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Gender Discrimination in Non-Insured Employment Pension Plans: The Impact of EU Directives

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Abstract

The objective of this work is two-fold: first, to ascertain whether the application of European Union laws (Directive 2004/113 and Directive 2006/54) governing defined-benefit employment pension plans and incompletely insured but funded pensions was, in fact, discriminatory in several countries, namely France, Germany, Italy, Spain, Sweden and the United Kingdom. Having found that such discrimination was the case, our second goal is to calculate the cost of that discrimination to the employers.

It is found that the discriminating effect emerged regardless of whether same-gender or different-gender tables were used for calculating benefits; furthermore, the level of discrimination was seen to rise in tandem with the retirement age. This phenomenon can be ascribed to the survival rate of women being higher. The actual cost of the discrimination was determined by isolating the effect of the interest rate and creating *ad hoc* survival charts that would eliminate the bias inherent in insurance-company tables. These two presentations of data are expressed both in terms of annuity per unit and of GDP, projected until 2015.

JEL Codes: G23, G28, J16, J26

Keywords: gender discrimination, pension plans, funded pensions, actuarial repercussions of gender biometric behavior, EU laws.

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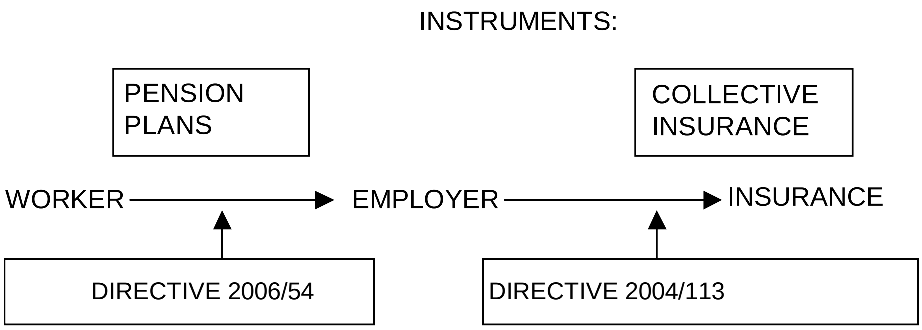
1. Introduction

More than a decade ago, the European Union embarked on a mission to realize the ideal of equal treatment for men and women and drew up a specific strategic Program (2001-2005) to achieve that goal. As cited in a major study (Woodward, 2008), there then followed an exhaustive catalog of gender-mainstreaming actions mandated by the EU to bring about equality of the sexes. Among these have been several regulatory requirements to banish discrimination based on gender from the workplace; the national legal systems within the EU member states have had to adapt to these directives.

However, as a number of authors, e.g., Eylenbosch (1996), have pointed out, in spite of the real advancements made toward the goal of equal treatment, the area of complementary pensions has yet to experience such a reform. The notion of equality in this sector must take into account not only the EU-wide regulations (Luckmans, 1997) but also the ways in which the national pension systems operate.

This complex situation is what sparked our interest in the study of various topics within it. In addition, the repercussions of the relevant European Union bylaws for member countries besides our own (Gonzalez-Rabanal and Saez de Jauregui Sanz, 2006) had to be investigated for any deviations from the predicted impact on Spain (given the different social-security systems existing in EU member states).

The views of the European Union on the administration of pensions by businesses could be summarized as follows:



That is, there are two EU Directives covering this facet of national life. Directive 2004/113, financial in nature, basically aimed at insurance schemes and called for—with the exceptions mentioned in Article 5—the use of set tables. The additional costs arising from the different longevities of men and women would be borne by the insurance companies.[1]

For its part, Directive 2006/54 focused on employment and, therefore, affected both collective life insurance plans with pension commitments and employment pension plans. However, unlike its predecessor, this Directive surprisingly chose to not consider the usage of different tables discriminatory.

2. The problem

The possibility of gender discrimination occurring in the field of pensions has given rise to widespread concern. Several studies, among them Marier (2007) have highlighted the tendency of women to be the ones who leave the workplace in order to take on family responsibilities, thus presenting a less stable contributory pattern.

The present study also touches on a much more subtle discrimination factor: the one derived from the gap in lifespans between men and women. This is what increases the cost of hiring women from the standpoint **of defined-benefit employment pension plans that are not fully insured.**[2]

1.- If different survival tables are used when calculating the same benefit for both genders, the employer has to boost the contributions made on behalf of its female workers and thus has a financial incentive to hire only men.

2.- In the case where unisex tables are used, a higher cost for female employees will also be generated for the employer. This is true due to the company's having contributed the same amount at the beginning for both men and women and later realizing that most men die earlier and, therefore, create an actuarial benefit from the return of the contributions made on their behalf. No such actuarial benefit will accrue from the company's female staff members. Again, this disparity may cause the employer to try to avoid hiring women. Obviously, if the policy goal is stopping the business community from discriminating against women when hiring, that community will have to be compensated for the added cost being imposed on it.

So, if the employer is not to discriminate against women, the amount of compensation to be paid to it will have to be correctly quantified so that the

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1 This way, discrimination was thought to be avoided, but a new distortion was thereby generated that could affect the very solvency of the insurance companies. If they were to act as rational economic agents, they would raise the prices of their products (i.e., the fees), thus shifting the burden of funding the EU's policy of gender equality onto the insurance policy purchasers (the employers). In turn, there was the possibility of the employer trying to pass this increment on to consumers by charging more for its products.

2 It should be remembered that pension plans that transfer the risk onto an insurance company will not be discriminatory if the use of a unisex table is mandated.

gender of prospective hires becomes a moot point. It is this calculation that our investigation was focused on.

3. Calculation of the amount of compensation

It is necessary to calculate the total surplus effort represented by the actual value that the employer has to take on when hiring women, since their longevity is greater than men's.

Such a surplus effort will be the difference between the actual actuarial value of the capital that must be created for men and for women when they reach their retirement age C_n.

If C_n is the capital that must have been created[3] on behalf of a man at his retirement age x_j, then its actual actuarial value C_o at age x, C_{0_x} , is equal to:

$$C_{0_x} = {}_n p_x \cdot \left(\frac{1}{1+i}\right)^n \cdot C_n \tag{1}$$

Where:
i: annual benefits of capitalization (interest rate)
x: man's actual age
x_j: retirement age
n: number of years between x and x_j
npx: probability that a man x years old will reach x+n years of age
In the case of women, the following expression will be obtained:

$$C_{0_y} = {}_n p_y \cdot \left(\frac{1}{1+i}\right)^n \cdot C_n \tag{2}$$

Therefore, the difference of the actual actuarial[4] value between a man and a woman[5] of the same age, x=y, helps establish the total surplus effort at its actual value, S_{va}, and is expressed as follows:

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3 That is to say, it is the amount that has to have been created by the age xj, if the person still lives, which is equivalent to the actual value of his life annuity when he reaches that age.

4 It is interesting to consider what situations might offset the surplus effort of the employer year by year. There could be cases where a woman worker dies or leaves the company, and the employer has already been compensated for it. In such a case, if the total surplus effort has already been calculated and the employer has already been compensated in full, should the amounts unduly received be returned?

5 In the international actuarial nomenclature, it is common to use letter x to represent the age of men, whereas letter y is normally used to express women's ages.

$$S_{VA} = C_{0_y} - C_{0_x} = {}_n p_y \cdot \left(\frac{1}{1+i}\right)^n \cdot C_n - {}_n p_x \cdot \left(\frac{1}{1+i}\right)^n \cdot C_n = \left({}_n p_y - {}_n p_x\right) \cdot \left(\frac{1}{1+i}\right)^n \cdot C_n \quad (3)$$

With this formula, the total surplus effort at its actual value is determined.

In order to calculate the annual amount of such a surplus effort, the starting point will be the inverse concept, that is to say, the actuarial capitalization of the initial contribution C_0. This way, the final capital C_n at retirement age will be:

$$C_n = \frac{1}{{}_n p_x} \cdot (1+i)^n \cdot C_0 \quad (4)$$

If the process of actuarial capitalization is analyzed, year by year, then for an initial contribution A_0, as well as the ones in the following years, at the beginning of each annuity $A_1 \ldots A_{n-1}$, the following will be obtained:

Capital at the end of year 1:

$$C_1 = \frac{1}{p_x} \cdot (1+i) \cdot A_0 \quad (5)$$

Capital at the end of year 2:

$$C_2 = \frac{1}{p_{x+1}} \cdot (1+i) \cdot (C_1 + A_1) \quad (6)$$

Capital at the end of year 3:

$$C_3 = \frac{1}{p_{x+2}} \cdot (1+i) \cdot (C_2 + A_2) \quad (7)$$

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Capital at the end of year n:

$$C_n = \frac{1}{p_{x+n-1}} \cdot (1+i) \cdot (C_{n-1} + A_{n-1}) \quad (8)$$

Where:

p_{x+j}: degree of probability that a male aged x+j will still be alive by x+j+1

Since the probability of living to a certain age is greater for women than for men (p_y>p_x), the inverse of it means the probability is greater for men; therefore, starting with the same actual value (C_0) and with the same age for both sexes (x=y**),** the final capital obtained will be greater in the case of men than in the case of women of the same age, given that the total difference of capitalization (D) produced between the two genders is the following:

$$D = \left(\frac{1}{{}_n p_x} \cdot (1+i)^n \cdot C_0 \right) - \left(\frac{1}{{}_n p_y} \cdot (1+i)^n \cdot C_0 \right) = \left(\frac{1}{{}_n p_x} - \frac{1}{{}_n p_y} \right) \cdot (1+i)^n \cdot C_0 \tag{9}$$

Thus, when an employee reaches the end of his or her working life and takes retirement, **if the corporate employer is compensated at this time with an amount equal to the disparity, the discrimination (and cost disadvantage) caused by the longer life-expectancy of women will have been neutralized**.

It should be noted that in the calculation of the last equation there is a factor (i) representing the amount of interest coming from the capitalization of the pension fund that will depend on the skill of the plan's manager at investing the fund's assets.

If this factor is not eliminated from the compensation calculation, the resulting amount is distorted because what is sought is compensation for all employers, regardless of the benefits gained from superior fund management or from hiring only women.

In order to eliminate this distortion, the value of the compensation is calculated, year by year, and not at the end of the annuity but at the beginning of it, thus yielding the following equation:

During the first year, the difference created at the end of it will be:

$$D_1 = \left(\frac{1}{p_x} - \frac{1}{p_y} \right) \cdot (1+i) \cdot A_0 \tag{10}$$

If this first annual difference D_1 is corrected, that is to say $C_1^* = C_1 + D_1$, then the difference at the end of year 2 will be:

$$D_2 = \left(\frac{1}{p_{x+1}} - \frac{1}{p_{y+1}} \right) \cdot (1+i) \cdot (C_1^* + A_1) \tag{11}$$

And so on. If all the differences obtained have been corrected, then the difference at the end of year **n** will be:

$$D_n = \left(\frac{1}{p_{x+n-1}} - \frac{1}{p_{y+n-1}} \right) \cdot (1+i) \cdot (C^*_{n-1} + A_{n-1}) \tag{12}$$

In general, at the end of any year t, the difference in capitalization will be:

$$D_t = \left(\frac{1}{p_{x+t-1}} - \frac{1}{p_{y+t-1}} \right) \cdot (1+i) \cdot (C^*_{t-1} + A_{t-1}) \tag{13}$$

This last equation is divided by (1+i) in order to calculate the value of the compensation at the beginning of the year rather than at the end of the year. This way, the difference in the value of capitalization will only depend on the divergent longevity values, which are represented by the inverse of the survival probabilities.[6]

$$D_t = \left(\frac{1}{p_{x+t-1}} - \frac{1}{p_{y+t-1}} \right) \cdot (1+i) \cdot \left(\frac{1}{1+i} \right) \cdot (C^*_{t-1} + A_{t-1}) \tag{14}$$

Calculating:

$$Dt = \left(\frac{1}{p_{x+t-1}} - \frac{1}{p_{y+t-1}} \right) \cdot (C^*_{t-1} + A_{t-1}) \tag{15}$$

This means that, year by year, the differences produced at the end of each year (as a result of the different value of p_x and of p_y) have been corrected, that is: $C_i = C_i + D_i$.

$\left(\frac{1}{p_{x+t-1}} - \frac{1}{p_{y+t-1}} \right)$ is the difference in the probabilities for survival at the beginning of the annuity for a given age between both genders; $(C_{t-1}+A_{t-1})$ represents the capital at the beginning of the annuity (once the differences due to the unequal lifespans of p_x and p_y have been corrected, including the initial contribution A_{t-1}); and (1+ i) is one plus the annual capitalization interest created.

[6] It is divided by (1+i) in order to let us calculate the compensation at the beginning of the first year instead of at the end of it. This way, the difference in the value of capitalization will be made to depend only on the different longevity values, which are represented by the inverse of the life expectancies of both genders.

Thus, the difference in the capitalization value will only depend on the different longevity values of both genders and not on the value of “i” (which “has disappeared” from the formula).

Defining the compensation value in terms of unit of capital at the beginning of the annuity results in:

$$d_y = \frac{1}{p_x} - \frac{1}{p_y} \tag{16}$$

Where d_y represents the annual amount per unit of capital that balances the company’s surplus effort derived from having hired women instead of men.

This number depends, as stated, on the difference in the inverse of the probability of a person whose age is x surviving another year; this applies to both genders of the same age, at the beginning of the corresponding annuity.

If the goal is to calculate the subsidy to be paid by the state to the employer in order to prevent sexual discrimination, the following data must also be known: the number of female workers that belong to the employment pension plan, the age of each at the beginning of the annuity, and the constituted fund amount at the beginning of the annuity for each. The amount per female worker will be:

$$e_y = d_y\, C \tag{17}$$

Where: $C = C_0+A_0$, that is, the capital of the female’s worker pension fund at the beginning of the annuity, including the contribution made at the beginning, if any was made.

The total amount (E) to be paid to the employer will be the sum total of all the female workers’ amounts.

As seen before, in order to calculate the value of d_y, it is necessary to know p_x and p_y (life-expectancy rates), which are calculated from the mortality rates for each age and gender.

The biometric tables normally employed in Europe by the insurance companies (GRM80, GRMF95, and, in Spain’s case, PERMF-2000) were unacceptable for our purposes, being inherently biased for consisting entirely of statistics of the insurers’ own clientele. In addition, they included a security surcharge.

For this reason, we found it necessary to create *ad hoc* tables specific to each of the countries under study. Specifically, we obtained the following data from the Eurostat; (a) the number of people alive at each age, and (b) the number of people deceased at each age, differentiating both sets of data by gender.

The next step was to establish the mortality rate, which had to be quantified so that samples[7] could be taken for calculating the probability of survival at each age from then on, that is p_x and p_y.

All the data being assembled, the statistical Q_x was used to find the mortality rate for each age x.

The following hypothesis was posited: deaths are distributed uniformly throughout the whole year. This assumption led to this formula:

$$Qx = \frac{0.5(D_x^a + D_x^{a+1})}{P_x^a + 0.5D_x^a} \tag{18}$$

Where:

$D_x^a =$ Deaths occurred during year a, at age x.

$D_x^{a+1} =$ Deaths occurred during year a+1, at age x.

$P_x^a =$ Population present on December 31 of year a, who are x years old.

According to Eurostat, not all the countries under study had data for the year 2002 available, forcing us to make do with statistics from 1998, 1999, 2000, and 2001 (deaths only for the latter). It was decided to choose a temporal interval of several years[8] so as to lessen the distortionary effects coming from any extraordinary occurrences.

We then had to adjust the mortality rates we found to get them more in line with generally accepted averages for these phenomena. Makeham's model of biometric adjustment was used to achieve this.

The creation of new mortality tables required making a biometric adjustment to the existing data in order to calculate the *real probability of death*,[9] i.e., the probability of an individual belonging to a particular generation, aged x, dying before reaching x+1 years of age.

Makeham's model states that the number of survivors aged x (lx) is calculated with the following equation:

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7 The quantification of the observations (Qx)

8 In order to avoid extraordinary disruptions that might take place in a given year that would distort the mortality numbers, obtaining statistical information for a period exceeding one year was deemed desirable. In our case, it turned out to be three complete years.

9 That is to say, the one that keeps to the biometric patterns.

$$lx = ks^x g^{c^x}$$

Therefore, in order to get p_x, the procedure would be the following:

$$p_x = \frac{l_{x+1}}{l_x} = \frac{ks^{x+1} g^{c^{x+1}}}{ks^x g^{c^x}} = sg^{c^x(c-1)} \quad (19)$$

To estimate the parameter of this model, King-Hardy's method is called for. Take the logarithms[10] in the last equation:

$$\log(px) = \log(s) + c^x (c-1) \log(g) \quad (20)$$

Where:

$$A = \log(s), \qquad B = (c-1)\log(g) \quad (21)$$

Then:

$$\log(px) = A + Bc^x \quad (22)$$

In view of earlier observations, p_x can be known, and the proposed equation is solved to yield the values for the parameters s, g, c.

King-Hardy's method defines three numbers, S1, S2, S3, where:

$$S1 = \sum_{x=x_0}^{x_0+t-1} \log(px) \quad S2 = \sum_{x=x_0+t}^{x_0+2t-1} \log(px) \quad S3 = \sum_{x=x_0+2t}^{x_0+3t-1} \log(px) \quad (23)$$

Replacing:

$$S1 = \sum_{x=x_0}^{x_0+t-1} (A + Bc^x) = tA + B \sum_{x=x_0}^{x_0+t-1} c^x \quad (24)$$

$$S2 = \sum_{x=x_0+t}^{x_0+2t-1} (A + Bc^x) = tA + B \sum_{x=x_0+t}^{x_0+2t-1} c^x \quad (25)$$

$$S3 = \sum_{x=x_0+2t}^{x_0+3t-1} (A + Bc^x) = tA + B \sum_{x=x_0+2t}^{x_0+3t-1} c^x \quad (26)$$

10 Logarithms can be natural or Neperian.

From this system of equations;

$$c = \sqrt[t]{\frac{S3 - S2}{S2 - S1}} \tag{27}$$

$$B = \frac{(S2 - S1)(c - 1)}{c^{x_0}(c^t - 1)^2} \tag{28}$$

$$A = \frac{S1 - Bc^{x_0}\,\frac{c^t - 1}{c - 1}}{t} \tag{29}$$

For the calculations needed for the solution of the pattern under study, the specimen table was divided into several stretches.

Given the length of the Eurostat data, we opted to take three stretches of 33 for the Spanish, French, Italian and Swedish cases. From the sum of logarithms of p_x for t = 33, x_0 = 1;

$$S1 = \sum_{x=1}^{X=33} LN(px) \quad S2 = \sum_{x=34}^{X=66} LN(px) \quad S3 = \sum_{x=67}^{X=99} LN(px) \tag{30}$$

In the case of Germany, we decided to use three equal stretches of 31. For t = 31, x_0 = 1;

$$S1 = \sum_{x=1}^{X=31} LN(px) \quad S2 = \sum_{x=32}^{X=62} LN(px) \quad S3 = \sum_{x=63}^{X=93} LN(px) \tag{31}$$

In the case of the United Kingdom, we used three stretches of 28. For t = 28, x_0 = 1;

$$S1 = \sum_{x=1}^{X=28} LN(px) \quad S2 = \sum_{x=29}^{X=56} LN(px) \quad S3 = \sum_{x=57}^{X=84} LN(px) \tag{32}$$

The data for Spain had been obtained previously (Gonzalez-Rabanal and Saez de Jauregui, 2006) through the same procedure.

Thus, once p_x and p_y were calculated, the *ad hoc* mortality tables could be created for each one of the selected countries for the years[11] 1998 through 2001. They were named as follows:

Spain: PEM2005 (for males) and PEF2005 (for females)

United Kingdom: PUKM2005 (for males) and PUKF2005 (for females)

Sweden: PSM2005 (for males) and PSF2005 (for females)

Germany: PAM2005 (for males) and PAF2005 (for females)

France: PFM2005 (for males) and PFF2005 (for females)

Italy: PIM2005 (for males) and PIF2005 (for females)

Results of the calculations[12] are shown in Table 1.

Once the values of p_x and p_y were known, it was possible to figure out the amount d_y of the subsidy needed for those values.

The calculated results of d_y for each country are given in Figures 1 to 6. The values of d_y according to different mortality tables in each country versus the Spanish ones, are also shown.

Below, we also determine the cost of the above-mentioned compensation for the employers in terms of GDP, for each country.

The amount per female worker that should be paid to the employer (e_y) depends on two factors: d_y and the amount of the woman's pension plan at the beginning of the annuity.

The total amount (E_y) of the subsidy depends on the total number of female workers covered by the employment pension plan.

Firstly, it is necessary to calculate the number of participants as well as their personal assets. In the absence of information on the number of pension-plan participants or their distribution by age and gender, this calculation was accomplished as follows:

1) The different percentages of d_y for each country (calculated from our *ad hoc* mortality tables), as compared with the Spanish d_y for each age and gender were determined.

2) A behavioral measurement was made for ages ranging from 16 to 85.

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[11] *Ad hoc* mortality tables were constructed with four years' information: 1998-2001. This period was selected in order to have enough observed data.

[12] The mortality was 15% greater in the so-called ad hoc mortality tables than in the conventional ones of the insurance companies, as mentioned above.

3) This average value was multiplied by the Spanish subsidy/funds ratio, since distribution of personal assets by age and gender is unknown in the other countries. Thus, an estimated corresponding ratio for each country could be arrived at through the comparative behavior of d_y.

4) Once the behavior of the subsidy/fund ratio was known, along with information on the existent funds (personal assets) overseen by Inverco,[13] we projected it forward with regression techniques similar to those used for the Spanish case; these values were multiplied, and the subsidy amount was calculated in absolute terms.

Thus, subsidy/funds (data adjusted according to the differential behavior of d_y in the other countries compared to the Spanish case) x funds (data provided by Inverco that were projected forward) = amount of subsidy.

5) The GDP figures for each country (obtained from the Eurostat) were projected into the future through regressions,[14] making it possible for us to estimate each country's subsidy/GDP ratio for the period 2005-2015.

These calculations are displayed in Figures 7 to 12.

4. Conclusions

In the last few years, legislation on equal treatment for men and women has been declared of utmost priority within the European Union. However, proclaiming gender equality is not enough to make it a reality in the sphere of pension plans, especially funded pensions. The main reason for this is the disparity in the life expectancy between men and women, as proven by the present research.

The greater longevity of women means that, for an equal amount of contribution **(defined contribution)**, if benefits are collected as capital (financial income), there will be no discrimination due to gender. This is true because men and women receive the same amount when they reach retirement age, but it does generate discrimination when such benefits are paid in the form of a perpetual annuity. In fact, the amount due to women ends up being less, since the same quantity has to be prorated among a greater number of years.

If the income is defined, there are two possible situations: either the income is insured or it isn´t; and in either case, the option exists of applying equal or different survival tables.

[13] Spanish Association of Collective Investment Schemes and Pension Funds
[14] Polynomial regression models are estimated by the method of least squares.

In the case of **insured defined income,** if same-gender tables must be used, straight discrimination will not be generated right away; however, insurance companies will feel the pinch, since their costs will rise as their female pensioners live longer.

This expense will undermine their financial well-being, so there will be a tendency to restore the balance by raising premiums—in effect, passing on the increased cost to their customers, i.e., the corporate employers who have purchased the policies. In turn, the corporate employer will try to offset the higher cost it is now bearing, by either raising its own prices in the marketplace for its goods or services or by lowering salaries for all of its workers. Thus, the inefficiency inherent in this scenario hurts either the policyholder (the employer) or the final consumer of its products, when it chooses to transfer the cost forward, or it hurts all personnel, if the transfer goes backwards, affecting salaries and related expenses. It should be mentioned that, given the *diffused character* of this cost, not much rejection is seen, though it does exist.

If the use of different tables is permitted, discrimination is again not prevented. In this case, the employer is required to pay higher premiums for female employees (due to their greater longevity) and thus may be disinclined to hire them.

In the case of non-insured defined benefits, if the application of different tables is permitted, the higher cost of hiring women is borne by the employer beforehand. The company will be charged a higher contribution for each woman worker than for its male workers so that the insurance company will be able to provide the same benefits to both sexes, of which the women usually live longer than the men; as a consequence, the employer may well avoid having women on its staff, tantamount to outright discrimination.

If the defined income is not insured, and, at the same time, there is a requirement to apply a same-gender table, the higher cost of employing women again falls on the employer, but this time afterwards. This happens when the company realizes that by hiring men, who die before women do, it will derive an actuarial benefit from men that will not be forthcoming from the female staff; therefore, such an organization has an incentive to avoid having women become a part of its personnel, discriminating *de facto* against them.

Obviously, most of the possibilities laid out above lead to discrimination one way or another, and its relevance and magnitude must be analyzed and measured.

The conclusion of this research is that the different life expectancies of men and women undo the good intentions of labor policies aimed at eliminating gender discrimination, regardless of whether same-gender tables or different tables are applied.

Therefore, if the desire of the EU authorities is to stamp out gender-based discrimination, they will have to start compensating the employer for the higher cost it bears in the form of higher premiums (if different tables are applied) or for its loss of actuarial benefits (if same-gender tables are applied). Such compensation should be a subsidy granted to the employer that would remove the cost differential attached to the hiring of women.

Our proposal is to have this compensatory subsidy paid by the state to each employer, consisting of an amount equal to the cost of bringing about non-discrimination on the premises. Beyond the individual corporation, society as a whole would benefit from having a workplace culture that was, in effect, non-discriminatory.

This subsidy could be financed through a tax (contribution) on labor; if so, the cost of employing manual labor would rebound to the latter's benefit. Alternatively, it could be sourced from the general tax system and be channeled as a direct payment to the employer at the end of the year; or else, a deductible expense could be taken by companies when determining their taxable income each year.

The amount of necessary public subsidy must be calculated, for every fiscal year, by multiplying the product of the capital of the pension plan that is constituted for each worker at the beginning of the annuity by the difference of the inverse probabilities of surviving a year longer existing between genders for each working age.

It is possible to calculate in this way the amount for any country, although France, Germany, Italy, Spain, Sweden and the UK were chosen for being particularly suitable for study due to the prominence that pension and funded plans have in the layout of their social welfare systems and their relative size in the EU's overall economy.

In addition, the designed calculation model allows us to estimate the amount of compensation for any given year.

The projection of this amount has been done up to 2015, both in absolute terms and in relation to GDP. As an intermediate result, we developed *ad hoc* mortality tables for the prevention of the already-mentioned security surcharge. They also represent a distribution of population divided by gender *exactly as it is in reality*; this enabled us to calculate the difference in annual actuarial capitalization between men and women.

The use of these tables proves that there is always discrimination and that it increases with age. This suggests a higher amount of subsidy (for all ages between 34 and 76) than what the Figures typically used by the insurance companies would indicate.

A method of calculation was worked out to avoid the impact of the interest rate on the determination of the compensatory aid, making it applicable to any pension plan, regardless of the return of its capitalization.

Thus, depending on the composition of a company's personnel in terms of age and gender, the amount of the appropriate subsidy can be known so that the EU's stated goal of non-discrimination between men and women can draw closer to being realized at last. This will, of course, require each EU state to assume the associated costs in order to put non-discriminatory measures into practice.

Obviously, any legislative changes that play with the national retirement age—by either reducing or delaying it—also have an effect on the makeup of the subsidy; accordingly, when the retirement age is delayed, the amount would increase, since more men will have died and, correspondingly, more women will remain alive, thus having more pensions accrued in their favor. That is, the value of d_y is greater (as shown by Figures 1 to 6).

It is clear that, only if the national authorities in the different member states of the EU are willing to assume the differential cost of hiring women under pension plans of the non-insured defined-benefit type (which happen to be considered one of the basic elements of social protection in the countries that were analyzed) will it be possible to rigorously apply the principles implicit in the EU's rulings on equal treatment for men and women.

Table 1. Mortality table calculated *ad hoc* for the different countries

SPAIN		**GERMANY**		**FRANCE**	
PEM2005	**PEF2005**	**PAM2005**	**PAF2005**	**PFM2005**	**PFF2005**
0,00041319	0,00021665	0,000308288	0,00016116	0,0003992	0,00022029
0,00041688	0,00021709	0,000311891	0,00016215	0,0004037	0,00022103
0,00042094	0,00021759	0,000315863	0,00016326	0,00040865	0,00022187
0,00042539	0,00021814	0,000320242	0,0001645	0,00041408	0,00022281
0,00043029	0,00021877	0,000325069	0,00016588	0,00042004	0,00022385
0,00043568	0,00021948	0,00033039	0,00016742	0,00042659	0,00022503
0,0004416	0,00022028	0,000336257	0,00016915	0,00043377	0,00022633
0,00044811	0,00022117	0,000342725	0,00017107	0,00044165	0,0002278
0,00045526	0,00022218	0,000349855	0,00017322	0,0004503	0,00022944
0,00046313	0,00022332	0,000357715	0,00017562	0,00045979	0,00023127
0,00047178	0,0002246	0,00036638	0,0001783	0,00047021	0,00023331
0,00048128	0,00022604	0,000375932	0,0001813	0,00048165	0,0002356
0,00049173	0,00022766	0,000386463	0,00018465	0,0004942	0,00023816
0,00050322	0,00022949	0,000398073	0,00018838	0,00050798	0,00024102
0,00051585	0,00023154	0,000410872	0,00019255	0,0005231	0,00024423
0,00052973	0,00023386	0,000424981	0,00019721	0,0005397	0,00024781
0,00054499	0,00023646	0,000440535	0,00020242	0,00055791	0,00025181
0,00056176	0,00023939	0,000457682	0,00020823	0,0005779	0,00025628
0,0005802	0,0002427	0,000476585	0,00021473	0,00059985	0,00026129
0,00060047	0,00024641	0,000497424	0,00022198	0,00062393	0,00026689
0,00062276	0,0002506	0,000520397	0,00023007	0,00065036	0,00027315
0,00064726	0,00025531	0,000545722	0,00023912	0,00067937	0,00028015
0,00067419	0,00026061	0,000573641	0,00024922	0,0007112	0,00028798
0,00070379	0,00026658	0,000604418	0,0002605	0,00074614	0,00029673
0,00073633	0,00027331	0,000638347	0,0002731	0,00078449	0,00030652
0,0007721	0,00028087	0,000675749	0,00028718	0,00082658	0,00031746
0,00081143	0,00028939	0,000716981	0,00030289	0,00087278	0,0003297
0,00085465	0,00029899	0,000762435	0,00032044	0,00092348	0,00034339
0,00090217	0,00030978	0,000812542	0,00034005	0,00097912	0,0003587
0,0009544	0,00032194	0,000867778	0,00036194	0,00104018	0,00037581
0,00101182	0,00033563	0,000928668	0,00038639	0,0011072	0,00039495
0,00107494	0,00035103	0,000995791	0,0004137	0,00118076	0,00041635
0,00114432	0,00036838	0,001069784	0,0004442	0,00126148	0,00044029
0,00122059	0,00038791	0,001151349	0,00047826	0,00135007	0,00046705
0,00130442	0,00040989	0,001241261	0,0005163	0,0014473	0,00049698
0,00139657	0,00043464	0,001340374	0,00055879	0,001554	0,00053044
0,00149786	0,0004625	0,001449626	0,00060623	0,00167109	0,00056786
0,0016092	0,00049386	0,001570056	0,00065922	0,0017996	0,00060971
0,00173159	0,00052917	0,001702804	0,0007184	0,00194062	0,0006565
0,00186611	0,00056892	0,001849129	0,00078448	0,00209538	0,00070882
0,00201397	0,00061367	0,002010416	0,00085829	0,00226521	0,00076732
0,00217648	0,00066405	0,002188194	0,00094071	0,00245158	0,00083274
0,00235511	0,00072076	0,002384144	0,00103276	0,00265609	0,0009059
0,00255144	0,0007846	0,002600121	0,00113555	0,0028805	0,00098769
0,00276722	0,00085647	0,002838165	0,00125035	0,00312675	0,00107916
0,00300438	0,00093737	0,003100526	0,00137854	0,00339695	0,00118143
0,00326503	0,00102845	0,00338968	0,00152169	0,00369343	0,00129578
0,00355149	0,00113097	0,003708355	0,00168154	0,00401873	0,00142363
0,00386629	0,00124637	0,004059552	0,00186005	0,00437565	0,00156659
0,00421225	0,00137628	0,004446578	0,00205938	0,00476725	0,00172644
0,00459243	0,00152251	0,004873072	0,00228195	0,00519687	0,00190515
0,00501019	0,00168711	0,00534304	0,00253047	0,00566819	0,00210496

SPAIN		GERMANY		FRANCE	
PEM2005	PEF2005	PAM2005	PAF2005	PFM2005	PFF2005
0,00546924	0,00187239	0,005860888	0,00280797	0,00618524	0,00232835
0,00597364	0,00208094	0,006431465	0,00311779	0,00675243	0,0025781
0,00652783	0,00231566	0,007060106	0,00346371	0,00737458	0,00285732
0,00713671	0,00257986	0,007752676	0,00384991	0,00805697	0,00316946
0,00780563	0,0028772	0,008515626	0,00428106	0,00880541	0,0035184
0,00854045	0,00321185	0,009356042	0,00476237	0,00962621	0,00390845
0,00934763	0,00358846	0,010281715	0,00529966	0,01052631	0,00434446
0,01023421	0,00401228	0,0113012	0,00589938	0,01151329	0,0048318
0,01120792	0,0044892	0,012423893	0,00656876	0,01259542	0,00537649
0,01227723	0,00502585	0,013660102	0,00731583	0,01378177	0,00598525
0,0134514	0,00562967	0,015021141	0,00814953	0,01508222	0,00666555
0,01474057	0,00630901	0,016519412	0,00907983	0,01650756	0,00742576
0,01615582	0,00707326	0,018168506	0,01011781	0,0180696	0,00827517
0,01770928	0,00793295	0,019983309	0,0112758	0,01978118	0,00922418
0,01941419	0,0088999	0,021980111	0,0125675	0,0216563	0,01028434
0,021285	0,00998738	0,024176727	0,01400815	0,02371024	0,01146854
0,02333749	0,01121023	0,02659262	0,01561467	0,02595961	0,01279109
0,02558885	0,01258512	0,029249038	0,01740582	0,02842246	0,01426796
0,02805781	0,01413068	0,032169146	0,01940243	0,03111843	0,01591686
0,03076476	0,01586779	0,035378176	0,02162756	0,03406881	0,01775749
0,03373183	0,01781977	0,03890357	0,02410674	0,0372967	0,01981172
0,03698309	0,02001269	0,042775134	0,0268682	0,04082709	0,0221038
0,04054462	0,02247563	0,047025182	0,02994312	0,04468702	0,02466059
0,04444466	0,02524101	0,051688689	0,03336588	0,04890565	0,02751182
0,04871372	0,02834492	0,056803425	0,03717434	0,05351442	0,03069037
0,05338476	0,0318275	0,062410089	0,0414101	0,05854713	0,03423251
0,05849322	0,03573327	0,068552417	0,04611881	0,06404005	0,03817821
0,06407721	0,04011154	0,075277267	0,05135043	0,07003199	0,04257144
0,07017755	0,04501684	0,082634677	0,05715948	0,07656436	0,04746045
0,07683786	0,05050925	0,09067787	0,06360532	0,08368125	0,05289807
0,08410459	0,05665485	0,099463209	0,07075231	0,09142935	0,05894198
0,092027	0,063526	0,109050079	0,07867001	0,09985798	0,06565498
0,10065715	0,0712017	0,11950068	0,08743321	0,10901896	0,07310515
0,11004976	0,07976778	0,130879711	0,09712196	0,11896641	0,08136604
0,12026202	0,08931701	0,143253925	0,10782135	0,12975657	0,09051668
0,13135331	0,09994904	0,156691532	0,11962121	0,14144739	0,10064157
0,14338481	0,11177018	0,171261405	0,13261557	0,15409808	0,11183037
0,15641899	0,12489278	0,187032092	0,14690181	0,16776854	0,12417758
0,17051889	0,13943442	0,204070568	0,16257951	0,18251855	0,13778178
0,18574729	0,1555165	0,222440718	0,1797489	0,19840686	0,15274468
0,20216565	0,17326244	0,242201521	0,19850885	0,21549003	0,16916975
0,2198328	0,19279505	0,263404897	0,21895427	0,2338211	0,1871604
0,23880343	0,21423328	0,28609321	0,24117296	0,25344791	0,20681762
0,25912622	0,23768797	0,310296424	0,2652417	0,27441131	0,228237
0,28084177	0,26325666	0,336028905	0,29122169	0,29674297	0,2515051
0,30398021	0,29101723	0,363285931	0,3191532	0,320463	0,276695
0,32855846	0,32102051	0,392039941	0,34904952	0,34557728	0,30386114
0,35457732	0,35328169	0,422236656	0,38089025	0,37207466	0,33303329
0,38201826	0,38777091	0,453791192	0,41461421	0,39992384	0,36420986
0,4108401	0,42440306	0,486584394	0,45011215	0,42907035	0,39735056
0,44097563	0,46302755	0,520459617	0,48721972	0,45943347	0,43236874
0,47232838	0,50341858	0,555220312	0,5257113	0,49090338	0,46912376
0,50476963	0,54526706	0,590628749	0,56529549	0,52333873	0,50741394
0,538136	0,58817533	0,626406334	0,60561292	0,55656478	0,54697081
0,57222788	0,63165636	0,662235925	0,64623772	0,59037258	0,58745549

SPAIN		**GERMANY**		**FRANCE**	
PEM2005	**PEF2005**	**PAM2005**	**PAF2005**	**PFM2005**	**PFF2005**
0,606809	0,67513896	0,697766573	0,68668336	0,62451924	0,6284583
0,64160747	0,71798075	0,73262103	0,72641404	0,65872979	0,66950276
0,67631874	0,75949001	0,766406221	0,76486215	0,69270093	0,71005485
0,71061072	0,79895713	0,798726653	0,80145201	0,72610669	0,74953874
0,74413124	0,83569489	0,829200441	0,83562925	0,75860658	0,78735906
0,77651811	0,86908534	0,85747726	0,86689431	0,78985573	0,82292971
0,8074115	0,8986291	0,883257098	0,89483738	0,81951728	0,85570784
0,83646844	0,92399107	0,906308312	0,91917091	0,84727624	0,88523058
0,86337858	0,94503525	0,926483172	0,93975541	0,87285436	0,91115098
0,88788043	0,96184134	0,943728907	0,95661378	0,89602477	0,93326836
0,90977657	0,97469752	0,958092485	0,96993053	0,91662534	0,95154833

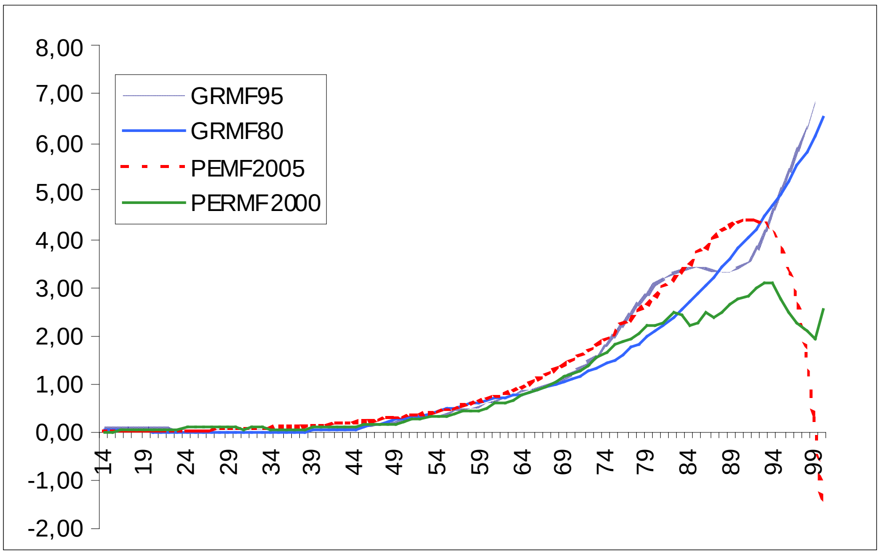
ITALY		**UNITED KINGDOM**		**SWEDEN**	
PIM2005	**PIF2005**	**PUKM2005**	**PUKF2005**	**PSM2005**	**PSF2005**
0,000408553	0,000180342	0,000367606	0,000144786	0,000298975	0,000126419
0,000410697	0,00018083	0,000369962	0,000146442	0,000300552	0,00012725
0,000413074	0,00018138	0,000372577	0,000148276	0,000302309	0,000128179
0,000415711	0,000182	0,000375478	0,000150308	0,000304266	0,000129217
0,000418634	0,000182698	0,000378697	0,000152559	0,000306445	0,000130379
0,000421877	0,000183483	0,000382269	0,000155053	0,000308874	0,000131678
0,000425473	0,000184369	0,000386234	0,000157816	0,000311579	0,000133131
0,000429461	0,000185365	0,000390633	0,000160877	0,000314592	0,000134755
0,000433883	0,000186488	0,000395514	0,000164269	0,000317948	0,000136572
0,000438788	0,000187753	0,000400931	0,000168026	0,000321687	0,000138604
0,000444227	0,000189177	0,000406943	0,000172189	0,000325851	0,000140876
0,000450259	0,000190781	0,000413613	0,000176801	0,000330491	0,000143417
0,000456948	0,000192587	0,000421016	0,00018191	0,000335658	0,000146259
0,000464366	0,000194622	0,00042923	0,000187571	0,000341415	0,000149437
0,000472593	0,000196913	0,000438345	0,000193842	0,000347827	0,000152991
0,000481717	0,000199494	0,00044846	0,00020079	0,00035497	0,000156965
0,000491835	0,000202401	0,000459684	0,000208488	0,000362927	0,00016141
0,000503056	0,000205674	0,000472139	0,000217015	0,00037179	0,00016638
0,0005155	0,000209361	0,00048596	0,000226463	0,000381663	0,000171939
0,0005293	0,000213514	0,000501298	0,00023693	0,00039266	0,000178155
0,000544604	0,00021819	0,000518317	0,000248526	0,000404911	0,000185107
0,000561575	0,000223457	0,000537203	0,000261374	0,000418557	0,000192881
0,000580397	0,000229389	0,00055816	0,000275607	0,000433757	0,000201575
0,000601269	0,00023607	0,000581415	0,000291375	0,000450689	0,000211297
0,000624416	0,000243595	0,000607221	0,000308844	0,00046955	0,00022217
0,000650086	0,00025207	0,000635856	0,000328198	0,00049056	0,000234329
0,000678553	0,000261614	0,000667632	0,000349639	0,000513962	0,000247927
0,000710121	0,000272363	0,000702892	0,000373393	0,000540031	0,000263133
0,00074513	0,00028447	0,000742018	0,000399709	0,000569069	0,000280138
0,000783953	0,000298105	0,000785434	0,000428864	0,000601414	0,000299155
0,000827006	0,000313461	0,00083361	0,000461163	0,000637443	0,000320422
0,000874749	0,000330756	0,000887069	0,000496946	0,000677576	0,000344204
0,000927694	0,000350234	0,000946388	0,000536588	0,000722279	0,0003708
0,000986407	0,000372171	0,001012209	0,000580504	0,000772073	0,000400542
0,001051515	0,000396877	0,001085246	0,000629157	0,000827538	0,000433801
0,001123716	0,000424702	0,001166287	0,000683056	0,000889318	0,000470995
0,00120378	0,000456039	0,001256211	0,000742767	0,000958133	0,000512588
0,001292563	0,000491331	0,001355989	0,000808916	0,001034783	0,0005591
0,001391015	0,000531078	0,0014667	0,000882196	0,001120159	0,000611113

ITALY		**UNITED KINGDOM**		**SWEDEN**	
PIM2005	**PIF2005**	**PUKM2005**	**PUKF2005**	**PSM2005**	**PSF2005**
0,001500187	0,000575842	0,001589541	0,000963376	0,001215253	0,000669276
0,001621244	0,000626255	0,001725839	0,001053307	0,001321172	0,000734318
0,00175548	0,00068303	0,001877066	0,001152931	0,001439145	0,000807051
0,001904327	0,00074697	0,002044855	0,001263292	0,001570543	0,000888383
0,002069371	0,000818978	0,002231015	0,001385546	0,001716891	0,00097933
0,002252374	0,000900072	0,002437555	0,001520972	0,001879889	0,001081029
0,002455285	0,000991396	0,002666701	0,001670987	0,002061426	0,001194748
0,002680265	0,001094242	0,002920921	0,001837161	0,002263608	0,001321908
0,002929709	0,00121006	0,00320295	0,002021232	0,002488778	0,001464094
0,003206269	0,001340485	0,003515823	0,002225122	0,002739542	0,001623079
0,003512884	0,001487357	0,0038629	0,002450961	0,003018803	0,001800846
0,003852811	0,001652747	0,004247907	0,002701105	0,00332979	0,001999609
0,004229654	0,001838987	0,004674972	0,002978165	0,003676095	0,002221843
0,004647406	0,0020487	0,005148668	0,003285026	0,004061714	0,002470312
0,005110489	0,002284839	0,005674061	0,003624884	0,004491093	0,002748108
0,005623796	0,002550726	0,00625676	0,004001274	0,004969176	0,003058681
0,006192744	0,002850099	0,006902977	0,004418107	0,005501459	0,003405887
0,006823326	0,003187163	0,007619587	0,004879707	0,006094052	0,003794032
0,007522175	0,003566649	0,008414198	0,005390859	0,006753747	0,004227922
0,008296624	0,003993875	0,009295226	0,005956853	0,007488089	0,004712928
0,009154781	0,004474824	0,010271979	0,006583535	0,008305459	0,005255039
0,010105609	0,00501622	0,011354747	0,007277368	0,009215163	0,005860944
0,01115901	0,005625621	0,012554899	0,008045493	0,010227533	0,006538103
0,012325923	0,006311517	0,013884993	0,008895796	0,011354029	0,007294838
0,013618418	0,007083449	0,01535889	0,009836987	0,012607364	0,008140427
0,015049819	0,007952127	0,016991882	0,010878678	0,014001626	0,009085214
0,016634814	0,008929574	0,018800831	0,012031477	0,015552427	0,010140723
0,018389591	0,010029282	0,02080431	0,013307083	0,017277046	0,011319789
0,020331978	0,011266378	0,023022766	0,014718389	0,019194604	0,012636699
0,022481592	0,012657819	0,025478685	0,016279604	0,021326233	0,014107349
0,024859999	0,0142226	0,028196773	0,018006368	0,023695277	0,015749414
0,027490887	0,015981981	0,031204139	0,019915893	0,026327486	0,01758253
0,030400242	0,017959743	0,034530496	0,0220271	0,029251242	0,019628497
0,033616542	0,020182458	0,038208359	0,024360774	0,032497781	0,021911499
0,037170944	0,022679792	0,042273256	0,026939724	0,036101433	0,02445833
0,041097492	0,025484819	0,046763933	0,029788957	0,040099866	0,02729865
0,045433311	0,028634371	0,051722556	0,032935851	0,044534337	0,030465245
0,050218814	0,032169401	0,057194911	0,036410344	0,049449934	0,033994305
0,055497887	0,036135364	0,06323058	0,040245124	0,054895821	0,037925712
0,061318075	0,040582614	0,069883094	0,044475818	0,060925459	0,042303339
0,067730733	0,045566812	0,077210048	0,049141187	0,067596803	0,047175339
0,074791155	0,05114932	0,085273166	0,054283306	0,074972462	0,052594448
0,082558652	0,05739759	0,094138298	0,059947742	0,083119795	0,058618251
0,091096573	0,064385518	0,103875327	0,066183702	0,092110936	0,06530944
0,100472243	0,072193734	0,114557964	0,073044166	0,102022713	0,072736017
0,110756807	0,080909821	0,126263397	0,080585964	0,112936438	0,080971441
0,12202494	0,090628402	0,13907177	0,088869814	0,12493752	0,090094682
0,134354402	0,101451062	0,153065449	0,097960282	0,138114882	0,100190159
0,147825404	0,113486049	0,16832803	0,10792565	0,152560108	0,111347524
0,162519737	0,126847679	0,184943046	0,118837674	0,168366286	0,123661248
0,178519633	0,141655373	0,202992333	0,130771203	0,185626482	0,137229947
0,195906305	0,158032224	0,222553991	0,143803614	0,204431781	0,15215541
0,214758122	0,176102992	0,243699904	0,158014052	0,224868836	0,168541239
0,235148372	0,195991414	0,266492777	0,173482415	0,247016868	0,186491038

ITALY		UNITED KINGDOM		SWEDEN	
PIM2005	**PIF2005**	**PUKM2005**	**PUKF2005**	**PSM2005**	**PSF2005**
0,257142571	0,217816695	0,290982659	0,190288052	0,27094405	0,206106069
0,28079529	0,24168907	0,317202951	0,208508133	0,29670327	0,227482301
0,306146479	0,267704324	0,345165904	0,228215632	0,324327238	0,250706758
0,333217292	0,295937183	0,374857692	0,249476908	0,353822988	0,275853128
0,36200547	0,326433553	0,406233149	0,272348823	0,385165864	0,302976568
0,392480351	0,359201669	0,439210371	0,296875403	0,418293152	0,332107718
0,424577656	0,394202305	0,473665437	0,323084011	0,453097629	0,363245986
0,458194287	0,431338409	0,509427605	0,350981096	0,489421393	0,396352218
0,493183407	0,470444684	0,546275454	0,38054754	0,527050495	0,431341029
0,529350235	0,511277932	0,5839345	0,411733758	0,565710992	0,46807314
0,566449014	0,553509246	0,622076958	0,444454702	0,605067203	0,506348288
0,604181755	0,596719395	0,660324289	0,47858503	0,644722998	0,545899394
0,642199382	0,640399037	0,698253237	0,51395478	0,684227017	0,586388895
0,680105938	0,683955459	0,735405878	0,550345963	0,723082591	0,62740826
0,717466438	0,726727456	0,771304045	0,587490595	0,760762957	0,668481821
0,75381882	0,768009568	0,805468065	0,625070741	0,796731905	0,709076001
0,788690137	0,807085994	0,837439302	0,662721175	0,830469421	0,748614819
0,821616724	0,843273227	0,866805299	0,700035268	0,861501087	0,786502132
0,852167536	0,875968687	0,893225667	0,736574561	0,889429066	0,822150351
0,879969181	0,904700649	0,91645621	0,771882332	0,913961641	0,855014406
0,904730544	0,929172955	0,9363683	0,805501085	0,93493759	0,884628562
0,926264336	0,949296901	0,952960483	0,836993473	0,952341456	0,910642461
0,944502635	0,965203037	0,966359732	0,865965567	0,966306311	0,932851799
0,959503648	0,977227775	0,976810865	0,892090818	0,977101945	0,951218592
0,971447639	0,985873956	0,984654317	0,915132427	0,985108584	0,965876488

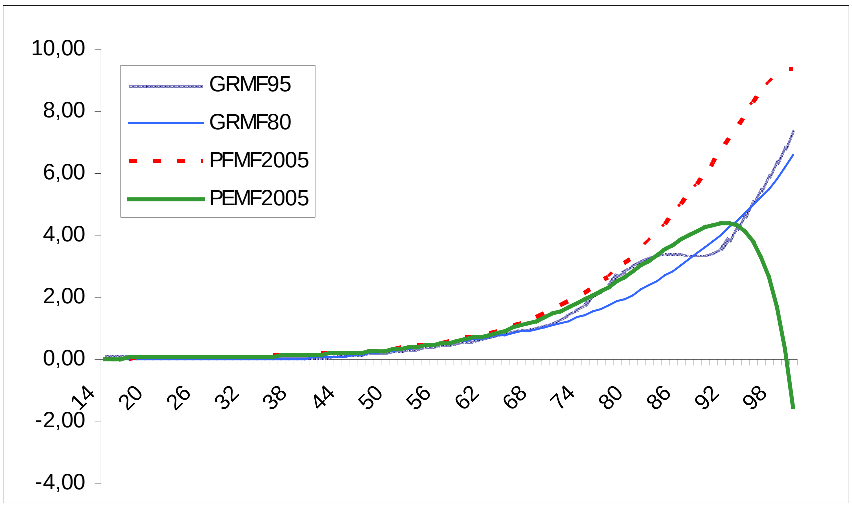
Source: Authors' compilation.

Figure 1. **Spain: Value of d_y (for every 100 C.U. of capital), ages 14-99**



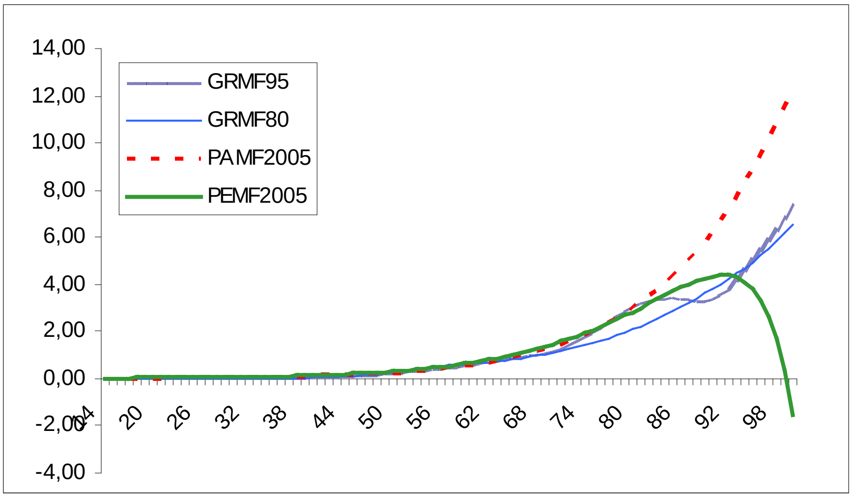
Source: Authors' compilation.

Figure 2. **France: Value of d_y (for every 100 C.U. of capital), ages 14-99, Compared with Spain**



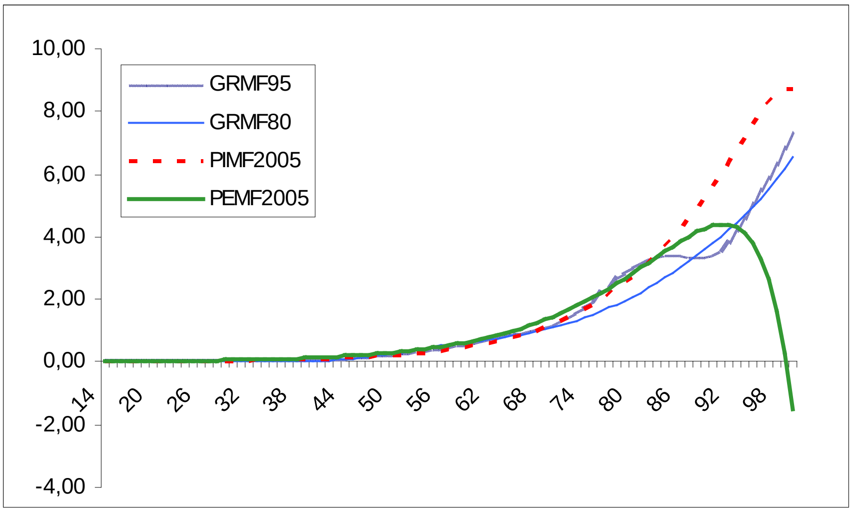
Source: Authors' compilation.

Figure 3. Germany: Value of d_y (for every 100 C.U. of capital), ages 14-99, Compared with Spain



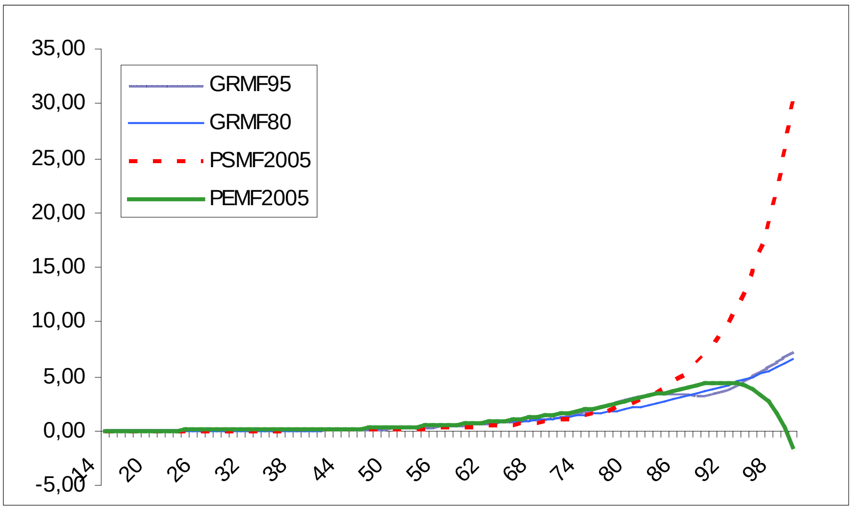
Source: Authors' compilation.

Figure 4. Italy: Value of d_y (for every 100 C.U. of capital), ages 14-99, Compared with Spain



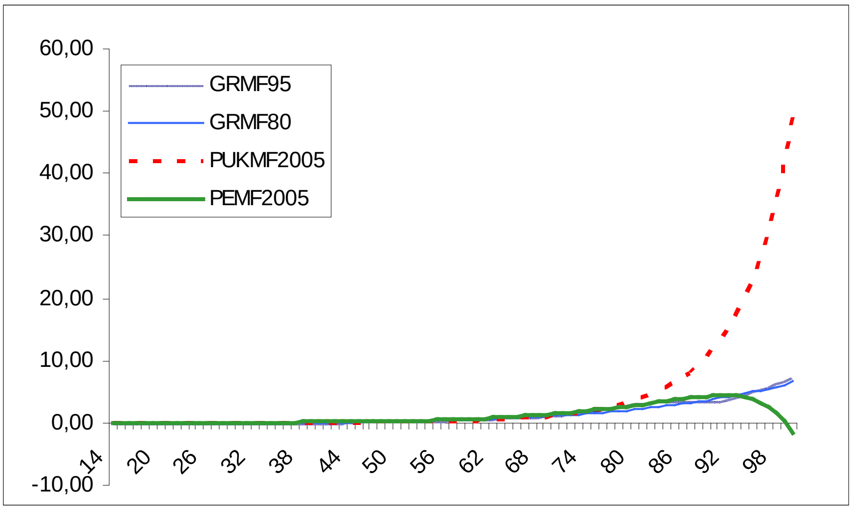
Source: Authors' compilation.

Figure 5. Sweden: Value of d_y (for every 100 C.U. of capital), ages 14-99, Compared with Spain



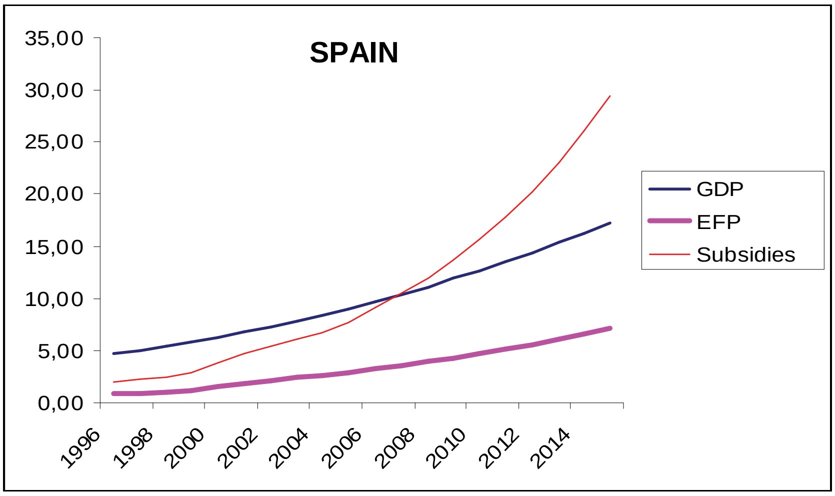
Source: Authors' compilation.

Figure 6. UK: The value of d_y (for every 100 C.U. of capital), ages 14-99, Compared with Spain



Source: Authors' compilation.

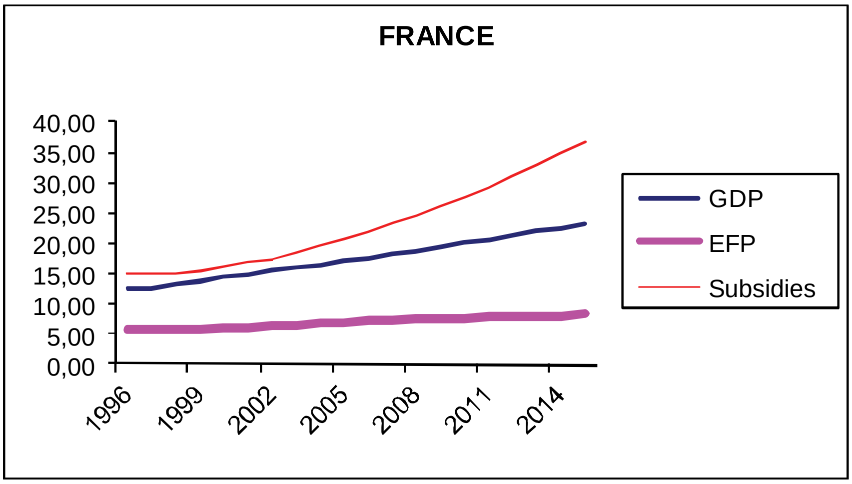
Figure 7. Spain: Projection of the GDP, the EFP and the subsidy, 2005-2015



Source: Authors' compilation.

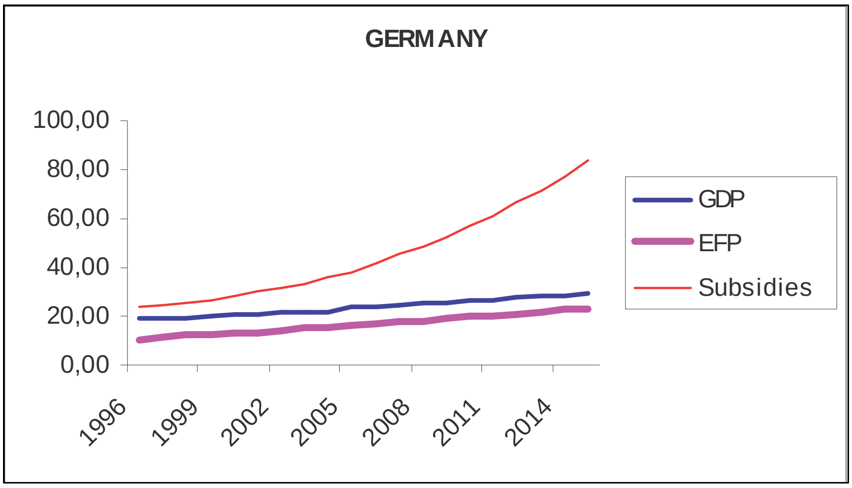
GDP: Hundred billion EURO. **EFP: Employment Funded Pensions**: Ten billion EURO. **Subsidy**: Millions of EURO.

Figure 8. France: Projection of the GDP, the EFP and the subsidy, 2005-2015



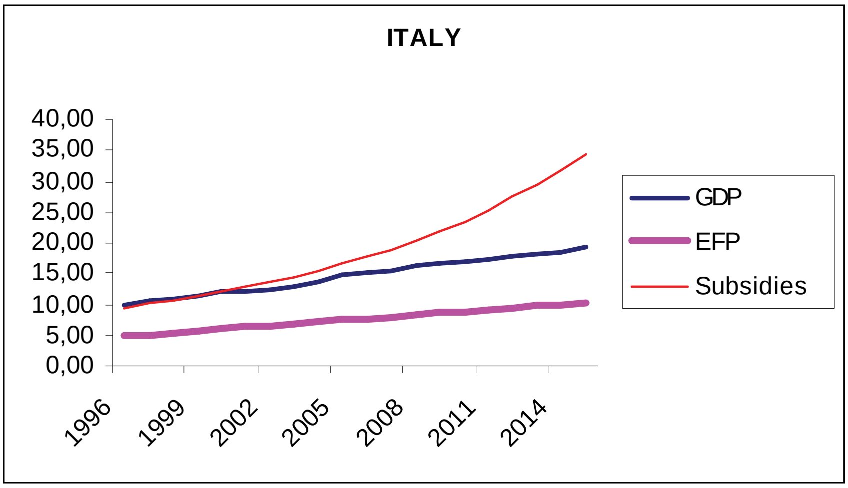
Source: Authors' compilation.

Figure 9. Germany: Projection of the GDP, the EFP and the subsidy, 2005-2015



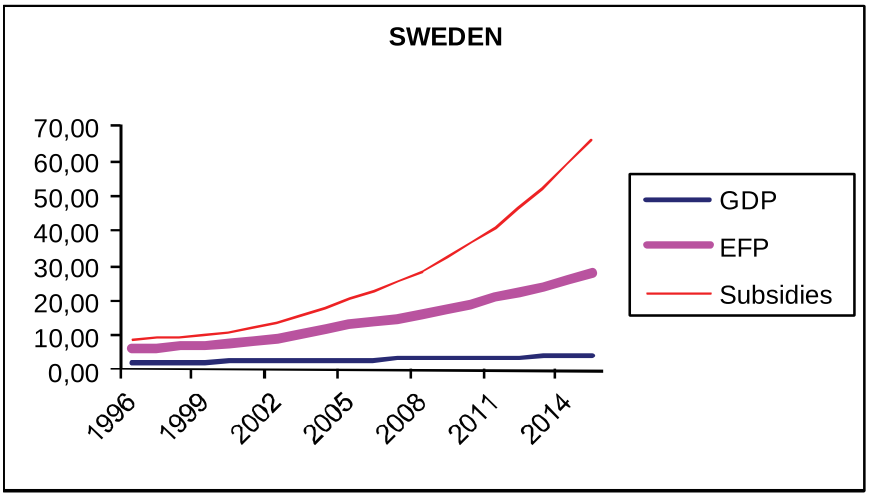
Source: Authors' compilation.

Figure 10. Italy: Projection of the GDP, the EFP and the subsidy, 2005-2015



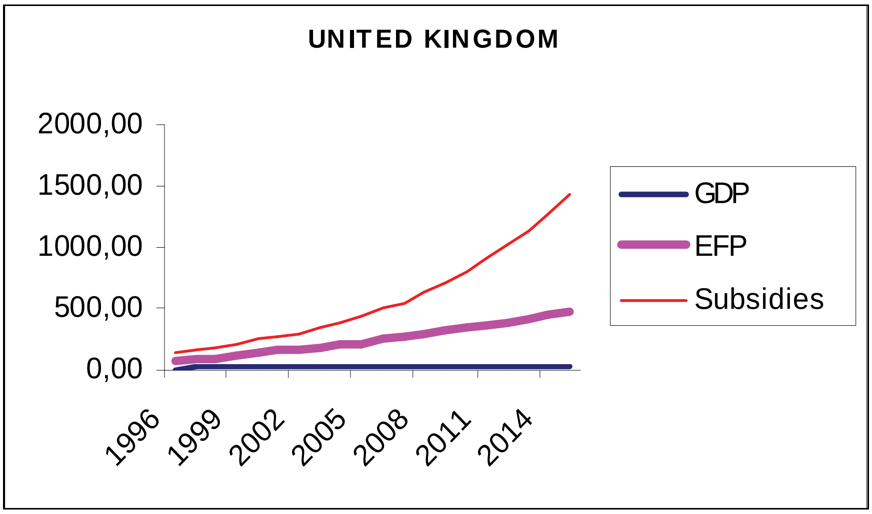
Source: Authors' compilation.

Figure 11. Sweden: Projection of the GDP, the EFP and the subsidy, 2005-2015



Source: Authors' compilation.

Figure 12. UK: Projection of the GDP, the EFP and the subsidy, 2005-2015



Source: Authors' compilation.

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