

The effects of CPI increase on disposable income: an analysis for Spain by CGE

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Abstract

Spain is the European country where the differences between the highest and lowest incomes have increased the most in the last decade. In addition, the rise in prices would have repercussions on household disposable income, impacting income distribution and, consequently, poverty rates and inequality could even deepen the gender gap.

In this context, our paper aims to analyse the impact of the increase in the Consumer Price Index (CPI) in 2022 on the disposable income of Spanish households. To do this, we employ a Computable General Equilibrium model calibrated with a Social Accounting Matrix disaggregated by income deciles and gender of the main income earner.

Keywords: Consumer Price Index, gender inequality, Computable General Equilibrium Model, disposable income.

JEL: C68, E16, E31

1. Introduction

The literature on poverty and social exclusion suggests a clear positive relationship between poverty risk and gender in many developed countries. According to Cebrián and Moreno (2015a) and Bettio et al. (2013), in rich countries, the lower disposable income of households with a higher proportion of women is closely linked to the gender gap in the labour market, which also implies lower entitlements to benefits and pensions. It, therefore, has a negative impact on women's economic capacity throughout their life cycle.

The gender gap in the labour market has traditionally manifested itself in a persistent gap in employment and unemployment rates, a higher share of part-time work and temporary contracts in women's employment, wage discrimination and unemployment rates, wage discrimination against women and significant segregation of women in lower-paid occupations. In this context, Cantó et al. (2016) say that it seems reasonable to think that households with a higher proportion of women who were already more vulnerable previously to a recession might have suffered a more significant increase in their poverty risk in this last period.

However, the literature also argues that the impact of an economic crisis on a given group does not depend exclusively on their previous risk of poverty. For example, according to Canto et al. (2015), the recession's effect on specific demographic groups will be strongly conditioned by how the crisis has impacted their job opportunities, wages, and benefits. Even somewhat more marginally, by their demographic evolution in the population.

Spain has been one of the most unequal countries in Europe in recent decades. Between 2015 and 2019, it was the fifth most unequal country in the EU-27. The growth of inequality in Spain in recent decades is due to the evolution of labour and capital income and to the limited redistributive capacity of taxes and benefits, which has increased very little since 1990 (Ayala and Cantó, 2022).

Early evidence on the pandemics' economic effects points to a higher increase in inequality and poverty than in the rest of the EU-27. In addition, after years of low prices, the abrupt rise in inflation is compounding the already chronic inequality, with low-income households

struggling with the loss of purchasing power. Wages, however, have lagged. The Tax Agency puts their average growth between 2007 and 2020 at 10.2%, while inflation rose, according to the INE, by 20.3%, practically double the rise in wages.

The increase in prices would have repercussions on household disposable income, impacting income distribution and, consequently, poverty rates and inequality could even deepen the gender gap. Focus on the poverty rate by gender between 2007 and 2013, the gender gap is narrowing, albeit due to a further deterioration in the situation of men. The percentage of men who do not manage to reach a minimum income has increased, while for women, this figure hardly changes (Cantó et al., 2019).

This paper aims to analyse the impact of the increase in the CPI in 2022 on the disposable income of Spanish households disaggregated by income deciles and differentiated by gender of the main income earner. These results could help policymakers anticipate the social impact of price increases, especially the repercussions in terms of the gender gap.

2. Methods and data

We employ a multisectoral model based on a Social Accounting Matrix (SAM)¹ as a methodological framework². It was constructed for Spain with the base year 2016 (SAMSPA16). A SAM captures the generation, allocation and use of national income, relating production to the various institutional sectors of an economy (government, households, and firms), as well as to the rest of the world, based on a robust national accounting framework.

This is disaggregated into 63 productive activities, 20 types of households differentiated by income decile and gender of the main income earner, considering their income and expenditure structure. It includes ten accounts that disaggregate the other institutional sectors, representing the Spanish economy for the base period under the assumption that the economic structure of a region does not change in five years. By allowing the closure of the circular flow of income, the SAM is a fundamental tool for analysing the effects of exogenous shocks among the different economic agents. With it, we calibrate a Computable General Equilibrium (CGE) model that contemplates the interaction of four differentiated agents (consumers, producers, government, and foreign sector).

The above framework allows us to analyse the response of Spanish households' disposable income to CPI increases. As households are differentiated by income decile and gender of the main income earner, it is possible to analyse the variation in households depending on these characteristics. The analysis will serve as a tool for policymakers to define different strategies to mitigate the impact, especially in vulnerable households.

However, an essential element of the research is related to the choice of the numeraire. As Robinson (1989) and Willenbockel (1994) have shown, introducing fixed-wage rates breaks the zero-homogeneity presented in Walrasian neoclassical models. Thus, in the absence of zero

¹A SAM is an integrated data system that links the different variables and subsystems. It explicitly and consistently incorporates the interdependence between the different parts and variables of the overall system. This causal interdependence of the system is the basis of SAM-based multi-sector modelling, as Pyatt and Round (1976) described. The causal process that generates a SAM may be complex and non-linear and needs to be explicitly specified as an equation in a conceptual model. The proposal made in this study precisely links a SAM to a CGE, showing the causal relationships between variables.

² For more details about these models see Cardenete & Llop (2005).

homogeneity, the results after a simulation with a structuralist CGE model may differ quantitatively when the numeraire is fixed, as Hosoe (2000) has shown³.

Therefore, starting from the assumption of fixed prices adopted in the CGE, we will present the reported changes in disposable income when the prices of labour (w) and capital (r) are taken as the numeraire, respectively.

3. Simulations and main results

In this sense, the simulation references the annual average inflation forecast reported by FUNCAS (2022), considering the consensus of all the institutions participating in the panel of 5.4%, the maximum estimates of 7.8% and the minimum of 3.2%⁴.

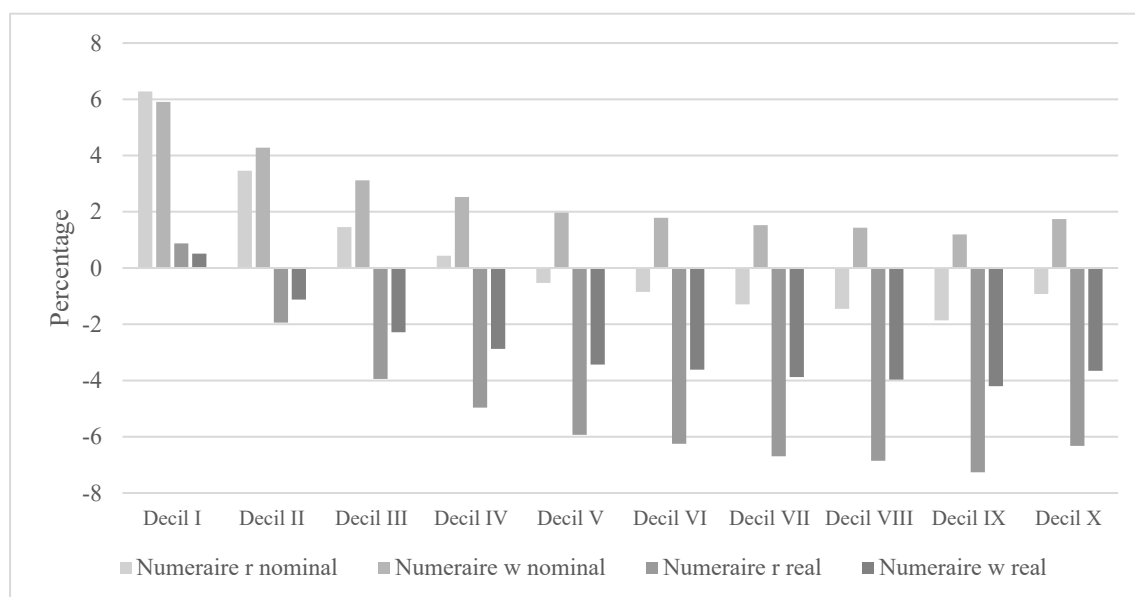
First, taking the price of labour as the numeraire, and considering a 5.4% increase in the CPI, the results show an increase in the disposable income of decile I and a progressive reduction in the disposable income of the remaining deciles, both in nominal and real terms (see Figure 1). Decile I show a different behaviour, as its disposable income would increase. This is explained by the income composition of households belonging to this decile since 52.63% of their income corresponds to social transfers and other benefits, compared to the lower participation of their income generated by their own account (9.11%) and others (25.92%) in total income.

From the point of view of the gender of the main income earner, we conclude that the increase in prices in Spain has a more significant impact on those households whose main income earner is female, especially in deciles II, III and IV. However, the most significant reduction is seen in households with a female main income earner in decile IX (-5.08%) and a slight difference between households in deciles VI and X, no greater than 3%. Concerning decile I, households with female main income earners are the greatest beneficiaries.

³ With the sensitivity analyses, that the choice of numeraire causes much more significant differences in simulation results than the assumption of the elasticity value does. More papers explain the importance of the choice the numeraire and how the results would be interpreted (McDonald et al. 2016, Cardenete y Sancho 2004, Sue Wing 2004).

⁴ Average annual inflation is used as the simulation scenario because our methodological proposal, as a representation of the circular flow of income, considers the structure of expenditure, which reflects how consumers allocate their spending according to groups by the COICOP (Classification of Individual Consumption by Purpose).

Figure 1. Comparative impact on household disposable income by income decile. Nominal vs real results.



Source: Authors' elaboration.

On the other hand, taking the price of capital as a numeraire, and in the face of a 5.4% increase in the CPI, there is a reduction in the disposable income of households, both in nominal and real terms, increasing progressively as the decile increases. The higher the income level, the more significant the negative impact generated by the price rise.

The results show a similar trend to the previous case. Both deciles I and X exhibit a different behaviour from the rest of the deciles. Decile I would benefit from the rise in prices since its income depends more on government transfers and other benefits than on the income generated by its work. On the other hand, while seeing its disposable income decrease, decile X does so to a lesser extent than decile IX.

When comparing Spanish households disaggregated by gender of the main income earner, the rise in prices negatively impacts the income of female households in deciles II to IV (slightly in decile VI). Similar behaviour is shown in deciles IX and X, with a greater impact on disposable income for households with female primary income earners in decile IX. On the contrary, the positive effect on decile I is mainly due to the behaviour of households with female primary income earners, highlighting that these households are the ones that receive government transfers and other benefits to a greater extent, so their labour income is less affected.

When comparing both scenarios, it is observed that the fact of setting different numeraries produces different quantitative results; let us see that the impact is accentuated when the price of capital is set; however, both in real and nominal terms, the trend remains the same (see Figure 1).

4. Concluding Remarks

The previous results point out that the price increase strongly impacts households' disposable income, especially in those that depend in greater proportion on wage remuneration. It is also observed that households with female income earners have a greater loss of purchasing power, making them more vulnerable and increasing their risk of poverty. So, to ensure that women are not left behind, policy needs to keep up with inflation from a gender perspective. The above results indicate that price increases strongly impact the disposable income of households, especially those that are more dependent on wage income. Households with female breadwinners are also found to experience a greater loss of purchasing power, making them more vulnerable and increasing their risk of poverty. Policies must, therefore, keep pace with inflation in a gender-sensitive manner if women are not to be left behind⁵.

Disclosure of statement

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⁵ The importance of a gender focus in anti-inflation policies lies in consumers' perception of inflation over time, which is important in forming their inflation expectations. Comparisons across different demographic groups have shown that women tend to perceive higher inflation than men (Blanchflower & MacCoille, 2009) because they tend to be less competitive and more risk-averse (Buser et al., 2021; Fisher & Yao, 2017), which ultimately affects actual inflation. Macroeconomic shocks and monetary policy may have a more significant negative impact on women's employment than on men's due to occupational segregation, gender differences in labour market tenure and gender discrimination. In addition, persistent inflation reduces household purchasing power, which could lead to increased poverty, exacerbated by labour market inequalities that tend to affect women more.

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