ARE EUROPEAN SOCIAL SPENDING POLICIES EFFECTIVE IN THE FIGHT AGAINST GENDER INEQUALITY?

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ABSTRACT

The aim of this paper is to analyse the factors that influence a greater or lesser decrease in gender inequality, paying special attention to the role of social policy. To this end, a measure of inequality in the distribution of income between men and women has been developed and a panel of data has been estimated for 33 European countries and a time period of 15 years. The results show that income inequality in general, as measured by the Gini index, and gender inequality based on differences in the distribution of income between men and women are closely linked, and that retirement benefits and women's educational attainment are the tools that most improve gender equity in income distribution.

KEYWORDS

Gender inequality, institutional quality, social benefits, Gini index, schooling years.

JEL CODES

H55, I18, I2, I38, J16

1. INTRODUCTION

Concern about gender inequality has grown in recent decades, which has even led to the recognition of gender equality and women's empowerment as one of the Sustainable Development Goals (World Bank, 2015). In the European case, the promotion of gender equality and equity is at the heart of social policies (European Commission, 1996). This is why, in this paper, we ask several questions: How does social spending affect gender inequality in European countries? Which items of social spending are most effective in the fight against gender inequality? We have tried to answer these and other questions in this paper, in which we have estimated a panel data model for 33 European countries and a time period of 15 years (from 2003 to 2017).

This paper incorporates two important novelties to the study of gender inequality. Firstly, we analyse the distribution of disposable income before and after social benefits, adapting the Reynolds-Smolensky index to our object of study, which allows us to check whether or not social spending policy reduces income differences between men and women, and how much it does so. The use of disposable income implies extending the traditional analysis of gender inequality that only considers wages as a source of income, without taking into account that the composition of income and public sector activity also determine gender inequality.

On the other hand, the second important novelty incorporated in this study and the main objective of this work is based on measuring the effect of each of the social spending items on the variation in income inequality between men and women. In fact, the results obtained allow us to affirm that retirement benefits and women's education are the main instruments in the fight against gender inequality. On the other hand, the insufficient benefits for widowhood, orphanhood and to avoid social exclusion are less effective in the fight against inequality.

The paper is structured as follows: after this introduction, section 2 reviews the theoretical framework on the different measures of gender inequality and the role of the state in the fight against gender inequality. Subsequently, in section 3, the empirical analysis is carried out to determine the influence of different explanatory variables on the

variation of gender inequality in income distribution. Finally, section 4 presents the main conclusions of this work.

2. THEORETICAL FRAMEWORK

Over the last decades, both policymakers and the scientific community have become increasingly interested in gender issues. This has led to a proliferation of studies addressing gender inequality, a problem that affects almost all countries (Umberson et al., 1996; Walby, 2005 and 2011; García-Calvente et al., 2012, Krasnov, 2019). In this sense, gender equity is considered a fundamental pillar of economic and social development (Sen, 1992; Broderick, 2012; Dula, 2019; Kam et al., 2022).

In accordance with the objectives of this article, we can divide the literature on gender inequality into two groups: firstly, those that focus on how to measure gender inequality, and secondly, those that try to explain the determinants of gender inequality. Therefore, the first question to ask in work on gender inequality is how to measure gender inequality. The traditional analysis of gender inequality is mainly based on the differences between men and women in the labour market and analyses variables such as activity rates, employment rates (Duncan and Duncan, 1955; Cebrián and Molero, 2015 and 2018; ILO, 2016; Albanesi and Prados, 2022), and, above all, wage levels (Anker 1998; Plantenga and Jansen, 1999; Card et al., 2016; Blau and Khan, 2017; Caliendo and Wittbrodt, 2022). It is true that the greater job insecurity faced by women, resulting from educational inequalities compared to men, explains the existing wage gap (Gharehgozli and Atal, 2020). This greater job insecurity also has consequences for women's decision-making, not only at the general level but also in their own households, as pointed out by Fritzell, 1999; Thabassum and Begum, 2021).

On the other hand, the difference in health between men and women has been used as a measure of gender inequality (Ridgeway, 2011; Borrell et al., 2014; Kennedy et al., 2020; Bimpong et al., 2022). However, as Rieker and Read (2017) argue, there are limitations in explaining gender differences in health as researchers try to explain them

either through socio-economic factors or based on biological differences. Therefore, they argue for the need for a model that integrates both approaches.

Other measures of gender inequality have also been used, such as women's political participation (Grasso and Smith, 2022), women's political representation (Brown et al., 2022), and, more generally, women's empowerment (Adeosun and Owolabi, 2021). Indeed, as Wang and Naveed (2021) argue, women's empowerment, understood in a broad sense, i.e., in social, political and economic terms, plays a key role in reducing inequality in income distribution.

Therefore, the most commonly used indices at the international level are the following (García-Calvente, 2015):

- Global Gender Gap. Index developed by the World Economic Forum, it considers women's economic participation and opportunities, educational attainment, political power attained, health inequality and survival issues.

- Gender Inequality Index. It measures the loss of human development due to inequality between men and women. This inequality is analysed in terms of health, empowerment and labour market gaps. This index is carried out by the United Nations Development Programme (UNDP).

- Social watch Gender Equity Index. It is elaborated by Social Watch and considers gender inequality arising from economic activity, women's empowerment and different levels of education.

- Gender Development Index. Also developed by UNDP, it measures gender inequality based on differences in healthy life expectancy, educational attainment and decent standard of living.

- Gender Empowerment Measure. It measures the level of women's opportunities in terms of political and economic participation, control over economic resources and women's decision-making power. It is elaborated by the UNDP.

- European Gender Equality Index. Developed by the European Institute for Gender Equality (EIGE), it analyses different aspects of gender inequality such as those associated with work, money, knowledge, power and health.

The literature review of gender inequality shows a lack of studies that address gender inequality through income differences between men and women. The lack of gender-disaggregated income inequality indices makes it difficult to analyse income inequality between men and women. In fact, works such as Hong Vo et al. (2021) use the wage gap as income inequality. However, as Amate-Fortes et al. (2021) point out, income is composed not only of wage income but also of capital income, as well as transfers from the public sector. Therefore, these authors propose a new measure of gender inequality through the ratio of men's median income to women's median income. Other authors, such as Avram and Popova (2022), study income inequality between men and women using household disposable income, and assuming that it is equally distributed among adult household members. However, this assumption is questionable, since, as Blaskó et al. (2020) show, women contribute less to household income.

Most of the literature has focused on analysing the socio-economic determinants of gender inequality (Heymann et al., 2019; Cabezas-Rodriguez, 2021) and many agree on women's education as the reducer of gender inequality (Adeosun and Owolabi, 2021; Hong Vo et al., 2021). However, what our paper sets out to do is to analyse how social policies affect gender inequality. In this regard, it is important to note that social policy in most Western countries is not designed to reduce gender inequality, as Davies et al. (2001) argue in the case of Canada. These authors argue that until social policy aims to reduce gender inequality, it will not be possible to combat this problem effectively. However, gender inequality is increasingly being included in spending policies in most countries in general, and in European countries in particular. As Quinn (2017) argues, gender budgeting is gaining importance in these countries to the extent that the fight against gender discrimination is becoming a macroeconomic policy. In some cases, European national and regional governments have legislated for gender budgets, many have initiated institutional changes to develop gender budgets, while others have committed to linking equality policy to economic policy. In this regard, Detraz and Peksen (2017) conclude that welfare policies contribute to improving the economic

situation of women and thus reduce gender inequality. More recent work, such as that of Michener and Brower (2020), argues that public policies aimed at reducing gender inequality must consider differences in race and ethnicity, as such policies have differential implications across different population groups. Avram and Popova (2022) argue that both taxes and social transfers, except for retirement pensions, reduce income inequality between men and women. Other work has focused on the role of legal entitlements in determining gender inequality (Htun et al., 2019).

But how should the success of social policies on gender equality be measured? Answering this question is one of the main novelties of this paper. In the case of income inequality, the most used indicator to measure the effectiveness of social policies has been the Reynolds-Smolensky index (Splinter, 2020; Greselin et al., 2021), i.e., an index that measures how much the Gini index is reduced by the effect of social spending and tax policies. The lack of a gender-disaggregated income inequality index precludes this type of analysis. However, in this paper we use the income inequality measure of Amate-Fortes et al. (2021). As Eurostat provides income data before and after social spending, this will allow us to generate a variable that measures whether this inequality index increases or decreases with the action of social policy in European countries and, in turn, to study which social spending items are most effective in the fight against gender inequality, i.e., we adapt the Reynolds-Smolensky index to the case of income inequality between men and women.

3. THE MODEL

A linear model is used to explain the determinants of the variation in the inequality of income distribution between women and men (our measure of gender inequality) once the effect of social spending is considered. In doing so, we try to analyse which social expenditure items are the most effective in fighting gender inequality, following Eurostat's European System of Integrated Social Protection Statistics (ESSPROS). We also use other control variables such as, for example, the female activity rate, with which we try to study whether the incorporation of women into the labour market helps to reduce gender inequality or whether, on the contrary, it is a source that generates greater

inequality. In addition, we analyse the role of women's education on inequality, the institutional quality of countries and the impact of the main welfare state models on inequality.

The analysis has been carried out for a sample of 33 countries (all 27 EU countries plus the United Kingdom, Iceland, Norway, Serbia, Switzerland, and Turkey) and a time period of 15 years (between 2003 and 2017). This has resulted in a panel data with 495 observations, although missing observations in some countries and years mean that the full panel consists of 231 observations. Despite not being able to estimate the full model, this is not a problem as the sample is large enough to obtain conclusive results. In any case, the choice of this sample of countries and years is due to the availability of data provided by the aforementioned Eurostat statistical database.

A) Data

The variables we have used are summarised in the table below:

(See table 1)

B) The model

The model uses the index of gender inequality in income distribution developed by Amate-Fortes et al. (2021). Using the Eurostat income distribution statistics base, this measure of inequality is constructed using the following formula:

$$GIID_{it} = \frac{MFI_{it}}{MMI_{it}} \qquad (1)$$

where,

GIID is the gender inequality in income distribution; *MFI* measures the median female income; *MMI* is the median male income; and the subscripts *i* and *t* refer to the country

and the year under study respectively. This simple formula therefore measures the proportion by which women have less income relative to men. The use of median income instead of mean income is due to the fact that it provides a measure of the central tendency of this variable, which allows a more robust measure of the dispersion that may exist in the distribution of income among the population (Leys et al., 2013). It is important to mention, as has been done above, that income is composed not only of wage income but also of capital income, as well as transfers from the public sector. Therefore, if our aim is to see how social policies affect gender inequality, we understand that we should use a measure of income inequality between men and women and not an indicator of the wage gap.

Eurostat's ESSPROS database provides data on median income before and after social benefits. This allows us to measure the variation in gender inequality explained above as a consequence of European governments' social spending. This indicator, which is an adaptation of the Reynolds-Smolensky index, is the main novelty of our work.

$$VGIID_{it} = \frac{GIID_{it} - GIIDB_{it}}{GIIDB_{it}} \qquad (2)$$

where,

VGIID measures the change in gender inequality in the income distribution and is the variable we use as the dependent variable. *GIID* is the gender inequality in income distribution, as discussed above, i.e., it measures the differences in income between men and women after social benefits. By social benefits we mean the benefits collected in the above-mentioned database, i.e., transfers, in cash or in kind, from social protection schemes to households or individuals to alleviate the burden of one or more risks or needs, such as sickness and/or health care, disability, old age, survivors, families and children, unemployment, housing and social exclusion. Finally, *GIIDB* reflects gender inequality in income distribution before these social benefits.

When analysing the data, it can be seen that, of the 425 observations generated, only in one does this gender inequality index increase, so that what we are going to estimate

in this work is which social spending items, among other variables, are the ones that most reduce this gender inequality.

For this purpose, as mentioned above, a linear panel data model has been estimated using the Generalised Method of Moments (GMM). The use of panel data, despite the low variability over time of some of the variables used in the model, allows us to estimate jointly all the economic, institutional and demographic variables used. The use of panel data allows us to control for individual heterogeneity, provide data with a higher degree of variability and a lower level of collinearity between regressors, study dynamic adjustment processes, identify and measure effects that are not detectable with pure cross-sectional or time series data, and build and test more complex behavioural models than with simpler data.

We have made four different estimates depending on the social expenditure variables used. In this way, we have developed the following models:

$$VGIID_{it} = \beta_1 GDP_{it} + \beta_2 TAX_{it} + \beta_3 ACTIVITY_{it} + \beta_4 SCHOOL_{it} + \gamma_1 SPB_{it} + \lambda_1 POPULATION_{it} + \lambda_2 NORDIC_{it} + \lambda_3 CONTINENTAL_{it} + \theta_1 INSTITUTIONS_{it} + \eta_i + \delta_t + \mu_{it} \qquad (3)$$

where,

VGIID, the dependent variable in our model, measures the gender inequality variation in the income distribution as explained above; *GDP* is GDP per capita in purchasing power parity in constant 2011 dollars. This variable is intended to analyse the effect of economic development on gender inequality, as do Dollar and Gatti (1999), and Tisdell (2021), among others. *TAX* collects public revenues from personal income taxes relative to GDP. This variable allows us to study whether the progressivity of this tax reduces gender inequality more. *ACTIVITY* is the rate of female activity. As discussed above, this will allow us to examine whether the incorporation of women into the labour market has helped to reduce gender inequality or whether, on the contrary, it is a source of inequality. *SCHOOL* reflects the number of years of expected schooling for girls born in a given country. This variable is used as a proxy for the educational attainment of women in a

country and allows us to analyse whether education contributes to reducing gender inequality in income distribution. *SPB* measures the social protection benefits in constant 2010 euros per capita. This variable is key to our analysis, as it will allow us to measure the impact of social policy in European countries on the variation in gender inequality. *POPULATION* is the population of each country under study, and it is used as a proxy variable for the size of the country. The aim is to determine whether or not larger countries struggle more with gender inequality. In this regard, it is important to note that population grows faster in countries where gender inequality is higher (Dorius and Firebaugh, 2010). However, Shrestha (2021) concludes that the maximum utilisation of population and available resources contributes to gender equity. Therefore, it is important to analyse whether the size of countries, as measured by population, has any impact on gender inequality. *NORDIC* is a dummy variable that takes the value 1 if the country in question follows the Nordic welfare state model and 0 if otherwise. *CONTINENTAL* is a dummy variable that takes the value 1 if the country in question follows the Continental welfare state model and 0 if otherwise. Following the classification made by Esping-Andersen (2015), these two variables are used to analyse which welfare state model is more effective in the fight against gender inequality, as other authors have done (Van de Velde et al., 2019). *INSTITUTIONS* measures the institutional quality of countries through the average value of the six indicators that make up the World Bank's Worldwide Governance Indicators, i.e., voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Through this variable it will be possible to study the effect of institutional quality on gender inequality. η_i measures individual country-specific unobserved effects, but constant in time, while δ_t measures the unobserved temporal effects that are variable in time but identical between countries.

The second estimated model is as follows:

$$VGIID_{it} = \beta_1 GDP_{it} + \beta_2 TAX_{it} + \beta_3 ACTIVITY_{it} + \beta_4 SCHOOL_{it} + \gamma_1 SPBC_{it} + \gamma_2 SPBK_{it} + \lambda_1 POPULATION_{it} + \lambda_2 NORDIC_{it} + \lambda_3 CONTINENTAL_{it} + \theta_1 INSTITUTIONS_{it} + \eta_i + \delta_t + \mu_{it} \quad (4)$$

where,

SPBC includes social protection cash benefits in constant 2010 euros per inhabitant; *SPBK* measures social protection benefits in kind in constant 2010 euros per capita. Through these two variables we try to determine which of the two is more effective in the fight against gender inequality.

The third model has the following formulation:

$$VGIID_{it} = \beta_1 GDP_{it} + \beta_2 TAX_{it} + \beta_3 ACTIVITY_{it} + \beta_4 SCHOOL_{it} + \gamma_1 HEALTH_{it} + \gamma_2 DISABILITY_{it} + \gamma_3 OLD_{it} + \gamma_4 SURVIVAL_{it} + \gamma_5 FAMILY_{it} + \gamma_6 UNEMPLOYMENT_{it} + \gamma_7 HOUSING_{it} + \gamma_8 EXCLUSION_{it} + \lambda_1 POPULATION_{it} + \lambda_2 NORDIC_{it} + \lambda_3 CONTINENTAL_{it} + \theta_1 INSTITUTIONS_{it} + \eta_i + \delta_t + \mu_{it} \qquad (5)$$

where,

HEALTH covers cash benefits to replace loss of income due to illness, and the provision of health care regardless of the reason for the loss of income. *DISABILITY* measures the cash benefits intended to compensate the beneficiary for the reduction in income due to the total or partial loss of the ability to carry out a work activity, under the terms established by legislation, and rehabilitation and other services, except for health care. *OLD* covers the full range of benefits designed to mitigate the consequences of old age, including loss of income, loss of autonomy in the performance of daily tasks, or reduced social activity. *SURVIVAL* are financial benefits granted to persons below retirement age who have suffered the loss of a family member or person who was their main breadwinner. *FAMILY* are the financial aid granted to households with the aim of reducing the burden of childbirth and raising children, as well as the maintenance of other members of the family. *UNEMPLOYMENT* includes, on the one hand, passive measures, i.e., those aimed at alleviating the consequences derived from the lack of paid employment, especially those related to the deprivation of a sufficient source of income, and on the other hand, active measures, aimed at preventing or reducing unemployment situations. *HOUSING* measures the support provided to households to meet housing costs. *EXCLUSION* is a heterogeneous series of benefits whose common feature is that they seek to prevent or alleviate situations of social exclusion linked to the scarcity of

economic resources, or the presence of problems related to health, education or employment. All these variables are valued in constant 2010 euros per inhabitant and their inclusion in the model allows us to analyse which of these items have an impact on the fight against gender inequality, making it possible to determine which policies are most effective in this regard.

The last estimated model is the same as the previous one, although a new variable is added, the Gini index variation.

$$VGIID_{it} = \beta_1 GDP_{it} + \beta_2 TAX_{it} + \beta_3 ACTIVITY_{it} + \beta_4 SCHOOL_{it} + \gamma_1 HEALTH_{it} + \gamma_2 DISABILITY_{it} + \gamma_3 OLD_{it} + \gamma_4 SURVIVAL_{it} + \gamma_5 FAMILY_{it} + \gamma_6 UNEMPLOYMENT_{it} + \gamma_7 HOUSING_{it} + \gamma_8 EXCLUSION_{it} + \lambda_1 POPULATION_{it} + \lambda_2 NORDIC_{it} + \lambda_3 CONTINENTAL_{it} + \theta_1 INSTITUTIONS_{it} + \theta_2 VGINI_{it} + \eta_i + \delta_t + \mu_{it} \qquad (6)$$

where,

VGINI measures the change in the inequality of income distribution, as measured by the Gini index, before and after considering public spending on social protection. To make it easier to understand the results, it is shown in absolute value. The aim of this variable is to analyse whether the reduction of inequality in income distribution influences the reduction of gender inequality.

4. RESULTS AND DISCUSSION

After the model is estimated by GMM, we obtain the following results:

(see table 2)

The first conclusion we draw from the estimations is that the results appear to be robust, as there are few differences in the estimates based on the explanatory variables used.

As for the values we have obtained, in most cases they are those expected a priori. Thus, economic development, proxied by GDP per capita, does not seem to have an impact on the variation in gender inequality. The null significance of the estimated regressor for this variable does not allow us to draw clear conclusions in this respect. This is due to the fact that the sample is composed of countries that are very similar in terms of economic development, where the differences in GDP per capita are not large enough to obtain a significant result. This result is consistent with that obtained by Rashmi Umesh (2012) who analyses the impact of economic development on gender inequality in different states of India, with different levels of development, without reaching a clear conclusion about this relationship. The same is found for the variable that captures the effect of income tax on gender inequality. The estimated parameter is not significant in any of the four estimations, so we cannot affirm that the progressivity of this tax has a clear impact on the reduction of gender inequality.

The incorporation of women into the labour market, measured by the female labour force participation rate, has a negative effect on the reduction of gender inequality in the income distribution. The negative sign of the estimated coefficient, although only significant in one of the four estimations, shows that the higher the female activity rate, the lower the reduction in gender inequality. This may be due to two reasons: on the one hand, because the labour market does not reduce inequality between men and women, but increases it, and on the other hand, because working women receive fewer social benefits. In this regard, Berloffa et al. (2019) warn of the greater problems women face in thriving in the labour market, which means that women's increased participation in the labour market causes greater wage distortion (Witkowska, 2013). In fact, as Alfani et al. (2021) argue, female labour market participation only has positive effects in the upper income deciles.

However, as Goldin (2014) points out, the gender wage gap has narrowed as gender convergence in educational attainment has occurred. In addition, higher educational attainment contributes to higher wages for women (Adeosun and Owolabi, 2021). Therefore, in this paper, the variable "school", which measures the expected years of schooling of girls born in a given country, and which serves to approximate the educational level of women in each of the countries in the sample, we observe that the estimated regressor is positive and highly significant, which leads to the same conclusion

as in the aforementioned paper, i.e. that women's education allows gender inequality in the distribution of income to be further reduced.

Regarding the effect of social spending on gender inequality, the main objective of this paper, we can affirm based on the results obtained that social protection benefits do indeed have a positive and significant effect on the reduction of gender inequality. What type of social spending has the greatest effect on this reduction in inequality? The positive and significant coefficient of social spending in cash shows that this type of government assistance reduces gender inequality more than social spending in kind, as the parameter estimate for this variable is not significant. It is worth mentioning that social spending in cash is most of the total social spending, accounting in most of the countries studied for approximately 65% of total social spending. This result confirms the thesis of Soares and Silva (2010) for the case of Latin America.

By functions, the results show which items are most effective in reducing gender inequality. Thus, the estimated negative and highly significant coefficient estimate for expenditure on illness and health care suggests that spending on health does not further reduce gender inequalities, but rather works in the opposite direction. This may be due to the fact that women, on average, enjoy better health than men, as reflected by the fact that life expectancy is generally higher among women than men in European countries (Jaba et al., 2011; Crimmins et al., 2019). This is why the parameter estimate for retirement benefits is positive and highly significant, i.e., women, having a longer life expectancy, also enjoy a longer time of retirement benefits, thus this expenditure item helps to further reduce gender inequality. This is possible thanks to the greater participation of women in the labour market which, although there is a wage gap between men and women which means that women contribute less than men and therefore receive fewer pensions, the public pension system reduces this income inequality. This is not to say that there is no inequality in public pensions between men and women, as Vara (2013) suggests for the Spanish case, but that this inequality is reduced more by the effect of pensions. This result contradicts that obtained by Avram and Popova (2022), who argue that retirement pensions do not reduce income inequality between men and women. However, it is important to mention that these authors use household disposable income and allocate half to each spouse, although women contribute less to household income (Blaskó et al., 2020). Therefore, we consider that it is more appropriate to use individual income.

On the other hand, the result obtained for the variable "survival", which basically includes widowhood and orphan's pensions, is a priori surprising. Although, for the reasons mentioned above, women receive a higher proportion of these pensions, the negative and significant sign of the coefficient estimated for this variable leads to the conclusion that these types of benefits do not help to reduce gender inequality. The reason for this result can be found in the fact that these benefits tend to be very small. In this sense, Bonnet et al. (2012) argue that this type of benefit is losing importance in European welfare models in line with the new family structures, where divorce has increased in recent decades. In fact, countries such as Sweden have abolished this type of support. Something similar happens with benefits that try to avoid social exclusion, i.e. those aimed at families and individuals with scarce economic resources, or with problems related to health, education or employment. Likewise, in this case, we find a bidirectional relationship, i.e., gender inequality in income distribution means that women, in a greater proportion than men, find themselves in a situation of social exclusion (Bhalla and Lapeyre, 2004), so that they receive this type of aid, which is not sufficient to reduce this inequality. The rest of the benefits do not have a clear effect on gender inequality, as the parameter estimated for each of them is not significant, except in the case of housing benefits, where the positive and significant sign shows that this type of assistance to meet housing expenses reduces gender inequality more.

Regarding the size of the countries, approximated by population, it is observed that it has no impact on the reduction of gender inequality. The estimated coefficient is not significant, so we cannot draw any conclusions in this regard. On the other hand, the way in which social spending is programmed through the main welfare state models does have different effects on the reduction of gender inequality. Thus, while the Nordic model does not further reduce these inequalities, the continental model does help to increase the reduction of gender inequality in income distribution. This may be since gender inequality is lower in the Nordic countries than in the countries of the continental model, as Pascall (2008) argues. The same argument could be used for institutional quality, since the estimated coefficient for the "institutions" variable yields a priori surprising result. Although it is significant in only one of the four estimations, it is negative, i.e., institutional quality does not further reduce income inequality between men and women. Perhaps the reason for this result lies in the fact that the institutional differences between

the countries in the sample are very small and, in addition, it may be due to the fact that countries with higher democratic quality, less corruption, a more efficient public sector and less political instability tend to coincide with those countries with lower gender inequality. In fact, as Beer (2009) points out, it is not so much institutional quality as women's participation in institutions that can improve gender equity.

Finally, the relationship between the change in the Gini index and the change in gender inequality is positive and significant, i.e., public social spending policies, most of which are aimed at reducing income inequality, also encourage a reduction in gender inequality in income distribution. This shows that an important part of the inequality in income distribution is explained by differences in income between men and women.

5. CONCLUSIONS

The aim of this paper is to analyse which items of social expenditure reduce income inequality the most. To this end, we have developed an index that measures the variation in income inequality between men and women as a result of European governments' social policies.

The results obtained show that, although social protection spending is not specifically designed to combat gender inequality, it does reduce it through state action. In fact, one of the main objectives of social spending is equity in income distribution and, insofar as it achieves this objective, it also achieves greater equality in the distribution of income between men and women. It can therefore be concluded that income inequality is largely due to gender inequality. In this sense, European governments should design specific measures to bring women's incomes closer to those of men, as this would also reduce income inequality in general.

However, not all types of benefits affect gender inequality equally. In this respect, social spending in cash is more effective than social spending in kind in reducing the income gap between men and women. Within cash transfers, it is retirement pensions that reduce gender inequality the most, and although there is an income gap between men and

women resulting from public pension systems, this is a consequence of the wage gap and the differences that still exist today in the participation of women in the labour market in relation to men. For this reason, public policies in European countries must place emphasis on improving women's working conditions, with the aim of ensuring that the growing participation of women in the labour market does not become a source of new inequalities. In this respect, efforts should be made to reduce wage gaps and to promote parity in the level of education attained by men and women. Education continues to be the main tool in the fight against any type of inequality and, of course, against gender inequality. The level of education that women acquire is what will allow them to fight in the labour market for better salaries, to reach positions of greater responsibility and even to intervene in political decision-making. Equality in education and parity in the representation of women in institutions must therefore continue to be promoted. The quality of institutions alone will not improve equity in the distribution of income between men and women, but it is women's participation in legislative and executive bodies that can reduce gender inequality.

The rest of the social benefits, namely health care spending, survivors' benefits and those aimed at avoiding the risks of social exclusion, are less effective in the fight against the income gap between men and women. It might be worth reconsidering certain benefits such as widowhood benefits, given the transformations that are taking place in families, and creating benefits that are directly targeted at women in order to reduce the income gap.

This paper is not without limitations. Perhaps the main limitation lies in the fact that we do not have more income inequality indices disaggregated by gender that would allow us to carry out further robustness analysis, i.e., whether the results vary according to the dependent variable used. On the other hand, as mentioned above, it would have been desirable to have all the data for all 425 observations.

DECLARATION OF INTEREST STATEMENT

The authors have no interest conflict.

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APPENDIX: PRE- AND POST-ESTIMATION ANALYSIS

Firstly, a graphical analysis was carried out to detect possible outliers. This has allowed us to verify that there are no outliers in our sample. Subsequently, an analysis of the bivariate correlations was carried out to check for the existence of multicollinearity between the independent variables, without observing any problems in this regard. However, the analysis of the VIF (Variance Inflation Factor) does identify possible problems of multicollinearity in some of the variables used, so an analysis of the residuals was carried out to confirm these problems. This analysis has verified the existence of multicollinearity only among the variables that include public social expenditure, both overall and that which distinguishes between expenditure in kind and in cash, as well as social expenditure by function. To solve this problem, it has been decided to estimate different models in such a way that not all these variables coincide in the same estimation.

Then, we performed the Lagrange Multiplier Test for random effects. The value obtained for the Chi squared (χ^2) causes the null hypothesis to be rejected, making the use of Ordinary Least Squares (OLS) with random effects preferable to the pooled regression, i.e., the usual OLS estimator.

Subsequently, the Hausman test was performed to decide between random effects and fixed effects. The $"\chi^2"$ value obtained allows us to reject the null hypothesis, i.e., the difference between the random and fixed effects coefficients is systemic, so it is appropriate to use the fixed effects method.
Fifth, the Wooldridge test was carried out. This test determined that the model does not present autocorrelation problems. Finally, the modified Wald test showed that the model is heteroscedastic. Therefore, given the possible existence of endogeneity in the macroeconomic and fiscal variables, we have opted to use the GMM estimator (Arellano and Bond, 1991) for dynamic panel data in its robust version due to the presence of heteroskedasticity. The instruments used are the lagged variable of the dependent variable, GDP per capita, personal income tax, the female labour force participation rate and the expected years of schooling for women. The Arellano-Bond test for the existence of autocorrelation yields a result that allows us not to reject the null hypothesis and, therefore, we again confirm that the model does not present a problem of autocorrelation. Likewise, the Hansen and Sargan tests show that the instruments are valid and that there is no over-identification.