

Supplementary private pensions and saving: Evidence from Spain

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Abstract

This article analyzes the effect of private supplementary pensions (and the tax reliefs that aim to stimulate such plans) on national saving in Spain. The relevance of this topic results from the alleged positive effects of private pension's plans is their potential positive impact on savings. Using a longitudinal dataset and fixed-effects methods, we find that tax-favored contributions to a pension fund are not associated to a lower consumption level, which evidences that this policy does not increase national saving. Empirical results on the impact of contributions on private household wealth are less clear.

JEL classification: D91, H31, I38.

Keywords: tax relief, saving, pension funds, Spain.

I. Introduction

Tax relief on supplementary pensions represents one of the pillars of the so-called *voluntary welfare* (Barr, 1992). The presence of tax incentives for encouraging private pension schemes is quite common in OECD economies, not only as an attempt of raising national saving but also as a way of attenuating future fiscal pressures on the public sector associated to public pensions, making compatible moderate increases in pension expenditure for the public sector with ‘living’ pensions for pensioners. In fact, voluntary pension plans are a piece of the World Bank and OECD’s core recommendations for reforming pensions in Western countries; in particular, it is argued that these tax-favored plans should complement non-contributory pensions and mandatory contributory benefits.

The economic analysis of this policy has centred on its effect on national saving, as a positive by-product of the existence of private pension plans that further increase their attractiveness. If private pensions plans increase savings it can be argued that such system of old-age provision will contribute to higher investment and future growth, making it easier to combine in the future higher pensions for pensioners and growing income for workers. The evidence on the issue is still inconclusive, with most of the studies focusing on the United States and not reaching a consensus on its effectiveness. The present article, which studies the effect of tax incentives for promoting supplementary pensions on saving in Spain, aims to enlarge the body of literature related to this topic. In particular, this research is one of the few available for a country other than the United States and it profits from the use of a longitudinal survey that allows controlling for the effect of time-constant unobservable households heterogeneity using fixed-effects techniques. The results suggest that contributions to

pension funds are not linked to higher national saving since they are not accompanied by consumption drops. However, there is no clear evidence that pension funds contributions come from reshuffling other household assets or saving that would have been done anyway. Therefore, at most, it seems that this tax relief would increase private household saving but not national saving, as the additional saving would come from the higher disposable income allowed by the existence of the tax relief.

The rest of the article unfolds as follows. The second section, which comes after this introduction, outlines the systems of tax incentives for encouraging retirement saving in Spain and summarizes the main findings of previous literature. The third and fourth sections describe the database and the methodology used in the study, respectively, while the fifth one is devoted to present and discuss the main results of the empirical analysis. The last section, as usual, summarizes the main conclusions of the article.

II. Background and literature review

Supplementary pensions in Spain

Spanish authorities started to foster supplementary pension provision in 1988, when the first parametric reform of the public pay-as-you-go system was carried out. In particular, contribution to private pension funds were exempted from the income tax (a progressive tax with several brackets) up to a certain limit, the returns to such investment were also tax-free and, finally, withdrawals were taxed (usually at a lower marginal tax rate because of the declining incomes at old age). These first tax reliefs were accompanied by exemption from payroll taxes since 1995 and several tax

incentives in the corporate tax since 2001.¹ Nevertheless, the most beneficial tax treatment was in effect from 1999 to 2007, with not only higher general and specific contribution limits, but also a tax-exemption of 40% on lump-sum withdrawal payments. This special treatment on lump-sum payments was removed in 2007.²

As an expectable result of such tax treatment, the number of contributors to pension funds grew exponentially from 1989 to 2009 (see Figure 1), reaching more than 10 million members at the end of 2009. It is also relevant to point out that, according to data from the Spanish Association of Investment and Pension Funds, around 81% of such pension plans were personal (less than 20% were occupational schemes or similar plans) and, according to the Spanish Directorate General for Insurance and Pension Funds (*Directorio General de Seguros y Fondos de Pensiones*, 2009), roughly 82.1% of total pension funds correspond to defined contribution schemes, 0.7%, to defined benefit plans and the rest, to mixed systems. These figures are quite in line with international trends in pension systems design, which privilege personal defined contribution pensions.

¹ In addition, private pension assets were always exempted from the wealth tax, which was abolished in 2008.

² A more detailed description of tax relief on private pensions in Spain can be found in Antón (2007) and Domínguez-Barrero and López-Laborda (2007).

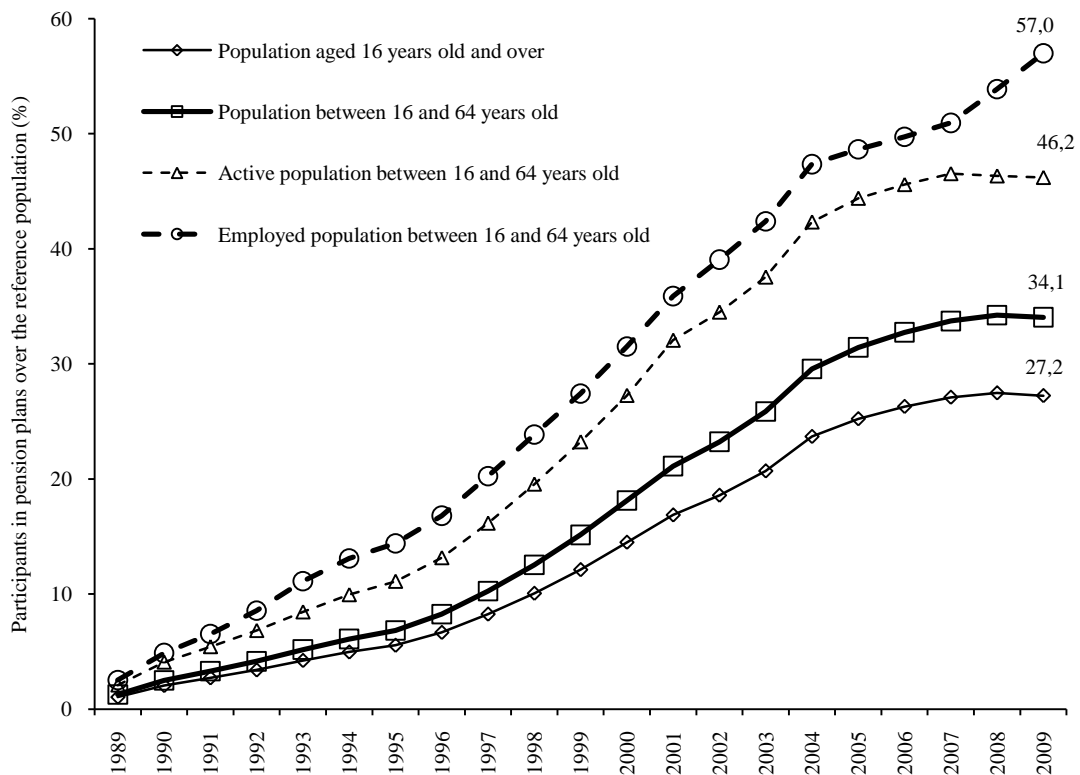


Figure 1. Evolution of participation in supplementary pension schemes in Spain (1989-2009). Source: Authors' analysis from Spanish Association of Investment and Pension Funds data and Spanish Labour Force Survey (4th quarter of each year).

The growth in the number of contributors also translated into a rapid accumulation of funds: in barely two decades, the supplementary pension system has accumulated funds that account for more than 8% of Spanish GDP in 2009 (see Figure 2). Although this data puts Spain in a position that is far from countries where either occupational or personal private pensions have a longer tradition, such as Canada, the United States or Chile, the relevance of these schemes is larger than in Italy, Greece or France and very similar to other countries like Poland or Hungary that have recently moved to mandatory personal accounts.

Unfortunately, information on the cost of the tax incentives for encouraging these benefits is remarkably limited. The data available is limited to the income tax relief, which would account for roughly 0.2% of the Spanish GDP in 2002 (Yoo and De Serres, 2004; Antón, 2007).

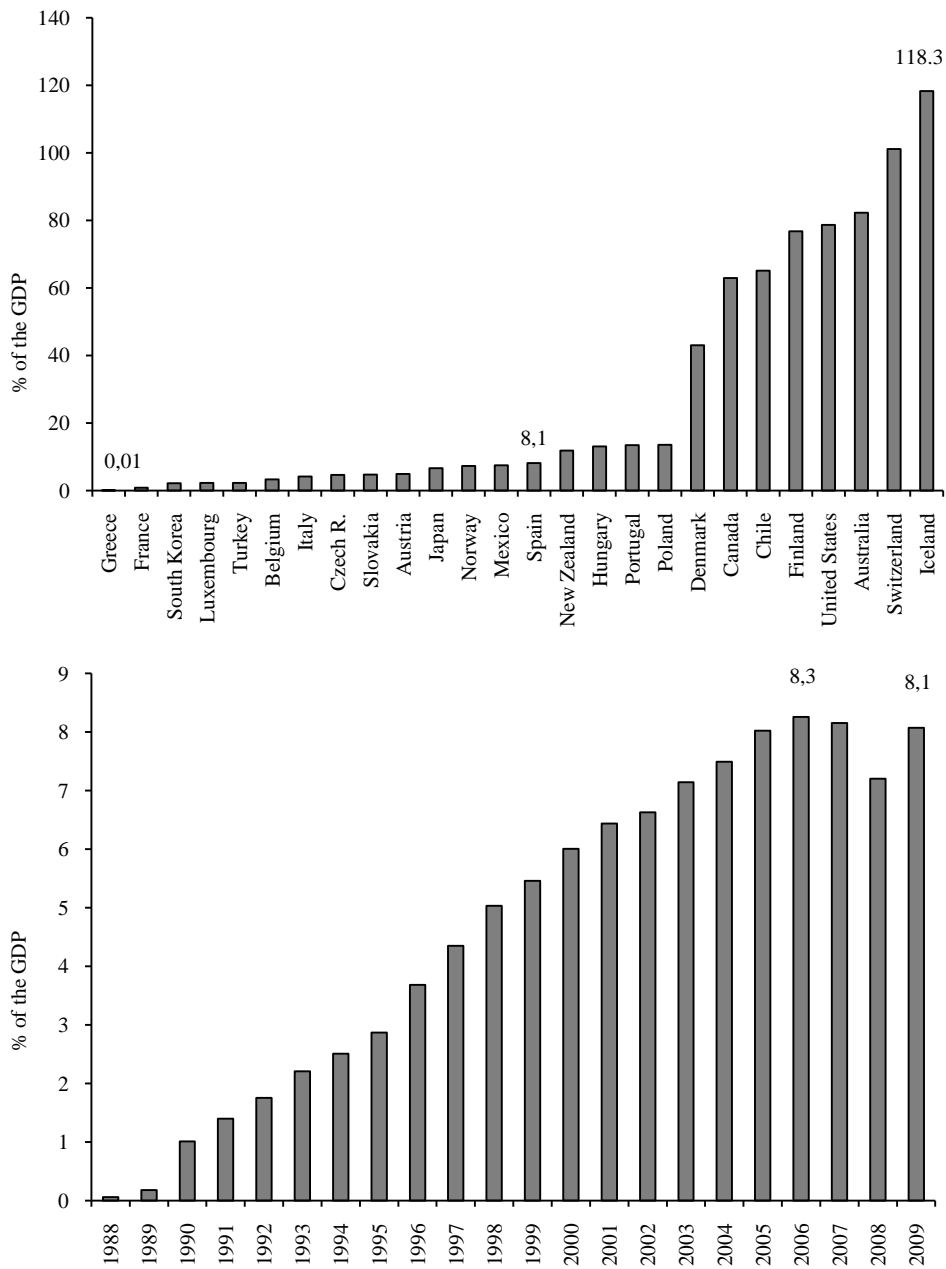


Figure 2. Pension funds assets in Spain. Upper panel: Pension funds assets in Spain as a percentage of the GDP (1989-2009). Lower panel: pension funds assets in OECD countries as a percentage of the GDP (around 2009). Data from Belgium, France, Greece, Slovakia and Switzerland correspond to 2008; Japanese data are from 2005. Source: Authors' analysis from OECD and Spanish Association of Investment and Pension Funds data.

Supplementary pensions, tax incentives and saving

The effect of pension tax relief on saving is a highly controversial issue. On a theoretical basis, under perfect capital markets and consumers with perfect foresight, the net effect of such a policy on private saving is ambiguous, as it results from the balance of a substitution effect associated to a higher rate of return on saving and an income effect linked to larger possibilities of consumption because of the tax break. Under less restrictive scenarios, using Behavioral Economics models contemplating problems of self-control or some type of bounded rationality, results are not straightforward either (Bernheim, 2002).

According to Attanasio and DeLeire (2002), money put in pension funds can come from three different sources: first, money that otherwise would have been devoted to consumption; second, saving originated from reshuffling assets or that would have been done anyway (in absence of tax incentives); and third, saving associated to the higher disposable income because of the tax break. Only in the first case, pension funds assets represent a net addition to national saving, whereas in the second case the effect on private saving is null and in the last case the higher private household saving is compensated by a lower public saving, resulting on a null effect on national saving.

Empirical evidence has been mainly based on the United States, particularly on Individual Retirement Accounts (IRAs) and 401(k) plans, and is definitely quite controversial. Surveys of this vast literature reveal very inconclusive and contradictory findings, from negative or null effects on national saving to very positive or even crowding-in effects (private saving would increase more than one monetary unity by each monetary unity contributed) (Engen *et al.*, 1994; Bernheim, 2002; Attanasio *et al.*,

2004; Börsch-Supan, 2004; Bosworth and Burtless, 2004; OECD, 2009).³ Studies based on the British case do not reach a consensus either (Guariglia and Markose, 2000, Attanasio *et al.*, 2004; Rossi, 2009). Finally, two recent research papers for Germany suggest that the introduction of tax-favoured supplementary pensions (the so-called Riester reform) would not have contributed to increase saving (Börsch-Supan *et al.*, 2007; Corneo *et al.*, 2010).

There is only one study of the Spanish case, Ayuso *et al.*, who explore the effects of the introduction of the tax breaks in the late eighties on consumption. They combine information from tax data and a household budget survey using a two-sample two-stage least squares approach. They do not find any overall effect on saving, though positive and negative effects on particular age and income groups are reported. This paper aims to contribute to the literature on this issue outside the United States. In order to do so, we profit from the use of fixed-effects techniques applied to a longitudinal household finance survey that includes information on wealth, pension funds and consumption. Because of reasons of availability, the use of panel databases has been very limited in previous work on this topic. Particularly, such type of literature is limited to the research work of Engel *et al.* (1994) and Joines and Manegold (1995), using the Internal Revenue Service-Michigan Tax Panel, and López-Murphy and Musalem (2004), who exploit a panel of countries. All those three studies find very small effects of contributions to voluntary pension funds on saving.

³ The complete list of papers dealing with this topic in the United States comprises more than twenty references. Although the interested reader is encouraged to review the above mentioned literature surveys, it is worth mentioning that leading contributions come from, on the one side, Venti and Wise (1986 and 1990) and Poterba *et al.* (1995), who report large positive effects on saving and, on the other side, Engen *et al.* (1994), Gale and Scholz (1994) and Gale (1998), whose findings point out a negligible impact of tax relief for private pensions.

III. Data

The database used in this analysis is the *Spanish Survey of Household Finances* (SSHF) of 2002 and 2005, carried out by the Bank of Spain jointly with the National Statistics Institute (INE). The design of the survey was inspired on the *Survey of Consumer Finances* of the United States and the *Survey of Household and Income Wealth* of Italy and includes a multi-stage and stratified sampling, over-representing high income households (Bover, 2004, 2008a). The survey contains detailed information on financial and non-financial wealth, income and durables and non-durables consumption of Spanish households. Furthermore, the two available waves of the SSHF allow constructing a panel of 2,580 households (Bover, 2008b), among which one third make contributions to supplementary pensions in 2002 or 2005.⁴

One of the key issues in the survey was the treatment of missing values, whose presence is non-negligible in many variables related to income and, especially, wealth. After many efforts to minimize non-response, this issue was addressed by the designers of the SSHF using multiple imputation techniques, which were argued to be the most appropriate way of dealing with this problem (Barceló, 2006). Therefore, the Bank of Spain provides the researchers not only with original data but also with five sets of imputations to deal with the issue of missing values.

Both the descriptive and the multivariate analysis of the database were carried out using the five imputations included with the survey. All these calculations were performed using the software Stata 11.1.

⁴ The data are freely available in the website of the Bank of Spain, jointly with the codebooks and questionnaires translated into English.

IV. Methodology

In order to explore the effects of pension contributions to national saving we follow the proposal of Attanasio and DeLeire (2002), who explore the impact of IRA tax deductions on saving in the United States. Following these authors, saving in private pensions might come from three different sources: 1) a lower level of consumption; 2) private saving that would have been done in absence of tax incentives or that represents reshuffling of existing assets; and 3) the higher disposable income because contributing households benefits from tax incentives. Contributions to pension plans represent new national savings only in the second case. If participation in private pension schemes is not associated with a lower consumption, then national savings does not increase, while, in the last situation, though private household saving is higher, the net effect on national saving is null because the increase of household saving is counteracted by a decrease in public saving linked to the lower tax revenue.

In order to assess the impact of participation in pension plans on saving these authors suggest two kinds of tests. The first type of test is based on consumption and its main objective is to determine if enrolment in a pension plan leads to a lower level of household consumption, which, as mentioned earlier, is the only way by which these plans can boost national saving. In this strategy, we estimate the following expression:

$$C_{it} = \alpha + \beta X'_{it} + \gamma P_{it} + u_i + \varepsilon_{it} \quad [1]$$

where C_{it} denotes the consumption level of household i in time t , X_{it} is a vector household observable characteristics, P_{it} is the variable associated to participation in private pensions (either enrolment in pension plan or yearly pension contributions depending on the specification), u_i is a household-specific disturbance and ε_{it} is a time-

varying individual specific disturbance. The null hypothesis is that participation in pension plans does not affect consumption and, thus, it does not rise national saving. This expression is estimated both in levels and logs.

The second test is based on household non-pension assets and consists in determining if pension plan contributions are done at the expense of existing assets or saving that would have been done anyway. The equation to be estimated unfolds as follows:

$$NPW_{it} = \alpha + \beta X'_{it} + \gamma P_{it} + u_i + \varepsilon_{it} \quad [2]$$

where NPW_{it} represents non-pension wealth. The null hypothesis is now that pension saving does not negatively affect other types of saving, that is, that pension saving is not substituting other types of saving. We must have in mind that even if non-pension wealth is unaffected by pension saving, it does not mean that national saving increases as it requires a lower consumption level to be true. Furthermore, we check if participation in pension plans affects the level of total household assets, that is, we estimate the equation

$$W_{it} = \alpha + \beta X'_{it} + \gamma P_{it} + u_i + \varepsilon_{it} \quad [3]$$

where W_{it} denotes total household wealth.

In contrast to most of previous empirical works, we benefit from the use of panel data, which allows removing the time-constant household unobserved heterogeneity using fixed-effects estimation, which is likely to play an important role in determining household saving decisions, as it has to reflect unobserved tastes for saving, attitudes towards risk, ability, etc. Therefore, identification of the causal effect of pension

contributions is achieved provided that the endogeneity of this variable is associated to time-varying observable characteristics and time-constant unobservable factors. One should bear in mind that, although we control for a wide range of observable characteristics, unobserved time-varying variables that are not independent of the dependent variable and contributions could lead to inconsistent estimators. In this respect, as mentioned above, using longitudinal data, this work goes a step further than previous research.

As Attanasio and DeLeire (2002) suggest, the effects on national saving are more likely to appear when a household starts to contribute to a pension plan. Nevertheless, the effect can be observed in a wider period of time if there are not perfect capital markets or there are (tax deductible) contribution limits (as in the Spanish case). Therefore, we estimate the equations presented above using both a binary indicator of participation in pension plans and the annual level of contributions as key variables for determining the effect of the enrolment in pension plans on saving.

V. Results

The main descriptive statistics of the sample used in the analysis are presented in Table 1. The most relevant feature to be highlighted is the existence of significant differences in observable characteristics between contributing and non-contributing households: for instance, consumption, wealth, income or pension contributions are remarkably higher among contributing households.

TABLE 1

Main descriptive statistics of the sample

	<i>Mean</i>	<i>Standard deviation</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Mean</i>	<i>Standard deviation</i>
Consumption (2005 constant €)	15,508	12,749	13,579	11,033	20,526	15,296
Non-durables consumption (2005 constant €)	12,143	8,188	10,879	7,147	15,431	9,681
Wealth (2005 constant €)	245,675	837,817	192,841	924,855	383,152	526,707
Non-pension wealth (2005 constant €)	241,491	835,591	192,841	924,855	368,078	517,565
Female household head	0.370	0.483	0.386	0.487	0.328	0.470
Household head aged less than 35	0.141	0.348	0.151	0.358	0.116	0.320
Household head aged 35-44	0.228	0.420	0.194	0.396	0.315	0.465
Household head aged 45-54	0.204	0.403	0.164	0.370	0.309	0.462
Household head aged 55-64	0.165	0.371	0.147	0.355	0.211	0.408
Household head aged 65-74	0.178	0.383	0.230	0.421	0.044	0.205
Household head aged 75 and over	0.083	0.276	0.114	0.317	0.004	0.067
Household head with Elementary education	0.408	0.492	0.484	0.500	0.211	0.408
Household head with Basic education	0.165	0.371	0.168	0.374	0.157	0.364
Household head with Medium education	0.261	0.439	0.230	0.421	0.341	0.474
Household head with High education	0.166	0.372	0.117	0.322	0.292	0.455
Household head married	0.701	0.458	0.662	0.473	0.801	0.399
Household head employed	0.520	0.500	0.431	0.495	0.752	0.432
Household size	3.172	1.403	3.040	1.464	3.516	1.164
No. of employed people	1.227	0.970	1.064	0.978	1.650	0.807
No. of children aged less than 5	0.192	0.462	0.185	0.465	0.211	0.455
No. of children aged 5-15	0.374	0.693	0.325	0.663	0.503	0.753
No. of people aged 65 and over	0.468	0.725	0.592	0.778	0.146	0.419
No. of people with High education	0.439	0.818	0.320	0.703	0.749	0.995
Household income	33,863	36,316	27,558	25,150	50,269	52,327
Household contributor to a pension plan	0.278	0.448	---	---	1.000	0.000
Yearly contributions to pension plans (2005 constant €)	780	2,486	---	---	2,810	4,064
Year 2005	0.500	0.500	0.480	0.500	0.553	0.497
Observations	5,160		3,564		1,596	

Note: Standard deviations have been computed using the first imputed dataset.

Source: Authors' analysis from SSHF.

The results of the econometric analysis are displayed in Table 2.⁵ First of all, they show that the null hypothesis asserting that contribution to voluntary pensions does not reduce consumption cannot be rejected in any of the proposed specifications, either using a binary variable for contributors or a continuous variable for contributed amounts. In other words, our results suggest that the contribution to private pensions does not reduce consumption, which would imply that, by definition, they cannot increase national savings. Being a contributor seems to exert a positive effect on consumption, while the consumption variable is not affected by the continuous variable in any case. The results are basically the same when express consumption in logs. In order to check the robustness of the results, we repeat the analysis excluding non-durable goods from our consumption variable and the results hold. In addition, we perform the analysis restricting our sample to those households headed by individuals aged less than 65 years and, again, the results are basically the same as in the first set of estimates.

In the second place, we test if being a contributor to a pension plan or the amount contributed is associated to lower non-pension wealth. In this case, the null hypothesis is that contributing to voluntary pensions is not compensated by lower non-pension assets, that is, there is no substitutability between both types of saving or pension saving would not have been generated otherwise. On the basis of the results obtained in this second test, we can reject the hypothesis of null substitutability when using the binary indicator of being part of a pension plan, whereas none of the estimated coefficients is statistically different from zero in the case of contributions. The results, therefore, are ambiguous and non-conclusive in this second case: private pensions

⁵ Detailed results from the 24 regressions are available from the authors upon request.

would seem to substitute for other savings when using the binary indicator, but they would seem not to substitute when looking at the actual amount contributed. The same results are found when we compute the impact of participation in complementary pensions on total household assets. Nevertheless, it should be mentioned the very large standard error of the estimates.

TABLE 2

Fixed-effects estimates of the impact of contributing to private pension plans on consumption and non-pension saving

	<i>Total sample</i>		<i>Households headed by people aged less than 65 years old</i>	
	<i>Being contributor to a pension plan</i>	<i>Contributions to a pension plan</i>	<i>Being contributor to a pension plan</i>	<i>Contributions to a pension plan</i>
Total consumption	2,613 ** (1,121)	0.887 *** 0.057	3,302 ** (1,656)	1.074 *** (0.095)
Total consumption (in logs)	0.086 ** (0.036)	(0.000) *** (0.000)	0.103 ** (0.045)	0.000 *** (0.000)
Non-durables consumption	1,279 ** (626)	0.276 *** (0.034)	1,596 ** (754)	0.321 *** (0.035)
Non-durables consumption (in logs)	0.052 (0.031)	0.000 *** (0.000)	0.077 ** (0.039)	0.000 *** (0.000)
Non-pension wealth	-622,306 ** (312,484)	-109 (76)	-959,344 ** (509,429)	-138 (92)
Wealth	-604,152 ** (312,141)	-108 (76)	-945,674 * (508,887)	-137 (92)
Observations	5,160	5,160	3,103	3,103
Households	2,580	2,580	1,685	1,685

Notes:

Standard errors in parentheses.

*** significant at 1%. ** significant at 5%. * significant at 10%.

Control variables: an intercept, household head sex, household head age (using dummies for less than 35, 35-44, 45-54, 55-64, 75 and over), household head educational level (using dummies for Basic, Medium and High education), household head marital status, household head employment status, household size, no. of employed people in the household, no. of children aged less than 5 in the household, no. of children aged between 5 and 15 in the household, no. of people aged 65 and over in the household, no. of people with High education in the household, household income, squared household income and a dummy for year 2005.

Source: Authors' analysis from SSHF.

In sum, these results suggest a null effect of contributions on national saving and an unclear effect on household private saving (the levels of significance are lower and the precision of estimates are larger). In the best of cases, the analysis depicts a situation where new household saving would be financed by the lower taxes paid by pension

contributors. Two cautionary notes should be kept in mind. First, the estimated effect of contributions on household non-pension savings is extremely imprecise, probably because such effect is too small to identify it clearly with a relatively small sample. Second, missing values play a substantial role in the survey (an issue that, as mentioned in section 3, is addressed using multiple imputation), especially regarding saving: while around 45% of the households surveyed had some imputed component of household saving in 2005, this proportion was less than 5% in the case of consumption. In principle, on the basis of this second feature, results based on consumption are less likely to be subject to measurement error.

VI. Conclusions

Tax relief on supplementary private pensions, which have proliferated in the last years in OECD economies, has the promotion of saving as one the primary objectives. The aim of this paper has been to assess to what extent this objective has been accomplished in the Spanish case. Using a longitudinal household finance survey and fixed-effect techniques, we have found that participation in this type of pension plans is not associated with a decrease in consumption. Therefore, a positive effect on national saving can be ruled out. Nevertheless, our empirical analysis has not offered conclusive evidence on the impact on household private saving. At most, our results suggest that the participation in supplementary pension schemes would have a positive effect on private household saving because of the higher available income resulting from the tax relief, which would be compensated by lower tax revenues. The overall impact on national saving, therefore, would be zero.

These findings cast additional doubts on the convenience of using these kinds of tax relief for fostering national saving and pension coverage. Furthermore, one has to keep in mind that policies that rely on tax breaks for accomplishing such aims have been evaluated as having a strongly regressive impact on the income distribution (Burman *et al.*, 2004; Hughes and Sinfield, 2004; Antón, 2007). In this respect, it seems reasonable to explore other alternatives that, according to the empirical evidence, are likely to be more equitable and effective policies for raising savings than tax credits or tax relief, like matching incentives (Duflo *et al.*, 2006, 2007) or the improvement of financial education (Lusardi, 2004; Lusardi *et al.*, 2008).

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