

DISCUSSION PAPER SERIES

No. 7162

MARRIAGE AND OTHER RISKY ASSETS: A PORTFOLIO APPROACH

Graziella Bertocchi, Marianna Brunetti and
Costanza Torricelli

***FINANCIAL ECONOMICS,
INTERNATIONAL MACROECONOMICS
and PUBLIC POLICY***



Centre for Economic Policy Research

www.cepr.org

Available online at:

www.cepr.org/pubs/dps/DP7162.asp

MARRIAGE AND OTHER RISKY ASSETS: A PORTFOLIO APPROACH

Graziella Bertocchi, Università di Modena and CEPR
Marianna Brunetti, Università di Roma Tor Vergata and CEFIN
Costanza Torricelli, Università di Modena and CEFIN

Discussion Paper No. 7162
February 2009
Revised February 2010

Centre for Economic Policy Research
53–56 Gt Sutton St, London EC1V 0DG, UK
Tel: (44 20) 7183 8801, Fax: (44 20) 7183 8820
Email: cepr@cepr.org, Website: www.cepr.org

This Discussion Paper is issued under the auspices of the Centre's research programme in **FINANCIAL ECONOMICS, INTERNATIONAL MACROECONOMICS and PUBLIC POLICY**. Any opinions expressed here are those of the author(s) and not those of the Centre for Economic Policy Research. Research disseminated by CEPR may include views on policy, but the Centre itself takes no institutional policy positions.

The Centre for Economic Policy Research was established in 1983 as an educational charity, to promote independent analysis and public discussion of open economies and the relations among them. It is pluralist and non-partisan, bringing economic research to bear on the analysis of medium- and long-run policy questions.

These Discussion Papers often represent preliminary or incomplete work, circulated to encourage discussion and comment. Citation and use of such a paper should take account of its provisional character.

Copyright: Graziella Bertocchi, Marianna Brunetti and Costanza Torricelli

CEPR Discussion Paper No. 7162

February 2009

Revised February 2010

ABSTRACT

Marriage and Other Risky Assets: A Portfolio Approach*

We study the joint impact of gender and marital status on financial investment by testing the hypothesis that marriage represents - in a portfolio framework - a sort of safe asset, and that this effect is stronger for women. We show that married individuals have a higher propensity to invest in risky assets than single ones, that the marital status gap is stronger for women than for men and that, for women only, the marital status gap evolves over time. Next we explore a number of possible explanations of the observed gender differences by controlling for background and individual factors that capture the evolution of family and society. We find that both the higher female marital status gap, and its time variability, vanish for those women who are employed. Our empirical investigation is based on a dataset drawn from the 1989-2006 Bank of Italy Survey of Household Income and Wealth.

JEL Classification: E21, G11, J12 and J21

Keywords: divorce, labor force participation, marriage and portfolio choice

Graziella Bertocchi
Universita di Modena
Via le Berengario 51
I - 41100 Modena
ITALY

Marianna Brunetti
University di Roma Tor Vergata
Via Columbia 2
00133 Roma
ITALY

Email: graziella.bertocchi@unimore.it

Email: marianna.brunetti@uniroma2.it

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=127397

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=163013

Costanza Torricelli
Universita di Modena
Via le Berengario, 51
I - 41100 Modena
ITALY

Email: costanza.torricelli@unimo.it

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=103808

* We would like to thank participants at the 2009 CEPR European Summer Symposium in International Macroeconomics, the 9th SAET Conference on Current Trends in Economics, and the University of Pisa, for comments and suggestions.

Submitted 27 January 2009
Revised February 2010

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 and its potential determinants. The relevance of gender and marital status has been established for a variety of related issues, ranging from political choices (Edlund and Pande, 2002) and preferences toward the size of government (Lott and Kenny, 1999) to wealth accumulation and saving behavior. 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), Dohmen et al. (2005), Fellner and Maciejovsky (2007), Croson and Gneezy (2009), Lusardi and Mitchell (2008) and Arano et al. (2010). 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), showing that single are more risk averse than married individuals. Nevertheless, only a few studies consider marital status and gender jointly when analyzing 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.

In the present paper, 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. 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 and focus on two component of wealth: 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. The marital status gap, however, may well evolve over time, under the influence of a variety of factors. In recent times, the perception of being married as a risk free status may have changed in the face of the observed evolution of intra-family dynamics and women's professional careers. The increasing diffusion of divorce and the decline of marriage have caused a progressive dissolution of the traditional family structure, while the growing participation of women to the labor market has provoked a parallel gradual reduction in the gender earnings gap. All these factors are likely to be more relevant for women. Thus, we shall also test the hypothesis that, for women, the marital status gap evolves over time. Furthermore, we shall explore a number of possible explanations of this evolution.

We estimate a probit model for the decision to participate, i.e., to invest in risky assets, to test two main hypotheses and possible explanations for the results obtained. The first hypothesis is that the impact of the marital status on portfolio choices, i.e., the marital status gap, differs for men and women. The second hypothesis is that the marital status gap for women is not time-invariant. Finally, we explore possible determinants of the marital status gap and its evolution. We control first for background factors, such as divorce risk and labor market structure. Next we focus on individual characteristics, including risk aversion, marital instability and employment status.¹

Our empirical analysis tests the above predictions on a dataset drawn from the 1989-2006 Bank of Italy Survey of Household Income and Wealth (SHIW). 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

¹ The macroeconomic dynamics of family formation and their impact on economic decisions have been studied by Cubeddu and Ríos-Rull (2003), Stevenson and Wolfers (2007) and Love (2009).

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.

The rest of the paper is organized as follows. Section 2 presents background information on the evolution of marriage, divorce and female labor force participation in Italy. Section 3 describes our dataset. Section 4 presents a first set of empirical findings highlighting the differential behavior of the marital status gap for men vs. women. Based on further empirical evidence, Section 5 discusses possible explanations. Section 6 concludes and suggests directions for future research. Appendix 1 provides information about the data we employed, while Appendix 2 reports results of some robustness tests.

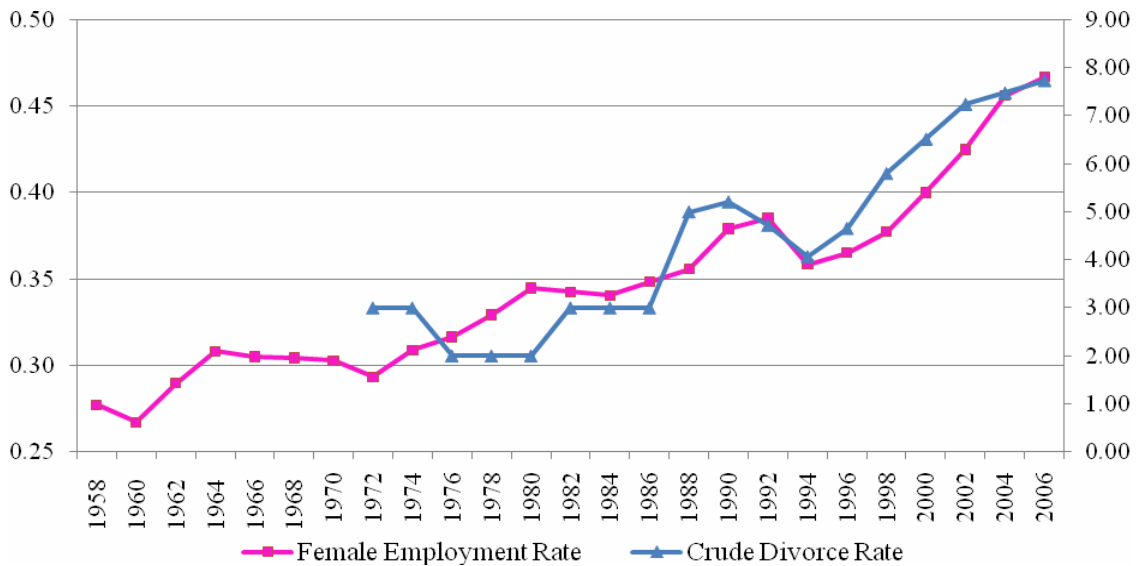
2. Background

2.1. 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. 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 returned to its pre-reform level. In fact, since 1995, a quick increase has occurred. 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.

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).

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 was 0.28 in 1958. This was higher than in the other Mediterranean countries and below the US, the UK and France (see, e.g., Fernandez and Fogli, 2009, for an international comparison of female labor force participation rates). During the next decades, however, the Italian figures witnessed 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 have worked, at least at the beginning of the sample, as a safe asset, but also that this role may have become less pronounced over time as marriage became riskier. Moreover, the post-war period witnessed an almost uninterrupted expansion of women's role in the labor market, driven in part by the same factors that determined 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

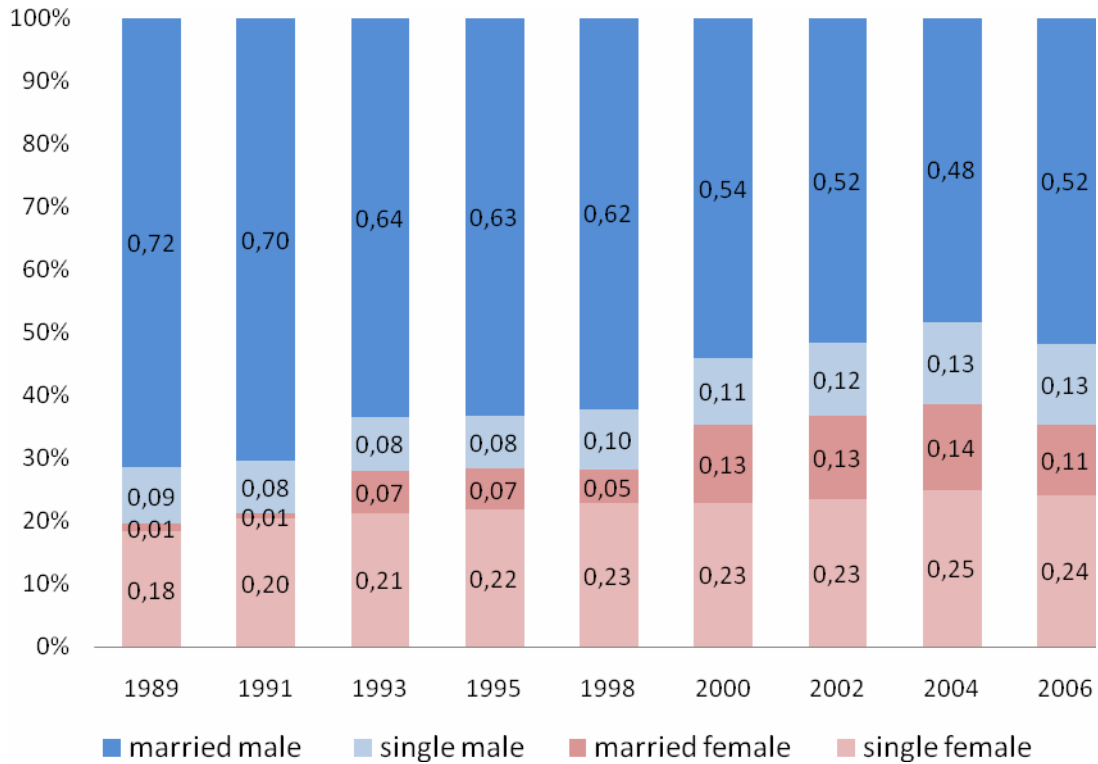
2.2. Financial markets and household portfolios in Italy

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 (2009). 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 2 reports the weighted sample percentage of households by gender and marital status.

The data clearly show that during the period under consideration the structure of the average Italian family has sensibly changed along the gender and status dimension. As for the latter, figures display a decline of the proportion of married individuals that make financial decisions and a parallel increase in singles, i.e., never married, separated/divorced and widowed (from 27% in 1989 to 37% in 2006). As for gender, women who are household financial head register a substantial increase (from 20% in 1989 to 35% in 2006). In more detail, in 1989 married males represent 72% of the household heads, single males 9%, married women 1%, and single women 18%. By 2006, the share of married males has declined to 52%, the share of single males has increased to 13%, the share of married females has reached 11%, with a spectacular jump especially around 2000, and the share of single females has reached 24%.

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.

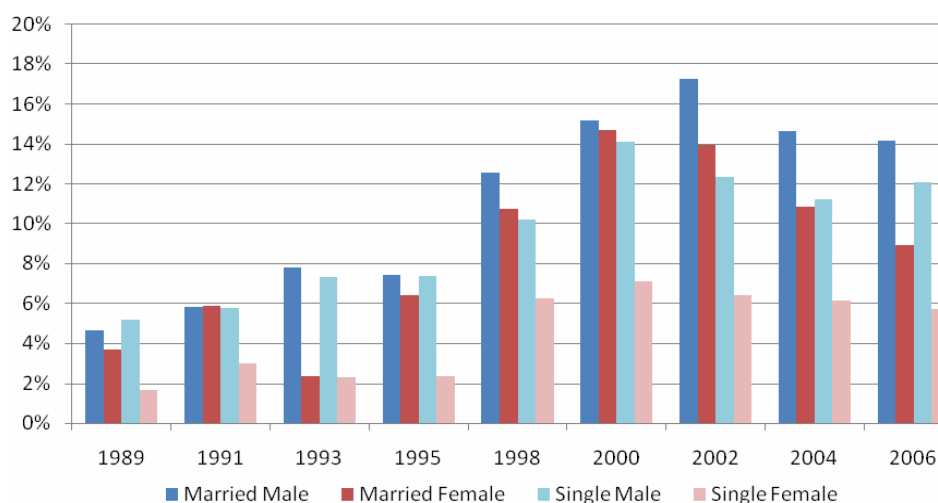
Chart 2. Household financial heads by gender and marital status, 1989-2006



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.

Turning to the financial decisions of the household financial head, a comparison of the rate of participation in risky financial assets in 1989 and 2006 is illustrated in Chart 3. Overall, participation has sensibly increased between 1989 and 2006. It peaks between 2000 and 2002, reflecting the stock market boom and its 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 3. 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 and the increasing participation of women into the labor market manifest themselves also in financial decisions.

3. 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 Wealth³, 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 SHIW basic sample unit is the household defined as “a group of cohabiting people who, regardless for their relationships, satisfy their needs by pooling all or part of their incomes”. The survey reports three different definitions for the head of the household, namely: (i) the person who is responsible for the financial and economic choices of the household (“declared” definition); (ii) the person who earns the highest income (“income” definition); and (iii) the reference point to establish the relationships among all members of the household (“Eurostat” definition). In contrast

³ In each wave, data are collected for around 8,000 households, for a total of 71,625 observations (for more details on the SHIW see <http://www.bancaditalia.it/statistiche/indcamp/bilfait>). From this sample, we drop 255 observations in which no information is provided on the financial assets allocation, so that our final sample is constitutes of 71,370 observations.

with household surveys for other countries, where the household head is defined on the basis of different attributes (e.g., highest income, or male gender), a distinctive feature of the Italian survey is that, by introducing the “declared” definition, it also provides specific information relative to the person making financial decisions. According to this definition, choices can be interpreted as specific to the financial decision-maker, independently of her/him being the main income earner. Thus, since we need to be sure that portfolio information is referred to the person who actually makes financial choices, in this paper we use the first definition when we refer to the household financial head.

For each household, the SHIW provides plenty of demographic information, of which we have used the following: the number of household components, the number of children, as well as the age, level of education, gender and marital status of the financial head of the household. 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 financial heads of household, by creating a dummy variable `MARRIED` taking value 1 if the household financial head is married and 0 otherwise. Likewise, we construct a dummy variable named `MALE` capturing gender, which takes value 1 if the household financial head is male and 0 if female. Unsurprisingly, only a minority of married women declare themselves as the household heads.⁴

Beside demographic information, the SHIW also provides economic information about the households, including income, 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 credit and market risk profiles.⁵ Then assets are clustered in three risk classes: “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

⁴ While it is true that some misreporting may be present, if anything we would expect underreporting, rather than overreporting, of the fraction of women that declare themselves to be in charge.

⁵ Since we focus on financial portfolios, we do not consider investment decisions in housing. However, housing enters our definition of wealth. As for financial asset classification, the one 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. For further details on assets risk-classification see Brunetti and Torricelli (2009).

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 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*”, but 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 characterizes 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 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. To sum up, our risky assets class is represented by stocks, corporate bonds, and foreign assets.

The two most recent waves of the SHIW, 2004 and 2006, also 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. On the basis of this information, we construct the dummy variable RISK-AVERSE which takes value 1 if the respondent answers with the most risk-averse choice (no risk for the capital, low returns), 0 otherwise. This allows to rank individuals with respect to their risk aversion without having to assume a particular functional form for the utility function.

We also use the available information about the household heads’ position in the labor market. More specifically, we create the dummy TENURE assuming value 1 if the head of the household has a tenured employment position, 0 otherwise. This information is only available since the 2000 wave. We also create a dummy for SELF-EMPLOYED, taking value 1 if he/she is self-employed, 0 otherwise. Finally, we create a household-specific variable which aims at capturing those marriages more likely to be unstable. Based on an Istat report⁶, divorces seem to be more widespread among those couples where the woman has a higher education with respect to the men: we thus create the dummy variable named MARITAL INSTABILITY assuming value 1 if the wife has a higher education with respect to the husband, 0 otherwise.

⁶ See Istat, “Evoluzione e nuove tendenze dell’ instabilita’ coniugale”, 2008.

We supplement our dataset with aggregate variables based on data provided by Istat⁷. These variables are the divorce hazard, 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 divorce hazard is defined as the ratio of the number of divorces over the number of marriages at the regional level. The crude divorce (separation) rate is the number of divorces (separations) in each region over every 1000 residents. We employ the divorce hazard as our main measure of the aggregate, background risk of divorce, since contrary to the crude divorce rate it takes into account both the increasing dynamics of divorce and the underlying decreasing dynamics of marriage.⁸ 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 A.1 in Appendix 1 provides a more detailed descriptions of all the data and variables used while Table A.2 presents summary statistics referred to the whole pooled sample and to the initial and final waves, i.e., 1989 and 2006. We also present separate summary statistics for the male and the female subsamples.

4. Results

To test our hypotheses, we estimate a probit model for the decision to participate, i.e., to invest in risky assets. For this model, we run a set of pooled regressions with robust standard errors clustered at the regional level. We run two separate sets of regressions for the male and the female subsamples. All regressions always include a set of time and regional dummies, with the year 2000 and Piedmont taken as reference categories.

In order to provide a preliminary test of our first hypothesis, i.e., that the impact of marital status differs for men and women, we start from a basic specification where the decision to participate is regressed on the marital status dummy. Results are presented in Table 1, column 1. For both subsamples, the marginal effect of the dummy for married household heads is highly significant and positive, suggesting that married household heads are more inclined to invest in risky assets than

⁷ Data are downloadable from <http://www.istat.it/lavoro/>.

⁸ Nonetheless, results are robust to the choice of both indicators (see Section 7.3).

single ones. Moreover, the size of the effect almost doubles for the female subsample, which indicates that the marital status gap is larger for women.

Table 1. The determinants of the participation decision, 1989-2006

	MALES				FEMALES			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
MARRIED	0.0227***	0.0058	0.0064	0.0036	0.0391***	0.0206***	0.0209***	0.0223***
AGE		0.0032***	0.0033***	0.0033***		0.0018***	0.0018***	0.0018***
AGE ² /1000		-0.0027***	-0.0028***	-0.0028***		-0.0017***	-0.0017***	-0.0017***
INCOME		0.0020***	0.0021***	0.0020***		0.0016***	0.0016***	0.0015***
INCOME ² /1000		-0.0033***	-0.0033***	-0.0032***		-0.0050***	-0.0050***	-0.0050***
WEALTH		0.0001***	0.0001***	0.0001***		0.00005***	0.00005***	0.00005***
WEALTH ² /1000		-0.000005***	-0.000005***	-0.000005***		-0.00001*	-0.00001*	-0.00001*
FAMILY SIZE		-0.0146***	-0.0147***	-0.0141***		-0.0065***	-0.0065***	-0.0064***
CHILDREN		0.0092***	0.0092***	0.0086***		0.0024	0.0024	0.0024
EDU = 2		0.0804***	0.0804***	0.0849***		0.0083	0.0082	0.0082
EDU = 3		0.1285***	0.1287***	0.1344***		0.0295***	0.0295***	0.0297***
EDU = 4		0.2016***	0.2021***	0.2140***		0.0551***	0.0550***	0.0562***
EDU = 5		0.2760***	0.2765***	0.2984***		0.0880***	0.0881***	0.0909***
EDU = 6		0.3323***	0.3312***	0.3572***		0.0375	0.376	0.04
1989*MARRIED		-0.0105	-0.0116	-0.0105		-0.0042	-0.0047	-0.0043
1991*MARRIED		0.0238	0.0221	0.0233		0.001	0.0008	0.0009
1993*MARRIED		0.0002	-0.001	0.0003		-0.0194***	-0.0194***	-0.0194***
1995*MARRIED		-0.0089	-0.0097	-0.0086		-0.0145**	-0.0147**	-0.0146**
1998*MARRIED		0.0082	0.0077	0.008		-0.0069	-0.0071	-0.0069
2002*MARRIED		0.0158	0.0159	0.0156		-0.0096**	-0.0097**	-0.0095**
2004*MARRIED		0.0186	0.0194*	0.0188*		-0.0109**	-0.0108**	-0.0109**
2006*MARRIED		-0.0011	-0.0015	-0.0008		-0.0132***	-0.0134***	-0.0130***
FLFP			0.2704**	0.2982**			0.0106	0.0055
DIVORCE			0.1447**				0.0802	
HAZARD								
MARITAL INSTABILITY				0.0165***				-0.0043
Observations	50808	50808	50808	50808	20562	20562	20562	20562
Pseudo R-squared	0.0963	0.2333	0.2338	0.2343	0.1135	0.2561	0.2564	0.2563
Log-Likelihood	-15312.8	-12990.5	-12982.4	-12973.1	-4205.74	-3529.3	-3528.11	-3528.36

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

Next, in column 2, we explore an extended specification including 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 financial head (age, age squared and education). We also include a set of interaction terms involving the time dummies and the marital status dummy, in order to investigate our second hypothesis, i.e., the presence of time variability in the impact of our key covariate. Adding these interactions amounts to test the

hypothesis of marriage as a safe asset along a time dimension. The estimates of the extended specification show that, both for men and women, the propensity to invest in risky assets increases with age, income and wealth, with highly significant marginal effects for all regressors. There is also evidence of a non linear effect of each of these variables, even though for wealth the non linearity is less marked for females. Education also exerts a positive impact on participation even though, for women, this effect is absent at the extremes of the educational ladder. 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 for men only, possibly because for them this characteristic induces a longer time horizon and thus investment choices that are riskier and more rewarding over the long run. Overall, this evidence is broadly in line with intuition and previous results from the literature.

Turning to the marital status dummy, its marginal effect loses significance for men, while it retains it for women, suggesting that the differential behavior of married and single men is fully explained by standard covariates, while for women marital status still matters even after controlling for them. Moreover, while for men the marital status differential does not show any time variability, for women we find evidence of a humped-shaped time evolution: relative to our reference year, i.e., 2000, the interaction with time is insignificant for 1998, while it is significant for the adjacent years, with negative marginal effects whose absolute size increases with the distance from the intermediate years. In other words, the gap between married and single women tends to be lower at the beginning of the sample, peaks during the intermediate years, and declines afterwards. Therefore, our results support both our first hypothesis, i.e., that the marital status gap is stronger for women, and our second hypothesis, i.e., that the marital status gap is not time invariant for women.

A set of additional regressions (see Appendix 2) shows the robustness of the results obtained under an alternative definition of the risky asset class and a finer definition of the family structure. As for the former, using Guiso and Jappelli's (2002) definition for the dependent variable, we find that once again the marital status gap in the basic specification is higher for females, and that its dynamics are only present for females, even though they are less evident than under our definition, since the alternative measure of asset riskiness is less precise. As for the latter, we split singles among separated/divorced, widowed, and never married, by introducing an appropriate set of redefined dummy variables. Results suggest that, for women, a distinction among the causes of non marriage does not make a difference for their choices: all unmarried women appear to behave similarly, independently of the circumstances that led them to this status. Finally, (unreported)

regressions run under ordinary least squares confirm previous results and in particular the absence of any dynamics for the male sample.

Based on this evidence, we conclude that our results are robust and support both our hypotheses. The scope of the following section is to explore possible explanations of the observed differential dynamics of the marital status gap between men and women. We keep the specifications collected in Table 1 as the benchmark for all the subsequent variants.

5. The determinants of the marital status differential

In the effort to understand the determinants of the gender differences emerging from the data, both in terms of size and stability of the marital status gap, in the following discussion we explore three alternative avenues. First, we consider a set of background factors that can capture the evolution of gender roles in the family and society: namely, the increasing incidence of divorce and the expansion of female labor market participation. Then, we turn to individual characteristics. We first introduce an individual, rather than aggregate, measure of divorce risk. Next we consider the role of risk aversion, since innate risk attitudes have been suggested as a potential, exogenous determinant of gender differences in behavior. Finally, we consider the individual position in the labor market.

5.1. Background factors: divorce hazard and female labor participation

To understand the emerging differences between the male and the female subsamples, in a further set of regressions, which we present in Table 1, columns 3, we add to the previous covariates those background factors that capture the evolution of gender roles in the family and society, i.e., the rate of female labor force participation and the divorce hazard, both measured in the region of residence. We find that these new covariates exert a different impact on men vs. women, since they increase men's propensity to invest while they are irrelevant for women's. The positive impact of these regressors for men could be explained by their high correlation with the local level of income and financial development, together with a higher influence of these factors for men. However, the inclusion of these additional factors cannot explain the evolution of the female marital status gap. Therefore, this additional evidence suggests that family and employment structure do have an impact on financial participation decisions, but the explanation of the differential evolution of the marital status gap for men vs. women must be left to other factors.

In a set of unreported regressions, we try alternative definitions of these background factors. We insert the female employment rate as an alternative to the female labor force participation rate, and try the separation rate and the crude divorce rate instead of the divorce hazard. All our previous results hold under all these alternative specifications.

5.2. Individual factors: marital instability, risk aversion and employment status

With the aim of providing an explanation for the differential evolution of the marital status gap for men vs. women, we now turn to additional individual characteristics that can capture the impact of family structure and labor market structure. In Table 1, columns 4, we investigate the potential role of a granular, household-specific measure of marital instability, as an alternative to the regional divorce hazard that we had previously introduced as a background factor. Therefore, we substitute to the divorce hazard our measure of marital risk, i.e., a dummy taking value 1 if the wife holds a higher level of education than the husband, a factor which is commonly associated with a higher risk of divorce, since it signals a departure from the traditional family model. Table A2 shows that the fraction of household heads holding a higher educational level than the spouse increases over time both for male and female household heads, and that the fraction is always much lower for females. The regression shows that this new measure does exert a more precise effect on the participation decision for the male sample, but all the previous conclusions hold. We also consider different measures of marital instability, namely, a dummy which equals 1 if the personal income of the wife is greater than the personal income of the husband, and a dummy which equals 1 if the wife is working and the husband not working. While the second alternative is not significant, all our results hold under the first alternative measure of marital instability. Therefore, the evolving structure of the family as shaped by marital risk cannot explain women's behavior and the time variability of their perception of marriage as a valuable and safe asset.

Risk attitudes have been suggested as a potential, exogenous determinant of investment decisions. In particular, it has been suggested that risk aversion tend to be higher for women and for single individuals. This theory is based on a view of risk attitudes as exogenous and innate individual characteristics that exhibit little variation over the time dimension. To explore this avenue, we exploit a measure of risk aversion which is available only in the SHIW two most recent waves, 2004 and 2006.

Within our sample, women do appear to be more risk averse than men. The same holds for single vs. married household heads, as the weighted average of the risk-aversion dummy is 45.36% for

married against 54.37% for singles. To be noticed, however, is that risk aversion turns out not to be time invariant, even over such a limited time span. For instance, when we analyze how our household heads, on average, respond to the risk aversion question, we find that the share of those who are willing to take the highest degree of risk decreases slightly from 2004 to 2006, while more household heads opt for the no risk option. If we focus on those household heads who are surveyed in both waves, again we find that only 66% remain in their original category, as measured by our dummy, while the remaining 34% gives a different answer. In particular, moves from low to high risk aversion are more frequent than the opposite, both for men and women (see Table A2). This pattern suggests that risk attitudes may actually be endogenous, or that they may vary with other covariates, or else that they are determined, together with the decision to invest in risky assets, by a common third factor.

Keeping this warning in mind, we still run a set of regressions including the dummy reflecting risk aversion, over the 2004-2006 subsample for which this measure is available. The results are presented in Table 2. In columns 1, we reproduce the specification previously presented in Table 1, columns 2 for the entire time span. Some differences do emerge: even before controlling for risk aversion we find that, for men, in 2004-6 the marital status dummy is marginally significant even taking into account standard covariates, even though its interaction with time remains insignificant. Moreover, the covariates reflecting household size and number of children lose significance. For women, on the other hand, over this subsample the marital status dummy is insignificant, as well as household size. The number of children remains insignificant as for the full sample. Since the regression is run over only two waves, the dynamics are only captured by a single interaction between time and the marital status dummy, which is not significant both for men and women. Therefore, the reduced length of the sample does not allow any dynamics to emerge as far as the impact of marital status is concerned. In columns 2, we add the risk aversion dummy, which as expected exerts a negative impact on the decision to participate both for males and females. The impact of risk aversion is actually stronger for males, since being risk averse reduces their likelihood of investing in risky assets by around 11%, while for female this effect is only around 6%. It also appears that the marital status gap, for males, is fully explained by differences in risk aversion between married and single male household heads. Columns 3 and 4 show that controlling for risk aversion leaves the impact of female labor force participation in the region of residence unvaried (i.e., positive for men and insignificant for women), while for men the impact of the divorce hazard is reversed and marital instability loses significance. However, these discrepancies are largely due to the limited sample size. To sum up, while controlling for risk aversion highlights several new angles, the drastically reduced time span and the shortcomings of the available measure

of risk aversion prevent us from finding an explanation of the differential evolution of the marital status gap for men vs. women.

Table 2. The determinants of the participation decision, 2004-2006:
Risk aversion

	MALES				FEMALES			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
MARRIED	0.0362*	0.0311	0.0276	0.0248	0.0123	0.0038	0.0024	0.0006
AGE	0.0119***	0.0107***	0.0107***	0.0107***	0.0037***	0.0041***	0.0040***	0.0040***
AGE ² /1000	-0.0100***	-0.0085***	-0.0085***	-0.0084***	-0.0033***	-0.0034***	-0.0033***	-0.0034***
INCOME	0.0023***	0.0019***	0.0019***	0.0019***	0.0023***	0.0019***	0.0019***	0.0019***
INCOME ² /1000	-0.0031***	-0.0026***	-0.0026***	-0.0026***	-0.0078***	-0.0063**	-0.0063**	-0.0063**
WEALTH	0.0002***	0.0002***	0.0002***	0.0002***	0.0001***	0.0001***	0.0001***	0.0001***
WEALTH ² /1000	-0.00002***	-0.00001***	-0.00001***	-0.00001***	-0.00001***	-0.00001***	0.00001***	-0.00001***
FAMILY SIZE	-0.0233*	-0.0175	-0.0179	-0.017	-0.0082	-0.0033	-0.0035	-0.0035
CHILDREN	0.0132	0.0102	0.0106	0.0095	0.003	-0.001	-0.0008	-0.0008
EDU = 2	0.2137**	0.1890**	0.1879**	0.1954**	-0.0134	-0.0159	-0.0155	-0.0152
EDU = 3	0.2840***	0.2506***	0.2482***	0.2560***	0.0257	0.0164	0.0164	0.0163
EDU = 4	0.3608***	0.3140***	0.3112***	0.3257***	0.0812***	0.0584**	0.0580**	0.0570**
EDU = 5	0.4829***	0.4164***	0.4144***	0.4372***	0.1234***	0.0887***	0.0877***	0.0849***
EDU = 6	0.3600***	0.2820**	0.2796**	0.3062**	0.1255	0.0703	0.0694	0.0664
2006*MARRIED	-0.0224	-0.0183	-0.0125	-0.0153	-0.0052	0.0001	0.0021	0.0019
RISK AVERSE		-0.1117***	-0.1106***	-0.1107***		-0.0635***	-0.0633***	-0.0633***
FLFP			2.2769***	3.3991***			0.9895	0.875
DIVORCE								
HAZARD			-0.5167**				0.0574	
MARITAL								
INSTABILITY				0.0296*				0.0059
Observations	6788	6788	6788	6788	3731	3731	3731	3731
Pseudo R-squared	0.2278	0.2483	0.2502	0.2503	0.2327	0.2545	0.2549	0.2549
Log-Likelihood	-2686.4	-2615.0	-2608.3	-2607.9	-1019.9	-990.9	-990.4	-990.4

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes regional dummies and a dummy for the year 2006. * significant at 10%; ** significant at 5%; *** significant at 1%.

Finally, we turn to individual characteristics that capture the household head's position in the labor market. In Table 3, we run a set of regressions which reproduce the same specifications of Table 1, but over a subsample of employed household heads. In the most parsimonious specification 1, the marital status gap is still larger for women than for men. However, several importance differences do emerge in the subsequent specifications. In columns 2, adding standard determinants no longer explains fully the marital status gap for men, while it nearly always does it for women. Thus, we observe a convergence between men and women once we limit our attention to working household heads. The same conclusion holds as far as the dynamics are concerned, because the interactions between time and the marital status dummy are now insignificant for both genders. Therefore, as long as the household head is employed, participation decisions are fully explained by standard

determinants other than gender and no residual dynamics is observed. Moreover, background variables lose significance even for men, while for women the only relevant variable is the regional divorce hazard. To sum up, we can conclude that the differential evolution of the marital status gap for men vs. women disappears for a subsample of employed household heads, which suggests that the differential evolution emerging from the full sample is driven by the behavior of those women who are unemployed. Unreported regressions over the unemployed subsample confirm that it displays patterns similar to those of the full sample.

Table 3. The determinants of the participation decision, 1998-2006:
Employed household heads

	MALES				FEMALES			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
MARRIED	0.0216***	0.0169**	0.0177**	0.0142*	0.0495***	0.0243	0.0242	0.0291*
AGE		0.0061***	0.0062***	0.0060***		0.0067***	0.0067***	0.0066***
AGE ² /1000		-0.0059***	-0.0060***	-0.0058***		-0.0070**	-0.0070**	-0.0069**
INCOME		0.0021***	0.0021***	0.0021***		0.0032***	0.0032***	0.0031***
INCOME ² /1000		-0.0033***	-0.0033***	-0.0032***		-0.0121***	-0.0120***	-0.0119***
WEALTH		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***
FAMILY SIZE		-0.0206***	-0.0206***	-0.0200***		-0.0043	-0.0042	-0.004
CHILDREN		0.0152***	0.0152***	0.0148***		-0.0022	-0.0021	-0.0022
EDU = 2		0.0980**	0.0992**	0.1067**		-0.0600**	-0.0594**	-0.0603**
EDU = 3		0.1365***	0.1379***	0.1464***		-0.0431	-0.0428	-0.044
EDU = 4		0.2057***	0.2075***	0.2226***		0.0021	0.0028	0.002
EDU = 5		0.3026***	0.3052***	0.3342***		0.0227	0.0241	0.0236
EDU = 6		0.3667***	0.3690***	0.4030***		-0.006	-0.0054	-0.0045
T1989*MARRIED		-0.0135	-0.0149	-0.0131		-0.0085	-0.0089	-0.0084
T1991*MARRIED		0.014	0.012	0.0138		0.047	0.0458	0.0458
T1993*MARRIED		-0.0071	-0.0084	-0.0069		-0.0475***	-0.0473***	-0.0475**
T1995*MARRIED		-0.02	-0.021	-0.0197		-0.0293	-0.0297	-0.0301
T1998*MARRIED		0.0038	0.003	0.0034		0.0112	0.0107	0.0105
T2002*MARRIED		0.0134	0.0136	0.0131		-0.0151	-0.016	-0.015
T2004*MARRIED		0.0023	0.0029	0.0023		0.0005	0.0023	0.0006
T2006*MARRIED		-0.0116	-0.0122	-0.0116		-0.011	-0.0118	-0.0111
FLFP			0.2725	0.2990*			-0.2727	-0.296
DIVORCE HAZARD			0.1254				0.3810**	
MARITAL INSTABILITY				0.0191***				-0.0121
Observations	30638	30638	30638	30638	5934	5934	5934	5934
Pseudo R-squared	0.0920	0.2157	0.2161	0.2168	0.0945	0.1994	0.2008	0.2000
Log-Likelihood	-9736.12	-8409.26	-8405.53	-8397.41	-1826.18	-1614.53	-1611.7	-1613.35

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

With a focus on more specific institutional characteristics of the labor market, we also investigate the potential impact of other individual factors affecting a household head's labor market position. Among employed household heads, we distinguish between those holding a tenured position and those with no tenure, on the basis of information which is only available since 2000. In Table 4, we add a dummy taking value 1 when the individual holds tenure, and 0 otherwise, to the same set of regressions of Table 3 for the employed subsample, but over the 2000-6 subperiod only. The marginal effect of the dummy is absent for men, while surprisingly is negative for women. Overall, however, nothing changes about the behavior of the marital status gap. Similarly, in a set of unreported regressions, to the regressions of Table 4 we add a dummy taking value 1 if the household head is self-employed, and 0 if he/she is an employee, only to find no additional insights from this distinction, as the dummy is always insignificant.

To sum up, we show that the time variability of the marital status gap for women tends to disappear for employed women, suggesting that the evolution of the female marital status gap is driven by the role of those women who do not work. In other words, working women appear to align their behavior to that of men's, which implies that the observed hump has to be attributed to the behavior of housewives.

Table 4. The determinants of the participation decision, 2000-2006:
Job Tenure

	MALES				FEMALES			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
MARRIED	0.0190*	0.0221	0.0218	0.0165	0.0205	0.0439**	0.0435**	0.0536**
AGE	0.0115***	0.0113***	0.0113***	0.0110***	0.0103*	0.0102*	0.0101*	0.0101*
AGE ² /1000	-0.0121***	-0.0119***	-0.0119***	-0.0113***	-0.0110*	-0.0108*	-0.0107*	-0.0106*
INCOME	0.0048***	0.0047***	0.0047***	0.0045***	0.0057***	0.0056***	0.0056***	0.0055***
INCOME ² /1000	-0.0199***	-0.0199***	-0.0198***	-0.0188***	-0.0348***	-0.0340***	-0.0339***	-0.0336***
WEALTH	0.0002***	0.0002***	0.0002***	0.0002***	0.0001*	0.0001**	0.0001**	0.0001**
WEALTH ² /1000	-0.00002	-0.00002	-0.00002	-0.00002	0.00003	0.00003	0.00003	0.00003
FAMILY SIZE	-0.0237***	-0.0231**	-0.0229**	-0.0214**	-0.0153	-0.0142	-0.0142	-0.0139
CHILDREN	0.0157	0.0150	0.0150	0.0137	0.0094	0.0084	0.0089	0.0082
EDU = 2	0.0938	0.0911	0.0920	0.0967	0.9094***	0.9097***	0.9133	0.9105
EDU = 3	0.1280*	0.1257*	0.1268*	0.1380**	0.9339***	0.9334***	0.9367*	0.9350*
EDU = 4	0.1916***	0.1894***	0.1903***	0.2117***	0.8090***	0.8087***	0.8137*	0.8138*
EDU = 5	0.2590***	0.2556***	0.2569***	0.3002***	0.9773***	0.9772***	0.9783*	0.9786**
EDU = 6	0.2783**	0.2770**	0.2812**	0.3332**	0.9212***	0.9211***	0.9218*	0.9217*
2002*MARRIED		0.0159	0.0162	0.0148		-0.0288	-0.0299	-0.0291
2004*MARRIED		-0.0001	0.0001	-0.0004		-0.0172	-0.0155	-0.0175
2006*MARRIED		-0.0268	-0.0267	-0.0271		-0.0361	-0.0369	-0.0368
TENURE	0.0158	0.0163	0.0164	0.0162	-0.0451**	-0.0457**	-0.0446**	-0.0467**
FLFP			0.6699	0.6278			-0.4566	-0.6864
DIVORCE			0.0588				0.5304***	
HAZARD								
MARITAL								
INSTABILITY				0.0378***				-0.0219
Observations	8032	8032	8032	8032	2931	2931	2931	2931
Pseudo R	0.2015	0.2019	0.2021	0.2039	0.1873	0.1885	0.1902	0.1898
Log-Likelihood	-2728.1	-2726.7	-2725.8	-2719.6	-924.9	-923.6	-921.7	-922.1

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes also regional dummies and dummies for the years 2002, 2004 and 2006. * significant at 10%; ** significant at 5%; *** significant at 1%.

5.3. Discussion

We can interpret our results more broadly as follows. The initial emergence and the subsequent decline of the female marital status gap are the joint product of two countervailing forces. The continuing increase in labor participation, in the postwar period, brings about a general tendency to the emancipation of all women, even those who are still outside the labor force. Emancipation means, among several other things, the ability to economic and financial decisions for the household. Before that time, the vast majority of female financial decision makers were in fact single, while the few married women in charge were, in a sense, very special women with a career.

As a consequence of these developments, instead, we observe an increase of the fraction of married women, including housewives, who become in charge. The lagged, cumulative impact of this process is a candidate explanation for the initial expansion of the marital status gap, since it widened the financial participation of married women so that, at some point at the beginning of the 1990s, the difference between married and single women starts to emerge. Even though many of these married women are still outside the labor force, they can count on a stable position within their marriage: as a result, their choices tend to differ sharply from those of single women. Therefore, this difference can indeed be attributed to the value of marriage as a sort of risk free asset, which makes married women more inclined to invest in risky assets. The marital status gap for women reaches a peak around 1998-2000. Subsequently, female labor force participation keeps expanding, making a smaller and smaller proportion of married women to depend on their husbands' income. More importantly, another new and opposing force comes into the picture. Gradually, the previous decade had in fact shaken the foundations of family structure, with an increase in the number of divorces which has gradually eroded the perception of marriage as a safe asset. This devaluation of marriage implies a convergence of married women to the same preferences of single women. Therefore, the eventual decline of the marital status gap can both be attributed to women's mobilization into the labor force and to the decline of marriage. At the end of the process, married and single women find themselves in a more similar position, since they both work and neither enjoys the protection of a safe marriage. To sum up, even though we cannot fully identify the channels through which the marital status gap evolves we do produce suggestive evidence that marriage represents, for women, a sort of safe asset, and also that the value of this asset, far from being time invariant, evolves over time. The explanation we suggest for this evolution which rests on the analysis of the structure of family and society, as reflected by decline of marriage as a valuable safe asset in the face of increasing female labor force participation.

6. Conclusion

Based on a dataset drawn from the 1989-2006 Bank of Italy Survey of Household Income and Wealth, we have studied the 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 married women have a higher propensity to invest in risky assets than single ones, while a marital status gap does not apply to men. These findings confirm 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 married vs. single women has evolved over time, following a humped shaped pattern, while no such pattern emerges for men. This confirms our second hypothesis that the female marital status gap is not time invariant. We also explored a number of possible explanations for the observed evolution, including aggregate and individual factors that capture the evolution of gender roles in the family and society, such as the increasing incidence of divorce and the expansion of female labor market participation. Our findings suggest that the evolution of the female marital status gap is driven by the role of those married women who are unemployed. The combination of two forces, women's continuing mobilization into the labor force in the postwar period, and the decline of marriage in the past decade, can explain the initial rise and the subsequent decrease of the gap in the financial decisions of married and single women. Thus we can conclude that women's perception of marriage as a safe asset, as reflected by their financial decisions, has been shaped by the transformation of the structure of family and society.

More generally, our investigation leads us to conclude that 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, only few 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.

REFERENCES

- Arano, K., Parker, C. and Terry, R., 2010, Gender-Based Risk Aversion and Retirement Asset Allocation, *Economic Inquiry* 48, 147-155.
- Barber, B. M. and Odean, T., 2001, Boys will be Boys: Gender, Overconfidence, and Common Stock Investments, *Quarterly Journal of Economics* 116, 261-289.
- Brunetti, M. and Torricelli, C., 2009, Population Age Structure and Household Portfolio Choices in Italy, *European Journal of Finance*, forthcoming.
- Christiansen, C., Joensen, J. S. and Rangvid, J., 2006, Gender, Marriage, and the Decision to Invest in Stocks and Bonds: Do Single Women Invest More in Less Risky Assets", mimeo.
- Crosan, R. and Gneezy, U., 2009, Gender Differences in Preferences, *Journal of Economic Literature* 47, 448-474.
- Cubeddu, L. M. and Rios-Rull, J.-V., 2003, Families as Shocks, *Journal of the European Economic Association* 1, 671-682.
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J. and Wagner, G. G., 2005, Individual Risk Attitudes: New Evidence from a Large, Representative, Experimentally-Validated Survey, *DIW Discussion Papers* 511.
- Edlund, L. and Pande, R., 2002, Why Have Women Become More Left-Wing? The Political Gender Gap and the Decline in Marriage, *Quarterly Journal of Economics* 117, 917-961.
- Fellner, G. and Maciejovsky, B., 2007, Risk Attitude and Market Behavior: Evidence from Experimental Asset Markets, *Journal of Economic Psychology* 28, 338-350.
- Fernandez, R. and Fogli, A., 2009, Culture: An Empirical Investigation of Beliefs, Work, and Fertility, *American Economic Journal: Macroeconomics* 1, 146-177.
- Guiso, L. and Jappelli, T., 2002, Household Portfolios in Italy, in Guiso, L., Haliassos, M. and Jappelli, T. (eds.), *Household Portfolios*, Cambridge: MIT Press.
- Hinz, R. P., McCarthy, D. D. and Turner, J. A., 1997, Are Women Conservative Investors? Gender Differences in Participant-Directed Pension Investments, in Gordon, M. S., Mitchell, O. S. and Twinney, M. M. (eds.), *Positioning Pensions for the Twenty-first Century*, Philadelphia: University of Pennsylvania Press, 91-105.
- Jianakopulos, N. A. and Bernasek A., 1998, Are Women More Risk Averse?, *Economic Inquiry* 36, 620-630.
- Lott, J. R. and Kenny, L. W., 1999, Did Women's Suffrage Change the Size and Scope of Government?, *Journal of Political Economy* 107, 1163-1198.

- Love, D., 2009, "The Effect of Marital Status and Children on Savings and Portfolio Choice," *Review of Financial Studies* 23, 385-432.
- Lupton, J. P. and Smith, J. P., 2003, *Marriage, Assets and Savings*, in Grossbard-Shecht, S. (ed.), *Marriage and the Economy: Theory and Evidence from Advanced Industrial Societies*, Cambridge, Cambridge University Press, 129-152.
- Lusardi, A. and Mitchell, O. S., 2008, *Planning and Financial Literacy: How Do Women Fare?*, *American Economic Review, Papers & Proceedings* 98, 413–417.
- Neeman, Z., Newman, A. F. and Olivetti, C., 2008, *Are Career Women Good for Marriage?*, mimeo, Boston College.
- Schmidt, L. and Sevak, P., 2006, *Gender, Marriage, and Asset Accumulation in the United States*, *Feminist Economics* 12, 139-166.
- Schubert, R., Brown, M., Gysler, M. and Brachinger, H. W., 1999, *Financial Decision-Making: Are Women Really More Risk-Averse?*, *American Economic Review, Papers & Proceedings* 89, 381-385.
- Stevenson, B. and Wolfers, J., 2007, *Marriage and Divorce: Changes and Their Driving Forces*, *Journal of Economic Perspectives* 21, 27-52.
- Sundén, A. E. and Surette, B. J., 1998, *Gender Differences in the Allocation of Assets in Retirement Savings Plans*, *American Economic Review, Papers & Proceedings* 88, 207-211.
- Waite, L. and Gallagher, M., 2000, *The Case for Marriage: Why Married People are Happier, Healthier, and Better Off Financially*, New York: Doubleday.
- Zissimopoulos, J., Karney, B. and Rauer, A., 2008, *Marital Histories and Economic Well-Being*, Michigan Retirement Research Center Working Paper 2008-180.

APPENDIX 1 – Data description and summary statistics

Table A.1 Data description

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.
TENURE	Binary variable assuming value 1 for household heads holding a tenure position, 0 otherwise (i.e., temporary job).
SELF-EMPLOYED	Binary variable assuming value 1 for household heads being self-employed, 0 otherwise.
MARITAL INSTABILITY	Binary variable assuming value 1 for married couples in which the wife has a higher education with respect to the husband, 0 otherwise.
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 DATASource: <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 HAZARD	Number of divorces over number of marriages at the regional level. Ranging between 2% and 36%.
DIVORCE RATE	Crude divorce rate at the regional level, computed as the number of divorces in each region every 1000 residents. Ranging between 1% and 15%.
SEPARATION RATE	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 labor 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 45%.

OECD DATASource: <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.

Table A.2 Descriptive Statistics

Variables	Pooled Sample			Male			Female		
	1989	2006	Total	1989	2006	Total	1989	2006	Total
PARTICIPATION	0.042 (0.201)	0.113 (0.316)	0.094 (0.291)	0.048 (0.213)	0.138 (0.345)	0.107 (0.309)	0.018 (0.134)	0.067 (0.251)	0.063 (0.244)
PARTICIP _{GJ}	0.249 (0.432)	0.388 (0.487)	0.378 (0.485)	0.265 (0.442)	0.429 (0.495)	0.415 (0.493)	0.180 (0.384)	0.311 (0.463)	0.295 (0.456)
AGE	53.235 (15.656)	55.521 (16.208)	54.688 (16.066)	50.969 (14.625)	54.278 (15.134)	52.794 (14.969)	62.576 (16.297)	57.800 (17.789)	59.012 (17.577)
INCOME	16.947 (12.012)	33.095 (33.702)	24.997 (22.728)	18.443 (12.363)	37.125 (38.569)	27.200 (24.199)	10.778 (7.860)	25.704 (20.169)	19.965 (17.960)
WEALTH	74.943 (115.475)	258.853 (582.532)	161.850 (334.558)	81.866 (116.823)	294.599 (628.211)	178.784 (357.422)	46.407 (105.069)	193.311 (481.042)	123.178 (271.388)
FAMILY SIZE	2.901 (1.366)	2.540 (1.282)	2.732 (1.327)	3.191 (1.266)	2.783 (1.230)	3.033 (1.250)	1.708 (1.086)	2.095 (1.255)	2.044 (1.238)
CHILDREN	1.039 (1.079)	0.799 (0.979)	0.930 (1.032)	1.171 (1.087)	0.883 (1.005)	1.064 (1.053)	0.496 (0.852)	0.644 (0.910)	0.625 (0.910)
EDU = 1	0.094 (0.292)	0.054 (0.225)	0.084 (0.278)	0.063 (0.243)	0.031 (0.173)	0.054 (0.225)	0.222 (0.415)	0.096 (0.294)	0.154 (0.361)
EDU = 2	0.383 (0.486)	0.241 (0.428)	0.310 (0.463)	0.368 (0.482)	0.208 (0.406)	0.285 (0.451)	0.443 (0.497)	0.302 (0.459)	0.367 (0.482)
EDU = 3	0.238 (0.426)	0.286 (0.452)	0.266 (0.442)	0.263 (0.440)	0.314 (0.464)	0.296 (0.456)	0.137 (0.344)	0.235 (0.424)	0.198 (0.398)
EDU = 4	0.214 (0.410)	0.320 (0.467)	0.262 (0.440)	0.230 (0.421)	0.347 (0.476)	0.283 (0.450)	0.146 (0.353)	0.271 (0.445)	0.215 (0.411)
EDU = 5	0.068 (0.252)	0.094 (0.292)	0.075 (0.263)	0.072 (0.259)	0.093 (0.291)	0.079 (0.270)	0.051 (0.219)	0.095 (0.293)	0.065 (0.246)
EDU = 6	0.004 (0.060)	0.004 (0.067)	0.003 (0.052)	0.004 (0.063)	0.006 (0.079)	0.003 (0.057)	0.002 (0.044)	0.001 (0.033)	0.001 (0.037)
MARRIED	0.728 (0.445)	0.630 (0.483)	0.673 (0.469)	0.889 (0.314)	0.801 (0.399)	0.851 (0.356)	0.063 (0.243)	0.316 (0.465)	0.267 (0.443)
MALE	0.805 (0.396)	0.647 (0.478)	0.695 (0.460)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
DIVORCE HAZARD	0.101 (0.049)	0.191 (0.042)	0.135 (0.069)	0.100 (0.049)	0.192 (0.042)	0.131 (0.069)	0.105 (0.049)	0.190 (0.044)	0.144 (0.070)
DIVORCE RATE	5.357 (2.211)	7.804 (1.136)	6.171 (2.535)	5.319 (2.208)	7.821 (1.115)	6.042 (2.524)	5.514 (2.218)	7.773 (1.174)	6.465 (2.533)
SEPARATION RATE	7.603 (2.761)	14.229 (3.384)	11.315 (4.424)	7.585 (2.776)	14.283 (3.352)	11.022 (4.402)	7.677 (2.697)	14.132 (3.439)	11.985 (4.403)
FLFP	0.250 (0.061)	0.354 (0.080)	0.304 (0.082)	0.249 (0.062)	0.356 (0.080)	0.301 (0.082)	0.256 (0.059)	0.350 (0.081)	0.311 (0.082)
FER	0.305 (0.040)	0.386 (0.069)	0.351 (0.063)	0.304 (0.041)	0.388 (0.069)	0.348 (0.063)	0.308 (0.038)	0.384 (0.070)	0.357 (0.063)

	.	0.895	0.908	.	0.897	0.915	.	0.891	0.891
TENURE	.	(0.307)	(0.288)	.	(0.305)	(0.279)	.	(0.311)	(0.312)
SELF-EMPLOYED	0.198	0.156	0.167	0.226	0.196	0.207	0.084	0.083	0.075
	(0.399)	(0.363)	(0.373)	(0.418)	(0.397)	(0.405)	(0.277)	(0.276)	(0.264)
MARITAL INSTABILITY	0.102	0.126	0.117	0.122	0.143	0.137	0.023	0.097	0.071
	(0.303)	(0.332)	(0.321)	(0.327)	(0.350)	(0.344)	(0.149)	(0.296)	(0.256)
RISK AVERSION	.	0.487	0.487	.	0.447	0.450	.	0.560	0.557
	.	(0.500)	(0.500)	.	(0.497)	(0.497)	..	(0.496)	(0.497)
Obs.	8165	7768	71370	6697	4896	50808	1468	2872	20562

Notes: *PARTICIPATION* and *PARTICIPATION_{GJ}* are dummy variables assuming value 1 if the household head holds risky activities, according to the definitions adopted in this study and Guiso and Jappelli (2002), respectively. *AGE* is the age of the household head, *INCOME* and *WEALTH* are respectively the household's total income and net wealth (expressed in thousands € at 1995 values for the pooled sample), *FAMILY SIZE* is the number of household components, *CHILDREN* is the number of children in the household, *EDU* is a 6-category variable indicating the highest educational level achieved by the household head. *MARRIED* and *MALE* are dummy variables assuming value 1 if the household head is respectively married and male. *DIVORCE HAZARD* is the ratio of divorces over marriages at the regional level. *DIVORCE RATE* and *SEPARATION RATE* are divorce and separation rates, *FLFP* and *FER* are female labor force participation and female employment rates, all the regional level. *TENURE* and *SELF-EMPLOYED* are dummies assuming value 1 if the household head has a tenured employment position or is self-employed, respectively. *MARITAL INSTABILITY* is a dummy assuming value 1 if the wife has a higher education with respect to the husband. *RISK AVERSION* is a dummy variable with value 1 if the household head is risk-averse. For additional details see the Data Appendix. All statistics are computed using sampling weights (*pesofl2* in the SHIW). Standard deviations are reported in parenthesis.

APPENDIX 2 – Robustness

Table A.3 The determinants of the participation decision, 1989-2006:
An alternative definition of risky assets

	MALES				FEMALES			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
MARRIED	0.0877***	0.0435**	0.0471**	0.0374*	0.1691***	0.0799***	0.0808***	0.0932***
AGE		0.0117***	0.0119***	0.0123***		0.0089***	0.0088***	0.0088***
AGE ² /1000		-0.0124***	-0.0126***	-0.0127***		-0.0094***	-0.0093***	-0.0093***
INCOME		0.0081***	0.0081***	0.0080***		0.0101***	0.0100***	0.0099***
INCOME ² /1000		-0.0146***	-0.0145***	-0.0142***		-0.0309***	-0.0307***	-0.0305***
WEALTH		0.0004***	0.0004***	0.0004***		0.0005***	0.0005***	0.0005***
WEALTH ² /1000		-0.00003***	-0.00003***	-0.00003***		-0.0001***	-0.0001***	-0.0001***
FAMILY SIZE		-0.0206***	-0.0205***	-0.0187***		-0.0268***	-0.0268***	-0.0268***
CHILDREN		0.0092	0.0088	0.0069		0.013	0.013	0.0137
EDU = 2		0.1068***	0.1061***	0.1156***		0.0387**	0.0401**	0.0400**
EDU = 3		0.1749***	0.1747***	0.1863***		0.1111***	0.1127***	0.1147***
EDU = 4		0.2479***	0.2478***	0.2663***		0.1576***	0.1586***	0.1659***
EDU = 5		0.2578***	0.2580***	0.2802***		0.1885***	0.1908***	0.2010***
EDU = 6		0.3862***	0.3858***	0.4043***		0.1276	0.1324	0.1419*
1989*MARRIED		0.0001	-0.0085	-0.0046		-0.061	-0.0692	-0.0661
1991*MARRIED		-0.0599*	-0.0668**	-0.0636*		-0.1495**	-0.1498**	-0.1500**
1993*MARRIED		-0.0088	-0.0156	-0.0105		-0.0713**	-0.0706**	-0.0721**
1995*MARRIED		-0.0063	-0.0117	-0.0075		-0.0377	-0.039	-0.0381
1998*MARRIED		0.0036	0.0007	0.0017		0.0161	0.0149	0.0169
2002*MARRIED		-0.0034	-0.0028	-0.0042		-0.0447*	-0.0441*	-0.0449*
2004*MARRIED		0.0133	0.0181	0.0144		-0.0367	-0.0346	-0.037
2006*MARRIED		-0.0274	-0.0291	-0.0254		-0.031	-0.0301	-0.0256
FLFP			1.1092***	1.2856***			0.9067**	1.0043**
DIVORCE			0.5964**				0.5247**	
HAZARD								
MARITAL INSTABILITY				0.0494***				-0.0436***
Observations	50808	50808	50808	50808	20562	20562	20562	20562
Pseudo R-squared	0.1248	0.2296	0.2304	0.2308	0.1201	0.2444	0.2451	0.2452
Log-Likelihood	-29911.1	-26328.8	-26299.8	-26289.3	-10934.3	-9390.1	-9380.8	-9379.9

Notes: 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). Each regression includes time and regional dummies. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.4 The determinants of the participation decision, 1989-2006:
A finer definition of marital status

	MALES				FEMALES			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
MARRIED	0.0203***	0.0039	0.0045	0.0016	0.0167***	0.0179***	0.0180***	0.0197***
SEPARATED- DIVORCED	-0.0008	-0.0162**	-0.0162**	-0.0162**	-0.0053	-0.0048	-0.0048	-0.0047
WIDOW	-0.0095	0.0067	0.0068	0.0062	-0.0292***	-0.0023	-0.0024	-0.002
AGE		0.0035***	0.0036***	0.0036***		0.0019***	0.0019***	0.0019***
AGE ² /1000		-0.0030***	-0.0030***	-0.0030***		-0.0018***	-0.0018***	-0.0018***
INCOME		0.0020***	0.0020***	0.0020***		0.0015***	0.0016***	0.0015***
INCOME ² /1000		-0.0033***	-0.0033***	-0.0032***		-0.0050***	-0.0050***	-0.0050***
WEALTH		0.0001***	0.0001***	0.0001***		0.00005***	0.00005***	0.00005***
WEALTH ² /1000		-0.00001***	-0.00001***	-0.00001***		-0.00001*	-0.00001*	-0.00001*
FAMILY SIZE		-0.0149***	-0.0150***	-0.0144***		-0.0069***	-0.0069***	-0.0068***
CHILDREN		0.0091***	0.0092***	0.0086***		0.0032	0.0033	0.0032
EDU = 2		0.0807***	0.0807***	0.0851***		0.0081	0.0081	0.0081
EDU = 3		0.1292***	0.1294***	0.1350***		0.0294***	0.0293***	0.0296***
EDU = 4		0.2027***	0.2032***	0.2150***		0.0547***	0.0546***	0.0560***
EDU = 5		0.2778***	0.2783***	0.3000***		0.0870***	0.0870***	0.0900***
EDU = 6		0.3349***	0.3337***	0.3595***		0.0345	0.0344	0.0371
1989*MARRIED		-0.0094	-0.0105	-0.0094		-0.0039	-0.0044	-0.004
1991*MARRIED		0.024	0.0224	0.0236		0.0013	0.0011	0.0013
1993*MARRIED		0.0004	-0.0008	0.0005		-0.0193***	-0.0193***	-0.0193***
1995*MARRIED		-0.0092	-0.01	-0.0089		-0.0144**	-0.0146**	-0.0145**
1998*MARRIED		0.0082	0.0076	0.008		-0.0069	-0.007	-0.0068
2002*MARRIED		0.0165	0.0166	0.0163		-0.0095**	-0.0096**	-0.0095**
2004*MARRIED		0.0175	0.0182	0.0177		-0.0109**	-0.0109**	-0.0109**
2006*MARRIED		-0.002	-0.0024	-0.0017		-0.0132***	-0.0135***	-0.0131***
FLFP			0.2699**	0.2976**			0.0086	0.0036
DIVORCE			0.1447**				0.0811	
HAZARD								
MARITAL INSTABILITY				0.0164***				-0.0042
Observations	50808	50808	50808	50808	20562	20562	20562	20562
Pseudo R-squared	0.0963	0.2336	0.2341	0.2346	0.1214	0.2563	0.2566	0.2565
Log-Likelihood	-15311.9	-12985.3	-12977.2	-12968	-4168.57	-3528.33	-3527.1	-3527.4

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