Information and Financial Literacy for Socially Sustainable NDC Pension Schemes

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Introduction

The accumulation of pension wealth is a long and complex endeavor, with various circumstances in which individuals have to make consequential decisions, even in public systems with a strong compulsory component. Awareness is essential to increase welfare, given that conscious citizens are more likely to make sensible choices and avoid regrettable mistakes. Awareness requires both information and the ability to use it wisely, which in turn requires a minimum of economic and financial knowledge, typically called financial literacy. Workers should have some knowledge (conjecture) and a basic understanding of where they stand on their accumulated (prospective) pension wealth and retirement options. This knowledge was less important in the traditional world of defined benefit (DB) pension systems, because of their more "guaranteed" nature. It is definitely essential in the case of defined contribution (DC) schemes because of their results-oriented structure, which entails more risks and a higher level of individual responsibility for both the private and public components of the pension system. This chapter concentrates on the latter, and more specifically on systems that are run on a notional or pay-as-you-go (PAYG) basis and are characterized by a DC-type formula to calculate benefits (NDC systems, for brevity).[1]

This new pension landscape implies more, and more complex, personal choices, and greater risk (although one should not forget that in the "old" DB landscape, the political risk of unsustainable promises—a risk that people are more likely to ignore by appealing to the notion of "acquired rights"—was rarely taken into account in an explicit way and even less covered). This naturally raises concerns about the amount (and quality) of information provided to citizens, as well as about citizens' level of knowledge, which affects the ability to deal with crucial financial decisions, such as planning for retirement and managing savings for old age. It also raises the question of how to attain a universal minimum level of financial knowledge.

This chapter investigates the importance of both information and financial literacy, which both contribute by adding social sustainability to the inherent tendency of NDC pension systems toward financial equilibrium.[2] It provides a new dimension to this discussion by exploring the role of the media in the approval and implementation of pension reforms in general and in the specific case of NDC schemes. "Pension Information: Why? What? When? From Whom?" deals with the scope, content, and importance of

information—and sometimes its lack of popularity among politicians, particularly in the case of retrenching reforms. More specifically, it distinguishes between formal and informal communication, the first officially supplied by the institutions in charge of pension provision, and the second by the media. "Pension Information in Practice" explores the supply side of information (that is, the role of the media in pension knowledge and in the reform debate) by analyzing the dissemination role by both the Internet and newspapers in selected European countries, with a focus on Italy in the critical context of its 2011 pension reform. "Financial Literacy Applied to Pensions: What Is 'Pension Literacy'? Why Is It Important?" deals with the demand (users) side: it highlights the notion of pension literacy as a specific component of financial basic knowledge and as an ingredient to "make sense" of pension information, to improve both personal decisions and the effectiveness of pension systems and reforms. "Conclusions" draws some preliminary findings as well as policy implications and outlines the main areas for future work.

Pension Information: Why? What? When? From Whom?

WHO IS AFRAID OF INFORMATION?

Information is critical for individual life-cycle decisions, in deciding, for example, whether to spend more or less, now or later (that is, to save, to dissave, or not to save); to participate in a supplementary pension plan; when to retire; and whether to leave on a gradual retirement option, when available. Knowledge should help workers to better plan their retirement, thus avoiding major mistakes and consequent disappointments, such as a shortfall of actual versus expected pension benefits, and painful lifestyle adjustments.

Information on the functioning of unfunded pension systems—and of NDC systems as a subset thereof—is also fundamental for systems' sustainability, and thus for the political consistency of reforms. In turn, reforms are required either to adapt the pension design to economic and demographic structural changes or to improve a previous poor design, which might be due to the interference of politicians, whose electoral purposes often tend to prevail over the system's main role of providing income security in old age. Differently from individual-level choices, citizens (that is, public opinion and voters) should also be properly informed about the aggregate behavior of the pension system. From this point of view, widespread misinterpretation of pension reforms will lead to attempts to prevent or reverse them after their approval. The reluctance of governments, politicians, and other political and social actors to provide information for fear of generating resentment and losing consensus (or even to exploit ignorance) has to be recognized and overcome, possibly with the aid of international institutions, which typically do not share the same fears and are not constrained by short-term electoral interests.

Concerns by politicians are well expressed by Juncker's oft-quoted aphorism: "We all know what to do, but we don't know how to get re-elected once we have done it" (*Economist* 2007; see also Buti et al. 2008). This statement implicitly stresses the importance of financial literacy: if politicians and experts are able to see the necessity, and thus the embedded social values, of reforms, why should citizens not do the same? And if they do, why should they punish the government or political parties that approved the reforms?[3] If people understand the need for a reform they will not necessarily vote out a politician who takes painful steps in the short run to consolidate the system in

the medium to long run. This view thus provides another reason, on top of the effects on individual planning and decisions, to champion financial literacy—it also supports an important policy action: governments could indirectly generate long-term support for more effective citizenship and virtuous reforms by promoting, together with basic financial education in schools, good information and specific financial education programs for adults.

FORMAL INFORMATION (FROM THE PENSION AGENCY) AND INFORMAL INFORMATION (FROM THE MEDIA)

Information (online, written, and broadcast) has to be simple and trustworthy. Within a public pension system, it is obvious that it should be provided by the public pension agency, which is obliged by its mandate to provide formal, precise, and micro personalized information. This crucial informative task cannot be delegated to noninstitutional actors or private entities such as trade unions, workers' associations, and nonprofit organizations, although they can support, and typically do, the public pension institute. The importance of this kind of information, however, is not universally recognized, sometimes because of bureaucratic or political negligence, sometimes because of administrative deficiencies, and sometimes because of fear of losing electoral support, particularly in the case of reforms that try to restore the system's financial sustainability. As a consequence, not all countries have credible institutions capable and willing not only to inform members about their specific (current and prospective) personal situation, but also to produce periodic and reliable information about the financial status of the scheme.[4] When this does not happen, a negative impact on views about the retirement system and its reforms is likely to occur, in turn affecting decisions as well. Of course, the provision of reliable information does not guarantee that it will be used correctly and wisely: sometimes formal information is simply ignored either because it is too complex and thus not understood, or because people have misperceptions about the institution providing it.

One important problem is the need to distinguish, in each worker's specific position, what has already been accumulated (such as the "accrued-as-of-today" notional capital) with respect to what can reasonably be estimated for the future (and possibly for the far future) under specific hypotheses. Even if the accrued pension wealth—in the case of notional accounts, not backed by reserves—is nothing more than a "promise" that can be changed by a political decision (normally without the need for a constitutional law), simulations of future wealth and of the implied pension benefit are, of course, much more uncertain. Hence, it is important that the difference be made transparent and understandable. The first type of information is perceived as more objective; the second as more "speculative" (something like "your future pension benefit in this specific 'scenario,' including the time profile of your future contribution and a given retirement age"). Although fundamental for a proper understanding, the distinction is not easily grasped, also because the state can always "tax," either directly or indirectly through cutbacks, the accrued pension wealth or amend the rules for its future accumulation.

General information, particularly about the pension system's characteristics, problems, updates, innovations, and policy proposals, is provided by the media. Pensions and pension reforms are very popular topics, because all individuals are involved, either directly or indirectly (for example, as spouses, partners, or dependent children).

The incentives of mass media in disseminating basic pension knowledge are likely to be quite different from those of the official pension institution, which in principle should be more neutral, but in practice might be sensitive to the government's requirements. It is still unclear whether individual opinions about pensions are more influenced by the media or by the official pension provider, a question that can depend on, among other things, the institute's public reputation. One can easily argue that the latter has a comparative advantage in providing personalized information about accrued capital, returns, and the like. However, the relative novelty of NDC systems—and of regulations imposing informative tasks on them—could imply that citizens still rely more heavily on information provided by better-known media, both traditional ones (newspapers, magazines, radio, and TV, particularly talk shows) and, increasingly, new ones (social networks).

WHAT WORKERS SHOULD KNOW ABOUT THEIR OWN PENSION AND RETIREMENT OPTIONS

Precise information on future pension benefits can be given only to those somewhat close to retirement, and thus with a high degree of certainty about their pension level. For others the pension statement should clearly refer to "projections," "simulations," or "estimates," none of which are easy terms. The probabilistic nature of more distant benefits should always be emphasized, to avoid the idea that precise calculations imply the promise of a "sure amount."

On a personal level, it is therefore important that citizens be informed of the following:

- The (notional) accrued capital, that is, the present value of pension wealth.
- How much of this wealth is due to their own contributions (that is, both the employee and the employer's share), credited contributions (financed by general taxation for periods of education, unemployment, and care activities), and returns (typically calculated by using the rate of growth of the total wage bill or gross domestic product [GDP]).
- How the notional amount is transformed into a pension benefit (the conversion factor used to convert the capital into an annuity).
- Whether this transformation takes into account the cohort-averaged expected longevity at retirement.
- Possible retirement ages, together with a description of how the pension benefit will evolve in case of deferral, highlighting the incentives to the continuation of work—or at least the absence of disincentives—that are typical of the DC method; in particular, people should know that postponing retirement contributes twice to the increase of individual benefits: through higher contributions and lower expected longevity (when longevity is taken into account).
- How the pension benefit will evolve in retirement (the indexation rule).
- Supplementary benefits, such as survivors' pensions and the possibility to draw on accumulated pension wealth, particularly when they are optional and not included in the default options.[5]

- For those whose careers have developed—at least partially because of a transition toward the NDC regime—under a DB scheme, the gap between actualized pension benefits and accrued capital through paid contributions. The purpose of this is to give a measure of the "gift" implied by the DB scheme and to contrast people's perceptions of having more than what they "paid" for their own pension, even when this is largely untrue.

WHAT SHOULD BE KNOWN ABOUT NDC SYSTEMS?

An NDC pension system is a complex structure that does not lend itself to straightforward interpretation. 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 performs roles that the market does not or cannot perform, the first being social cohesion. In particular—even when it is largely based on insurance principles—it cannot be exempt from performing some redistribution tasks. It is very important that people be informed, even at a very basic level, about the nature of this institution, particularly its "social compact" features, which the notional personal accounts somehow tend to conceal. More specifically, workers should be informed of the following:

- A PAYG system (whether DB or DC) is an "intergenerational contract": retirees receive their pensions because of contributions paid by current workers, who contribute under the assumption that future generations will also pay and thus, indirectly, finance their own pensions. In the contract, the state is also supposed to represent the interests of future generations, which obviously cannot participate directly in the deal.
- When combined with a DC formula, the system (NDC) can achieve both financial equilibrium (notwithstanding its implicit debt dimension, stemming from its very creation) and greater intragenerational fairness than a "pure" DB formula.[6]
- The adequacy of benefits (that is, their capability to provide financial security in old age) depends mainly on the individual's whole contributory history, thus a good working career, and on adequate tax rates.
- Contributions are credited, even if partially, for unemployment spells or work leave made necessary by care activities, to avoid gaps in the accumulation process.
- Returns are credited to contributions, which are a form of compulsory saving, not a pure tax.
- To make the social contract sustainable, and thus to protect future generations, the rate of return that is recognized must mirror the growth in the contributory base. In turn, this is typically approximated by the rate of growth of GDP (approximately n+g, the sum of population and productivity growth rates). The notion that returns are not determined by financial markets but by the rate of growth of labor income (or of the economy) should also be transparent.[7] Because people often seem to be rather impatient with a notion of financial equilibrium, the amount of intergenerational fairness that is implied by using this rate of return on contributions should help to make the system less abstract and friendlier.[8]

- The system contains "automatic stabilizers" that encourage people to work longer as longevity increases: (a) for any given pension wealth, the benefit increases with retirement age (normally up to a maximum); and (b) when longevity increases, the coefficients that transform the notional capital into a pension are normally reduced for any permissible retirement age.

All this information is not easily conveyed; even when it is, its reading is complex and certainly hardly stimulating. Nevertheless, information is essential to enhance one of the main features of the NDC system (that is, its transparency), and to help contrast privileges and other forms of perverse redistribution. To strengthen this mission, it is important that this information be officially provided by the pension institute in an independent way.

Pension Information in Practice

INFORMATION THROUGH PUBLIC PENSION STATEMENTS: A SELECTIVE SURVEY

Because public pension programs provide the foundation for retirement income for a vast majority of workers (if not all of them), it is important for governments to give individuals detailed information about their public retirement benefits. Public pension statements are one way governments can provide workers with information about their retirement duties, rights, and options. The following discussion looks especially at countries that have adopted NDC systems (without considering the entire list).

In Sweden, which launched its NDC system in 1998 and fully implemented it in early 2003, a substantial amount of pension and financial information is systematically and regularly provided to the population at large. The famous "Orange Envelope" has been a forerunner and a benchmark. It is sent by the pension institute once a year and contains individual information about previous years' contributions, personal account balances at the beginning and end of the year, annual returns, plus individual-specific projections 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 note that the projections are calculated for two assumptions about the real wage growth rate: 0 percent and 2 percent. The Orange Envelope also contains information about the direct relationship between the annuity and the retirement age, consistent with the view of a pension as insurance against the risk of longevity. The widespread dissemination of information is likely to have lowered the barriers to planning for retirement.

As a supplement to the NDC pillar, which provides contributions-related benefits that represent the largest share of retirement income, the Swedish system also includes a funded part. Consequently, information about the functioning of financial markets is also provided, in particular with 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). For example, Swedish adults show a good understanding of the risk diversification concept: more than two-thirds (68 percent) of them correctly answered the risk question designed by Lusardi and Mitchell (2008) to test basic financial literacy. On the other hand, it can also be the case that not everybody opens the Orange Envelope; even when they do, there is no guarantee that they can adequately absorb and

understand the information. Even though most recipients claim to read the information in the Orange Envelope, less than one-half of the sample population reported having a good understanding of the pension system, and many individuals reported that they lack sufficient knowledge to manage their individual accounts (Sundén 2009).

A comparison with Italy is instructive. Italy introduced its NDC system in 1996 but the phase-in process was so long and the general information to the people so limited (and not infrequently biased) that it took 20 years to introduce the Italian version of the Orange Envelope. It is thus not surprising that the new formula and even the PAYG method of financing are not yet properly understood by the population. Paradoxically, even though pensions have always occupied a wide space in the news, very little has been done to explain in an official way the advantages and limitations of the new method of calculating benefits.

Similarly to Sweden, the United States' Social Security Administration is required by law to send out the Social Security Statement, that is, the public pension statement. Even though the United States does not have an NDC pension system, legislation specifies that the statement must 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, survivors', and other auxiliary benefits. In 2000, a paragraph was added about the advantages and disadvantages of retiring early. Many studies found a significant increase in the number of respondents who knew (a) about the relationship between Social Security benefits and earnings, (b) how benefits are financed, (c) that benefits increase automatically as the cost of living rises, and (d) that the full retirement age is increasing. Moreover, respondents who reported receiving, and who had thus presumably looked at or read the statement, were more knowledgeable about the program 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 one-half of workers did not believe that Social Security benefits would exist when they reach retirement age (Gallup 2015). Although Mastrobuoni (2011) finds that Social Security Statements had a significant impact on workers' knowledge about their benefits, he also suggested that workers did not change their retirement behavior. In particular, they did not change their expected age of retirement after receiving the statement, and their monthly claiming patterns did not show any change after introduction of the Social Security Statement.

Likewise, Canada has a legislative requirement to send workers statements of contributions on request. For recipients age 30 or older, the statement includes information on their contributions, pensionable earnings, retirement pension, and disability and survivors' benefits. For recipients younger than 30, the statement only includes information on their contributions and pensionable earnings, omitting information on the retirement pension and disability and survivors' 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).

In Poland, the launch of the NDC pension formula in 1996 altered the incentives for future pensioners, because postponing retirement now leads to significantly higher pension levels. However, incentives to work longer only function if society is provided with information about the pension system (Chłoń-Domińczak 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. Since 2008, this information has also included the calculation of the accrued pension based on the current account value, and the projected account value for selected potential retirement ages (Chłoń-Domińczak 2009). In Latvia as well, the State Social Insurance Agency as of 1997 took initiatives aimed at improving public understanding and promoting acceptance of the NDC pension system. Media campaigns were undertaken, and contribution statements are sent to contributors once a year, with an explanation of the system (Fox and Palmer 1999).

Even this brief analysis of these cases leads to the conclusion that pension information is critical for individual knowledge and planning in many areas, and both low literacy and lack of information affect the ability to secure a comfortable retirement.

PENSION INFORMATION IN THE MEDIA

How much information about pension systems and reforms can be found in the media, as compared with other personally or politically relevant issues? Do articles and editorials simply report the facts and the political contests surrounding pension reforms, or do they also deliver basic concepts as a precondition to understanding the mechanics and main implications of PAYG systems and DC formulae? To the authors' knowledge, these empirical research questions have not been explicitly tackled yet. The three following analyses try to answer them:

- *Attention to online media.* For a sample of European countries (France, Germany, Italy, Sweden, and the United Kingdom), Google Trends is used to measure the relative amount of online searches about pensions and compare them across countries and over time.

- *Volume of coverage by traditional media.* For the same sample of countries, the dynamics of newspaper coverage of pensions and pension reforms in the past 15 years are examined by exploiting the Dow Jones Factiva news archive.

- *Type of coverage for a specific pension reform.* To check the type of coverage devoted to pension reforms, the focus is turned on Italy, looking at the amount and type of newspaper coverage devoted to the last major pension reform (that is, the Monti-Fornero reform), introduced in December 2011 in an emergency situation, very close to a financial crisis (Fornero 2015).[2] More specifically, the analysis investigates how the treatment of pensions differed across newspapers and changed before and after the "natural experiment" of the reform itself.

Regarding the first type of analysis, figure 25.1 shows the relative importance of pension information in France, Germany, Italy, Sweden, and the United Kingdom from 2004 to 2017, as proxied by the Google Trends data on the volume of online searches. Italy and France show the highest rates of online searches about pensions, with Italy having the maximum number of searches at the beginning of 2015. On the other hand, Germany, Sweden, and the United Kingdom—countries that have already "sorted out" their reforms—showed less interest in pension themes in recent years. More frequent online searches by Italians and the French may indicate higher sensibility toward social security issues in these countries. Whereas searches in France

FIGURE 25.1 **Google Trends, online searches of pensions in France, Germany, Italy, Sweden, and the United Kingdom, 2004–17**
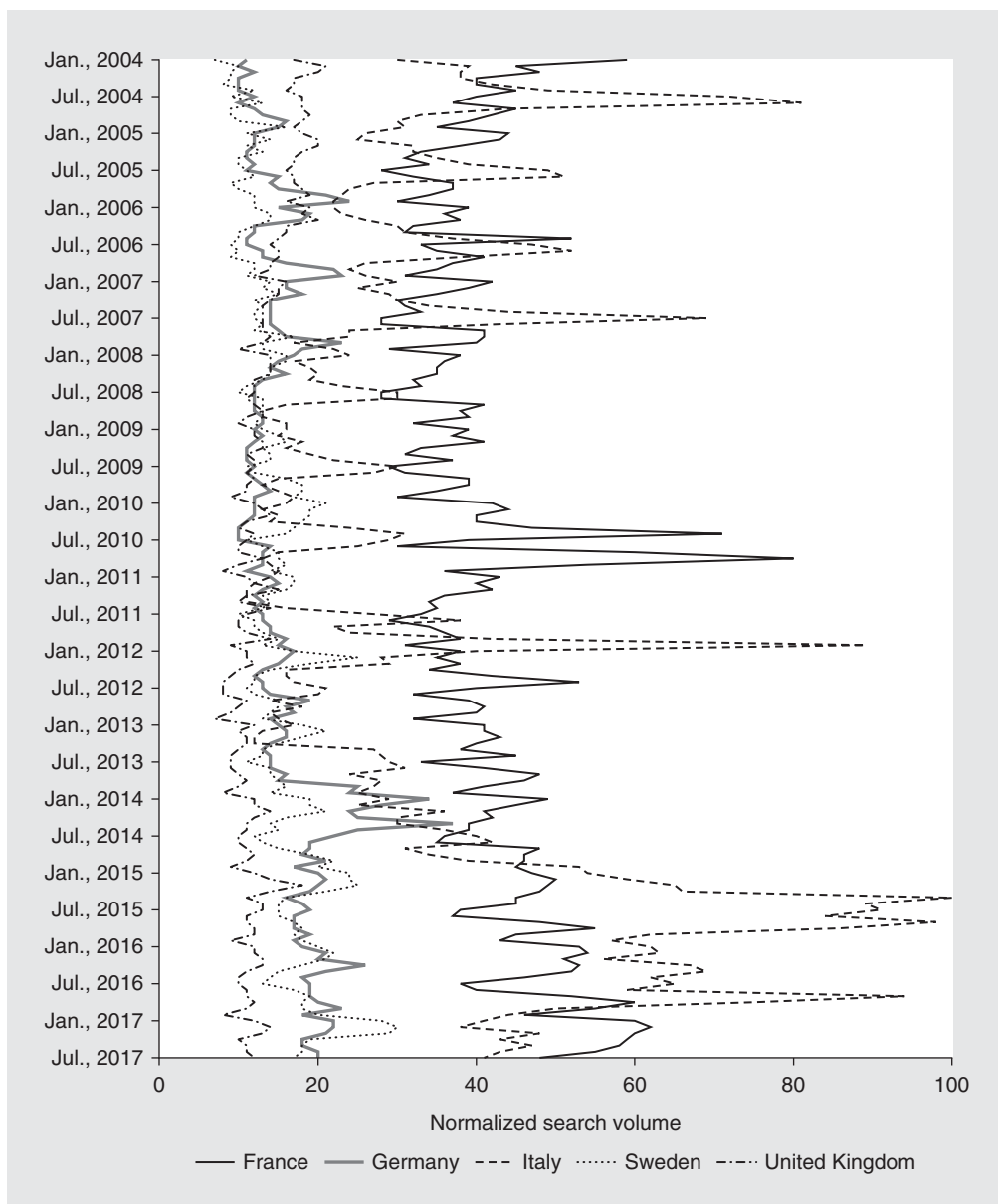
SOURCE: Original calculations.

were quite steady from 2004 to 2017, Italy shows two peaks: one at the end of 2011–beginning of 2012, when the Monti-Fornero pension reform was introduced; and the other at the beginning of 2015, when the Constitutional Court's decisions on price adjustment of pensions affected many retirees.[10] Thus, searches were especially high when changes in the retirement landscape happened, and people probably tried to gather more information on the Internet.
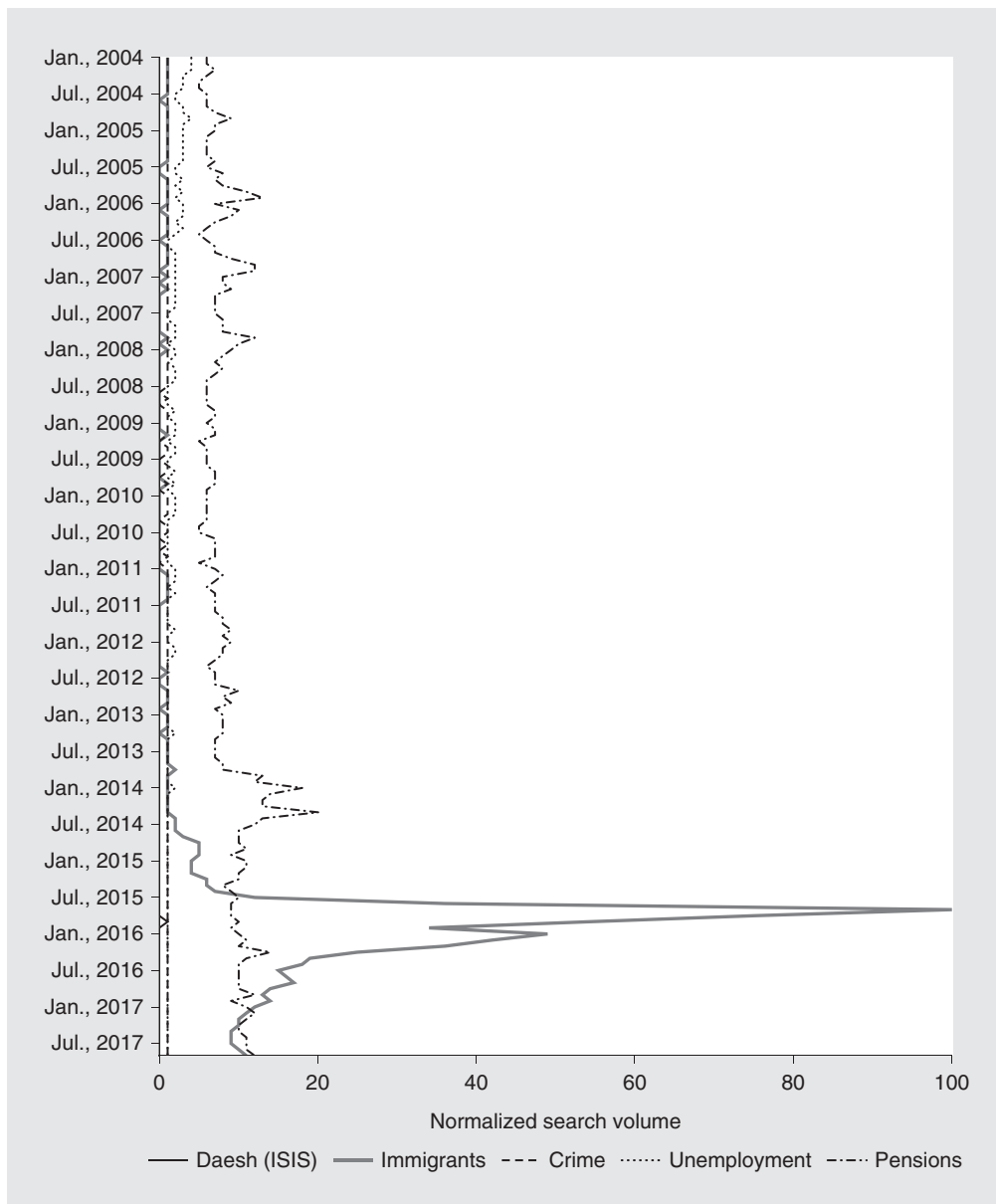
FIGURE 25.2 **Google Trends, searches of Daesh (ISIS), immigrants, crime, unemployment, and pensions in France, 2004–17**
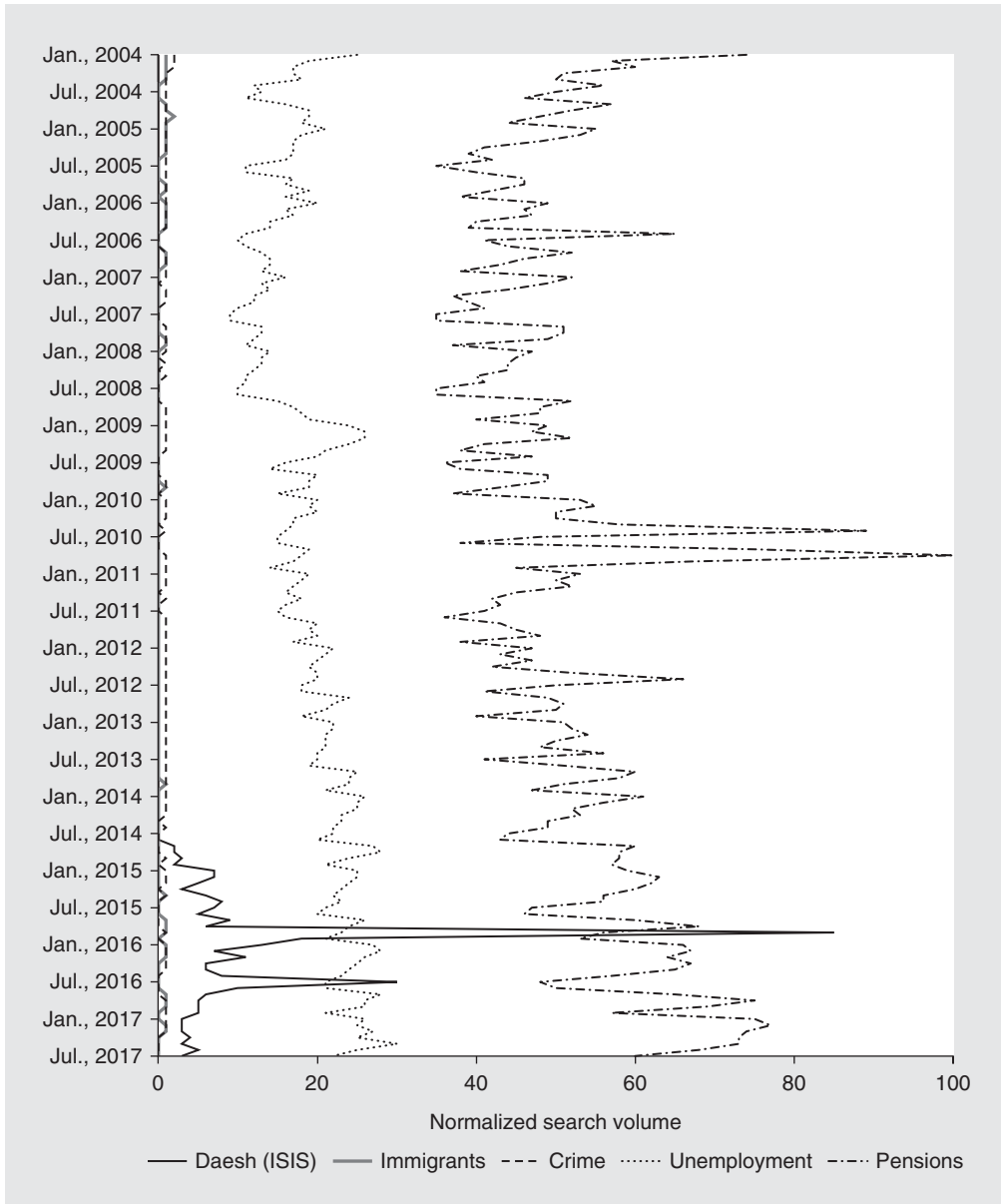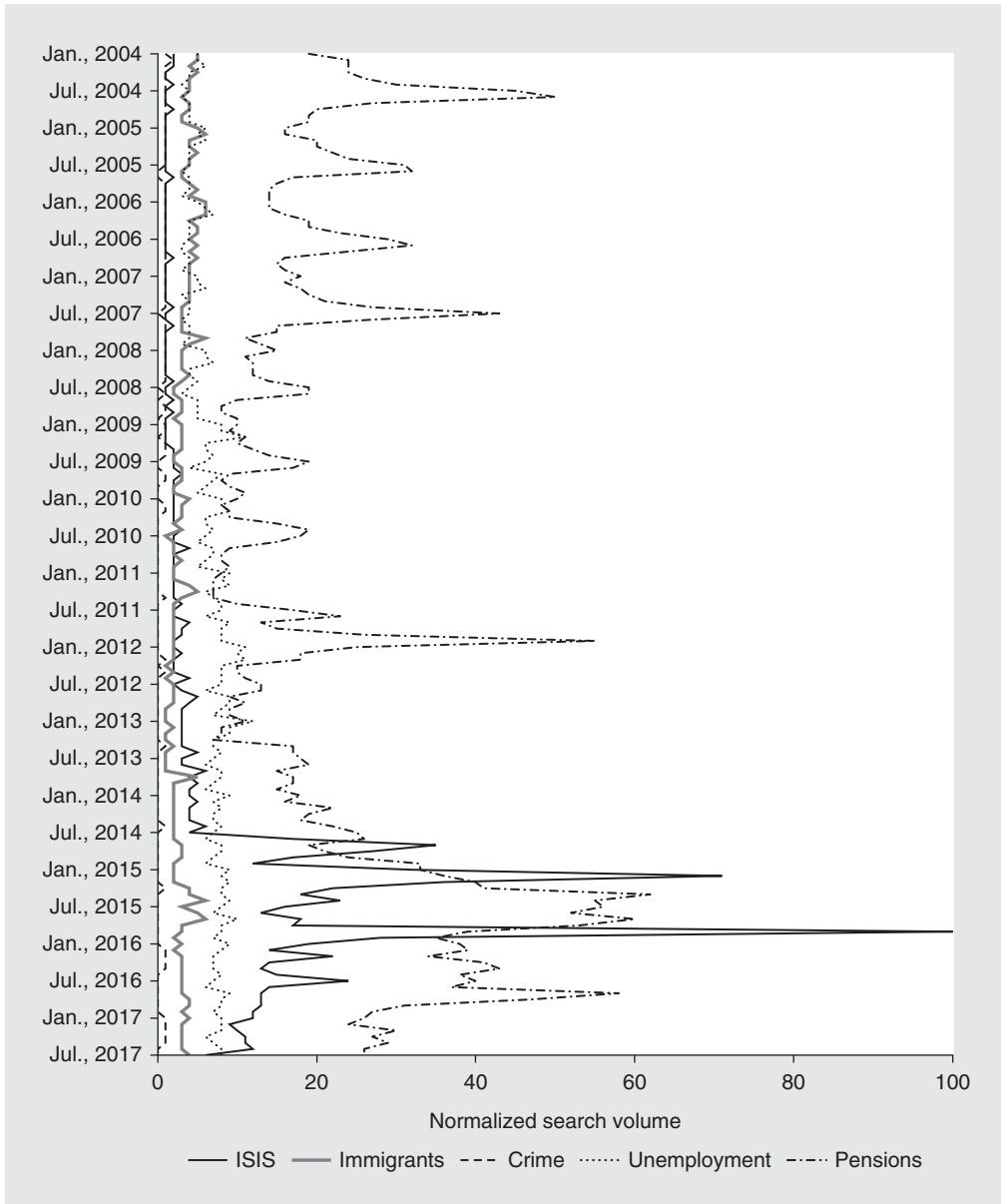

SOURCE: Original calculations.

Figures 25.2, 25.3, 25.4, 25.5, and 25.6 compare the volume of online searches on pensions with the volume of searches on other policy-relevant issues, for each sampled country. Figures 25.2 and 25.4 confirm that social security is a hot topic in both France and Italy: from 2004 to 2017, people looked for more information on pensions than on unemployment, immigrants, crime, or ISIS. In Sweden as well, where the NDC pension system was introduced in 1998, the volume of online searches over time was larger for pensions than for other relevant topics (figure 25.5).[11]

FIGURE 25.3 **Google Trends, searches of Daesh (ISIS), refugees, crime, unemployment, and pensions in Germany, 2004–17**
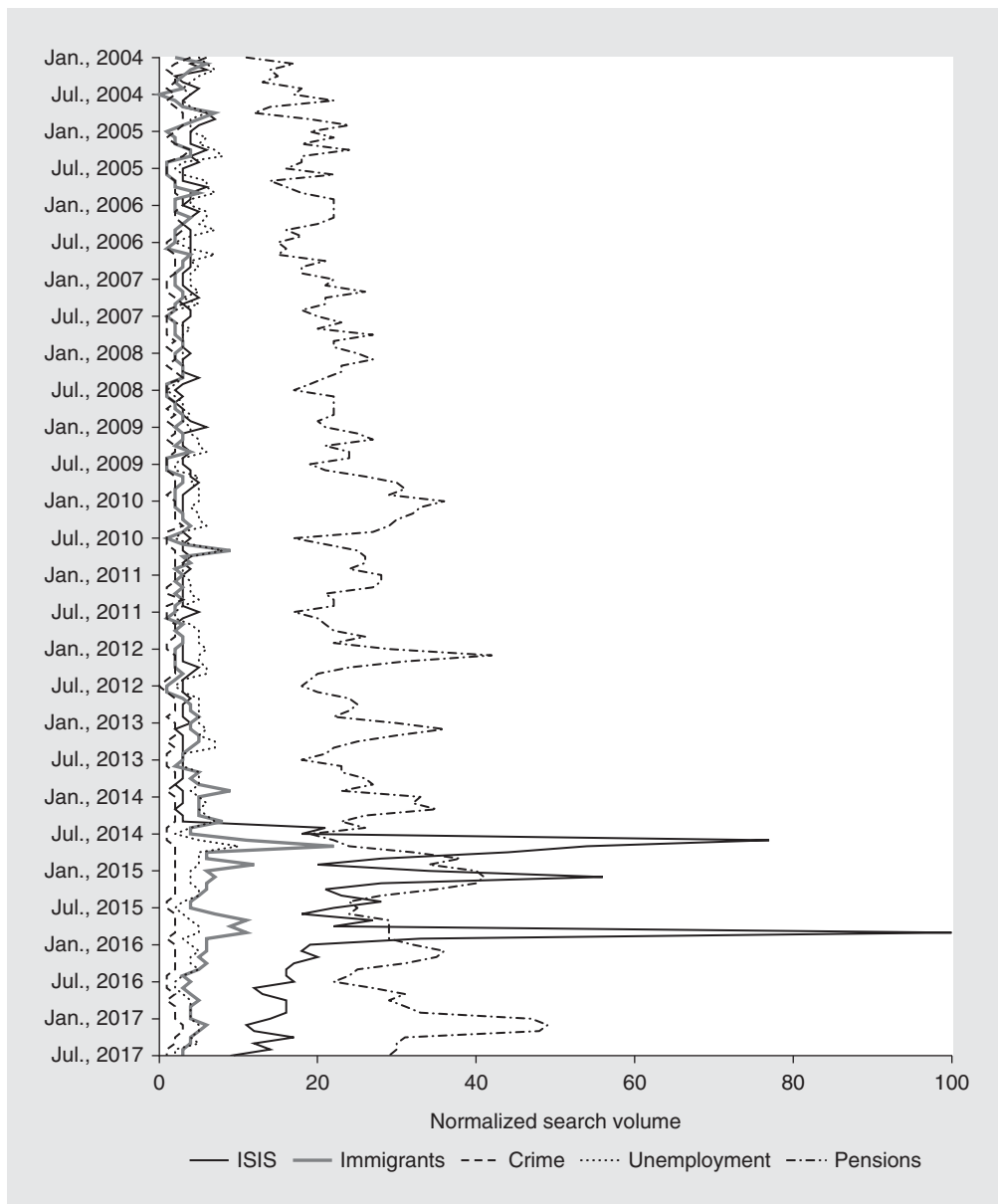

SOURCE: Original calculations.

FIGURE 25.4 **Google Trends, searches of ISIS, immigrants, crime, unemployment, and pensions in Italy, 2004–17**

SOURCE: Original calculations.

The second research question investigates how online searches regarding pensions compare with the coverage devoted to this topic by traditional media outlets over time. The availability of easily searchable news archives allows the gathering of monthly coverage data on selected newspapers for the countries under consideration. Data were gathered for the 2004–17 period for *Le Monde* in France, *Frankfurter Allgemeine Zeitung (FAZ)* in Germany, *Corriere della Sera* in Italy, *Svenska Dagbladet*

FIGURE 25.5 **Google Trends, searches of ISIS, immigrants, crime, unemployment, and pensions in Sweden, 2004–17**
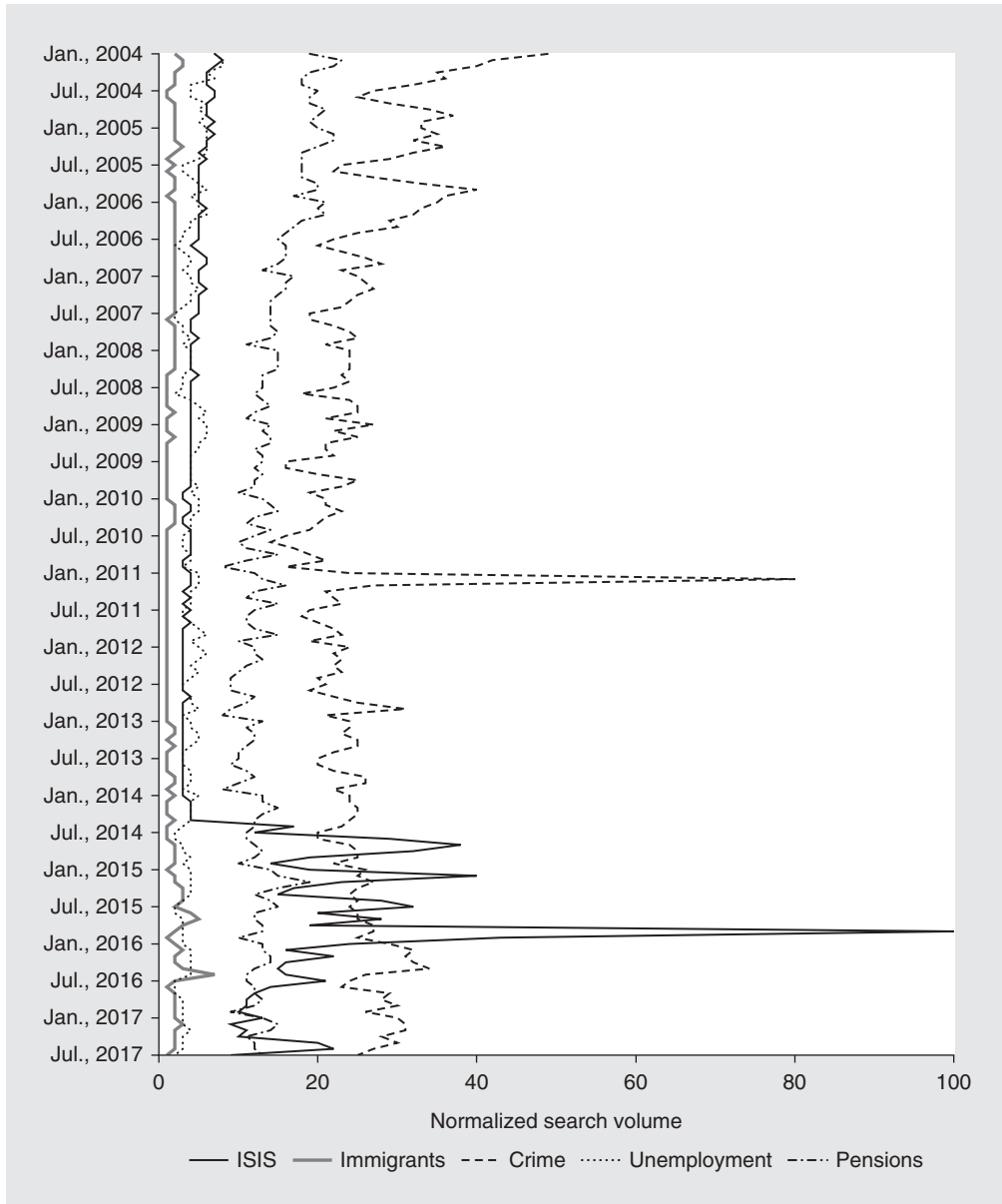

SOURCE: Original calculations.

FIGURE 25.6 **Google Trends, searches of ISIS, immigrants, crime, unemployment, and pensions in the United Kingdom, 2004–17**

SOURCE: Original calculations.

in Sweden, and *The Times* in the United Kingdom. Figures 25.7, 25.8, 25.9, 25.10, and 25.11 show for each country the time series of online search volume on pensions together with the monthly count of stories[12] in which the word "pension" appears in the selected newspapers. The figures show a very close correlation between online searches and newspaper coverage of the pension theme. If anything, newspaper coverage appears to be generally leading online searches. A plausible rationale for this is

FIGURE 25.7 **France: Google searches on pensions versus *Le Monde* articles on pensions, 2004–17**
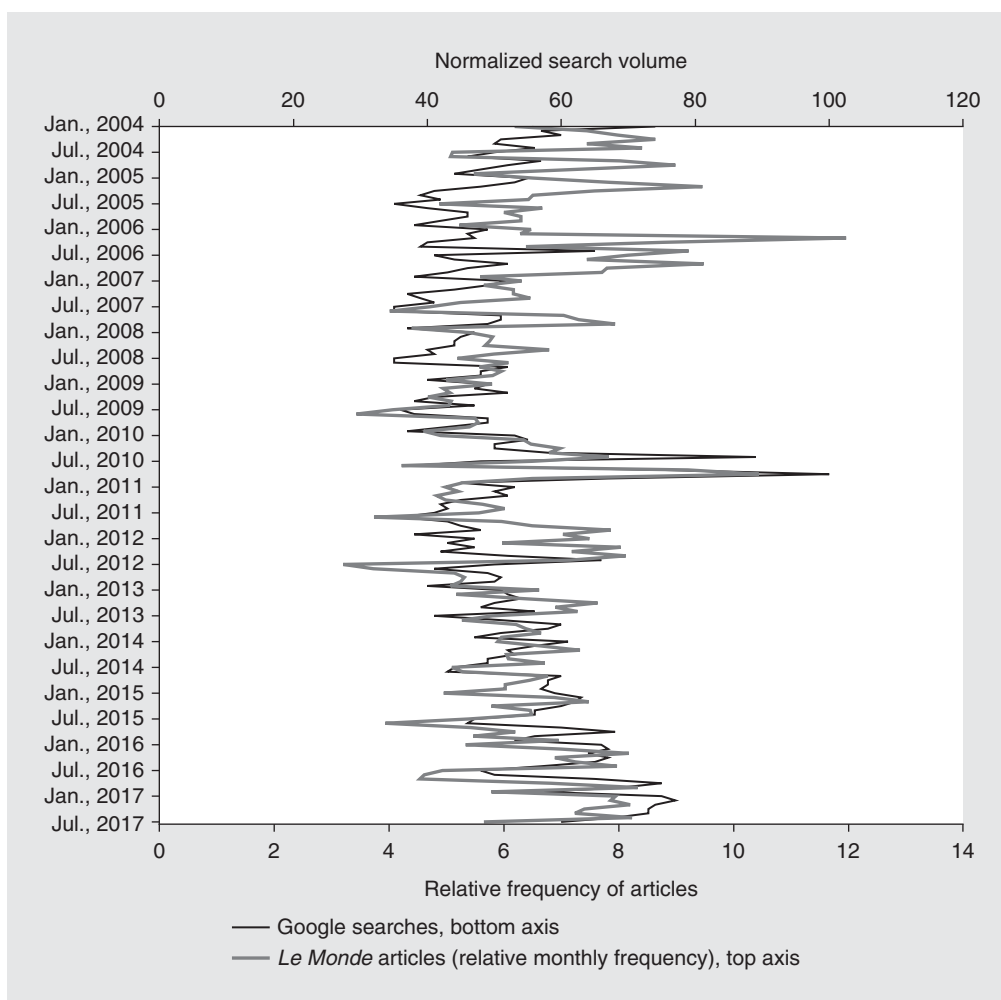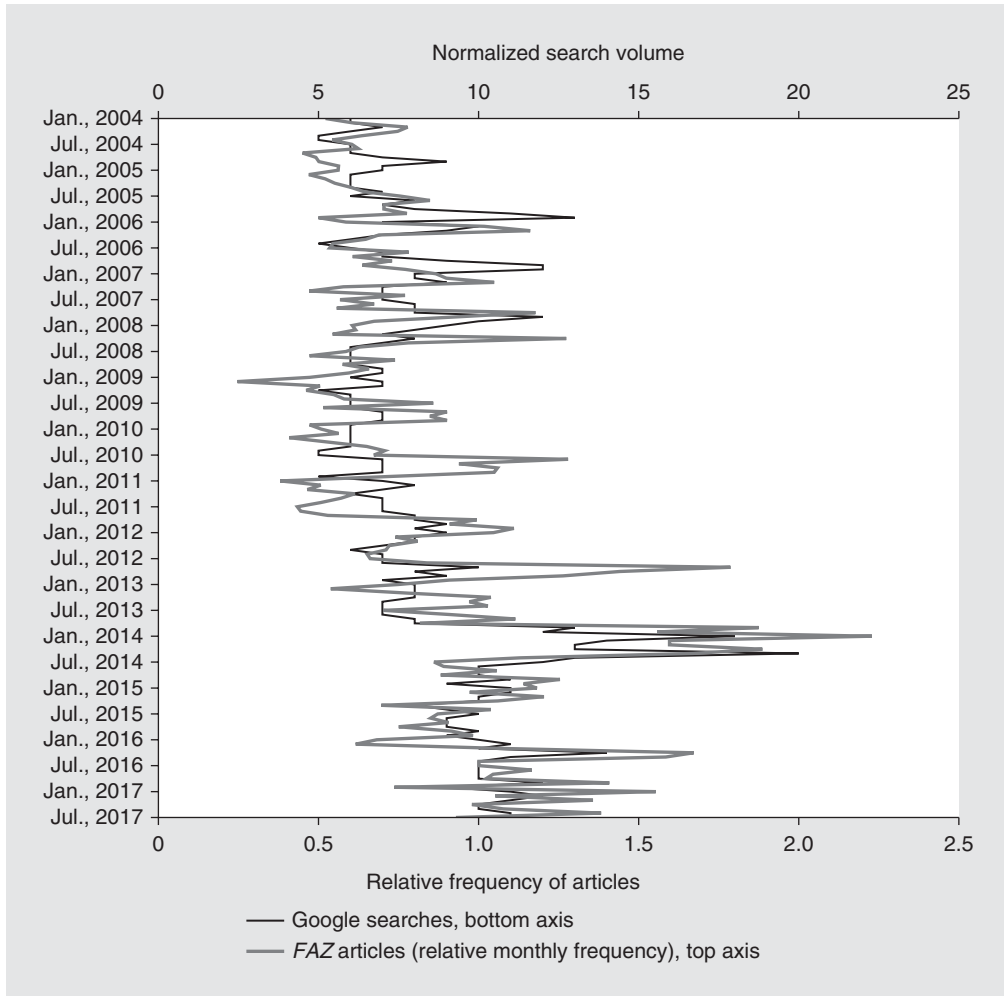

SOURCE: Original calculations.

that citizens initially get informed through traditional media outlets and then may be induced to search for additional information on the Internet. This positive correlation is confirmed by multivariate regression analysis.

The third research question on content analysis analyzes the case of Italy, with a specific focus on 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, the texts of all articles in four national dailies (*Corriere della Sera*, *Repubblica*, *Stampa*, and *Giornale*) that mention anywhere the word "pensioni" (pensions) were obtained for a four-month timespan starting in November 2011 and ending in February 2012. Overall, 2,045 articles were published during the period, split as follows: 621 articles in *Corriere*, 604 in *Repubblica*, 424 in *Stampa*, and 396 in *Giornale*. Figure 25.12 shows the histogram of articles on a daily basis in all

FIGURE 25.8 **Germany: Google searches on pensions versus *FAZ* articles on pensions, 2004–17**

SOURCE: Original calculations.

four newspapers: there is a clear increase in coverage of pensions that rapidly reaches a maximum on December 5, that is, the day before enactment of the Decree-Law by the newly established Monti cabinet. Then coverage slowly drops in December (with a further spike on December 23, when the Decree-Law was converted into law), and more rapidly so in 2012, when the government was engaged in preparing the labor market reform (Fornero 2013). The topic, however, became a preferred subject for heated TV talk shows.

FIGURE 25.9 **Italy: Google searches on pensions versus *Corriere della Sera* articles on pensions, 2004–17**
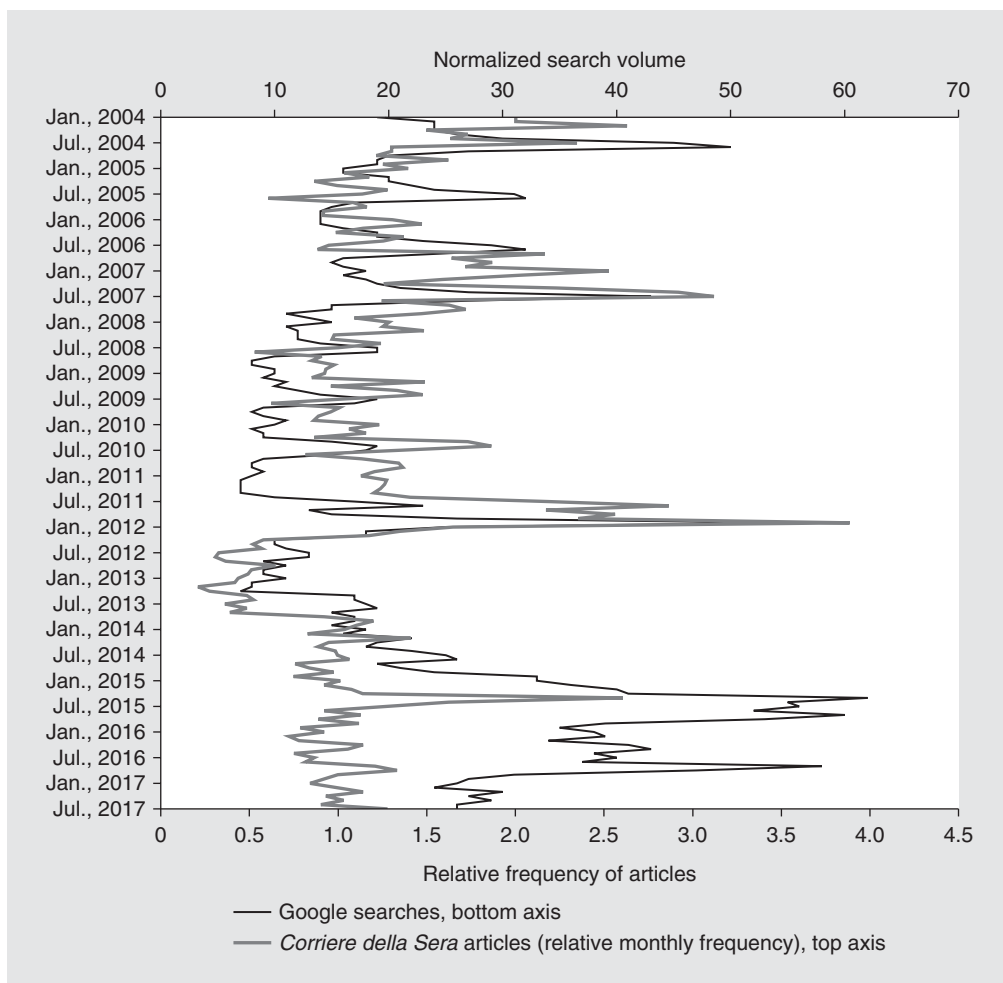
SOURCE: Original calculations.

The next step is regression analysis of daily coverage data, in which the dependent variables are the relative frequencies of pension articles that mention various concepts (table 25.1) and political figures and countries (table 25.1). The focus is on understanding how coverage varies before and after enactment of the reform (that is, the day the Decree-Law was issued) and as a function of the newspaper under consideration. Thus, each regression includes newspaper-specific fixed effects, a postreform

FIGURE 25.10 **Sweden: Google searches on pensions versus *Svenska Dagbladet* articles on pensions, 2004–17**
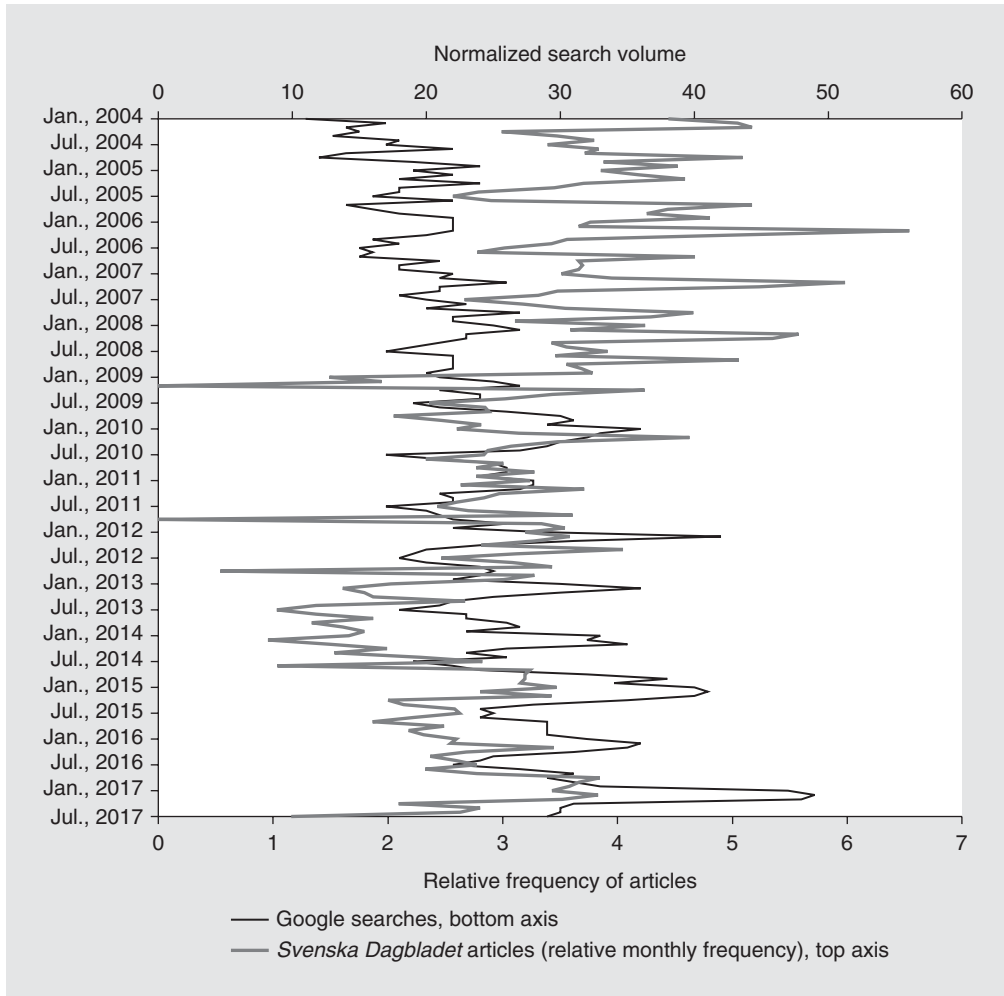
SOURCE: Original calculations.

binary (dummy) variable, and a linear time trend. To avoid inflating the precision of the estimates, standard errors are clustered at the daily level. For each concept or figure, two different specifications are shown: the first one checks how the relative frequency of coverage changes after the reform unconditionally (that is, it does not allow for newspaper-specific differences in those potential postreform changes), whereas the second specification interacts the postreform dummy variable with the newspaper-specific dummy variables.

As shown in table 25.1, the words "reform," "spread" (between the returns of Italian and German bonds), and "austerity" are cited significantly less after the reform, while no

FIGURE 25.11 **United Kingdom: Google searches on pensions versus *The Times* articles on pensions, 2004–17**
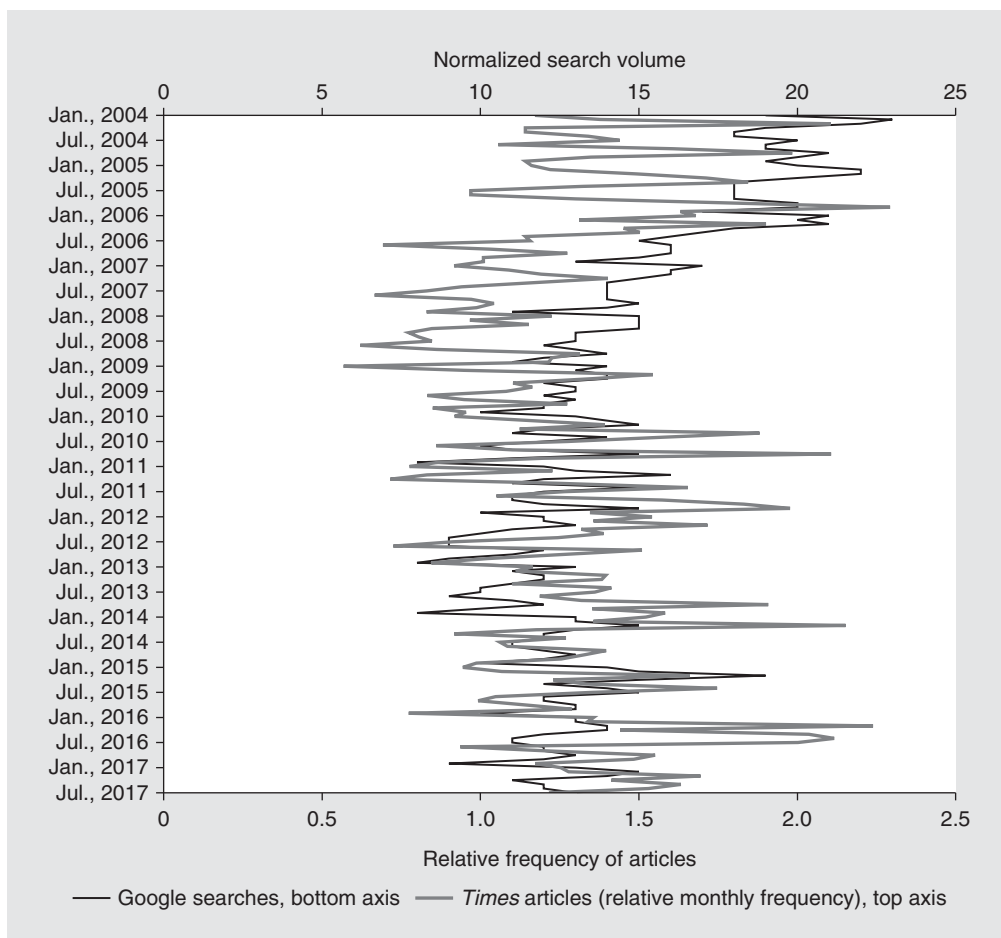
SOURCE: Original calculations.

significant change is found for "growth" and "firms." On the other hand, the mention of "trade unions" significantly increases after the reform, which appears to be driven by the increase in coverage by *Corriere* and *Repubblica*. Comparing newspapers—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 so *Stampa*—devote less attention to "growth."

Table 25.1 shows that Europe is less significantly covered after the reform—albeit with an overall increasing trend. 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, no significant change occurs in the coverage of Monti, Fornero, and Germany after

FIGURE 25.12 **Histogram of articles about pensions in four Italian newspapers, November 2011 through February 2012**
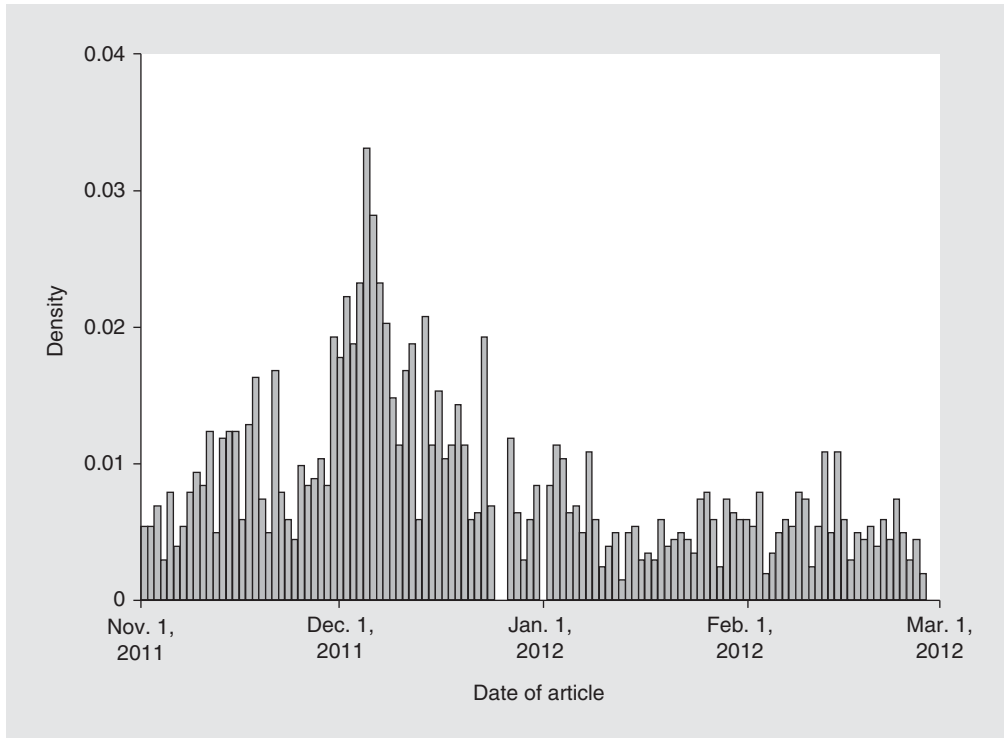
SOURCE: Original calculations.

NOTE: Sampled newspapers are *Corriere della Sera, Repubblica, Stampa, and Giornale.*

the reform. Interestingly, the more extreme newspapers in the sample (that is, *Repubblica* on the left and *Giornale* on the right) devote significantly more coverage to political figures compared with *Corriere*: this applies to Monti, Bersani, Berlusconi, and—to a lesser extent—Merkel.

This is just a first attempt to analyze the ways media outlets cover major pension reforms in a time of crisis, but some preliminary conclusions can be drawn. First, the media frame that is centered around the need for the reform itself appears to be replaced after its enactment by more actor-centered coverage, and trade unions and their discontent get more media attention. Second, when covering pensions, more ideologically extreme newspapers give more coverage to political actors than do more moderate outlets, but it is unclear whether this is a general pattern or is pension specific.

TABLE 25.1 **Coverage of the Monti-Fornero pension reform by four national newspapers (*Corriere*, *Repubblica, Stampa, Giornale*), regression analysis**

Dependent variable: relative frequency of pension articles that mention:	(1) Reforms	(2) Reforms	(3) Spread	(4) Spread	(5) Austerity	(6) Austerity	(7) Trade unions	(8) Trade unions	(9) Crisis	(10) Crisis	(11) Growth	(12) Growth	(13) Firms	(14) Firms
Postreform dummy	−0.144**		−0.137***		−0.0465**		0.143***		−0.0586		0.0258		−0.0533	
	(0.0602)		(0.0400)		(0.0215)		(0.0524)		(0.0544)		(0.0518)		(0.0473)	
Corriere dummy × postreform dummy		−0.0517		−0.0706		−0.0570**		0.148**		−0.0141		−0.0379		−0.0657
		(0.0685)		(0.0493)		(0.0257)		(0.0642)		(0.0683)		(0.0627)		(0.0604)
Repubblica dummy × postreform dummy		−0.216**		−0.221***		−0.0448		0.252***		−0.121		0.0553		−0.0958
		(0.0862)		(0.0666)		(0.0398)		(0.0693)		(0.0784)		(0.0761)		(0.0730)
Stampa dummy × postreform dummy		−0.0424		−0.143**		−0.0329		0.132*		−0.0523		0.109		−0.0136
		(0.0802)		(0.0565)		(0.0309)		(0.0685)		(0.0802)		(0.0747)		(0.0691)
Giornale dummy × postreform dummy		−0.266***		−0.115*		−0.0503*		0.0387		−0.0483		−0.0184		−0.0365
		(0.0829)		(0.0668)		(0.0302)		(0.0689)		(0.0761)		(0.0624)		(0.0706)
Repubblica dummy	0.00242	0.113**	0.0725**	0.173***	0.0341	0.0258	0.0230	-0.0446	0.0515	0.123*	0.0418	-0.0214	0.0303	0.0498
	(0.0427)	(0.0545)	(0.0329)	(0.0642)	(0.0223)	(0.0236)	(0.0329)	(0.0383)	(0.0371)	(0.0622)	(0.0383)	(0.0545)	(0.0394)	(0.0585)
Stampa dummy	0.0309	0.0265	-0.0285	0.0212	0.0144	-0.00186	-0.0169	-0.00556	0.0554	0.0819	−0.0258	−0.125**	−0.00480	−0.0398
	(0.0365)	(0.0564)	(0.0259)	(0.0496)	(0.0199)	(0.0135)	(0.0324)	(0.0439)	(0.0397)	(0.0621)	(0.0399)	(0.0604)	(0.0369)	(0.0558)
Giornale dummy	−0.0626	0.0823	0.114***	0.145**	0.0195	0.0149	0.0221	0.0957**	0.0309	0.0546	−0.137***	−0.151***	−0.0178	−0.0376
	(0.0389)	(0.0565)	(0.0359)	(0.0623)	(0.0187)	(0.0151)	(0.0373)	(0.0475)	(0.0398)	(0.0744)	(0.0284)	(0.0463)	(0.0349)	(0.0586)
Time trend	0.00176**	0.00174**	0.000912*	0.000912*	0.00157***	0.00157***	−0.000311	−0.000326	−0.000433	−0.000433	−0.00115*	−0.00115*	0.00118*	0.00118*
	(0.000871)	(0.000878)	(0.000537)	(0.000539)	(0.000469)	(0.000471)	(0.000693)	(0.000697)	(0.000814)	(0.000817)	(0.000679)	(0.000683)	(0.000629)	(0.000629)
Constant	−32.74**	−32.52*	−17.12*	−17.17*	−29.82***	−29.82***	6.051	6.326	8.603	8.573	22.14*	22.18*	−22.06*	−22.14*
	(16.51)	(16.63)	(10.18)	(10.21)	(8.883)	(8.924)	(13.13)	(13.21)	(15.42)	(15.49)	(12.86)	(12.95)	(11.91)	(11.93)
Observations	425	425	425	425	425	425	425	425	425	425	425	425	425	425
R-squared	0.027	0.046	0.077	0.087	0.057	0.058	0.044	0.059	0.023	0.026	0.061	0.070	0.012	0.014

SOURCE: Original table.

NOTE: The dependent variables are the relative frequencies of pension articles that also mention other keywords. The postreform dummy takes on the value of one the day after the enactment of the Decree-Law ("Decreto Salva Italia") that introduced the Monti-Fornero pension reform, that is, December 6, 2011, and zero otherwise. Standard errors are clustered at the daily level and are shown below each coefficient. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

TABLE 25.1 **Coverage of the Monti-Fornero pension reform by four national newspapers, regression analysis (cont.)**

Dependent variable: relative frequency of pension articles that mention:	(1) Europe	(2) Europe	(3) Germany	(4) Germany	(5) Monti	(6) Monti	(7) Fornero	(8) Fornero	(9) Bersani	(10) Bersani	(11) Berlusconi	(12) Berlusconi	(13) Merkel	(14) Merkel
Postreform dummy	−0.221***		0.000423		0.0164		0.0518		0.0866**		−0.197***		−0.0996***	
	(0.0609)		(0.0353)		(0.0605)		(0.0519)		(0.0349)		(0.0509)		(0.0333)	
Corriere dummy × postreform dummy		−0.140*		−0.00775		0.0458		0.0889		−0.0352		−0.0854		−0.0923**
		(0.0739)		(0.0493)		(0.0734)		(0.0577)		(0.0419)		(0.0594)		(0.0451)
Repubblica dummy × postreform dummy		−0.250***		0.00537		0.00742		0.0726		−0.0453		−0.361***		−0.117**
		(0.0857)		(0.0487)		(0.0776)		(0.0708)		(0.0478)		(0.0698)		(0.0539)
Stampa dummy × postreform dummy		−0.209**		0.0346		−0.0700		−0.00347		−0.120*		−0.213***		−0.121**
		(0.0845)		(0.0594)		(0.0799)		(0.0683)		(0.0620)		(0.0747)		(0.0609)
Giornale dummy × postreform dummy		−0.288***		−0.0293		0.0788		0.0462		−0.150***		−0.132*		−0.0683
		(0.0767)		(0.0547)		(0.0765)		(0.0563)		(0.0507)		(0.0716)		(0.0419)
Repubblica dummy	0.146***	0.221***	0.00419	−0.00468	0.120***	0.146***	−0.0106	0.00124	0.0359*	0.0441	0.0461	0.230***	0.0606**	0.0772
	(0.0407)	(0.0631)	(0.0285)	(0.0389)	(0.0386)	(0.0450)	(0.0332)	(0.0388)	(0.0200)	(0.0324)	(0.0372)	(0.0609)	(0.0296)	(0.0508)
Stampa dummy	0.0194	0.0674	0.0137	−0.0147	−0.00553	0.0723	−0.0625**	−0.000192	0.0723**	0.130**	−0.0102	0.0771	0.0199	0.0393
	(0.0422)	(0.0760)	(0.0303)	(0.0510)	(0.0395)	(0.0571)	(0.0310)	(0.0482)	(0.0279)	(0.0589)	(0.0334)	(0.0669)	(0.0270)	(0.0542)
Giornale dummy	0.00767	0.108*	0.0163	0.0306	0.110***	0.0888	−0.0414	−0.0122	0.0535**	0.131***	0.0942**	0.128*	0.0485*	0.0325
	(0.0382)	(0.0585)	(0.0321)	(0.0539)	(0.0411)	(0.0618)	(0.0320)	(0.0331)	(0.0232)	(0.0465)	(0.0361)	(0.0645)	(0.0256)	(0.0384)
Time trend	0.00214***	0.00213**	0.000659	0.000657	−0.000842	−0.000839	0.000134	0.000130	−0.000266	−0.000278	−0.00144*	−0.00143*	0.00143***	0.00143***
	(0.000810)	(0.000813)	(0.000496)	(0.000498)	(0.000910)	(0.000912)	(0.000661)	(0.000663)	(0.000497)	(0.000501)	(0.000782)	(0.000775)	(0.000455)	(0.000459)
Constant	−40.02**	−39.86**	−12.37	−12.33	16.49	16.41	−2.368	−2.307	5.197	5.387	27.73*	27.58*	−27.00***	−27.06***
	(15.34)	(15.41)	(9.407)	(9.439)	(17.26)	(17.30)	(12.52)	(12.57)	(9.426)	(9.489)	(14.82)	(14.70)	(8.631)	(8.698)
Observations	425	425	425	425	425	425	425	425	425	425	425	425	425	425
R-squared	0.066	0.073	0.011	0.013	0.034	0.039	0.022	0.026	0.073	0.085	0.214	0.240	0.031	0.033

SOURCE: Original table.

NOTE: The dependent variables are the relative frequencies of pension articles that also mention other keywords. The postreform dummy takes on the value of one the day after the enactment of the Decree-Law ("Decreto Salva Italia") that introduced the Monti-Fornero pension reform, that is, December 6, 2011, and zero otherwise. Standard errors are clustered at the daily level and are shown below each coefficient. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Financial Literacy Applied to Pensions: What Is "Pension Literacy"? Why Is It Important?

WHY FINANCIAL LITERACY IS IMPORTANT FOR RETIREMENT: A SELECTIVE REVIEW OF THE LITERATURE

Welfare gains from individual choices depend on the efficiency of those choices, which in turn require, among other things, at least a basic understanding of their main elements and likely consequences, both in the short and the medium-long run. In the case of retirement saving, for example, even when it is compulsory and disguised under the payment of payroll taxes, understanding that "each dollar or euro of contribution counts" for the future pension benefit is crucial to make wiser and more farsighted choices, such as turning away from moonlight jobs, even if they appear more convenient in terms of net pay.[13]

To grasp the basic features of pensions, good information should thus complement widespread financial literacy. Illiteracy is instead associated with inattention to information, misinterpretation of pensions, and lack of knowledge of one's rights or, at the opposite, to claims of "acquired entitlements" that are hardly justifiable according to principles of social justice. This is, for example, the case for very generous—in terms of the difference between the amount (the present value) of benefits and contributions—DB pensions awarded to high income earners.

Research has shown that widespread pension illiteracy can generate myopia, distortions, inconsistencies, and opportunistic conduct, such as a preference for early retirement not justified by hazardous working conditions or health flaws, and not supported by a parallel willingness "to pay for it" in terms of correspondingly reduced pension benefits (Calcagno, Coda Moscarola, and Fornero 2016). An excessively early retirement exposes workers to the risk of inadequate pension benefits at an older age, and the public budget to the moral pressure of adding resources so as not to abandon older people in need (the so-called Samaritan's dilemma).

As mentioned in the introduction, most advanced economies witnessed a rather radical change in the retirement landscape in the past two to three decades. DC pensions[14] have significantly expanded and are expected to expand more in the near future; thus, as already mentioned, individuals all over the world are (and will be) increasingly called to take greater responsibility to save, invest, and draw down their retirement wealth. DC pensions are normally more flexible than DB ones, implying more choices, even when—as is often the case—DCs are guided by appropriate design of default options. In addition, in most countries life expectancy is increasing, with people spending more years in retirement because minimum retirement ages have not yet increased. And a longer retirement requires greater savings and resources to pay for the extra consumption and health care costs of these additional years (Kritzer and Smith 2016).

In this new pension landscape it is important to understand the extent to which individuals are equipped to make decisions and whether they are sufficiently knowledgeable about basic economic and financial notions and principles to make wise decisions, when required, and to plan for retirement. From this point of view, research finds that those reporting that they are unable to plan for retirement or cannot carry out their retirement saving plans are also those who are least aware of fundamental economic concepts driving economic well-being 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 5–10 years off. This has important consequences, since 30–40 percent of wealth inequality can potentially be attributed to financial knowledge (Lusardi, Michaud, and Mitchell 2017).

Numeracy 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 or 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, earlier contributions will have a higher weight than those paid at older ages.

Behrman et al. (2010) identify 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) show that financial sophistication boosts households' retirement planning behavior, 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, 2018) also show that financial literacy is among the factors reducing exposure to debt when 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 Australia, Canada, Chile, France, Germany, Japan, the Netherlands, New Zealand, and Sweden, 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 in which private pensions are very gradually 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).

BASIC UNDERSTANDING OF NDC PENSIONS AS INSURANCE THAT CAN ACCOMMODATE REDISTRIBUTION AND MAKE IT MORE TRANSPARENT

Correct information and basic financial knowledge, at both the micro personalized and macro levels, should contribute to citizens' understanding that pensions are not (or should not be considered) the result of the generosity of politicians, but of personal savings in the working period of the life cycle, and of the sound functioning of the labor market, which is the source of income by which pensions in a PAYG system are paid. The pension system, as designed by law, can translate this saving into adequate pension benefits with efficiency, equity, and sustainability, but it does not create new wealth per se. This social compact

has an inherent insurance function, made explicit by the transformation, at retirement, of individuals' notional pension wealth into an income flow to be paid conditional on workers' (or their survivor's) existence. Citizens should also understand the "unfunded" nature of notional (PAYG) systems—that is, 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 or additional deficit. Those additional funds should finance the redistributive part of the pension expenditure; that is, the assistance component on top of the insurance one (the integration needed to reach the minimum pension level, or the contributions paid by the state in case of unemployment, maternity leave, or care activities).

The insurance feature embedded in the NDC system does allow for both solidarity and flexibility of retirement, concepts that people normally attach to a public pension system. Solidarity may come during the working life by contributions paid out of progressive general taxation for periods of unemployment, care, education, and training. Flexible retirement is a "natural" good feature of NDC systems, in that it does not come at the expense of the young and future generations (as was the case with early retirement options under the DB method). Of course, in NDC systems as well, 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. NDC systems allow workers employed in specific jobs to retire earlier on the basis of scientific knowledge about their health and mortality conditions. People should be aware that an efficient pension system is certainly not unsuited to solidarity. To 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 favor 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 and employers, implying a tradeoff between "generous" pensions and high (gross) labor costs, which discourages employment and might also be associated with lower net wages. It is important to convey these essential concepts in a few simple messages. This means that both politicians and the media should have a sufficient level of economic and financial literacy.

PENSION LITERACY AND THE SUSTAINABILITY OF PENSION SYSTEMS AND REFORMS

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 can provide a firm basis for higher social payoffs.

Reforms are meant not only to change laws but, more importantly, to change people's behavior. Their effectiveness crucially depends on the ability of citizens (that is, 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 with the expectation of benefits tomorrow. The electorate's

ability to understand essential economic concepts is a relevant element for the evaluation of the electoral costs of pension reforms. Fornero and Lo Prete 2019 show 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 honored by future generations, they can be less hostile to pension restructuring.

Again at the macro level, the "lump of labor fallacy" is still widespread. Jobs are too often regarded to be fixed in number and early retirement is often considered, even at the government level, to be an easy way to create 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, with little or no gain in job creation for the young (Kalwij, Kapteyn, and de Vos 2010).

Even though information and financial literacy can intuitively be seen as complements, objections have been raised that the cost-effectiveness of educational programs aimed at universal financial literacy is low relative to, for example, nudges. The increase of 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"). This chapter asserts that this supposed contrast is wrong: financial literacy is not, of course, the only factor that would help devise a good pension design or increase the effectiveness of reforms. At the same time, the importance of well-designed choice options is not to be underrated. Behavioral 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). And a complementarity likely exists between financial literacy and reliance on experts: reliance on experts without diffusion of financial knowledge among the public might result in adverse selection and the 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.

This is not to suggest that the combination of good information and financial literacy is a sufficient condition for the success of reforms. However, it is reasonable to argue that citizens who understand the basic principle of a reform should be less opposed to it when the reform is needed (and on the other hand, should be more opposed if the reform is meant to create differentiations and privileges). Because financial literacy can be improved by investing in education, governments may increase their citizens' awareness of what is involved in a reform by investing in specific educational programs for adults and basic financial education in school, which may in turn help change the reform's electoral cost and future viability.

Conclusions

This chapter revolves around the complementarity between information and financial literacy for an efficient and equitable functioning of NDC pension systems, and more generally of unfunded systems, at both the micro- and macroeconomic level. More specifically, it provides some new evidence—in the shape of stylized facts—about how public opinion in five European countries (France, Germany, Italy, Sweden, and the United Kingdom) is

concerned with pensions, both from a cross-country perspective and in comparison with other policy issues. To do so, it exploits information on online searches, as provided by Google Trends, and matches these data with media coverage of pensions in traditional media (in this case, daily newspapers). It also looks at a specific case study—newspaper coverage of the 2011 Italian pension reform, introduced when Italy was on the verge of a financial crisis (Fornero 2013).

Much work on the topic of the complementarity between pension information and financial literacy is still to be done, both at the individual and macro levels. First—in addition to developing a theoretical model to empirically test this relationship—a strong need exists for survey data providing evidence on what kind of information is provided about pensions, where people get this formal and informal information, and how they use it. Then one could check whether and how this use is influenced by the level of financial literacy, and whether the combination of good personalized information and basic financial knowledge effectively produces better retirement choices. To the authors' knowledge, this combination of data on the provision of information, their use, and individuals' basic financial knowledge is not available yet.

Second, a more comprehensive content analysis of newspaper articles and editorials and TV news about pensions should be performed, 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 reforms' 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 2015; Puglisi and Snyder 2015).

Finally, in the current era in which social networks are playing an exponentially increasing role in the social, political, and media sphere, one could investigate the connection between coverage of pensions and pension reforms on traditional media (TV and newspapers, together with their online counterparts) and conversations on social network on the topic. A purpose of this analysis would be to investigate whether elite discourse on traditional media still happens to lead the conversation on social networks, or whether the opposite holds; that is, online conversations take place first and influence arguments and proposals that are then featured on traditional media and possibly in the formal political arena (for example, in parliament).

Notes

1. More specifically, the word "nonfinancial" or "notional" is used to denote a pension system that does not rely on the accumulation of funds (reserves) to pay for pensions, but on current workers' contributions that are used to pay for current retirees' benefits. The term is thus a synonym for a PAYG system. Unfunded pension systems are in general public because it is harder and certainly riskier—particularly in the case of a single profession or even a firm—to maintain the capacity to "tax" future workers to finance the benefits of current ones.

2. Although the NDC system can fix the financial problems created by aging and by a structural decline in productivity growth, social sustainability relates to (a) whether pensions in the future will be sufficient to provide adequate living conditions for older people, and (b) people's understanding and involvement. This kind of sustainability depends essentially on the good performance of the labor market and on social protection to cover the unlucky by resorting

to general taxation. The majority of pensioners in rich countries today enjoy more or less the same standard of living of the average population, but the future looks bleaker for young and future generations given their greater difficulties on the labor market.

3. Fornero and Lo Prete (2019) test this hypothesis by looking at pension reforms in 21 advanced economies over 20 years, from 1990 to 2010. The study shows that although the probability of being reelected following a pension reform normally decreases, it falls less in countries with higher financial literacy scores.

4. Sweden, the United States, and Japan are generally considered good benchmarks.

5. As in the Italian case of an "Advance on Pension" (APE, *Anticipo Pensionistico,* introduced in 2015), which comes in two versions: "social," when the costs are socialized, that is, covered by general taxation, and "voluntary," when the person has to repay the debt, including the subsidized interest.

6. Provided mortality rates do not differ substantially by social class. When this is not the case, corrections to the pure DC formula should be adopted (see chapters 12, 13, and 14).

7. Interestingly, according to an Italian survey, individuals showed adequate knowledge of GDP growth in 2016 resulting in an average estimated value of 0.6 percent compared with 0.8 percent registered by Istat. On the other hand, average estimated values for unemployment and inflation rates were significantly greater than official data (Istat 2016).

8. On the other hand, long-run financial equilibrium implies that the "implicit" pension debt is matched by the system's "assets"; that is, the present value of future contributions (plus any other financial asset).

9. Decree-Law 201/2011, issued on December 6, 2011 (the so-called *Decreto Salva Italia*) and then converted into Law 214/2011.

10. In March 2015, the Italian Constitutional Court declared unconstitutional the freeze of price indexation for pension benefits higher than three times the minimum (that is, approximately higher than €1,500), which had been one measure of the 2011 pension reform. As a result, the price indexation of pensions for a large number of retirees had to be resumed.

11. Unfortunately, Google Trends does not allow checking the extent to which those searches landed Internet users on the pension organization's official website or on specific news sites.

12. Relative to the average number of monthly articles.

13. Of course, this is not always a choice for workers subject to binding financial constraints, in which case, the loss in pension wealth could be seen as the cost of overcoming the liquidity constraint.

14. Or, more generally, formulae characterized by a stronger correlation, at the individual level, between contributions paid and benefits received, and by an actuarial factor that takes into account the age of retirement and thus the different expected longevity at retirement.

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