE	Crude divorce rate at the regional level, computed as the number of divorces in each region every 1000 region residents. Ranging between 1% and 14%
SEPARATION	Crude separation rate at the regional level, computed as the number of separations in each region every 1000 region residents. Ranging between 2% and 24%
FLFP	Female lavor force participation rate at the regional level, computed as the ratio of women occupied and those actively looking for an occupation over total female working-age population in the region. Ranging from 22% to 47%
FER	Female employment rate at the regional level, computed as the ratio of women employed over total female working-age population in the region. Ranging between 13% and 44%

OECD DATA

Source: http://stats.oecd.org/wbos/Index.aspx?usercontext=sourceoecd

FEMALE WORKING AGE POPULATION	Female population between 15 and 64 years of age, in thousands, available since 1956
FEMALE EMPLOYMENT	Employed women in thousands, available since 1958
FER	Female employment rate, computed as the ratio of employed women over female working-age population

ROBUSTNESS APPENDIX

Table A1. The determinants of the participation decision, 1989-2006:
An alternative definition of risky assets

Variable	*No time interactions*	*Time interactions*			
	1	*1*	*2*	*3*	*4*
AGE	0.010 ***	0.010 ***	0.011 ***	0.011 ***	0.011 ***
AGE^2 /1000	-0.112 ***	-0.112 ***	-0.115 ***	-0.117 ***	-0.117 ***
INCOME	0.013 ***	0.013 ***	0.010 ***	0.009 ***	0.009 ***
$INCOME^2$/1000	-0.026 ***	-0.026 ***	-0.021 ***	-0.018 ***	-0.018 ***
WEALTH	0.0004 ***	0.0004 ***	0.0004 ***	0.0004 ***	0.0004 ***
$WEALTH^2$/1000	-0.00003 ***	-0.00003 ***	-0.00003 ***	-0.00003 ***	-0.00003 ***
FAMILY SIZE	-0.049 ***	-0.048 ***	-0.027 ***	-0.025 ***	-0.021 ***
CHILDREN	-0.002	-0.003	0.001	0.007	0.007
EDU=2	0.142 ***	0.142 ***	0.098 ***	0.091 ***	0.084 ***
EDU=3	0.211 ***	0.211 ***	0.163 ***	0.170 ***	0.159 ***
EDU=4	0.263 ***	0.263 ***	0.225 ***	0.237 ***	0.228 ***
EDU=5	0.226 ***	0.226 ***	0.218 ***	0.246 ***	0.240 ***
EDU=6	0.271 ***	0.271 ***	0.281 ***	0.325 ***	0.320 ***
MM	0.067 ***	0.067 ***	0.073 ***	0.074 ***	0.075 ***
MF	0.044 ***	0.045	0.049	0.063	0.062
SM	0.036 ***	0.036 ***	0.043 ***	0.043 ***	0.044 ***
1991	0.055	0.056	0.085 ***	0.038	0.051 **
1993	0.140 ***	0.142 ***	0.205 ***	0.048 *	0.087 ***
1995	0.240 ***	0.241 ***	0.276 ***	0.145 ***	0.174 ***
1998	0.224 ***	0.219 ***	0.202 ***	0.100 ***	0.114 ***
2000	0.200 ***	0.195 ***	0.136 ***	0.044	0.047
2002	0.136 **	0.138 ***	0.039	-0.040	-0.045 *
2004	0.163 ***	0.164 ***	0.055	-0.052 *	-0.055 **
2006	0.061	0.063	-0.036	-0.145 ***	-0.142 ***
1991*MF		-0.124	-0.127	-0.134	-0.133
1993*MF		-0.038	-0.055	-0.062	-0.064
1995*MF		-0.007	-0.030	-0.035	-0.039
1998*MF		0.080	0.073	0.062	0.062
2000*MF		0.033	0.028	0.018	0.019
2002*MF		-0.009	-0.015	-0.032	-0.031
2004*MF		-0.011	-0.004	-0.020	-0.016
2006*MF		-0.019	-0.017	-0.008	-0.010
DIVORCE			0.046 ***		0.017 ***
FLFP				2.506 ***	2.062 ***
Adjusted	0.1853	0.1856	0.2132	0.2297	0.2321
Wald	4438.89	4605.01	4221.16	5564.34	5406.51

Note: Marginal effects of probit estimates with robust standard errors clustered at the regional level. The dependent binary variable is 1 if the household holds risky assets whereby this class is defined as in Guiso and Jappelli (2002). For the model without time-interactions, we report just the baseline model (column numbered 1 as in previous tables), while for model with time interactions we report all the specifications (columns numbered from 1 to 4 as in previous tables). significant at 10%; ** significant at 5%; *** significant at 1%.*

Table A2. The determinants of the participation decision, 1989-2006:
Wealth quantile regressions

Variable	*I QUANTILE*				*II QUANTILE*			
	No Time Interactions		*Time-Interactions*		*No Time Interactions*		*Time-Interactions*	
	1	*4*	*1*	*4*	*1*	*4*	*1*	*4*
AGE	0.0002 **	0.0002 **	0.0002 **	0.0002 **	-0.0002	0.0001	-0.0002	-0.0001
AGE^2 /1000	-0.002 *	-0.002 *	-0.002 *	-0.002 *	-0.0004	-0.001	-0.0005	-0.001
INCOME	0.001 ***	0.0004 ***	0.0006 ***	0.0004 ***	0.004 ***	0.003 ***	0.004 ***	0.003 ***
$INCOME^2$/1000	-0.006 ***	-0.004 **	-0.006 **	-0.004 **	-0.038 ***	-0.029 ***	-0.038 ***	-0.029 ***
WEALTH	0.0004 ***	0.0003 ***	0.0003 ***	0.0003 ***	-0.0007 **	0.0005 *	-0.0007 **	0.0005 *
$WEALTH^2$/1000	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.005 *	0.004	0.005 *	0.004
FAMILY SIZE	-0.003 ***	-0.002 ***	-0.003 ***	-0.002 ***	-0.021 ***	-0.017 ***	-0.021 ***	-0.017 ***
CHILDREN	0.002 **	0.002 **	0.002 ***	0.002 ***	0.016 ***	0.015 ***	0.016 ***	0.015 ***
EDU=2	0.006	0.005	0.006	0.005	0.014 **	0.008	0.014 **	0.007
EDU=3	0.014 ***	0.012 **	0.014 ***	0.012 **	0.035 ***	0.026 ***	0.034 ***	0.026 ***
EDU=4	0.025 ***	0.022 ***	0.024 ***	0.022 ***	0.063 ***	0.053 ***	0.062 ***	0.052 ***
EDU=5	0.021 **	0.020 **	0.021 **	0.020 **	0.102 ***	0.094 ***	0.101 ***	0.094 ***
EDU=6	0.038	0.049 *	0.037	0.048 *	0.095	0.094	0.094	0.093
MM	0.002 **	0.002 **	0.002 **	0.002 **	0.013 ***	0.013 ***	0.013 ***	0.013 ***
MF	0.00004	0.00002	-0.006 ***	-0.005 ***	0.005	0.006	0.021	0.028
SM	0.001	0.001	0.001	0.001	0.012 ***	0.013 ***	0.012 ***	0.013 ***
1991	-0.0003	-0.001	-0.0003	0.0005	0.006	0.004	0.006	0.004
1993	-0.0005	-0.001	-0.0004	-0.001	0.024 **	0.015	0.026 **	0.017 *
1995	-0.0006	-0.001	-0.001	-0.002	0.025 *	0.012	0.022 *	0.010
1998	0.003 **	0.001	0.004 **	0.001	0.050 ***	0.031 ***	0.050 ***	0.031 ***
2000	0.013 ***	0.006 ***	0.013 ***	0.006 ***	0.077 ***	0.045 ***	0.073 ***	0.043 ***
2002	0.010 ***	0.004 **	0.011 ***	0.004 ***	0.050 ***	0.022 **	0.049 ***	0.021 **
2004	0.007 ***	0.001	0.007 ***	0.001	0.062 ***	0.024 **	0.064 ***	0.025 **
2006	0.009 ***	0.002	0.008 ***	0.001	0.056 ***	0.019 *	0.061 ***	0.021 *
1991*MF			/	/			0.011	0.006
1993*MF			/	/			-0.020	-0.019 *
1995*MF			0.971 ***	0.968 ***			0.009	0.002
1998*MF			/	/			-0.010	-0.012
2000*MF			0.894 ***	0.885 ***			-0.002	-0.005
2002*MF			0.759	0.739			-0.005	-0.008
2004*MF			0.890 ***	0.889 ***			-0.012	-0.013
2006*MF			0.944 ***	0.942 ***			-0.018	-0.017
DIVORCE		-		-0.0001		0.0010		0.001
FLFP		0.0300 ***		0.030 ***		0.1630 ***		0.162 ***
Adjusted R^2	0.1977	0.2114	0.1993	0.2132	0.1747	0.1894	0.1768	0.1915
OBS	17915	17915	17664	17664	17898	17898	17898	17898

*Note: Marginal effects of probit estimates with robust standard errors clustered at the regional level. The models are estimated over different wealth quantile. For each quantile, we report just the baseline model (column numbered 1 as in previous tables) and the one with divorce rate and female labour force participation both with and without time-interactions (column numbered 4 as in previous tables) . * significant at 10%; ** significant at 5%; *** significant at 1%.*

Table A2. The determinants of the participation decision, 1989-2006:
Wealth quantile regressions (ctd.)

Variable	*III QUANTILE*				*IV QUANTILE*			
	No Time Interactions		*Time-Interactions*		*No Time Interactions*		*Time-Interactions*	
	1	*4*	*1*	*4*	*1*	*4*	*1*	*4*
AGE	0.002 **	0.002 ***	0.002 **	0.002 ***	0.007 ***	0.006 ***	0.007 ***	0.006 ***
AGE^2 /1000	-0.023 ***	-0.024 ***	-0.023 ***	-0.024 ***	-0.063 ***	-0.056 ***	-0.063 ***	-0.057 ***
INCOME	0.007 ***	0.006 ***	0.007 ***	0.006 ***	0.004 ***	0.004 ***	0.004 ***	0.004 ***
$INCOME^2$/1000	-0.062 ***	-0.047 ***	-0.062 ***	-0.048 ***	-0.007 ***	-0.006 ***	-0.007 ***	-0.006 ***
WEALTH	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.00007 ***	0.00003 ***	0.0001 ***	0.00006 ***
$WEALTH^2$/1000	-0.007 ***	-0.006 **	-0.007 ***	-0.006 **	-0.00001 ***	-0.000003 ***	-0.0006 ***	-0.000006 ***
FAMILY SIZE	-0.038 ***	-0.031 ***	-0.038 ***	-0.030 ***	-0.033 ***	-0.025 ***	-0.033 ***	-0.025 ***
CHILDREN	0.018 ***	0.018 ***	0.018 ***	0.018 ***	0.005	0.010	0.005	0.010
EDU=2	0.029 *	0.020	0.029 *	0.020	0.238 ***	0.214 ***	0.236 ***	0.213 ***
EDU=3	0.055 ***	0.046 ***	0.055 ***	0.046 ***	0.316 ***	0.293 ***	0.315 ***	0.292 ***
EDU=4	0.085 ***	0.082 ***	0.086 ***	0.082 ***	0.367 ***	0.352 ***	0.366 ***	0.351 ***
EDU=5	0.089 ***	0.100 ***	0.089 ***	0.100 ***	0.421 ***	0.433 ***	0.420 ***	0.433 ***
EDU=6	0.090 *	0.116 **	0.090 *	0.115 **	0.440 ***	0.467 ***	0.441 ***	0.467 ***
MM	0.034 ***	0.032 ***	0.034 ***	0.032 ***	0.076 ***	0.072 ***	0.076 ***	0.072 ***
MF	0.030 ***	0.028 ***	-0.129 ***	-0.122 ***	0.040 ***	0.032 **	0.151 **	0.134 **
SM	0.024 ***	0.025 ***	0.024 ***	0.025 ***	0.063 ***	0.062 ***	0.063 ***	0.062 ***
1991	-0.012	-0.011	-0.013	-0.012	0.031	0.028	0.033	0.029
1993	0.011	-0.001	0.012	0.001	0.059	0.033	0.065 *	0.039
1995	-0.013	-0.021	-0.010	-0.019	-0.006	-0.038	-0.002	-0.034
1998	0.074 ***	0.041 **	0.071 ***	0.039 **	0.176 ***	0.102 ***	0.174 ***	0.101 ***
2000	0.101 ***	0.052 ***	0.094 ***	0.047 **	0.217 ***	0.110 ***	0.208 ***	0.103 ***
2002	0.082 ***	0.029	0.083 ***	0.029	0.212 ***	0.087 **	0.213 ***	0.089 **
2004	0.063 **	0.010	0.066 ***	0.011	0.158 ***	0.026	0.165 ***	0.032
2006	0.028	-0.014	0.028	-0.014	0.127 ***	0.005	0.134 ***	0.009
1991*MF			0.940 ***	0.944			-0.054	-0.046
1993*MF			0.943	0.947 ***			-0.125 **	-0.123 **
1995*MF			/	/			-0.103 **	-0.100 **
1998*MF			0.944 ***	0.947 ***			-0.037	-0.033
2000*MF			0.950 ***	0.953 ***			-0.024	-0.024
2002*MF			0.950 ***	0.953 ***			-0.075	-0.074
2004*MF			0.950 ***	0.953 ***			-0.095 *	-0.091 **
2006*MF			0.949 ***	0.951 ***			-0.098 **	-0.085 *
DIVORCE		0.003 **		0.003 **		0.010 ***		0.010 ***
FLFP		0.379 ***		0.379 ***		0.925 ***		0.922 ***
Adjusted R^2	0.1259	0.1419	0.1262	0.1422	0.1264	0.1448	0.1272	0.1456
OBS	17906	17906	17821	17821	17906	17906	17906	17906

*Note: Marginal effects of probit estimates with robust standard errors clustered at the regional level. The models are estimated over different wealth quantile. For each quantile, we report just the baseline model (column numbered 1 as in previous tables) and the one with divorce rate and female labour force participation both with and without time-interactions (column numbered 4 as in previous tables) . * significant at 10%; ** significant at 5%; *** significant at 1%.*

Table A2. The determinants of the participation decision, 1989-2006: Wealth quantile regressions (ctd.)

Variable	***Top 5%***			
	No Time Interactions		***Time-Interactions***	
	1	***4***	***1***	***4***
AGE	0.006	0.005	0.006	0.005
AGE^2 /1000	-0.053	-0.040	-0.052	-0.039
INCOME	0.004 ***	0.004 ***	0.004 ***	0.004 ***
$INCOME^2$/1000	-0.006 ***	-0.005 ***	-0.006 ***	-0.005 ***
WEALTH	0.00003	0.00003	0.00003	0.00003
$WEALTH^2$/1000	-0.000003	-0.000003	-0.000003	-0.000003
FAMILY SIZE	-0.020	-0.017	-0.020	-0.017
CHILDREN	-0.006	0.003	-0.007	0.003
EDU=2	0.233 *	0.176	0.232 *	0.175
EDU=3	0.356 ***	0.301 **	0.354 **	0.299 **
EDU=4	0.415 ***	0.372 ***	0.414 ***	0.370 ***
EDU=5	0.431 ***	0.404 ***	0.430 ***	0.403 ***
EDU=6	0.429 ***	0.409 ***	0.428 ***	0.408 ***
MM	0.101 ***	0.101 ***	0.101 ***	0.101 ***
MF	-0.004	0.003	-0.492 ***	-0.490 ***
SM	0.020	0.025	0.020	0.025
1991	0.107 *	0.099 *	0.105	0.097 *
1993	0.109 *	0.083	0.104 *	0.077
1995	0.009	-0.035	0.011	-0.034
1998	0.193 ***	0.116 *	0.188 ***	0.110 *
2000	0.159 ***	0.041	0.148 ***	0.033
2002	0.228 ***	0.091	0.223 ***	0.086
2004	0.167 ***	0.017	0.170 ***	0.020
2006	0.170 ***	0.024	0.165 ***	0.016
1991*MF			/	/
1993*MF			0.683	0.686
1995*MF			0.704 ***	0.707 ***
1998*MF			0.682 ***	0.685 ***
2000*MF			0.695 ***	0.698 ***
2002*MF			0.697 ***	0.701 ***
2004*MF			0.701 ***	0.705 ***
2006*MF			0.705 ***	0.709 ***
DIVORCE		0.016 ***		0.016 ***
FLFP		1.018 ***		1.025 ***
Adjusted R^2	0.1070	0.1215	0.1077	0.1221
OBS	3582	3582	3581	3581

*Note: Marginal effects of probit estimates with robust standard errors clustered at the regional level. The models are estimated over the 5% richest households. We report just the baseline model (comumn numbered 1 as in previous tables) and the one with divorce rate and female labour force participation both with and without time-interactions (column numbered 4 as in previous tables). * significant at 10%; ** significant at 5%; *** significant at 1%.*

Table A3. The determinants of the participation decision, 1989-2006:
A finer definition of marital status

Variable	*No Working dummy*								*Working dummy*							
	1		***2***		***3***		***4***		***1***		***2***		***3***		***4***	
AGE	0.003	***	0.003	***	0.003	***	0.003	***	0.003	***	0.003	***	0.003	***	0.003	***
AGE^2 /1000	-0.032	***	-0.030	***	-0.029	***	-0.029	***	-0.033	***	-0.032	***	-0.031	***	-0.031	***
INCOME	0.003	***	0.002	***	0.002	***	0.002	***	0.003	***	0.002	***	0.002	***	0.002	***
$INCOME^2$/1000	-0.005	***	-0.004	***	-0.004	***	-0.004	***	-0.005	***	-0.005	***	-0.004	***	-0.004	***
WEALTH	0.00006	***	0.00006	***	0.00006	***	0.00006	***	0.00006	***	0.00006	***	0.00006	***	0.00006	***
$WEALTH^2$/1000	-0.00001	***	-0.00001	***	-0.00001	***	-0.00001	***	-0.00001	***	-0.00001	***	-0.00001	***	-0.00001	***
FAMILY SIZE	-0.018	***	-0.014	***	-0.013	***	-0.013	***	-0.018	***	-0.015	***	-0.014	***	-0.013	***
CHILDREN	0.006	**	0.006	**	0.007	***	0.007	***	0.006	**	0.007	***	0.008	***	0.008	***
EDU=2	0.063	***	0.050	***	0.046	***	0.044	***	0.062	***	0.049	***	0.045	***	0.043	***
EDU=3	0.110	***	0.092	***	0.090	***	0.087	***	0.110	***	0.092	***	0.089	***	0.086	***
EDU=4	0.171	***	0.150	***	0.148	***	0.145	***	0.171	***	0.151	***	0.149	***	0.145	***
EDU=5	0.214	***	0.200	***	0.206	***	0.202	***	0.217	***	0.202	***	0.208	***	0.204	***
EDU=6	0.218	***	0.212	***	0.226	***	0.223	***	0.220	***	0.214	***	0.228	***	0.225	***
MM	0.028	***	0.026	***	0.025	***	0.025	***	0.028	***	0.026	***	0.026	***	0.025	***
WM	0.002		0.001		0.002		0.002		0.003		0.002		0.003		0.003	
DM	0.028	***	0.030	***	0.028	***	0.028	***	0.027	***	0.029	***	0.026	***	0.027	***
SM	0.023	***	0.022	***	0.022	***	0.022	***	0.023	***	0.022	***	0.022	***	0.022	***
MF	0.036	*	0.034	*	0.037	*	0.036	*	0.037	*	0.034	*	0.037	*	0.036	*
WF	-0.004		-0.009		-0.008		-0.009		-0.004		-0.008		-0.008		-0.009	
DF	-0.005		-0.006		-0.005		-0.005		-0.006		-0.007		-0.006		-0.006	
1991	0.007		0.013		0.003		0.006		0.007		0.013		0.003		0.006	
1993	0.029	*	0.045	***	0.008		0.015		0.028	*	0.044	***	0.007		0.015	
1995	0.010		0.017		-0.009		-0.004		0.010		0.016		-0.009		-0.005	
1998	0.078	***	0.072	***	0.039	***	0.042	***	0.077	***	0.071	***	0.038	***	0.041	***
2000	0.104	***	0.082	***	0.048	***	0.049	***	0.103	***	0.081	***	0.047	***	0.048	***
2002	0.096	***	0.065	***	0.036	**	0.034	***	0.095	***	0.064	***	0.035	**	0.034	***
2004	0.084	***	0.052	***	0.019		0.019		0.084	***	0.052	***	0.019		0.018	
2006	0.066	***	0.041	**	0.006		0.007		0.066	***	0.041	**	0.005		0.007	
1991*MF	0.018		0.017		0.016		0.016		0.018		0.018		0.016		0.016	
1993*MF	-0.036	***	-0.036	***	-0.035	***	-0.035	***	-0.037	***	-0.037	***	-0.036	***	-0.036	***
1995*MF	-0.021		-0.023		-0.023		-0.023		-0.023		-0.024		-0.024	*	-0.024	*
1998*MF	0.003		0.000		-0.001		-0.002		0.002		-0.001		-0.003		-0.003	
2000*MF	0.005		0.003		0.001		0.001		0.003		0.001		-0.001		-0.001	
2002*MF	-0.014		-0.015		-0.016		-0.016		-0.015		-0.016		-0.018		-0.018	
2004*MF	-0.020		-0.020		-0.021	*	-0.020		-0.021		-0.021		-0.022	*	-0.021	*
2006*MF	-0.021		-0.020		-0.019		-0.019		-0.022		-0.021		-0.020		-0.020	
WORKING									-0.009	***	-0.009	***	-0.008	***	-0.008	***
DIVORCE			0.008	***	0.437	***	0.003	***			0.008	***			0.003	***
FLFP							0.365	***					0.437	***	0.365	***
Adjusted R	0.2155		0.2257		0.2331		0.2341		0.2159		0.2261		0.2335		0.2344	
Log	-17166.97		-16944.55		-16781.1		-16761.3		-17158.911		-16936.38		-16772.93		-16753.14	

*Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level and time-interaction dummies. MM stands for married male, WM for Widow Male, DM for Divorced/Separated Male and SM for Single (never married) male. Analogous definitions hold for Female. The right panel reports results obtained including also a dummy for actually participation to the labour market. * significant at 10%; ** significant at 5%; *** significant at 1%.*

Table A4. The determinants of the participation decision, 1989-2006: Employed household heads subsample

Variable	***1***		***2***		***3***		***4***	
AGE	0.008	***	0.007	***	0.007	***	0.007	***
AGE^2 /1000	-0.083	***	-0.073	***	-0.065	***	-0.064	***
INCOME	0.003	***	0.003	***	0.002	***	0.002	***
$INCOME^2$/1000	-0.005	***	-0.004	***	-0.004	***	-0.004	***
WEALTH	0.00008	***	0.00008	***	0.00008	***	0.00008	***
$WEALTH^2$/1000	-0.00001	***	-0.00001	***	-0.00001	***	-0.00001	***
FAMILY SIZE	-0.022	***	-0.018	***	-0.017	***	-0.016	***
CHILDREN	0.008	*	0.009	**	0.009	**	0.009	**
EDU=2	0.059	**	0.057	*	0.045		0.045	
EDU=3	0.102	***	0.096	***	0.089	***	0.087	***
EDU=4	0.164	***	0.160	***	0.152	***	0.151	***
EDU=5	0.224	***	0.230	***	0.225	***	0.224	***
EDU=6	0.225	***	0.248	***	0.261	***	0.261	***
MM	0.037	***	0.037	***	0.037	***	0.037	***
MF	0.041		0.042		0.047		0.046	
SM	0.025	***	0.027	***	0.028	***	0.028	***
1991	0.007		0.015		0.003		0.006	
1993	0.039	*	0.058	***	0.012		0.021	
1995	0.008		0.015		-0.015		-0.010	
1998	0.087	***	0.080	***	0.043	**	0.046	***
2000	0.121	***	0.097	***	0.058	***	0.059	***
2002	0.109	***	0.075	***	0.040	**	0.039	**
2004	0.079	***	0.045	**	0.008		0.008	
2006	0.066	**	0.038	*	-0.003		-0.001	
1991*MF	0.047		0.047		0.047		0.047	
1993*MF	-0.050	**	-0.051	**	-0.050	**	-0.050	**
1995*MF	-0.030		-0.031		-0.032		-0.032	
1998*MF	0.035		0.027		0.023		0.022	
2000*MF	0.018		0.012		0.008		0.008	
2002*MF	-0.009		-0.013		-0.016		-0.016	
2004*MF	-0.005		-0.008		-0.009		-0.009	
2006*MF	-0.009		-0.009		-0.012		-0.012	
DIVORCE			0.010	***			0.003	***
FLFP					0.569	***	0.489	***
Observations	36770		36770		36770		36770	
Adjusted R square	0.1841		0.1937		0.2018		0.2025	
Log	-10412.63		-10290.84		-10187.46		-10178.85	

*Note: Marginal effects of probit estimates with robust standard errors clustered at the regional level and time-interaction dummies, estimated on the subsample of actually employed households. * significant at 10%; ** significant at 5%; *** significant at 1%.*

Table A5. The determinants of the participation decision, 1989-2006:
Whole sample, additional dummy for employed household head

Variable	*Working*				*Working Married Female*			
	1	*2*	*3*	*4*	*1*	*2*	*3*	*4*
AGE	0.003 ***	0.003 ***	0.003 ***	0.003 ***	0.003 ***	0.003 ***	0.003 ***	0.003 ***
AGE^2 /1000	-0.032 ***	-0.030 ***	-0.029 ***	-0.029 ***	-0.033 ***	-0.031 ***	-0.030 ***	-0.029 ***
INCOME	0.003 ***	0.002 ***	0.002 ***	0.002 ***	0.003 ***	0.002 ***	0.002 ***	0.002 ***
$INCOME^2$/1000	-0.005 ***	-0.005 ***	-0.004 ***	-0.004 ***	-0.005 ***	-0.005 ***	-0.004 ***	-0.004 ***
WEALTH	0.0001 ***	0.0001 ***	0.0001 ***	0.0001 ***	0.0001 ***	0.0001 ***	0.0001 ***	0.0001 ***
$WEALTH^2$/1000	-0.00001 ***	-0.00001 ***	-0.00001 ***	-0.00001 ***	-0.00001 ***	-0.00001 ***	-0.00001 ***	-0.00001 ***
FAMILY SIZE	-0.018 ***	-0.014 ***	-0.013 ***	-0.013 ***	-0.018 ***	-0.014 ***	-0.013 ***	-0.013 ***
CHILDREN	0.006 **	0.007 **	0.007 ***	0.007 ***	0.006 **	0.007 ***	0.007 ***	0.007 ***
EDU=2	0.062 ***	0.050 ***	0.045 ***	0.043 ***	0.062 ***	0.050 ***	0.045 ***	0.043 ***
EDU=3	0.111 ***	0.092 ***	0.089 ***	0.086 ***	0.110 ***	0.092 ***	0.089 ***	0.086 ***
EDU =4	0.172 ***	0.151 ***	0.149 ***	0.146 ***	0.171 ***	0.151 ***	0.149 ***	0.145 ***
EDU =5	0.218 ***	0.203 ***	0.208 ***	0.205 ***	0.217 ***	0.202 ***	0.208 ***	0.204 ***
EDU =6	0.222 ***	0.216 ***	0.230 ***	0.226 ***	0.222 ***	0.216 ***	0.230 ***	0.226 ***
MM	0.031 ***	0.031 ***	0.030 ***	0.030 ***	0.032 ***	0.031 ***	0.030 ***	0.030 ***
MF	0.041 **	0.042 **	0.044 **	0.043 **	0.023	0.027	0.032 *	0.032
SM	0.025 ***	0.026 ***	0.025 ***	0.025 ***	0.025 ***	0.026 ***	0.025 ***	0.025 ***
1991	0.007	0.013	0.003	0.006	0.007	0.013	0.003	0.006
1993	0.028 *	0.044 ***	0.007	0.015	0.028 *	0.044 ***	0.007	0.015
1995	0.009	0.016	-0.009	-0.005	0.009	0.016	-0.009	-0.005
1998	0.077 ***	0.071 ***	0.038 ***	0.041 ***	0.077 ***	0.071 ***	0.038 ***	0.041 ***
2000	0.103 ***	0.081 ***	0.047 ***	0.048 ***	0.102 ***	0.081 ***	0.047 ***	0.048 ***
2002	0.095 ***	0.064 ***	0.035 **	0.034 ***	0.094 ***	0.064 ***	0.035 **	0.033 ***
2004	0.083 ***	0.051 ***	0.018	0.018	0.083 ***	0.051 ***	0.018	0.018
2006	0.065 ***	0.040 **	0.005	0.006	0.065 ***	0.040 **	0.005	0.006
1991*MF	0.019	0.018	0.016	0.017	0.019	0.018	0.016	0.017
1993*MF	-0.037 ***	-0.037 ***	-0.036 ***	-0.036 ***	-0.035 ***	-0.036 ***	-0.035 ***	-0.035 ***
1995*MF	-0.023	-0.024	-0.024 *	-0.024 *	-0.019	-0.022	-0.022	-0.022
1998*MF	0.002	-0.001	-0.003	-0.003	0.006	0.002	0.000	-0.001
2000*MF	0.003	0.001	-0.001	-0.001	0.009	0.006	0.002	0.002
2002*MF	-0.015	-0.016	-0.018	-0.017	-0.011	-0.013	-0.015	-0.015
2004*MF	-0.021	-0.021	-0.022 *	-0.021 *	-0.017	-0.018	-0.020	-0.019
2006*MF	-0.022	-0.021	-0.020	-0.020	-0.018	-0.019	-0.018	-0.018
WORKING	-0.009 ***	-0.009 ***	-0.009 ***	-0.009 ***	-0.011 ***	-0.011 ***	-0.010 ***	-0.010 ***
WORKING*MF					0.018 ***	0.013 **	0.011 *	0.010 *
DIVORCE		0.008 ***		0.003 ***		0.008 ***		0.003 ***
FLFP			0.437 ***	0.366 ***			0.436 ***	0.365 ***
Adjusted R	0.2156	0.2257	0.2333	0.2341	0.2333	0.2258	0.2333	0.2342
Log	-17164.33	-16943.05	-16778.75	-16759.39	-16777.23	-16940.89	-16777.23	-16758.0

*Note: Marginal effects of probit estimates with robust standard errors clustered at the regional level and with time-interaction dummies. The right panel of the table reports the results obtained including also a dummy for being a working married female. * significant at 10%; ** significant at 5%; *** significant at 1%.*

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