Two crises, two policy responses in Spain? Poverty among working-age population in the Great Recession and the COVID-19[1]

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Introduction

In recent decades economic, employment and social changes in in the European context have led to new forms of poverty related to labour participation (Author's own, 2011). Of particular concern are the circumstances of specific groups, including women, children, the working poor, and the working-age population (Carabaña and Salido, 2014; Addabo et al., 2015; Filandri and Struffolino, 2019; Author's own, 2024). The use of multiple poverty indicators has proven especially valuable for analysing variations over extended periods (Eurofound, 2017). This methodology involves the application of diverse thresholds, enabling researchers to assess the circumstances of individuals at the lower end of the income distribution (Laparra, 2013; Ayala et al, 2022).

Comparative studies demonstrate that the dynamics of economic cycles and crises exert a significant influence on the risk of falling into poverty (Dudzevičiūtė & Prakapas, 2018). However, not all recessions have the same origin or duration, and their subsequent effects on the population can vary significantly. The Great Recession of 2008 had a strong impact on the labour market, undermining the living conditions of certain types of workers (Hoynes et al, 2012; Author's own, 2014). In contrast, the origin of the COVID-19 crisis was attributed to an exceptional health situation, with asymmetric effects on countries, especially those with labour markets with greater productive specialisation and characterised by high levels of unemployment and temporary employment (Fana et al, 2020). Consequently, such conditions deepened pre-existing inequalities and increased social needs (Ayala, 2020; Blundell et al, 2020; Menta, 2021). The case of Spain has not been sufficiently addressed in the international literature; therefore, there is an absence of consolidated evidence regarding the profile of poverty in the aftermath of the crisis, as well as on which income guarantee mechanisms were most decisive in each of these cycles.

Spain stands out as one of the countries where these last two crises have been most intense (European Commission, 2013; Almeida et al, 2021), and with a labour market more sensitive to economic fluctuations, with unemployment rates rising more during crises and falling less during periods of economic growth (Ayala et al, 2011). This pronounced cyclical effect has resulted in a notable disparity in the risk of poverty between the

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working-age population and the inactive population. Between 2015 and 2019, the risk of poverty increased more significantly among the working-age population than among the inactive population (Author's own, 2022). Furthermore, the Spanish social transfer system is characterized by its low redistributive effectiveness: despite the similarity in the effort of Spain in terms of social spending with that of neighbouring countries, its capacity to reduce poverty has been lower (Ayala and Cantó, 2020). The difficulties faced by individuals in combining labour earnings with benefits may help explain Spain´s less favourable outcomes in comparative terms (Author's own 2024).

These two features of the Spanish case—the low redistributive effectiveness of social transfers and the difficulties in combining labour earnings and non-contributory benefits—have changed during the second crisis. In 2020, the year the crisis began, the Minimum Vital Income ("*Ingreso Mínimo Vital*"), a new benefit conditional on minimum wages, was implemented. This new benefit significantly modifies the landscape of social transfers: on the one hand, being state-run, it is provided under the same conditions throughout the country, unlike the minimum income schemes implemented by regional governments; on the other hand, it is a benefit compatible with the receipt of labour earnings (de la Fuente, 2025). This important change makes the comparative analysis of the two crises even more interesting.

The present study has three specific objectives. Firstly, it compares the risk of poverty for the working-age population (ages 18–59) in the two recent recessions in Spain. This will serve to determine, on the one hand, whether there are variations according to the type of crisis or whether the effects are similar; and, on the other, whether the effects of recessions differ according to the severity of poverty. Secondly, it examines the behaviour of two types of relative poverty (moderate and severe) to assess whether either profile remains unchanged or change with the economic cycle and the income threshold applied. Thirdly, the study analyses how the composition of household income (social transfers, earnings or a combination of both) influences the risk of experiencing moderate and severe poverty.

The article begins with a review of the literature, structured according to the objectives outlined in order to formulate the working hypotheses at the end of the section. Then, it assesses the adaptation of the data source utilized and the methodology selected for the analysis. The presentation of results is divided into a descriptive section, responding to the first objective, and an analytical section that explores the second and third objectives. The study concludes with a recapitulation of the most salient evidence, its empirical and policy implications, and potential avenues for future research.

1. Poverty among working-age population in contexts of crisis

1.1. The relationship between economic cycles and poverty

The literature highlights the importance of analysing the relationship between macroeconomic conditions and poverty, especially when socially vulnerable groups are more dependent on the labour market, given that labour participation and social transfers are the main focuses of anti-poverty strategies (Meyer and Sullivan, 2011). Changes in the main macroeconomic aggregates have a clear influence on income distribution.

Trends in unemployment, inflation and economic growth produce changes in inequality and poverty (Ayala et al, 2017). In capitalist economies, cycles of expansion and crisis alternate, and they must be considered for a proper analysis of social phenomena related to the economy (Carabaña and Salido, 2014). Although periods of economic growth may create conditions conductive to a decline in poverty and inequality, such outcomes are not guaranteed. Comparative research shows that many OECD countries maintained stable levels of inequality and poverty during the economic expansion that preceded the Great Recession of 2008 (Ayala et al., 2017).

In the case of Spain, inequality and poverty behave differently during economic cycles. Inequality follows the expected counter-cyclical tendency (Carabaña and Salido, 2014; García et al, 2014): polarisation and inequality decrease when GDP and individual incomes increase – as was observed in the period before the Great Recession – while inequality increases when GDP and individual incomes decrease – as happened during that recession. The Spanish labour market is also more sensitive to recessionary downturns than to positive ones (Ayala et al, 2011), with a higher rate of structural unemployment. In other words, the unemployment rate rises more sharply than in other countries in periods of economic downturn and decline less when there is economic growth. In this same context, relative poverty rate remained stable across economic cycles, ranging from 20 to 22 percent between 2004 and 2021.

However, the Great Recession had an impact in destroying jobs and worsening living conditions for the working-age population. This situation was further exacerbated by labour market reforms and austerity measures in social protection (OECD, 2012; Gálvez-Múñoz et al, 2013; Author's own, 2014; Gómez-Serrano et al, 2016). The large increase in unemployment was concentrated in jobs with higher male participation (generally permanent and full-time) during the initial phase of the crisis (Hoynes et al, 2012; Addabo et al, 2015). In contrast, during the second phase, reductions in public employment disproportionately affected women (Pérez-Corral et al, 2024). The implementation of employment policies resulted in the labour market becoming more flexible and precarious (Barroso, 2017), so families were less able to cope with prolonged periods of unemployment and insecurity, which eventually led to a reduction or disappearance of household income (Bárcena-Martín and Moro-Egido, 2013; Martínez and Navarro, 2016; Pérez-Corral et al, 2024). During the Great Recession of 2008, a significant segment of the population experienced a decline in income exceeding 25 percent from one year to the next (Bárcena and Cantó Sánchez, 2020). Consequently, the effects of the crisis persisted beyond the recessionary period, classifying Spain a case of late recovery and one of the countries where the 2008 crisis had the greatest impact (European Commission, 2013).

The COVID-19 crisis emerged while average income and poverty rates had yet to recover from the Great Recession (Ayala, 2020; OECD, 2020). GDP declined by 17.9 percent, although the impact on unemployment was less pronounced during the pandemic because of job retention initiatives and support for firms and workers (ILO, 2020). Nevertheless, the pandemic also affected household incomes through reduced individual labour participation (Cantó et al, 2022). Some research has demonstrated that the impact of the pandemic – as well as the subsequent recovery – came much faster than that of the 2008 crisis. The increase in poverty and the percentage of households with no income occurred

during the first months of 2020, between January and September (Ayala, 2020; Menta, 2021; Ayala et al, 2022).

In the European context, the policies implemented to mitigate the consequences of the pandemic were innovative and more far-reaching than in the Great Recession (Moreira and Hick, 2021). However, southern European countries were less prepared to deal with emergencies through income stabilisation mechanisms and the targeting of support measures to the most vulnerable (Cantó et al, 2022). Spain was among the European countries where the impact of this crisis on household disposable income was most significant (Almeida et al, 2021). Nevertheless, the concerted response at the European level, based on the allocation of funds and the implementation of cohesion mechanisms across member states, enabled the mitigation of the most adverse effects during the initial year. The most important measures executed by the central government included implementing furlough plans – called ERTEs (*expedientes de regulación de empleo temporal*, 'temporary employment regulation records') – making access to some benefits more flexible and putting Minimum Basic Income (*ingreso minimo vital*, IMV) into action (Rodríguez Teruel et al, 2022). After the summer, poverty rates were already similar to those in January, and the percentage of households not participating in the labour market decreased considerably, although, in this case, pre-pandemic levels were not fully regained (Ayala, 2020; Menta, 2021; Ayala et al, 2022).

1.2. Avoiding relativism in the measurement of poverty: anchored poverty thresholds for different levels of severity

The extent of the relationship between the business cycle and poverty depends very much on the measurement of poverty (Škare and Pržiklas Družeta, 2016). The most common poverty indicators adopt an economic and relative approach operating under the assumption that needs derive from and are defined by social relations and life in society. Relative poverty, as defined by Cantó et al., (2000), refers to individuals who are excluded from the average level of well-being of the general population. Usually operating based on income, it is a concept that allows a high degree of comparability across countries and over time (Cabrera and García-Pérez, 2023). However, it is a measure that is not very sensitive to changes in the economic cycle because the income level that defines the poverty threshold changes as the overall earnings distribution fluctuates (Ayala, 2020).

Poverty rates are typically determined using annual income and calculated based on thresholds adjusted to reflect the annual income distribution, meaning that the indicator is highly dependent on trends in income distribution (Ibáñez, 2014): when average and median incomes decrease, so does the poverty threshold (and the opposite holds too), thus lowering the income threshold below which a person is considered poor (Almeida et al, 2021). Due to this adjustment in the definition of the poverty line, the proportion of individuals considered poor changes very little (Martínez and Navarro, 2016), as reflected in the stable poverty levels in Spain over the last two decades (between 19 and 22 percent).

As a solution to this measurement problem, researchers have proposed the use of anchored poverty thresholds, preferably at the onset of the economic cycle (Carabaña and Salido, 2014; Eurofound, 2017). This approach facilitates a more accurate analysis of trends in poverty overt time and their relationship to changes in the economy. Ayala et al

(2022) have demonstrated that this strategy compensates for the statistical effect of moving thresholds. Consequently, it ensures that households with unchanged living conditions are not misclassified as poor due to adjustments in relative thresholds. The use of such anchored thresholds provides more reliable measures for analysing the effect of economic crises (Almeida et al, 2021); primarily due to the confirmed effects on anchored poverty and material deprivation, in contrast to the less pronounced effects on the relative poverty risk (Duiella and Turrini, 2014).

To address the limitations of the relative approach to understanding poverty, an alternative, complementary approach involves the application of various poverty thresholds (UN, 2017), enabling the identification of those in more critical conditions and at heightened risk of social exclusion (severe poverty). The severe poverty indicator can measure the situations of greatest need and risk of exclusion, those that require priority attention (Laparra, 2013). Furthermore, in the case of Spain, the increase in the poverty risk does not occur in the households that are closer to the highest poverty line (moderate poverty), but rather among those at the bottom of the income distribution (Ayala et al, 2022).

Therefore, the combination of poverty thresholds anchored at different points of the income distribution has the potential to overcome the disadvantages of the relative nature of the poverty line to better assess the effect of economic cycles on the living conditions of the economically disadvantaged. Following this approach and using two alternative indicators, this paper disaggregates the population typically at risk of relative poverty, officially measured as the proportion of people living in households below the threshold of 60 percent of the median equivalised income. First, the moderate poverty indicator identifies individuals who are proximate to the risk threshold, but do not fall into the most severe category (between 60 and 40 percent of the income indicator). Second, the severe poverty indicator, focuses on those in the lowest positions of the income distribution (below 40 percent) and, therefore, in the most disadvantaged living conditions.

1.3. Determinants of poverty among the working-age population and the role of social transfers

The literature on the analysis of poverty risks in the working-age population distinguishes three types of particularly influential factors, regardless of the indicator used (Filandri and Struffolino, 2019; Author's own, 2024; Author's own, 2024): individual (socio-demographic and employment-related variables), household characteristics (capturing the balance between household resources and needs), and income-related (mainly composed of earnings and social transfers).

The profile of poverty in Spain exhibits consistent characteristics across different economic cycles and irrespective of the indicator used (including those for moderate poverty, severe poverty, and in-work poverty). Firstly, an analysis of individual variables indicates that, in general, women, younger and older individuals, those with a lower level of education and those with less connection to the labour market are most at risk of poverty (Ayala, 2014; Menta, 2021; Ayala et al, 2022). However, although this profile remains stable, the crises under consideration had different impacts on some of these categories. While the Great Recession resulted in an increase in men's poverty because its comparatively lesser impact on female labour participation, the pandemic appears to

have had a greater impact on women's situation (Ayala, 2014; Ayala et al, 2022). The two crises particularly affected the young population, with greater and more frequent income losses due to more precarious employment and less access to social protection (Bárcena-Martín and Moro Egido, 2013). The protective effect of higher levels of education also diminished (Ayala, 2014; Menta, 2021) and the poverty risk for employed people (especially the self-employed) increased, although the most severe situations were avoided (Ayala, 2012; Ayala, 2014; Ibáñez, 2014; Menta, 2021).

Secondly, household variables refer to the number of people and the number of income recipients (whether from labour incomes or transfers). Households where dependent children live are always at greater risk of poverty, and their situation worsens during crises (Ayala, 2012; Ayala, 2014; Ibáñez, 2014; Ayala et al, 2022). Thus, households with only one adult (particularly single-parent households), which lack the family cushion of living with other people who also receive incomes, are more likely to fall into poverty, especially during crises (Ayala, 2014). Households with more people cohabiting also face worse economic situations, as happened intensely during the Great Recession, when many people moved in with family or others and the average household size increased (Ayala, 2014; Ibáñez, 2014). The labour participation of all household members is also a significant factor in the risk of falling into poverty: those households that manage to maximise their employment potential move away from the poverty line, while the opposite is observed in households where some of the active-age members do not participate in the labour market (Ibáñez, 2014; Author's own, 2024; Author's own, 2024).

Thirdly, variables that bring together information on the composition of household income are also crucial for understanding the poverty risks of the working-age population. The role of income replacement and social protection mechanisms is fundamental to understanding changes in living conditions, poverty and inequality (Ayala et al, 2011). On the one hand, although the social protection system does not allow the combination of transfers with labour participation at the individual level, in most cases households do combine different sources of income to avoid poverty risk (Author's own, 2024). On the other hand, the situation in Spain stands out in the European context for the reduced protective coverage of its social protection system, and especially of the benefits aimed at the working-age population (Ayala and Cantó, 2020). The system has a greater impact on reducing the most severe forms of poverty, while its effectiveness is more limited in addressing moderate poverty risks (Ayala et al., 2016; Ayala et al., 2021), which can be attributed to lower social spending, less generous benefits aimed at promoting social inclusion, and the structure of the tax system (Gómez-Serrano et al., 2016).

The Spanish social protection system consists of two types of benefits, each designed according to distinct criteria regarding access, coverage, and level of protection (Ayala et al, 2016). First are the *contributory* benefits, which are determined by prior contributions and account for most of the poverty reduction Second is the *minimum income system* (or *non-contributory protection*), targeted at individuals who fall outside contributory protection or whose entitlements have expired. These benefits guarantee limited support, as the amounts are considerably below the poverty threshold. The *minimum income system* is usually found in households at the bottom of the income distribution and is characterized by a lack of flexibility and accessibility, particularly for a significant segment of the vulnerable population.

Overall, the joint effect of the full range of benefits has been more effective in reducing poverty among women than men, but less successful in addressing the needs of young people, children, and households with heavier family burdens (Ayala et al, 2021). There is also a clear differentiation in relation to activity, as protection is lower among the employed and unemployed compared to those who are inactive, and coverage is insufficient for those who are earning low wages and/or are more likely to be unemployed (Ayala et al, 2016).

By type of benefit, pensions are the main instrument for income equalisation in Spain, with a very high impact in reducing poverty (Ayala et al, 2016; Ayala and Cantó, 2020), followed by unemployment benefits, especially in their contributory form and, above all, those targeted at the working-age population (Ayala and Cantó, 2020; Author's own, 2024). Although designed to support those most at risk of poverty, the minimum income scheme, has shown a comparatively limited capacity to alleviate poverty; and family benefits, despite reaching many families, have little influence on the incidence and intensity of poverty (Ayala et al, 2016; Ayala et al, 2021; Author's own, 2024).

1.4. Hypotheses

To address the three specific objectives of this research, three groups of hypotheses were formulated based on the literature review (Table 1). Considered together, they establish the analytical framework that guides the empirical findings presented in the results and conclusions. Firstly, the objective is to examine the effects of crises on poverty and its severity. In light of the generalised increase in unemployment and a concomitant decline in income (OECD, 2012; Gálvez-Múñoz et al, 2013; Author's own, 2014; Gómez-Serrano et al, 2016), the expected outcome is that the behaviour of both severe and moderate poverty will be analogous across the two crises; that is, it is hypothesized that both poverty rates follow a similar pattern in the extent of the increase (*Hypothesis 1a*). However, it is also plausible that the consequences of these two crises differ in their intensity (*Hypothesis 1b*). The repercussions of the Great Recession, stemming from economic origins and rooted in the structural problems of the Spanish labour market, are anticipated to result in a greater prevalence of poverty, particularly severe poverty (Bárcena-Martín and Moro-Egido, 2013; Martínez and Navarro, 2016; Pérez-Corral et al., 2024). In contrast, the health origin of the COVID-19 pandemic crisis was attributable to a combination of circumstances, with a more limited effect on unemployment (ILO, 2020), and a faster institutional response (Almeida et al, 2021; Rodríguez Teruel et al, 2022). This leads to the expectation of a weaker influence on severe poverty, with the effect being concentrated in a growth in moderate poverty.

Secondly, an analysis of the moderate and severe poverty profiles will enable us to determine which groups or socio-demographic profiles were most affected in each period of the crises in Spain. Two alternative explanations can be drawn from the possible results. On the one hand, it is expected that there is a set of characteristics that are invariably associated with poverty and tend to be exacerbated in recessionary periods and in severe poverty (*Hypothesis 2a*): women, young people and households with a greater number of cohabitants and the presence of minors are more likely to suffer poverty as, along with other reasons, they encounter more difficulties in entering the labour market and have more unstable incomes (Ayala, 2014; Menta, 2021; Ayala et al, 2022; Author's

own, 2024). On the other hand, the poverty profile may vary depending on the recession under consideration (*Hypothesis 2b*). During the Great Recession, with a problem clearly and primarily in the labour market, the highest poverty risks were observed among individuals experiencing unemployment and households with very low work intensity (Ibáñez, 2014; Author's own, 2024; Author's own, 2024). In the COVID-19 crisis, with a more transitory economic and labour contraction and a more rapid institutional response, the effects would have been greater on the self-employed and households with greater child-rearing responsibilities, less covered by institutional protection (Ayala, 2014; Menta, 2021).

Table 1. Research questions and hypotheses

Objectives	Hypothesis
1. *Impact of the crises on types of poverty*	1a. Similar evolution of severe and moderate poverty in both crises.
	1b. Different evolution of severe and moderate poverty: Great Recession larger impact on severe poverty; COVID-19 pandemic larger impact on moderate poverty.
2. *Features associated with the poverty profile*	2a. Stable profile, accentuated in crises and severe poverty: women, youth, households with children.
	2b. Variable profile: in the Great Recession, the unemployed and low work intensity households; COVID-19, the self-employed and households with children
3. *Effectiveness of transfers and the combination of different household income sources*	3a. Receiving pensions and unemployment benefits help to avoid poverty.
	3b. The combination of labour incomes and transfers decrease poverty risks.

Source: Prepared by authors.

Finally, the possible effects of the composition of household income (social transfers, earned income, or a combination of both) on poverty are assessed. In this case, the hypotheses are articulated as complementary explanations. On the one hand, the literature emphasises the role of pensions and unemployment benefits (*Hypothesis 3a*), which are targeted at those with higher labour participation, and which helped to avoid poverty in both crises (Ayala et al, 2016; Ayala and Cantó, 2020; Author's own, 2024). On the other hand, some previous studies have identified the combination of earnings and transfers as a prevalent strategy adopted by households to evade poverty (*Hypothesis 3b*) (Author's own, 2024). Therefore, during periods of crises, the combination of both sources of income would increase the probability of avoiding poverty.

2. Methodology

The Spanish module of the European Union Survey on Income and Living Conditions (EU-SILC)[2] is part of the harmonised statistical operations carried out by the countries of the European Union. It aims to provide a source of data for international comparisons on income distribution, poverty and social exclusion. It has been carried out annually since 2004 and is suitable for the objectives of this research because it collects individual information on labour participation and household income. This makes it possible to analyse poverty risk situations and the composition of household income, paying particular attention to the social benefits received. Moreover, the EU-SILC is characterised by collecting data based on national representative probability samples that randomly select persons and households and, therefore, allow for the exhaustive identification of the target population (Eurostat, 2021).

The study examines the period from 2008 to 2020 descriptively[3], starting in the year before the Great Recession, and continuing through to the onset of the crisis due to the COVID-19 pandemic. For a more in-depth analysis, we selected the years before the start of the two crises – 2008 and 2019 – and the years of their greatest impact on the living conditions of households in Spain – 2013 in the case of the Great Recession and 2020 for the pandemic[4]. The sample selected comprises people of working age, defined as those aged between 18 and 59, excluding individuals aged18–24 who are inactive and living with a parent: 19,657 people in 2008, 16,364 in 2013, 19,071 in 2019, and 26,339 in 2020.

Considering the effects of the business cycle on poverty, the anchored poverty approach is used, and two indicators of relative income poverty are analysed. On the one hand, the poverty line is anchored in 2008 (the start of the observation period) and adjusted according to the Harmonised Index of Consumer Prices to take account of the impact of price changes on households' living conditions. On the other hand, the poverty indicators (dependent variables) are based on the at-risk of poverty threshold which is set at 60% of the median equivalised disposable household income (MEDHI), therefore the at-risk of poverty indicator is divided into two different measures: moderate-poverty, that includes individuals with incomes are between 40 and 60 percent of the threshold, while severe-poverty refers to those below 40 percent.

The inclusion of the independent variables (Appendix Table 1) follows the rationale derived from the literature review: individual characteristics (gender, age group, educational attainment, employment status and migration background), household characteristics (presence of children and work intensity[5]), and a variable that measures

[2] The microdata was downloaded directly from the Spanish Statistical Office website (https://www.ine.es/en/).

[3] The EU-SILC collects information on different reference periods each year: there are variables that report on the time when the interview takes place and others that refer to the previous year (income reference period). All the variables in this research are collected for the income reference period and, therefore, although microdata for the period 2009–2021 were used, the analysis is carried out on the years 2008–2020.

[4] Unemployment rates show that 2013 and 2020 marked the peak years of the Great Recession (28.1%) and the COVID-19 (15.3%) crisis, respectively, with sharp increases compared to 2008 (10.4%) and 2019 (14.0%). These trends are shown in Appendix Figure 1.

[5] This variable follows the definition by Eurostat (2021), measuring the work intensity of other adults in the household (excluding the respondent) as the ratio of their actual to potential working time.

the income composition of the household, considering labour earnings, transfers and the combination of both.[6].

Given that the dependent variable classifies individuals into three conceptually distinct categories –no poverty risk, moderate risk and severe risk, as defined above– a multinomial logistic regression model is employed. Although it could be considered as an ordinal variable, the results of the parallel regressions test reject the null hypothesis of proportionality (i.e. that the effects of explanatory variables are consistent across outcome categories). More importantly, from a conceptual perspective, each outcome of the dependent variable reflects a qualitatively distinct socio-economic situation rather than representing a gradient of poverty severity. These differences imply that the same explanatory variable may exert non-uniform effects across categories. Therefore, the multinomial specification is formally preferred to account for this heterogeneity[7] (Long and Freese, 2014).

Since all independent variables are categorical, the analysis relies on Average Marginal Effects (AMEs), which estimate the discrete change in the predicted probability of each outcome when moving from the reference category to another category of an explanatory variable. These differ from marginal effects at the means, as they incorporate the full distribution of observed values, rather than assigning average characteristics to all individuals. AMEs are computed separately for each dependent outcome and can be interpreted in a similar manner to those in binary logit models. This makes them substantially more intuitive and accessible than odds ratios, which represent changes in the odds between outcomes, being considerably less interpretable when the dependent variable has more than two categories. As argued by Mood (2010), AMEs offer a more robust and interpretable metric for comparing the effects of predictors across groups or models. Model fit indicators, including sample size, the Akaike Information Criterion (AIC), and the adjusted McFadden's R^2, are reported in Appendix Table 2 to support the comparative assessment of model performance across years.

An assessment of whether such effects changed across recessionary periods is conducted through the statistical framework developed by Mize et al. (2019). Their contribution proposes a general methodology for comparing marginal effects and predicted probabilities across non-linear models estimated on different samples, accounting for differences in variable distributions, model specifications, and sampling variation. In this case, their statistical tool, implemented through dedicated software (*mecompare*[8]*)*, is used to test whether the magnitude and direction of AMEs differ significantly between 2008 and 2013 (the Great Recession), and between 2019 and 2020 (the COVID-19). This

[6] The variable 'region' (NUTS2) is included as a control variable, as it may reflect possible differences in the configuration and financing of the different regional social protection systems. Analysing it is beyond the scope and objectives of the article but is available upon request.

[7] The absence of multicollinearity in models (both total and partial for each explanatory variable) has been verified through the variance inflation factor (VIF) test. All VIF values fell within acceptable thresholds

[8] This command, developed for use with the Stata statistical software, implements methodology already cited from Mize, Doan, and Long (2019). For further details, see: https://www.trentonmize.com/software/mecompare

makes it possible to determine not only whether changes are statistically significant, but also their substantive relevance and direction of influence[9].

3. Results

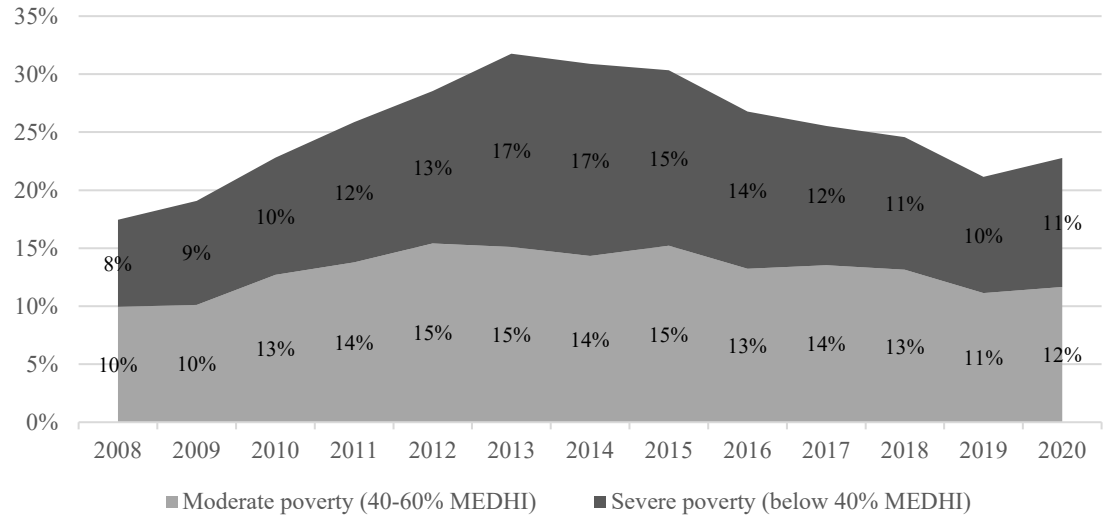
The results are organized in two sections, each addressing a specific research question. The first provides a descriptive comparison of the effects of the Great Recession and the COVID-19 crisis on poverty, based on the at-risk-of-poverty thresholds. This is complemented by an overview of the main changes in the coverage rates of social transfers by type of benefit, which enables the identification of the socio-demographic profile of recipients. This, in turn, makes it possible to assess whether the two crises produced similar or divergent effects on each form of poverty (*H1a, H1b*). The second section analyses the effect of each group of explanatory variables, with particular attention to the role of social transfers and their interaction with earnings during each recessionary period. It explores whether the profiles of moderate and severe poverty remain stable or change across economic cycles (*H2a, H2b*), and whether the role of benefits, as well as their comparability with employment, vary over time (*H3a, H3b*).

3.1. Trends in moderate and severe poverty among the working age population: 2008-2020

Figure 1 shows the working-age moderate and severe poverty rates based on anchored thresholds over the period 2008–2020. Several key trends emerge, with the first turning point occurring during the most acute phase of the Great Recession. First, between 2008 and 2012, both poverty rates increased steadily, maintaining a two-percentage-point gap between them: from 10 and 8 percent for moderate and severe poverty, respectively, to 15 and 13 percent in 2012. Secondly, between 2013 and 2014, there was a significant change: severe poverty overtook moderate poverty. In these years, the negative effects of the crisis deepened poverty severity, disproportionately affecting individuals at the bottom of the income distribution (between 0 and 40 percent). Therefore, the increase in the overall working-age poverty rate in these years (reaching 31.8% in 2013) is largely due to the increase in severe poverty. Thirdly, from 2015 onwards, there was a decline in both types of poverty, although the differences between the two no longer remain 2 percentage points apart but reach 1 percent in some years. This is due to a certain slowness in the reduction of severe poverty in the years before the COVID-19 crisis. Finally, during this last crisis, poverty rose again, albeit moderately, and affecting a smaller share of the population than in the previous crisis. In this case, moderate poverty rates achieved levels of 11 percent and severe poverty 10 percent.

[9] See Example 6.6 in: https://www.trentonmize.com/software/mecompare, which compares marginal effects across separate models estimated for different groups or periods.

Figure 1. Trends in the rates of moderate and severe working age poverty in Spain (anchored), 2008–2020



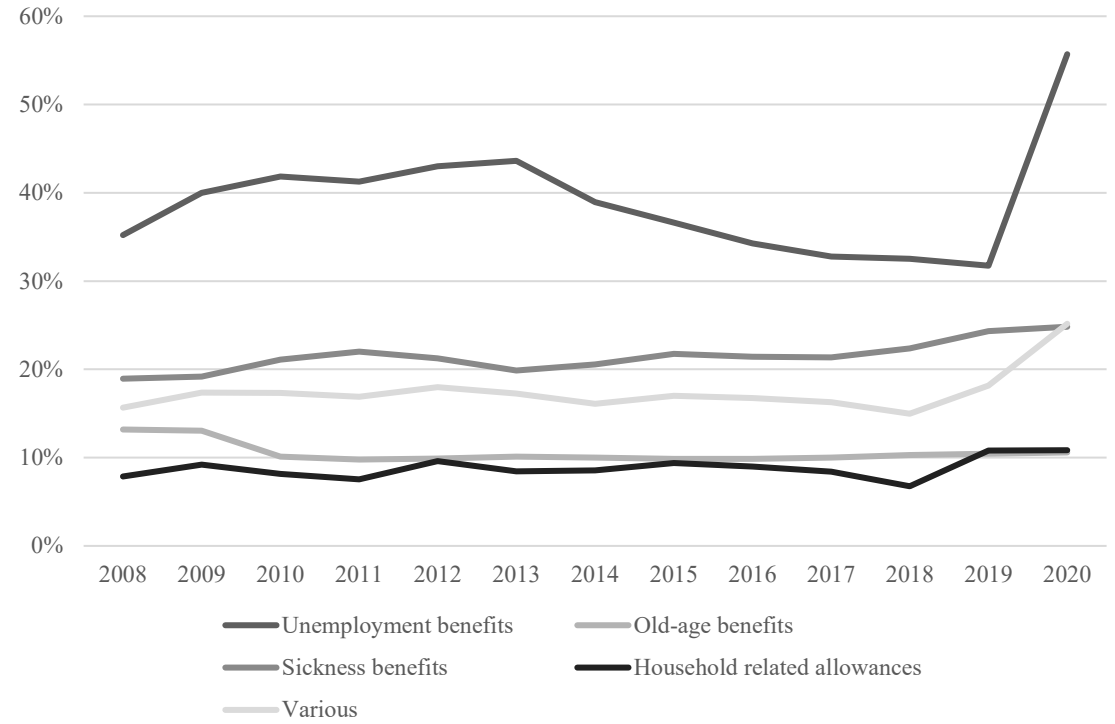
Source: Authors' calculations based on EU-SILC microdata (weighted), 2009–2021.

Part of the observed variations in poverty levels can be attributed to the protective function of the social transfer system, which can be analysed through the coverage rates for the period analysed. Figure 2 presents the share of the working-age population living in households receiving each type of benefit in Spain between 2008 and 2020. First, unemployment benefits consistently exhibit the highest level of coverage, regardless of the economic context: in the first period, the coverage rate increased from 35 percent in 2008 to nearly 44 percent in 2013; in the second, it rose from 32 percent to 56 percent, an increase of over twenty percentage points. Therefore, contributory benefits tend to expand in parallel with increases in public spending during both recessionary periods.

The remaining types of transfers analysed display lower and relatively stable coverage rates between 2008 and 2020. Only two categories of benefits consistently exceeded 10 percent coverage in all the years considered and showed an increase during the COVID-19 crisis. Sickness benefits rose from 22 percent in 2018 to nearly 25 percent in 2020, while the share of households combining multiple transfers increased from 15 percent to 25.2 percent over the same period, thereby becoming the second most prevalent social protection mechanism among the Spanish working-age population during the pandemic. Therefore, in terms of coverage levels, the analysis primarily highlights unemployment benefits, the strategy of combining multiple transfers simultaneously, and, to a lesser extent, the rise in sickness benefits during the most recent crisis.

Figure 2. Share of working-age population living in households in receipt of each type of benefit in Spain, 2008–2020

Note



Note: In 2020, specific transfers were introduced on account of COVID-19: rental subsidies (0.6 per cent), ERTEs and similar (26.3 per cent), cessation of activity and similar (7.1 per cent), other COVID-19 subsidies (2.0 per cent).

Source: Authors' calculations based on EU-SILC microdata (weighted), 2009–2021.

The shifts in the profile of beneficiaries of these three types of transfer demonstrate the importance of specific characteristics[10]. On the one hand, individuals receiving unemployment benefits exhibit traits associated with greater potential participation in the labour market: young people, unemployed individuals (but even some individuals in paid employment) and, above all, in households with high work intensity and where earned income is combined with receipt of benefits. In contrast, sickness benefits and the combination of several transfers are more associated with those in situations of inactivity, including older people and households with very low work intensity where such transfers constitute the primary source of income.

However, an analysis of the changes associated with each crisis reveals that the main shift is concentrated on unemployment benefits. In 2020, social protection for employed individuals (including employment retention schemes such as ERTEs) provided broad coverage for the income risks faced by both salaried and self-employed workers. There was also a notable increase in the percentage of households combining this type of benefit with labour force participation by at least one member, reaching an unprecedented peak of 80 percent. In contrast, changes in the coverage of sickness benefits or the receipt of multiple types of assistance were less pronounced, and the recipient profile remained relatively stable. The only significant novelty also occurred during the most recent crisis:

[10] These descriptive results are available upon request to the authors.

uptake of both benefits increased primarily among the self-employed, likely reflecting the need to maintain business continuity during lockdown periods, despite the impossibility of remaining active in the labour market and the severe restrictions on social interaction in certain sectors.

3.2. Analysis of moderate and severe poverty among the working-age population

The results derived from the model estimations provide three sets of evidence. First, they reveal the profile associated with each type of poverty and how it has evolved over time (addressing the second research question). Second, they identify which transfers are more consistently associated with lower poverty risks during each crisis, taking into account the composition of household income, including the combination of social transfers and earnings (third research question).

Beginning with the profile of moderate poverty (Table 2), several variables exert a significant influence regardless of the year considered. Notably, employment status, the presence of children in the household, and migration background consistently increase the likelihood of facing this form of deprivation. The risk is especially high among the unemployed and economically inactive, across all periods analyzed. A similar, albeit less pronounced, association is observed for self-employed individuals. Additionally, having children and being born outside Europe are systematically linked to a greater probability of experiencing moderate poverty.

In contrast, educational attainment and household labour intensity act as protective factors. Higher education levels consistently emerge as the most robust safeguard. Similarly, high or very high labour intensity significantly lowers the risk of moderate poverty, although its protective role weakened in 2013. Consequently, both low and high labour intensity (relative to very low) showed reduced protective effects in the aftermath of the Great Recession.

A comparative analysis across the four years examined indicates that, while the overall risk profile remains largely stable, the effects of age and migration background exhibit some variation. In 2008, individuals aged 50–59 faced a lower risk compared to younger cohorts, a pattern that became less evident by 2013. During the COVID-19 crisis, the most notable change relates to migration status: individuals from outside Europe experienced a marked increase in their risk of falling into moderate poverty.

Table 2. AMEs of individual and household variables on the probability moderate poverty

Variable *(reference category)*	**2008**	**2013**	**Δ 2008–2013**	**2019**	**2020**	**Δ 2019–2020**
Sex						
(ref: male)						
Female	0.007	0.008	0.000	0.009*	0.006	0.002
Age						
(ref: 18–34)						
35–49	-0.006	-0.001	-0.005	-0.013*	-0.011*	-0.002
50–59	-0.042***	-0.021**	-0.021**	-0.024***	-0.029***	0.005
Migration background (citizenship) *(ref: national citizen)*						
EU citizen	0.068***	0.076***	-0.008	0.029*	0.065***	-0.036*
Non-EU citizen	0.068***	0.078***	-0.010	0.078***	0.106***	-0.028**
Educational attainment						
(ref: primary or less)						
Lower secondary	-0.021***	-0.020*	-0.001	-0.014	-0.029***	0.015
Upper secondary	-0.062***	-0.049***	-0.013	-0.036***	-0.053***	0.017
Higher education	-0.096***	-0.101***	0.005	-0.086***	-0.102***	0.017
Individual employment situation						
(ref: employed)						
Self-employed	0.054***	0.054***	0.000	0.055***	0.049***	0.006
Unemployed	0.073***	0.088***	-0.015	0.087***	0.086***	0.002
Inactive	0.083***	0.066***	0.017	0.074***	0.080***	-0.006
Children in the household						
(ref: without children)						
With children	0.050***	0.037***	0.013*	0.045***	0.040***	0.005
Other household members' work intensity						
(ref: very low [0–0.2])						
Low [0.21–0.45]	-0.071***	-0.037***	-0.033**	-0.029***	-0.049***	0.020
Medium [0.46–0.55]	-0.069***	-0.058***	-0.011	-0.061***	-0.079***	0.017
High [0.56–0.85]	-0.119***	-0.079***	-0.040***	-0.093***	-0.106***	0.013
Very high [0.86–1]	-0.104***	-0.093***	-0.010	-0.099***	-0.104***	0.005

Notes: * p<0.10, **p<0.05, ***p< 0.01.
Source: Authors' calculations based on EU-SILC microdata, 2009, 2014, 2020 and 2021.

Table 3. AMEs of individual and household variables on the probability of severe poverty

Variable *(reference category)*	2008	2013	Δ 2008–2013	2019	2020	Δ 2019–2020
Sex						
(ref: male)						
Female	0.006*	0.021***	-0.015**	0.010**	0.009**	0.001
Age						
(ref: 18–34)						
35–49	-0.016***	-0.043***	0.027***	-0.019***	-0.021***	0.003
50–59	-0.030***	-0.078***	0.048***	-0.030***	-0.037***	0.006
Migration background (citizenship) *(ref: national citizen)*						
EU citizen	-0.017***	-0.050***	0.033***	-0.046***	-0.028***	-0.018*
Non-EU citizen	-0.033***	-0.098***	0.065***	-0.060***	-0.039***	-0.021**
Educational attainment						
(ref: primary or less)						
Lower secondary	-0.041***	-0.124***	0.083***	-0.078***	-0.068***	-0.010
Upper secondary	0.083***	0.128***	-0.044*	0.090***	0.055***	0.035*
Higher education	0.092***	0.157***	-0.065***	0.085***	0.118***	-0.033***
Individual employment situation						
(ref: employed)						
Self-employed	0.072***	0.126***	-0.054***	0.086***	0.121***	-0.035***
Unemployed	0.100***	0.183***	-0.084***	0.131***	0.117***	0.013
Inactive	0.061***	0.102***	-0.041***	0.064***	0.077***	-0.013
Children in the household						
(ref: without children)						
With children	0.041***	0.068***	-0.027***	0.045***	0.038***	0.006
Other household members' work intensity						
(ref: very low [0–0.2])						
Low [0.21–0.45]	-0.065***	-0.113***	0.048***	-0.090***	-0.071***	-0.019*
Medium [0.46–0.55]	-0.080***	-0.152***	0.072***	-0.091***	-0.094***	0.004
High [0.56–0.85]	-0.098***	-0.184***	0.086***	-0.124***	-0.118***	-0.006
Very high [0.86–1]	-0.087***	-0.181***	0.094***	-0.119***	-0.113***	-0.006

Notes: * p<0.10, **p<0.05, ***p< 0.01.
Source: Authors' calculations based on EU-SILC microdata, 2009, 2014, 2020 and 2021.

The findings reveal a consistent profile of severe poverty across the years analysed (Table 3), with certain characteristics becoming more pronounced in the aftermath of economic crises. Employment status stands out as the most decisive factor in determining the risk of falling into severe poverty. Individuals who are unemployed, economically inactive, or self-employed face significantly elevated risks. In particular, the likelihood of experiencing severe poverty rose markedly for these groups in 2013 compared to 2008. During the COVID-19 crisis, however, this increase was observed mainly among the self-employed, while the already high vulnerability of the unemployed and inactive population remained stable. Nationality is also strongly associated: individuals born outside Europe are consistently more exposed to severe poverty. Likewise, households with children are particularly vulnerable to severe poverty during economic downturns, especially during

the Great Recession. Finally, women face a higher probability of experiencing severe poverty, a disparity that intensified in 2013.

Conversely, there are several mitigating factors associated with the most intense poverty risks. Higher levels of education (especially tertiary) serve as a strong protective element. This effect became more evident after the Great Recession, with both secondary and tertiary qualifications increasingly associated with lower levels of severe economic deprivation compared to those with only primary education. However, during the pandemic, the cushion effect of upper secondary education diminished notably, weakening its capacity to reduce poverty. In addition, greater labour intensity within the household emerged as a protective factor, particularly between 2008 and 2013, when increased participation in the labour market by household members contributed to enhance their financial security.

Finally, Table 4 offers an analysis of the social protection system, distinguishing the association between of household income composition (specifically labour earnings and social transfers) and poverty outcomes. On the one hand, in the case of moderate poverty, the combination of labour income with pensions (and, to a lesser extent, with sickness and disability benefits) consistently lowers the probability of experiencing moderate poverty. Likewise, those households that receive multiple benefits and labour earnings at the same time, also have a lower risk of falling near the at-risk-of-poverty threshold, except in 2020.

The results also point to the influence, albeit less consistent, of other categories within this variable. From one perspective, combining earned income with benefits specifically targeted at households significantly reduced the risk of moderate poverty, though only in 2013. In this context, such a combination appears to have played a buffering role during the aftermath of the Great Recession. Alternatively, households receiving a single type of social benefit were able to reduce the risk of moderate poverty, but only in 2008 and 2013. These findings suggest that, following the recovery from the first crisis, transfers alone became less strongly associated with a reduced risk of poverty. In contrast, the combination of labour income with unemployment benefits was related to a higher likelihood of moderate poverty in 2019 and 2020. This pattern may reflect, at least in part, the transition of some households out of severe poverty, who (despite improved economic conditions trough those benefits) remain below the moderate poverty threshold, thereby shifting from one category (severe poverty) to another (moderate poverty). Considering the overall pattern of these results on the association between social transfers, their combination with earnings and the moderate poverty, they suggest that, for households experiencing reduced labour market participation, such a combination may have been insufficient to avoid falling below the at-risk threshold set at 60% of MEDHI.

On the other hand, working-age individuals also combine earned income and benefits at the household level to avoid falling into severe poverty. Specifically, combining pensions with labour income, as well as multiple social transfers, emerges as a common strategy among households less exposed to severe poverty, especially after crisis periods. . The combination with sickness benefits also serves as a safeguard, though with less significance during the Great Recession and a stronger association in 2020 compared to 2019. In the absence of labour earnings, those receiving multiple benefits were less likely

to be in severe poverty in 2013. By contrast, relying on a single type of transfer increases the risk of being at the lower end of the income distribution, which may reflect gaps in the design of the social protection system for certain segments of the working-age population.

Table 4. AMEs of the composition of income variable on the probability of being in moderate or severe poverty

	2008	2013	Δ 08–13	2019	2020	Δ 19–20
Composition of income *(ref: only labour earnings)*						
Moderate poverty						
Only one type of benefit	-0.044***	-0.049***	0.005	0.017	-0.001	0.018
Multiple benefits	-0.009	-0.026*	0.018	-0.017	-0.014	-0.003
Labour earnings with unemployment benefits	0.000	0.007	-0.007	0.031***	0.028***	0.003
Labour earnings with old-age pensions	-0.059***	-0.046***	-0.013	-0.038***	-0.032***	-0.006
Labour earnings with sickness benefits	-0.037***	-0.049***	0.013	-0.025**	-0.016	-0.009
Labour earnings with household-related allowances	0.007	-0.029**	0.036**	0.015	-0.015	0.030**
Labour earnings with multiple benefits	-0.037***	-0.023**	-0.015	-0.013*	0.000	-0.014
Severe poverty						
Only one type of benefit	0.102***	0.086***	0.015	0.035***	0.034***	0.001
Multiple benefits	0.006	-0.045***	0.051***	-0.004	-0.007	0.003
Labour earnings with unemployment benefits	-0.002	0.011	-0.013	-0.005	-0.029***	0.024***
Labour earnings with old-age pensions	-0.039***	-0.122***	0.083***	-0.054***	-0.077***	0.023**
Labour earnings with sickness benefits	-0.019*	-0.032*	0.013	-0.012	-0.058***	0.046***
Labour earnings with household-related allowances	-0.012	-0.005	-0.007	0.002	0.012	-0.010
Labour earnings with multiple benefits	-0.021***	-0.076***	0.055***	-0.032***	-0.060***	0.028***

Notes: * p<0.10, **p<0.05, ***p< 0.01.
Source: Authors' calculations based on EU-SILC microdata, 2009, 2014, 2020 and 2021.

4. Conclusions

This article contributes to understanding how different types of crises affect the risk and severity of poverty among the working-age population in Spain during the Great Recession and the COVID-19 pandemic. To this end, three specific questions and hypotheses have been posed. Firstly, to test whether the evolution of moderate and severe poverty was similar or different in both crises. The results have shown that the Great Recession had a greater and more prolonged effect on severe poverty, while the impact

of the pandemic on both types of poverty (moderate and severe) was smaller and affected both in similar ways. Much of the most recent crisis's lesser impact is explained by the rapid response and coverage implemented in institutional terms (Almeida et al, 2021; Rodríguez Teruel et al, 2022). Unemployment protection, together with the expansion of other benefits (such as sickness benefits), appear to reduce the poverty risks among individuals who were fully or nearly inactive. This result would support *Hypothesis 1b*, which argued that, apart from the obvious negative impact of the crises on poverty, their effects would be differentiated if we distinguish between moderate and severe risk.

Secondly, the study sought to show whether the profile of these forms of poverty is invariable or consistent over time and whether the socio-demographic and household characteristics associated with this situation change in each crisis. The estimates obtained indicate that the poverty profile is mostly stable, confirming *Hypothesis 2b* and in line with other results (Ayala, 2014; Menta, 2021; Ayala et al, 2022, Author's own, 2024). Although some traits gained more influence in one of the two crises, results confirm that a persistent profile emerges, characterised by individuals who are unemployed, inactive or self-employed, with low level of education, being born outside the EU, and living in households with children and with low work intensity. In the case of severe poverty, the significance of these variables is greater, and the profile also expands to include other situations such as, for example, women.

Thirdly, the study assesses which sources of income are more associated with being in poverty. The combination of earnings and benefits at the household level is mostly consistent linked to a lower likelihood of poverty, particularly during periods of economic stability. Therefore, *Hypothesis 3b* is confirmed: combining earned income and transfers appear to be more advantageous than living on transfers or wages alone (Author's own, 2024). This combination particularly reduces poverty more when it coincides with pensions, with several transfers at the same time, or with sickness benefits. However, this association is not uniform across all types of transfers. In particular, combinations involving unemployment benefits were associated with an increased likelihood of moderate poverty. As noted in the results section, this pattern may reflect a transition from severe to moderate poverty, as certain households improved their economic situation but remained below the relative threshold. This interpretation is supported by the marginal effects, which simultaneously showed a reduction in the probability of severe poverty and an increase in moderate poverty risk in these cases. This second group of evidence lends partial support to *Hypothesis 3a*, underlining the role of pensions in buffering poverty risks during recessionary episodes (Ayala et al, 2016; Ayala and Cantó, 2020; Author's own, 2024), even among the working population.

These results help to underline the singularity of the Spanish case in the behaviour of poverty in economic crisis cycles, which has been under-researched so far in the international literature. Despite the unequal impact of each crisis on moderate and severe poverty, there is one constant that becomes apparent: the decisive role of labour participation. Low labour intensity within households seems to be the most influential factor in determining poverty risks in both crises. In contrast, having income from work complemented by pensions seems to emerge as the strategy that best helps to alleviate poverty. These patterns are particularly pronounced in the case of severe poverty, where

both low household labour intensity and the absence of contributory income sources coincide more systematically with heightened economic vulnerability.

The findings of this study inform both the analytical approaches and measurement tools to understand poverty". At a theoretical-conceptual level, they highlight the value of using different thresholds to gain a more nuanced picture of the effects of crises on different segments of a society. Otherwise, there is a risk of underestimating the extent of economic vulnerability among those facing more severe poverty. At the empirical level, they emphasise the importance of analysing poverty in the light of economic cycles and how crises influence the worsening living conditions of working-age people. This approach in turn enables researchers to observe how consistent the profiles associated with severe and moderate poverty risks are.

The main contribution in terms of policy implications lies in the potential to inform about concrete measures in several directions: the consistent association of combining earnings and transfers in low-income households reinforces the need to make access to benefits more flexible alongside the multiple advantages of employment (Author's own, 2024). This policy measure should probably be implemented in a progressive way and with adaptation to the income level until a certain threshold is exceeded. Another possible course of action would be facilitating the combination of several transfers, highlighting the need to simplify the complex design of social protection systems, especially the last resort-safety net of minimum income schemes (Martinez et al., 2025). In short, it is necessary to improve income support systems so that they can react quickly and automatically in the short term, particularly during economic downturns (Cantó et al, 2022).

This study presents certain limitations that suggest possible lines of future research. Firstly, the collection of data on household income on an annual basis limit the possibility to monitor households' economic conditions at specific points in time; Menta (2021) points out that observing the consequences of COVID-19 was made possible precisely by the availability of monthly income data. Secondly, since this is a study focused on the Spanish case, its conclusions cannot be directly generalised to other institutional contexts, and comparison with other countries would considerably enrich the analysis and explanations. Finally, this study relies solely on economic and monetary indicators. The use of complementary indicators, such as material, deprivation or subjective wellbeing, would offer a more comprehensive picture of the multidimensionality nature of poverty faced by the working-age population. Taken together, these findings offer new insights into how crisis contexts reshape poverty risks; and point to key directions for strengthening income support systems in ways that are both equitable and responsive.

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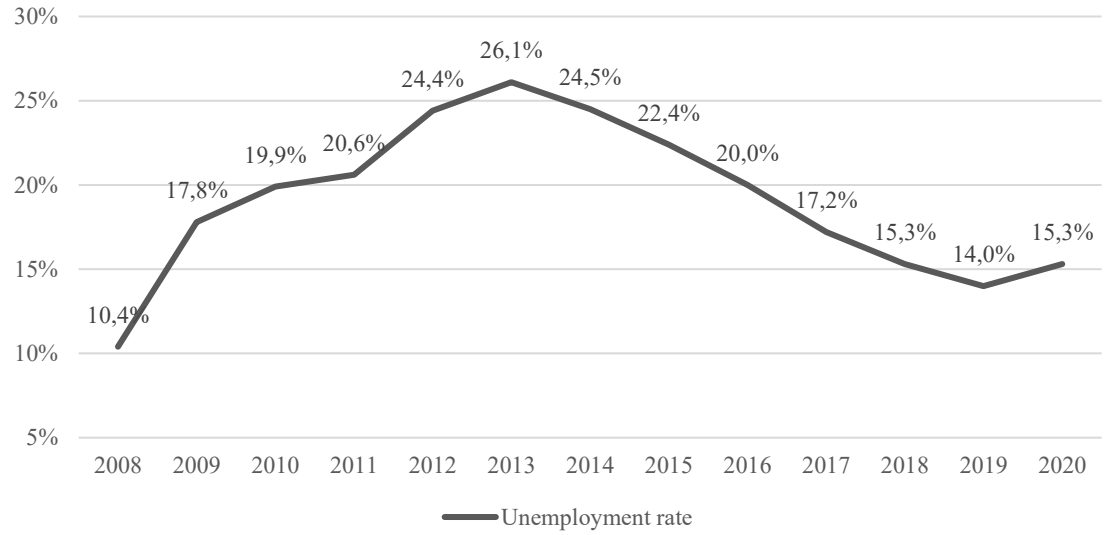
Appendix. Supplementary tables

Appendix Figure 1. Evolution of the unemployment rate and the at-risk of poverty threshold in Spain, 2008-2020



Source: EU-SILC and Labour Force Survey, Spain National Statistics Institute.

Appendix Table 1. Distribution of independent variables (individual, household and income-related characteristics)

		2008	2013	2019	2020
Sex	*Male*	51.1	50.3	50.3	50.1
	Female	48.9	49.7	49.7	49.9
Age	*18–34*	37.1	29.8	26.9	26.9
	35–49	42.1	45.6	44.8	44.3
	50–59	20.9	24.6	28.3	28.8
Migration background	*National citizen*	83.4	85.0	81.7	80.6
	EU citizen	4.6	4.1	4.0	3.9
	Non-EU citizen	12.0	10.9	14.4	15.5
Educational attainment	*Primary or lower*	16.2	12.3	9.1	8.7
	Lower secondary	27.5	29.4	25.0	24.1
	Upper secondary	24.7	22.1	23.4	23.5
	Higher education	31.6	36.2	42.5	43.6
Employment situation	*Employed*	62.6	52.5	64.6	62.4
	Self-employed	10.8	9.7	9.4	9.1
	Unemployed	11.0	24.5	13.1	15.2
	Inactive	15.6	13.3	12.8	13.3
Presence of children	*Without children*	50.5	49.4	50.1	48.3
	With children	49.5	50.6	49.9	51.7
Others' work intensity	*Very low [0–0.2]*	20.8	32.1	23.9	25.0
	Low [0.21–0.45]	12.0	12.6	10.2	11.8
	Medium [0.46–0.55]	14.0	12.4	13.9	13.6
	High [0.56–0.85]	12.5	8.4	9.4	10.1
	Very high [0.86–1]	40.7	34.5	42.5	39.5
Income composition	*Only labour earnings*	42.2	37.0	43.5	26.8
	Only one type of benefit	2.1	4.9	2.7	3.3
	Various benefits	1.4	2.8	1.9	2.0
	Combines work with unemployment benefits	22.0	27.4	17.3	32.8
	Combines work with old-age pensions	7.2	6.3	6.7	4.9
	Combines work with sickness benefits	4.3	3.4	5.4	3.0
	Combines work with household-related allowances	6.1	4.2	6.4	4.0
	Combines work with various benefits	14.6	14.0	16.0	23.2

Note: Percentages are weighted to represent the population distribution within each category of the independent variables. Unweighted sample sizes are reported in Appendix Table 2 below.

Source: Authors' calculations based on EU-SILC microdata, 2008, 2013, 2019 and 2020.

Appendix Table 2. Fit statistics for the estimated models

	2008	**2013**	**2019**	**2020**
N	17311	14580	16500	22833
Adjusted R^2	0.214	0.251	0.228	0.236
AIC	14264.3	18210.4	15130.5	22193.7

Note: *N* = sample size; *Adjusted* R^2 = proportion of variance explained, adjusted for the number of independent variables; *AIC* = Akaike Information Criterion, lower values indicate better fit.

Source: Authors' calculations based on EU-SILC microdata, 2009, 2014, 2020 and 2021.