



HAL
open science

Retirees' Pension Wealth in France: An Assessment on Sample Administrative Data

Christophe Daniel, Anne Lavigne, Stéphane Mottet, Jesus-Herell Nze Obame, Bruno Séjourné, Christian Tagne

► **To cite this version:**

Christophe Daniel, Anne Lavigne, Stéphane Mottet, Jesus-Herell Nze Obame, Bruno Séjourné, et al.. Retirees' Pension Wealth in France: An Assessment on Sample Administrative Data. 2015. halshs-01175605v2

HAL Id: halshs-01175605

<https://shs.hal.science/halshs-01175605v2>

Preprint submitted on 23 Nov 2015

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Retirees' Pension Wealth in France: An Assessment on Sample Administrative Data

Christophe Daniel (GRANEM, UMR-MA 49, Université d'Angers) ¹

Anne Lavigne (LEO, UMR 7332, Université d'Orléans) ²

Stéphane Mottet (GRIEF, EA Université de Poitiers)³

Jesus-Herell Nze Obame (GRANEM, UMR-MA 49 Université d'Angers) ¹

Bruno Séjourné (GRANEM, UMR-MA 49, Université d'Angers) ¹

Christian Tagne (LEO, UMR 7332, Université d'Orléans) ²

This version: 14 September 2015.

We thank the *Direction de la recherche, des études, de l'évaluation et des statistiques* of the French Government for providing us with the EIR 2012. This research has benefited for the financial support of the *Observatoire de l'Épargne Européenne*.

¹ GRANEM, Université d'Angers, 13 Allée François Mitterrand, 49 036 Angers Cedex 1, France.

² Corresponding author. Anne.Lavigne@univ-orleans.fr

Laboratoire d'économie d'Orléans (UMR 7332), Rue de Blois, BP 26729, 45 067 Orléans Cedex 2, France
+ 33 2 38 49 27 63 ; + 33 6 76 88 60 41

³ Institut d'Administration des Entreprises, Université de Poitiers, 20 rue Guillaume VII le Troubadour, Bât.E1 TSA 61116, 86 073 Poitiers Cedex 9, France

Keywords: pension wealth, pension schemes, inequality

JEL Codes: G23, H31, J32

Abstract:

This contribution proposes a measure of retirees' pension wealth in the French public Pay-As-You-Go schemes (first and second pillar schemes) and of its distribution among the population of retirees in 2012 using the *Echantillon Inter régimes de Retraités* (EIR) panel data. We show that aggregate pension wealth amounts to around €5 800 billion assuming a 2 percent discount rate which represents 25 years of benefits and 2.8 years of 2012 GDP. There are significant differences in the amount of individual's pension wealth between the pension schemes of the private and public sectors, and between men and women. Moreover, there is more inequality in the distribution of pension wealth among private sector retirees than public sector ones.

Introduction

Pension reforms in Europe raise two concerns which may be perceived at odds but which are indeed intricate. In the last decades of the previous century the major concern was to ensure the sustainability of pension reforms defined as the long term balance between contributions and benefits of the PAYG reformed systems. The main motive for such reforms was to come up with population ageing induced by the retirement of the baby boom generation and the overall increase in life expectancy. Sustainability can be reached through different ways, from pension expenditure cuts to increases in payroll contributions, combined with more stringent eligibility requirements (legal age of retirement, length of contributory period, earnings measure used to calculate pension entitlements, valorization and indexation rules...). Assessment of sustainability rests on macroeconomic measures such as expected public pension spending per GDP.

For two decades, France has been adopting several reforms of its Pay-As-You-Go pension system, in order to preserve its long-term sustainability. Unlike other countries that have opted for systemic reforms (implementation of notional accounts e.g.), reforms in France were characterized by parametric adjustments (length of contributory period, indexation rules, legal age of retirement, pension rebates or bonuses ...) that may have affected the generosity of the PAYG system. This generosity is measured by various indicators (average pension level, replacement rate, relative income of retirees with respect to working population...). Recently, the literature has focused on pension wealth as a relevant indicator to compare the generosity of pension systems in intertemporal, interpersonal and international dimensions.

In a pure PAYG pension system, pension benefits are financed by contributions levied on contemporary incomes, so that there is no accumulation of financial assets to meet the commitments towards future retirees. However, these commitments exist and will be honored by future generations of contributors. Therefore, we can estimate their value, even if they are not binding but contingent to potential regulatory changes. The actuarial value of these commitments is called "implicit debt" or "social debt" from a macroeconomic perspective and "pension wealth" in a microeconomic viewpoint. In seminal contributions (see Feldstein (1974), for example), pension wealth was conceived to assess the degree of substitution between pension savings on a private and voluntary basis and implicit savings made through mandatory contributions. More recently, the notion of implicit liabilities of PAYG regimes has been used to analyze the overall sustainability of public spending, particularly in Europe within the Stability and Growth Pact. Thus, pension wealth is a long-term viability indicator of a PAYG system from a macroeconomic perspective, but also an indicator of the pension adequacy in a microeconomic perspective.

Our study falls within the scope of the latter strand of literature. International organizations such as the OECD and the World Bank have contributed to the methodology of computation of pension wealth, via the APEX (Analysis of Pension Entitlements across Countries) infrastructure developed by Axia Economics (see for example OECD, 2013). More recently Grech (2015a, 2015b) also provided measures of pension wealth for a selected number of European countries. While these contributions enable international comparisons of pension rights and of redistributive characteristics of public pension systems, they rely on simulations made on hypothetical individuals.

Our contribution proposes a measure of pension wealth in the French public PAYG schemes (first and second pillar schemes) and of its distribution among the population of retirees in 2012 using the *Echantillon Inter régimes de Retraités* (EIR) panel data. It is a first step towards the assessment of the impact of the recent pension reforms on retirees' pension adequacy and eventually of retirement saving needs. By focusing on current retirees, our contribution will complement OECD projections on the assessment of pension saving needs for future retirees.

In the first section, we define the pension wealth indicator. In the second section, we present the EIR panel and give some basic statistics on the characteristics of retirees in France. In a third section, we comment the results of our computations. A final section concludes.

1. Pension wealth: **rationale**, definition and measure

Replacement rate at retirement, defined as the value of pension benefits at retirement as a proportion of pre-retirement earning, provides a simple measure of pension adequacy. **It can be calculated on a gross or net (of contributions and taxes) basis to assess the changes in the living standard after the transition from activity to retirement.** Nevertheless it has a main drawback since it fails to account for changes in the indexation rules of pension benefits along with the increase in life expectancy (Grech, 2015a, 2015b). Therefore there is a growing strand of literature that uses the lifetime value of pension benefits as an alternative measure of pension adequacy. Pension wealth can be defined from two perspectives:

- At the macro level, pension wealth measures the burden of current and future pension commitments (generally expressed as a percentage of GDP at a given horizon), and thus contributes to assess the long-term sustainability of pension schemes or the sustainability of the overall public debt integrating this implicit debt;
- At the micro level, pension wealth measures the present value at any time (t) of current and expected pension benefits for a given individual (or different types and categories of individuals) assuming that the rules governing the pension system are not modified during the retirement period. Given that value it is therefore possible to assess the impact of a pension reform.

The literature identifies three methods to compute pension wealth, based on different assumptions:

- The open system approach which computes all the present and future flows of benefits (net of contributions) to be paid by the pension system, including the benefits of the to-be-born generations;
- The closed system approach which assumes that the regime continues to exist until the death of the last contributor and does not account for new entrants to the scheme;
- The accrued-to-date liabilities approach which calculates the present value of benefits (net of contributions) to be paid to the past and present contributors, based on the accrued rights.

The first method is clearly appropriate to assess the steady-state sustainability of a PAYG system (Blanchet and Le Minez, 2012). The last two methods are particularly relevant when assessing the closing conditions of a pension scheme. They assess the amount of reserves required for the system to be balanced if it were to be fully funded. By construction, these methods require few prospective assumptions. In counterpart, the estimates are very sensitive to the discount rate and generally lead to extremely high debt/GDP ratios, not necessarily meaning that the system is unbalanced in the long run. The scenario of an abrupt termination of a public PAYG pension scheme seems unrealistic even if it has been observed in several countries (see Chile e.g.): it may nevertheless provide interesting orders of magnitude.

In a microeconomic perspective, the accrued-to-date liabilities approach is suitable since it aims at measuring, for an individual or a population, the notional wealth representing the overall amount of pension contributions. For an individual, pension wealth can be defined as the present value at the date of retirement of the expected pension benefits flows received from the age of retirement until death. Formally, for a population of individuals:

$$(1) \quad PW(t) = \sum_{a \geq R} \sum_{k \geq a}^D L(a, t) \cdot l_{k/a} \cdot \frac{P_k(t)}{(1+r)^{k-a}}$$

Where $L(a, t)$ denotes the population of age a in the year t , $l_{k/a}$ the survival probability of an individual aged a until age k , P_k the pension paid at age k , D (maximum) age at death, R the age at retirement, and r the discount rate (assumed to be constant).

International studies by OECD or Grech (2013, 2015a, 2015b) provide useful comparisons of pension wealth around the world. They rely on a set of uniformed assumptions regarding inflation, real earnings growth, real discount rate and real rate of return (when applicable, e.g. for defined contributions pension systems), while allowing for differences in mortality assumptions.

The difference between our contribution and these studies is twofold. First, the above mentioned studies compute pension wealth for *hypothetical* individuals (individuals with full or incomplete career, or at various income levels) whereas we assess pension wealth on a sample data of *real* individuals. Second, they concern current, and future, retirees while our study focuses on the current stock of retirees the ultimate objective being to assess the – would be – needs of further savings following more stringent conditions on pension rights after the last pension reforms.

Equation (1) can be used to compute the total amount of pension benefits, or only parts of them (direct benefits or survivors' benefits). It can deal with the overall pension system, or with some specific schemes (first pillar, second pillar, or integrated schemes such as the civil servants' scheme). For our estimations on the French PAYG pension system, the pension benefits are indexed on inflation: up to 2014, the coefficient of indexation is the one set by law and from 2015 onwards, the expected inflation rate is assumed to be equal to 1.5%.

In equation (1), the series of pensions is discounted over the expected residual lifetime. In our computation, the above age limit is set to 104 (no individual is expected to survive over 104). Consequently the series of pensions is discounted over an average period of 30 years.⁴ The choice of a discount rate is a crucial, and controversial, issue in the literature. Two approaches are available:

- A macroeconomic approach, from the point of view of a pension scheme manager. In this context, the objective of the fund manager would be to calculate a prudential reserve and he could use a yield curve to adjust the discount rate over time (see, for example, the Solvency 2 recommendations);
- A microeconomic approach, from the point of view of the individual who discounts the sum of the pension benefits he receives until his death. If there is a relatively large, though not conclusive, literature on the choice of a social discount rate, few studies are devoted to how individuals discount their own future earnings (for a review of the literature, see Frederick, Loewenstein, O'Donoghue, 2002). The most recent contributions are based on behavioral and experimental economics and emphasize the difficulty to disentangle the pure perception of time from other variables (uncertainty, distortion of preferences, self perception, habits ...).

For our study, the microeconomic approach seems the most relevant. The related literature says little on how to set an individual discount rate. Vernière (1992) suggests a real rate of 4%: "For comparison, the pre-tax return of financial assets held by households, measured by the ratio of interest and dividends received on financial asset [...] has averaged 4.7% in real terms over the 1970-1988 period "(Vernière, 1992, p. 90). Buffard-Girardot (2010) points out that "the value of the pension wealth strongly depends on the present value of the total pension benefits received and thus on the discount rate. This rate should reflect the real interest rate, but also the evolution of the price index on which the revaluation of pensions is based." She

⁴ Some individuals start to retire at the age of 20 (mostly military servants) in our data base, but they are rare.

compares the values of pension wealth for three discount rates: 0%, 2% and 4%; and finds that pensioners' pension wealth varies from €166,000 for a 0% rate to 113,100 for a 4% rate. She retains a 4% rate for the rest of her study, justifying it by the fact that "the long-term interest rate was around 4% in 2004". More recently, Blanchet and Le Minez (2012) have assessed the impact of pension reforms in France with the DESTINIE microsimulation model, and have retained a 3% discount rate to calculate the accrued-to-date pension liabilities (ATDPL), with variants ranging for 2 to 4%. They have also derived the sensitivity of ATDPL to the discount rate at steady state (for a constant age structure of the population and unchanged pension legislation) which shows that the more distant the ages at benefits perception and contributions payment the larger the impact of discounting (which is intuitive). They find that the semi-elasticity of ATDPL with respect to discount rate is equal to -18, i.e. an increase of one percentage point of the discount rate reduces the ATDPL by 18%.

In their literature review, Frederick, Loewenstein and O'Donoghue (2002) note a wide range of individual discount rates estimated by various experimental studies. These rates vary from negative values to values close to 100 000%, very different and much higher than observed market rates.

Eventually, the relevant discount rate in order to analyze the impact of pension reforms on pension wealth is probably the rate of return on retirement savings. Since the savings vehicles dedicated to retirement in France, namely the PERP and the PERCO⁵, are too recent to provide a long term series of interest rates, one can use the rate of return on life insurance contracts, which are used as close substitutes to retirement savings. This rate of return has followed the general decline in long-term interest rates over the past decade, and given the sluggish growth prospects expected in the coming years, a 2% discount rate is plausible (with alternative scenarios ranging from 0 to 4%).

Another important component in the computation of pension wealth concerns the survival probabilities since the pension benefits received by a retiree are conditional on her survival each year. To estimate survival probabilities, two options are possible:

- The first (also the simplest) option is to assign to each individual in the sample the average survival probability of her generation, taken from official cohort life tables and differentiated by gender;
- The second option is to infer, from the waves of EIR, the "in sample" survival probability. Indeed, since the same retirees are surveyed in each wave of the EIR panel, "exit" between two waves is essentially attributable to death. The sampling technique in the EIR, however, raises a detrimental difficulty. Some generations have been "over-sampled" in few waves (for reasons linked to the preparation of the Government reforms), so that, from one wave to another, some individuals of these "over-sampled" generations have been removed from the base, not because they died, but because the next wave included again the same representation as the other ones (see the various operating guides EIR published by DREES).

To compute the pension wealth in 2012, we proceed in four steps:

- Step 1: calculating and assigning survival probabilities

Survival probabilities come from the life tables provided by INSEE (2014) which are available by gender. For each of the retirees in the sample (pensioners in the sample in 2012 are aged from 34 to 100 years), we estimate the annual survival probabilities up to 104 (the maximum age in the mortality tables), conditional on age in 2012. For example, for an individual aged 34 in 2012, the annual conditional survival probability at age 65 is equal to the ratio of the survivors of age 34 at age 65 over the survivors aged 34.

⁵ The acronyms PERP and PERCO respectively stands as the acronym for *Plan d'Epargne Retraite Populaire* and for *Plan d'Epargne Retraite Collectif*: PERP designates an individual voluntary retirement plan and PERCO an employer-sponsored collective retirement plan both launched in France with the pension reform act of 2003.

- Step 2: computing (residual) pension wealth in a given regime

For each individual in the EIR sample in 2012, we get a set of series of monthly pension benefits paid by all the *caisses*⁶ in which the individual contributes. Let us denote PW_i the (residual) pension wealth of an individual i aged a_i in 2012, receiving an annualized pension benefit (excluding bonuses for children or survivor's benefits) $P_{C,i}$ in a *caisse* C . Individual's residual pension wealth is thus equal to:

$$(2) PW_i = \sum_C \sum_{t=1}^{104-a_i} \frac{l(a_i+t|a_i) \cdot P_{C,i}}{(1+r)^t}$$

- Step 3: computing the aggregated pension wealth

The third step consists in aggregating the individuals' pension wealth according to their sampling weight w_i in the overall population:

$$(3) PW = \sum_{i=1}^N w_i \cdot PW_i = \sum_{i=1}^N w_i \cdot \sum_C \sum_{t=1}^{104-a_i} \frac{l(a_i+t|a_i) \cdot P_{C,i}}{(1+r)^t}$$

- Step 4: adding the 'consumed' pension wealth to the 'residual' pension wealth

In the 2012 EIR sample, we have a stock of retirees of different generations, not only the flow of the newly retirees in 2012. We can thus compute the part of pension wealth already consumed by the older retirees (i.e. the amount of pensions already perceived by these older generations indexed by j from their first year at pension claiming until 2012, denoted YR_j). This already consumed pension wealth can be added to the 'residual' pension wealth (i.e. the pension wealth calculated in equation (3)) to get the overall pension wealth in 2012.

$$(4) OPW = \sum_{j=1}^M w_j \cdot \sum_C \sum_{t=YR_j}^{2012} P_{C,j} \cdot (1+r)^{2012-t} + \sum_{i=1}^N w_i \cdot \sum_C \sum_{t=1}^{104-a_i} \frac{l(a_i+t|a_i) \cdot P_{C,i}}{(1+r)^t}$$

2. The data and basic statistics

The EIR samples allow for relatively comprehensive information on the population of retirees: the amount of pension benefits and the conditions for pension claiming (age at retirement, length of the contributory period etc.) in all pension schemes. The EIR samples gather administrative data and as such contain only information relevant for the management of the *caisses de retraite*. Therefore some useful information about the socio-economic characteristics of the retirees is missing (marital status, number of children, earnings, financial assets, residential location, and so on).

In this section, we present some raw statistics on three crucial variables that influence individuals' pension wealth, namely the age at retirement, the reference wage or income and the value of the (direct) pension benefit. This analysis allows us to identify to what extent different pension rules among the major regimes (private sector, public sector, and self-employed workers) may affect pension entitlements and pension wealth.

- Average age at pension claiming

Age at pension claiming is a critical determinant of pension wealth. Early retirement has two opposite effects on pension wealth (see Figure 1). On the one hand, it increases the duration of pension perception and thus pension wealth for a given life expectancy. On the other hand early retirement may affect the number of years of contributions, such as the retiree is no longer eligible to full pension benefits and

⁶ The French pension system is complex and made of different schemes, for workers in the private sector, in the public sector, or for independent workers. Each scheme is managed by a *caisse*.

suffers from a haircut on pension. The trade-off between early retirement and postponed retirement is driven by the conditions at which each retiree receives pension benefits, eventually depending on generation and regime of affiliation (former worker of the private sector, the public sector, or former self-employed). The comparison between private and public sectors reveals significant differences.

Insert <Figure 1>

Workers in the public sector claim pension benefits at 58 years and a half on average, earlier than those in the private sector (61 years and a half). Women retire later than men in both private and public sectors, but the gender gap tends to diminish for the younger generations. When considering the second pillar, ordinary workers (*non cadres*) claim pension benefits later than senior management staff (*cadres*). Against intuition since the recent reforms were expected to give incentives to postpone retirement, workers of the youngest generations tend to retire earlier than workers of the remote generations, especially in the private sector. But it should be stressed that the 1948 generation has not fully retired as of 2012 which underestimates the average age at pension claiming.

The recent pension reforms of 1993 and 2003 have tightened the age conditions at which workers are entitled to full benefits, depending on their status (private or public sector workers) and on their generation: the length of contributory period has been progressively extended from 150 quarters to 160 quarters, starting from 1994 for the private sector workers and from 2004 for the civil servants. Table 1 shows the proportion of beneficiaries of full rate pension, pension with haircut (*décote*) or premium (*surcote*).

Insert <Table 1>

As civil servants retire earlier than private sector workers on average, it is not surprising that the proportion of civil servants getting a full-rate pension is lower than for private sector employees (respectively 67.0% for those who have contributed only to the civil servants' scheme, and 85.7% for those who are only affiliated to the private sector scheme). The proportion of civil servants who get a pension premium (*surcote*) is significantly higher than in the private sector. In private schemes, men are more likely to claim full-rate pension benefits than women, and the reverse is observed in the civil servant scheme where women are less likely to receive pension premium but also to suffer from pension haircut (*décote*).

- Average reference wage

The reference wage is a key element for the calculation of pension wealth. Until the 1993 reform, the reference wage was the average wage of the best 10 years of career; with the reform the number of best years has been progressively raised to 25, people born in 1948 being the first generation fully concern by the 25 best years rule. In 2012, all the retirees (whatever their generation) have a reference wage computed on the 25 best years (with some specificities for some schemes, namely schemes covering self-employed affiliated).

Among the beneficiaries of a normal pension in the general scheme in 2012, men have a higher reference wage than women: on average, €17 054 for men against €11 884 for women. When they retire at 60, both men and women have a reference wage slightly above the average: €17 314 for men against €13 753 for women. The average reference wage decreases along with the retirement age over 63. The beneficiaries (men or women) who claim their pension benefits between 55 and 59 have on average a higher reference wage than the older ones. (See Figure 2a)

As the average reference wage has been increasing over time due to better education and labor productivity (and more generally, a secular improvement of social and economic conditions), the average reference wage increases with generation. (See Figure 2b)

Insert <Figures 2a and 2b>

- Monthly pension benefit (retirees' own rights)

The calculation of the pension wealth is decomposable by schemes (first pillar, second pillar or integrated for the public sector⁷). In this paper we only take into account the direct pension received by the retirees excluding the extra (non contributory) rights (disability benefits, bonuses for children, survivor's pension...). The data reveal significant differences between pension benefits served by the schemes, and between men and women. (See Table 2a)

In private sector schemes (including first and second pillars) the average pension benefit is less than €1 000 in 2012. In contrast in the public sector (civil and military servants), it amounts to €1 661.8. Moreover the difference between men's and women's pension is weaker in the public sector than in the private sector. (See Table 2b)

In the private schemes, the average pension benefit increases along with the generations; this is consistent with the above observation on reference wage. In the public schemes, the situation differs for the generations born after 1943 which are those fully impacted by the 2003 pension reform.

Insert <Tables 2a and 2b>

3. Pension wealth estimations

Table 3a displays the aggregate retirees' pension wealth in 2012 under different assumptions regarding the discount rate. When discounting at a 2 percent rate (resp. 4 percent), aggregate pension wealth is equal to €5 799.9 billion (resp. 4 850.0) which represents 25.0 years (resp. 25.2) of benefits and 2.8 years of 2012 GDP.

We have split the aggregate pension wealth into two components, to take into account that retirees (at least the oldest ones) have already consumed part of their wealth. Table 3b and 3c show the amounts already consumed and to be consumed (the residual pension wealth). The results are sensitive to the chosen discount rate: the higher the discount rate, the lower the estimation of the residual pension wealth. Roughly, at a 2% discount rate, the aggregate pension wealth already consumed by the retirees represents 97% of the residual pension wealth to be consumed in the future. Of course, the lower the discount rate, the lower is the estimated residual wealth.

Insert <Tables 3a, 3b, 3c>

If we turn to pension wealth per capita, table 4a shows that on average, pensioners of the public scheme receive a pension wealth nearly twice higher than those of the private sector (remind that pension wealth encompasses both the first and second mandatory pillars for the private sector, which makes the comparison relevant). Self employed workers get a significantly lower pension wealth from mandatory schemes (roughly half the average pension wealth of private sector wage earners).

On average, men have a 45% higher total pension wealth than women in the private sector. The gender difference is less pronounced in the public sector (14% on average), due to higher women's qualification and no gender wage discrimination for a given level of qualification. Interestingly, the pension wealth gap between men and women is lower than the pension gap in the private sector (45% vs. 53%), but roughly the same in the public sector (14% vs. 16%).

⁷ In the public sector (civil and military servants), the scheme is integrated in the sense that the retirees get a unique benefit, covering the first and second pillar pension.

Insert <Tables 4a and 4b>

Finally we have proceeded to an analysis of the inequality of pension wealth among the retirees in 2012. Table 5 and figure 3 display the Gini coefficients by generation, gender and pension scheme. The higher the Gini index, the less equal the pension scheme is. Pension wealth concentration is higher in the private sector (first and second pillar pension), especially within the second pillar scheme for top managers, compared to the public sector. There is no clear evidence that pension wealth inequality increases among the recent generations. In the private sector, pension wealth inequality seems to be higher for women than for men, especially for top managers affiliated to AGIRC for their second pillar pension. In the public sector, the gender difference is tenuous.

Insert <Table 5>

Not surprisingly, the distribution of pension benefits and the distribution of pension wealth are highly correlated and follow the same trend across birth-cohorts (figure 3) in all pension schemes. However, the level of inequality in pension benefits and wealth differs: the distribution of pension benefits is more or less even than the distribution of pension wealth depending on the pension scheme and on the trend that both distributions follow across generations.

Insert <Figure 3>

Indeed, inequality in pension benefits and wealth among retirees follows a downward trend across generations in the private sector's first pillar and employees' second pillar pension where the distribution of pension wealth is less even than the distribution of pension benefits. Inequality among retirees tends to rise in managers' second pillar pension where the distribution of pension wealth is more even than the distribution of pension benefits. Pension wealth concentration appears relatively stable across birth-cohorts in the public sector at a lower level than in the private sector but inequalities in pension benefits are higher than inequalities in pension wealth.

Conclusion

This contribution aimed at providing a measure of retirees' pension wealth in France using the 2012 EIR sample data. First, as expected, we found that the pension wealth indicator crucially depends on the choice of the discount rate, ranging from €5 850 billion (2.8 years of 2012 GDP) for a 4 percent discount rate to €6 066.5 billion (2.9 years of GDP) with a 0 percent rate. Second we found that the average pension wealth in the public sector schemes (civil and military servants, employees of national firms) is twice higher than in the private sector schemes (basic and supplementary). This result is explained by several facts: on average employees in the public sector have higher wages, are more likely to have full careers and retire earlier than employees of the private sector. Third, our results stress the differences between men and women, particularly in the private sector. Finally, our study shows that the distribution of pension wealth is relatively more concentrated among the public schemes (civil servants and employees of public firms) than among the private schemes, especially the complementary scheme for top managers of the second pillar. **It complements previous studies on hypothetical populations of current and future retirees which estimate post-reform pension wealth as around 10 times the annual earnings (OCDE, 2013).**

Our study could be improved in several ways. First we have assumed a 1.5% inflation rate for the future; this assumption is consistent with the choice of a real discount rate, but we could use alternative inflation rates to index the pension benefits and the discount rate. Second, we could use in-sample life tables to account for differences of survival probabilities between pension schemes. Measuring retirees' pension

wealth is a first step towards the estimation of the impact of the recent pension reforms on individual levels of pension wealth among retirees (D[anonymous]., 2015).

References

Blanchet D. et S. Le Minez (2012) : “Joint macro/micro Evaluations of Accrued-To-Date Pension Liabilities: An application to French Reforms”, INSEE, document de travail G 2012/14.

Buffard-Girardot, P. (2010), “Mesures de l'équivalent patrimonial des droits à retraite en 2004”, document de travail, INSEE, n°F1004.

D[anonymous] (2015), “La réforme des retraites de 1993 en France : quel impact sur l'équivalent patrimonial des droits à la retraite ?”, working paper.

Feldstein, M. (1974), “Social Security, Induced Retirement and Aggregate Capital Accumulation”, *The Journal of Political Economy* 82(5): 905-926.

Frederick, S., Lowenstein, G., and O'Donoghue, T. (2002), “Time Discounting Preference: A Critical Review”, *Journal of Economic Literature* XL: 351-401.

Grech, A.G. (2013), “How Best to Measure Pension Adequacy?” MPRA working paper, n°46126.

Grech, A.G. (2015a), “Evaluating the Possible Impact of Pension Reforms on Elderly Poverty in Europe”, *Social Policy Administration*, 49(1): 68-87.

Grech, A.G. (2015b), “Convergence or Divergence? How the Financial Crisis Affected European Pensioners”, *International Social Security Review*, 68(2): 43-62.

INSEE (2014), “Tables de mortalité des années 2011-2013, arrêtées fin décembre 2014”, French mortality tables available on line (table 68) on INSEE website.

OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing, http://dx.doi.org/10.1787/pension_glance-2013-en

Vernière, L. (1992), “Une évaluation de l'équivalent patrimonial des droits à retraite détenus par les ménages”, *Economie et Prévision* 105: 87-93.

Figure 1. Age at pension claiming by gender and generation

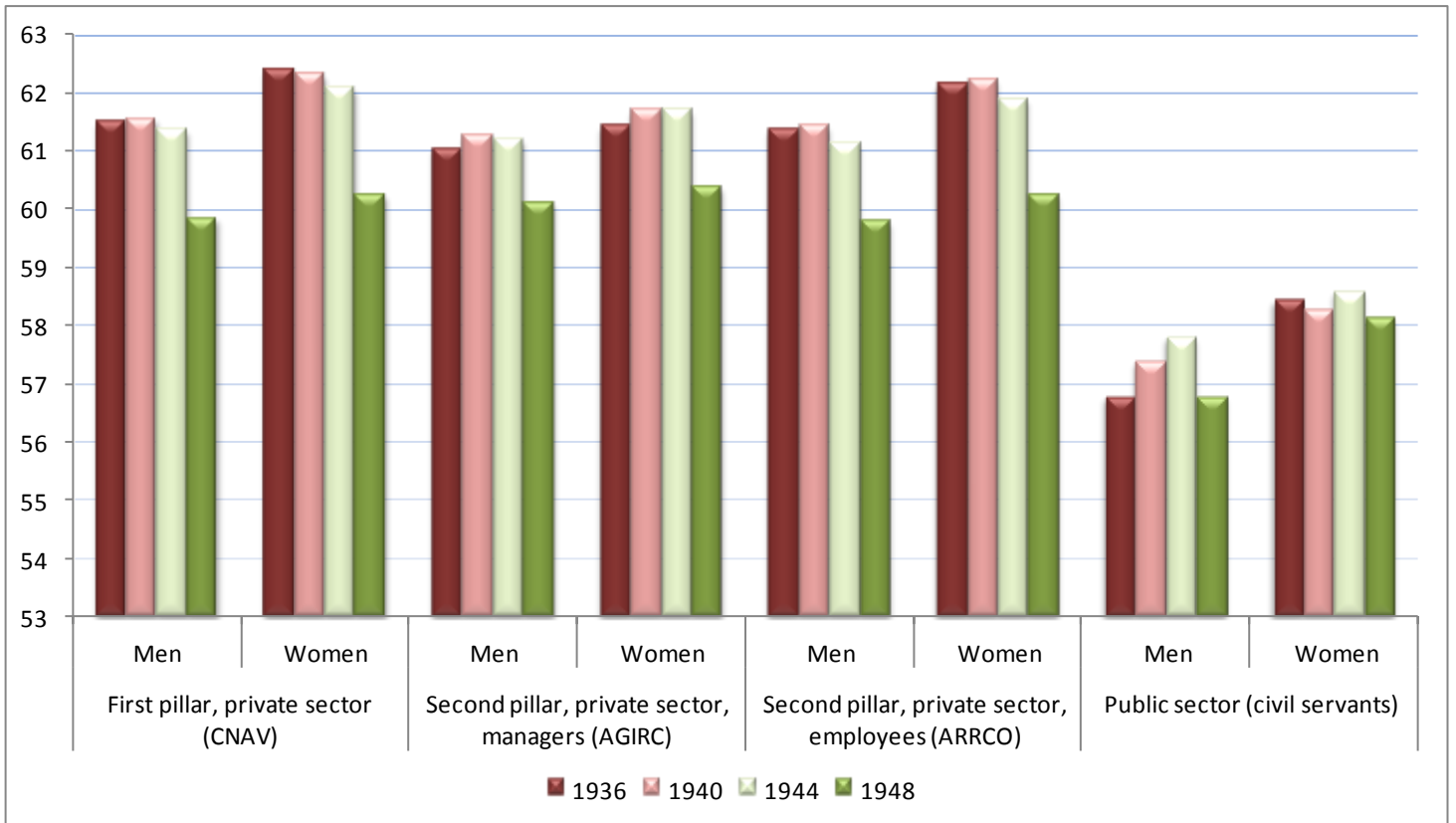


Figure 2a. Average reference wage by age at pension claiming, in €

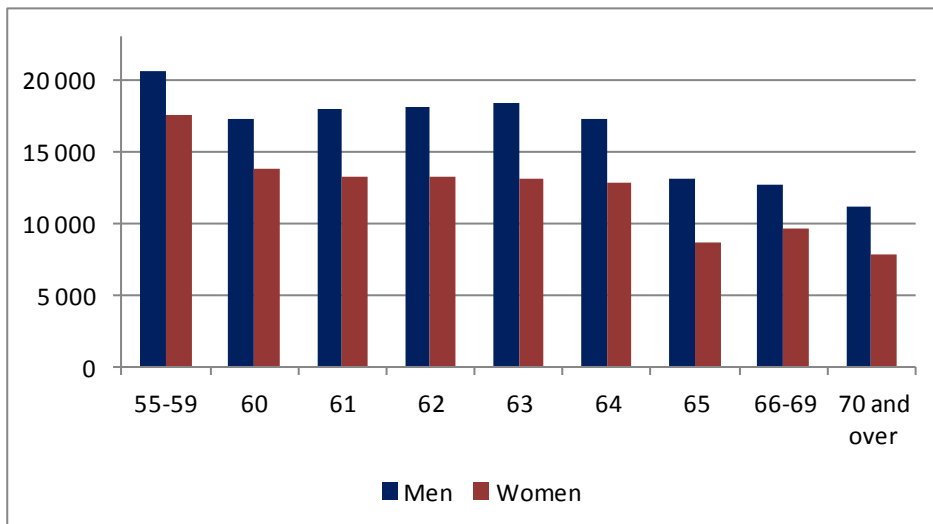


Figure 2b. Average reference wage by generation at pension claiming, in €

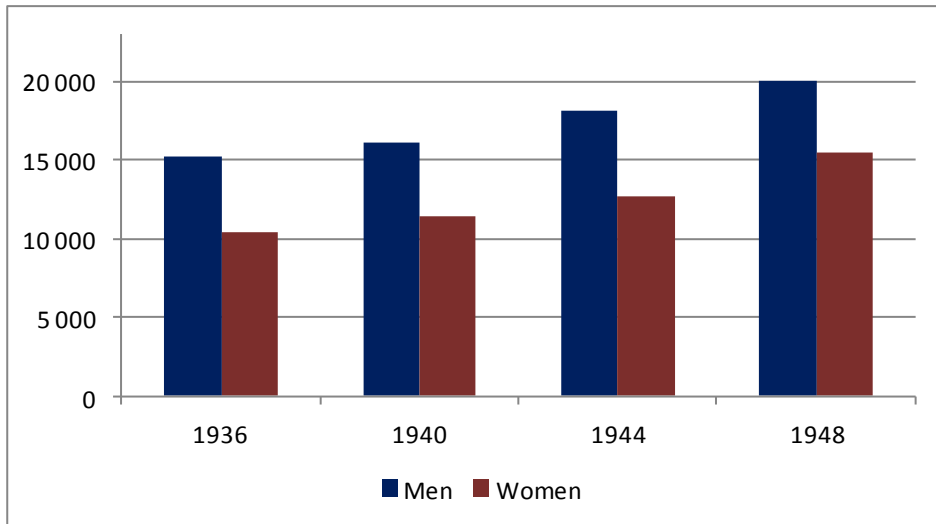


Table 1. Proportions of beneficiaries of a normal pension at different rates (haircut, full, premium) by scheme, gender, affiliation

| Rate of pension | CNAV (basic private sector scheme) | | | | | | Civil servants | | | | | |
|-----------------|------------------------------------|-------|------|----------------------------|-------|------|----------------------------|-------|------|--------------------------------------|-------|------|
| | Only CNAV scheme | | | CNAV and other affiliation | | | Only civil servants scheme | | | Civil servants and other affiliation | | |
| | Men | Women | All | Men | Women | All | Men | Women | All | Men | Women | All |
| Haircut | 8.3 | 12.4 | 10.6 | 7.8 | 11.0 | 9.2 | 14.6 | 14.1 | 14.3 | 18.8 | 15.0 | 16.8 |
| Full rate | 86.9 | 84.7 | 85.7 | 86.0 | 83.2 | 84.8 | 65.2 | 68.7 | 67.0 | 61.2 | 68.6 | 65.3 |
| Premium | 4.8 | 3.0 | 3.8 | 6.1 | 5.8 | 6.0 | 20.2 | 17.2 | 18.7 | 19.9 | 16.4 | 18.0 |

Table 2a. Average monthly pension benefits (in €) by gender and generation in the private schemes

| Generation | Private schemes | | | | | |
|------------|---------------------|-------|----------------------------------|-------|---------------------------------------|-------|
| | CNAV (first pillar) | | ARRCO (second pillar, employees) | | AGIRC (second pillar, managing staff) | |
| | Men | Women | Men | Women | Men | Women |
| 1934 | 629.7 | 439.6 | 363.6 | 192.5 | 789.4 | 341.5 |
| 1940 | 645.2 | 483.9 | 373.6 | 222.3 | 922.6 | 361.3 |
| 1944 | 680.7 | 515.5 | 385.0 | 239.0 | 884.3 | 345.1 |
| 1948 | 743.1 | 599.1 | 410.0 | 293.0 | 729.7 | 328.4 |

Table 2b. Average monthly pension benefits (in €) by gender and generation in the public schemes

| Generation | Public schemes | | | | | | | | | |
|------------|----------------|---------|----------------|---------|-----------------|---------|---------------------------|---------|--------------------------|---------|
| | Civil servants | | Military staff | | SNCF (railways) | | IEG (electricity and gaz) | | RATP (Paris bus & metro) | |
| | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women |
| 1934 | 2 170.6 | 1 750.4 | 1 782.2 | 1 566.3 | 1 549.4 | 942.6 | 2 482.5 | 1 770.0 | 1 900.7 | 2 342.7 |
| 1940 | 2 316.2 | 1 945.9 | 1 901.8 | 1 568.4 | 1 548.8 | 1 112.1 | 2 627.9 | 1 445.2 | 3 064.6 | 1 703.6 |
| 1944 | 2 335.3 | 1 982.5 | 2 041.6 | 1 370.0 | 1 577.1 | 1 174.6 | 2 677.5 | 2 105.4 | 2 754.3 | 1 939.1 |
| 1948 | 2 132.5 | 1 932.4 | 1 882.3 | 1 470.2 | 1 763.2 | 1 492.6 | 2 603.9 | 1 993.0 | 2 630.1 | 2 778.6 |

Tableau 3a. Aggregated pension wealth of retirees receiving a pension from a compulsory scheme as of 2012

| | Discount rate | | | | | | | |
|--|---------------|---------|---------|---------|---------|---------|---------|---------|
| | 0% | 1% | 1.5% | 2% | 2.5% | 3% | 3.5% | 4% |
| Pension wealth in 2012 (bn €) | 6 066.5 | 5 890.7 | 5 835.2 | 5 799.9 | 5 784.1 | 5 787.3 | 5 809.3 | 5 850.0 |
| Pension wealth as a number of years of 2012 benefits | 26.2 | 25.4 | 25.2 | 25.0 | 25.0 | 25.0 | 25.1 | 25.2 |
| Pension wealth as a number of years of 2012 GDP | 2.9 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |

Tableau 3b. Consumed pension wealth of retirees receiving a pension from a compulsory scheme as of 2012

| | Discount rate | | | | | | | |
|--|---------------|---------|---------|---------|---------|---------|---------|---------|
| | 0% | 1% | 1.5% | 2% | 2.5% | 3% | 3.5% | 4% |
| Pension wealth in 2012 (bn €) | 2 429.5 | 2 625.6 | 2 733.4 | 2 848.4 | 2 971.3 | 3 102.6 | 3 243.2 | 3 393.9 |
| Pension wealth as a number of years of 2012 benefits | 10.5 | 11.3 | 11.8 | 12.3 | 12.8 | 13.4 | 14.0 | 14.6 |
| Pension wealth as a number of years of 2012 GDP | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.6 |

Tableau 3c. Residual pension wealth of retirees receiving a pension from a compulsory scheme as of 2012

| | Discount rate | | | | | | | |
|--|---------------|---------|---------|---------|---------|---------|---------|---------|
| | 0% | 1% | 1.5% | 2% | 2.5% | 3% | 3.5% | 4% |
| Pension wealth in 2012 (bn €) | 3 636.9 | 3 265.1 | 3 101.7 | 2 951.4 | 2 812.8 | 2 684.7 | 2 566.1 | 2 456.1 |
| Pension wealth as a number of years of 2012 benefits | 15.7 | 14.1 | 13.4 | 12.7 | 12.1 | 11.6 | 11.1 | 10.6 |
| Pension wealth as a number of years of 2012 GDP | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.2 |

Table 4a. Pension wealth of retirees per capita at 2% discount rate, by broad categories of schemes and gender in 2012 (in €)

| Scheme | Variable | All | | | Men | | | Women | | |
|--|-------------------------|-----------|-----------|--------------------|-----------|-----------|--------------------|-----------|-----------|--------------------|
| | | Mean | Median | Standard deviation | Mean | Median | Standard deviation | Mean | Median | Standard deviation |
| Private sector (first and second pillar) | Consumed pension wealth | 130 289.7 | 66 637.4 | 1 226 270.9 | 164 753.9 | 87 954.1 | 1 473 674.9 | 97 435.7 | 54 833.9 | 852 713.8 |
| | Residual pension wealth | 140 036.0 | 89 598.5 | 1 052 301.3 | 167 552.6 | 123 963.1 | 1 178 536.0 | 113 804.9 | 69 441.5 | 869 417.4 |
| | Total pension wealth | 270 325.7 | 199 271.9 | 1 846 729.4 | 332 306.5 | 281 849.3 | 2 150 256.3 | 211 240.6 | 156 175.7 | 1 357 188.3 |
| Public sector (civil and military servants, employees in nationalised firms) | Consumed pension wealth | 266 553.7 | 198 062.9 | 1 731 353.7 | 303 016.4 | 230 282.1 | 1 965 801.7 | 225 601.5 | 172 656.0 | 1 388 628.6 |
| | Residual pension wealth | 271 711.2 | 249 136.9 | 1 161 258.7 | 269 755.1 | 251 097.0 | 1 212 613.6 | 273 908.2 | 247 206.6 | 1 103 826.9 |
| | Total pension wealth | 538 264.9 | 496 131.2 | 1 987 905.6 | 572 771.5 | 539 619.4 | 2 241 055.0 | 499 509.7 | 452 329.3 | 1 637 398.6 |
| Self employed | Consumed pension wealth | 73 145.9 | 41 291.5 | 671 098.8 | 84 322.3 | 46 599.4 | 751 738.9 | 59 136.6 | 35 548.7 | 508 947.1 |
| | Residual pension wealth | 59 783.5 | 35 657.6 | 564 098.1 | 72 432.2 | 44 736.2 | 616 355.7 | 43 928.7 | 26 138.0 | 446 308.4 |
| | Total pension wealth | 132 929.4 | 105 880.8 | 1 002 336.2 | 156 754.5 | 129 098.7 | 1 103 723.6 | 103 065.3 | 84 962.1 | 768 311.6 |

Table 4b. Pension wealth of retirees per capita at 2% discount rate, by pension pillars and gender in 2012 (in €)

| Scheme | Variable | All | | | Men | | | Women | | |
|---|-------------------------|-----------|-----------|--------------------|-----------|-----------|--------------------|-----------|-----------|--------------------|
| | | Mean | Median | Standard deviation | Mean | Median | Standard deviation | Mean | Median | Standard deviation |
| First pillar (mandatory) schemes | Consumed pension wealth | 140 097.7 | 90 757.8 | 1 144 347.6 | 166 986.5 | 113 185.7 | 1 298 785.5 | 114 933.1 | 73 592.3 | 932 896.7 |
| | Residual pension wealth | 143 616.9 | 115 266.3 | 881 524.8 | 158 067.6 | 133 215.1 | 866 749.7 | 130 092.8 | 93 580.1 | 885 024.0 |
| | Total pension wealth | 283 714.7 | 244 665.6 | 1 566 248.8 | 325 054.2 | 286 763.5 | 1 666 456.9 | 245 025.8 | 193 521.6 | 1 405 481.2 |
| Second pillar (mandatory) schemes | Consumed pension wealth | 62 041.7 | 23 733.5 | 825 340.2 | 85 821.2 | 36 950.2 | 1 028 970.1 | 35 747.7 | 15 123.4 | 433 019.6 |
| | Residual pension wealth | 66 287.0 | 33 424.2 | 684 743.2 | 86 155.3 | 50 846.7 | 809 294.3 | 44 317.6 | 20 046.2 | 460 740.1 |
| | Total pension wealth | 128 328.7 | 71 696.7 | 1 291 972.8 | 171 976.5 | 103 180.5 | 1 564 802.1 | 80 065.4 | 43 884.4 | 752 076.6 |
| Third pillar (optional) schemes | Consumed pension wealth | 66 814.9 | 30 492.2 | 564 509.2 | 88 649.4 | 57 746.8 | 640 055.8 | 31 405.1 | 12 199.2 | 324 560.1 |
| | Residual pension wealth | 76 973.4 | 56 437.3 | 417 038.5 | 93 174.5 | 91 667.8 | 405 914.2 | 50 699.4 | 31 057.0 | 372 759.3 |
| | Total pension wealth | 143 788.3 | 137 657.7 | 744 527.1 | 181 823.9 | 190 427.3 | 727 395.9 | 82 104.6 | 47 678.4 | 570 932.7 |

Table 5. Gini coefficients of pension wealth by scheme and generation in 2012

| Generation | CNAV | | | ARRCO | | | AGIRC | | | Civil servants | | |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|-------|-------|
| | All | Men | Women | All | Men | Women | All | Men | Women | All | Men | Women |
| 1936 | 0.428 | 0.400 | 0.423 | 0.499 | 0.430 | 0.550 | 0.563 | 0.542 | 0.558 | 0.226 | 0.232 | 0.201 |
| 1940 | 0.412 | 0.393 | 0.410 | 0.481 | 0.410 | 0.551 | 0.568 | 0.541 | 0.581 | 0.217 | 0.203 | 0.227 |
| 1944 | 0.402 | 0.387 | 0.404 | 0.476 | 0.417 | 0.536 | 0.584 | 0.565 | 0.578 | 0.223 | 0.212 | 0.232 |
| 1948 | 0.359 | 0.356 | 0.354 | 0.423 | 0.376 | 0.475 | 0.608 | 0.590 | 0.605 | 0.230 | 0.226 | 0.231 |

Figure 3. Gini coefficient of pension and pension wealth by scheme and generation in 2012

