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### Individual heterogeneity and pension choices: How to communicate an effective message?

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# **Individual heterogeneity and pension choices: How to communicate an effective message?<sup>§</sup>**

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## **Abstract**

We use the Elaboration Likelihood Model (ELM) to explain how communication influences the heterogeneity in pension choices. To this end we exploit the 2007 Italian reform that allowed transferring future severance pay contributions into a pension fund and was accompanied by an information campaign with a clear message. According to ELM, individuals follow either a “central route” or a “peripheral route” depending on their motivation and ability to think, and eventually change or retain their initial attitude. Based on Logit models and data from the Bank of Italy Survey on Household Income and Wealth, we find that the decision to transfer the severance pay into a pension fund was taken by more educated and older individuals, with high household income. Since the reform was mainly directed at low income and younger individuals, this result suggests that the information campaign was not very effective. Moreover, our findings show that generic financial literacy does not significantly affect decision consciousness, pointing at a more relevant role in the elaboration process for: the individual’s comprehension of the specific choice object (pension funds), cognitive skills, and influential contextual factors (i.e., unions and employer’s pressure).

*March 2016*

**Keywords:** pension choices, Elaboration Likelihood Model, financial literacy

JEL classification: D14, D03

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## Introduction

Studies in household finance highlight individual heterogeneity in household portfolio choices including those connected to pension choices. Traditional explanations for the heterogeneity in participation in pension schemes rest on variation in socio-demographic attributes and economic and financial individual or household characteristics (e.g. Huberman et al. (2007) on the participation in Defined Contribution (401)k pension plans in the US, and Antolin (2008) on the participation in supplementary pension schemes for eight OECD countries). One strand of literature specifically investigates the role of education, where low education in general and low financial education in particular are often found to have a negative impact; see Lusardi and Mitchell (2006, 2011) for the US, Fornero and Monticone (2011a) and Rinaldi (2011) for Italy; Coppola and Lamla (2013) for Germany. Conversely, Duflo and Saez (2003) find a small positive effect of information when choosing to participate in employer sponsored tax deferred accounts, and a larger effect of social interactions. Cappelletti and Guazzarotti (2013) use Italian data and confirm a lack of knowledge of complementary pension schemes even among those who participate in such a scheme - many participants cannot recall their investment strategy or the amount of their annuity. They also find that participation rates are particularly low among those who would benefit most, namely younger workers. Unsurprisingly, the authors also find that income is the strongest predictor of participation, as individuals who earn more have more resources to subscribe.

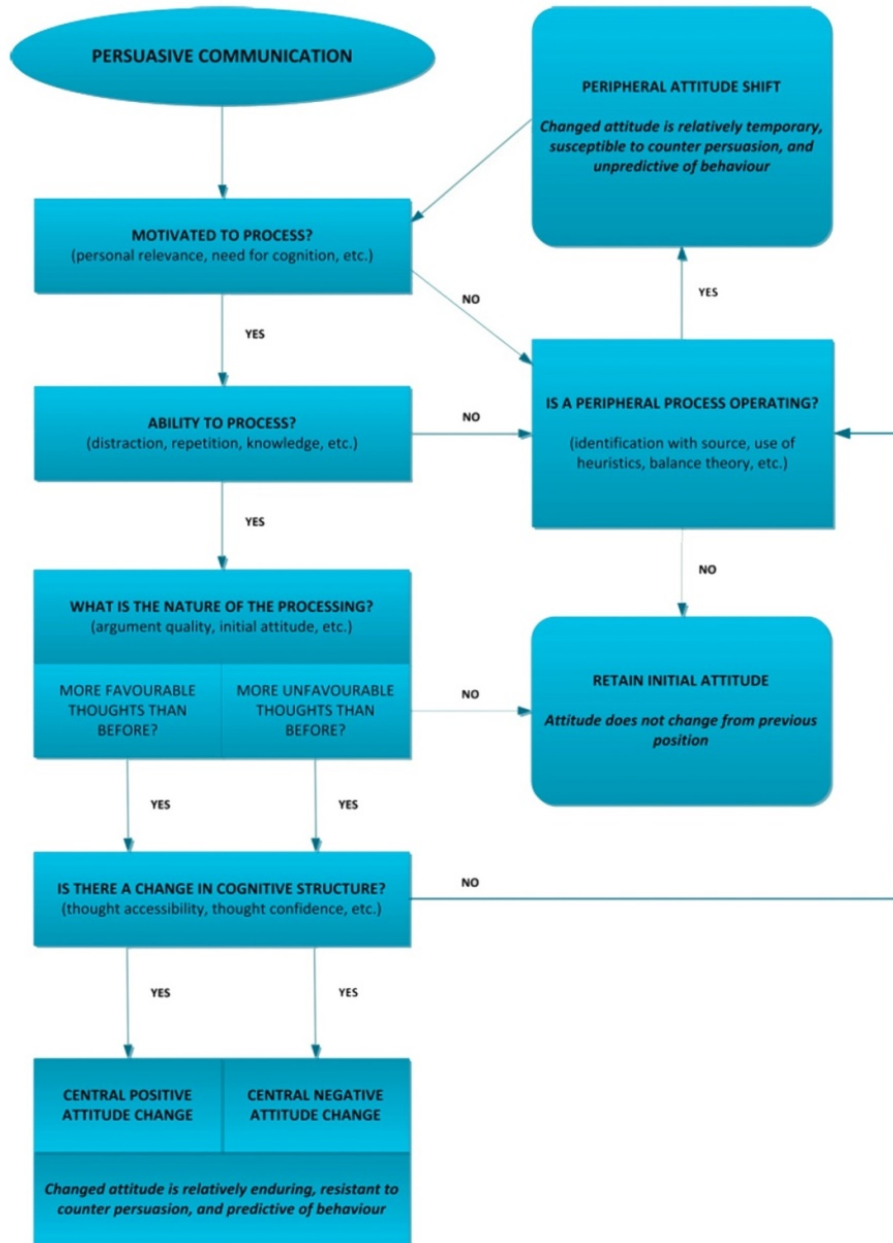
In order to explore a different route, this paper aims to explain the heterogeneity in pension choices through the Elaboration Likelihood Model (ELM) proposed by American psychologists Richard E. Petty and John T. Cacioppo (Petty and Cacioppo, 1983). This essentially models the elaboration process that occurs when attempting to change a person's attitude through communication. The amount of elaboration or thinking is different for each individual and varies from low to high according to motivation and ability to process the message. When motivation and ability to think are high, individuals are inclined to travel a "central route to persuasion", otherwise they follow a "peripheral route to persuasion". Although the ELM has been mainly used so far in marketing studies for consumers' choices (Jae and Delvecchio, 2004; Petty and Rucker, 2006), it lends itself to be used to analyse other types of individual choices connected with a communication message. For example, it may be used also to explain the heterogeneity in household financial portfolios, because a given (financial) advice can lead to different choices depending on individual and household characteristics.

In particular, we use ELM in order to analyse the heterogeneity in pension choices connected to the 2007 Italian reform that allowed transferring future severance pay contributions into a pension fund. In fact, the reform was accompanied by an information campaign with a quite clear message that resembled an advertisement in favour of the pension fund choice. We use data from the Bank of Italy's Survey of Household Income and Wealth (SHIW), which includes a question on the choice concerning transferring the severance pay into a pension fund. We will exploit information of four waves: one before (2006) and three after the reform (2008, 2010 and 2012).

The rest of the paper is organized as follows. Section 1 reviews the general structure of the Elaboration Likelihood Model of persuasion. Section 2 describes the Italian reform allowing the severance pay transfer into a pension fund. While Section 3 describes the dataset, Section 4 uses these data to describe all the steps to assess the effectiveness of the reform message using the ELM. Section 5 presents the empirical results and Section 6 concludes.

# 1. The Elaboration Likelihood Model of persuasion (ELM)

Figure 1 – The Elaboration Likelihood Model of Persuasion



Source: Petty, Briñol and Priester (2009)

The Elaboration Likelihood Model of persuasion (ELM) (Petty and Cacioppo, 1983) is essentially a theory about the thinking processes that can occur when attempting to change a person’s attitude through communication. The ELM assumes that any one variable can influence attitudes in a number of different ways and that individuals can differ in how carefully and extensively they think about a message. In other words, in any given context, the amount of individual elaboration or thinking on a message or issue can vary from low to high along an “elaboration continuum”. The position along this continuum is determined by considering people’s

motivation and ability to process the message presented to them. The concept of ‘motivation’ in the ELM consists in personal relevance of the issue, while ‘ability’ refers to resources and skill to understand and attend to a message. Ability does not only depend on intelligence, but also on time available or distraction in the communication environment.

According to Petty and Cacioppo (1983), if motivation and ability to think are high, individuals are inclined to travel a central route to persuasion. Otherwise they follow a peripheral route to persuasion. In the central route, individuals carefully consider the elements of the message in order to determine whether what it proposes makes sense and will benefit them in some way. Hence, it is reasonable to assume that if someone makes a decision through a central route, their changed attitude is relatively enduring, resistant to counter persuasion, and predictive of behaviour (Petty and Cacioppo, 1983; Jae and Delvecchio, 2004; Wilson, 2014). On the other hand, if a decision process is based on superficial elements, external context, or momentary feelings, then it is likely that the resultant peripheral attitude is relatively temporary, susceptible to counter persuasion, and not predictive of behaviour. Under this peripheral route, it is therefore likely that the message recipient will make a decision without undertaking the effort required to process merits and demerits in the message (Petty and Cacioppo, 1983).

## **2. The severance pay transfer into pension funds: the Italian reform and its main message**

At the start of 1970s the Italian pension system was a mixed social system: with a guaranteed minimum pension for all citizens, and a pension based on an average of the last-career earnings for workers in the public and private sectors, employees and self-employed. The pension system was exclusively funded through a Pay-As-You-Go scheme, determining a substantial coverage intervention by the State. The progressive increase in average life expectancy, the falling birth rate, the huge government budget deficit, and the slowdown of economic growth made the Italian pension system unsustainable in the long term. For these reasons, it has been deeply modified since the early 1990s, through reforms aimed at improving its long-term sustainability and redressing its main problems (Fornero and Monticone, 2011a). These reforms implied that public pensions fell over time, so that future retirees will face the problem how to finance their consumption after retirement. According to the State General Accounting Office’s estimates, the replacement rate of a private employee will decrease from about 74% in 2010 to 60-65% after 2040 with a contribution requirement parity (Ministry of Economics and Finance, 2014). In an attempt to limit this overwhelming socio-economic problem, the Italian Government decided to introduce a ‘supplementary’ pension, or non-compulsory pension, in the form of participation in pension funds. This makes the new national pension scheme based on two pillars: I) the Pay-As-You-Go compulsory pension, which remains the most important; and II) the non-compulsory pension funded through a Defined Contribution scheme, so that the higher the contribution the higher the pension.<sup>1</sup>

In addition to pensions, retiring private sector employees in Italy can rely on a severance pay (Tfr, *Trattamento di fine rapporto*) that depends on the length of the employment relationship in the same company (it has to be at least eight years long). To finance the Tfr, companies are forced to set aside for each employee a percentage of the gross annual salary (about 7.5%) on their annual

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<sup>1</sup> Actually there is a third additional pillar: the private pension, which is determined by individual/household saving investments. This pillar entirely depends on individual responsibility and life-cycle choices, and it is not imposed or recommended in any way by the State.

budget. Since the severance pay is due only at the end of the employment relationship, it represents a loan from employee to company. Indeed for this particular funding source, companies have to set aside also an interest, computed at the annual rate of 1.5% plus three quarters of the national inflation rate.

Even though the supplementary pension scheme was introduced since 1992, participation in pension funds was much lower than in other developed countries (OECD, 2014). In order to speed up the development of the second pillar, the Italian Government decided in 2005 to allow employees to transfer their own future severance pay's contributions into a pension fund as of January 1, 2007.<sup>2</sup> This reform was motivated by the fact that pension funds generally have a higher return than the Tfr one (considering an average inflation rate of about 2% during the decade 1997-2007, the average return of severance pay was equal to  $1.5+0.75\times 2=3\%$ ). Moreover, contrary to the severance pay that is received as a lump sum, investments in pension funds can be converted into annuities at retirement. The Government's objective was to develop pension funds to ensure an increase in retirement income.

According to the reform, since the 1<sup>st</sup> January 2007 all Italian employees in the private sector have to choose among three alternatives: i) to deposit their future severance pay contributions (the portion set aside up to 31 December 2006 remains in the company) into a pension fund, ii) to leave the Tfr in their companies, iii) an intermediate solution (in this case, however, at least 50% of severance pay has to be directed into the pension fund).<sup>3</sup> To further encourage the participation in pension funds, the Government created tax incentives and a silence-as-assent mechanism. In fact, Italian employees have six months from the start of their job (or from the start of the law's effectiveness) to communicate the decision of rejection or acceptance, after which their severance pay is automatically transferred into a pension fund managed by the Italian National Institute of Social Security (*Istituto Nazionale di Previdenza Sociale, INPS*). There are thus three possible scenarios: I) the employee decides not to give up the severance pay and denies the transfer into a pension fund; II) the employee decides to transfer Tfr into a pension fund, giving up the severance pay at the end of the work relationship; III) the employee does not take a decision, probably because he or she has no interest in the message content.<sup>4</sup> Once the Tfr is transferred into a pension fund (regardless of the explicit choice) this is irrevocable; on the other hand, employees can always change their mind and adhere to a fund later.

Summing up, in terms of the ELM architecture, what is the 'message' that the Italian Government wanted to give through the 2007 reform? Relying on many different sources (literature, publications and media, and as discussed below in Section 4.2 we believe it can be synthetized as follows: "*Pension funds plus tax incentives linked to them can guarantee a higher retirement income, compared to the severance pay (Tfr)*".

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<sup>2</sup> The reform is contained in the Legislative Decree no. 252/2005. This law, supplemented by the Law no. 296/2006 and the Legislative Decree no. 28/2007, reforms from the 1st January 2007 the Italian pension system strengthening the role of pension funds in order to ensure higher levels of pension coverage.

<sup>3</sup> Since 2010 this reform involved also a part of public employees: those who were hired after January 1, 2001. However, since this category is very small and the same reform has different rules regarding public employees, to simplify the study we consider only the employees in private sector.

<sup>4</sup> To simplify, we consider the so-called 'intermediate' cases, those in which the employee decides to transfer only a part of his/her severance pay, in the same way as those in which the employee decides to entirely transfer his/her Tfr.

### 3. Data and sample

The Survey of Household Income and Wealth (SHIW) is a large biennial representative survey of the Italian population conducted by the Bank of Italy. For each household member, the SHIW provides demographic information (age, level of education, gender and marital status), economic information at the household level including net wealth (real and financial assets net of financial liabilities) and the amounts invested in a variety of financial assets. Moreover Bank of Italy's survey contains questions on individuals' levels of financial literacy and knowledge of pension funds.

We use the longitudinal component of SHIW to build a four waves balanced panel from 2006 to 2012. The panel consists of 6,419 individuals (belonging to 2,767 households) for a total of 25,676 observations. Since the pension reform under investigation involved only employees in the private sector (and not the self-employed), we keep only those who were employed in the private sector in 2012, and were 16-65 years old in 2006. This leads to a data set of 1,125 individuals (belonging to 887 households), but we still have to account for some data issues connected to 2007 Italian reform.

Since the 2008 wave the survey includes a question on the choice to transfer future severance pay contributions into a pension fund (see Fornero and Monticone, 2011b). This question has three response options: 'Yes', 'No', and 'Do not know'. The presence of the 'Do not know' option means that respondents are not forced to pick an answer, minimizing guessing. However this methodological choice does not completely prevent the presence of several missing responses (i.e. people who did not answer at all to the question) due to: low consciousness of individual pension situation; unwillingness to declare information about wealth (Cannari and D'Alessio, 1993; D'Alessio and Faiella, 2002); no explicit option for refusing to answer. The data show that in numerous cases the answer changes over the 2008-2012 period. This probably happens either because the 'No' response is revocable and because some people do not have a full consciousness or knowledge of their choice about the severance pay transfer into a pension fund. For these reasons, we decide to take into account only employees' answers declared in 2012 survey, dropping also from our panel all observations that had a missing answer in 2012 (i.e. 55 observations) and accordingly in each wave, since we are working with a balanced panel dataset.<sup>5</sup>

Table 1 reports descriptive statistics of demographic characteristics of the sample of employees obtained as described above. In 2006, about 42% of the sample are women, 96% are Italian citizens. Approximately 50% of the respondents live in the North, 20% in the Centre and the remaining 30% in the South. 49% of employees live in towns or cities with more than 40,000 inhabitants, while 29% live in municipalities with less than 20,000 inhabitants. Average age is 38.4, 48% of total sample completed high school, and only 8% have a university (or higher) degree. The average number of household members is 3.5, 63% of people are married, and 31% are single.

As for the answers on the severance pay choice, in 2012, 16% of the sample declared they had transferred it into a pension fund, 72% of the sample had not, and 12% declared they 'Do not know'.

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<sup>5</sup> Alternatively we could have included missing values and interpreted them as well as 'Do not know' responses. We tested robustness of our final results against this alternative: the outcomes do not change the conclusions of the analysis in Section 4 (results available upon request).

*Table 1 – Demographic characteristics of the sample by year and Tfr choice (mean values)*

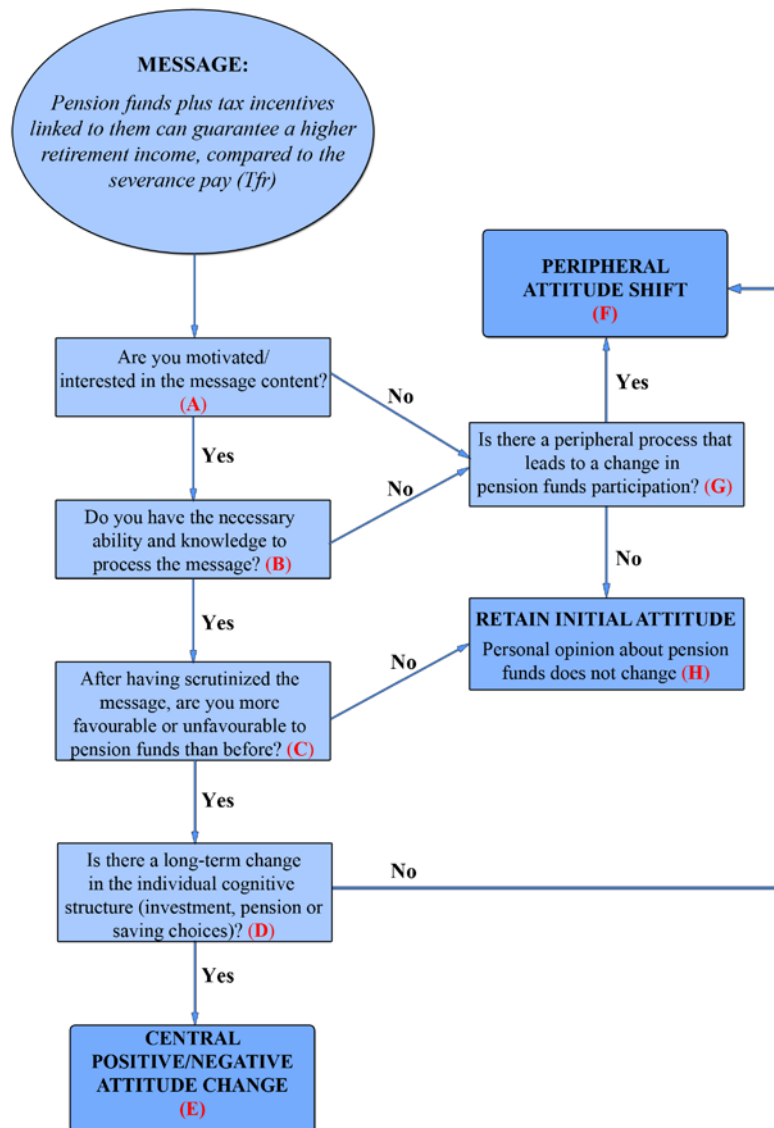
Demographic Variables	2006	2012			
	Total sample	Yes	No	Do not Know	Total sample
<b>Observations</b>	1,070	168	775	127	1,070
<b>Female</b>	41.5%	34.5%	43.7%	37.0%	41.5%
<b>Age</b>	38.4	46.9	44.4	41.1	44.4
<b>Italian</b>	95.7%	99.4%	95.1%	96.9%	96.0%
<b>Marital status</b>					
<i>Married</i>	62.9%	75.0%	63.9%	39.4%	62.7%
<i>Single</i>	31.1%	19.6%	28.5%	50.4%	29.7%
<i>Divorced</i>	5.1%	4.8%	5.9%	10.2%	6.3%
<i>Widow</i>	0.8%	0.6%	1.7%	0.0%	1.3%
<b>Education level</b>					
<i>Primary</i>	6.5%	1.8%	7.1%	3.1%	5.8%
<i>Lower secondary</i>	38.0%	24.4%	36.8%	32.3%	34.3%
<i>Secondary</i>	47.8%	60.1%	46.7%	49.6%	49.2%
<i>Tertiary</i>	7.7%	13.7%	9.4%	15.0%	10.7%
<b>Area</b>					
<i>North</i>	49.8%	62.5%	48.0%	44.1%	49.8%
<i>Centre</i>	20.2%	22.0%	19.4%	22.8%	20.2%
<i>South</i>	30.0%	15.5%	32.6%	33.1%	30.0%
<b>Size of municipality</b>					
<i>&lt; 20,000 inhabitants</i>	29.0%	29.2%	28.0%	34.6%	29.0%
<i>20,000 - 40,000</i>	21.9%	15.5%	23.7%	15.0%	21.4%
<i>40,000 - 500,000</i>	44.2%	48.2%	43.6%	46.5%	44.7%
<i>&gt; 500,000</i>	5.0%	7.1%	4.6%	3.9%	5.0%
<b>Household size</b>	3.46	3.34	3.34	3.21	3.32

#### **4. An assessment of the effectiveness of the reform message based on ELM**

In order to develop an empirical assessment of the effectiveness of the reform message, we put our research question into the traditional ELM scheme. As highlighted by Figure 2, the ELM works through a step-by-step sequence, where the message represents the starting point, each intermediate step (boxes **A**, **B**, **C**, **D**, and **G**) is a specific condition, and the concluding steps (boxes **E**, **F**, and **H**) represent the three possible ELM outcomes.



Figure 2 – The employee’s decision process through the Elaboration Likelihood Model



Note: The figure is based on an adaptation of the scheme by Petty, Briñol and Priester (2009).

After exposure to the message, the first step is to assess the employee’s involvement in the message content (box **A** in Figure 2). In order to do this, we consider as involved or motivated those who respond ‘Yes’ or ‘No’ to the question about the Tfr transfer into a pension fund, showing they remember their choice at the time of the survey. Indeed, those who do not know or do not remember their response after a few years (or even months), will probably not really be interested in the message content. Accordingly, 88% of the sample are involved (72% for ‘No’ response plus 16% for ‘Yes’, as discussed in Section 3), while the remaining 12% are not (the ‘Do not know’ answers in Table 1).

However, even if involved and motivated, an employee must have the necessary ability to process the message (box **B** in Figure 2). We define the ability to process using four specific questions, included in the 2008 survey only, about the possible advantages of pension fund saving after the 2007 reform. The precise wording of the four questions is reported below.

- (1) *Pension funds enjoy tax benefits compared to a mutual fund.*  
*True/False/Do not know.*
- (2) *When you retire, you can withdraw part of the invested capital.*  
*True/False/ Do not know.*
- (3) *There are pension funds with guaranteed minimum returns.*  
*True/False/Do not know.*
- (4) *Pension funds guarantee a fixed percentage of the last salary.*  
*True/False/Do not know.*

*Table 2 – Statistics of the pension funds questions. Year 2008*

<b>Question 1 (%)</b>		<b>No. of correct answers</b>	<b>% of sample</b>
Incorrect or 'do not know'	68.8		
Correct	31.2		
<b>Question 2 (%)</b>			
Incorrect or 'do not know'	54.8	0	33.5
Correct	45.2	1	17.4
<b>Question 3 (%)</b>		2	23.2
Incorrect or 'do not know'	56.6	3	21.9
Correct	43.4	4	4.0
<b>Question 4 (%)</b>			
Incorrect or 'do not know'	74.4	<b>Total (N = 1,070)</b>	100.0
Correct	25.6		

Table 2 shows that only few respondents has a good knowledge of pension funds functioning and the reform. In particular, only 4.0% correctly answered all four questions, while 33.5% did not answer even one question correctly. The question with the highest percentage of correct answers (45.2%) is the one on the possibility of withdrawing part of the capital at retirement, and a similar percentage (43.4%) of correct answers is given on the existence of pension funds with guaranteed minimum returns. Only about one third (31.2%) know about tax benefits introduced by 2007 reform, while only about one fourth (25.6%) know that pension funds do not guarantee a fixed percentage of the last salary. We define respondents as able to process the message content if they correctly answered at least two questions out of four. The sample can then be divided into four groups: people who are not involved and not able to process the message content (6.8% of the sample); people who are not involved but able (5.1%); people who are involved but not able (44.1%); and people who are both involved and able (44.0%). According to the ELM structure only the last group of employees can proceed to step **C**, while the others deviate in step **G**.

If the employee does not have the necessary involvement or ability, it is fundamental to assess whether or not a peripheral process is operating (box **G** in Figure 2). To know whether this is the case or not, we consider the presence of a change in participation in a pension fund from 2006 to 2012. Indeed, in a scenario without any peripheral influence, it is plausible that people will retain their initial (i.e. 2006) attitude, so that they will still have a pension fund in 2012 if they had one in 2006 and vice versa (box **H** in Figure 2). By contrast, a change in 2012 with respect to the initial attitude signals the influence of contextual elements on the employee's behaviour, triggering a

'peripheral route' (box **F** in Figure 2). Note that, according to ELM theory, people without motivation and ability can never achieve the central route.

Examples of contextual elements that can influence the employee's choice, are the presence of unions at the workplace or the role of media. As for the former, several unions decided to sponsor specific occupational pension funds inside the workplace. As for the latter, especially in 2007 the media (TV, newspapers, radio, websites, etc.) massively reported potential positive and negative effects of this controversial reform. Another contextual element is the number of employees in the firm, because the reform defined two different regulations in case of transfer denial: for firms with more than 50 employees and for smaller firms. Indeed, people employed in firms with less than 50 employees may receive more pressure for not transferring, since employers can take great advantage of their employees' severance pay if it remains in the firm.<sup>6</sup>

Employees who are motivated and able to process the message will, after having scrutinized the message and collected all necessary information, try to evaluate if they are less or more favourable to pension fund participation than before receiving the message (box **C** in Figure 2). As for box **G**, here we use a change in the participation in a pension fund from 2006 to 2012 as a signal. In fact, regardless their motivation or ability, employees can always choose to retain their initial attitude (box **H** in Figure 2) or change their mind. Motivated and able employees are more likely to take a conscious decision, even if they retain their initial attitude.

At this point, if a person is also more favourable/unfavourable to pension funds and the process has been rational and conscious, then we would expect that he/she will make a long-term change in his/her cognitive structure (box **D** in Figure 2). If the attitude change is relatively permanent and predictive of subsequent behaviour, then the employee made the choice following a central route (box **E** in Figure 2); otherwise, it is important to understand what happened. Petty and Cacioppo (1983) confirm in their theory that a central route can be followed only by individuals with motivation and ability, but these are necessary and not sufficient conditions. Therefore, even if employees are motivated and able to understand the message content, their attitude may be affected by positive or negative cues, contextual elements, or heuristics that allow them to evaluate the advocacy quickly, triggering once again a peripheral route (box **F** in Figure 2).

We assess the presence of a long-term change in employees' cognitive structures by checking whether the change in pension fund participation from 2006 to 2012 is consistent with the own response about the severance pay transfer. In particular, there is consistency between the change in the pension fund participation and the Tfr choice when the 'Yes' response is associated to a positive change in pension fund participation (i.e. the respondent did not have a pension fund in 2006, but has one in 2012) or the 'No' response is associated to a negative change in pension fund participation (i.e. the respondent had a pension fund in 2006, but no longer has one in 2012). In the former case consistency is obvious, since if employees decide not to deny the transfer of the

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<sup>6</sup> Before the 2007 reform all Italian firms were forced to set aside on their annual budget a percentage of the gross annual salary of their employees in order to finance their future severance pay. Since the severance pay is due only at the end of work relationship in a lump sum plus a low inflation-based return, in practice it represents a sort of cheap loan from employee to employer. After the reform became effective, regardless the employees' decision to transfer their Tfr into a pension fund, medium-large firms lost this convenient financial source. Indeed, if employees in a larger firm now deny the Tfr transfer into a pension fund, then the future Tfr contributions will be managed by the Italian National Institute of Social Security. On the other hand, smaller firms can still take advantage of their employees' severance pay if they decide not to transfer it into a pension fund. Therefore, employers of smaller firms had an incentive to convince their employees to deny the Tfr transferring.

severance pay, then they will surely have a pension fund in 2012.<sup>7</sup> In the latter the decision may be driven by a higher consciousness of some negative characteristics of investing in a pension fund (e.g. higher riskiness). In sum, if there is no consistency, a peripheral route (box **F** in Figure 2) acted because the decision has not been really conscious; otherwise employees followed a central route (box **E** in Figure 2) and their attitude change is permanent.

In conclusion, on the basis of ELM outcomes, there are two possible taxonomies of individuals. In fact, the sample of employees can be divided in three different groups: those who changed their initial attitude about pension funds in a conscious way (the ELM's central route, CR); those who changed their pension fund participation in an unconscious way (the ELM's peripheral route, PR); and those who decided to retain their initial attitude (RIA). Alternatively, the sample can be split in two between those who chose consciously and those who did not. In fact, also among those who retain their initial attitude there are people that decide to do that consciously: employees who end up in box **H** through step **C** (i.e. those who are motivated and able to process the message content).

These two ways to categorize people represent our two variables of interest. The first variable is a multinomial variable, which can assume three (unordered) values (CR, PR, or RIA), while the second one is a binary variable (conscious or unconscious decision).

We follow Petty and Rucker (2006) in a series of steps to assess the message effectiveness. In particular, they identify the following six steps, which we discuss in detail in the following subsections:

- 1) Consider the audience elaboration level (are reform recipients prone to scrutinize the message carefully and able to do so?);
- 2) Design and evaluate message characteristics;
- 3) Evaluate message objectives (is the desired attitude change immediate or enduring?);
- 4) Assess fit between audience elaboration, message characteristics and message objectives (is there consistency?);
- 5) Test message effectiveness (is more effective under low or high elaboration?);
- 6) Evaluate message effectiveness

#### *4.1. Audience elaboration level*

Evaluating the audience elaboration level is not a simple process, because it is based on many individual and contextual elements. Indeed, a person's elaboration level, i.e. the skills to understand and scrutinize the message as well as the interest in the message content, can vary depending on individual characteristics, but also cultural characteristics. However, given that the message content is about pension funds and, more in general, pension investment choices, we estimate it through: time-to-retirement (i.e. the remaining number of years to reach retirement)<sup>8</sup>; financial literacy; risk aversion; and current participation in a pension fund. Since the reform became effective in 2007, in order to evaluate the audience elaboration level, and recalling that SHIW is a biannual survey, we consider only observations in the wave prior to the message, i.e. 2006.

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<sup>7</sup> Actually 4% of those who chose to transfer their Tfr into a pension fund then erroneously declared not to have a pension fund in 2012 (Table 3). Given the clear ambiguity of these answers, we decide to consider these few individuals as followers of a peripheral route and as takers of an unconscious decision.

<sup>8</sup> The time-to-retirement is calculated as the difference between 40 (necessary number of contribution years to retire) and the current number of contribution years.

*Table 3 – Work and economic descriptive variables of the sample for year and Tfr choice  
(mean values)*

Work and Economic Variables	2006	2012			Total
	Total	Yes	No	Do not Know	
<b>Job position</b>					
<i>Worker</i>	45.4%	42.3%	62.2%	55.9%	58.3%
<i>Clerk</i>	27.3%	37.5%	31.4%	40.2%	33.4%
<i>Executive</i>	7.0%	20.2%	6.5%	3.9%	8.3%
<i>Other</i>	20.3%	-	-	-	-
<b>Time-to-retirement group</b>					
<i>Time-to-ret. &gt; 30</i>	24.2%	11.4%	22.0%	32.0%	21.5%
<i>16-30</i>	47.7%	32.9%	39.0%	40.0%	38.2%
<i>Time-to-ret. ≤ 15</i>	28.1%	55.7%	39.0%	28.0%	40.4%
<b>Company size</b>					
<i>Employees ≤ 15</i>	63.4%	13.1%	53.5%	46.5%	46.4%
<i>16-49</i>		13.1%	18.1%	24.4%	18.0%
<i>50-99</i>	10.2%	11.9%	7.0%	3.9%	7.4%
<i>Employees ≥ 100</i>	26.4%	61.9%	21.4%	25.2%	28.2%
<b>Expected replacement rate</b>	64.1	63.3	61.9	65.7	62.5
<b>Unknown replacement rate</b>	-	29.2%	45.9%	62.2%	45.2%
<b>Disposable household income (€)</b>	38,539	50,575	39,523	44,918	41,899
<b>Home ownership</b>	70.2%	85.1%	70.8%	72.4%	73.3%
<b>Household wealth (€)</b>	249,129	303,077	236,920	340,466	259,597
<b>Risk aversion</b>					
<i>Low</i>	1.2%	1.2%	0.5%	0.8%	0,7%
<i>Medium</i>	14.9%	9.5%	9.3%	7.1%	9,1%
<i>High</i>	83.9%	89.3%	90.2%	92.1%	90,3%
<b>Preference for short period <sup>1</sup></b>	-	29.2%	35.4%	26.0%	33.3%
<b>Preference for lump sum <sup>2</sup></b>	-	58.5%	64.2%	70.0%	63.6%
<b>Financial literacy <sup>2</sup></b>	-	73.8%	59.6%	47.2%	60.4%
<b>Pension fund knowledge <sup>2</sup></b>	-	64.9%	46.7%	42.5%	49.1%
<b>Pension fund participation in 2006</b>	9.9%	26.8%	6.3%	9.4%	9.9%
<b>Pension fund participation in 2012</b>	-	95.8%	11.5%	6.3%	24.1%

Notes: <sup>1</sup> Evaluated in 2010; <sup>2</sup> Evaluated in 2008. All statistics refer to the total sample except for time-to-retirement, company size, expected replacement rate, and unknown replacement rate which are referred only to employees (i.e. workers, clerks and executives).

Table 3 reports information on work and economic variables, according to the individual occupational status. Specifically, we have separated the sample in four categories: workers (i.e. blue-collar workers), clerks (i.e. white-collar workers), executives, and a residual category called ‘Other’. While in the first three categories people are all employees, the residual category contains self-employed, unemployed, students, housewives, and other inactive statuses. ‘Other’ category represents about 20% of the total sample in 2006, but it is missing in 2012 (i.e. all individuals who were in the residual category in 2006, then are employed in 2012) since we defined our sample in order to have only employees in private sector in 2012. On the other hand, in 2006 workers

represent about 45% of the total sample, clerks 27.3%, and executives the remaining 7%. Among employees, 48% have a time-to-retirement between 15 and 30 years, while 28% have time-to-retirement smaller or equal to 15. The group with time-to-retirement greater than 30, i.e. the group which should have the highest interest in the reform content, represents 24% of the sample. Most employees (63.4%) work in small companies (with less than 50 employees), about 26% worked in big companies (with at least 100 employees), while the mean expected replacement rate is equal to 64.1.

Considering all individuals in the sample, in 2006 the average household income is equal to €38,500, 70% are home-owner, and the average household wealth is equal to €249,000. Table 3 shows also that Italians are very risk averse: only about 1% prefer investments with high levels of risks and returns, while 84% prefer low returns and low or no risk. Moreover only 10% of the sample participated in a pension fund in 2006.

Regarding the financial literacy measurement, Fornero and Monticone (2011a) use three questions of the 2006 SHIW survey.<sup>9</sup> In particular, these questions aim to discover how many individuals understand how inflation, interest rates, and stocks work (for the detailed questions, see Fornero and Monticone, 2011a).

*Table 4 – Financial literacy questions. Year 2006*

Understands how inflation works (%)		No. of correct answers	% of sample
No	30.3		
Yes	69.7		
Understands how interest rate works (%)		0	17.9
No	55.7	1	18.6
Yes	44.3	2	35.1
Understands how stocks work (%)		3	28.4
No	40.2	<b>Total (N = 575)</b>	100.0
Yes	59.8		

Table 4 shows that individuals within the panel understood pretty well how inflation works, since almost 70% responded correctly. The majority of individuals (60%) understood also how stocks work, but only 44% correctly answered the question about interest rate. In conclusion, 28.4% of the sample had three correct answers out of three, while 18% gave the wrong answer to all three questions. If we define financial literacy as at least two questions out of three correct, then 63.5% of the sample is financially literate.

#### *4.2. Design message characteristics and objectives*

The content of a law is generally not easy to understand for the average individual. Moreover, laws are generally not formulated to involve or motivate people. This definitely also applies to the law on the pension reform (Legislative Decree no. 252/2005), which has the generic heading

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<sup>9</sup> In 2006 survey, financial literacy questions were not asked to the entire sample, but only to a half, extracted randomly, of it. For this reason total observations in the Table 4 are not 1,070, but 575.

*«Regulation of non-compulsory pension schemes»*. Furthermore, the identity of the sender of the message transmitted via law is unclear. Although the political responsibility of a law belongs to the Government that writes it, for citizens it is difficult to understand who is specifically asking them to make the choice. The credibility of the law message is mainly determined by the Government (or the Prime Minister or the Minister of Labour and Welfare State), though other stakeholders (e.g. unions, banks, representatives of employers and politicians) could influence the law's consequences, blurring or smoothing the initial idea of the reform. To deal with these issues and *«to guarantee employees the possibility to choose and to determine their future consciously»* (Damiano, 2007), and also given the reform importance, the Italian Government decided in 2007 to communicate the message of the law through all available channels: a lot of public and private TV channels spoke about the reform in their talk shows; a specific hotline and a specific website were created for any questions by the citizens; a daily information event was realized on the main public TV channel (*RAI 1*). Obviously, there were also reform opponents but they represented a minority and were not associated to the message sender.

The message, reported in Figure 2, is silent about several fundamental aspects of the employee's choice. For example, it does not mention the fact that the higher return of pension funds is connected to higher risk, that tax incentives can change over time (regardless of their choice), or that the Tfr transfer is irrevocable. The choice of the message wording is supported by the documented fact that only a very small percentage of potential beneficiaries have full knowledge of the advantages and disadvantages of the reform, while most were completely unaware of them. Most information was given by potential beneficiaries of the reform by means of publications (books, articles), union meetings and TV shows. Moreover, in terms of paper documents, private employees only received the appropriate forms needed to make their decision on pension funds, not accompanied by any information to make the decision more conscious. Consequently the high number of missing or 'Do not know' responses may derive from the fact that message and forms to formalize the decision were not received at the same time. In other words, it is likely that many beneficiaries of the 2007 reform did not really receive the message, regardless of their motivation or ability.

The reform was essentially meant to create pension fund investments for employees (plus linked tax benefits) linked to their severance pay so as to cope with a decreasing public pension in the future through a secondary pension income (pension fund return), probably higher than the traditional severance pay. In the end, given the message content and the irrevocable nature of the Tfr transferring decision when positive, the attitude change desired by the Italian Government was meant to be enduring.

#### *4.3. Assessing the fit between elaboration and message characteristics and objectives*

Tables 1 and 3 highlight differences in the demographic and socio-economic characteristics among the three different severance pay responses ('Yes', 'No' and 'Do not know'), especially between 'Yes' respondents and the other two.<sup>10</sup> The 'Yes' group is composed mainly by men, living in the North, married, with higher education and job skills, and higher average household

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<sup>10</sup> These differences are significant at the 1% level for size of the municipality of residence, household size, household wealth, expected replacement rate, risk aversion, and preference for short period and lump sum. Citizenship and gender are significant at the 5% level.

income compared to the other two groups. Most notably they are older than the others, which is contrary to expectations, since pension fund returns are supposed to be higher in the long run. On the other hand, the average age of employees who ‘Do not know’ is lower than in the total sample, showing a greater lack of interest of young people in their own pension situation. According to Pettigrew et al. (2007), a possible way to explain this outcome is that young people, regardless their education level, are characterized by a strong sense of ‘live for today’, low interest in financial planning, and a poor understanding of the available pension options. Given the strong correlation between time-to-retirement and age, the same result holds for time-to-retirement.

The ‘Do not know’ group has the highest average household wealth, which may be interpreted as non-response or misreporting of the richer individuals, which is typical for investment choices (Cannari and D’Alessio, 1993; D’Alessio and Faiella, 2002). Another interesting difference among the three groups is in the size of the firm where respondents work. Indeed this is probably connected to the factors discussed above: different regulations in case of transfer denial according to firm size (penalizing smaller firms), and the presence of unions. Most people in the ‘Yes’ group work in companies with more than 100 employees, i.e. the ones with higher unionization rates, where ‘No’ and ‘Do not know’ individuals more often work in companies with less than 50 employees. It is plausible that in the latter two cases, employees were not adequately informed or forced by their employers to deny the severance pay transfer into pension funds, so that the firm retained a cheap financing source. This may happen regardless of the employees’ involvement in message content or ability to process it, compromising the individual decision process.

Table 3 shows a plausible correlation with financial literacy and knowledge of pension funds. In the ‘Yes’ group about 73.8% of employees are financially literate and 64.9% of them are able to process the message content, while these percentages are much lower in the other two groups.<sup>11</sup> Those who decided to transfer their Tfr into a pension fund also have a higher pension funds participation (26.8%) and more knowledge (or at least consciousness) of their future pension income: they have the lowest percentage that in 2012 did not report their expected replacement rate (29.2%), while the ‘Do not know’ group of employees has the highest value of this rate (62.2%). Contrary to expectations given pension funds characteristics (e.g. riskiness, period of investment, and return modalities of invested capital) and reform objectives (i.e. increase the future replacement rate), there is no significant difference between ‘Yes’ group and the others in the expected replacement rate, risk aversion, and preference for short period and lump sum.

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<sup>11</sup> Financial literacy rate in Table 3 was calculated taking into account the three questions of the 2008 SHIW survey. The 2008 set of questions is not exactly the same as the 2006 one discussed in Section 4.1, because questions about interest rate and stocks market are replaced with questions about risk diversification and riskiness of financial instruments (for details, see Fornero and Monticone, 2011b). The criterion used to define someone as financially literate is equal to the one discussed in Section 4.1: at least two correct answers out of three.



*Table 5 – Tfr choice and change in pension funds participation by motivation and ability  
(Relative frequencies are calculated respect to the total sample)*

Choice about the Tfr Transfer	Change in Pension Funds Participation (2006 – 2012)				Total
	No – No	No – Yes	Yes – No	Yes - Yes	
<i>People who are neither motivated nor able to process</i>					
<b>Yes</b>	0 0.0%	50 42.4%	1 50.0%	8 18.6%	59 35.1%
<b>No</b>	372 56.8%	26 36.6%	13 41.9%	2 11.1%	413 53.3%
<b>Do not know</b>	109 100.0%	6 100.0%	10 100.0%	2 100.0%	127 100.0%
<b>Total</b>	481 62.5%	82 42.1%	24 55.8%	12 19.0%	599 56.0%
<i>People who are both motivated and able to process</i>					
<b>Yes</b>	5 100.0%	68 57.6%	1 50.0%	35 81.4%	109 64.9%
<b>No</b>	283 43.2%	45 63.4%	18 58.1%	16 88.9%	362 46.7%
<b>Do not know</b>	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
<b>Total</b>	288 37.5%	113 57.9%	19 44.2%	51 81.0%	471 44.0%

*Legend: No means no participation, Yes means participation, hence No-No and Yes-Yes correspond to no change.*

Table 5 reports the Tfr choice and change in pension funds participation from 2006 to 2012 by motivation and ability. It highlights that 64.9% of those who answered ‘Yes’ can be considered both motivated and able to process, compared to 46.7% of those who denied the transfer. Table 5 also shows that among those who changed their participation in pension funds from ‘No’ in 2006 to ‘Yes’ in 2012, a substantial part (42.1%) were not really involved in the message content or able to correctly scrutinize it, leading to a potentially unconscious decision. Among motivated and able employees who changed from ‘No’ to ‘Yes’, 45 out of 113 respondents decided not to give up their severance pay. Despite this, they can be considered as ‘success cases’ of the 2007 reform in terms of the attitude change aimed for by the Italian Government (i.e. investing in a pension fund to better cope with a lower public pension in the future). In fact, they decided to participate in a pension fund. Nonetheless according to the ELM they however followed a peripheral route, because their response (‘No’) seemed to determine only a temporary stance.

#### *4.4. Testing and evaluating message effectiveness*

As discussed above, the implementation of an ELM model provides three possible outcomes: I) individuals follow a central route to take their decision; II) individuals follow a peripheral route, not really taking a conscious decision; III) individuals retain their initial attitude. Table 6 highlights that the most common ELM outcome is the third one, showing a very high reluctance of Italian households in changing their attitude about the participation in pension funds (77.8%). Among people who changed their attitudes about pension funds the most common route was the peripheral one (14.2% of the sample), pointing out that Italian employees were overall influenced. This may

have happened because the message was not clearly explained or correctly provided, and also because Italian employees did not have, on average, the necessary motivation and ability to make a well-reasoned decision about such a complex subject. This creates the best condition to allow contextual stakeholders (e.g. employers and unions) to significantly influence private employees. As a consequence, only a small part of population (8.0%) is found to have taken a conscious decision.

*Table 6 – ELM outcomes and Tfr choice*

ELM Outcome	Choice about the Tfr Transfer			Total
	Yes	No	Do not know	
<b>Central Route</b>	68 40.5%	18 2.3%	0 0.0%	86 8.0%
<b>Peripheral Route</b>	52 31.0%	84 10.8%	16 12.6%	152 14.2%
<b>Retain Initial Attitude</b>	48 28.6%	673 86.8%	111 87.4%	832 77.8%
<b>Total</b>	168 100.0%	775 100.0%	127 100.0%	1,070 100.0%

*Table 7 – ELM outcomes and change in pension funds participation from 2006 to 2012*

ELM Outcome	Change in Pension Funds Participation (2006 - 2012)				Total
	No - No	No - Yes	Yes - No	Yes - Yes	
<b>Central Route</b>	0 0.0%	68 34.9%	18 41.9%	0 0.0%	86 8.0%
<b>Peripheral Route</b>	0 0.0%	127 65.1%	25 58.1%	0 0.0%	152 14.2%
<b>Retain Initial Attitude</b>	769 100.0%	0 0.0%	0 0.0%	63 100.0%	832 77.8%
<b>Total</b>	769 100.0%	195 100.0%	43 100.0%	63 100.0%	1,070 100.0%

*Legend: No: no participation; Yes: participation. Hence No-No and Yes-Yes correspond to no change.*

Regarding the ELM outcomes by Tfr choice group, retaining initial attitude was the most common outcome in ‘No’ and ‘Do not know’ groups, while employees who answered ‘Yes’ retained their initial attitude only in 28.6% of cases (Table 6). However this latter group is the one that shows the highest percentages in central and peripheral routes. In particular, among respondents answering ‘Yes’ to the Tfr transfer question, according to the ELM results, 40.5% followed a central route, while the remaining part followed a peripheral route reaching a not fully conscious decision. Instead, observing the relationship between ELM outcomes and changes in pension funds participation from 2006 to 2012, the peripheral route represents the favourite route among Italian employees that decided to change their attitude about pension funds both positively and negatively (Table 7). In fact only 34.9% of those who positively changed their initial attitude followed a central route, compared to 41.9% of those who negatively changed their participation.

*Table 8 – Consciousness of decision and ELM outcomes*

Conscious Decision	ELM Outcome			Total
	Central Route	Peripheral Route	Retain Initial Attitude	
No	0 0.0%	152 100.0%	498 59.9%	650 60.7%
Yes	86 100.0%	0 0.0%	334 40.1%	420 39.3%
<b>Total</b>	86 100.0%	152 100.0%	832 100.0%	1,070 100.0%

Table 8 shows that a substantial part (40.1%) of those who retained their attitude about pension funds did it consciously. Overall, irrespective of the route and the final attitude, 39.3% of the sample took the decision consciously.

*Table 9 – Tfr choice and change in pension funds participation by consciousness  
(Relative frequencies are calculated respect to the total sample)*

Choice about the Tfr Transfer	Change in Pension Funds Participation (2006 - 2012)				Total
	No - No	No - Yes	Yes - No	Yes - Yes	
<i>Unconscious decision</i>					
Yes	5 100.0%	50 42.4%	2 100.0%	8 18.6%	65 38.7%
No	372 56.8%	71 100.0%	13 41.9%	2 11.1%	458 59.1%
Do not know	109 100.0%	6 100.0%	10 100.0%	2 100.0%	127 100.0%
<b>Total</b>	486 63.2%	127 65.1%	25 58.1%	12 19.0%	650 60.7%
<i>Conscious decision</i>					
Yes	0 0.0%	68 57.6%	0 0.0%	35 81.4%	103 61.3%
No	283 43.2%	0 0.0%	18 58.1%	16 88.9%	317 40.9%
Do not know	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
<b>Total</b>	283 36.8%	68 34.9%	18 41.9%	51 81.0%	420 39.3%

*Legend: No means no participation, Yes means participation, hence No-No and Yes-Yes correspond to no change.*

Table 9 highlights that the percentage of those who answer ‘Yes’ to the Tfr transfer question take a conscious decision (61.3%) is higher than that one of employees who respond ‘No’ (40.9%). Moreover, Table 9 shows that there is a lack of consciousness regardless of the employees’ change in pension funds participation from 2006 to 2012. Indeed, the only category with more employees

taking than not taking a conscious decision (i.e. ‘Yes-Yes’ column) is the smallest one - in the other three categories they always represent a minority.

## 5. An econometric analysis of the ELM outcomes

In order to evaluate the impact of demographic and socio-economic characteristics on the probability that an employee follows a specific ELM route and to take a conscious decision, a multivariate analysis is now conducted estimating two different binary response models: a Multinomial Logit Model (MLM) for the ELM outcomes and a Logit Model for the consciousness of decision, both by the standard maximum likelihood procedure.

The model specification for the ELM outcomes is the following:

$$ELM_{ji} = \beta_j X_i^I + \gamma_j X_i^H + \omega_j X_i^W + \vartheta_j X_i^{IW} + \delta_j X_i^F + \varepsilon_{ji}$$

where  $ELM$  is a multinomial variable which can assume three values that cannot be ordered and represent the possible ELM outcomes (CR, PR, or RIA),  $j$  denotes the ELM outcome ( $j = 1, 2, 3$ ),  $i$  denotes the employee ( $i = 1, \dots, N$ ),  $X^I$  is a vector of individual characteristics (gender, age, marital status, education level),  $X^H$  is a vector of household characteristics of the employee (area of residence, size of the municipality of residence, number of household components),  $X^W$  is a vector of work characteristics (job position, company size),  $X^{IW}$  is a vector of household income and wealth information (income quintile, home ownership, wealth quintile), and  $X^F$  is a vector of individual economic and financial information (knowledge of own pension situation and pension funds, risk aversion, financial literacy, preference for short period investments). For a detailed description of each variable see Table A1 in the Appendix. The base outcome in the Multinomial Logit estimation is the third one: retaining initial attitude (RIA). It follows that Multinomial Logit marginal effects in Table 10 must be interpreted as an increase/decrease in the probability to follow a central route (first outcome) or a peripheral route (second outcome) respect to retain initial attitude.

On the other hand, we estimate the probability of taking a conscious decision in 2012 using the following logit model:

$$C_i = \beta X_i^I + \gamma X_i^H + \omega X_i^W + \vartheta X_i^{IW} + \delta X_i^F + u_i$$

where  $C$  is a binary variable which is equal to 1 if decision is conscious and 0 otherwise, and regressors are the same included in the multinomial logit model.

Table 10 reports the marginal effects of the controls on the ELM outcomes (Multinomial Logit) in column (1)-(3) and on the consciousness of the decision (Logit) in column (4). Results show that gender does not matter either in changing initial attitude or in consciousness of the decision process, somewhat in contrast to some studies in household finance highlighting a higher probability of women to be financially excluded (Lusardi, Mitchell and Curto, 2009; van Rooij, Lusardi and Alessie, 2011; Fornero and Monticone, 2011a). Also being young (i.e. less than 35) does not lead to a higher probability to change initial attitude about pension funds, although the 2007 reform was primarily directed to younger generations. Only being 35-45 years old in 2012 determines a (marginally) statistically significant higher probability to change initial attitude with respect to older individuals, but following a PR. Indeed this age group shows also a lower probability to take a conscious decision.

*Table 10 – Determinants of the ELM outcomes (Multinomial Logit)  
and of the decision consciousness (Logit): marginal effects*

	(1)	(2)	(3)	(4)
VARIABLES	Central route CR	Peripheral route PR	Retain initial attitude RIA	Decision consciousness DC
Female	-0.003	0.000	0.002	0.002
Age < 35	0.004	-0.012	0.008	-0.040
Age 35-45	-0.016	0.066*	-0.050	-0.075**
Age 45-55	0.003	0.026	-0.029	-0.040
Married	0.044	0.015	-0.059	0.052
High school	0.050**	0.032	-0.082**	0.012
University	0.078***	0.009	-0.087*	0.027
Center	-0.007	-0.002	0.009	0.006
South	-0.028	0.040	-0.012	-0.096***
Small city	-0.002	0.065**	-0.062*	-0.011
Big city	-0.021	0.028	-0.006	0.009
Household size = 2	-0.055	-0.031	0.086	-0.061
Household size = 3	-0.066	-0.081	0.147*	-0.023
Household size = 4	-0.035	-0.101	0.136*	0.024
Household size ≥ 5	-0.039	-0.039	0.078	0.054
Worker	0.008	0.014	-0.022	0.022
Executive	-0.019	0.028	-0.009	0.026
Employees ≤ 15	-0.071**	-0.050	0.121***	-0.009
15 < Empl. < 50	-0.067**	0.031	0.037	-0.115***
Employees ≥ 100	-0.015	0.054	-0.039	-0.055*
Medium income	-0.015	0.086**	-0.071	0.021
High income	0.051*	0.060	-0.111**	-0.011
Home ownership	0.037	-0.022	-0.015	0.034
Second wealth quintile	-0.053	0.058	-0.004	0.049
Third wealth quintile	-0.085	0.039	0.046	0.042
Fourth wealth quintile	-0.084	0.090*	-0.006	0.021
Fifth wealth quintile	-0.097	0.063	0.034	-0.001
Unknown repl. rate	-0.005	-0.022	0.027	-0.026
High risk aversion	0.020	-0.113**	0.093*	0.056*
Preference for short period	0.003	-0.027	0.024	0.031
Financial literacy	0.018	-0.017	-0.002	0.013
Pension funds knowledge	0.051***	-0.025***	-0.026**	0.204***
Observations	1,070	1,070	1,070	1,070
Pseudo R-squared	0.149	0.149	0.149	0.559
Log Likelihood	-615.2	-615.2	-615.2	-316.3

Notes: Standard Errors are robust; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Average Marginal Effects; Base outcome: 3 (RIA).

Moreover, results show a strong impact of higher education levels on the probability to change consciously initial attitude. Nonetheless, having a high education level does not have a role in the decision consciousness (column 4). Geographic dummies (column 1) are not significant when looking at determinants of CR (w.r.t. RIA), but living in the South has a strongly significant negative effect on the decision consciousness. Living in a small city is associated to a higher probability to change via a PR the initial attitude about pension funds. The size of the company has a significant effect on ELM outcomes and the consciousness of decision process: with respect to medium-large firms (i.e. with more than 50 employees), working in a small one determines a much lower probability to change via a CR the initial attitude and, more in general, to take a conscious decision. On the other hand, employees in large companies seem to have been influenced more by some contextual element (e.g. unions) and, as a consequence, show a significant lower probability to consciously decide about the Tfr transfer. In other words, employees in large companies may have received more and better information about pension funds and reform objectives thanks to information meetings organized by unions, but this may have strongly influenced those employees who were neither motivated nor able to process contents of reform message.

Table 10 shows that job position dummies, quintiles of household wealth and income, and home ownership do not affect the consciousness of the decision process. Nonetheless, people with high income (i.e. belonging to the fourth or fifth income quintiles of the total population) have a slightly higher probability to follow a CR, while employees with a medium income (i.e. belonging to the third income quintile of the total population) are more likely to follow a PR. As expected having a high risk aversion determines a big deterrent to be influenced to change own initial attitude or to unconsciously take an important choice such as the Tfr transfer one. On the other hand, knowing or being able to figure out the future replacement rate and the preference for short period investments do not have a statistically significant impact on the probability to change the pension funds participation and to choose consciously about the Tfr transferring. As expected, pension funds knowledge has a clear-cut and positive role in determining decision making via a CR and, more in general, in taking the Tfr choice consciously. Finally, financial literacy is positively associated with the probability to follow a CR and with consciousness, but it is never statistically significant, contrary to studies on this topic (Fornero and Monticone, 2011b). It follows that in this specific decision, once environmental elements and characteristics of elaboration processes (e.g. motivation and ability to process) are accounted for, financial literacy is not anymore important in explaining the consciousness of the Tfr choice.

### *5.1. Robustness checks*

Robustness tests of the results of Table 10 are conducted along several dimensions, which are just summarized here (details are available upon request).

As for the controls, we tried different specifications of some of them: quadratic specification for age (instead of age classes), quadratic specification for income and wealth (instead of quintiles), linear specification for household size (instead of dummies). All results in Table 10 hold.

In order to verify the non-significance of financial literacy, first of all, we use a level-specification (i.e. the number of correct answers) or specific dummies for the three questions. Secondly, we remove from the model specification the education level and the company size dummies. In both these checks, financial literacy turn out non-significant.

Finally, we remove from the model specification the control “pension funds knowledge”. In this case, both in Multinomial Logit and Logit estimations financial literacy variable become significant. However, while the marginal effect of financial literacy is strongly statistically significant (1%) on the choice consciousness, it is only marginally significant (10%) on the probability to follow a CR respect to RIA. Therefore we believe the main specification is better and our final considerations about financial literacy are robust.

## 6. Conclusions

This paper aims to explain the heterogeneity in pension choices through the Elaboration Likelihood Model (ELM) proposed by (Petty and Cacioppo, 1983), which reproduces the elaboration process that occurs when there is an attempt to change a person’s attitude through communication. When motivation and ability to think are high, individuals are inclined to follow a “central route to persuasion”, otherwise they follow a “peripheral route to persuasion”. Although the ELM has been mainly used so far in marketing studies for assessing the effectiveness of advertisement on consumers’ choices, as far as we know this paper represents the first attempt to use it to investigate pension choice.

In particular, we use ELM in order to analyse the heterogeneity in pension choices connected to the 2007 Italian reform that allowed transferring future severance pay’s contributions into a pension fund. In fact, the reform was accompanied by an information campaign with a quite clear message that resembled an advertisement in favour of the pension fund choice. To this end we use data from the Bank of Italy’s Survey of Household Income and Wealth (SHIW), which includes a question on the choice about the severance pay’s transfer into a pension fund. Specifically, we exploit the information of four waves: one before (2006) and three after the reform (2008, 2010 and 2012).

In order to develop an empirical assessment of the effectiveness of the reform message, we set our research question into the traditional ELM scheme, whereby the starting point is the definition of the message proposed by the Government with this reform. Relying on many different sources (literature, publications and media) we synthetize it as follows: “*Pension funds plus tax incentives linked to them can guarantee a higher retirement income, compared to the severance pay (Tfr)*”. Then we use the SHIW data to assess whether the employee has the involvement/motivation, and the necessary ability to process the message in order to associate each individual one of the three possible ELM outcomes: I) decision reached via a central route; II) decision reached via a peripheral route; III) retaining the initial attitude. Since among those who retain their initial attitude some did it consciously, an alternative association is between individuals and consciousness and unconsciousness of the decision.

Then to evaluate the impact of demographic and socio-economic characteristics of employees on the probability to follow a specific ELM route and to take a conscious decision, we performed a multivariate analysis estimating two different binary response models: a Multinomial Logit Model for the three ELM outcomes and a Logit Model for the consciousness of decision. Main results are from regression analysis are that being female or a living in the South do not represent *ceteris paribus* a threat to consciousness, low income or wealth have are associated to a lower probability to change their initial attitude; generic financial literacy is not statistically significant in taking a conscious decision, high education level (developed cognitive skills) and a specific knowledge of pension funds seem to have a strong impact on choice consciousness; individuals working in large

companies have more and better information on the reform content (possibly due to the presence of unions), but also a higher probability of being influenced, having a high risk aversion reduces the probability of being influenced.

In conclusion, the decision to transfer the Tfr into a pension fund was taken by more educated and older individuals, with a high household income, even though these individuals are also generally richer. This evidence is not surprising in Italy, where pension funds are a relatively new and the public pension system was traditionally generous. However, those who would have the greatest need because low income or younger did not receive or understand the message of the reform, deciding not to give up the severance pay in favour of a potential higher future retirement income. Thus, the message of the information campaign of 2007 reform was overall not very effective. Moreover, our ELM application highlights that generic financial literacy does not significantly affect decision consciousness, figuring out a more relevant role in the employees' elaboration process for other elements such as: the individual's comprehension of the specific choice object (pension funds), cognitive skills, and influencing elements (e.g. unions, employer's pressure). These considerations may have useful policy implications for the effectiveness of information messages in the pension domain.



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## Appendix

*Table A.1 – SHIW variables description*

Variables	Description
<i>Dependent variables</i>	
ELM outcomes	Multinomial variable which can assume three values that cannot be ordered and represent the possible ELM outcomes (CR, PR, or RIA)
Decision consciousness	Binary variable which is equal to 1 if decision is conscious and 0 otherwise
<i>Control variables</i>	
Female	Binary variable taking value 1 for female, 0 for male.
Age < 35 Age 35-45 Age 45-55	Binary variables representing the age group of employees. The reference category is Age ≥ 55.
Married	Binary variable taking value 1 for married employees, and 0 otherwise.
High school University	Binary variables representing the highest education level achieved. The reference category is composed by No education, Primary education, and Secondary education.
Center South	Binary variables representing the area of residence. The reference category is North.
Small city Big city	Binary variables representing the size of the municipality of residence. The reference category is Medium city.
Household size = 2 Household size = 3 Household size = 4 Household size ≥ 5	Binary variables representing the household size. The reference category is Household size = 1.
Worker Executive	Binary variables representing the job position. The reference category is Clerk (i.e. white-collar worker).
Employees < 35 Employees 15-50 Employees ≥ 100	Binary variables representing the company size. The reference category is Employees 50-100.
Medium income High income	Binary variables representing the income quintile. Medium income is the third quintile, while High income represents fourth and fifth ones. The reference category is Low income (first and second quintile).
Second wealth quintile Third wealth quintile Fourth wealth quintile Fifth wealth quintile	Binary variables representing the wealth quintile. The reference category is First wealth quintile.
Unknown replacement rate	Binary variable taking value 1 for employees who did not declare their expectation about the future replacement rate, 0 otherwise.
High risk aversion	Binary variable taking value 1 for employees who declared to prefer an investment with high or very high returns, but also with high or very high probability to lose a portion of their invested capitals.

Preference for short period	Binary variable taking value 1 for employees who declared that if they won a lottery where the prize is equal to the annual household disposable income and it is postponed by a year, then they would give up to at least 10% of this prize to receive it immediately; 0 otherwise.
Financial literacy	Binary variable taking value 1 for employees who correctly answered to at least two out of the three questions discussed in Section 4.4, 0 otherwise.
Pension funds knowledge	Binary variable taking value 1 for employees who correctly answered to at least two out of the four questions discussed in Section 4, 0 otherwise.