Gender pension gaps along the distribution:
An application to the French case

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Abstract

In this article we estimate the relative contributions of career duration and income earned to the pension gap between men and women at different points along the pension income distribution, as well as the role played by minimum pensions and other partly or wholly non-contributory policies in reducing this gap. Our research focuses on all the retirees in France in 2008, whether they were formerly employed in the public or the private sector. Applying the decomposition method proposed by Firpo, Fortin and Lemieux (2007, 2009), we show that in the first deciles, the gap is largely due to differences in career duration. This effect gradually fades, and differences in the reference wage become the main explanation. We also show that minimum contributory pensions play an extremely important role in limiting the gender pension gap in the first deciles, for both the public and the private sectors. Lastly, the gender pension gap is much smaller in the public sector than in the private. This is both due to the fact that careers in the public sector are less fragmented and also because calculation of the reference wage does not penalize career interruptions so much. This relative advantage of women employed in the public sector over their counterparts in the private sector can probably be added to the factors usually proposed to explain the over-representation of women in the public sector.

Keywords: Pension, Gender gap, Public sector, Oaxaca-Blinder decomposition, Quantile decompositions, RIF regressions methods.

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Introduction

It is well-known that women's pensions are on average lower than men's, reflecting lower wages and more fragmented professional trajectories (see Bettio et al., 2013 for a comparative study). France is no exception: on average, across all direct pensions (public and private), women's pensions are only 60% of those of men (Bonnet and Hourriez, 2012).

The scale of this inequality depends not only on the past careers of men and women, but also on the way that pension systems transform accrued rights into pensions, in other words the relation between wages earned over the life cycle and the size of the pension. This relation is determined both by the formula of calculation, i.e., the way that wages earned and periods of pensionable employment are taken into account, and by specific policies aiming to reduce the problem of insufficient pensions (minimum pensions) or to take into account past family costs (bonus for children) and current family situation (survivor pensions).

This article has two objectives. The first is to estimate the relative contributions of career duration and income earned to the gender pension gap at different points along the pension income distribution. Secondly, it seeks to identify the levels of the distribution at which minimum pensions and other partly or wholly non-contributory policies reduce the gap between men and women. Our research focuses on all the retirees in France in 2008, whether they were formerly employed in the public or the private sector. Given the importance of public employment in the professional activity of women, restricting the study to the private sector, as is often done, would produce incomplete information about the pension inequalities between men and women.

There is relatively little literature on this topic, since pension inequalities between men and women have only recently attracted the interest of researchers (Ginn (2001), Jefferson (2009), Ponthieux and Meurs (2015)). One notable exception is the article by Bardasi and Jenkins (2010), who analyze the mean difference between the private pension income of men and women in the UK in terms of personal pension coverage rates and personal characteristics. They show that the latter only explain half of the differential. Differences in the returns on personal characteristics for private pensions are the result of differences in the jobs taken and the number of hours worked. In other words, women are penalized in their access to "good" jobs, and this has an impact on their pension coverage and accrued rights. These results differ from those of Even and Macpherson (1994), who, using similar methods for the United States, find that the gender gap in private pensions is mainly linked to personal characteristics. Bardasi and Jenkins explain that this is mainly due to differences in the information used: in the American case, wage trajectories were available, so that the differences in returns on personal characteristics observed in the British case correspond in part to differences in income in the case of the United States. This debate highlights the importance of the quality of data in identifying precisely the origin of differentials.

In the case of France, private pensions are still relatively uncommon and most pension income comes from public pension schemes. All employees are covered by such pension schemes, so there is no question of any selection effect in joining one. We have a very rich database for 2008, covering all retirees and allowing us to trace their professional careers and wages earned, to distinguish between those who worked in the public and the private sectors, and to know their personal characteristics

(current age, retirement age, origin) and family details (number of children), which influence the level of their pensions. In this paper we focus on the three largest groups of retirees, namely private sector employees, public employees working for the central government and public employees employed by local authorities and hospitals. Retirees receiving a pension from at least one of these three schemes represented 83.6% of male and 91.1% of female retirees in 2008. The richness of the data allows us to analyze very precisely the determinants of pension levels and so to elucidate the causes of the observed pension gaps between men and women.

We start by performing a standard mean decomposition as developed by Oaxaca (1973) and Blinder (1973). As the distribution of pensions is rather irregular, marked in particular by threshold effects, we continue the analysis to describe the factors explaining the pension gap at different points along the distribution. For that we use the decomposition method proposed by Firpo, Fortin and Lemieux (2007, 2009).

We show that the pension gap in the first deciles is essentially due to differences in career duration. This effect gradually fades and is replaced as the main explanatory factor by differences in the reference wage. We also show that contributory minimum pensions play a very important role in limiting the gender pension gap in the first deciles, for both the public and the private sectors. Lastly, the configurations differ between the two sectors, with the gender pension gap being much narrower in the public sector. This is both due to the fact that public sector careers are less discontinuous than those in the private sector and also because calculation of the reference wage does not penalize career interruptions so much. This relative advantage of women employed in the public sector over their counterparts in the private sector can probably be added to the factors usually proposed to explain the over-representation of women in the public sector (Blank, 1985), such as the type of occupation (teaching, nursing, administrative tasks), the family-friendly workplace and job security.

The following section outlines the main institutional characteristics of retirement schemes in France. We then describe the database and methodology used (section 3). A decomposition of mean differences in pensions is presented in section 4, while section 5 presents a decomposition of differences over the whole distribution. Finally, some concluding remarks end the article.

2. Institutional background

2.1. The French retirement system

The French retirement system is rather complex, with separate pension schemes for the different occupational groups. Here we present the main features of this system.

The pensions of private sector employees come from several schemes: the "General Scheme" (*régime général* or RG), often referred to as the "basic scheme," and one or more complementary schemes (ARRCO, AGIRC and IRCANTEC). Public employees receive their pension from one of two schemes, depending on their former employer: one for those employed by the central government (*Service des Retraites de l'État* or SRE), and the other for those employed by local authorities and hospitals (CNRACL). The designation is different but the calculation principles are the same. There are

a number of other pension schemes, in particular for the self-employed, but these are not included in our study because of the difficulty in evaluating members' lifetime earnings.

Retirees who have spent their whole careers in either the public or the private sector are referred to as "single-sector retirees" (*monopensionnés*). Those who have worked in both the private and public sectors and thus receive pensions from more than one scheme are referred to as "multi-sector retirees" (*polypensionnés*).

Generally, the pension is mainly a function of the length of the contribution period (D), i.e., the number of quarters of contributions, and the reference wage (wref). The contribution period is used to calculate the pension rate, which is applied to the reference wage. The reforms enacted since the beginning of the 1990s gradually increased the contribution period required for a full pension, modified the calculation of the reference wage and created a pension bonus for people who start receiving their pension after they have satisfied the age and contribution period requirements for a full pension. These reforms have generally been implemented gradually, by "generation", i.e., parameters have changed incrementally for successive birth cohorts. Recent reforms have moved towards convergence between public and private sector retirement systems, but differences persist (see below).

In 2008,[4] the pension formula for the private sector basic scheme and the two public sector schemes was the following:

$$P = Rate \times w_{ref} \times min\left[\frac{D_{scheme}}{D_{required}}, 1\right] \times (1 - d) \times (1 + s)$$

$$d = reduc\_rate \times max\left[0, min\left(D_{required} - D_{total}, 4 \times (65 - age)\right)\right]$$

$$s = bonus\_rate \times 1_{(age>min\_age)} \times max\left[0, \left(D_{total} - D_{required}, 4 \times (65 - age)\right)\right]$$

Parameters concerning individuals: D_{scheme} is the individual's period of contributions in a given sector; D_{total} is the individual's total contribution period, including all sectors of activity; age is the individual's retirement age and w_{ref} the individual's reference wage.

In the General Scheme, the reference wage is currently the average of the 25 highest years of wages, up to the contribution ceiling.[5] Past years of wages are adjusted using an index. For public employees, the reference wage is the wage of the last 6 months of career, excluding bonuses.[6]

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[4] Some reforms have been enacted since 2008, but they do not apply to the retirees in our database.

[5] The calculation of the reference wage was changed in 1993. The years used to calculate the reference wage increased from the highest 10 years of wages to the highest 25 years. This change was applied gradually, by increasing the number by one year for successive birth cohorts, beginning with people born in 1933. The reform came fully into effect for people born in 1948 or later.

[6] Bonuses may constitute a large part of the wage for public employees, so the reference wage may be half the total remuneration for some categories. The average rate of bonus for public employees (teachers excluded)

Parameters concerning scheme rules: $D_{required}$ is the contribution period required for a full pension (which depends on birth cohort). Before the 1993 reform, it was equal to 150 quarters; then the contribution period required for a full pension was increased from 150 to 160 quarters. This increase was implemented gradually, by one quarter for each successive birth cohort, beginning with people born in 1933. People born in 1943 or later were subject to a required contribution period of 160 quarters;[7] *reduc_rate* is the reduction rate of the pension if retirement occurs with a shorter contribution than that required for a full pension, and is equal to 1.25% per missing quarter; *bonus_rate* is the pension supplement you get if you retire after satisfying the age and contribution period requirements for a full pension, and is equal to 1.25% per extra quarter; min_age is the minimum retirement age.

If an individual retires at the age of 65, the pension is not reduced, whatever the individual's contribution period. This age is often referred to as the "full rate age".

The full pension rate is 50% for the General Scheme and 75% for public employees. The rate is lower in the basic scheme for private sector workers, but these latter also receive additional pensions from complementary schemes. In these schemes, the pension is equal to the number of "points" acquired by the worker, multiplied by the value of the point. The number of points acquired in a given year is equal to the product of the employee's wage and the contribution rate of the scheme divided by the reference wage defined by the scheme. (This reference wage is often likened to the "price" of a point.) Complementary pension schemes may provide a large share of the total pension for high-wage workers. In the rest of the paper, we consider pensions from the private sector as a whole, with no distinction between the parts provided by the basic and complementary schemes.

2.2. Minimum pensions and pension entitlements linked to family situation

These schemes are completed by two main public policies: minimum pensions, and pension entitlements linked to family situation (bonus for children, survivor's pension). These policies affect the level of pensions and are expected to limit pension inequalities.

The General Scheme for private sector employees guarantees a minimum pension to retirees who are entitled to a full pension, that is, those who retire at the age of 65 or whose contribution period, counting all the sectors they have worked in, exceeds the requirement for a full pension. If an individual's pension rights fall below this minimum, their pension is brought up to the minimum, which is called the "contributory minimum" (*minimum contributif*). The full contributory minimum is paid to retirees who fulfill the contribution period requirement for a full pension. The contributory minimum is reduced for retirees with a shorter contribution period on a pro rata basis.

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aged 55-59 years was 29 % in 2006. For teachers it was 12% and for some strenuous or dangerous jobs (policemen, nurses, firemen, etc.) it was 45% (COR/DGAFP, 2009).

[7] From generation 1949 on, the contribution period rises again but these new rules do not concern the retirees in our database.

In the public employee schemes, there is a similar mechanism called the "guaranteed minimum" (*minimum garanti*). Until the 2003 reform, the guaranteed minimum was granted in full to retirees with 25 years or more of service, and a partial minimum was paid to retirees with between 15 and 25 years of service. With 15 years of service, civil servants were entitled to 60% of the full guaranteed minimum. This contrasts with the private sector contributory minimum, which is proportional to the individual contribution period. In order to move towards harmonization of private and public sector rules, the 2003 reform increased the contribution period required for a full public sector minimum pension from 25 to 40 years. As of January 1, 2013, public employees with 15 years of contributions in the public sector get 57.5% of the full guaranteed minimum. The minimum increases by 2.5 percentage points per year for each additional year up to 30, and by 0.5 percentage points for each year above 30, reaching 100% of the minimum for 40 years of service.

The original rationale for minimum pensions was quite different in the public and private sectors. The private sector contributory minimum was originally designed to enhance pensions for workers with long careers and low wages. The public sector guaranteed minimum was designed to increase pensions for public employees with short careers. With a long career, a public employee's pension, calculated as a proportion of the career-end wage, rarely falls below the guaranteed minimum.

Pension rights linked to retirees' work history can be supplemented by rights linked to their family situation. A pension bonus is given to parents who have brought up three or more children. The bonus depends on the scheme and may vary with the number of children. In the General Scheme, it is 10%. The private sector complementary scheme ARRCO gives a 5% bonus for three or more children; the private sector complementary scheme AGIRC gives 8% for three children, plus 4% for each additional child, with a maximum of 24% for 7 or more children.[8] In the public sector, the bonus is 10% for three children, plus 5% for each additional child; however, the total pension, including the bonus for parents, cannot exceed the career-end gross wage (bonuses excluded) used to calculate the pension.

Widows and widowers may get a survivor's pension. The survivor's pension is equal to a percentage of the pension rights of the deceased spouse.

3. Data and methodology

3.1. Data

Individuals may receive retirement pensions from more than one scheme if they worked in more than one sector over the course of their careers (for example, someone who started as a private sector employee and then became self-employed, or someone who worked in more than one type of employment at the same time). An administrative database enables us to calculate total pensions for an anonymous sample population, by matching individual data on pensions from the compulsory retirement schemes. This database is called the EIR, which stands for *Echantillon Interrégimes de Retraités* (inter-scheme sample of retirees). The EIR also collects information used to compute

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[8] These rules apply to rights accrued before 2011. For rights accrued in 2012 or later, the increase is 10% for three or more children in both AGIRC and ARRCO.

benefits: contribution periods, pension rates, situation at retirement, increases or reductions in pension rates due to early or delayed retirement, etc.

This administrative database collects information directly from retirement schemes and then matches the information by retiree. There is no system that centralizes information on all pensions paid out to retirees. The 2008 wave of the EIR was designed to represent the population aged 35 and over as of December 31, 2008. It includes all individuals in the sample who are receiving a retirement pension, either through direct entitlement or through indirect entitlement to a deceased spouse's pension, i.e. a survivor's pension. Virtually all obligatory retirement schemes participate in the EIR, except some small ones. For the 2008 EIR, 74 schemes gave information: the General Scheme and other basic schemes, schemes for public sector employees, and mandatory complementary schemes.

All told, the 2008 EIR includes 233,165 individuals who are receiving at least a direct entitlement pension, and, possibly, a survivor's pension.

We have chosen to concentrate on schemes for private sector employees and public employees. Thus we deal with three groups of retirees:
- private sector employees, who are covered by the General Scheme (RG)
- public employees working for the central government, who are covered by the Service des Retraites de l'État (SRE)
- public employees working for local authorities or hospitals, who are covered by a separate scheme (CNRACL).

These retirees may be getting pensions from a single scheme (single-sector retirees) or from more than one (multi-sector retirees). All told, they make up 83.6% of male and 91.1% of female retirees in 2008. In the rest of this article, we present our results for the different sectors, first for single-sector retirees, then for the whole sample (single and multi-sector retirees).

3.2. Descriptive statistics

The gender gap in pensions may stem from several factors involved in the calculation of pensions:

- the variables that directly link the past wage-earning career to the size of the pension, namely the length of contribution and the reference wage. Intuitively, since women have shorter careers and lower wages on average, they will therefore receive lower pensions. These two variables are the most important for explaining pension levels.
- the variables that correspond to public policies aiming to raise the pension level of particular populations because of specific costs. Here there will be dummy variables for the presence of three or more children, since this gives rise to a bonus, and for the fact of retiring for reasons of incapacity or invalidity.
- a dummy variable on whether or not the retiree receives a minimum pension.
- the retirement age. This plays a role because it is the result of a trade-off between earlier retirement and larger pension. It differs considerably between men and women, especially in the private sector.
- the year of birth, in order to take into account the cohort structure. As the legislation has changed over time, and different cohorts may be subject to different laws, the link between

length of contribution, wages, etc. and the level of pension depends on one's year of birth. Moreover, because of differential mortality, the survivors of the oldest generations are often the people with the highest pensions.

- a dummy variable on whether the retiree was born in France, not because this affects the pension, but because these people have particular careers and this indicator enables us to reduce the measurement error.

The two variables that have the most effect on the level of pensions are the length of contributions and the reference wage. The following graphs present the distributions of the lengths of contribution used in the calculation of pension levels, and then the distributions of wages, separately for men and women, for all retirees and then for each scheme.

For retirees as a whole, we find as expected that the distribution of lengths of contribution is more concentrated for men, with a strong peak around 160 quarters, while the distribution for women is more scattered, with many female retirees having lengths of contribution below 50 quarters (figure 1). This general configuration is similar to that of the General Scheme, while the curves are of a very different shape for central government employees (single- or multi-sector), where the lengths of contribution differ little between men and women.[9] The profiles for local government employees display an over-representation of short durations (less than 100 quarters), very pronounced for women, but also for single-sector men (figure 2).

**Figure 1 - Distribution of career duration by gender**
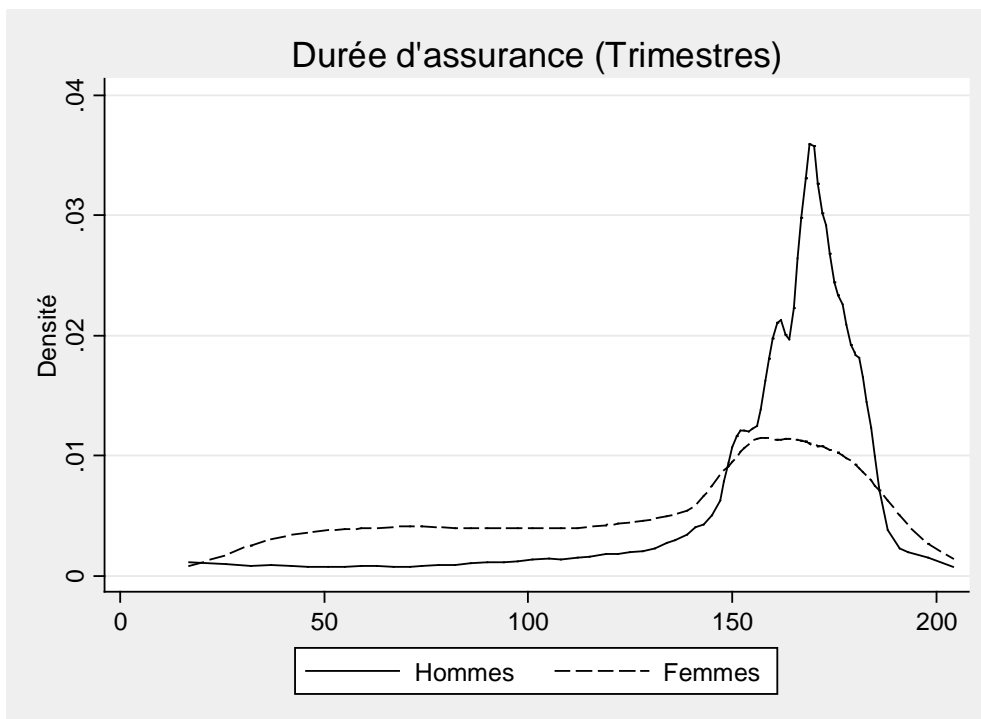
Source: EIR 2008, Retirees with direct entitlement, as of December 31, 2008

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[9] Short lengths of service (less than 15 years) in the public sector are subject to the "*clause de stage*" and switched back to the General Scheme, which automatically raises the average length of service in the public sector. However, this only involves a small number of people.

Figure 2. Distribution of career duration by sex and type of retiree

Durée d'assurance (Trimestres) selon le type de retraité
densité

Hommes ——— Femmes - - - - -
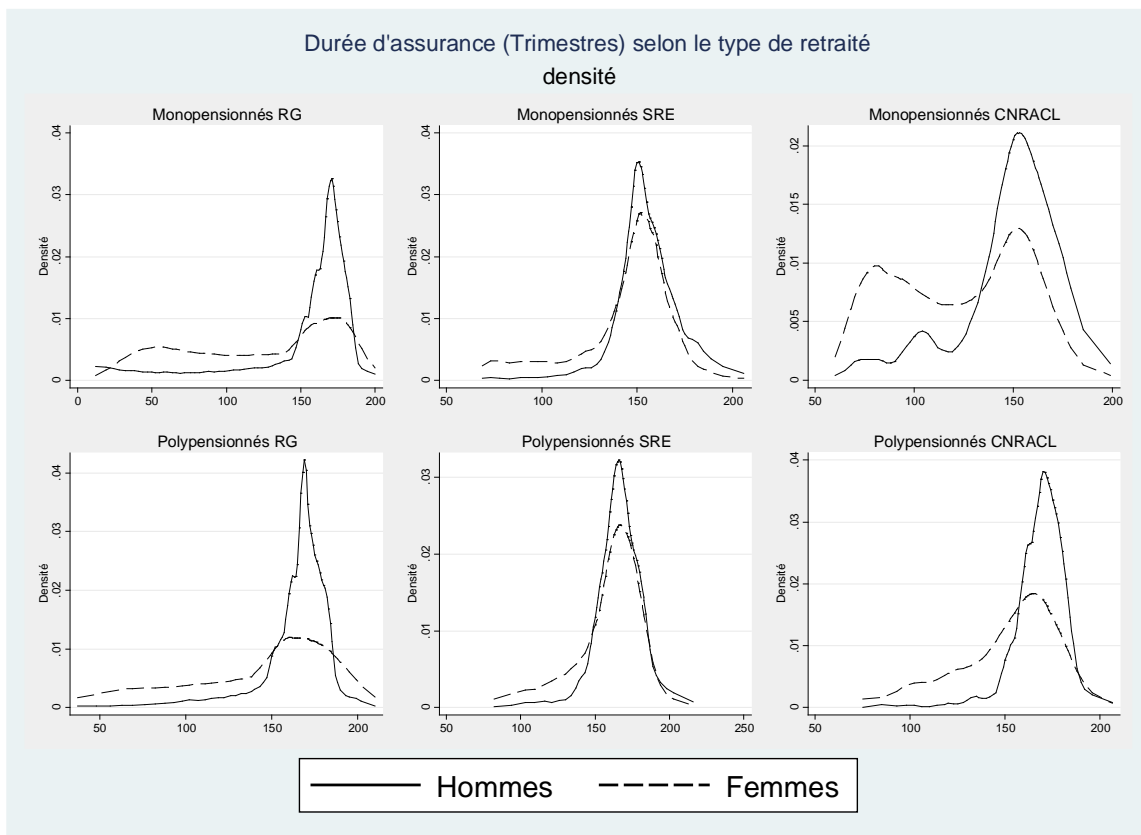
Source: EIR 2008, Retirees with direct entitlement, as of December 31, 2008

Turning our attention to the reference wage (figure 3), the wage distribution of women in the General Scheme is considerably to the left of that of men, clearly indicating that the disadvantage in terms of contribution period is compounded by the disadvantage in wages.

Figure 3. Distribution of reference wages by sex

Salaire de référence mensuel (€)

Hommes ——— Femmes - - - - -
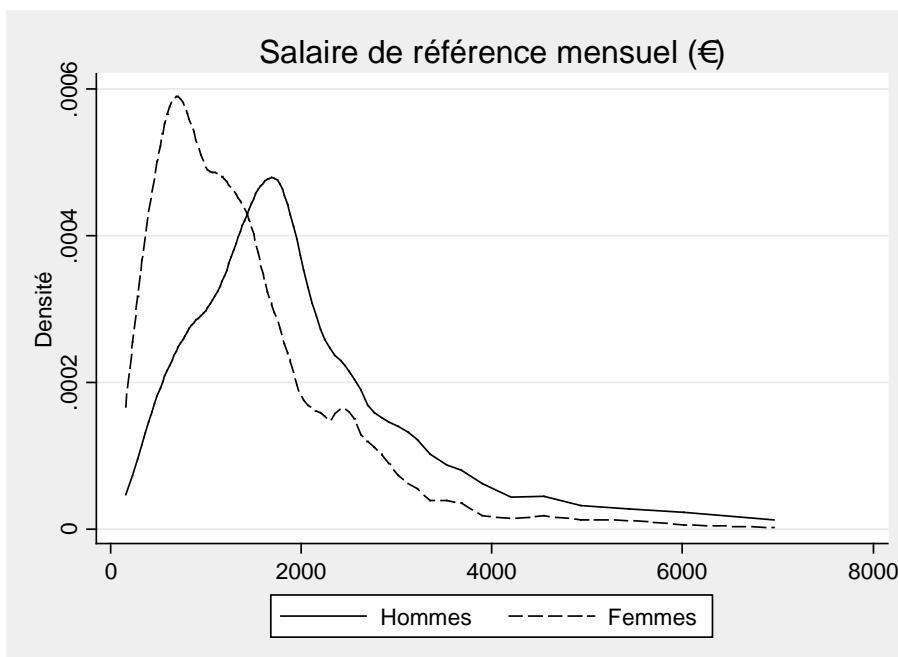
Source: EIR 2008, Retirees with direct entitlement, as of December 31, 2008

For central government retirees, the wage distributions of men and women are more similar. They are also more irregular, and the disadvantage in terms of the reference wage for women is not so clear, especially for the single-sector retirees. For single-sector retirees on the CNRACL scheme, the configurations are even more particular, with two peaks, one at 1600 euros and the other at 2500 euros, and a higher proportion of women in the lowest wage levels. The picture is not the same for multi-sector retirees on the CNRACL scheme, however, where the configurations are similar to those observed for the General Scheme, with an accumulation of low wages, although at higher levels as one moves up. The numerous peaks observed in the three forms of public sector employment, especially among single-sector retirees, is certainly due to the existence of pay scales that cause employees in the same category and the same corps to arrive at the same final index (figure 4).

Figure 4. Distribution of reference wages by sex and type of retiree (*)
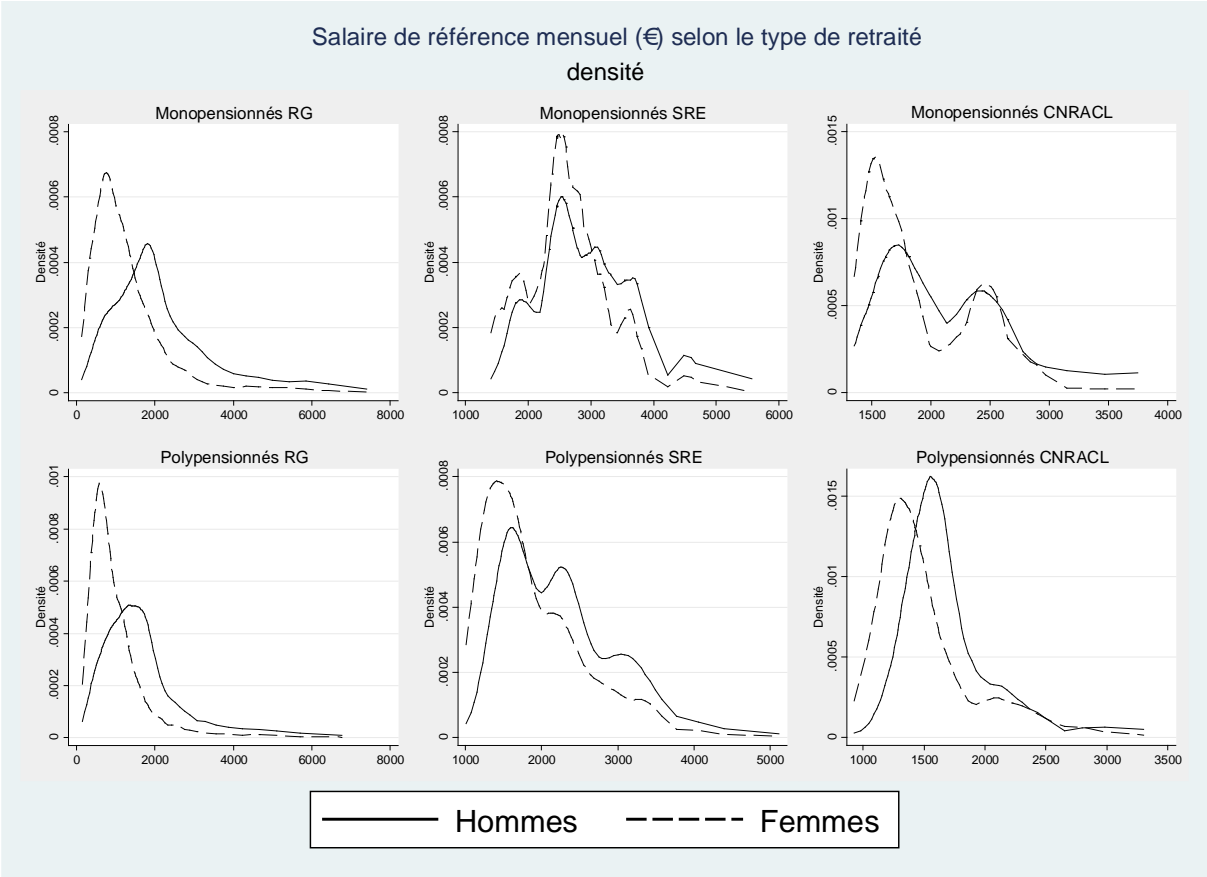
(*) NB: the abscissae of these graphs are not to the same scale, for the sake of clarity.
Source: EIR 2008, Retirees with direct entitlement, as of December 31, 2008

3.3. Decomposition of the mean gender pension gap (Oaxaca-Blinder)

To decompose the mean gender pension gap, we start with the classic method of Oaxaca (1973) and Blinder (1973). Formally, in the case of wage differences, this standard decomposition is written:

$$\bar{W}_m - \bar{W}_f = (\bar{X}'_m - \bar{X}'_f)\beta^* + \bar{X}'_m(\beta_m - \beta^*) + \bar{X}'_f(\beta^* - \beta_f)$$

where W_m (resp. W_f) represents the estimated mean wage of men (resp. women), $\bar{X}$ the observed individual characteristics and β^* the norm used to value those characteristics. Ideally, β^* represents the return to these characteristics in a non-discriminatory labor market (Oaxaca and Ransom, 1994). Statistically, the same calculation can be used for the gender pension gap (as Bardasi and Jenkins (2010) did for Great Britain),[10] but the interpretation will be different. This is because the formulas used to calculate pensions are gender-neutral and unaffected by the current preferences of individuals. Some of the values used to calculate an individual's pension may be the result of personal choices (retirement age, for example), but once these values are known, the calculation is totally deterministic. So, whereas an employer might seek systematically to promote men rather than women, a pension fund cannot refuse to give a monetary advantage to a woman if she is entitled to it. Likewise, the individual behavior of retirees cannot affect the level of pension received. A man and a woman with exactly the same characteristics will get the same pensions, the returns to characteristics being identical by nature.

Consequently, the share of the pension gap explained by composition effects should in theory reach 100% if we can take into account all the constituent elements of pensions. The interest does not lie in the share explained – we will endeavor to reach 100% -, but in its composition. Thus, we seek to determine which elements – linked to past career and which can include past discriminations against women – are the most important in explaining the gender pension gap.

In practice, however, there remains an "unexplained" part in the decomposition of the mean pension gap. Where exactly does this unexplained part come from?

First of all, it stems from the way the decomposition is performed. The formulas for the calculation of pensions are strongly non-linear, because of the existence of the contributory/guaranteed minimum, the way the payment rate is calculated for the General Scheme, and various ceilings. Consequently, the average returns to characteristics may potentially differ if their distributions between two groups differ, when the non-linearities affect each group differently. Furthermore, the variables we use to explain the pension level are indeed variables that determine the pension, but the link between the two may not be direct. Thus, in the private sector, we use the length of contributions to all schemes to measure the duration of activity. However, some quarters are "more useful" than others in the sense that they generate higher entitlements. For example, part of the length of contributions for women is actually a supplement added for each child, and it has no effect on either the yearly average wage nor on the rights accrued in complementary schemes. For this reason, a quarter may be more rewarding for men than women because it is more often associated with professional activity.

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[10] Note that we decompose the log pension gap, as is usually done for wages, insofar as pensions are a multiplicative function of the measures considered (durations, wages), whereas the decomposition is an additive method.

To limit the effects of non-linearities, the continuous variables are finely discretized before being introduced into the empirical analysis in the form of series of dummy variables. A dummy variable is created for each band of 5 quarters (for the duration), for each band of 100€ (for the reference wage), for each year of birth and for each quarter for the retirement date.[11] This allows, for example, each band of duration to have a different effect on the pension and does not require the transition from 50 to 55 quarters to have the same (marginal) effect on the pension as the transition from 150 to 155 quarters. In the results presented below, the effect of one factor, for example duration, is calculated by grouping together the contributions of all the dummy variables describing that factor. Measurement errors may also play a role in the unexplained part. The reference wage that we determine for the calculation of an individual's pension is an approximation of the life cycle wage. The more linear the career, the more realistic it is, and the more fragmented the career (which is more often the case for women), the less realistic. Two people with the same reference wage can therefore have different pensions in the complementary schemes. The risk of measurement error in the reference wage is greatest for multi-sector retirees who have followed a large part of their career in a scheme other than those included in our analysis, because we do not model the wage reference for these schemes. This measurement error on wages will affect men more than women, because they are more likely to be multi-sector retirees.

3.4. Decomposition of the gender pension gap at different quantiles

The distribution of pensions is quite irregular, as the graphs in the previous section show. This is particularly due to non-linearities in the formulas of calculation, threshold effects and, in the case of the public sector, accumulation point caused by the index system and pay scales.

The decomposition of mean differences is not sufficient to analyze the pension gaps in their entirety. To identify the most important factors at different points along the distribution, we use the decomposition method proposed by Firpo, Fortin and Lemieux (2007, 2009). It is not possible directly to apply the Oaxaca-Blinder mean decomposition method to another level in the distribution, because the coefficients obtained after a classic quantile regression do not correspond to the marginal effects of the different explanatory variables. However, Firpo, Fortin and Lemieux (2007, 2009) show that if we transform the functional variable with the help of the recentered influence function, we can apply the Oaxaca-Blinder decomposition to this transformation. The coefficients determined by a linear regression applied to this transformation correspond very well to the marginal effects of the explanatory variables on the quantile considered.

Consider a variable of interest (the dependent variable) Y with distribution F_Y and marginal density $f_Y(.)$. Here Y is the (logarithm of the) level of pension benefit. Consider a statistic of interest v. Here v is a given quantile, but the method can be applied to other distributional statistics, as the Gini. Let's denote $\text{IF}(y; v)$ the influence function for an observed y for the statistic $v(F_Y)$. The recentered influence function (RIF) is the sum of the distributional statistic considered and of the influence function:

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[11] In certain cases, some bands have been grouped together. For example, there are no retirees with a duration of less than 60 quarters receiving an SRE pension, because one must complete 15 years of service to be eligible for this pension (in practice, very few have less than 100 quarters). This does not prevent us from comparing the different types of pensioners.

$$\text{RIF}(y; v) = v(F_Y) + \text{IF}(y; v)$$

For the quantile Q_τ of level τ, the influence function $\text{IF}(y; Q_\tau)$ is given by

$$\text{IF}(y; Q_\tau) = \frac{\tau - \left(\mathbb{I}_{\{Y \leq Q_\tau\}}\right)}{f_Y(Q_\tau)}$$

where $\mathbb{I}_{\{.\}}$ is the indicator function. Thus the recentered influence function for the quantile of level τ is:

$$\text{RIF}(y; Q_\tau) = v(F_Y) + \frac{\tau - \left(\mathbb{I}_{\{Y \leq Q_\tau\}}\right)}{f_Y(Q_\tau)} = Q_\tau + \frac{\tau - \left(\mathbb{I}_{\{Y \leq Q_\tau\}}\right)}{f_Y(Q_\tau)}$$

Firpo et al. (2009) show that it is possible to recover the marginal effects of a set of explanatory variables X just by regressing the recentered influence function of the quantile of level τ on X, by using OLS. In this case it is possible to apply the classic Oaxaca-Blinder decomposition to the recentered influence function to obtain the decomposition for a given distributional statistic (quantiles or others) – see Firpo et al. (2007). Note that the recentered influence function of the mean is the mean itself.

So the method used is the following:
- For each quantile in the distribution (quartiles, deciles, etc.), and for each individual, we determine the recentered influence function of the quantile.
- We then apply the Oaxaca-Blinder method to this quantile, regressing, for men and for women, the recentered influence function of the quantile on the different variables (the same that were used for the mean).
- We can therefore determine the composition effects of each variable and the unobservable effects on gender gaps for other characteristics of the distribution than the mean.

We present the results with and without the variable for receiving the contributory/guaranteed minimum, in order to appreciate the impact of this measure on the gaps at different points along the distribution. The contribution of a given factor at a given quantile indicates the share of the gender pension gap at this quantile that is explained by the differences between men and women in the distribution of this factor.

Even more so than for the decomposition of mean differences, the way that we take into account the explanatory variables, especially the length of contribution and the reference wage, is important and can lead to different results depending on the choices made. One would expect that at the lower end of the distribution (for example the first decile), it is rather the differences between men and women in terms of short careers and low wages that drive the gender pension gap, while these groups of pensioners will probably have little effect on the pension gap in quantiles at the top of the distribution. Consequently, we keep the same very fine discretization of wages and durations as previously.

4. Results of the mean decomposition

Table 1 presents the results for all retirees and for each group of pensioners, taking into account all the variables that affect pensions except for the fact of receiving a minimum. The fits are of very good quality. The R² of the regressions used to calculate the decomposition are high: between 67% and 95%. They are lowest for men in the General Scheme and very high for single-sector retirees (both men and women) from central government employment. This quality is due both to the fact that we incorporate the main determinants of retirement pensions and to the very flexible form used, which optimizes our taking into account of the non-linearities.

For retirees as a whole, 83% of the mean difference of 0.56 (in log points) can be ascribed to differences of composition following the different factors taken into account for the calculation. Out of this total, the duration and the wage are by far the most explanatory factors, since they account for 38% and 54% of the mean difference respectively. The effect of the bonus for children is close to zero. Lastly, the other composition effects (invalidity and age differences) are negative and therefore work in favor of women, but only explain a very small share of the gap. Only the fact of being foreign has a positive but limited effect (6% of the total), reflecting the fact that retirees born outside France are more likely to be men and to receive lower pensions, all other things being equal. There remains a residual – or unexplained gap – of 0.098 (17% of the total) in favor of men.

Looking at the results by type of retiree, we again find that pension gaps are on average much lower in the public sector (for pensioners on either the SRE or the CNRACL scheme) than in the General Scheme, which contains the women with the most fragmented and least favorable careers, and who have most often experienced inactivity. The gaps are also systematically larger for the single-sector + multi-sector groups than for single-sector retirees alone (except on the CNRACL).

Table 1. Decomposition of mean differences in pension (in log points) for the whole stock and by type of retiree

	Ens	RG		SRE		CNRACL	
	Ens	Mono	Ens	Mono	Ens	Mono	Ens
Men	7.104	6.920	7.027	7.701	7.660	7.363	7.368
Women	6.539	6.315	6.359	7.497	7.449	7.082	7.131
Total gap	0.564	0.605	0.668	0.204	0.211	0.280	0.237
Explained gap	0.466	0.620	0.521	0.192	0.169	0.221	0.166
duration	0.217	0.222	0.269	0.072	0.070	0.116	0.132
wage	0.302	0.506	0.335	0.120	0.091	0.094	0.018
retirement age	-0.008	-0.041	-0.028	0.001	0.002	-0.003	-0.006
children	0.002	0.000	0.001	0.002	0.007	-0.006	0.004
invalidity	-0.009	-0.026	-0.016	-0.001	0.000	0.001	0.000
cohorts	-0.004	0.005	-0.002	-0.002	0.001	0.020	0.019
origin	-0.033	-0.046	-0.038	0.000	0.000	0.000	0.000
Explained share	*83%*	*102%*	*78%*	*94%*	*80%*	*79%*	*70%*
Unexplained share	0.098	-0.015	0.148	0.011	0.042	0.059	0.070
Unexplained share	*17%*	*-2%*	*22%*	*5%*	*20%*	*21%*	*30%*

Source: EIR 2008

In every case, the unexplained share of the gap is much lower for single-sector retirees than for the group of single-sector and multi-sector retirees considered as a whole. This is particularly true for single-sector retirees of the General Scheme. It is due to the fact that the link between duration, reference wage and pension is more complex for multi-sector retirees, because their pensions are calculated independently from each other, thus amplifying the non-linearities discussed above.

For each scheme, the differences in composition are essentially differences in terms of duration and wages. Figure 5 presents the components of the explained gap and clearly highlights the predominant role of wages and durations. For retirees on the General Scheme, as for those on the SRE, wage differences make a greater contribution than differences in duration, above all for single-sector retirees.

Figure 5. Representation of explained contributions, by type of retiree
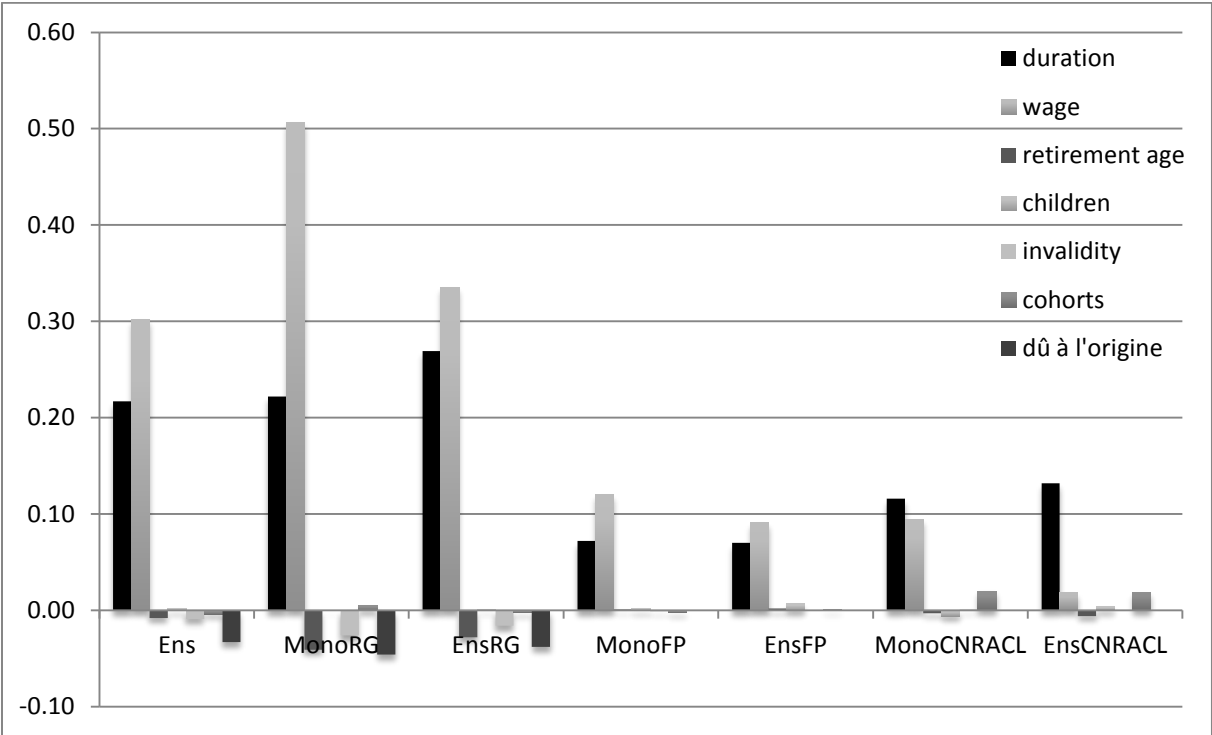
Source: EIR 2008

In every case, taking into account multi-sector retirees reduces the mean gender gap in the reference wage, which has the effect of reducing the contribution of wage gaps (though less strongly for the SRE scheme), essentially in favor of the unexplained share. On the contrary, the mean difference in duration increases for the General Scheme and (weakly) for the CNRACL scheme, while it remains stable for the SRE scheme. This could explain the fact that differences in duration make a greater contribution to the pension gap in the first two schemes when we consider all the retirees in those schemes. Moreover, as already mentioned, by including the multi-sector retirees (especially in the General Scheme), we are adding men for whom the link between wage and pension is less precise than it is for single-sector retirees (see above). And finally, overall, wages and durations make a smaller contribution to the pension gap in the SRE and CNRACL schemes than in the General Scheme, because of the greater homogeneity of careers. The differences between men and women in terms of career duration are much smaller in the two public sector schemes, both because short careers are excluded and because full careers for women are more frequent than in the private sector.

The contribution of wages is lowest for the CNRACL scheme when we take into account multi-sector retirees. Women receiving multi-sector pensions after local government and hospital employment are quite a heterogeneous group, with a relatively large share of skilled jobs. This reduces the gender pay gap in this part of the public sector, which in turn reduces the pension gap related to the reference wage. This shows the interest of taking into account multi-sector pensions to obtain a more precise view of relative situations. The disadvantage, however, is the high contribution of the unexplained share when multi-sector pensions are included.

Let us now turn our attention to the other factors. The contribution of differences in retirement age is negligible in the public sector. It remains low, but in favor of women, in the General Scheme. This is because for retirees as a whole (both sexes) it is generally advantageous to retire at the age of 65 rather than before (particularly for women), and women are more numerous at this age. With the exception of retirees on the CNRACL scheme (especially single-sector retirees), differences in cohort structure have little effect. This factor contributes to 7% of the pension gap for single-sector retirees on the CNRACL scheme, and 8% for all retirees on this scheme. The proportion of parents with 3 or more children has negligible impact. Differences in the proportion of invalidity/incapacity have little effect, except for retirees on the General Scheme, and they tend to reduce the average pension gap. Again, the effect of invalidity on the pension is positive (all else being equal), which can be interpreted as the effect of receiving the full pension rate from the age of 60, even for a low duration, resulting in a higher pension. This positive effect is combined with a higher rate of invalidity/incapacity among women.

- The specific role of the contributory/guaranteed minimum

The mechanism that is certainly the strongest generator of non-linearities is the contributory/guaranteed minimum. For people with a long career but low wages, it is likely to decorrelate the retirement pension and the reference wage quite strongly. In every case, we expect the introduction of the contributory/guaranteed minimum to increase the explained share of the model, insofar as far more women than men benefit from this measure. Note that this variable is not a characteristic of the individual *per se*, unlike the reference wage and duration of activity; it is a characteristic of the pension system (i.e., the formula of calculation). Nevertheless, introducing it allows us better to take into account the non-linearities.

For the public sector, where careers follow progressions that are defined in the pay scales, the guaranteed minimum is more likely to introduce non-linearities into the effect of duration, since the minimum is fully accorded after 25 years of service and modulated between 15 and 25 years of service.[12]

Since a higher proportion of women than men receive the contributory/guaranteed minimum, up to fairly high levels in the distribution of pension incomes (especially in the General Scheme) and since, all else being equal, the contributory minimum has the effect of increasing the pension, it is not surprising to observe that these differences contribute to the benefit of women in the total pension gap (Table 2 and figure 6 in appendix). The effects are only important for single-sector retirees on the General Scheme and, to a lesser extent, for General Scheme retirees as a whole (single- and multi-sector). This also has the effect of slightly reducing the contribution of the other observable

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[12] Recent reforms have introduced changes in this area, but the stock of retirees studied here is that of 2008.

variables, but of increasing the contribution of wages, chiefly for single-sector retirees on the General Scheme.

Table 2. Decomposition of pension differences (in log points) for the whole stock and by regime – the effect of minimum pensions

	Ens	RG		FP		CNRACL	
	Ens	Mono	Ens	Mono	Ens	Mono	Ens
Men	7.104	6.920	7.027	7.701	7.660	7.363	7.368
Women	6.539	6.315	6.359	7.497	7.449	7.082	7.131
Total gap	0.564	0.605	0.668	0.204	0.211	0.280	0.237
Explained gap	0.466	0.604	0.527	0.192	0.172	0.224	0.167
duration	0.207	0.195	0.256	0.071	0.069	0.104	0.131
wage	0.355	0.651	0.392	0.120	0.094	0.082	0.018
retirement age	-0.005	-0.019	-0.021	0.001	0.002	-0.002	-0.006
children	0.002	0.000	0.001	0.002	0.007	-0.006	0.004
invalidity	-0.008	-0.019	-0.014	-0.001	0.000	0.001	0.000
minimums	-0.051	-0.164	-0.047	0.001	0.000	0.026	0.000
cohorts	-0.004	0.002	-0.003	-0.002	0.001	0.019	0.019
origin	-0.030	-0.042	-0.036	0.000	0.000	0.000	0.000
Explained share	*83%*	*100%*	*79%*	*94%*	*82%*	*80%*	*70%*
Unexplained share	0.099	0.002	0.141	0.011	0.039	0.057	0.070
Unexplained share	*18%*	*0%*	*21%*	*5%*	*18%*	*20%*	*30%*

Source: EIR 2008

The effect of minimum pensions is particularly high for single-sector retirees on the General Scheme. The share explained by this factor represents more than one quarter of the total gap. In other words, this component captures the fact that women are far more likely than men to receive the contributory minimum and that this latter is an important element in explaining the pension gap. If this safety net did not exist, the gender pension gap would be even larger. Moreover, the contributory minimum has the effect of increasing the contribution of gender wage differences to the pension gap, especially for single-sector retirees. As the contributory minimum and the reference wage are negatively correlated and as receiving the contributory minimum has a positive effect on the pension, omitting this variable generates a bias, by underestimating the effect of wage on pension (omitted variable bias), which leads to a stronger contribution of wage gaps when we take into account the fact of receiving a minimum pension. This bias is particularly strong for single-sector retirees on the General Scheme, because of the importance of the contributory minimum for these retirees (and especially for the women).

5. Results of the decomposition along the distribution

Decomposition along the whole distribution brings to light the following results. Firstly, the pensions for the first centiles of women are higher than those of men[13] (Figure 7, top left-hand quarter). From the 5th centile, the gap shifts in favor of men and grows in this direction until it reaches a maximum around the 15th and 16th centiles (with a gap that almost doubles). It then decreases gradually and only increases again in the last few centiles.

When we separate the contribution of differences in composition on the observable determinants of pensions and the contribution of the unexplained share (differences linked to unobservable factors and measurement errors), we can see that the composition effects are in favor of men and contribute largely to pension gaps, at every point along the distribution. They are relatively low for the very first centiles but increase fast, reaching a maximum between the 1st decile (centile 10) and the 3rd decile (centile 30), approximately, before gradually decreasing. At the lower end of the distribution, the unexplained share follows the same trend. Initially in favor of women, it decreases very fast before stabilizing at a low level, almost zero, between the 6th and the 9th deciles. It only starts to increase again (slightly) at the top of the distribution.

The unexplained share only makes an important contribution to pension gaps in the very first centiles, and it is in favor of women. It can probably be associated with measurement errors on the pensions of some men at the low end of the distribution whose pensions are actually incomplete. Certain men end up towards the bottom of the distribution despite "good characteristics" (wage and duration) because part of their pensions, paid by schemes not included in the EIR, is missing, and they are as a consequence considered as single-sector retirees. Men are more often affected by this phenomenon because they are more likely to be multi-sector retirees. Above the first decile, the unexplained share remains low, but in favor of men, consistent with what we observe for the average.

The decomposition allows us to identify the factors that play a role in composition effects (Figure 7, bottom left-hand quarter). At the low end of the distribution, the two main parameters that determine the pension (duration and wage) act in the same direction and quite strongly. Differences in reference wage play a more important role up to about the first decile, after which differences in duration make a greater contribution, up to somewhere between the 3rd and 4th deciles. The contribution of duration then falls sharply, while the contribution of wages remains fairly stable and is the essential cause of pension gaps in the upper part of the distribution. Above the median value, approximately, the contribution of differences in duration becomes negligible: from the 7th decile, the total explained gap is essentially due to differences related to wages. From the moment that all retirees, men and women alike, have completed a full career – which is the case in the upper part of the pension distribution -, the differences of composition in terms of duration become negligible. Overall, therefore, composition effects are more related to differences in duration at the bottom of the distribution (except below the first decile); they are related to both duration and wages in the middle of the distribution, and they are more related to differences in wages in the upper part of the distribution.

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[13] For values that remain very modest: around 150€ per month at the 5th centile.

Figure 7. Decomposition of gender pension gaps at different centiles. *Whole field*
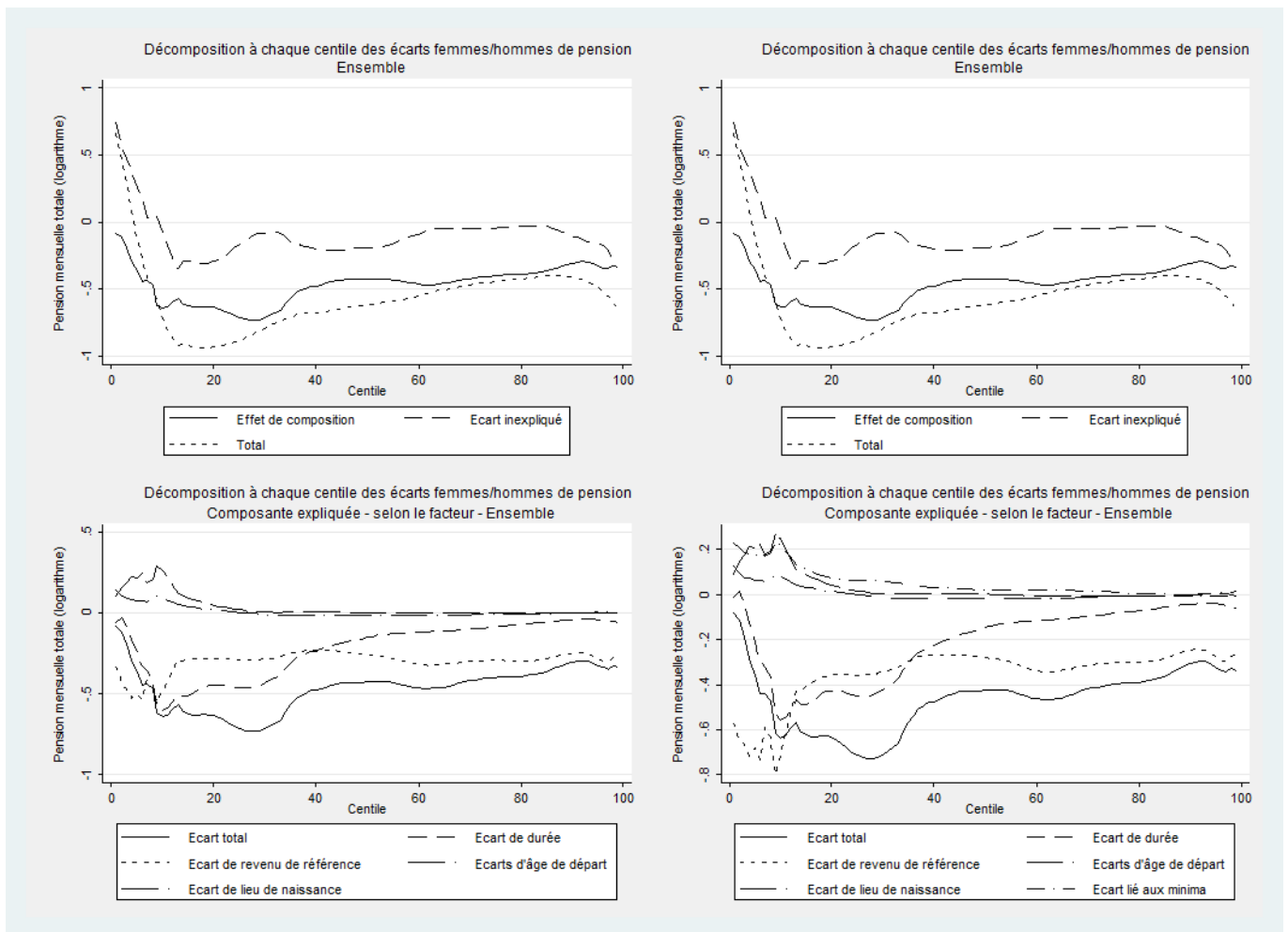
Source: EIR 2008

Note: these graphs only represent the effects of the main factors (see appendix 5 for the complete graphs). However, the estimations take into account all the factors. The vertical scales may differ from one graph to another.

All the other factors have a negligible effect above the 2nd decile. Below it, on the other hand, they are more in favor of women, as the distribution of these variables reduces the gender pension gap. As we have already observed for the mean differences, it is the proportions of people born in France that have the strongest impact. We interpret the contribution of this factor as an indication either of measurement errors on the careers of men born abroad and receiving low pensions, or of irregular and unfavorable forms of career that one is more likely to observe among people born abroad. The other factors make quite small contributions which can be interpreted in the same way as for the mean differences. However, it is interesting to note that these effects observed for the mean differences are essentially effects that appear in the very first deciles of the pension distribution.

Introducing the receipt of a contributory minimum pension as an explanatory factor somewhat modifies the conclusions towards the bottom of the distribution (Figure 7, top right and bottom right-hand quarters). As women are more likely to receive the contributory minimum pension, the differences of composition on this variable are in their favor, but although this effect can be observed up to quite a high level in the distribution, it is very slight above the first two deciles. This is because although the reception of a contributory minimum remains in favor of women up to a high level in the distribution of pensions, the share of the pension income that is provided by the contributory or guaranteed minimum grows smaller and smaller, thus reducing the impact of this variable. Taking into account the reception of the contributory/guaranteed minimum has an effect on the contribution of the composition in terms of reference wage, which becomes more clearly in favor of men up until about the 15th decile. Disregarding the reception of a contributory/guaranteed minimum pension leads one to underestimate the effect of the reference wage on the pension, as explained above.

However, it should be recalled that these observations concern all the retirees on the General Scheme and on the two public sector schemes. One might expect the results to differ when we consider each group of retirees separately.

- Main results by types of retirees

As in the case of the mean differences, and probably even more so, the analysis centered on all the retirees in our field conceals important disparities between the different types of retirees. We will now examine in turn the single-sector retirees of the RG, the SRE and the CNRACL, and then the single- and multi-sector retirees together for each scheme.

The overall appearance of the graphs for the single-sector retirees of the General Scheme is quite similar to that for all retirees taken as a whole. However, the contribution of differences in the reference wage is much larger and that of differences in duration is much smaller, to the extent that the effects of wage differences are greater than the effects of differences in duration at almost every point in the distribution (and throughout the whole distribution when we take the contributory minimum into account).

As expected, given the results of the mean decompositions, the effect of the contributory minimum is more important than for the field as a whole: it plays a clear role in increasing the effect of differences in reference wages at the bottom of the distribution, for almost the whole first quartile. The contribution (in favor of women) of the contributory minimum is also amplified compared with our results for the field as a whole, for at least the first quartile (and even as far as the 3rd decile).

It can also be noted that durations contribute in favor of women in the very first centiles, which might be explained by the supplements added to lengths of contribution: women with very small pensions have longer durations than men in this case.

The profile is quite different for single-sector retirees of the public sector, at least towards the bottom of the distribution. Firstly, the differences are much smaller than in the General Scheme: the gap at the median pension (for logarithms of pensions) is 5 to 6 times smaller.[14] Secondly, the total effect is in favor of men throughout the whole distribution. The overall appearance of the total effect is a bell curve: the relatively large gap for the first centiles gradually diminishes before slowly decreasing, except for the last centiles where the fall is more pronounced. It is essentially due to differences in composition, except at the two extremes of the distribution (the first two deciles and the last decile, approximately). Between these extremes, the unexplained share of the gap is almost zero. This is almost certainly due to the fact that essentially, between the two extremes, we find men and women who have completed their careers and reached the highest index on their pay scale. There is no non-linearity, since the pension is probably the product of the final index and the pension rate (which is more or less identical for everyone). The situation is different for the first two deciles: some of the women in these deciles receive the guaranteed minimum (as do some men, but only in the first decile), and there are also early retirements for mothers of three or more children. At the top of the distribution (the last decile) the unexplained share is slightly larger, although still small. It may be that the top centiles comprise above all the careers of a small number of high-ranking public servants and that our method for dealing with non-linearities fails to take into account all the differences between centiles.

If we examine the composition effects factor by factor, the first thing to observe is that the different effects are quite weak. Secondly, only the differences in durations and wages are noteworthy. Moreover, from about the 2nd decile upwards, the profile is the same as for the General Scheme. Careers are more homogeneous (except at the bottom of the distribution). One interpretation is that among the single-sector retirees of the public sector, very long careers are less numerous, because of recruitment constraints (fewer early entries), less incentive to pursue one's career once one has reached the full pension rate (no premium[15] as there is in the private sector, but no complementary schemes and therefore no way to increase one's pension, especially for those who have reached the top pay index for their category), and less impact of supplements to the length of contribution for women (4 quarters per child instead of 8). The general shape of the curves also has certain points in common with that of the General Scheme in the lower part of the distribution, but the position of the curves is quite different. There is no difference between the first decile and the rest of the distribution as regards the contribution of wage differences, unlike in the General Scheme. Consequently, for the first deciles, it is the differences in duration that contribute the most to the pension gap. The contribution of wage differences remains stable up to the 4th decile; above this point it increases slowly while the contribution of differences in duration decreases, exactly as in the General Scheme. However, taking into account the guaranteed minimum further reduces the contribution of wage differences at the bottom of the distribution (in the first centiles), just as it

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[14] The scales are different, which may give the impression that the effects are stronger for SRE retirees than for General Scheme retirees. That is not the case.

[15] References to the legislation concern the rules in force before the reform of 2003, because the large majority of the stock of retirees studied here retired before this date.

reduces the contribution of differences in duration.[16] Because of the method of calculation, the guaranteed minimum erases all the differences in reference wage and duration for people who have more than 25 years of service (in the lower part of the distribution). Below 25 years, the mechanism is more complicated, because the pro rata rate applied to the guaranteed minimum index is more favorable than that applied to the payment rate index. Differences in the rate of recipients of the guaranteed minimum have an effect in favor of men (negative). This effect is weak and disappears after approximately the 1st decile. The marginal effect of reception of the guaranteed minimum at the 1st decile is low. Moreover, recipients of the contributory minimum can only be observed up to the 1st decile for men and up to the 2nd decile for women, so that overall, the rates of recipients and the resulting difference in rates are very small. Remember that people with less than 15 years of service are subject to the "*clause de stage*", meaning that they receive their pension from the General Scheme, and consequently there is nobody in the sample of SRE retirees with a very short duration.

To sum up, the differences are much smaller at every point along the distribution in SRE scheme, owing to a greater homogeneity of careers, and differences in general appearance are observed essentially at the bottom of the distribution, with a more pronounced contribution of wages in the General Scheme and of durations in the SRE.

For the CNRACL scheme, the differences are of the same order of magnitude as in the SRE, and therefore much lower than for the single-sector retirees in the General Scheme. The difference at the media (for the logarithms of pensions) is almost twice as small.[17] Furthermore, the total difference is in favor of men throughout the whole distribution. It is essentially due to differences in composition, except at the extremes of the distribution (roughly the 1st and 10th deciles). Between these extremes, the effects are relatively stable throughout the distribution, although the unexplained share tends to decrease (in absolute value, which results in an increasing curve), until it even becomes slightly in favor of women around the 7th and 8th deciles, while the composition effect tends to increase slightly. The contribution of wage differences is initially stronger than that of differences in duration (except for the 1st decile) before becoming less important, but the differences are very small and the progressions of the two contributions are almost parallel.

The age structure makes a small contribution to the pension gap (already observed in the decomposition of mean differences). Although small, it is present throughout the distribution: the younger cohorts have smaller pensions and women are more numerous in these cohorts (in fact, they are essentially composed of women).

Finally, taking into account the differences related to the guaranteed minimum has a qualitatively similar result to that observed for the SRE (outside the 1st centile): it reduces the contribution of the reference wage to the pension gap at the bottom of the distribution, but also that of duration. On the contrary, the effects are much greater: between (approximately) the 1st and the 40th centile, taking into account the guaranteed minimum almost entirely erases the contribution of differences

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[16] A brief reminder of how the guaranteed minimum works for our stock of retirees (retired before 2010): the individual's pension is calculated and then compared with the value of the guaranteed minimum, which is calculated using a prorated index for anything below 25 years of service (with a pro rata rate that is more favorable than the ratio between length of service and target duration used for the contributory minimum) and granted in full for 25 years of service or more.

[17] The scales are different in order to represent these phenomena, which may give the impression that the effects are larger for CNRACL retirees than for General Scheme retirees.

in the distribution of wages, but it also, although less clearly, reduces the contribution of differences in duration. The effect of the guaranteed minimum persists as far as the median pension.

Given the small size of the sample for male CNRACL retirees (800), we will not discuss the centile-by-centile decomposition in any greater detail. It is interesting to note that taking into account all the CNRACL retirees (including the multi-sector retirees), considerably increases the size of the two groups, especially that of the men (proportionately, at least). In this case, most of the pension gap throughout the distribution stems from differences in duration, in keeping with what we observed for the mean differences.

Concluding remarks

- Over the whole stock of retirees, the first centiles are higher for women than for men. This is due to the single-sector retirees of the General Scheme, and it is reasonable to suspect that the pension information is incomplete for certain men for whom very low pensions are observed.
- In all the other cases, the pension gap is in favor of men, at every point in the distribution and for all three pension schemes.
- At every point in the distribution, the pension gap is larger for single-sector retirees of the General Scheme than for those of the SRE and CNRACL schemes.
- In every case, the unexplained share of the pension gap is only substantial at the bottom of the distribution and, to a lesser extent, in the top decile. At the bottom of the distribution, it is in favor of women in the General Scheme (and for the whole stock of retirees, given the weight of this scheme) but in favor of men in the public sector schemes. For the rest of the distribution, it is rather in favor of men, thus widening the pension gap, but it remains very small, if not negligible.
- Composition differences are essentially due to differences in duration and wages.
- In every case, differences in duration are quite small at the bottom of the distribution, gradually increasing to reach a maximum at about the 15th centile for the General Scheme and the SRE, but around the median for the CNRACL, before gradually decreasing again to become negligible, since towards the top of the distribution most retirees have completed a full career.
- At the bottom of the distribution, wage differences make a smaller contribution than differences in duration in the two public sector schemes, but a larger contribution in the General Scheme. For the CNRACL, the two factors make quite similar contributions to the pension gap throughout the distribution. For the RG and the SRE, on the contrary, above the 3rd or 4th decile most of the pension gap is due to wage differences.
- Taking into account minimum pensions, by introducing a dummy variable for their reception into the estimations, reduces the pension gap at the bottom of the distribution in the General Scheme, while increasing the contribution of wage differences. This effect lasts up to about the 3rd decile, and is above important in the first two deciles. In the public sector schemes, on the other hand, taking into account the guaranteed minimum appears to increase the pension gap in each centile, only slightly and up to about the 2nd decile in the SRE, but more markedly and up to about the median in the CNRACL.
- The other factors work rather in favor of women, but very weakly throughout the distribution and in every case, except for the country of birth which has a slightly more pronounced effect in the General Scheme up to the 2nd decile. The effect observed in the decomposition of mean differences therefore stems essentially from the bottom of the distribution.

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Figure 6. Representation of explained contributions by type of pension scheme
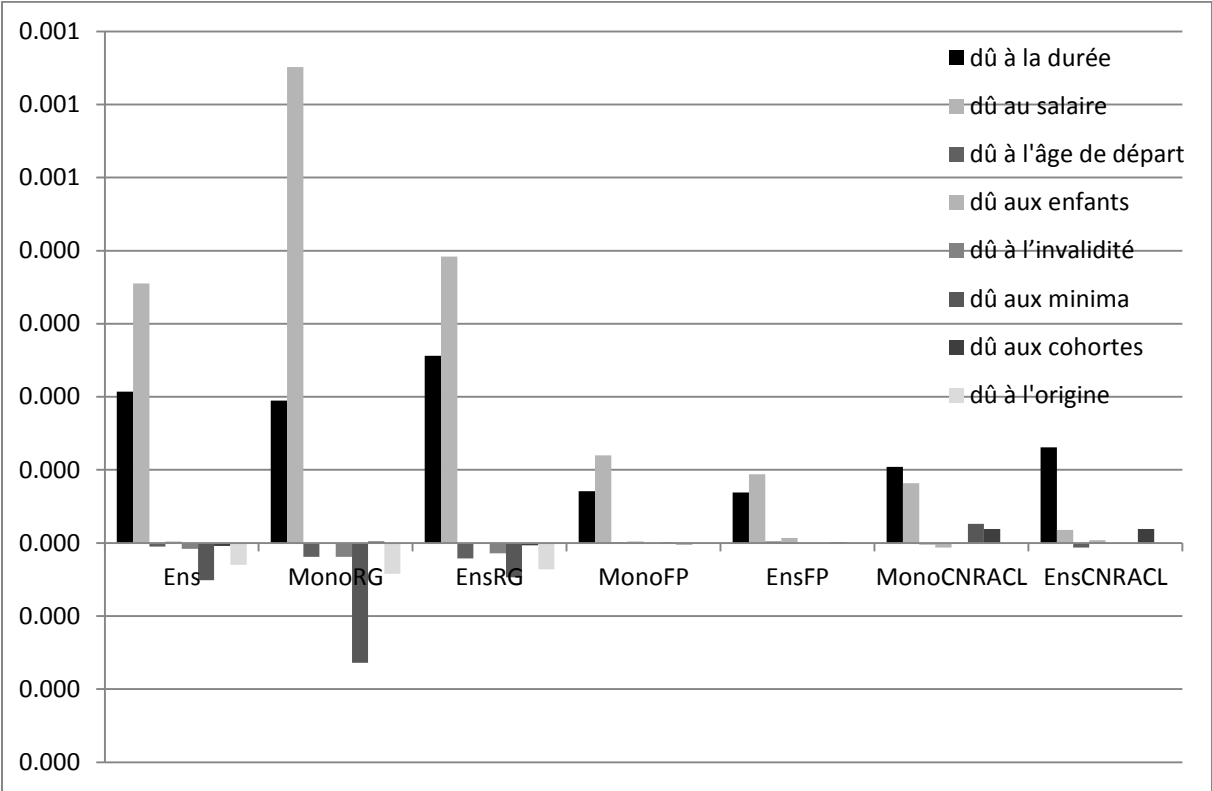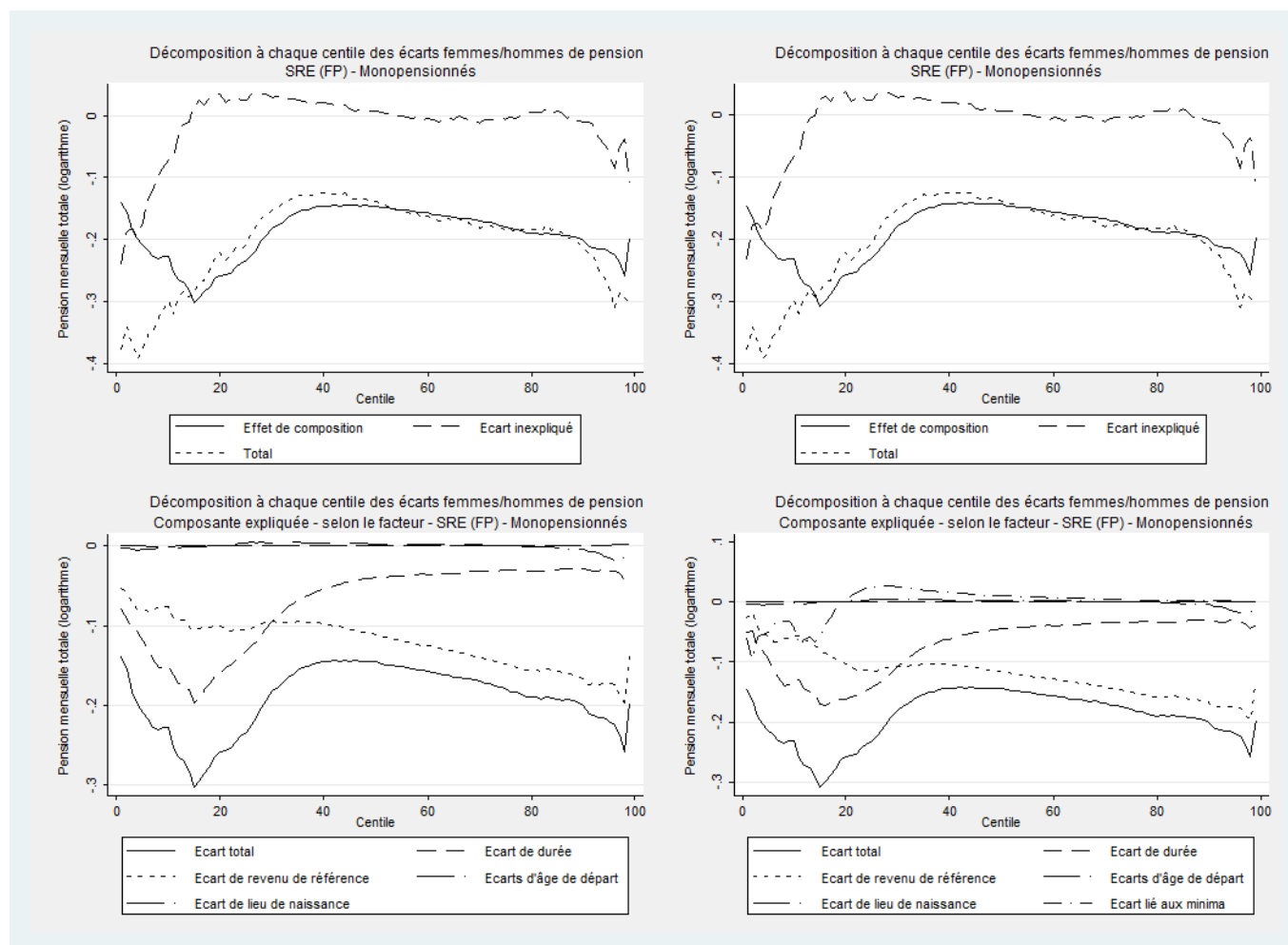

Source: EIR 2008

Figure 8. Decomposition of gender pension gaps at different centiles. *Single-sector retirees in the General Scheme*
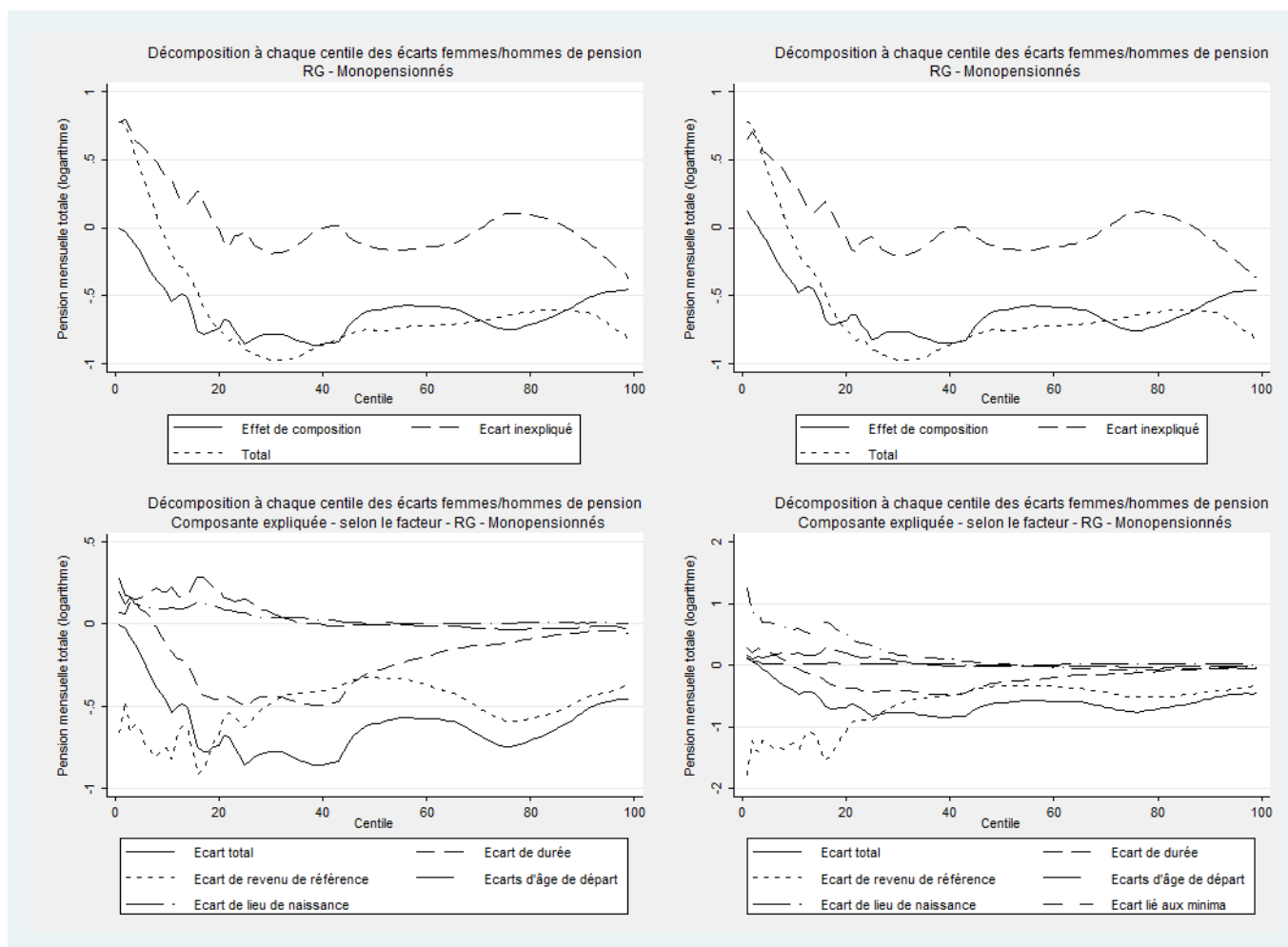
Source: EIR 2008

Note: these graphs only represent the effects of the main factors (see appendix 5 for the complete graphs). However, the estimations take into account all the factors. The vertical scales may differ from one graph to another.
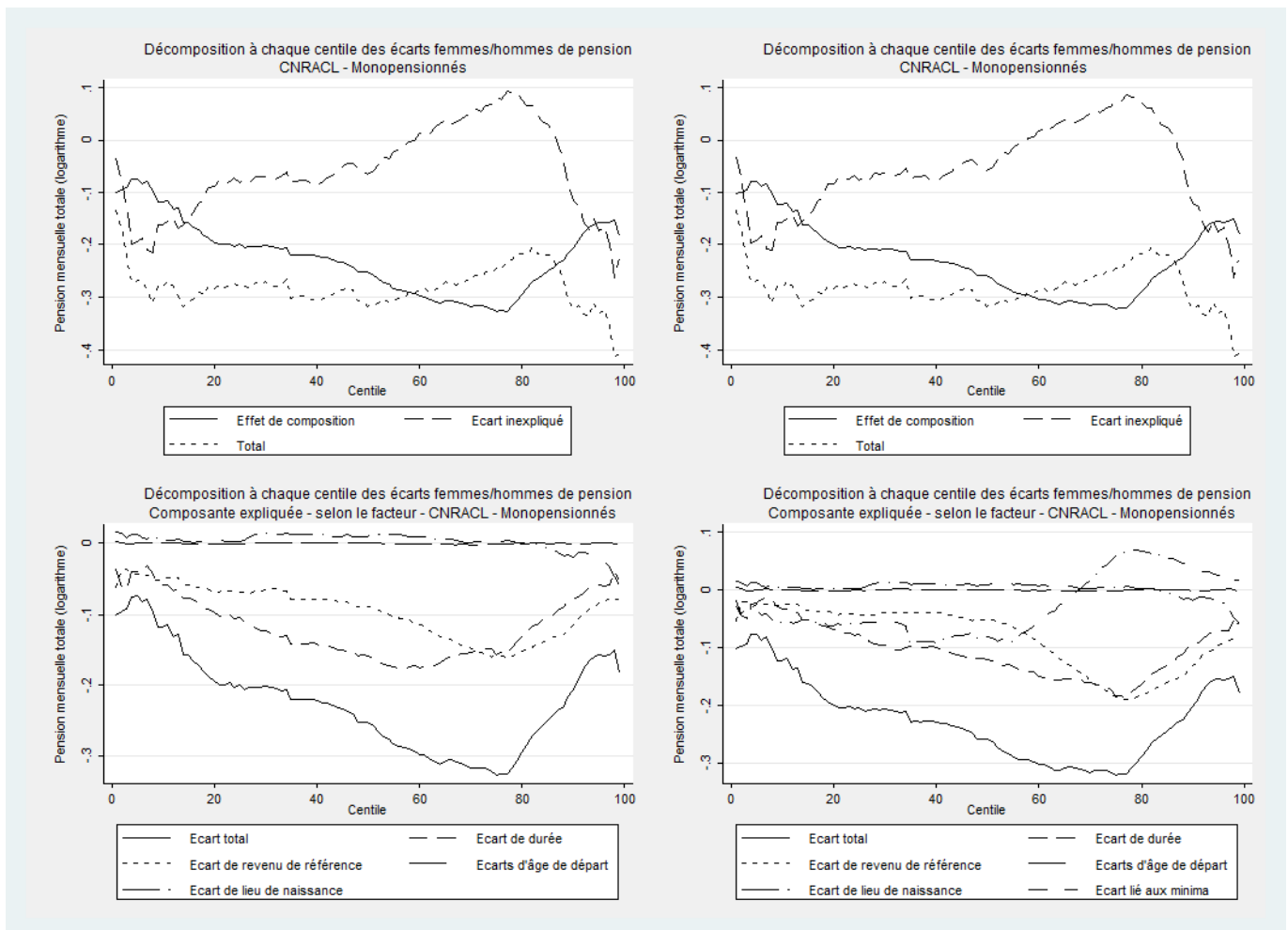
Figure 9. Decomposition of gender pension gaps at different centiles. *Single-sector retirees of the SRE*

Source: EIR 2008

Note: these graphs only represent the effects of the main factors (see appendix 5 for the complete graphs). However, the estimations take into account all the factors. The vertical scales may differ from one graph to another.

Figure 10. Decomposition of gender pension gaps at different centiles. *Single-sector retirees of the CNRACL*

Source: EIR 2008

Note: these graphs only represent the effects of the main factors (see appendix 5 for the complete graphs). However, the estimations take into account all the factors. The vertical scales may differ from one graph to another.