CeRP

CENTER FOR RESEARCH ON PENSIONS AND WELFARE POLICIES

Working Paper 180/18

INFORMATION AND FINANCIAL LITERACY FOR A SOCIALLY SUSTAINABLE NDC PENSION SYSTEM

Elsa Fornero
Noemi Oggero
Riccardo Puglisi

May 2018

Information and Financial Literacy for a Socially Sustainable NDC Pension System

Elsa Fornero[*], Noemi Oggero[♣] and Riccardo Puglisi[♦]

The accumulation of pension wealth is a long and complex endeavour, with various 'moments' in which the individual has to make decisions, even in public systems with a strong compulsory component. Awareness is essential to increase welfare, as citizens are more likely to make sensible choices and avoid regrettable mistakes. Awareness requires both information and the ability to use it wisely; in turn, this requires a minimum economic-financial knowledge, typically called financial literacy. Workers must have some knowledge (conjecture), as precise as possible, of where they stand on their accumulated (prospective) pension wealth and retirement options. This knowledge is less important in the traditional world of DB pension promises, because of their 'guaranteed' nature (although the political risk—a risk that people are more likely to ignore, by appealing to the notion of 'acquired rights'—was never explicitly taken into account and thus covered). Knowledge is instead essential in (N)DC schemes because of their more complicated structure, combined with a higher level of individual responsibility and corresponding risk. In this chapter, we investigate the importance of both information and financial literacy, as they are complementary in achieving a socially sustainable NDC pension system.

Pension information: How much? When? From whom?

i. *The importance of information: still a controversial issue?*

Information is critical for individual planning: in deciding, for example, whether to consume more or less; to participate in a supplementary pension plan; to decide when to retire or whether to leave on a gradual retirement option, when available. Knowledge should help the worker to avoid mistakes and disappointments such as a shortfall of actual versus expected pension benefit and ensuing painful lifestyle adjustments.

Information on the mechanics of unfunded pension systems—and of NDC systems as a subset thereof—is also fundamental for the system's sustainability, and thus for the political sustainability of reforms when these are needed to adapt the pension design to economic and demographic structural changes. Differently from individual-level choices, citizens as voters and members of public opinion must think about the aggregate behaviour of PAYG systems in both the DB and DC versions thereof. From this point of view, widespread misinterpretation of pension reforms will lead to attempts to prevent or to reverse them after approval. The reluctance of governments, politicians and other political/social actors to provide information for fear of losing consensus (or even in the interest of exploiting ignorance)

[*] University of Turin and CeRP-Collegio Carlo Alberto: elsa.fornero@unito.it
[♣] University of Turin and CeRP-Collegio Carlo Alberto: noemi.oggero@carloalberto.org
[♦] University of Pavia: riccardo.puglisi@unipv.it

has to be recognized and overcome, possibly with the aid of international institutions, which typically do not share the same fears and short-term interests.[1]

ii. *Formal information (from the pension agency) and informal information (from the media).*

Information (online, written and/or broadcast) has to be precise and trustworthy. Within a public pension system, it is natural that this information is provided by the public pension agency, in a micro-personalized fashion. Of course, private information, by means of trade unions, associations and non-profit organizations, can also be provided, and typically is. The pension agency, however, should not entirely delegate this informative task to those non-public actors.

Information, particularly about problems, 'news', innovations and policy proposals, is provided by the media. The incentives faced by mass media outlets to provide information about pensions are likely to be quite different from those faced by the official pension agency, which is obliged by its formal mandate to provide formal, precise and personalized information. It is still unclear whether individual opinions about pensions are more influenced by the media or by the official pension agency. While one can easily argue that the latter has a comparative advantage in providing personalized information about accrued capital, returns, etc., the relative novelty of NDC reforms—and of regulations imposing informative tasks—could imply that citizens still rely more on the information provided by better known media outlets, both traditional ones (newspapers, magazines, radio and TV) and new ones (the internet and social networks).

iii. *Pension information in the media.*

How much information about pensions and pension reforms can be found in the media, compared to other policy-relevant topics? Do articles and editorials simply report the facts and the political fights surrounding pension reforms, or do they also provide *knowledge* about the mechanics of PAYG and NDC systems? To our knowledge, those empirical research questions have not been explicitly tackled yet. We try to answer these questions through the three following analyses:

1) Attention through social media. For a sample of European countries (France, Germany, Italy, Sweden and the UK), we use the Google Trends website to measure the relative number of online searches about pensions, comparing them across countries and over time.

2) Volume of coverage by traditional media. For the same sample of countries, we look at the dynamics of newspaper coverage of pensions and pension reforms in the last 15 years, by exploiting the Dow Jones Factiva news archive.

---

[1] Concerns by politicians are well expressed by Juncker's much quoted aphorism: "We all know what to do, but we don't know how to get re-elected once we have done it" (The Economist, March 15, 2007). The sentence implicitly stresses the importance of financial literacy: if politicians and experts are able to see the necessity, and thus the social values, of reforms, why shouldn't citizens? And if they do, why should they punish the governments/political parties that approved the reforms? For a focus on the issue, see Fornero and Lo Prete (2017).

3) Type of coverage of Italian pension reforms. To check the type of coverage devoted to pension reforms, we then focus on Italy and look at the amount and type of newspaper coverage devoted to the last major pension reform—i.e. the Monti-Fornero one—which was enacted in December 2011.[2] More specifically, we try to investigate how the media framing of pensions differed across newspapers and changed before and after the 'natural experiment' of the reform itself.

Regarding the first type of analysis, Figure 1 shows the relative importance of pension information in Germany, France, Italy, the UK and Sweden from 2004 to 2017, as proxied by the volume of online searches. Italy and France show the highest rates of online searches regarding pensions, with Italy having the greatest number of searches at the beginning of 2015.[3] On the other hand, Germany, Sweden and the UK showed less interest in pension themes in recent years. More online searches by Italians and the French may indicate higher sensibility towards social security issues in these countries. While searches in France were quite steady from 2004 to 2017, Italy shows two peaks: one at the end of 2011/beginning of 2012, when the new pension reform was introduced, the other at the beginning of 2015, when the sentence by the Constitutional Court on price adjustment of pensions affected many retirees. Thus, searches were especially high when changes in the retirement landscape happened, and people tried to gather more information from the internet.

Figures 2 to 6 compare the volume of online searches related to pensions with the volume of searches on other policy-relevant issues for each sampled country. Figures 2 and 4 confirm that social security is a hot topic in France and Italy: from 2004 to 2017, people looked for more information on pensions than on unemployment, immigrants, crime and ISIS. In Sweden, too, where the NDC pension system was introduced in 2001, the volume of online searches over time was greater for pensions than for other relevant topics (Figure 5).

Our second exercise investigates how online searches regarding pensions compare to the coverage devoted to them by traditional media outlets over time. The availability of easily searchable news archives allows us to gather monthly coverage data on selected newspapers for the countries under consideration. We do so for the 2004–2017 period for *Le Monde* in France, *Frankfurter Allgemeine Zeitung* (FAZ) in Germany, *Corriere della Sera* in Italy, *Svenska Dagbladet* in Sweden and *The Times* in the UK. Figures 7 to 11 show for each country the time series of the online search volume on pensions together with the monthly count of stories[4] where the word 'pensions' appears in the selected newspapers. The graphs show that there is a very close correlation between online searches and newspaper coverage of the pension theme. If anything, newspaper coverage appears to be generally leading vis-à-vis online searches:

---

[2] Decree-Law 201/2011, which was issued on December 6th, 2011 (so called "Decreto Salva Italia") and then converted into Law 214/2011.

[3] In March 2015, the Italian Constitutional Court declared part of the 2011 pension reform unconstitutional. As a result, indexation of pensions for a large number of retirees had to be resumed.

[4] Relative to the average number of monthly articles.

a plausible rationale for this is that citizens are initially informed by traditional media outlets and might then be induced to search for additional information on the internet. This positive correlation is confirmed by regression analysis.

Regarding our third research question on content analysis, we analyse the case of Italy, with a specific focus on the enactment of the Monti-Fornero reform at the end of 2011 and on its media coverage in four national newspapers. More precisely, exploiting the Dow-Jones Factiva archive, we obtained the texts of all articles in four national dailies (*Corriere della Sera*, *Repubblica, Stampa* and *Giornale*) that mention anywhere the word 'pensioni' (pensions) during a four-month time span starting in November 2011 and ending in February 2012. Overall, there are 2,045 articles during the time period under consideration, which are split as follows: 621 articles in *Corriere*, 604 in *Repubblica*, 424 in *Stampa* and 396 in *Giornale*. Figure 12 shows the histogram of articles on a daily basis in all four newspapers: there is a clear increase in coverage of pensions which rapidly reaches a maximum on December 5th—i.e. the day before the enactment of the Decree-Law by the newly established Monti cabinet. Then the coverage slowly drops in December (with a further spike on December 23rd, when the Decree-Law was converted into law), and more rapidly so in 2012.

In Tables 1 and 2 we perform some regression analyses on daily coverage data, where the dependent variables are the relative frequencies of pension articles that mention various concepts (in Table 1) and political figures and countries (in Table 2). Our focus is understanding how coverage varies before and after the enactment of the reform (i.e. the day the Decree-Law was issued) and as a function of the newspaper under consideration. Thus in each regression we include newspaper-specific fixed effects, a post-reform dummy and a linear time trend. In order not to inflate the precision of our estimates, we cluster the standard errors at the daily level. For each concept or figure, we present two different specifications: in the former, we check how the relative frequency of coverage changes after the reform *unconditionally*—i.e. we do not allow for newspaper-specific differences in those potential after-reform changes—while in the latter, we interact the post-reform dummy with the newspaper-specific dummies.

Regarding Table 1, we find that the words 'reform', 'spread' (between the returns of Italian vs. German bonds) and 'austerity' are cited significantly less after the reform, while we do not find any significant change in the case of 'growth' and 'firms'. On the other hand, we find a significant increase in the mentions of trade unions after the reform, which appears to be driven by the increase in coverage by *Corriere* and *Repubblica*. When comparing newspapers, we find that (taking *Corriere* as the excluded category) *Repubblica* and *Giornale* give significantly more coverage to the spread when dealing with pensions, while *Giornale*—and, less robustly, *Stampa*—devote less attention to growth.

In Table 2, we find that Europe is less significantly covered after the reform—albeit with the presence of an overall increasing trend—and the same applies to Bersani (secretary of the Democratic

Party, the main left-wing party in Italy), Berlusconi (leader of the main right-wing party and former Prime Minister) and German chancellor Angela Merkel. On the other hand, there is no significant change in the coverage of Monti, Fornero and Germany after the reform. Interestingly, the less centrist newspapers in the sample (i.e. *Repubblica* on the left and *Giornale* on the right) devote significantly more coverage to political figures vis-à-vis *Corriere*: this applies to Monti, Bersani, Berlusconi and, to a lesser extent, Merkel.

Pension information, financial literacy, and the effects on people's behaviour

i. *Information and financial literacy in the context of NDC pension schemes.*

As many countries have moved towards more individual-level participation in the provision of financial security in the post-work period, a minimum level of financial knowledge is required to plan for retirement and manage savings for old age. This new pension landscape, where the number and the complexity of financial choices are increasing, naturally raises concerns about the level of knowledge held by individuals and their ability to deal with financial decisions.

Research shows that saving for retirement requires substantial information and financial literacy (Lusardi and Mitchell 2011). Compound interest and inflation are fundamental concepts required for making saving decisions, and knowledge of risk diversification could help people make decisions about participating in a pension fund as a way to combine the different risk–return combinations of an unfunded and a funded scheme. The knowledge of these simple concepts is strongly associated with successful retirement planning: those who cannot do a simple interest calculation, who do not know about inflation and risk diversification, are also much less likely to calculate how much they need to save for retirement (Lusardi and Mitchell 2008). The concept of compound interest is especially important to know in the presence of NDC pension schemes: like most financial instruments, the rate of return in NDC plans works in a compounded way, generating returns from previous returns. Hence, in determining the final (notional) capital and thus the pension benefit, the earlier contributions will have a higher weight than those paid at older ages. Since competent planning for retirement and investing in retirement assets require several additional financial concepts—including an understanding of the risk/return relationship, and how stocks and bonds work—Lusardi and Mitchell (2009) sought to measure more sophisticated financial knowledge. By every measure of financial literacy they considered, they found that financial knowledge is a key determinant of retirement preparedness.

In the context of NDC schemes, the pension system provides incentives to enhance transparency, which in turn might increase financial literacy. An NDC system makes people think in terms of lifetime contributions, lifetime incomes, annuities and lifetime pension benefits in relation to flexibly chosen retirement ages. Moreover, it induces thinking in terms of choices, trade-offs and budget constraints, thus generating pension literacy (Holzmann and Palmer 2006). This is a relevant working hypothesis which deserves further scrutiny of the extent to which the need to make informed decisions within an

NDC system does endogenously induce—at least in the medium term—a significantly higher degree of financial literacy. A similar situation characterizes self-employed individuals, who normally show higher financial literacy levels than employees, possibly because their business implies some learning 'in the field'. By the same token, information provided by non-public actors and specifically by the media might be endogenously enhanced, at least in the medium term, by the demand for more financially sophisticated citizens that care about making more informed retirement plans.

But there is also a less optimistic hypothesis, which does not exclude the previous one: in the political economic equilibrium after the implementation of a pension reform, media outlets could reverse their course of action by abruptly stopping support for the reform itself and starting to 'ride the wave' of social discontent. In turn, this discontent is triggered by the short-term costs of the reform, but the media end up reinforcing it in a populistic fashion. More thorough empirical work is needed to shed light on the relative importance of those two mechanisms.

ii. *Information through public pension statements: a selective survey.*

Since public pension programmes provide the foundation for retirement income for many workers, it is important for governments to provide workers with information about their public retirement benefits (Kritzer and Smith 2016). Public pension statements are one way countries can provide workers with information about their retirement programs.

In Poland, the launch of the NDC pension formula altered the incentives for future pensioners, since postponing retirement leads to significantly higher pension levels. However, incentives to work longer only function if the society is provided with information about the pension system (Chlon-Dominczak 2009). A systematic public education effort is required to improve the pension literacy of the population, and a step taken by Poland in this direction is the annual information on individual accounts that the social insurance institution sends to covered workers. From 2008, this information also includes a calculation of the accrued pension based on the current account value, and the projected account value for selected potential ages of retirement (Chlon-Dominczak 2009).

In Sweden, where the NDC scheme provides an earnings-related benefit that represents the largest share of retirement income, a large amount of financial information has been widely distributed to everybody eligible for a pension. The famous Orange Envelope is distributed by the government's pension agency once a year and contains individual information about the previous year's contributions, the rate of return to account balances during the year, account balances, and an individual-specific projection translating the account balances into an expected monthly pension benefit calculated at three different retirement ages (Almenberg and Säve-Söderbergh 2011). It is important to notice that the projections are calculated for two assumptions about real wage growth (0 and 2 per cent). The widespread dissemination of financial information is likely to have raised the levels of financial literacy in Sweden and to have lowered the barriers to planning for retirement. Since the system includes a funded part, information about the functioning of financial markets has also been provided, with particular reference to the relative risks of equities versus bonds, and the inappropriateness of having high exposure to equities close to retirement. This can be expected to have raised awareness of basic financial concepts (Almenberg and Säve-Söderbergh 2011). On the other hand, it may also be the case that not everybody opens the Orange Envelope and, even if they do, this is no guarantee that they will absorb and elaborate the information. Even though most recipients claim to read the information in the Orange Envelope, fewer than half report having a good understanding of the pension system and many report that they lack sufficient knowledge to manage their individual accounts (Sundén 2009).

As in Sweden, the Social Security Administration in the United States is required by law to send out a social security statement—i.e. a public pension statement. Even though the United States does not have an NDC pension system, legislation specifies that statements contain the worker's earnings history; the social security taxes paid by the worker; an estimate of potential retirement benefits at different retirement ages; and estimates of disability, survivor and other auxiliary benefits. In 2000, a paragraph was added that encouraged the recipient to think about the advantages and disadvantages of retiring early. Since strengthening public understanding of social security programmes was one of the goals of the Social Security Administration, many surveys have been conducted to evaluate the statement's outreach efforts. Studies found a significant increase in the number of respondents who knew about (i) the relationship between social security benefits and earnings; (ii) how benefits were financed; (iii) that benefits increased automatically as the cost of living rises; and (iv) that the full retirement age was increasing. Moreover, respondents who reported receiving the statement were more knowledgeable about the programme than those who did not (Kritzer and Smith 2016). A sizable percentage of respondents also reported using the statement for financial planning, thought the information in the statement was useful for retirement planning, and expressed overall satisfaction with the information about savings and investment. However, more than half of workers did not believe that social security benefits would exist when they reach retirement age (Gallup 2015).

Likewise, in Canada there has been a legislative requirement to send workers a statement of contributions on request. For recipients aged 30 or older, the statement includes information on their contributions, pensionable earnings, retirement pension, disability and survivor benefits. For recipients younger than 30, the statement only includes information on their contributions and pensionable earnings, omitting information on the retirement pension, disability and survivor benefits. Surveys found that more than two thirds of respondents said the information was important to them, they had a better understanding of the Canadian pension plan and the services it provides, and they were more likely to plan for their retirement (Kritzer and Smith 2016).

What emerges from the analysed countries is that pension information is critical for individual knowledge and planning in many areas. Indeed, both low literacy and lack of information affect the ability to secure a comfortable retirement.

iii. *Information and financial knowledge: the case of Italy.*

In Italy, information from the national pension agency was sent for the first time relatively late, in 2016. Consistent with the idea that information and financial literacy are complementary, lack of formal information was coupled with a lack of social security literacy. In particular, Italians showed limited knowledge of the calculation method for social security benefits, the expected amount of retirement income compared to the final salary, and the financing method of the social security system (Ceccarelli and Rinaldi 2011). Another study documented widespread ignorance by Italians about the costs, sustainability and basic functioning of the pension system (Boeri and Tabellini 2012).

In July 2014, a survey commissioned by CeRP-Collegio Carlo Alberto and conducted by GFK-Eurisko examined the effects of the Monti-Fornero Italian pension reform on several aspects of older workers' behaviour. The study asked questions about both personal understanding of the motivation of the reform, and perceptions regarding available pension information. The survey was conducted on a representative sample of 805 Italian dependent workers aged 55 and above; it also obtained information on the standard sociodemographic characteristics of respondents.

While media coverage of pensions exploded when the reform was introduced, data show that more than half of the population had heard of it but did not know its precise content. This very high percentage reinforces the hypothesis that getting information is not enough if people do not have a basic level of knowledge to understand it. In addition, a non-negligible portion of interviewed individuals was not aware of their retirement situation: 15 per cent of respondents close to retirement did not know their years of contribution, and one in four did not know the age at which they could have retired.

To measure the degree of comprehension of the reform, we checked whether the respondent agreed with three statements describing the main objectives of the reform: contrasting the effects of population ageing on public finances; convincing the financial markets that the Italian pension system does not threaten sustainability of the public debt; improving the equilibrium of the pension system for the young and future generations ('comprehension index' variable). Controlling for sociodemographic characteristics, we study the relationship between comprehension of the reform's objectives and preference for a DC scheme. The first column of Table 3 shows that people with a higher comprehension index are more likely to think that pension benefits should be computed as a function of contributions made and of retirement age. Symmetrically, the second column shows that individuals that better understand the reform's objectives are less likely to think that pensions should be computed on the basis of their last salary received. Columns 3 and 4 refer to the explicit preference stated by respondents for a

DC versus a DB pension scheme. Once again, individuals who understand the reform's objectives are more likely to follow a DC pension scheme, while those who understand them less prefer a DB plan. Finally, the last column of Table 3 shows that respondents with a higher level of reform comprehension are more likely to think that people who retire earlier should receive a lower pension (in any case, or with the exception of demanding jobs). All these estimates show that comprehension is fundamental in order to have socially sustainable reforms.

To investigate the relationship between reform comprehension and information, we use a question about whether or not respondents think that information received from their pension agency about their future pensions is sufficient. Column 1 of Table 4 shows that individuals who understood the reform's objectives were less likely to report that information was insufficient. Likewise, people who said they knew the reform were less likely to complain about insufficient information (column 2). On the other hand, respondents who said they did not know about the reform were more likely to say formal information received was not enough (column 3 of Table 4). This result highlights the demand for formal information, especially from people who do not comprehend the reform's objectives. Indeed, 88 per cent of the sample reported that they were very interested in having more information on their contributions and the expected pension benefit, either by email, mail or on the pension agency website.

Financial literacy applied to pensions: What is pension literacy? Why is it important?

i. *Why financial literacy is important for retirement: a review of the literature.*

Welfare gains from individual choices depend on the efficiency of those choices, which in turn is conditional on understanding the basic elements of pension options. In order to grasp those elements, good information is complementary to the presence of widespread financial literacy. In contrast, illiteracy can be associated with misinterpretation of pensions, and to claims of 'acquired rights' that are hardly justifiable according to principles of social justice, as in the case of the very generous DB pensions (in terms of the difference between the amount—the present value—of benefits and contributions) awarded to high income earners.

Research has indeed shown that widespread financial illiteracy can generate myopia, distortions and inconsistencies, such as a preference for early retirement not supported by a parallel willingness to pay for it in terms of correspondingly reduced pension benefits (Calcagno, Coda Moscarola and Fornero 2016). Moreover, the lump of labour fallacy continues to be widespread: jobs are too often considered to be in a fixed number and early retirement an easy way to facilitate jobs for the young. This, in turn, might induce politicians to recommend generous early retirement options, to the detriment not only of the system's financial equilibrium, but also of the adequacy of the benefits.

In past decades, the retirement landscape has undergone many radical changes in most advanced economies. Since DC pension schemes are likely to spread out, individuals all over the world will increasingly be called to take greater responsibility to save, invest and decumulate their retirement wealth. In addition, life expectancy in most countries is increasing, with people spending more years in retirement, and a longer retirement requires greater savings and resources to pay for the extra consumption and healthcare costs of these additional years (Kritzer and Smith 2016).

In this new pension and financial landscape, it is important to understand the extent to which individuals are equipped to make decisions and whether they are sufficiently knowledgeable about economics and finance to plan for retirement. To this extent, research found that those who report that they are unable to plan for retirement and/or who cannot carry out their retirement saving plans are also those who are least aware of the fundamental economic concepts driving economic wellbeing over the life cycle (Lusardi and Mitchell 2011). Many people lack key knowledge of financial concepts and fail to plan for retirement even when retirement is only five or ten years off. This has important consequences, since 30–40 per cent of United States wealth inequality can potentially be attributed to financial knowledge (Lusardi, Michaud and Mitchell 2017).

Behrman et al. (2010) identified the impact of financial literacy and schooling on wealth accumulation and pension contribution patterns. Their estimates indicate that financial literacy is at least as important, if not more so, than schooling, in explaining variation in household wealth and pension contributions. Van Rooij, Lusardi, and Alessie (2012) showed that financial sophistication boosts households' retirement planning behaviour, thereby providing an important channel for the development of savings plans and creating instruments for self-control. Financially savvy employees are also most likely to participate in their DC plan (Clark, Lusardi and Mitchell 2017). Lusardi, Mitchell and Oggero (2017) also showed that financial literacy is among the factors reducing exposure to debt on the verge of retirement.

Although much research on this topic is focused on the United States, a positive relationship between financial literacy and planning for retirement has been found in many other countries such as France, Germany, Sweden, the Netherlands, Canada, New Zealand, Australia, Japan and Chile, with some country-specific peculiarities (Agnew, Bateman and Thorp 2013; Alessie, Van Rooij and Lusardi 2011; Almenberg and Säve-Söderbergh 2011; Arrondel, Debbich and Savignac 2013; Boisclair, Lusardi and Michaud 2017; Bucher-Koenen and Lusardi 2011; Crossan, Feslier and Hurnand, 2011; Garabato Moure 2016; Sekita 2011). In the Italian pension landscape, where private pensions are playing a greater role in ensuring old-age income, financial literacy increases the probability of saving for retirement through a private pension plan (Fornero and Monticone 2011).

As countries are increasingly relying upon individual responsibility in the accumulation of retirement wealth, people's retirement security will depend ever more on individual decisions. Hence, financial literacy and sophistication are critical to guarantee individuals' retirement security.

ii. *Basic understanding of pensions as insurance.*

Citizens must be made aware that pensions are not the result of the generosity of politicians, but of the sound functioning (in economic and financial terms) of the pension system itself. They must understand, even at a very basic level, the insurance aspect of the 'contract', implicit in the transformation of their notional pension wealth at retirement into an income flow to be paid conditional on the worker's (or her survivor's) existence. Citizens should also understand the 'unfunded' nature of DB and NDC systems—i.e. the reliance on contributions paid by current workers to finance pensions, with additional funds possibly coming from the overall government budget, which in turn is financed by taxation, reduction of other expenditures and/or additional deficit. The insurance aspect requires, in general, a close correspondence, at the individual level, between contributions and benefits, possibly corrected by an actuarial factor which takes into account the age of retirement and thus the different expected longevity at retirement (the essence of the NDC system). The same principle allows for flexible retirement. Flexibility is a good feature of pension systems, but it should not be at the expense of the young and future generations (as was the case with early retirement options under the DB method).

iii. *What should be known about the NDC systems*?

A PAYG scheme based on a DC-type formula is a complex system that does not lend itself to a straightforward reading. Firstly, it is not a market mechanism but a public institution, which means that even when it mimics the market—as the NDC scheme does—it necessarily has some roles that a market does not or cannot perform. It is very important that people understand the nature of this institution, even at a very basic level, and in particular its 'collective' contract nature, which the (notional) personal accounts tend somehow to conceal. More specifically, workers should know that:

- A PAYG system (whether DB or DC) is an intergenerational contract: retirees receive their pensions by means of contributions paid by current workers, who contribute under the assumption that future generations will also pay and thus finance their own pensions; in the contract, the state is supposed to represent the interest of future generations, who obviously cannot directly participate.
- When combined with a DC formula, the system (NDC) is suitable to achieve both financial equilibrium (notwithstanding its implicit debt dimension, stemming from its very creation) and greater intergenerational fairness.
- To maintain the equilibrium (i.e. maintain a stable level of debt), the system must rely on a recognized rate of return on contributions that depends on demographic and economic trends (~n+g): the notion that returns are not determined by financial markets but by the rate of growth of the economy (or labour income) should also be made transparent. Interestingly, in Italy, people showed an adequate knowledge of the GDP growth in 2016,

resulting in an average estimated value of 0.6 per cent compared to 0.8 per cent registered by Istat. On the other hand, average estimated values for unemployment and inflation rates were significantly above the official data (Istat, 2016).

- Returns are credited to contributions, which are a form of (compulsory) saving, not a pure tax.
- The coefficients that transform the (notional) capital into a pension (annuity) depend on life expectancy at retirement age; to maintain the equilibrium, they should decrease at the various ages of possible retirement when longevity increases.

iv. *What workers should know about their own pension and retirement options.*

Information on workers' specific position can be more objective (like the 'accrued-as-of-today' notional capital) or more speculative (something like 'your future pension benefit if your contribution follows the specified path'). The distinction between what is achieved and what is projected, under various circumstances, is fundamental for a proper understanding of the system and to avoid misinterpretations.

Precise information about the future pension benefit can be given only to those somewhat near retirement, and thus with a high degree of certainty as to their pension level, while for others the statement should clearly refer to projection, simulations or estimates. The probabilistic nature of more distant benefits should always be emphasized to avoid the idea that precise calculations imply a sure promise.

On a personal level, it is thus important that citizens are informed about:

- The amount that has been achieved as notional accrued capital, with the distinction between own contributions and accredited returns.
- Possible retirement ages, accompanied by a description of how the pension benefit will evolve in case of postponement, highlighting the incentives to continue work—or at least the absence of disincentives—which are typical of the DC method. In particular, people should know that postponing retirement contributes twice to increase individual benefits: through more contributions and lower expected longevity.
- Additional benefits, such as survivor pensions or the possibility to draw on the accumulated pension wealth (such as it is the case with the Italian voluntary APE) should be part of the informative package.

Finally, for those whose career has developed—at least partially, because of the transition towards the NDC regime—under a DB scheme, the gap between pension benefits and contributions to the accrued capital should also be highlighted.

v. *Financial literacy and sustainability of pension systems.*

People should be aware that an efficient pension system is certainly not unsuited to solidarity. On the contrary, efficiency and transparency of the NDC system make it more likely that its redistributive consequences are equitable and perceived as such, while lack of transparency is usually associated with (hidden) privileges and mounting disapproval rates for the system itself. Exceptions to the rule of the actuarial correspondence between contributions and benefits are possible (indeed, are due in a public system), but they should favour the unlucky members of society, not the lucky ones, generating intolerable privileges. As mentioned above, people should also recognize that an expensive pension system is financed mainly from contributions by workers/employers, implying a trade-off between generous pensions and high (gross) labour costs, which discourages employment and might be also associated with lower net wages.

It is important to try to convey these essential concepts in few simple messages. This means that politicians and the media should also be economically and financially educated.

Politics, consistent reforms and NDC system

Of course, in NDC systems, too, pensions are not mechanically determined only by an objective formula taken from actuarial mathematics. In a public system, some redistribution will always be present and thus political choices will always have a role to play. Pension reforms affect people's lives and are often very unpopular, implying an electoral cost. Financial literacy can help improve politics by providing antidotes to populist tendencies in difficult situations. Financial knowledge is not a panacea, but a firm basis for higher social payoffs.

Reforms are meant not only to change laws but, more importantly, to change people's behaviour. Their effectiveness crucially depends on the ability of citizens—i.e. public opinion—to recognize the importance or, in some cases, the necessity of reforms, their general design and their sense of direction. They have the nature of social investments, requiring sacrifices today in expectation of benefits tomorrow. The electorate's ability to understand essential economic concepts is relevant for the evaluation of the electoral costs of pension reforms. In a recent paper (Fornero and Lo Prete 2017), it is shown that the electoral cost of a pension reform is significantly lower in countries where the level of financial literacy is higher. If entitlements are greater than contributions, and people understand that their pension entitlements are partly built on debt to be honoured by future generations, they can be less hostile to pensions' restructuring.

While information and financial literacy are easily seen as complementary, an objection has been that the cost-effectiveness of educational programmes aimed at universal financial literacy is low relative to, for example, nudges. An increase in financial literacy (even on a very large scale) cannot, of course, be expected to be the successful answer to all economic and financial problems (the 'silver bullet'). We think this supposed contraposition is wrong: financial literacy is not, of course, the only factor that will help to devise a good pension design and/or to increase the effectiveness of reforms. At the same time, the importance of a good design of choice options is not to be underrated. Behavioural 'nudges' can encourage even financially literate people to make wiser choices: there is no need for one to exclude the other. Moreover, the process of trial and error as a substitute for financial knowledge might be extremely costly (more than investing in financial literacy). There is, too, a likely complementarity between financial literacy and reliance on experts: reliance on experts without diffusion of financial knowledge among the public might result in adverse selection and a troubling emergence of charlatans. This phenomenon might be particularly intense, and worrisome, during periods with peak demand for experts and pundits, such as during severe economic and social crises, and in their long aftermath.

Future work

This chapter has centred on the complementarity between information and financial literacy for the efficient and equitable functioning of NDC pension systems, and more generally of unfunded systems, at both the macroeconomic and the microeconomic level. More specifically, we provided some new evidence, in the shape of stylized facts, about how public opinion in five European countries (France, Germany, Italy, Sweden and the UK) is concerned with pensions, both in a cross-country perspective and in comparison with other policy issues. To do so, we exploited information on online searches, as provided by Google Trends, and matched these data with media coverage of pensions on traditional media (in our case, daily newspapers). We also looked at a specific case study—i.e. newspaper coverage of the Monti-Fornero pension reform in Italy at the end of 2011.

Much work remains to be done. Firstly, in order to delve further into this complementarity between information and financial literacy, we need individual level survey data which jointly contain information on literacy, preferred media sources and pension choices. To our knowledge, such data are not yet available.

Secondly, one should perform a more comprehensive content analysis of newspaper articles and editorials and TV news about pensions, with a specific focus on the quasi experiment of pension reforms, to check whether and how the amount and tone of coverage change before and after their actual enactment. A natural extension of this work would be to investigate how this coverage is correlated with the partisan bias of the media outlets under consideration (Gentzkow, Shapiro and Stone 2016; Puglisi and Snyder 2016).

Thirdly, in the current era where social networks play an exponentially increasing role in the social, political and media sphere, one could investigate the connection between coverage of pensions and pension reforms in traditional media (TV and newspapers, together with their online counterpart) and conversations on the topic on social networks. A purpose of this exercise would be to check whether elite discourse on traditional media still happens to lead the conversation on social networks, or whether the opposite could hold—i.e. those online conversations take place first and end up influencing arguments and proposals that are then featured in traditional media and possibly in the formal political arena, i.e. in Parliament.

References

Agnew, Julie R., Hazel Bateman, and Susan Thorp (2013), "Financial Literacy and Retirement Planning in Australia," *Numeracy*, 6(2), Article 7.

Alessie, Rob, Maarten Van Rooij, and Annamaria Lusardi (2011), "Financial Literacy and Retirement Planning in the Netherlands," *Journal of Pension Economics and Finance,* 10(4), pp. 527–545.

Almenberg, Johan, and Jenny Säve-Söderbergh (2011), "Financial Literacy and Retirement Planning in Sweden," *Journal of Pension Economics and Finance*, 10(4), pp. 585–598.

Arrondel, Luc, Majdi Debbich, and Frédérique Savignac (2013), "Financial Literacy and Financial Planning in France," *Numeracy*, 6(2), Article 8.

Behrman, Jere, Olivia S. Mitchell, Cindy Soo, and David Bravo (2010), "Financial Literacy, Schooling, and Wealth Accumulation," NBER Working Paper n. 16452.

Boeri, Tito, and Guido Tabellini (2012), "Does Information Increase Political Support for Pension Reform?" *Public Choice*, 150(327), pp. 327–362.

Boisclair, David, Annamaria Lusardi, and Pierre-Carl Michaud (2017), "Financial Literacy and Retirement Planning in Canada," *Journal of Pension Economics and Finance*, 16(3), pp. 277–296.

Bucher-Koenen, Tabea, and Annamaria Lusardi (2011), "Financial Literacy and Retirement Planning in Germany," *Journal of Pension Economics and Finance*, 10(4), pp. 565–584.

Calcagno, Riccardo, Flavia Coda Moscarola, and Elsa Fornero (2016), "Too Busy to Stay at Work. How Willing Are Italian Workers "to pay" to Anticipate their Retirement?" CeRP Working Paper n.161/16.

Ceccarelli, Simone, and Ambrogio Rinaldi (2011), "Does Literacy Really Foster Pension Fund Participation? Some Evidence from a Survey of Italian Employees," available at SSRN: http://dx.doi.org/10.2139/ssrn.1972315

Chlon-Dominczak, Agnieszka (2009), "Retirement Behaviour in Poland and the Potential Impact of Pension System Changes," ENEPRI Research Report No. 61/January 2009.

Clark, Robert, Annamaria Lusardi, and Olivia S. Mitchell (2017) "Employee Financial Literacy and Retirement Plan Behavior: A Case Study," *Economic Inquiry*, 55(1), pp. 248–259.

Crossan, Diana, David Feslier, and Roger Hurnard (2011), "Financial Literacy and Retirement Planning in New Zealand," *Journal of Pension Economics and Finance*, 10(4), pp. 619–635.

Fornero, Elsa, and Chiara Monticone (2011), "Financial Literacy and Pension Plan Participation in Italy," *Journal of Pension Economics and Finance*, 10(4), pp. 547–564.

Fornero, Elsa, and Anna Lo Prete (2017), "Voting in the Aftermath of a Pension Reform: The Role of Financial Literacy," CeRP Working Paper no. 171/17.

Gallup (2015), "In Depth—Topics A to Z: Social Security," available at: http://www.gallup.com/poll/1693/social-security.aspx

Garabato Moure, Natalia (2016), "Financial Literacy and Retirement Planning in Chile," *Journal of Pension Economics and Finance*, 15(2), pp. 203–223.

Gentzkow, Matthew, Jesse M. Shapiro, and Daniel F. Stone (2015), "Media Bias in the Marketplace: Theory," in Simon Anderson, Joel Waldfogel, and David Stromberg (eds.), *Handbook of Media Economics,* Volume 1B, North Holland, pp. 623–645.

Holzmann, Robert, and Edward E. Palmer (2006), *Pension Reform: Issues and Prospects for Non-Financial Defined Contribution (NDC) Schemes*, Washington, DC: World Bank.

Istat (2016), "The Knowledge of Economic Data by Italian Consumers," available at: http://www.istat.it/en/archive/189746

Kritzer, Barbara E., and Barbara A. Smith (2016), "Public Pension Statements in Selected Countries: A Comparison," Social Security Bulletin 76, n. 1.

Lusardi, Annamaria, and Olivia S. Mitchell (2008), "Planning and Financial Literacy. How Do Women Fare?" *American Economic Review*, 98(2), pp. 413–417.

Lusardi, Annamaria, and Olivia S. Mitchell (2009), "How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness," NBER Working Paper n. 15350.

Lusardi, Annamaria, and Olivia S. Mitchell (2011), "Financial Literacy and Planning: Implications for Retirement Wellbeing," in Annamaria Lusardi and Olivia S. Mitchell (eds.), *Financial Literacy. Implications for Retirement Security and the Financial Marketplace,* Oxford University Press, pp. 17-39.

Lusardi, Annamaria, Olivia S. Mitchell, and Noemi Oggero (2017), "Debt and Financial Vulnerability on the Verge of Retirement," NBER Working Paper n. 23664.

Lusardi, Annamaria, Pierre-Carl Michaud, and Olivia S. Mitchell (2017), "Optimal Financial Knowledge and Wealth Inequality," *Journal of Political Economy*, 125 (2), pp. 431–477.

Puglisi, Riccardo, and James M. Snyder, Jr. (2015), "Empirical Studies of Media Bias," in Simon Anderson, Joel Waldfogel, and David Strömberg (eds.), *Handbook of Media Economics,* Volume 1B, North Holland, pp. 647-667.

Sekita, Shizuka (2011), "Financial Literacy and Retirement Planning in Japan," *Journal of Pension Economics and Finance,* 10(4), pp. 637–656.

Sundén, Annika (2009), "Learning from the Experience of Sweden: The Role of Information and Education in Pension Reform," in Annamaria Lusardi (ed.), *Overcoming the Saving Slump*, University of Chicago Press.

Van Rooij, Maarten, Annamaria Lusardi, and Rob Alessie (2012), "Financial Literacy, Retirement Planning, and Household Wealth," *Economic Journal*, 122, pp. 449–478.

Latest CeRP Working Papers

N° 180/18	Elsa Fornero Noemi Oggero Riccardo Puglisi	Information and Financial Literacy for a Socially Sustainable NDC Pension System
N° 179/18	Alessandro Milazzo Elena Vigna	The Italian Pension Gap: a Stochastic Optimal Control Approach
N° 178/18	Dora Gambardella Maria Cristina Rossi Riccardo Salomone	Social finance as a public policy instrument
N° 177/18	Mariacristina Rossi Dario Sansone Arthur van Soest Costanza Torricelli	Household Preferences For Socially Responsible Investments
N° 176/18	Elsa Fornero Mariacristina Rossi Cesira Urzì Brancati	Information and perceptions on pensions. The case of the 2011 Italian reform
N° 175/18	Claudio Morana Giacomo Sbrana	Some financial implications of global warming: An empirical assessment
N° 174/17	Elsa Fornero Mariacristina Rossi Serena Trucchi	Retirement Rigidities and the Gap between Effective and Desired Labour Supply by Older Workers
N° 173/17	Annamaria Lusardi Olivia S. Mitchell Noemi Oggero	Debt and Financial Vulnerability on the Verge of Retirement
N° 172/17	Giovanni Gallo Costanza Torricelli Arthur van Soest	Individual Heterogeneity and Pension Choices: How to Communicate an Effective Message?
N° 171/17	Elsa Fornero Anna Lo Prete	Voting in the aftermath of a pension reform: the role of economic-financial literacy
N° 170/17	Ewa Gałecka-Burdziak Marek Góra	How unemployed workers behave prior to retirement? A multi-state multiple-spell approach
N° 169/17	Flavia Coda Moscarola Matteo Migheli	Gender Differences in Financial Education: Evidence from Primary School
N° 168/17	Cecilia Boggio Flavia Coda Moscarola	What is Good for the Goose is Good for the Gander? A Field Experiment on Gender, Language and Financial Market Participation
N° 167/17	Johannes G. Hoogeveen Mariacristina Rossi Dario Sansone	Leaving, staying or coming back? An analysis of the migration dynamics during the Northern Mali conflict
N° 166/17	Carlo Maccheroni Samuel Nocito	Backtesting the Lee-Carter and the Cairns-Blake-Dowd Stochastic Mortality Models on Italian Death Rates
N° 165/16	Dario Sansone	Teacher Characteristics, Student Beliefs and the Gender Gap in STEM Fields
N° 164/16	Noemi Oggero Mariacristina Rossi	Does financial literacy of parents matter for the educational outcome of children?

The full series is available at: http://www.cerp.carloalberto.org/category/publications/working-papers/