



The regressivity of workers' social insurance contributions in Spain. Simulation of alternative systems from a view to Europe.

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Abstract

Spanish social insurance contributions exacerbate inequality and distort income distribution. One of the main causes of this effect is the existence of maximum and minimum limits on the contribution base. Therefore, the main objective of this paper is to analyze the regressivity of employees' social insurance contributions to the Spanish General Social Insurance Scheme and the resulting worsening of income inequality, with a view to proposing solutions to mitigate this effect. By comparing with the Social Insurance systems of other European countries, three reforms are simulated using EUROMOD: the removal of maximum and minimum contribution bases, and the introduction of two contribution deduction for low-income workers. The results show that these measures reduce regressivity, improve income distribution and increase tax revenue. In this way, greater equity in the social insurance system is promoted.

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1. Introduction

Spanish Social Security is characterized by its late development compared to other European countries, mainly due to Spain's late industrialization, and to socio-political factors existing in the Franco regime. Since its inception, the system has been subject to multiple changes that have led to strengthening its contributory nature, but also to building a universal social protection system. For this reason, the Spanish welfare system falls within the so-called "Mediterranean Model", characterized by its position between the two traditional welfare models: the Bismarckian and the Beveridge model (Salvador Cifre, 2020).

Currently, the Spanish Social Insurance system is divided into two main categories, the General Regime and the Special Regimes. Among the latter, the Special Regime for Self-Employed Workers is particularly noteworthy, as it covers the majority of self-employed workers. Meanwhile, most employees are covered by the General Regime.

This paper focuses on the contributions made by workers covered by the General Scheme. Social insurance contributions are the main source of funding for financial benefits, followed by government contributions via the General State Budget. Contributions represent 74.48% of the total Social Insurance resources, while state contributions represent 19.06%, according to the Budget data published by the Secretary of State for Social Security and Pensions (2023).

One of the recurring debates in the academic literature has been the nature of social insurance contributions and their relationship with Personal Income Tax (hereinafter, PIT) (Bertrán Girón, 2015; Galindo Felipe, 2023; Pérez Bernabeu, 2019). Social insurance contributions can be considered either as insurance against certain contingencies (unemployment, old age, illness, etc.), or as a payroll tax. According to Galindo Felipe (2023), contributions have characteristics typical of any tax, such as their purpose of obtaining resources, their status of public revenue, their pecuniary nature, and their mandatory and coercive nature. However, the existence of regulated contribution bases prevents the current social contributions from being fully defined as a tax. The concept of regulated contribution bases refers to the existence of maximum and minimum limits on the contribution base, which vary depending on the employee's occupational category. In this context, workers with wages above the maximum contribution base will contribute for a limited portion of their income. In fact, according to a study by Laborda et al. (2022), the highest quintiles bear a lower average effective rate than that borne by the lowest quintiles¹.

¹ It should be noted, however, that this study assessed the average effective tax rate of self-employed and employees taken together.

According to Bertrán Giró (2015), the regulated contribution bases were originated in a context very different from the current one². Although they may have been an appropriate solution at a time, this does not imply that, in the current context, a critical assessment of how they operate should not be carried out.

The Expert Commission for the Reform of the Spanish Tax System defined social insurance contributions as an "imperfect payroll tax, since the contribution bases to which the tax rate is applied in Spain do not refer to the wages actually paid, but to amounts established according to sliding scale by occupational category, within which the amount received by the worker falls" (Ministry of Finance and Public Administration, 2014, p. 363). For this reason, it classified them as "a particular form of taxation on labour". Based on this assessment, the Commission recommended transforming the current contribution system into a genuine payroll tax, unifying the tax bases around the income actually received. In practice, this proposal entails the removal of the limits on the contribution base. Furthermore, the report proposed other complementary measures, such as a reduction in tax rates and a more balanced distribution of the burden between workers and employers. Similarly, the current Toledo Pact (2020) also recommended adjusting the contribution bases to the worker actual income.

Fuenmayor *et al.* (2020) note that, in Spain, social insurance contributions are the only policy among those analysed in the study (income replacement benefits, minimum guarantee benefits and personal income tax) that has a negative effect on redistribution. According to the authors, this is mainly due to the existence of regulated contribution base. Furthermore, the same study also indicates that Spain is the country with the lowest collection of personal income tax and social insurance contributions among European countries.

In practice, it is unlikely that an employee's wage would fall below the minimum contribution base, since this represents the Minimum Interprofessional Wage increased by 1/6. However, it may be the case that a worker earns a salary above the maximum contribution base, thereby contributing at a rate below their actual salary. For example, Anghel *et al.*, (2023) found that 6.8% of Social Insurance contributors do so for the maximum base, being more common in men and people between 44 and 63 years of age.

Other works have also proposed the elimination of caps on contribution bases. For example, Elias & Riudavets-Barcons (2022) estimate that raising the maximum contribution base would increase revenues, albeit decreasingly. Specifically, €100 increase in the maximum base would result in a rise in revenue of over €400 million, which represents 0.035% of GDP. Meanwhile, Fuenmayor *et al.*, (2020) y Granell *et al.*, (2024) assesses the budgetary cost of completely removing the

² The main reason for establishing regulated contribution bases was to eliminate the existence of commercial profit in contributions. The maximum and minimum limits in the base ensured equal treatment, so that the employer could not decide which contribution would be paid on behalf of each worker. Thus, it was considered that the best way to achieve unity and uniformity in the social insurance system was through regulated contribution bases. This idea was enshrined in Law 193/1963 (Bertrán Girón, 2015).

maximum and minimum contribution bases. Both studies conclude that the removal of upper limits would have a limited impact on both total revenue and redistributive effects.

Thus, the objective of this paper is to provide empirical evidence on the regressive nature of the General Scheme's contribution system and to assess the impact of removing the upper limits on the contribution base. In addition, following an analysis of social insurance systems in other European countries, two further reforms will be simulated, these involve a reduction in contributions for the poorest workers, based on the Belgian and Irish schemes. These countries have been chosen primarily due to the favourable results obtained in previous analyses (Fuenmayor *et al.*, 2020). Furthermore, due to the feasibility of applying these deductions in the Spanish context.

The aforementioned reforms will be simulated using the EUROMOD microsimulation model, based on the 2021 EU-SILC database. Specifically, the study assesses the budgetary cost of introducing three policies, as well as their effect on household disposable income and inequality.

As far as the authors know, only the studies by Granell *et al.*, (2024) and Fuenmayor *et al.*, (2020) simulate the removal of the upper limits on contribution bases. In this regard, the present study contributes to the limited existing literature that evaluate the effect of completely removing the upper limits on contribution bases. Moreover, it is the only study that simulates the effect of uncapping the contribution bases on inequality and progressivity. Previous studies on the introduction of a tax deduction on social insurance contributions for low-wage workers in Spain have not been found either.

Overall, the results are favourable, both in terms of revenue collection and redistributive impact. Removing the upper limits on the contribution base leads to an increase in revenue and reduces regressivity, whilst applying deductions to contributions would reduce levels of inequality and improve the situation of low-income workers.

The structure of the article is detailed below. Section 2 describes the methodology used. Section 3 briefly explains the main characteristics of the Spanish Social Security system. Section 4 analyses the Spanish system in the European environment, i.e. it compares the progressivity and redistributive effect of the social contributions of workers attached to the General Scheme in Spain, with respect to other European countries. Based on these results, a review is carried out of the policies and structures of the country's best positioned in the previous analysis, and a theoretical comparative study of these systems is developed. In the fifth section, three reforms are designed for the Spanish Social Insurance System and the results are presented. As mentioned, the first reform consists of the elimination of the maximum and minimum contribution bases, whilst the second and third reforms replicate the Irish tapered credit and the Belgian workbonus. Finally, the last section presents the conclusions drawn from the study, which highlight the favourable results that would be achieved through the reforms.

2. Methodology

To measure the progressivity of workers' contributions and their redistributive effect on income, the Kakwani Index (1977) and Reynolds-Smolensky (1977) have been used, respectively.

On the one hand, the Kakwani Index is calculated as the difference between the fiscal concentration index and the Gini index corresponding to the initial distribution of income, before government intervention³. It is calculated from the following formula:

$$K = C_T - G_x \quad (1)$$

C_T is the tax concentration coefficient, and G_x the Gini coefficient before the policy. If the tax were distributed proportionally to household income, K would be equal to 0; if it is progressive, K would be greater than zero; and if it was regressive, K would be less than 0 (Bárcena Martín & Imedio Olmedo, 1999).

On the other hand, the Reynolds-Smolensky Index measures the redistribution achieved after applying a policy. It is calculated using the following formula:

$$RS = G_x - G_{x-t} \quad (2)$$

G_x is the Gini Index of market income and, G_{x-t} is the the Gini Index of income after subtracting the social insurance contributions. Positive values indicate that there is an improvement in income distribution because of public intervention, and negative values indicate a worsening of redistribution.

The EUROMOD programme was used to carry out the microsimulation analysis⁴. This program is a static microsimulation model of taxes and benefits developed by the European Commission. EUROMOD applies fiscal and social benefit policy rules to harmonised microdata on individuals and households obtained from the EU-SILC survey (*European Union Statistics on Income and Living Conditions*). The programme enables comparisons to be made between EU member countries thanks to the standardisation of the various tax and benefit systems in accordance with a common framework. The output data include each individual's final disposable income, together with taxes paid and benefits received (Figari et al., 2007; Dreoni et al., 2024).

³ Each of these indices is measured as twice the area between the relevant curve (the fiscal concentration curve or the Lorenz curve for income) and the line representing an equidistributed distribution.

⁴ The results presented here are based on the I.6+ version of EUROMOD. *EUROMOD is maintained, developed and managed by the Joint Research Centre (JRC) of the European Commission, in collaboration with Eurostat and national teams from the EU countries. We are indebted to the Institute for Social and Economic Research (ISER) and to the many people who have contributed to the development of the model. The results and their interpretation are the author's(?) responsibility.*

As mentioned, EUROMOD is a static simulator, i.e. it does not take into account changes in the behaviour of individuals in its calculations, and assumes that the socio-demographic characteristics of the population remains fixed over time (Sutherland & Figari, 2013). Although the static calculation performed by EUROMOD can serve as a basis for estimating the dynamic effects of policies, the results presented in this paper do not take into account possible behavioural changes resulting from the introduction of reforms. The study on the implications that the proposed reforms may have on the labour supply is left for future research work.

Finally, the database used is the Living Conditions Survey (Spanish terminology of the European EU-SILC) of 2021. EU-SILC collects cross-sectional and longitudinal data on income, poverty, social exclusion and living conditions in European Union countries, enabling an analysis of how simulated policies will affect household incomes and their distribution.

3. Spanish Social Insurance: A Brief Overview

The Spanish Social Insurance System includes different types of contribution, which vary according to working conditions and the type of work. The system is mainly based on two schemes: the General Regime and the Special Regime. Generally, employees, employers and the unemployed contribute through the General Scheme, while the self-employed do so through the Special Scheme (although there are several different schemes, such as the Special Agricultural Scheme).

Social Insurance contributions are calculated by multiplying the percentage set for each category by the contribution base. As can be seen in Table 1, maximum and minimum limits are established on the contribution base, which are determined annually by the Government. The minimum contribution base represents the Minimum Interprofessional Wage increased by one sixth (to include the pro-rata of bonus payments).

Table 1. Regulated contribution base by professional category, 2023

Contribution groups	Professional categories	Minimum base	Maximum base
1	Engineers and graduates	1.759,5	4.495,5
2	Technical engineers, experts and qualified assistants	1459,2	4495,5
3	Administrative and workshop managers	1269,3	4495,5
4	Non-qualified assistants	1.260,0	4.495,5
5	Administrative officers	1.260,0	4.495,5
6	Subordinates	1.260,0	4.495,5

7	Administrative Assistants	1.260,0	4.495,5
Base in euros per day			
8	Administrative officers	42,0	149,9
9	Third Officers	42,0	149,9
10	Laborers	42,0	149,9
11	Workers under 18 years of age	42,0	149,9

Source: Author's own elaboration based on information from the Social Security website: <https://www.seg-social.es/wps/portal/wss/internet/Trabajadores/CotizacionRecaudacionTrabajadores/10721/10957/9932/4327>.

Thus, the contribution base of employees will be the highest value between the worker's salary and the minimum contribution base. As the minimum contribution base is calculated based on the minimum wage, employees should not receive a salary lower than the minimum contribution base. However, it may happen that an employee's wage exceeds the maximum contribution base. In this case, the tax base will be the one set according to their professional category.

For employers, the contribution base is the same as that of employees. The only difference between employees and employers lies in the contribution rate (see Table 2). The Government sets the contribution rate annually for each contingency, distinguishing between employees and employers. This percentage also varies according to other characteristics, such as the type of contract or the period of activity or inactivity in the Special Agricultural Scheme. Table 2 sets out the contribution rates payable by employees and employers for each item covered by the General Scheme (Recio Alcaide et al., 2023).

Table 2. Contribution rates of employees and employers of the General Scheme, 2023

	Employees	Employers
Contribution type		
Pension (common contingencies)	4,70%	23,60%
Accidents and occupational diseases	1,55%	5,50%
Unemployment	1,55%	5,50%
Vocational training	0,10%	0,60%
Wage Guarantee Fund (FOGASA)	-	0,20%
Intergenerational Equity Mechanism	0,10%	0,50%

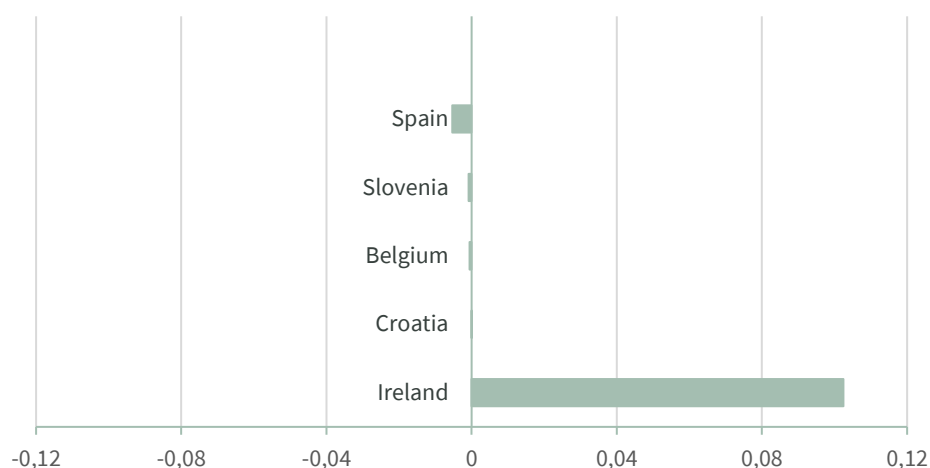
Source: Authors' elaboration based on information from the Social Security website: <https://www.seg-social.es/wps/portal/wss/internet/Trabajadores/CotizacionRecaudacionTrabajadores/10721/10957/9932/4315>.

4. The Spanish System in the European context

The following section analyses inequality and the redistribution of employees' social insurance contributions in Spain, in comparison with countries that have more redistribute systems, according to the study carried out by Fuenmayor et al., (2020). This study shows that, in 2018, Spanish social insurance contributions were the only ones in Europe to have a negative effect on the Gini coefficient, i.e. they increased inequality. Conversely, it was observed that contributions helped to reduce inequality in several European countries. For example, Romania, Belgium, Croatia, Slovenia, the United Kingdom, Ireland, the Czech Republic, Finland, Austria, Hungary, France and Latvia were above the European Union average.

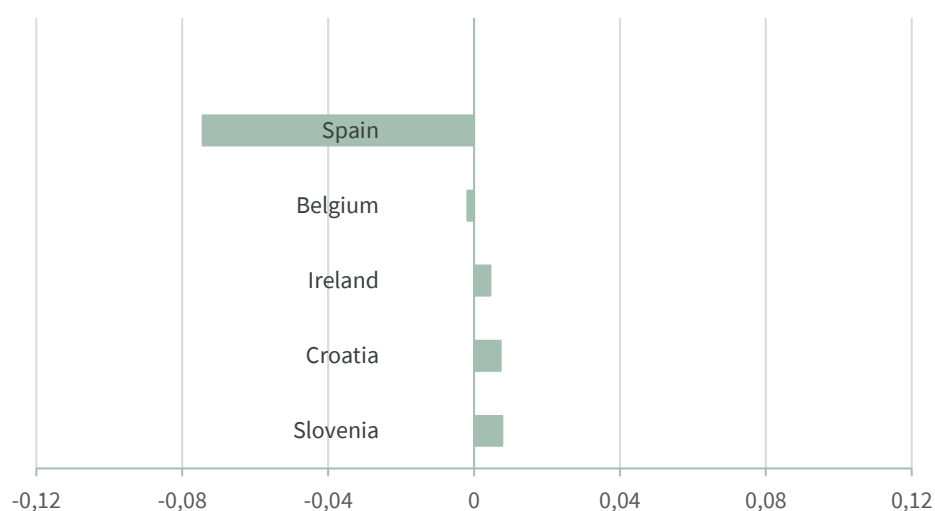
Figure 1 and Figure 2 show the effects on inequality and redistribution of workers' contributions in the Spanish General Scheme, compared to workers' contributions in Slovenia, Belgium, Croatia and Ireland. These countries were chosen for their positive impact in the aforementioned study.

Figure 1. Regulated contribution base by professional category, 2023



Source: Author's own elaboration based on EU-SILC 2021 data.

Figure 2. Kakwani index of Social Insurance contributions by workers in the General Scheme



Source: Author's own elaboration based on EU-SILC 2021 data.

In both the Kakwani and Reynolds-Smolensky indexes, the Spanish system performs worse results than the other systems analysed, as European policy leads to a greater increase in income inequality. In other words, the negative value of the Kakwani index highlights the regressive nature of contributions, which results in a deterioration of the redistributive capacity of the tax and benefit system.

According to the cited literature and the recommendations of various experts, the unfavourable results for Spain are mainly due to the existence of maximum and minimum contribution bases. Among the countries analysed, only Spain has regulated contribution bases, with no current justification for their existence (*Bertrán Girón, 2015; Commission for the Monitoring and Evaluation of the Toledo Pact Agreements, 2020; Ministry of Finance and Public Administration, 2014*). Thus, the maintenance of the maximum and minimum limits on the contribution base results in non-proportional contributions that exacerbate inequality and worsen redistribution in the Spanish system.

4.1. Overview of the Social Insurance Systems in the Selected Countries

Table 3. Summary of the Social Insurance Systems of BE, IR, CR, SI and ES

Subdivision ¹		Contribution rate	Deductions	Maximum bases	Minimum bases
Countries					
Belgium (BE)	Public/private; Worker/employee	One tax rate	<i>Workbonus</i>	No	No

Ireland (IE)	Class A and Class S	Differentiated tax rates	<i>Tapered credit</i>	No	No
Croatia (CR)	Pension Pillars	One tax rate	No	Monthly and annual ceiling for A1 and B2.	35% of the average gross salary from January to August of the previous year
Slovenia (SL)	Permanent or occasional income	One tax rate	In case the salary is less than the minimum base	No	60% of the average salary in Slovenia.
Spain (ES)	Types of Work and Employment	One tax rate	No	Annually set by the Government	Minimum Interprofessional Wage increased by 1/6

1 This column presents the majority division shown by the different countries to highlight and/or differentiate the contribution percentages.

Source: Authors' elaboration based on information from the Country Reports (European Commission, 2023).

Among the countries mentioned, it is worth nothing that, except for Croatia in some cases, the other countries do not set maximum and minimum limits for the contribution base. This suggests that the maintenance of the regulation contribution bases is an unusual arrangement within the European context.

Furthermore, the Croatian and Slovenian systems have specific characteristics that make their simulation unfeasible in the Spanish system. However, the Belgian and Irish systems have interesting elements, such as the workbonus and work credit. These policies refer to tax credits that reduce the contribution the worker must pay or, where applicable, exempt them from their payment. Thus, the application of these deductions in the Spanish system could reverse the situation mentioned above and improve the redistributive capacity of contributions. The Belgian workbonus and tapered credit operate differently, as discussed below.

Regarding the Belgian system (Assal *et al.*, 2023), contributions rates vary mainly between public-sector and private-sector employees, as well as between blue-collar and white-collar workers. The standard rate of Social Insurance contributions is 13.07% of total gross income. The workbonus is applied to employees' social insurance contributions, with a limit based on full-time equivalent income.

The following formula shows the calculation of the contribution, which includes the workbonus, for both white-collar workers (C_{wc}) and blue-collar workers (C_{bc}).

$$C_{wc} = \begin{cases} 13.07\%w_m - 247.31 & \text{if } w_a \leq 26,820 \\ 13.07\% - (247.31 - (0.2313 * (w_m - 2,013.64))) & \text{if } 26,820 < w_a \leq 53,630 \\ 13.07\%w_m & \text{if } w_a > 53,630 \end{cases} \quad (3)$$

$$C_{bc} = \begin{cases} 13.07\%w_m - 267.09 & \text{if } w_a \leq 26,820 \\ 13.07\%w - (267.09 - (0.2498 * (w_m - 2,013.64))) & \text{if } 26,820 < w_a \leq 53,630 \\ 13.07\%w_m & \text{if } w_a > 53,630 \end{cases} \quad (4)$$

w_m is the gross monthly wage, and w_a is the annual wage.

In other words, for white collar workers with earnings of less than 26,820 euros per year, their contribution will be deducted at 247.31 euros. If this income is between 26,820 and 53,630 euros per year, the result of applying the following formula will be discounted: $247.31 - (0.2313 * (w - 2,013.64))$. With respect to blue collar workers, the deduction only changes in its amount. In this case, for income of less than €26,820 per year, the deduction will be equal to €267.09 per month, and for income between €26,820 and €53,630 per year, the deduction will be the result of € 267.09 - (0.2498 * (w - 2,013.64)).

As regards the Irish System (Doolan *et al.*, 2023), the contribution scheme is broadly divided into two categories: class A, to which most workers belong, and class S, where self-employed workers are located. Contribution rates vary according to income thresholds. For class A workers, the contribution rates are as follows:

Table 4. Class A Contribution Schedule, Ireland 2023

	Employees	Employers
Contribution type		
≤ 352 euros per week	0,00%	8,80%
352 ≤ W ≤ 441 euros per week	4,00%	8,80%
≥ 441.01	4,00%	11,05%

Source: Authors own elaboration.

The tapered credit applies only to Category A workers, provided their weekly earnings are between €352.01 and €424. The reduction amounts to €12 per month, minus one-sixth of the weekly earnings exceeding €352. In other words, the maximum amount that can be deducted is €12 per month for an income of €352.01 per week. Thus, contributions in Ireland for Category A workers are calculated as follows:

$$C_{IE} = \begin{cases} 0\%w_m & \text{if } w_s \leq 352 \text{ € per week} \\ 4\%w_m - \left(12 - \frac{(w_m - 352.01)}{6}\right) & \text{if } 352 < w_s \leq 424 \text{ € per week} \\ 4\%w_m & \text{if } w_s > 424 \text{ € per week} \end{cases} \quad (5)$$

C_{IE} represent the Social Insurance contributions for workers in the Category A, w_m is the gross monthly wage, and w_s the weekly wage.

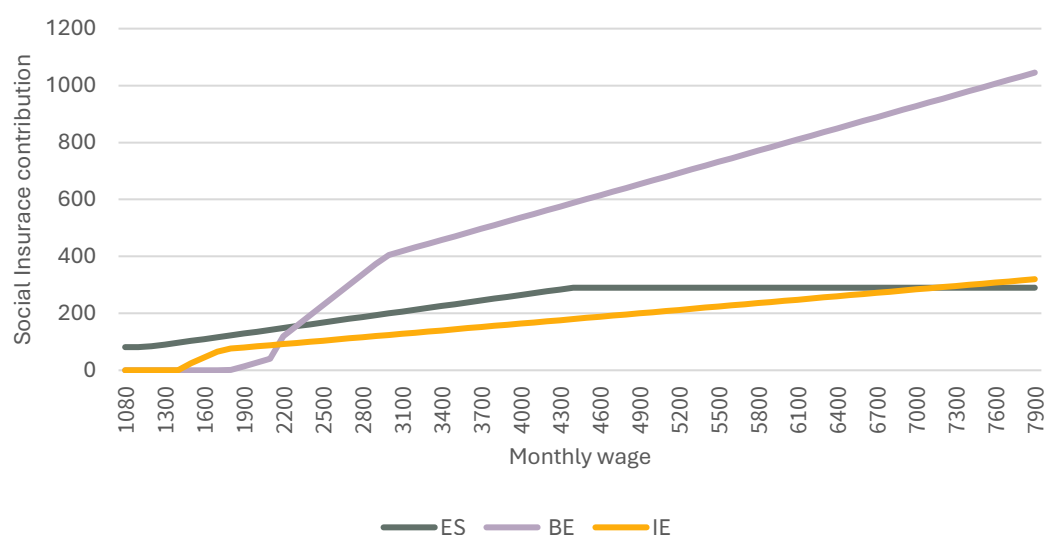
Consequently, in light of the results presented and based on the recommendations of the experts (*Ministry of Finance and Public Administration, 2014; Commission for Monitoring and Evaluation of the Toledo Pact Agreements, 2020*), a simulation is carried out for Spain to assess the impact of removing the upper limits on the contribution base. As well as two additional reforms that adapt the deduction of the employees' contributions to the Spanish system, following the Belgium and Ireland example.

4.2. Hypothetical Comparison of Social Insurance Contributions in Spain, Belgium and Ireland.

In order to facilitate the comparison between the Spanish, Belgian and Irish systems, social insurance contributions and the average rate for a group of employees have been calculated theoretically for a group of workers.

For the following hypothetical case, the Social Insurance contributions have been calculated for a full-time worker in the General Scheme, assigned to contribution group four (the group with the lowest minimum contribution base) in Spain. In the case of Belgium, the contribution for a full-time white-collar worker has been considered, whilst for Ireland it has been assumed that the worker belongs to Class A (given that the tapered credit applies to this group). The results are shown in the Figure 3 and Figure 4. Both the Social Insurance contribution and the salary are expressed in monthly terms⁵.

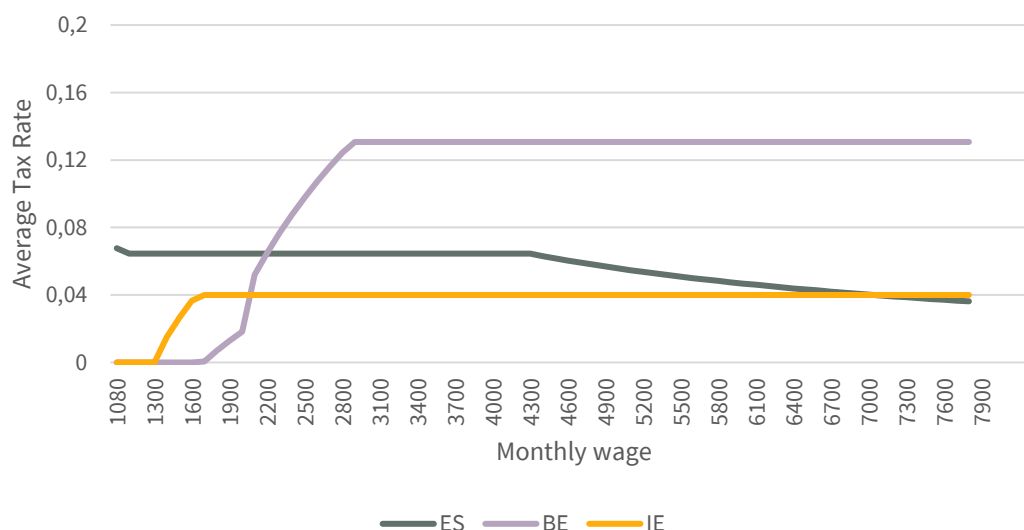
Figure 3. Hypothetical case of the Social Insurance contributions for Spain (ES), Belgium (BE), and Ireland (IE).



Source: Author's own elaboration based on EU-SILC 2021 data.

⁵ The figures begin with the Minimum Interprofessional Wage for the year 2023.

Figure 4. Average Tax Rate: Social Insurance Contributions/wage. Spain (ES), Belgium (BE) and Ireland (IE)



Source: Author's own elaboration based on EU-SILC 2021 data.

As can be seen in Figure 3, contributions in Spain increase with the contribution base in the bracket between the maximum base and the minimum contribution base. Once the maximum ceiling is exceeded, contributions remain constant. In other words, all workers contribute the same amount. In contrast, the Belgian and Irish systems are progressive for low incomes due to deductions, and, once the bracket in which the deduction applies is exceeded, the social insurance contributions become proportional, as there are no fixed bases.

As for Figure 4, it clearly shows the regressive effect of the Spanish system. The average rate is higher for low incomes, because of the minimum contribution base. Meanwhile, it decreases for high incomes from the maximum base. This means that higher wages bear a proportionally lower tax burden than those in the lower income brackets, unlike the situation in Belgium and Ireland.

In summary, it can be seen that the existence of maximum and minimum contribution bases means that the Spanish system is highly regressive when it comes to setting maximum contribution limits. This results in an unfair tax that widens the income gap between wage earners.

4.3. Potential Implications of the Reform for Benefits and Pensions

The maximum amount Social Insurance-related benefits and pensions is directly linked to the contribution base. Consequently, the removal of the upper limits on this base could lead to the review of the current limits on pensions and other benefits. Although an in-depth analysis of this issue is beyond the scope of this paper, some considerations will be set out here with a view to contributing to the opening of future lines of debate.

Currently, both Belgium and Ireland have maximum and minimum amounts for certain contributory benefits and pensions, but they do not have ceilings on the contribution base. For example, Belgium calculates the contributory unemployment benefit on the basis of the gross wage for at least the last five weeks, with a ceiling set annually by the Government (*European Commission, 2024a*). In Ireland, this benefit is fixed and varies according to average weekly earnings, which are divided into income brackets (*Department of Social Welfare, 2024a*). In Spain, however, the maximum amount of unemployment benefit is based on the regulatory base⁶, with upper limits determined by a percentage applied to the IPREM increased by 7/6 (*SEPE, 2023*).

Something similar happens with contributory pensions. Belgium sets a maximum earnings threshold, above which earnings are not taken into account when calculating the pension (*European Commission, 2024b*). Ireland classifies the pension into bands based on average contributions paid, with the amount increasing if there are dependants (*Department of Social Welfare, 2024b*). In Spain, however, the regulatory base is used as a reference for this calculation (*Seguridad Social, 2024*).

In short, the example of the Belgian and Irish system demonstrate that is possible to reconcile the removal of contribution base limits with the retention of minimum and maximum limits on contributory benefits and pensions. The main difference lies in the reference variable used to calculate these limits. For example, rather than being based on the contribution base, both Ireland and Belgium use wage or gross income.

5. Results of the Reforms on Employees' Social Insurance Contributions in the General Scheme.

Based on the analysis carried out in the previous sections, this section will model various reforms using a microsimulation analysis. The results will focus on the budgetary impact, and the changes brought in terms of progressivity and redistribution.

To adapt the deductions established by Ireland and Belgium to the Spanish system, thresholds and parameters have been modified. In general, the minimum income threshold represents 40% of the average wage in Spain, whilst the maximum limit for qualifying for the deduction is the average salary, according to data from the Economically Active Population Survey for the year 2022.

⁶ The regulatory base is determined according to the beneficiary's contribution base for a certain period and a certain number of days of contributions. The period to determine the contribution base and the days contributed depend on the type of benefit and pension. In the same way, the calculation of the regulatory base may be different depending on the status of the worker at the time of receiving the benefit (multiple employees, part-time workers, workers in training, etc.).

Regarding the incorporation of the Belgian workbonus into the Spanish system, Granell *et al.*, (2024) also simulate its implementation, albeit in a different way to that carried out in this study. In their study, they introduce a basic reduction that exempts workers whose contribution base does not exceed 800 euros per week. This reduction continues to decrease progressively until it disappears for contribution exceeding €1300 per month. Finally, they assess the budgetary cost of the reform and its impact on household income inequality, highlighting that the reform would entail a very slight reduction in contributions and a significant improvement in the Gini Index. On the other hand, no studies have been found that analyse and simulate the incorporation of the Irish tapered credit into the Spanish system.

It should be noted that we carried out these simulations using EUROMOD. Therefore, the program simulates not only changes in workers' contributions, but also any other consequences for the tax-benefit system. In this case, the knock-on effects on income tax and certain cash benefits will be particularly significant.

It should be noted that the application of minimum contribution bases in EUROMOD may be affected by issues relating to the measurement of low wages. These issues may lead to an overestimation of the result regarding the removal of maximum and minimum contribution bases. In theory, the limit on minimum contribution bases should have no effect, as these are calculated based on the minimum wage. However, the simulator applies this minimum in some cases, due to problems in measuring low wages. This is due, on the one hand, to the mismatch between hours worked (taken in the reference period) and wage earnings (corresponding to the previous year). On the other hand, there may be informal work, which in reality would not be subject to contributions, but which is calculated by EUROMOD (Grunberger *et al.*, 2025).

On the following pages "ES_2023" refers to the name of the current system (baseline); "ES_2023_ref" to the reform that removes the caps on the contribution base; "ES_2023_IE" to the reform that incorporates the Irish tapered credit; and "ES_2023_BE" to the reform that incorporates the Belgian workbonus. It is worth mentioning that, in the last two reforms, the limits on the contribution base are also eliminated.

Table 5. Budgetary results (in million of euros)

	ES_2023	ES_2023_ref (difference)	ES_2023_IE (difference)	ES_2023_BE (difference)
Tax Effects				
Annual income from taxes and contributions	298.807,20	306.427,39 (-2.55%)	303.269,25 (-1.49%)	304.440,16 (-1.89%)
Direct Taxes	122.049,96	121.029,34 (-0.84%)	122.094,80 (-0.04%)	121.490,20 (-0.46%)
Workers' contributions	29.188,33	30.710,90 (-5.19%)	26.478,31 (-9.28%)	28.253,81 (-3.20%)
Employers' contributions	137.185,09	144.312,28	144.312,28	144.312,28

		(-5.2%)	(-5.2%)	(-5.2%)
Annual public expenditure on benefits	238.234,43	238.138,11	238.040,03	238.040,93
		(-0.04%)	(-0.08%)	(-0.08%)

Source: Authors own elaboration based on the results of EUROMOD.

As shown in Table 5, the three proposed reforms would lead to an increase in tax revenues. With the elimination of the maximum and minimum contribution bases, revenue would rise from €298,807.20 to €306,427.39 million, representing an increase of 2.55%. The application of the deductions would entail a cost of 1.03% compared with the first reform if the tapered credit were applied, and 0.65% if the Belgian workbonus were applied. Even so, revenue would remain higher than under the current system.

These changes in tax revenues and contributions are due to changes in the contributions paid by the employees and employers, as well as in direct taxes (PIT). Although this paper focuses exclusively on employees' Social Insurance contributions, the fact is that this reform, by definition, also affect employers' contributions. Employer contributions are affected only by the removal of the maximum and minimum contribution bases, as the deductions relate solely to employees' contributions. Employer contributions rise from €137,185.09 million per year under the current system to €144,312.28 million per year under the first reform, representing an increase of 5.2%. As for employee contributions, these would also increase by 5.2% under the first reform, while they would decrease if the deductions were applied.

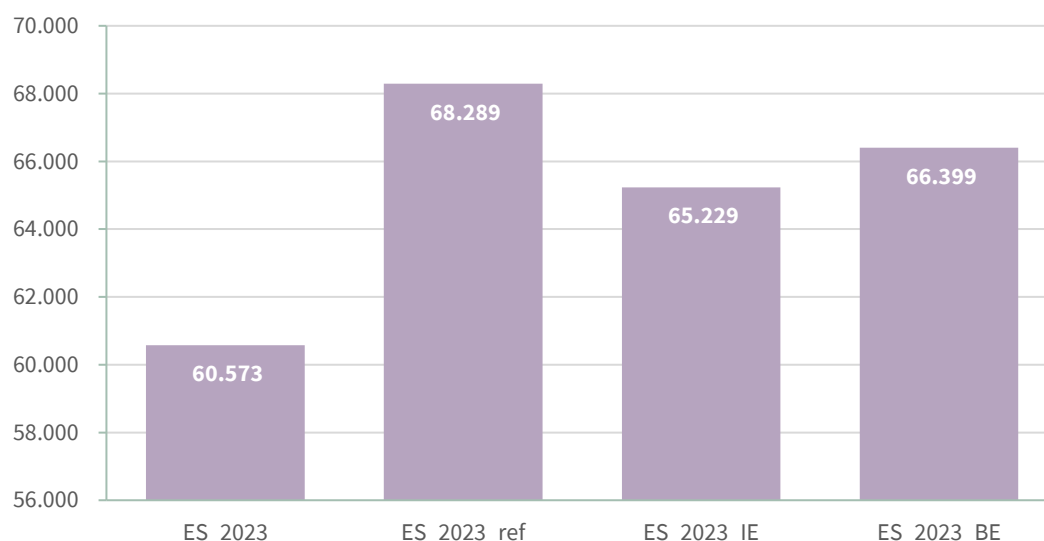
Finally, Personal Income Tax undergoes very slight changes. With the first reform, PIT revenue raises by 0.84% compared to the current system, whilst under the tapered credit it would rise by 0.04%. With the workbonus it would fall by 0.46%. Although the reduction may not be considered significant, it does highlight the interconnection between the tax system and benefits, which EUROMOD takes into account in detail. These changes are due to the fact that Social Insurance contributions are deductible from gross employment income in the PIT.

Public expenditures on social transfers varies very slightly. In the case of the first reform, it would fall by 0.04%. After introducing the deductions, the system would save 0.08% annually on social benefits with both tapered credit and workbonus. These results are due to slight changes (barely 1%) in some benefits. Such changes may be due to small variations in the income of people who were slightly below the threshold required to receive these benefits. In other words, the increase in the income of some households as a result of the reforms means that a small number of people are now above the income threshold require to receive these benefits.

Overall, the net annual revenues of the entire system (see Figure 5) would increase with the three reforms. In fact, the net revenue generated by removing the maximum and minimum contribution bases is sufficient to ensure that, even if a deduction is applied to workers' contributions, net revenue would still be higher than under the current system. Thus, if the upper limits on contribution bases were removed, the introduction of a deduction of this magnitude would not

require additional funding. This could lead to more generous deductions than those proposed in this paper or, alternatively, to development of other types of proposals regarding contributions rates or the number of benefits.

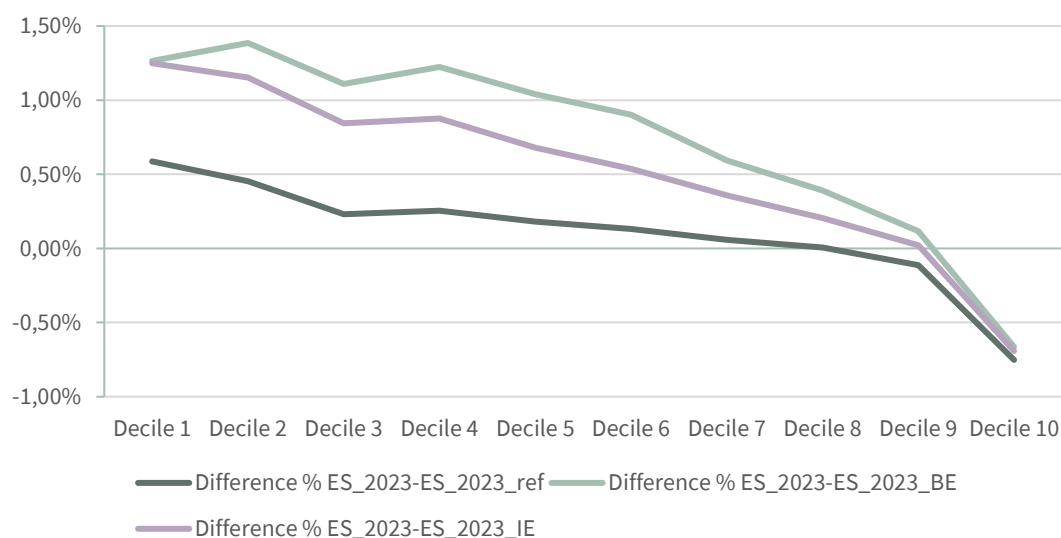
Figure 5. Net annual revenue (in millions of euros)



Source: Author's own elaboration based on the results of EUROMOD.

The distributional impact resulting from the implementation of the three reforms is shown below.

Figure 6. Change in average household income by deciles



Source: Author's own elaboration based on the results of EUROMOD.

In Figure 6, the blue line shows the percentage differences by deciles between the current system and the first reform; the green line provides the same information when applying them the Belgian workbonus; and the orange line shows the result of applying the Irish tapered credit. The first point to note is that implementing any of the three reforms would increase the average income of the most vulnerable households, i.e. those in the lowest income deciles. Simply

eliminating the maximum and minimum contribution bases, the poorest 10% of households could see their income rise by 0.59% compared to the current system. In the next two reforms, income growth is clearly higher than in the current system. However, the implementation of the three reforms shows, in general terms, a favourable redistributive effect.

Furthermore, the Gini index of disposable income and the S80/S20 ratio also show favourable results (see Table 6), highlighting a reduction in inequality under the proposed reforms. In this case, the effect is greater under the tapered credit Irish.

Table 6. Inequality indices

	ES_2023	ES_2023_ref	ES_2023_IE	ES_2023_BE
Inequality				
IG of disposable income ²	0,3160	0,3141	0,3125	0,3129
Workers' IG after contributions	0,4714	0,4669	0,4613	0,4627
S80/S20 coefficient on disposable income	5,4650	5,4177	5,3796	5,3865

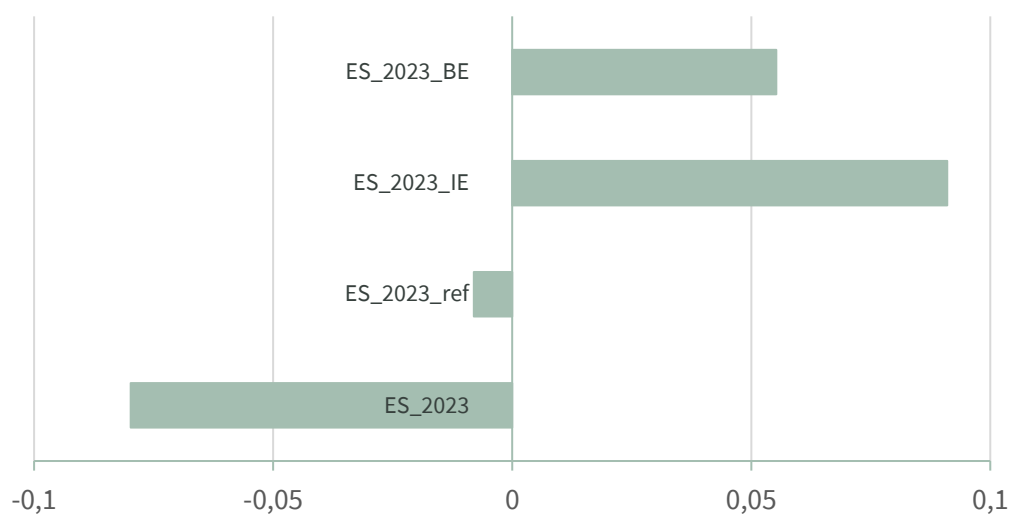
² The Gini index of disposable income corresponds to market income discounting taxes and contributions and adding benefits and pensions.

Source: Authors' own elaboration based on the results of EUROMOD.

If we analyse solely the effect that the implementation of these policies would have on inequality among workers registered in the General Social Insurance Scheme in Spain (second row of the table), a clear improvement in income inequality is observed after workers' contributions.

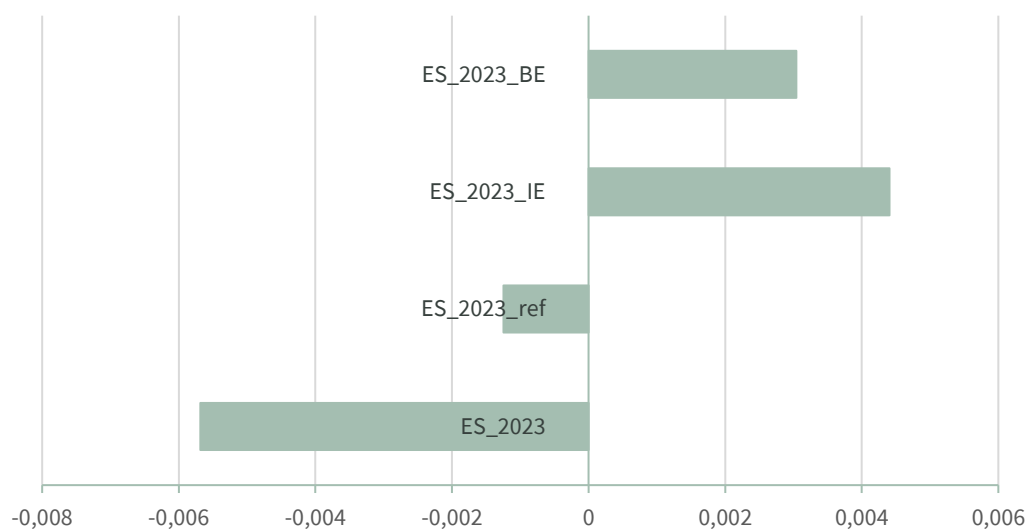
Finally, the Kakwani index shows an improvement in the progressivity of Social Insurance contributions, particularly if the Belgian and Irish systems are introduced. Redistributive capacity, measured through the Reynolds-Smolensky index, also shows a clear improvement (see Figure 7 and Figure 8).

Figure 7. Regulated contribution base by professional category, 2023



Source: Author's own elaboration based on EU-SILC 2021 data.

Figure 8. Kakwani index of the baseline and reforms



Source: Author's own elaboration based on EU-SILC 2021 data.

With the removal of the maximum and minimum bases, one would expect the Kakwani and Reynolds-Smolensky indices to be zero, as the reform would make the tax proportional. However, this result is not evident in the figures. This may be because income before contributions has been used to measure progressivity, rather than the contribution base. Therefore, it is possible that the results show a slight regressivity. Nevertheless, a clear improvement over the current system is evident.

If a deduction were introduced for low-income workers, the system would become slightly progressive, which would help to improve levels of income redistribution. In this case, the Irish tapered credit performs better than the Belgian workbonus, both in terms of progressivity and redistributive capacity.

However, adapting the Irish tapered credit would entail a higher fiscal cost, estimated at approximately €1,170.01 million more than the workbonus. As mentioned, the removal of the upper limits on the contribution base would generate sufficient revenue to fund either of the two proposed deductions and even to increase the amount of the deduction, expand the group of beneficiaries or, where appropriate, put forward other reform proposals.

6. Conclusions

This paper highlights the regressive nature of the social insurance contributions for workers registered with the General Social Insurance Scheme. This situation places a greater tax burden on lower-income workers, while those with incomes above the maximum base benefit from a softer tax treatment. For this reason, a set of reforms have been proposed that would help to improve progressivity and income distribution.

Through a microsimulation analysis, three policy examples have been presented that could be implemented without a completely breaking with the current system. The first involves the removal of the maximum and minimum contribution bases, whilst the latter two involve two deductions in the social insurance contribution for low-wage workers. The elimination of the maximum and minimum bases is in line with the recommendations of experts and academics (*Bertrán Girón, 2015; Ministry of Finance and Public Administration, 2014; Commission for Monitoring and Evaluation of the Toledo Pact Agreements, 2020*), which argue that maintaining these caps on the contribution base is ineffective. In fact, at least within the European context, only Spain has a contribution base subject to maximum and minimum limits. As demonstrated in this paper and in previous studies (*Fuenmayor et al., 2020; Granell et al., 2024*), maintaining fixed rates on the contribution basis means that, in practice, this tax becomes regressive, placing Spanish social insurance contributions among those that most exacerbate household income inequality. Therefore, the proposed reforms have aimed to improve the current situation in terms of fiscal progressivity and redistribution, by establishing proportional contributions (elimination of the maximum and minimum contribution bases) and introducing reductions in the social insurance contribution of low-income workers. Indeed, the results show that the proposed reforms have a favourable impact on average household incomes, economic inequality, and net revenue.

To the authors' knowledge, this study is the only one to assess the effect of removing the upper and lower limits on contribution bases on tax revenue, progressivity and income distribution. Analysis using EUROMOD has shown that adjusting the bases to actual wages would increase tax revenue, as a result of the higher contribution made by those above the upper limit, an increase that more than offsets the cost of the deductions. Furthermore, although the effect that the first reform would have on the income of households in the lowest income deciles is small, it would be favourable, as it would contribute to reducing income inequality and mitigate the regressive nature of the policy. On the other hand, the

introduction of either of the two deductions analysed would result in a slightly progressive tax system that would help to improve the initial distribution of income and reduce levels of inequality.

The clear consequence of removing the current limits on the contribution base would be a significant increase in revenue, which would more than offset the introduction of either of the two proposed deductions. Revenues would remain higher than the current system even if a deduction for low-income workers were introduced. This fact demonstrates that the system is not currently realising its revenue-raising potential, and removal of these limits could help improve the system's financial position, as well as allow for more generous deductions, or serve as a basis for proposals to reduce contribution rates and/or increase the amount of contributory benefits and pensions.

The choice between a reform modelled on the Belgian workbonus and one modelled on the Irish tapered credit will depend on the initial policy priorities to be implemented. Tapered credit is associated with better outcomes in terms of distribution and inequality, although with a higher fiscal cost.

In summary, the microsimulation of the three proposals set out in this paper shows that it is possible to establish a system that distributes the tax burden progressively; takes account of those on lower incomes; and moves towards reducing the high proportion of wage earners at risk of poverty or social exclusion. Among the future lines of research for this study, it is worth noting that the removal of maximum contribution bases would open up the debate on the need to adjust the upper limits of contributory benefits and pensions. However, countries such as Belgium and Ireland, which have minimum and maximum amounts for some of their contributory benefits and pensions, do not have upper limits on contribution bases.

Finally, it should be noted that the reforms introduced could have implications for the labour supply. However, given that EUROMOD is a static microsimulator, this study does not take into account the possible behavioural changes that the reforms may cause in individuals. This task is also identified as one of the future lines of research.

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Conflict of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Author contributions

Bárbara López: Conceptualization, Data Curation, Formal Analysis, Investigation, Software, Visualization. Writing – original draft

Amadeo Fuenmayor: Conceptualization, Data Curation, Funding Acquisition, Investigation, Resources, Supervision, Validation. Writing – review & editing

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