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# The impact of financial crisis on savings decisions: evidences from Italian pension funds

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## Abstract

This paper provides an empirical analysis of the impact of the financial crisis on households' saving decisions in private pension schemes. We base our study on an original dataset made up of three sample surveys collected in 2008, in 2012 and in 2015 by Mefop. Each survey has been conducted interviewing by phone more than 10000 people in order to construct a representative sample of roughly 1000 individual for each survey, which includes both members and not members of Italian pension funds. Each wave allows us to map saving decisions and personal characteristics (income, type of occupation, political orientation, financial literacy, etc.) in two distinct moment: before the crisis and after the crisis. Therefore we can identify the impact of the financial turmoil simply introducing a dummy variable. Results shows that the probability to invest in a private pension scheme has been barely touched and in some cases it is also possible to register an increase.

Keywords: financial crisis, saving decision, pension funds, Italy, sample survey  
JEL classification: G11, G23, H55

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## Introduction

As all developed countries, Italy faces up to the sustainability of the public pension system, threatened by the ageing of the population and the drop in the number of new born. The pay as you go scheme has been overhauled more times from mid '90 to achieve financial balance and today the path of public pension expenditure is under control.

Conversely more efforts have to be still done on the field of the adequacy of the treatments. The scheduled increases in the retirement age will play an important role but a key contribution to this achievement is linked to the soar in membership of pension funds. However they still continue to remain slightly thin. At the end of 2014 employees enrolled in pension funds still represented only 28% of potential members (Covip 2015).

Even though Italian employees (and not only) seem to be more aware of the need to hedge the risk of an inadequate income at retirement, pension funds still struggle to be recognized as the best way to deal with the issue. When asked on the main actions to tackle the expected decrease in the coverage of public pensions, Italian workforce mainly refers to savings different from pension funds like mutual funds, government bond and real estate as the preferred way to save for retirement.

The paper analyses the main determinants of pension funds membership and tries to evaluate whether financial turmoil affected membership in Italy. It uses an original dataset based on the survey realized by Mefop<sup>1</sup> in 2008, 2012 and 2015 on the Italian workforce. This period is plenty of significant events, both on the financial markets (subprime mortgages crisis, bankruptcy of Lehmann Brothers, Piigs crisis) and on the legislative field (enforcement of the new regulation on pension funds, Monti-Fornero reform of the first pillar). The data can help to investigate whether financial crisis change the attitude and the perception of pension funds among Italian workforce.

For Italy, the paper represents the first attempt to study the phenomenon of the pension funds membership and the effects of financial crisis on the choices of the Italian employees towards second pillar.

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<sup>1</sup> Mefop is a public body jointly owned by the Italian Ministry of Treasury and Finance and about 90 pension funds, both occupational and personal.

The paper is organized as follow: in the first paragraph the structure of the public and private Italian pension system is analyzed, than the review of the literature and the description of the dataset will follow and finally the empirical strategy and the main findings will be discussed, with reference to some policy conclusions. Tables and Figures are reported in the Appendix.

## **1.The Italian pension system**

### **1.1The public pillar: how it works**

From the mid '90 the Italian public pension scheme is a sort of “work in progress” due to the occurred changes to ensure its financial sustainability. However two are the breakthrough reforms. The first was made in 1995 when a notional defined benefit (NDC) scheme (reform Dini) was introduced. Under the Dini framework the NDC scheme only applied to employees with less than 15 years of qualifying contribution payed at January 1, 1996. Contrary, for those who accrued at least 15 years of qualifying contribution payed at January 1, 1996 nothing change and their treatment continued to be bases on their wage.

After some parametric maintenances, in December 2011, under the pressure of the financial markets concerned about the sustainability of the huge public debt burden the Parliament passed a new reform (reform Monti-Fornero) which is currently in force. From January 1, 2012 the NDC scheme apply also to the employees excluded by the Dini reform, i.e. those with at least 15 years of qualifying contribution payed at January 1, 1996. The Monti-Fornero reform also increased the retirement age from 65 to 67 beginning January 2012.

Public pension scheme is still a Pay as you go system, so to deal with the ageing of the population pension age and annuity factor to determine the treatment are automatically adjusted to life expectancy every three years, and from 2019 the adjustment will be made every two years.

## **1.2 The private pillar: how it works**

The legislative framework of Italian pension funds has been strongly revised in 2005 and come into force from January 2008.

Pension funds membership is voluntary but a mechanism of automatic enrolment is in force. When starting a job an employee has 6 months to decide whether to join a pension fund, if the choice is not made in due time he is enrolled in a pension fund which is established on the basis of the law (usually an occupational pension fund).

Despite the automatic enrolment procedure in place, membership still remain low and asymmetrically distributed among economic sectors. At the end of 2014 only 28% of the potential employees joined a pension fund. Moreover membership are under-developed in economic sectors where mid and small companies prevail (commerce and trade, touristic sector...), for female, young employees, in south-island regions, in the public sector.

Pension funds are mainly defined contribution, meaning that members bear all the financial risks; finally there is a common level playing field between occupational and personal pensions. All pension funds, no matter their nature, share the same rules on governance, investments, information, tax treatment.

## **2. Review of the literature**

The analysis of the literature shows that the pension funds membership is a multi-dimensional phenomenon in which a lot of factors may affect the choice: working conditions and financial skills of the employees, assets and income constraints, degree of trust on financial investments and on pension funds, behavior of the workers as well.

The probability to join a pension fund strongly vary on the dimension of the company, it is usually higher for employees of big companies than small one. That asymmetry is presumably due to the costs for the employer to set up a pension fund and to the risks of the bankruptcy of the scheme, particularly for defined benefits schemes (Dummann (2008), Horiba e Yoshida (2002)). These differences are consequently reflected in the economic sectors: where big companies prevail the probability to join a pension funds raises (financial sector, public utilities, public sector...), viceversa where small and medium companies prevail the probability to

become member of a pension fund is lower (commerce and trade, touristic sector, building and constructions...).

The membership of a pension fund seems to be linked also with the union membership and the age of employees<sup>2</sup>. If on the one hand employees and their representatives have the incentives to ask for the provision of a substantial total compensation (wage, health and pension coverage, other fringe benefits), the risk to be fired could act as a brake to wage claims (included the demand for pension coverage) as the request could trigger an increase in the costs related to the staff of the company.

However, employees members of a union are less likely subjected to layoff, they are usually enough close to retirement and so they could be more incentivated to ask for a pension scheme coverage by the employer. It seems to exist a close link between the participation to a union, the age of the employees and the pension funds membership. Therefore, it is not surprising that the probability to join a pension fund increases with the age of the employees and union membership while it is low for young employees and for those not enrolled into a union (Dummann 2008, McCarthy 2006, Ghilarducci e Lee 2005, Andrietti 2000, Heinz e Turner 1998, Maelli e Pudney 1996, Even e McPherson 1994, Allen *et al.*(1993), Disney and Cameron (1990) Freeman (1981 and 1985), Long and Scott (1982)).

Another relevant issue in the evaluation of pension funds participation is the degree of financial literacy. Lusardi, Michaud e Mitchell (2013) find out that employees with low level of assets are also usually poorly financially skilled, while workers with high level of assets are strongly financially educated. Furthermore, Lusardi and Mitchell (2014) show that, when dealing with complex economic choices (including pensions issues), high financially skilled people are more likely to achieve a higher degree of welfare than poorly financially educated one.

Other key elements to determine pension funds membership are assets (both financial and real estate) and income constraints, especially where the participation is voluntary and incentivated by tax reliefs. As regard Germany, for example, Dummann (2008) highliths that participation rates are higher for wealthy employees than poorer one. Another aspect which influences the behaviour of being member of a pension fund is the degree of trust on financial investments. Boeri and Zingales

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<sup>2</sup> For an in depth analysis of the interactions between provision of welfare state and unions see: Brugiavini *et.al.* (2001)

(2007) highlight that the probability to join a pension fund increases from 15% to 27% for people characterized by an high level of trust on financial markets<sup>3</sup>.

Finally, the membership of a pension fund could also be related to the so called social interaction. Usually people deal with complex economic choices without having adequate skills. They go beyond this gap by relying their decisions on the behaviors of their relatives, colleagues or friends. This phenomenon has also been documented in the field of pension's choices.

Duflo and Saez (2004 e 2005) treated a sample of employees of different departments of a Us university with a training course on pension funds. The attendance has been incentivated with a financial reward. First of all they find out that the participation to the pension scheme after 5 and 7 months from the treatment was greater for the departments involved in the training course. Then, and more relevant, they find out no substantial differences within the departments involved in the treatment, in the participation rates of treated and not treated employees. Duflo and Saez link this surprising finding to the social interaction between employees of the same department.

In The Netherlands Vermeer, van Rooij and van Vooren (2014) highlights that employees tend to postpone their retirement if their peers do the same. On average they find out that an increase of one year in the age of retirement leads to a delay of three months in the own retirement.

### 3. The dataset

The dataset collects the data of three surveys carried out by Mefop on June 2008 and November 2012<sup>4</sup>. The questionnaires have been submitted to a sample of 900 interviewees, randomly picked out from the Italian workforce, and equally balanced between members and not members of pension funds. The sub samples of members and not members reflect the features of the reference populations in the year of the survey. Sub samples of members and not members are weighted on the basis of the percentage of employees enrolled and not enrolled in pension funds. The samples of the three surveys have been also weighted on the basis of gender, age, place of residence and type of job.

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<sup>3</sup> The average employee of the sample has the following features: male, forty years old, with a child, white-collar, secondary degree of education

<sup>4</sup> Mefop (2014, 2011)

For the interview the Cati methodology (Computer-assisted telephone interviewing) has been used and only land-line interviews were collected. The surveys have involved all types of employees (public, private and self employed) in order to check the behaviours of the workforce as a whole, not only of those who have to choose whether to contribute pension funds with the *Trattamento di fine rapporto* (Tfr)<sup>5</sup>.

The questionnaires were arranged in the same way. The introductory section mapped both the social-demographic and wealth features of the sample. The first part was open to the sample as a whole in order to detect the degree of knowledge of the cornerstones of the retirement systems, both public and private: financing mechanisms (pay as you go and funded systems), ratio of the retirement treatment (defined benefit and defined contribution), substitution rates, profitability and safety, degree of trust in pension funds. The third section only involved the members of pension funds to verify their sentiment and the level of satisfaction toward the membership and the investment choices. The last part was reserved to the workers still not members of pension funds in order to study the reasons of their choices and purposes.

Having kept unchanged the structure of the questionnaires, having always used the CATI methodology and having selected samples based on the same variables allows us to appreciate whether and to what extent financial turmoil affected the attitude and the behaviour of the Italian workforce towards second pillar schemes.

As shown in Table 1, the dataset contains a rich set of information on the socio-demographic characteristics and on wealth and income situation as well of the interviewees. Information on occupational condition are also surveyed.

The samples are mainly represented by private employees (65% in 2008, 60% in 2012), self-employers represent about  $\frac{1}{4}$  of the sample (24% in 2008, 25% in 2012). Public employees represent only a marginal share of the samples (11% in 2008, 15% in 2012). The distribution of the samples on the basis to the type of employment reproduces that of Italian workforce from which the sample has been randomly surveyed.

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<sup>5</sup> The *Trattamento di fine rapporto* is a severance payment due at the end of the working relationship (retirement, sacking or resignation). The Tfr represents a “deferred wage” as it is monthly accrued at the rate of 6.91% of the wage. Tfr only involves private employees; it is not a financial investment as its rate of return is fixed by the law and is equal to 1.5% plus 75% of the inflation rate. When starting a job the employee has to choose whether to pay the Tfr to a pension fund, becoming member.



The allocation of the samples on the basis of the type of occupation is due to the fact that the enrolment in a supplementary pension schemes is closely linked to the TFR which is currently *de facto* limited to private employees. It implies that in the sub sample of members there are more private employees than in those of not members (77% vs. 53% in 2008, 72% vs. 56% in 2012). Both in 2008 and 2012 public employees are over-weighted in the sub group of not members than in those of members. Finally, as regard self-employed, while in 2008 they prevailed among not members (28% vs. 20%), in 2012 the percentages are the same and equal to 25%.

As regard gender, and in line with what is observed at national level, the samples of 2008 and 2012 see a prevalence of males (64% in 2008, 60% in 2012). The difference between the two genders increases for members while decrease for not members.

The distributions based on the age cohorts show that members represent the majority in the cohort 35-54 years old. The number of interviewees enrolled in a supplementary pension scheme with an age of at least 55 year old raises from 10% in 2008 to 17% in 2012. More generally members represent the majority in the cohorts 35-54 years old and 55 and more years old. Contrary not members prevail in the age cohort 18-34.

As regard the place of residence the majority of the respondents are located in the north regions both for members and not members (64% in 2008 and 59% in 2012). Members of Unions prevail within members while interviewees who declared not to be enrolled in a Union prevail among not members. As regard the political ideology, while in 2008 there was a slightly prevalence of right-centre right employees, in 2012 things change and left-centre left represent the majority. Finally as regard the degree of education, both in 2008 and in 2012 interviewees declaring a high school degree represent the most relevant share of the sample.

The survey contains some questions on the degree of trust in pension funds that have been used to check whether financial crisis affected trust on second pillar schemes, hence the probability to join a pension fund. The questions, which asks the interviewees the level of agreement (fully agree, partial agree, little agree, no agree) were the following:

- *Pension funds are an instrument to get an adequate level of pension*
- *Pension funds are a financial investment safer than other*
- *Pension funds are a financial investment that benefits of more tax incentives than other*
- *Pension funds only make banks, insurance companies and unions richer.*

The survey also contains some questions on confidence towards public and private pensions that we have used to check whether financial crisis affected trust on the two pillars, hence the probability to join a pension fund. The first question asked a judgement on the fact that public pension will be enough for the needs of old age<sup>6</sup>. The second and the third questions asked, respectively, a judgement on the safest and more profitable pension system<sup>7</sup>.

#### 4. The empirical strategy and the main findings

To estimate whether financial turmoil affected the probability to join a pension fund a probit model defined by the following equation has been used:

$$I_t = \beta_0 + \beta_1 Y_{2012} + \beta_2' W_t + \beta_3' D_t + \beta_4' C_t + \varepsilon_t \quad (1)$$

where:

$t$  = survey wave index

$I_t$  = dummy=1 if interviewee is a pension fund member

$Y$  = survey wave dummy (2008 omitted)

$W_t$  = matrix of occupational, wealth and income variables

$D_t$  = matrix of ideology and demographic variables

$C_t$  = matrix of variable related to confidence in pension funds

$\varepsilon_t$  = error component

To estimate the effect of financial crisis on pension fund membership a dummy which takes value one when associated to the 2012 wave has been used. The effect of the financial crisis is measured through the values associated to the coefficient  $\beta_1$ , which estimates *ceteris paribus* the change in the memberships probability between 2008 and 2012.

Four different specifications of the model have been estimated to take into account the confounding effects due of the Monti-Fornero reform and the levels of trust in pension funds (PFs). The first two specifications refer to all the sample while (alternatively controlling for the levels of trust in PFs), the third and the fourth ones are based only on the sub sample of respondents not affected by the Monti-Fornero

<sup>6</sup> Do you think that the only public pension will be sufficient to cover the needs after retirement? Yes; Yes but with difficulties; No I have to change my standard of living; No absolutely

<sup>7</sup> What is the safest pension system? What the more profitable pension system? Public; Private; Public and private are similar

reform (alternatively controlling for the levels of trust in PFs). We believe that the latter specifications better identify the effects of financial crisis on membership as they only take into account the workers not affected by the new legislative framework on first pillar of 2012 that had a huge impact on pension issues in public opinion.

At first sight it should be reasonable to expect a negative impact of the financial crisis in pension funds membership given the effect it produced on Italian economy, particularly what happened in 2011/2012. The soar of interest rates on Italian public debt forced the government to quickly adopt strong budget measure among which the Monti-Fornero reform of public pension. A long phase of recession started in that period and only in the last months GDP growth come back positive. However looking at the path of the workers enrolled in pension funds (Fig.1) it never decreases, not even during the periods of financial difficulties, so may be realistic not to expect a negative effect of financial turmoil on membership rates.

Table 2 summarizes the effects of financial crisis on pension funds membership. Looking at the overall sample, financial events negatively affect pension fund membership as the marginal probability associated to coefficient  $\beta_1$  is slightly negative. Moreover, turmoil of markets did not affect the level of trust in pension funds as including the variables related to the confidence on supplementary schemes the marginal probability associated to the coefficient  $\beta_1$  increases.

Our findings reverse when restricting the analysis to the sub sample of employees not affected by the Monti-Fornero reform: in fact the marginal probability associated to  $\beta_1$  become slightly positive although not statistically significant. As previously illustrated this group of interviewees represents those for which the notional defined contribution scheme was already in place from 1996. They were not touched by the measures of 2012 (at least as regard the way in which the treatment in computed) and so, only for this group it is possible to measure the “real effect” of financial crisis. For employees affected by the Monti-Fornero reform the outcome of  $\beta_1$  could be determined in a certain level by the changes in the public scheme.

Financial crisis did not negatively affected membership of pension funds, the negative sign in the value of  $\beta_1$  as regard the overall sample is presumably due to the effect of the measure adopted by the Parliament on the field of first pillar. The consequences associated to that strong measures hugely influenced the feeling of the employees, affecting also fields not directly affected neither by negative financial events nor by legislative changes like pension funds.

In the end we can conclude that pension funds are perceived as a safe way to save for retirement.

As regards the other variables that affect the membership probability, the estimates reported in Table 3 confirm the role of the enrolment in a union and the age of the employees. For interviewees members of a union the probability to join a supplementary pension increases of 13% than not members (9% in the case of those not affected by Monti-Fornero reform). For interviewees aged above 55 the probability to join a pension fund increases of 24% than those aged between 18 and 34 (33% for those not affected by Monti-Fornero reform).

The probability to join a pension fund increases for interviewees with financial investments different from pension funds even though the marginal probability is not statistically relevant (see Table 3). This result is not really a surprise that the probability to be enrolled in a pension fund decreases when interviewees own real estate investment. Real estate is the main form of saving in Italy and the large majority of households own the house where they live.

As reported in Table 4, the probability to become member of a pension fund is also affected from the ideology of the interviewees<sup>8</sup>. Even though it is difficult to establish a clear causal relation between pension funds membership and ideology, at first sight we could assume that a conservative political feeling, and so more right oriented, should more favourably looks to a pension system privately managed. Instead, a leftist feeling should more favourably looks to a pension system managed by the state. The findings seems in line with this expectations.

Finally, as reported in Table 5 and 6, also the confidence in the pension system and in pension funds has a great influence on the probability to be enrolled in a supplementary pension scheme. In particular, as expected, the marginal probability is lower for interviewees who do not agree on the following statements: 1) Pension funds are an instrument to get an adequate level of pension; 2) Pension funds are a financial investment safer than other; 3) Pension funds are a financial investment that benefits of more tax incentives than other.

Other variables like degree of education, income, type of employment, gender and geographic location of the interviewees do not affect membership.

As a main robustness check tables from 7 to 10 report the analysis of the membership probability conducted estimating the probit model in (1) separately on

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<sup>8</sup> In the survey there was a question on the political feeling: *No matter your vote to the last elections, what's your political ideology? Left, Centre-left, Centre, Centre-right, Right.*

the two waves. From 2008 to 2012 only few changes happened, the behaviour of the variables is substantially stable. The more relevant covariates affecting enrolment are the age and the union membership. The consequences of the financial turmoil can be read in the following results: the impact of the variables related to the trust in pension funds show that pension funds are perceived safer than other financial investments, the need of a pension fund coverage to achieve an adequate pension become statistically significant in 2012.

## 5. Conclusions

Our findings confirm the expectation that financial turmoil did not affect pension funds membership; trust towards pension funds continued to remain high also during the dramatic events occurred to the Italian interest rates in 2010-2011. In the end our analysis shows that pension funds are perceived as a safe way to save for retirement.

Final results, however, also confirms the problematic situation for pension funds membership in Italy. The probability to be enrolled in a supplementary pension scheme is high for old employees who are also members of a union and own a strong financial position. Members of pension funds belong to the categories of employees who have a lower need to be covered form a supplementary pension scheme. In fact they are usually full time workers, they benefit of high safeguarding job contracts and their pension will be quasi-fully based on their last wage. Instead, the outsiders, above all young employees, are characterized by less favourable working conditions: part-time or temporary contracts with low levels of safeguards and reduced pension contributions. Moreover, their pension will be fully based on the amount of contributions.

How to tackle the problem of adequacy of pensions for that employees? Hopefully supplementary pension schemes should play a key role, also taking into account their high level of safety during financial troubles. So, how to strengthen membership? Presumably the voluntary approach is no more sustainable. Foreign experiences like UK, USA, Australia, The Netherlands, New Zealand show that membership can only substantially growth with a mandatory or quasi-mandatory approach. Italian legislation already states a form of automatic enrolment however up to now it did not provides positive achievements. Italian legislator should evaluate whether to modify the legislative framework on automatic enrolment. A more feasible solution could be to introduce a real form of automatic enrolment into the collective bargaining and in deed this seems the solution social parties are involved to practice.

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## Appendix – Table and Figures

**Table 1 – The structure of the panel dataset**

| Variable                    | 2008    |             |              | 2012    |             |              |
|-----------------------------|---------|-------------|--------------|---------|-------------|--------------|
|                             | Members | Non members | Total sample | Members | Non members | Total sample |
| <i>Type of occupation</i>   |         |             |              |         |             |              |
| Employees of private sector | 77%     | 53%         | 65%          | 72%     | 56%         | 60%          |
| Employees of public sector  | 3%      | 19%         | 11%          | 3%      | 19%         | 15%          |
| Self-employer               | 20%     | 28%         | 24%          | 25%     | 25%         | 25%          |
| <i>Age Cohort</i>           |         |             |              |         |             |              |
| 18-34 years old             | 19%     | 41%         | 30%          | 19%     | 30%         | 27%          |
| 35-54 years old             | 71%     | 49%         | 60%          | 64%     | 58%         | 59%          |
| 55 and more years old       | 10%     | 10%         | 10%          | 17%     | 13%         | 13%          |
| <i>Gender</i>               |         |             |              |         |             |              |
| Male                        | 67%     | 61%         | 64%          | 64%     | 58%         | 60%          |
| Female                      | 33%     | 39%         | 36%          | 36%     | 42%         | 40%          |
| <i>Place of residence</i>   |         |             |              |         |             |              |
| North-West                  | 36%     | 31%         | 34%          | 34%     | 28%         | 30%          |
| North-East                  | 28%     | 21%         | 24%          | 25%     | 21%         | 22%          |
| Centre                      | 21%     | 19%         | 20%          | 21%     | 21%         | 21%          |
| South-Islands               | 15%     | 28%         | 22%          | 20%     | 29%         | 27%          |
| <i>Union Membership</i>     |         |             |              |         |             |              |
| Yes                         | 42%     | 28%         | 35%          | 38%     | 26%         | 29%          |
| Not                         | 58%     | 71%         | 64%          | 62%     | 74%         | 71%          |
| don't know/don't answer     | 0%      | 1%          | 1%           | 0,4%    | 0,3%        | 0,2%         |
| <i>Ideology</i>             |         |             |              |         |             |              |
| Right                       | 16%     | 16%         | 34%          | 9%      | 8%          | 8%           |
| Centre-Rights               | 24%     | 18%         | 12%          | 10%     | 13%         | 12%          |
| Centre                      | 11%     | 14%         | 18%          | 6%      | 6%          | 6%           |
| Centre-Left                 | 21%     | 16%         | 16%          | 32%     | 23%         | 25%          |
| Left                        | 13%     | 13%         |              | 16%     | 17%         | 17%          |
| don't know/don't answer     | 17%     |             |              | 27%     | 33%         | 31%          |
| <i>Degree of education</i>  |         |             |              |         |             |              |
| Primary degree              | 2%      | 1%          | 2%           | 1%      | 1%          | 1%           |
| Secondary degree            | 21%     | 24%         | 22%          | 16%     | 15%         | 15%          |
| High school degree          | 62%     | 50%         | 56%          | 61%     | 51%         | 53%          |
| University degree /PhD      | 16%     | 23%         | 18%          | 23%     | 32%         | 30%          |
| don't know/don't answer     | 0%      | 0%          | 2%           | 0%      | 0,4%        | 0,3%         |



**Table 2 – The effect of financial crisis on memberships probability**

|  | All sample                         |                                    | Respondents not affected by the 2012 pension reform |                                 |
|--|------------------------------------|------------------------------------|---|---------------------------------|
|  | (1)                                | (2)                                | (3)   | (4)                             |
| <b>year 2012 (effect of the financial crisis)</b>                        | <b>-0.0805</b><br><b>[0.022]**</b> | <b>-0.0706</b><br><b>[0.017]**</b> | <b>0.0054</b><br><b>[0.919]</b>                     | <b>0.0056</b><br><b>[0.900]</b> |
| General controls (occupational, wealth, income, ideology and demography) | YES                                | YES                                | YES   | YES                             |
| PFs confidence variables   | NO                                 | YES                                | NO  | YES                             |
| N  | 971                                | 784                                | 648   | 537                             |
| adj. R-sq  | 0.173                              | 0.225                              | 0.190   | 0.239                           |

*p-values in brackets, coefficient point estimates report marginal effects*

**Table 3 – The Impact of occupational, wealth and income variables on memberships probability**

|  | All sample |            | Respondents not affected by the 2012 pension reform |            |
|--|------------|------------|---|------------|
|  | (1)        | (2)        | (3)   | (4)        |
| Union membership yes   | 0.132      | [0.000]*** | 0.0897  | [0.033]**  |
| Type of employment (private excluded)                                    |            |            |   |            |
| public employees   | -0.0275    | [0.593]    | 0.00837   | [0.885]    |
| self employed  | -0.0459    | [0.202]    | -0.0587   | [0.172]    |
| Savings (no savings excluded)  |            |            |   |            |
| real estate  | -0.34      | [0.000]*** | -0.32   | [0.000]*** |
| financial savings  | 0.0361     | [0.450]    | 0.0777  | [0.223]    |
| Income (<15k excluded)   |            |            |   |            |
| 15k-30k  | -0.00427   | [0.890]    | 0.0254  | [0.489]    |
| above 30k  | -0.0149    | [0.791]    | -0.00142  | [0.983]    |
| General controls (occupational, wealth, income, ideology and demography) | YES        |            | YES   |            |
| N  | 784        |            | 537   |            |
| adj. R-sq  | 0.225      |            | 0.239   |            |

*p-values in brackets, coefficient point estimates report marginal effects*

**Table 4 – The impact of social variables on memberships probability**

|   |                | All sample |            | Respondents not affected by the 2012 pension reform |            |
|---|----------------|------------|------------|---|------------|
|   |                | (1)        |            | (2)   |            |
| Political orientation (left excluded)     | center         | 0.0809     | [0.038]**  | 0.0967  | [0.038]**  |
|   | right          | 0.176      | [0.003]*** | 0.143   | [0.055]*   |
| Geographic location (north west excluded) | north est      | 0.0337     | [0.460]    | 0.0804  | [0.161]    |
|   | center         | -0.000864  | [0.984]    | -0.00146  | [0.978]    |
|   | south          | -0.0645    | [0.119]    | -0.0836   | [0.086]*   |
| Gender (male excluded)                    | female         | -0.0161    | [0.651]    | 0.00801   | [0.854]    |
| Age (18-34 excluded)                      | age, 35-44     | 0.126      | [0.006]*** | 0.157   | [0.004]*** |
|   | age, 45-54     | 0.271      | [0.000]*** | 0.393   | [0.000]*** |
|   | age, above 55  | 0.236      | [0.000]*** | 0.325   | [0.000]*** |
| Education (graduates excluded)            | high school    | 0.0488     | [0.176]    | 0.0827  | [0.063]*   |
|   | primary school | 0.0388     | [0.474]    | 0.0677  | [0.304]    |
|   | no education   | -0.0565    | [0.756]    | 0.12  | [0.516]    |
| PFs confidence variables                  |                | YES        |            | YES   |            |
| N   |                | 784        |            | 537   |            |
| adj. R-sq                                 |                | 0.225      |            | 0.239   |            |

*p-values in brackets, coefficient point estimates report marginal effects*

**Table 5 – The impact of confidence in the pension systems on memberships probability**

|   | All sample                                 |                 | Respondents not affected by the 2012 pension reform |  |
|---|--|-----------------|---|--|
|   | (1)  |                 | (2)   |  |
| Public pension sufficient to cover the needs after retirement (yes completely excluded) | yes, with difficulties                     | 0.0272 [0.661]  | 0.0766 [0.338]                                      |  |
|   | no, i have to change my standard of living | 0.0547 [0.385]  | 0.114 [0.146]                                       |  |
|   | no, absolutely                             | 0.0894 [0.161]  | 0.142 [0.068]*                                      |  |
| Safety of the public system vs private system (public system excluded)                  | private system                             | 0.0124 [0.767]  | 0.0117 [0.820]                                      |  |
|   | are similar                                | 0.0178 [0.705]  | 0.091 [0.164]                                       |  |
| Profitability of the public system vs the private system (public system excluded)       | private                                    | 0.028 [0.480]   | 0.0282 [0.561]                                      |  |
|   | are similar                                | -0.0467 [0.332] | -0.0462 [0.448]                                     |  |
| General controls (occupational, wealth, income, ideology and demography)                | YES  |                 | YES   |  |
| N   | 784  |                 | 537   |  |
| adj. R-sq   | 0.225                                      |                 | 0.239   |  |

*p-values in brackets, coefficient point estimates report marginal effects*

**Table 6 – The impact of confidence in pension funds on memberships probability**

|  | All sample    |                   | Respondents not affected by the 2012 pension reform |  |
|--|---------------|-------------------|---|--|
|  | (1)           |                   | (2)   |  |
| Pension funds can provide an adequate pension (agree excluded)                     | partial agree | -0.117 [0.013]**  | -0.101 [0.069]*                                     |  |
|  | little agree  | -0.203 [0.000]*** | -0.166 [0.009]***                                   |  |
|  | no agree      | -0.207 [0.008]*** | -0.194 [0.053]*                                     |  |
| Pension funds provide a secure form of savings (agree excluded)                    | partial agree | -0.0846 [0.157]   | 0.0124 [0.856]                                      |  |
|  | little agree  | -0.142 [0.020]**  | -0.0551 [0.434]                                     |  |
|  | no agree      | -0.105 [0.156]    | -0.0186 [0.830]                                     |  |
| PFs benefits more tax incentives than other financial investments (agree excluded) | partial agree | -0.108 [0.055]*   | -0.149 [0.034]**                                    |  |
|  | little agree  | -0.11 [0.063]*    | -0.143 [0.054]*                                     |  |
|  | no agree      | -0.145 [0.061]*   | -0.238 [0.020]**                                    |  |
| Pension funds make banks and insurance companies richer (agree excluded)           | partial agree | 0.0089 [0.803]    | 0.0277 [0.516]                                      |  |
|  | little agree  | 0.0565 [0.214]    | 0.0898 [0.094]*                                     |  |
|  | no agree      | 0.0489 [0.483]    | 0.123 [0.159]                                       |  |
| General controls (occupational, wealth, income, ideology and demography)           | YES           |                   | YES   |  |
| N  | 784           |                   | 537   |  |
| adj. R-sq  | 0.225         |                   | 0.239   |  |

*p-values in brackets, coefficient point estimates report marginal effects*

**Table 7 – Two waves analysis – all sample, impact of socio-economic variables on memberships probability**

|   |                   | 2008 wave<br>(1) |            | 2012 wave<br>(2) |            |
|---|-------------------|------------------|------------|------------------|------------|
| Union membership                          | Yes               | 0.0924           | [0.069]*   | 0.165            | [0.000]*** |
| Type of employment (private excluded)     | public employees  | 0.0299           | [0.649]    | -0.0810          | [0.329]    |
|   | self employed     | -0.0295          | [0.610]    | -0.0690          | [0.137]    |
| Savings (no savings excluded)             | real estate       | -0.348           | [0.000]*** | -0.318           | [0.000]*** |
|   | financial savings | 0.0705           | [0.311]    | 0.0605           | [0.261]    |
| Income (<15k excluded)                    | 15k-30k           | 0.0537           | [0.288]    | -0.0147          | [0.768]    |
|   | above 30k         | -0.00291         | [0.977]    | 0.0885           | [0.192]    |
| Political orientation (left excluded)     | center            | 0.152            | [0.024]**  | 0.0480           | [0.355]    |
|   | right             | 0.175            | [0.052]*   | 0.168            | [0.031]**  |
| Geographic location (north west excluded) | north east        | 0.106            | [0.107]    | -0.0191          | [0.756]    |
|   | center            | 0.0635           | [0.353]    | -0.0532          | [0.345]    |
|   | south             | -0.0450          | [0.456]    | -0.0896          | [0.120]    |
| Gender (male excluded)                    | female            | 0.0588           | [0.290]    | -0.0688          | [0.165]    |
| Age (18-34 excluded)                      | age, 35-44        | 0.150            | [0.066]*   | 0.134            | [0.022]**  |
|   | age, 45-54        | 0.388            | [0.000]*** | 0.208            | [0.004]*** |
|   | age, above 55     | 0.330            | [0.001]*** | 0.194            | [0.024]**  |
| Education (graduates excluded)            | high school       | 0.0385           | [0.532]    | 0.0518           | [0.274]    |
|   | primary school    | 0.00545          | [0.947]    | 0.0683           | [0.398]    |
|   | no education      | 0.119            | [0.537]    | -0.561           | [0.000]*** |
| PFs confidence variables                  |                   | YES              |            | YES              |            |
| N   |                   | 352              |            | 432              |            |
| adj. R-sq                                 |                   | 0.327            |            | 0.139            |            |

*p-values in brackets, coefficient point estimates report marginal effects*

**Table 8 – Two waves analysis – all sample the impact of confidence in PFs on memberships probability**

|   |  | 2008 wave<br>(2) |            | 2012 wave<br>(3) |            |
|---|--|------------------|------------|------------------|------------|
| Public pension sufficient to cover the needs after retirement (yes completely excluded) | yes, with difficulties                     | 0.0395           | [0.698]    | -0.0114          | [0.904]    |
|   | no, I have to change my standard of living | 0.0421           | [0.643]    | 0.0500           | [0.613]    |
|   | no, absolutely                             | 0.110            | [0.228]    | 0.0691           | [0.489]    |
| Safety of the public system vs private system (public system excluded)                  | private system                             | 0.0407           | [0.554]    | 0.00821          | [0.875]    |
|   | are similar                                | 0.148            | [0.094]*   | 0.0810           | [0.322]    |
| Profitability of the public system vs the private system (public system excluded)       | private                                    | 0.0411           | [0.521]    | -0.0216          | [0.672]    |
|   | are similar                                | -0.0883          | [0.264]    | -0.0485          | [0.432]    |
| PFs useful to get an adequate pension (agree excluded)                                  | partial agree                              | -0.130           | [0.074]*   | -0.124           | [0.043]**  |
|   | little agree                               | -0.182           | [0.029]**  | -0.228           | [0.001]*** |
|   | no agree                                   | -0.197           | [0.115]    | -0.290           | [0.006]*** |
| PFs safer than other financial investments (agree excluded)                             | partial agree                              | 0.0311           | [0.758]    | -0.131           | [0.090]*   |
|   | little agree                               | 0.0314           | [0.777]    | -0.200           | [0.009]*** |
|   | no agree                                   | 0.0185           | [0.888]    | -0.167           | [0.078]*   |
| PFs benefits more tax incentives than other financial investments (agree excluded)      | partial agree                              | -0.349           | [0.000]*** | 0.00986          | [0.886]    |
|   | little agree                               | -0.263           | [0.006]*** | -0.0799          | [0.263]    |
|   | no agree                                   | -0.464           | [0.000]*** | -0.0193          | [0.849]    |
| PFs make banks, unions and insurance companies richer (agree excluded)                  | partial agree                              | 0.0168           | [0.767]    | -0.0115          | [0.820]    |
|   | little agree                               | 0.137            | [0.057]*   | -0.0162          | [0.791]    |
|   | no agree                                   | 0.226            | [0.029]**  | -0.0873          | [0.331]    |
| General controls (occupational, wealth, income, ideology and demography)                |  | YES              |            | YES              |            |
| N   |  | 352              |            | 432              |            |
| adj. R-sq   |  | 0.327            |            | 0.139            |            |

*p-values in brackets, coefficient point estimates report marginal effects*

**Table 9 – Two waves analysis – only respondents not affected by 2012 pension system reform, impact of socio-economic variables on memberships probability**

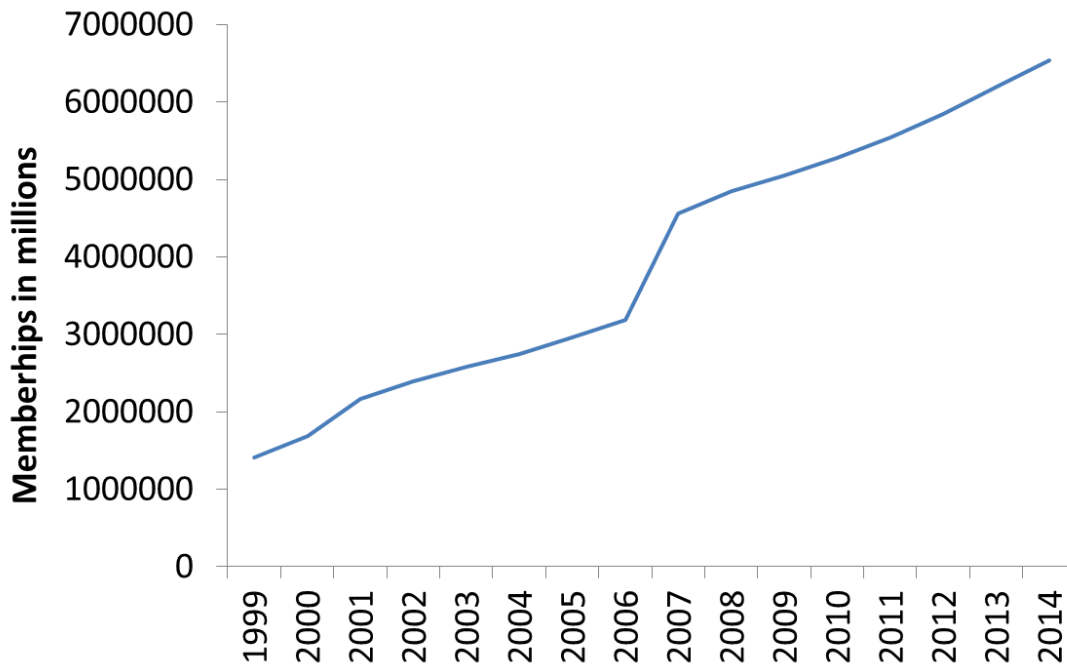
|   |                   | 2008 wave<br>(1) |            | 2012 wave<br>(2) |            |
|---|-------------------|------------------|------------|------------------|------------|
| Union membership                          | Yes               | 0.0924           | [0.069]*   | 0.0823           | [0.319]    |
| Type of employment (private excluded)     | public employees  | 0.0299           | [0.649]    | -0.0208          | [0.874]    |
|   | self employed     | -0.0295          | [0.610]    | -0.0870          | [0.206]    |
| Savings (no savings excluded)             | real estate       | -0.348           | [0.000]*** | -0.161           | [0.196]    |
|   | financial savings | 0.162            | [0.041]**  | 0.175            | [0.032]**  |
| Income (<15k excluded)                    | 15k-30k           | 0.0537           | [0.288]    | -0.0533          | [0.509]    |
|   | above 30k         | -0.00291         | [0.977]    | 0.0906           | [0.367]    |
| Political orientation (left excluded)     | center            | 0.152            | [0.024]**  | 0.0914           | [0.272]    |
|   | right             | 0.175            | [0.052]*   | 0.0148           | [0.912]    |
| Geographic location (north west excluded) | north east        | 0.106            | [0.107]    | 0.0354           | [0.772]    |
|   | center            | 0.0635           | [0.353]    | -0.0764          | [0.465]    |
|   | south             | -0.0450          | [0.456]    | -0.182           | [0.051]*   |
| Gender (male excluded)                    | female            | 0.0588           | [0.290]    | -0.0876          | [0.281]    |
| Age (18-34 excluded)                      | age, 35-44        | 0.150            | [0.066]*   | 0.223            | [0.012]**  |
|   | age, 45-54        | 0.388            | [0.000]*** | 0.572            | [0.001]*** |
|   | age, above 55     | 0.330            | [0.001]*** | -0.405           | [0.127]    |
| Education (graduates excluded)            | high school       | 0.0385           | [0.532]    | 0.183            | [0.018]**  |
|   | primary school    | 0.00545          | [0.947]    | 0.152            | [0.389]    |
|   | no education      | 0.119            | [0.537]    | 0.107            | [0.426]    |
| PFs confidence variables                  |                   | YES              |            | YES              |            |
| N   |                   | 352              |            | 185              |            |
| adj. R-sq                                 |                   | 0.400            |            | 0.232            |            |

*p-values in brackets, coefficient point estimates report marginal effects*

**Table 10 – Two waves analysis – only respondents not affected by 2012 pension system reform, impact of confidence in PFs on memberships probability**

|   |  | 2008 wave<br>(2) |            | 2012 wave<br>(3) |            |
|---|--|------------------|------------|------------------|------------|
| Public pension sufficient to cover the needs after retirement (yes completely excluded) | yes, with difficulties                     | 0.0395           | [0.698]    | 0.257            | [0.040]**  |
|   | no, I have to change my standard of living | 0.0421           | [0.643]    | 0.363            | [0.003]*** |
|   | no, absolutely                             | 0.110            | [0.228]    | 0.376            | [0.004]*** |
| Safety of the public system vs private system (public system excluded)                  | private system                             | 0.0407           | [0.554]    | -0.0112          | [0.887]    |
|   | are similar                                | 0.148            | [0.094]*   | -0.0313          | [0.827]    |
| Profitability of the public system vs the private system (public system excluded)       | private                                    | 0.0411           | [0.521]    | -0.0396          | [0.654]    |
|   | are similar                                | -0.0883          | [0.264]    | -0.0333          | [0.771]    |
| PFs useful to get an adequate pension (agree excluded)                                  | partial agree                              | -0.130           | [0.074]*   | -0.115           | [0.215]    |
|   | little agree                               | -0.182           | [0.029]**  | -0.243           | [0.035]**  |
|   | no agree                                   | -0.197           | [0.115]    | -0.397           | [0.038]**  |
| PFs safer than other financial investments (agree excluded)                             | partial agree                              | 0.0311           | [0.758]    | -0.0606          | [0.564]    |
|   | little agree                               | 0.0314           | [0.777]    | -0.128           | [0.222]    |
|   | no agree                                   | 0.0185           | [0.888]    | -0.0601          | [0.671]    |
| PFs benefits more tax incentives than other financial investments (agree excluded)      | partial agree                              | -0.349           | [0.000]*** | 0.0522           | [0.623]    |
|   | little agree                               | -0.263           | [0.006]*** | -0.0772          | [0.493]    |
|   | no agree                                   | -0.464           | [0.000]*** | 0.0368           | [0.842]    |
| PFs make banks, unions and insurance companies richer (agree excluded)                  | partial agree                              | 0.0168           | [0.767]    | -0.0166          | [0.834]    |
|   | little agree                               | 0.137            | [0.057]*   | 0.0205           | [0.820]    |
|   | no agree                                   | 0.226            | [0.029]**  | -0.0612          | [0.675]    |
| General controls (occupational, wealth, income, ideology and demography)                |  | YES              |            | YES              |            |
| N   |  | 352              |            | 185              |            |
| adj. R-sq   |  | 0.400            |            | 0.232            |            |

**Figure 1 – Membership of pension funds (1999-2014)**



Source: Covip (2014)