Pension information and retirement planning in France:
An evaluation of public policy

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Abstract

Households will have to increase their retirement-related assets to face the consequences of pension reforms and/or increasing longevity. Thus, improving retirement planning seems then to be necessary. However, the literature reports a general lack of awareness and understanding of the pension system. Transferring information on pensions to households has been identified as a way for governments to increase the public understanding. In 2007, France began mailing out personalized annual Statements that provided estimates of an individual's pension benefit.

Using the French data of the European survey SHARE, we will assess the effectiveness of the pension information initiative if the statement contribute that workers are better informed about their pension benefits and if it changed their assets accumulation behavior.

We have concluded that such pension policy has an impact on the wealthiest households who are able to integrate information and to put it into action. Conversely, this policy does not take the most vulnerable population into consideration and fails to fulfill its main objective: encourage households with little private savings to better prepare the retirement. This population does not seem able to save more after having received the pension statement. Consequently, the implementation of the pension information right generates or increases inequalities.

JEL classification: Households savings, public policy, quantile regressions, treatment effects models.

Keywords : D14, J18, C31

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I. Introduction

The worldwide increasing longevity over the past decades has threatened the sustainability of public pension schemes and intergenerational equity. Drastic reforms are now essential for the continuing existence of pension systems around the world. In France, pension reforms resulted in increasing contributivity for households (OECD, 2013). The reinforced rules to obtain a full pension make it more difficult for them to maintain their standards of living during retirement. In countries where individuals prepare their retirement privately, they have to manage the risk of outliving their accumulated wealth. Households should increase their retirement-related assets to face the consequences of pension reforms and/or increasing longevity (Bloom et al., 2006 ; De Nardi et al., 2009; El Mekkaoui and Oliveira Martins, 2014). Improving retirement planning in this context is crucial.

However, reforms are often faced with public controversy due to a general lack of awareness and understanding of the pension system. The abundant literature on financial literacy shows how a better understanding of financial mechanisms and environment is crucial to efficiently prepare the retirement. The lack of financial literacy can be interpreted as a manifestation of the agents' bounded rationality (Simon, 1947; Altman, 2011). Information used to make retirement related decision can be poor, or the information might be framed in a misleading fashion (Altman, 2011).

Transferring information on public and occupational pensions to households is a way for governments to increase the public understanding (Joo and Grable, 2000; Lusardi, 2008, Van Rooij and al., 2012). The rôle of the policy makers is then to improve the information quality to individuals, but also to present it in a non complex manner. The institutional environment can facilitate making a good use of information at hand within an appropriate specific making decision environment (Altman, 2012).

The expected double dividend of such a measure is first a better acceptance of reforms, and secondly a better awareness of the necessity to save privately to maintain their standards of living after retirement. This latter aim is especially important for households with very low private wealth at their end of the careers. In Europe, the first initiative to implement a legal pension information system and provide households with pension information was from Sweden in 1989. In France, it was introduced in 2007 after the 2003 pension reform.

This paper contributes to the literature on financial literacy and retirement planning by evaluating a public pension policy aiming at improving households financial and retirement knowledge.

The aim is to assess the effectiveness of the pension information policy if the pension statement (sent since 2007) contribute that workers are better informed about their benefits and if it changed their assets accumulation behavior.

We examine outcomes after the pension information system has been introduced. Using a regression discontinuity design, combined with quantile regressions, we assess whether the changes in asset holdings are due to the pension information system and then quantify the impact.

We have concluded that the pension statement sent to workers impacts only those who are the wealthiest. Savings for long term investment is impacted by pension information only as concerns highest quartile. The lowest quartile does not have any long term assets, and pension information has no impact on this. When considering financial assets, depending on the functional form assumed to deal with age effect, the pension statement seems to impact the amounts for the median percentile as well as the highest quartile. Our findings are quite alarming for the public policy aiming at informing the most vulnerable households better. This first evaluation of pension information in France suggests that this policy fails to reach the targeted population. It could even reinforce inequalities between those who already have the highest amounts of wealth and those who are probably the least well-prepared to retirement.

This study is organized as follows: section II, presents the literature on financial literacy and retirement-related saving behavior. Section III presents the French pension information system. Section IV and V describe the database used, the Survey of Health, Ageing and Retirement in Europe, and the methodology. The sixth section discusses the results. We conclude in the last session.

II. Information, literacy and retirement related savings behavior

The literature on financial literacy has developed very fast over the last decade and contributed to understand why households, in many developed countries, are not economically well prepared to their retirement. Lusardi and Mitchell's (2011b) explain that part of the workers close to retirement have not even questioned retirement (Lusardi and Mitchell, 2011b), which seems quite alarming.

However, the theoretical corpus on financial literacy has to be replaced within the pioneer framework explaining why the individual rationality might be bounded. Only such an extended conceptual framework allows to understand precisely why the role of pension information seems important and why it has been implemented over the past 25 years in Europe and in the United States (Altman, 2012).

Altough the homo oeconomicus is supposed to be perfectly rational, Simon (1947) explains that this rationality is bounded. First, individuals' preferences might be temporal inconsistent because of a strong preference for the present (Strotz, 1956): although households seem to be aware of the necessity to save for retirement, they don't. They agree that retirement related savings is necessary as they would like to maintain their standard of life after their retirement, but they prefer consume. Akerlof (1991) attributes such a behaviour to a lack of imagination : individuals are subject to myopa. According to Laibson (1996,

1997), impatience could explain it (Arrondel et al., 2004). Whatever the explanation, this inconsistency appears because present costs are salient in comparison with future costs.

Secondly, complexity in savings choices reveals also the possibly limited rationality of individuals: Beshears and his co-authors (2008) explained biases decisions since people tend to avoid the more complicated choices. Financial literacy traduces the ability to use information and to make appropriate financial decision, including retirement related savings decisions. Low financially literate individuals do not have this ability and make temporal inconsistent decisions, suffer from cognitive bias, or even do not think about their retirement planning.

Several studies (Lusardi and Mitchell, 2007a, 2007b, 2011a, 2011c and Van Rooij and al., 2012) report the lack of financial literacy and the economic awareness preventing individuals from planning retirement. According to Lusardi and Mitchell (2011c) financially educated individuals are not only more likely to plan their retirement but they also invest more efficiently (Calvert, Campbell, and Sodini, 2005). More educated people have a better propensity to plan, are better able to control their spending and consequently have a more efficient life cycle wealth accumulation (Americks et al., 2003). They are able to make long term financial plans and secure their retirement income. In many countries, literature shows that financial literacy is positively and highly correlated with the propensity to plan (Lusardi and Mitchell, 2011b, 2011c; Bucher-Koenen and Lusardi, 2011; Almenberg and Save-Soderbergh, 2011; Arrondel et al., 2013), which ensures that households plan their retirement efficiently.

Conversely, people lacking basic financial literacy or numeracy end up close to retirement with a low assets level (Lusardi and Mitchell, 2007a). Lusardi and Tufano (2008) focus on people with low debt literacy. They show that individuals with lower levels of debt literacy tend to transact in a high-cost manner and accumulate less wealth (Stango and Zinman, 2007).

The conclusion of Lusardi and Mitchell's (2011b) are quite alarming. According to them, many respondents to the National Financial Capability Survey in the US lack basic knowledge on financial concepts and are exposed to poor financial decisions. Low income earners and less educated people are the most vulnerable.

Von Rooij *et al*. (2012) show the causal relationship of financial knowledge upon thinking about retirement in the Netherlands and explain that the Dutch propensity to plan for retirement has increased. However, they have also concluded that there was little improvement in economic awareness and financial literacy between 2005 and 2010 despite several policy initiatives to increase financial knowledge. More generally, financial literacy has had a positive impact on the probability to accumulate retirement related wealth (Fornero and Monticone, 2011; Klapper and Panos, 2011).

In this context, according to Gale and Levine (2011), improving financial literacy should be the first concern for policy makers. And considering that the lack of financial literacy stems from the Simon theoretical framework of the bounded rationality, public policy has a role to play to improve the decision

making environment. Transferring better quality pension information and in a non complex fashion will improve the financial decision making. In this context, the public pension information (through pension statement) might otherwise improve the financial literacy or at least help to plan for retirement and make better investments. Retirement planning information could improve consumers' retirement knowledge and help them to adopt more relevant behavior (Joo and Grable, 2001).

According to Mastrobuoni, the social security statement improved strongly the knowledge of workers who do not contact the social security administration (SSA). A recent study conducted by Sass (2015) confirmed that the US social security that provides estimates of an individual's benefit adds value to workers by improving their pension knowledge.

Lusardi (2008) insists on the importance to consider effective ways of communication given the low level of financial education. Targeted programs addressing differences in household preferences, savings needs as well as financial and economic educational backgrounds could be efficient to improve retirement planning among different socio-economic groups (Lusardi, Mitchell and Curto, 2009). Information search is indeed costly for individuals. Financially distressed senior individuals are less likely to seek pension information. The latter are more vulnerable as they tend to overestimate their future pensions. According to Kim and Kim (2010), they will face a decrease in their standards of living. Private pension funding requires long term financial plans and pension information.

From the literature, we may deduce that governmental initiatives on pension information in many countries are headed in the right direction. By conveying information, they may increase public understanding, the functioning of private pension systems and foster household retirement savings. Free, customized information sent home enables the less educated and financially distressed consumers (as described by Kim and Kim, 2010) to be targeted. However, Prast, Teppa and Smits (2012) seem quite critical about the effectiveness of measures to deliver pension information in the Netherlands. According to them, this information is not sufficient to encourage individuals to make appropriate choices. Their conclusion is in line with Lusardi, Mitchell and Curto's proposal of targeted programs to improve retirement planning.

III. The French Pension information system

The French law providing information on pensions was introduced with the 2003 pension reform. This law establishes the individual right of individuals to pension information. The law[3], implemented in August 2003 states : "*Each person has the right to obtain, in conditions specified by decree, a statement of their individual situation regarding all the rights that he/she has acquired in legally compulsory pension plans. "*

[3] (*Article L. 161-17)* was implemented on the 23rd of August 2003

The French *GIP-info retraite*[4] addresses detailed information on income to those over the age of 35 (See table 7 in appendix). For those close to retirement age, this office provides exhaustive information on the individuals' pension situation at the age of 55. The document, known as the "indicative global estimate" (*Estimation Indicative Globale, EIG),* provides individuals with a detailed estimate of the future pension benefits as well as the earliest date at which they can expect to retire on a full pension rate.

According to the *GIP Info Retraite*, the aim behind providing these statements to all households was to allow them to have the necessary information they may need to make educated decisions concerning their retirement planning.

IV. Data & Statistics

We use detailed data from the 4th wave of the Survey of Health, Ageing and Retirement in Europe (SHARE Survey). We focus on French data and use the imputed table, which provides aggregated and imputed wealth variables. This module has the advantage of not being affected by missing data thanks to the imputation procedure implemented in the survey (Christelis, 2011). It is often well known that wealth variables are not very well reported. For this reason, we have used variables from the imputed table to avoid information loss.

We have selected the 4th wave because of the year in which the data was gathered. The transitory period of pension information program implementation ended in 2010. Up to 2011, the implementation of the pension information system was progressive. With of the 2011 data, the year of birth 1955 constitutes a threshold in receiving the pension statement: individuals born between 1948 and 1955, still in activity, have received their pension statement. Conversely, people born after 1955 still have received it.

We need to ascertain that individuals were still in activity when they were supposed to receive their pension statement. We know from French legislation that the cohort 1949 received their estimates in 2007, cohorts 1950 and 1951 in 2008, cohorts 1952 and 1953 in 2009 and cohorts 1954 and 1955 in 2010. As the survey provides the retirement year, we have excluded those who declared being retired at the dates above.

We have selected two variables of interest. The first one is the per capita household savings for long-term investment[5], which includes amounts on individual retirement accounts, contractual saving and life insurance. The second one is the per capita household gross financial assets, i.e. the sum of the bank accounts, bond, stock and mutual funds, plus the savings for long term investment.

[4]The Public Interest Group on the Right to Information (*Groupement d'intérêt public droit à l'information*), known as the GIP-info retraite, was introduced in 2003, after the "Fillon pension reform". This organization manages all the information and data from the State pension regimes as well as all the mandatory complementary pension organizations. GIP info retraite coordinates the information provided by the employers and regimes, as well as the State. From 2014, the *GIP info retraite* became the *GIP Union Retraite*.

[5] Although the variable is denoted "savings for long term investment" in the survey, we have considered stock variable. This variable indicates assets held over long-term horizons.

Table 1 Per capita households savings for long-term investments (in euros)

Birth year	N	mean	p25	p50	p75
1951	177	23380	0	3619	13377
1952	178	12489	0	2322	10000
1953	210	21549	0	900	11000
1954	199	13166	0	1221	11436
1955	182	17578	0	2650	14218
1956	180	9127	0	418	7721
1957	194	11290	0	2500	11000
1958	185	10614	0	1167	12070
1959	183	14665	0	1650	13809
1960	52	11057	0	4078	15336

Source: SHARE, 4th wave

Table 2 Per capita Household gross financial assets in 2010 (in euros)

Birth year	N	mean	p25	p50	p75
1951	177	38313	1667	5955	29366
1952	178	24816	2500	11969	24500
1953	210	33124	1167	7000	26250
1954	199	28920	1250	8388	26250
1955	182	28251	3400	9743	26732
1956	180	17608	859	3683	21957
1957	194	22264	1667	8506	24068
1958	185	20273	667	3381	18333
1959	183	23742	1058	5000	22500
1960	52	18867	2036	9122	20000

Source: SHARE, 4th wave

Tables 1 & 2 provide descriptive statistics for both variables of interest. The total sample includes 1745 observations. First, we note that individuals in the lowest quartile of the wealth distribution do not hold any savings for long term investments. For 612 observations, this variable is equal to 0. As it is frequent with wealth variables, the median is far lower than the average value for both variables, indicating that some households have very high wealth levels.

Table 3 Average assets held by cohorts on both sides of the year threshold (euros)

N	Per capita savings for long term investment	Per capita financial assets

Birth<=1955	953	17975	31061
Birth>1955	792	11276	20717

953 observations of our sample received pension estimate, while 792 did not. Savings for long term investment is 59% higher for informed cohorts, while their total financial assets are almost 50% higher (See table 3). These figures are obviously strongly correlated with age, which has to be controlled through a further relevant econometric analysis, developed in the next section.

V. Methodology

(i) Estimate Procedure

We have estimated the causal effect of the pension information program on the savings behavior of households of which one member at least is aged 50 or older. The progressive implementation of the program creates a discontinuity at the age of 56 in 2011. In this year, only cohorts from 1949 to 1955 had received the estimate of their pension. In 2011, being 56 or older implies having been recipient of an information mail, so being exposed to the treatment of pension information. This situation is consequently an application of the regression discontinuity design (Hahn et al., 2001; Imbens and Lemieux, 2008; Lee and Lemieux, 2010). More precisely the example of a sharp regression discontinuity (RD) method has to be considered.

Our aim is to compare observations just below and just above the threshold age of 56 to determine if pension information has already had an impact on holding behaviors in 2011. To have enough observations in the study sample requires including individuals in the age bracket 52-60 in 2011. The treatment group consequently includes individuals born between 1951 and 1955. Individuals born from 1956 to 1959 constitute the control group.

The RD method exploits a discontinuity in the treatment assignment to identify a treatment effect. In our case, the known discontinuity is due to quasi experimental situation implied by the progressive implementation of the economic policy. In the sharp RD design, the treatment assignment depends on a deterministic way on a variable Z with a known discontinuity at point Z_0. The assignment of individuals to the treatment "pension estimate mail" is totally age dependent. All people born between 1949 and 1955 are treated, while those born until 1956 are not.

Let denote p_i the indicator for assignment to the pension information, the rule is then:

$$p_i = \begin{cases} 1 \; if \; Z_i \leq \; Z_0 = 1955 \\ 0 \; otherwise \end{cases}$$

With Z_i the birth year of individual i and Z_0 the threshold, fixed at 1955[6].

This empirical approach exploits the discontinuity in available information at age 56 in 2011. We are interesting in observing if the pension estimate mail reception impacts significantly different wealth variables denoted Y. We have analyzed both the savings for long term investment, and the gross financial assets held (in log).

Let Y_1 represent the potential outcome if the individual receives the treatment, i.e. the pension information mail, and Y_0 the potential outcome in case if she/he does not receive it. The objective is to estimate the average treatment effect at the threshold Z_0. This average treatment effect (ATE) can be expressed as $ATE = E[Y_1 - Y_0|Z = Z_0]$.

When the support of Z is continuous, non-parametric and semi-parametric procedures for estimate are appropriate (Hahn et al., 2001; Porter, 2003). However, when the support of Z is discrete, taking J distinct values, Lee and Card (2008) show that parametric methods should be preferred. Identification of the ATE can be achieved by estimating the following regression function:

$$E[Y|Z = z_j] = \beta_0 p_j + h(z_j) \qquad [1]$$

Where $h(.)$ is a continuous function capturing the cohort effect on the outcome variable, $p_j = 1[z_j \geq 0]$. The assignment variable Z, here the birth year, is normalized so that the discontinuity point is represented by $z_j = 0$. As consequence, $z_j = 1955 - birth\ year$. The link between the birth year, the age and the assignment variable is summarized in table 4.

Table 4 Assignment variable

Normalized assignment variable	Age in 2011	Birth year	Treatment
4	60	1951	1
3	59	1952	1
2	58	1953	1
1	57	1954	1
0	56	1955	1
-1	55	1956	0
-2	54	1957	0
-3	53	1958	0
-4	52	1959	0
-5	51	1960	0

[6] To be precise, in 2011, individuals born in 1956 were recipient of their pension estimate mail. However, amounts reported are those of 2010.

The key identification assumption is the continuity of $h(.)$. With the specification [2], and under this assumption, the treatment effect β_0 is obtained by estimating the discontinuity in the empirical regression at the point where treatment switches from 0 to 1, in our case at age 56, when their birth year is 1955. Introducing covariates (X), equation [1] can be also express as :

$$Y_{ij} = \beta_0 p_j + h(z_j) + \delta X_i + \varepsilon_{ij} \qquad [2]$$

In [2], Y_{ij} is the wealth variable for the *i*th individual, born in year *j*, i.e. the *j*th value of the assignment variable$Z$. The hypothesis that $h(.)$ is smooth implies that, controlling other characteristics, the reception of the pension information mail (i.e. the treatment) is the only source of discontinuity in the wealth variable at age 56. It is common practice to regress Y_{ij} on $h(.)$ assuming it is a low order polynomial function. If the polynomial function assumed is correct, conventional least squares inference is appropriate (Lee and Card, 2008). Three different forms are assumed for $h(.)$: a linear form, a spline linear and a quadratic function.

After proposing a classic ordinary least square estimate for the equation [2], given the distribution of our data, we propose quantile regressions (Koenker and Bassett, 1978) to obtain a full characterization of the conditional distribution of the dependent variable. Table 1 shows indeed that a great proportion of the sample does save for the long term. We can deduce e from these statistics that distribution effects are particularly important with wealth variables. Following the abundant literature on financial literacy, we may fear that only part of the population is able to receive, understand and use pension information. For these reasons, we propose estimate the treatment effect for the following quantiles: the 25th percentile, the median and the 75th percentile.

Then two subsamples are created to target cohorts closer in age. The first subsample, denoted discontinuity sample 1 (DS1) includes cohorts from 1952 to 1958. Cohorts from 1956 to 1958 constitute the control group. The second subsample, denoted DS2, includes cohorts 1953 to 1957. Once again those born in 1956 and 1957 are the control cohorts. This process could enable the comparison of individuals with probably even more similar accumulation behaviors, however selecting those cohorts, we also exclude observations and restrain the size of our sample. The discontinuity sample 1 includes 1332 observations while the discontinuity sample 2 includes only 972 observations.

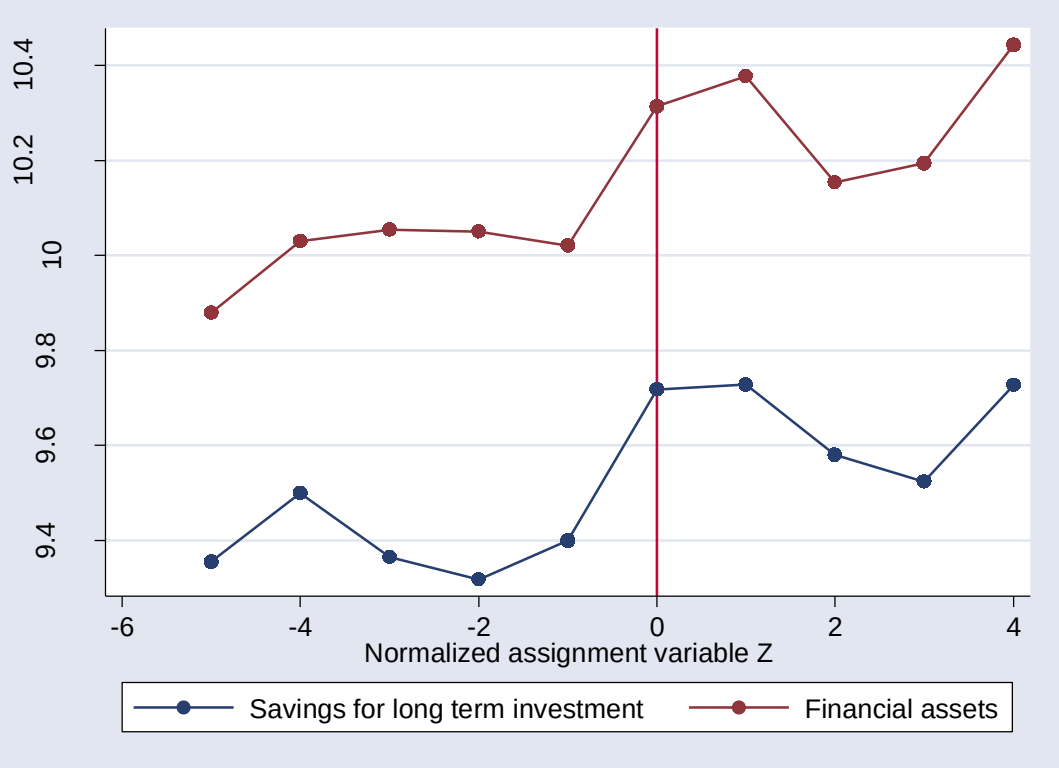
(ii) Graphical analysis

In case of discreteness of the assignment variable, Lee and Lemieux (2010), first, recommend, to simply compute and graph the mean of the outcome variable for each value of this discrete assignment variable. Graph 1 proposes a first approach of the discontinuity analysis and summarizes the mean per capita household wealth held, by values of the assignment variable z_j. A negative value of z_j indicates that

individuals did not received their pension estimate letter. Conversely, if $z_j \geq 0$, individuals were "treated".

The vertical red line represents the discontinuity, the point where the treatment switches from 0 to 1. It seems difficult to draw conclusions only with a graphical analysis. However, we can note that mean values of financial assets and savings for long term investments held seem to grow with age (i.e. with z_j), with a possible visual jump at point $z_j = 0$.

Graph 1 Mean amounts held, by assignment variable Z



(iii) Variables

To investigate the impact of pension information on different wealth variables, we have included control variables such as educational attainment for the individual and his/her partner, household composition (marital status and the number of children within the household), and per capita household disposable income. Dummy variables indicate whether the respondent is self-employed, retired and homeowner. An additional dummy enables capturing health effects if the individual has declared being limited in his/her daily activities.

We do not include any age variables as the function *h(.)* does. As different forms are assumed for *h(.)*, we capture a possibly non-linear effect of age on wealth. As suggested in von Rooij *et al.* (2012), a

polynomial for the logarithm of per capita disposable household income with a linear, quadratic and cubic term is included, allowing capturing potential non-linear effect of income on wealth accumulation.

VI. Results

Treatment effects for the total sample are reported in table 5 & 6[7]. In those tables, columns (1) provide the average treatment effect on the total sample. Columns (2) to (4) give respectively the treatment effect on the 25th percentile, the median and the 75th percentile. Results are reported by functional form assumed for $h(.)$.

Table 5 Treatment impact (β_0) on savings for long term investment (log)

	(1)	(2)	(3)	(4)
h(.) linear	0.337	-	0.731	1.041***
	(0.45)	-	(1.21)	(3.21)
h(.) spline linear	0.459	-	0.739	1.077**
	(0.58)	-	(1.17)	(3.05)
h(.) quadratic	0.421	-	0.664	1.004**
	(0.56)	-	(1.08)	(2.98)
N=1745				

Table 6 Treatment impact (β_0) on financial wealth (log)

	OLS	25th	50th	75th
	(1)	(2)	(3)	(4)
h(.) linear	-0.008	-0.018	0.270	0.249
	(-0.03)	(-0.05)	(1.46)	(1.41)
h(.) spline linear	0.066	0.102	0.372**	0.358**
	(0.20)	(0.28)	(2.00)	(2.15)
h(.) quadratic	0.042	0.058	0.308*	0.248*
	(0.14)	(0.37)	(1.74)	(1.69)
N=1745				

We have not detected any impact of pension estimate transmission on mean savings for long term investment nor mean financial assets held. However, quantile regressions confirm the differentiated impact of pension information according to the situation of respondents in the wealth distribution. While

[7] See tables 8 and 9 in appendix for the complete results of the estimates.

there is no impact on lowest percentiles, the wealth stock on the richest seems to be affected. The impact is much stronger on wealth held for long term investment. Having received pension statement has a significant impact: we can denote an information elasticity between 1.004 and 1.04 according to different functional forms of *h(.)* (See Table 5). The impact captured with the use of discontinuity sample is even stronger (See table 9 in appendix), showing that we do not capture only an age effect after age control. An effect on median individuals' long term wealth is even detected when using the discontinuity sample 2.

Once again, estimating financial wealth with OLS and a regression discontinuity does not provide any significant impact, whatever the form assumed for $h(.)$ (See table 6). However, taking account of a possibly differentiated impact by percentile shows that the wealthiest behavior is affected by the reception of pension information. The results are yet rather less conclusive, as a significant impact appears only with two of three regressions, for the median and the 75^{th} percentile, and these are not all confirmed with the discontinuity samples (See table 9). The financial accumulation elasticity to information appears lower than the long term accumulation elasticity, indicating than long term accumulation is probably more retirement oriented. We can note an elasticity comprised between 0.248 and 0.358 with a spline linear and a quadratic form of h(.) for the highest quartile of the distribution. The impact seems event stronger for respondents located at the median of the distribution as it reaches 0.308 à 0.372.

Part of the population reacts to pension information provided by increasing private savings. As the impact is stronger for long-term savings, we can suppose that they adjust their wealth level with appropriate assets for the retirement planning as a priority. Having an increasing retirement horizon also implies more long-term uncertainty. However our results also show that only those already having the highest levels of wealth seem to be impacted. This latter population is also probably the most aware of the long term issues and challenges for the pension system. The significant impact of the education variable, capturing especially in the case of financial literacy in our regressions, confirms that knowledge is key variable, determining the long term wealth accumulated (Americks et al., 2003; Lusardi and Mitchell, 2011b, 2011c; Bucher-Koenen and Lusardi, 2011; Almenberg and Save-Soderbergh, 2011; Arrondel et al., 2013).

The impact on financial wealth is lower as this variable also includes assets held with short-term, which seems indeed less appropriate for retirement planning. The median effect, which was not detected when estimating long term wealth, suggests that part of the population still chooses to increase their savings but not necessary long-term. Such behavior may indicate that these individuals are more budget constrained and prefer to keep more liquid assets, or are less aware of adequate financial products to prepare their retirement.

The pension information system has a significant impact on accumulation behavior, and this impact is the largest for the wealthiest households. Therefore, such a policy may lead to higher inequalities because it encourages he richest household to accumulate more. In other words, the pension information does not

seem to motivate those who are the most in need to adapt their decrease of their public pension. Thus, the policy fails to achieve its main purpose. Many reasons can explain this results simultaneously:

- Households with the lowest wealth levels are not able to increase their savings, even if they have clear information on their accumulated rights,
- In the same time, those who are at the bottom of the wealth distribution, are also those whose can pretend in France to a high replacement rate: as a consequence, they can be not surprised by the pension evaluation received, and consequently can choose not to change their accumulation behavior,
- They might not have a sufficicent level of financial literacy and do not make an effective use of information received. In this case, increasing the efficiency of this policy system requires a fundamental prerequisite : increasing the capacity of the population to make an effective use of the information provided. Currently those who have already high level of wealth seem to be able to translate the information provided into a financial decision.

Conclusion

This research contributes to the extended literature on the topic financial literacy and retirement planning by proposing to evaluate a very precise measure of economic policy: the pension information system. The paper aims at shedding new light on the relationship between a particular aspect of financial awareness – pension information- and retirement planning. This issue has attracted very little attention up to now mainly because of the lack of data. For example, Boeri and Tabellini (2010) showed that the impact of pension information on the citizens' willingness to accept pension reforms. To complement the very scarce academic literature on pension information, we have evaluated the impact of the pension information system implementation on household accumulation.

Taking advantage of the progressive implementation of the measure, which has created the conditions for a quasi-experimentation, we used a regression discontinuity design, combined with quantile regressions, to evaluate whether changes in wealth are due to the introduction of the pension information system and quantify the impact. Cohorts being recipients of pension information were identified as "treated" generations and others were control cohorts.

We have shown that pension estimate transmission implies an increase in long term assets accumulation and more generally in financial assets holding. Pension information has a significant positive impact on accumulation, but only on the highest part of the wealth distribution. With an elasticity for information between 1.004 and 1.04 for the 75^{th} percentile, the impact is much stronger on long term savings than financial assets. We estimate that the elasticity of financial assets is comprised between 0.248 and 0.358 for households within the 75^{th} percentile of wealth.

Pension statement reinforces the savings of those who already hold the highest levels of wealth. The current measure to convey pension information to households who consequently tends to reinforce inequalities between those who have already saved privately and were also probably the most informed and the most financially educated, as well as the part of the population with the lowest levels of wealth. Although the latter are the least informed and the least financially educated, the policy fails to reach them. We can also fear that this population, even if it realizes the necessity to increase retirement related wealth, will not be able to do this. Consequently, the pension information system, such as designed in France since the 2003 reform, has had perverse effects.

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Appendix

Table 7 Summary of the information available in the pension statements in France

French Earnings record
• Letter of introduction to the right to pension information
• Table summarizing the number of qualifying trimesters acquired from basic state and the number of points acquired for the complementary occupational pension schemes
• Total number of qualifying trimesters from both State and complementary pension schemes
• Amount of trimesters needed to attain a full pension in 2008 and the amount of trimesters needed to attain a full pension in 2012.
• A page detailing the time period, earnings (in points or euros) and qualifying trimesters that each regime the individual may have belonged to. There is also an area on each page the regime may choose to display any additional information
• The contact information for each of the different regimes.
• The contact information for rectifying or changing personal contact details
• Description of the GIP Info Retraite website
• Insert with a description of the French retirement system

Table 8 Estimates of the savings for long term investment (*log*)

	OLS			Quantile .50			Quantile .75		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Pension estimate received 0/1	0.337	0.459	0.421	0.731	0.740	0.664	1.042**	1.077**	1.004**
	(0.45)	(0.58)	(0.56)	(1.21)	(1.17)	(1.08)	(3.21)	(3.05)	(2.98)
Normalized assignment variable z	-0.0711	-0.175	-0.0779	-0.127	-0.174	-0.0774	-0.134**	-0.206**	-0.125**
	(-0.57)	(-0.88)	(-0.63)	(-1.12)	(-0.97)	(-0.67)	(-2.20)	(-2.05)	(-1.98)
Years of education (log)	1.781***	1.787***	1.789***	1.748***	1.691***	1.600***	2.026***	2.024***	2.031***
	(5.08)	(5.09)	(5.11)	(3.86)	(3.71)	(3.51)	(8.34)	(7.93)	(8.11)
Partner 's years of education (log)	0.197	0.205	0.208	0.00198	0.0701	0.116	0.107	0.161	0.159
	(1.13)	(1.17)	(1.18)	(0.01)	(0.34)	(0.56)	(0.96)	(1.38)	(1.39)
Never married	-0.620	-0.610	-0.608	-1.669**	-1.580**	-1.534**	-1.269***	-1.192***	-1.236***
	(-1.39)	(-1.35)	(-1.34)	(-3.03)	(-2.85)	(-2.77)	(-4.30)	(-3.84)	(-4.06)
Divorced	0.185	0.192	0.204	-0.812	-0.593	-0.464	0.193	0.294	0.312
	(0.38)	(0.39)	(0.42)	(-1.35)	(-0.98)	(-0.77)	(0.60)	(0.87)	(0.94)
Widowed	0.507	0.514	0.523	-0.0417	0.137	0.249	0.395	0.565	0.545
	(0.65)	(0.66)	(0.67)	(-0.04)	(0.13)	(0.24)	(0.73)	(0.99)	(0.97)
Number of childs	-0.180*	-0.179*	-0.178*	-0.217**	-0.221**	-0.235**	-0.529***	-0.513***	-0.510***
	(-1.94)	(-1.90)	(-1.88)	(-2.12)	(-2.14)	(-2.28)	(-9.62)	(-8.87)	(-9.00)
Limitation with activities	-0.127	-0.122	-0.119	-0.294	-0.341	-0.350	-0.157	-0.114	-0.114
	(-0.41)	(-0.40)	(-0.39)	(-0.92)	(-1.06)	(-1.09)	(-0.92)	(-0.63)	(-0.65)
Self Employed	1.134**	1.114**	1.094**	0.518	0.603	0.720	0.202	0.135	0.109
	(2.25)	(2.26)	(2.24)	(1.12)	(1.29)	(1.54)	(0.81)	(0.51)	(0.43)
Retired	-0.498	-0.537	-0.565	-0.952	-0.789	-0.634	-0.441	-0.495	-0.526
	(-0.67)	(-0.73)	(-0.76)	(-1.19)	(-0.98)	(-0.79)	(-1.03)	(-1.09)	(-1.19)
Homeowner	1.419***	1.417***	1.420***	2.863***	2.928***	3.061***	0.988***	0.974***	0.998***
	(4.35)	(4.34)	(4.36)	(7.26)	(7.39)	(7.73)	(4.68)	(4.38)	(4.58)

Ln(income)	-1.364***	-1.381***	-1.391***	-2.030**	-2.044**	-2.049**	-1.050**	-1.046**	-1.047**
	(-4.13)	(-4.24)	(-4.28)	(-2.33)	(-2.33)	(-2.34)	(-2.25)	(-2.13)	(-2.17)
Ln^2(income)	0.241**	0.244**	0.244***	0.472**	0.467**	0.470**	0.236**	0.223**	0.220**
	(3.26)	(3.30)	(3.30)	(3.20)	(3.15)	(3.17)	(2.99)	(2.68)	(2.70)
Ln^3(income)	-0.00891**	-0.00897**	-0.00893**	-0.0212**	-0.0207**	-0.0210**	-0.0107**	-0.00968**	-0.00947**
	(-2.07)	(-2.09)	(-2.08)	(-2.75)	(-2.68)	(-2.71)	(-2.58)	(-2.23)	(-2.23)
Normalized assignment variable z*(Z>=0)		0.175			0.125			0.136	
		(0.71)			(0.54)			(1.06)	
Squared normalized assignment variable z			0.0259			0.0254			0.0136
			(1.07)			(1.09)			(1.06)
Constant	-1.581	-1.875	-1.823	-4.579	-4.713	-4.630	1.376	1.310	1.429
	(-1.00)	(-1.12)	(-1.13)	(-1.63)	(-1.65)	(-1.63)	(0.91)	(0.82)	(0.92)
F()	14.94	14.90	14.94						
R-squared	0.1320	0.1326	0.1333	0.1190	0.1191	0.1196	0.0837	0.0842	0.0843
N	1744	1744	1744	1744	1744	1744	1744	1744	1744

t statistics are reported in parentheses - (1) *h(.)* linear, (2) *h(.)* spline linear, (3) *h(.)* quadratic

* p<0.1, ** p<0.05, *** p<0.001

Table 9 Estimates of the financial assets (*log*)

	OLS			Quantile.25			Quantile.50			Quantile.75		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Pension estimatie received 0/1	-0.00827	0.0659	0.0424	-0.0183	0.102	0.0582	0.270	0.372**	0.308*	0.249	0.358**	0.284*
	(-0.03)	(0.20)	(0.14)	(-0.05)	(0.28)	(0.16)	(1.46)	(2.00)	(1.74)	(1.41)	(2.15)	(1.69)
Normalized assignment variable z	0.0836	0.0198	0.0794	0.0660	-0.0146	0.0715	-0.00339	-0.0772	-0.0110	-0.00427	-0.0772	-0.00572
	(1.53)	(0.22)	(1.46)	(0.98)	(-0.14)	(1.04)	(-0.10)	(-1.47)	(-0.33)	(-0.13)	(-1.63)	(-0.18)
Years of education (log)	1.255***	1.258***	1.260***	1.462***	1.467***	1.454***	1.133***	1.167***	1.154***	1.245***	1.294***	1.294***
	(5.38)	(5.43)	(5.47)	(5.45)	(5.46)	(5.35)	(8.19)	(8.69)	(8.77)	(9.45)	(10.75)	(10.36)
Partner 's years of education (log)	0.303**	0.308**	0.309**	0.255**	0.266**	0.282**	0.187**	0.227***	0.216***	0.156**	0.156**	0.152**
	(2.86)	(2.90)	(2.90)	(2.08)	(2.16)	(2.26)	(2.96)	(3.68)	(3.58)	(2.59)	(2.83)	(2.66)
Never married	0.392	0.398	0.399	0.639**	0.614	0.643	0.270	0.302*	0.277	-0.199	-0.184	-0.206
	(1.57)	(1.59)	(1.59)	(1.96)	(1.88)	(1.94)	(1.60)	(1.85)	(1.73)	(-1.24)	(-1.26)	(-1.36)
Divorced	0.572**	0.577**	0.584**	0.469	0.487	0.569	0.356*	0.416**	0.388*	0.448**	0.512***	0.490**
	(2.06)	(2.07)	(2.09)	(1.32)	(1.37)	(1.58)	(1.93)	(2.34)	(2.22)	(2.56)	(3.21)	(2.95)
Widowed	0.854**	0.858**	0.863**	0.832	0.777	0.812	0.846**	0.884**	0.819**	0.540*	0.442	0.391
	(2.06)	(2.07)	(2.08)	(1.38)	(1.29)	(1.33)	(2.73)	(2.94)	(2.77)	(1.83)	(1.64)	(1.39)
Number of childs	-0.190**	-0.189**	-0.189**	-0.0942	-0.0867	-0.0926	-0.227***	-0.228***	-0.224***	-0.350***	-0.342***	-0.346***
	(-3.10)	(-3.08)	(-3.08)	(-1.55)	(-1.42)	(-1.50)	(-7.23)	(-7.52)	(-7.50)	(-11.71)	(-12.55)	(-12.22)
Limitation with activities	-0.0834	-0.0805	-0.0785	0.0668	0.0531	0.0591	-0.0326	-0.0573	-0.0569	-0.0270	-0.0886	-0.0649
	(-0.52)	(-0.50)	(-0.49)	(0.35)	(0.28)	(0.31)	(-0.33)	(-0.61)	(-0.61)	(-0.29)	(-1.04)	(-0.74)
Self employed	-0.130	-0.142	-0.154	-0.0528	-0.144	-0.206	0.0110	-0.0367	-0.0728	-0.162	-0.171	-0.144
	(-0.34)	(-0.37)	(-0.41)	(-0.19)	(-0.52)	(-0.74)	(0.08)	(-0.27)	(-0.54)	(-1.20)	(-1.39)	(-1.12)
Retired	-0.278	-0.302	-0.319	-0.0562	-0.198	-0.269	-0.176	-0.157	-0.178	-0.435*	-0.451**	-0.451*
	(-0.90)	(-0.99)	(-1.05)	(-0.12)	(-0.42)	(-0.56)	(-0.72)	(-0.66)	(-0.76)	(-1.87)	(-2.12)	(-2.04)
Homeowner	1.154***	1.153***	1.155***	1.706***	1.769***	1.750***	1.060***	1.058***	1.050***	0.726***	0.749***	0.749***
	(6.31)	(6.30)	(6.32)	(7.31)	(7.56)	(7.39)	(8.80)	(9.05)	(9.17)	(6.33)	(7.15)	(6.89)
Ln(income)	-0.817***	-0.828***	-0.834***	-1.222**	-1.263*	-1.250*	-0.985***	-0.996***	-0.997***	-0.699**	-0.706**	-0.707**
	(-3.82)	(-3.89)	(-3.93)	(-2.37)	(-2.44)	(-2.39)	(-3.70)	(-3.86)	(-3.94)	(-2.76)	(-3.05)	(-2.94)
Ln^2(income)	0.0888**	0.0902**	0.0903**	0.148*	0.160	0.157	0.150***	0.153***	0.151***	0.106**	0.106**	0.108**
	(2.14)	(2.18)	(2.19)	(1.70)	(1.83)	(1.78)	(3.34)	(3.50)	(3.53)	(2.48)	(2.72)	(2.66)
Ln^3(income)	-0.000344	-0.000379	-0.000353	-0.00250	-0.00304	-0.00292	-0.00374	-0.00393*	-0.00374	-0.00265	-0.00261	-0.00274

	(-0.15)	(-0.16)	(-0.15)	(-0.55)	(-0.67)	(-0.63)	(-1.59)	(-1.72)	(-1.67)	(-1.18)	(-1.27)	(-1.29)
Normalized assignment variable z*(Z>=0)		0.107						0.105			0.115*	
		(0.98)						(1.54)			(1.89)	
Squared normalized assignment variable z			0.0158						0.0107			0.00893
			(1.34)						(1.59)			(1.39)
Constant	3.933***	3.753***	3.785***				3.877***	3.580***	3.734***	5.605***	5.331***	5.415***
	(4.12)	(3.87)	(3.98)				(4.50)	(4.25)	(4.55)	(6.84)	(7.06)	(6.95)
F()	23.79	24.51	25.05									
R-squared	0.2375	0.2382	0.2389	0.1635	0.1639	0.1645	0.1729	0.1735	0.1736	0.1501	0.1507	0.1505
N	1744	1744	1744	1744	1744	1744	1744	1744	1744	1744	1744	1744

t statistics are reported in parentheses - (1) *h(.)* linear, (2) *h(.)* spline linear, (3) *h(.)* quadratic

* p<0.1, ** p<0.05, *** p<0.001

Table 10 Treatment impacts with discontinuity samples

	Discontinuity sample 1				Discontinuity sample 2			
	Savings for long term investments		Financial assets		Savings for long term investments		Financial assets	
	50th	75th	50th	75th	50th	75th	50th	75th
h(.) linear	1.158	1.056**	0.238	0.241	1.788*	1.268**	0.376	0.111
	(1.52)	(2.52)	(1.04)	(1.20)	(1.82)	2.89	(1.21)	(0.50)
h(.) spline linear	0.928	1.122**	0.361	0.452**	2.222*	1.663**	0.695*	0.485*
	(1.10)	(2.39)	(1.46)	(2.32)	(1.71)	(3.16)	(1.68)	(1.62)
h(.) quadratic	1.133	1.048**	0.359	0.331*	2.210*	1.663***	0.660*	0.381
	(1.42)	(2.35)	(1.54)	(1.78)	(1.86)	(3.77)	(1.75)	(1.46)
N	1332				972			

t statistics are reported in parentheses - (1) *h(.)* linear, (2) *h(.)* spline linear, (3) *h(.)* quadratic

* p<0.1, ** p<0.05, *** p<0.001