The Application of a Sustainability Factor in Spain's Social Security System

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Abstract

The reform of Spain's social security system, passed by Law 27/2011, introduces a sustainability factor that complements parametric changes. Spanish legislation explicitly specifies a sustainability factor that depends on the demographic variable of life expectancy at age 67.

The objective of this paper is to describe the Spanish Government's covert application to the revaluation of current pensions during 2013 of a sustainability factor linked to demographic and economic variables.

Keywords: Spanish parametric reforms, public pension system, sustainability factor

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1 Introduction

The introduction of a sustainability factor has been proposed in the recent reforms of Europe's public pension systems. The limited literature on this topic, outstanding among which are the works of Börsch-Supan et al. (2003), De las Heras (2011), Devesa et al. (2012a), and a later version of the latter in Devesa et. al. (2012b), makes a distinction between models according to whether this factor affects future pensioners or current pensioners. In the former case, the sustainability factor is used in determining the initial pension, while in the latter case it is used in determining pension re-adjustments.

Spanish legislation explicitly states in the regulations published until the present time[2] that the sustainability factor is linked to the five-year evolution of the demographic variable represented by life expectancy at the new retirement age (67 years), starting from a base year of application. It makes sense to apply the factor thus defined at the time the pension is put into payment. According to Devesa et al. (2012b), it can be linked to:

1. The retirement age, in that the legal age for retirement increases to keep pace with life expectancy.

2. The years of contributions required to qualify for 100% of the pension, in that the ratio between this length of time and life expectancy is kept constant and equal to that of the base year.

3. The initial pension, in that the initial amount of the pension is multiplied directly by a ratio between life expectancies or actuarial values of unit incomes at a fixed interest rate.

It does not make sense, however, to apply this factor to pensions which have already been put into payment because it would mean that each generation of pensioners would have a different revaluation of their pension.

Section 2 will examine two theoretical models of the sustainability factor applied to the current group of pensioners, and therefore affecting the revaluation of their pensions. Section 3 describes an application of these models to the case of Spain. Finally, in Section 4 it is concluded that the pension revaluation set by the Spanish government in 2012 and 2013 in the Royal Laws by Decree

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[2]Art. 8, Law 27/2011, of 1 August, on the updating, adaptation, and modernization of the Social Security system (BOE 184, 02-08-2011); and Art. 18, Organic Law 2/2012, of 27 April, on Budgetary Stability and Financial Sustainability (BOE 103, 30-04-2012).

28/2012 and 29/2012 can be seen as a covert application of a sustainability factor to current pensioners as a group which will complement the application of the explicitly defined sustainability factor applicable to future pensioners.

2 Theoretical Models of the Sustainability Factor

In this section, we shall focus on the studies of Devesa et al. (2012b) for the Spanish case and of Börsch-Supan et al. (2003) for the German case. In these, the sustainability factor affects the revaluation of pensions that have already been put into payment. In both cases, the amount of the revalued pension is adjusted by a factor that reflects the relationship between contributors and pensioners.

In the work of Devesa et al. (2012b), the retirement pension ($_{Ret}Pens_{t+1}$) is revalued at the beginning of the year according to the corresponding consumer price index projected for that year[3] ($\triangle CPI_{t+1}$) , and the sustainability factor is applied using Equation(1):

$$_{Ret}Pens_{t+1} =_{Ret} Pens_t \cdot (1 + \triangle CPI_{t+1}) \cdot \left(\frac{C_t/P_t}{C_{t-1}/P_{t-1}} \right)^{\alpha} \tag{1}$$

where,

$\left(\frac{C_t/P_t}{C_{t-1}/P_{t-1}} \right)^{\alpha}$: Sustainability factor

$_{Ret}Pens_{t+1}$: Retirement annuity in year $t+1$

$_{Ret}Pens_t$: Retirement annuity in year t

$\triangle CPI_{t+1}$: Projected CPI increase for year $t+1$

C_t : Number of contributors in year t

C_{t-1} : Number of contributors in year $t-1$

P_t : Number of pensioners in year t

P_{t-1} : Number of pensioners in year $t-1$

α : Degree of linkage, with a value in the interval $[0,1]$

The degree of linkage, α, is a parameter indicating how to share the burden of revaluation of the pensions between pensioners and contributors. If $\alpha = 0$,

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[3]Art. 48, Royal Legislative Decree 1/1994, of 20 June, approving the Redrafted Text of the General Law on Social Security.

the burden falls entirely on the contributors, while if $\alpha = 1$ it falls entirely on the pensioners. Values of $0 < \alpha < 1$ imply that the burden of the revaluation is accepted to a greater or lesser extent by each group. In the present work, a simulation is made of the application of the sustainability factor assuming a value of $\alpha = 0.25$.

The work of Börsch-Supan et al. (2003) incorporates the application of different factors in the formula for German pension indexation. Among them, there stand out the demographic or longevity factor, the old-age dependency factor, and the wage factor, to end with the sustainability factor itself whose mathematical formulation is that of Equation (2):

$$_{Ret}Pens_t =_{Ret} Pens_{t-1} \cdot (1 + \triangle GMW_{t-1}) \cdot \left[\left(1 - \frac{P_{t-1}/C_{t-1}}{P_{t-2}/C_{t-2}} \right) \cdot \alpha + 1 \right] \quad (2)$$

where,

$\left(1 - \frac{P_{t-1}/C_{t-1}}{P_{t-2}/C_{t-2}}\right) \cdot \alpha + 1$: Sustainability factor

$_{Ret}Pens_t$: Retirement annuity in year t (Riester formula)

$_{Ret}Pens_{t-1}$: Retirement annuity in year $t-1$ (Riester formula)

$\triangle GMW_{t-1}$: Gross mean wage increase in year $t-1$ reduced by the ratio between contributions to the system and private plans

C_{t-1} : Number of contributors in year $t-1$

C_{t-2} : Number of contributors in year $t-2$

P_{t-1} : Number of pensioners in year $t-1$

P_{t-2} : Number of pensioners in year $t-2$

α : Degree of linkage, with a value in the interval $[0, 1]$

Börsch-Supan et al. (2003) justify a value of $\alpha = 0.25$ as allowing the overall contribution rate to the Social Security system to exceed neither 20% of GDP until 2020 nor 22% in 2030.

In both models, one observes that it is meaningful to apply the sustainability factor when:

- It lessens the revaluation of a year's pensions. This lessening is closely linked to the evolution of the pensioners and contributors to the system (it is important in this regard which assumption is made as to whether or not the unemployed entitled to contributory benefits are included as contributors).

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- It distributes the financial burden of the revaluation of pensions, putting greater weight on the contributing workforce for values closer to zero, and on the pensioners for values closer to unity.

3 Application of Theoretical Models of the Sustainability Factor to the Case of Spain

In order to apply the theoretical models described in the previous section to the Spanish case, we start from the available information which is presented in the following tables.

Table 1: **Number of contributors (with and without the addition of unemployed contributors) and of pensioners.**

Year	Contributors excl. unemployed	Contributors incl. unemployed	Pensioners
2012	16 332 488	19 289 866	8 999 045
2011	17 111 792	19 881 956	8 871 435
2010	17 478 095	20 336 409	8 749 054
2009	17 640 018	20 514 540	8 614 876
2008	18 305 613	20 461 664	8 473 927
2007	19 195 755	20 563 218	8 338 546
2006	18 770 259	19 979 336	8 231 379
2005	18 156 182	19 325 818	8 107 268
2004	17 161 920	18 282 935	7 920 695

Source: General Treasury Report SS, INSS, 2011; Estimated by the authors from INE, SS, and SEPE information to 2012.

The evolution of the ratio of contributors to pensioners from 2004 to the present is shown in Figure 1. This ratio rose until 2007 and since then has steadily fallen.

Figure 1: **Ratio of contributors (including unemployed) to pensioners.**
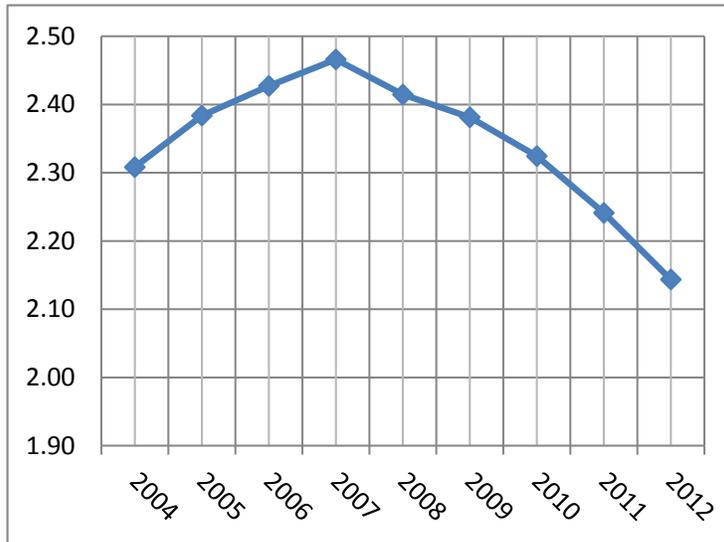
In considering the revaluation of Spain's public pensions, one must taken into account Art. 48 of Royal Legislative Decree 1/1994, of 20 June, approving the Redrafted Text of the General Law on Social Security. The article specifies that:

1. The retirement pension is revalued at the beginning of each year as a function of the corresponding projected CPI for that year.

2. If the accumulated consumer price index for the period between November of the previous fiscal year and November of the fiscal year to which the revaluation corresponds was greater than projected, the corresponding compensatory update will be made in the form of a single payment of the difference, in April of the following fiscal year.

Table 2: **CPI: estimated at the start of the year, and actual value at the end of the year.**

Year	Estimated CPI	Actual CPI	Compens. next April
2012	1.00%	2.90%	0.00%
2011	1.00%	2.90%	1.90%
2010	1.00%	2.30%	1.30%
2009	2.00%	0.30%	0.00%
2008	2.00%	2.40%	0.40%
2007	2.00%	4.10%	2.10%
2006	2.00%	2.60%	0.60%
2005	2.00%	3.40%	1.40%
2004	2.00%	3.50%	1.50%

Source: INE.

Table 2 lists the contributory pension revaluations projected at the beginning of each year and the actual CPI at the end that year. The third column indicates the percentage that had to be compensated in a single payment by the following April. One observes in the table that 2012 was the first year when, by the following April (2013), existing pensioners were not going to be compensated for the loss of acquisitive value.

The assumptions that we make to equiparate the two theoretical models are:

1. The 2013 forecasts were made at the end of 2012, with the available data on the numbers of contributors and pensioners corresponding to 31 December of 2012 and 2011. These figures will be used to work with the models of Devesa et al. (2012b) and Börsch-Supan et al. (2003).

2. The revaluation variable of reference in both models is the CPI rather than the mean gross wage increase, so as to conform more closely to the Spanish case.

3. The number of contributors includes the unemployed who receive unemployment benefits, and therefore contribute.

   Given these assumptions and the information in the tables, we calculate

the sustainability factor from the two models for different degrees of linkage a in the interval [0,1]

Table 3: **Sustainability factor.**

Degree of linkage	Model: Devesa et al.	Model: Börsch-Supan et al.
0	100%	100%
0.1	99.56%	99.54%
0.2	99.11%	99.09%
0.25	98.89%	98.86%
0.3	98.67%	98.63%
0.4	98.24%	98.18%
0.5	97.80%	97.72%
0.6	97.36%	97.27%
0.7	96.93%	96.81%
0.8	96.50%	96.36%
1	95.65%	95.45%

The authors of both studies took $\alpha = 0.25$ as a suitable degree of linkage to give an equitable partition of the financial burden of pension revaluation between current pensioners and contributors.

The plots in Figure 2 make it clear to see that the two models yield very similar results.

Figure 2: **Sustainability factor.**
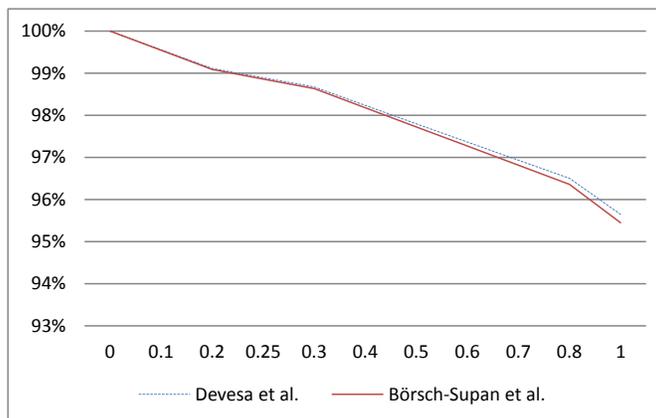
Taking the same value of $\alpha = 0.25$ in the present work, and assuming that the real CPI for 2013 will be the same as for 2012, i.e., 2.9%, one obtains that pensions during 2013 should be revalued by 1.76% and 1.73%, depending on the model considered.

In such a case, the burden of the cost of revaluation (less than the growth in CPI) is distributed as follows: contributors bear a rate of 1.76% in the model of Devesa et al. (2012b) or 1.73% in the model of Börsch-Supan et al. (2003), while pensioners bear the difference between 2.9% and 1.76% or between 2.9% and 1.73%, respectively, i.e., approximately 1.1% of the pension revaluation in both models. With the revaluation fixed, 60% will be borne by contributors and 40% by pensioners.

Thus, the sustainability factor applied to pensions already put into payment makes the revaluation of pensions much smaller than that set out in Art. 48 of Royal Legislative Decree 1/1994, of June 20, which maintains pensioners' purchasing power.

4 Revaluation of Spanish Pensions of 2012 and 2013: A Covert Application of a Sustainability Factor

Royal Law by Decree 28/2012, of 30 November, on measures to consolidate and guarantee the Social Security system, and Royal Law by Decree 29/2012, of 28 December, on improving management and social protection in the Special System for Domestic Workers and other measures of economic and social nature oblige, as a matter of extraordinary and urgent need, the revaluation of pensions in the 2012 fiscal year to be abandoned without taking effect, and the revaluation during 2013 to be suspended. Instead, it is specified that pensions whose amount does not exceed 1000 euros per month will be revalued by 2%, and the rest by 1%.

For 2012 and 2013, the legislation thus leaves without effect the compensation for the real increase in CPI and the pension revaluation projected at the beginning of the year. From our perspective, this decision taken by the Government is translated into an automatic and covert application of a sustainability factor.

Whichever the case, the pensioners have their pensions revalued over the previous year based on the amount they are receiving. In the present work, we take the pension to be revalued by 1.75%, the result of weighting the 2% by a factor of 0.7525 and the 1% by 0.2475 from the data given in Table 4.

Table 4: **Pensions in force by type and by amount greater than or less than or equal to 1000 euros.**

Number Pensions	Disab.	Retir.	Wid.	Orph.	War family	Total
≤ 1000 euros	681 887	3 553 602	2 136 053	268 609	35 660	6 675 811
Total	941 490	5 296 851	2 319 896	275 077	38 121	8 871 435
	72.43%	67.09%	92.08%	97.65%	93.54%	75.25%

Source: Statistical Report INSS 2011, p. 264.

The next step is to determine the degree of linkage, i.e., the value of α, corresponding to this 1.75% revaluation from the theoretical models expressed in Equations(1) and (2):

$$\alpha = \frac{ln(1.0175/1.029)}{ln(2.1435/2.2411)} = 0.2519 \tag{3}$$

$$\alpha = \frac{(1.0175/1.029) - 1}{1 - (0.4665/0.4462)} = 0.2450 \tag{4}$$

In this case, the contributors finance 1.75% of the revaluation, while the pensioners finance 1.15%, i.e., the contributors cover 60.35% of the cost and the pensioners 39.65%, with the degree of linkage, α, being 0.2519 with Equation (3) or 0.2450 with Equation (4).

From the perspective of the present work, any pension revaluation below the actual increment in the CPI is to be understood as the result of applying a reduction factor to what is set out in the provisions of Art.48 of Royal Legislative Decree 1/1994, and is therefore exclusively applied to pensions that have been put into payment. It is not therefore an explicit application of such a factor, but a silent and covert application that affects current pensioners. It has been applied to the pensions of 2012, and will continue for the pensions of 2013.

Hence it is a sustainability factor which, although the current legislation does not specify it in the same way as it does when speaking of a sustainability factor as a ratio between life expectancies, indeed operates and acts as such. The existing literature in this regard distinguishes perfectly between different types of factors and the consequences they have on the groups to which they are applied. It does not seem logical to focus on exclusively one type of sustainability factor.

The approach taken by the Government that has been analysed here departs from the requirement put forward by Jiménez (2013) that, for the proper functioning of a sustainability factor, it is crucial that the rules of action be public and known, with which it is indispensable that correct information be made available to citizens.

Royal Law by Decree 5/2013, of 16 March, in its ninth Additional Provision, requires the Government, within one month from the Law's entry into force, to set up an expert committee to study the Sustainability Factor. Hopefully, these experts will bear in mind the considerations of the present analysis together with its conclusion that a sustainability factor has already been applied during the year 2012 to the public pensions paid by Spain's Social Security system.

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