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Policy Research Working Paper 11159

# Soaring Food Prices Threaten Recent Economic Gains in the EU

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WORLD BANK GROUP
Poverty and Equity Global Department
June 2025

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## Abstract

The surge in food prices following the 2021 economic rebound has become a significant concern for households, particularly low-income ones, in Bulgaria, Croatia, Poland, and Romania. Food price inflation, which surpasses general inflation rates, risks worsening poverty and food insecurity in these countries. This paper explores the distributional impacts of rising food prices and the effectiveness of government response measures. Low-income households, who allocate a larger share of their income to food, are disproportionately affected and are struggling to cope with unexpected expenses, leading to increased difficulties in accessing proper nutrition. Simulations indicate that rising food prices contribute to higher poverty rates and greater income inequality, especially among vulnerable populations. They also suggest that the main poverty-targeted social assistance schemes offer critical support for the extreme poor, but expanding both coverage and benefits is vital to shield all at-risk individuals. Targeted policies that balance immediate relief with long-term resilience-building are essential to addressing the challenges posed by escalating food prices.


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Produced by the Research Support Team

# Soaring Food Prices Threaten Recent Economic Gains in the EU[1]

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**JEL classification** : I32, I38, D31, E31.

**Keywords**: food prices, distributional impacts, social protection, EU-SILC, Romania, Croatia, Bulgaria, Poland.

[1] This paper was prepared as part of the European Union Poverty and Equity Program in The World Bank's Global Poverty Practice. This paper also contributed to the World Bank EU Regional Economic Report 10 (A Path to Inclusive Growth in the EU amid Inflation and Fiscal Constraints), specifically informing the section on inclusive growth. The authors are grateful for comments and contributions provided by peer reviewers Anna Fruttero and Zurab Sajaia, as well as Nga Nguyen, Nadia Belhaj Hasine, Emilija Timmis, Desislava Nikolova, Andrei Silviu Dospinescu, Josip Funda, Iva Tomic, Catalin Pauna, Collette Mari Wheeller, Roman Zhukovskyi, and Manuela Sofia Stanculescu.

# I. Introduction

**In recent years, global food prices have surged significantly, driven by a confluence of factors that have escalated the cost of essential goods.** The Food and Agriculture Organization (FAO) (2022) attributes part of this rise to global supply chain disruptions caused by the COVID-19 pandemic, which led to delays in transportation, labor shortages, and production interruptions. Additionally, climate change has intensified the situation, with extreme weather events like droughts and floods damaging crops and reducing yields (IPCC 2021). The FAO (2023) also points to increased global demand for food, compounded by supply constraints such as limited arable land and resources. The rising costs of agricultural inputs, including fertilizers and fuel, further contribute to the higher production costs reflected in consumer prices (IFPRI 2022). Economic policies and trade barriers, including tariffs and export restrictions, have exacerbated price volatility and reduced global food supply (WTO 2021). Together, these factors have collectively driven up food prices, impacting consumers worldwide.

**The rise of food prices became a significant concern for households in the European Union after the economic rebound in 2021, especially those at the lower end of the income distribution who had fewer means to cushion the impact of these price hikes.** In recent years, inflation has shown a marked increase. As of February 2025, consumer prices in the European Union (EU) have witnessed an increase of about 23.3 percent since February 2021, according to the monthly percentage change in the Eurostat harmonized consumer price index (HICP). This overall HICP surge is largely attributed to the acceleration of food price inflation during the same period, which has increased by about 33 percent. Across the four countries considered in this analysis—Bulgaria, Croatia, Poland, and Romania—the overall price index has experienced a more pronounced rise, ranging from 30.4 percent in Croatia to 37.9 percent in Romania over the same period (figure 1). There was also a substantial increase in food and nonalcoholic beverages prices of more than 43 percent in these four EU countries. This increase in food prices following the COVID-19 pandemic represents a critical factor that can exacerbate poverty and undermine food security. While this paper focuses on food inflation, energy prices also rose sharply in the aftermath of the energy crisis, with important distributional consequences[2].

**Food inflation in the euro area is expected to peak in mid-2025 before easing, but several risks could prolong upward pressure.** According to the European Central Bank's (ECB) March 2025 macroeconomic projections, food inflation in the euro area is expected to rise until mid-2025 due to recent sharp increases in food commodity prices, before gradually declining to an average

[2] The distributional impact of rising energy prices is analyzed in greater detail in Prasad et al, 2023. The analysis found that energy inflation had a particularly regressive impact in countries where lower-income households allocate a higher share of their consumption to energy, and highlighted the role of both energy price caps and targeted support measures in cushioning its effects.

of 2.2% by 2027 as cost pressures ease[3]. Going forward, the outlook for food inflation will be shaped by several key factors: the trajectory of energy prices, which heavily affect agricultural input and transport costs; ongoing supply chain disruptions; and the increasing frequency of climate-related events like droughts and floods that threaten crop yields. Geopolitical developments (such as conflicts affecting major exporters) pose notable upside risks to prices for energy and broader commodities (World Bank 2024a). Changes in trade and agricultural policies, labor market pressures, and currency fluctuations will also play an important role in determining future food price dynamics. These elements will be critical to monitor as policymakers aim to contain inflation and mitigate its impact on vulnerable households.

**The sharp rise in food prices poses a significant challenge for households, particularly those at the bottom of the income distribution.** These households tend to spend a larger share of their income on food and are particularly vulnerable to inflationary pressures. As food prices have risen disproportionately compared to overall inflation, poverty and food insecurity risks have intensified. Higher food costs disproportionately affect low-income households by further reducing their limited purchasing power, making it harder to afford basic nutritional needs. These households have fewer options to substitute away from essential goods and more limited financial reserves to absorb rising prices, deepening existing inequalities. Addressing these impacts is crucial for poverty alleviation.

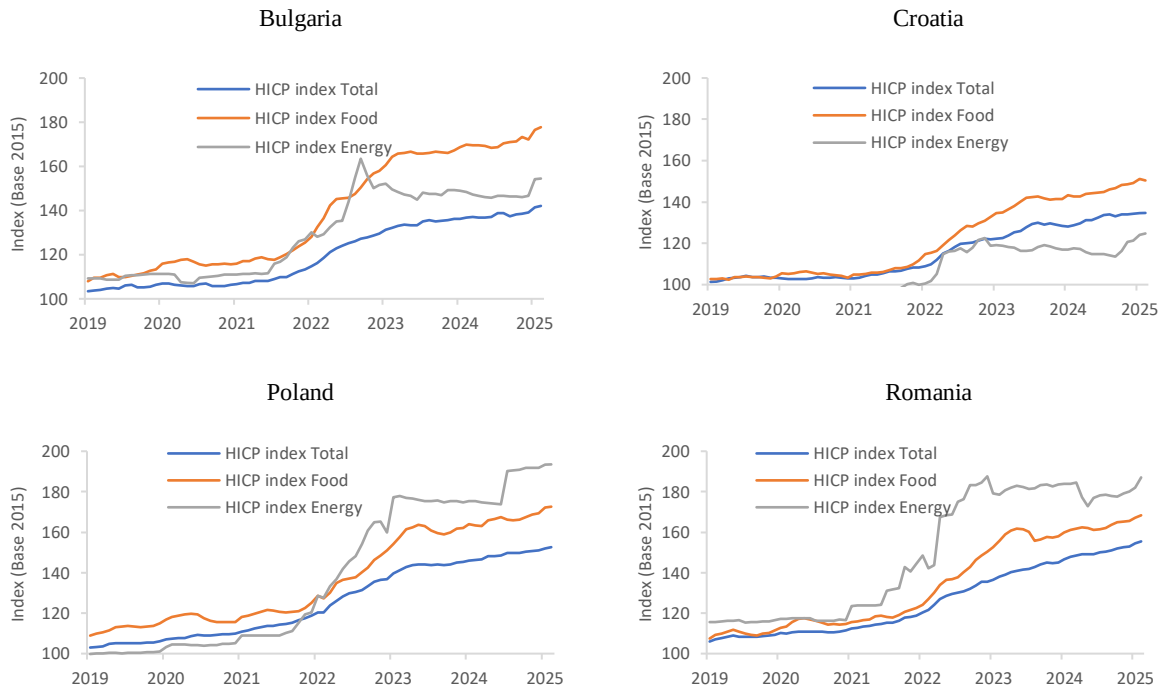
**Food inflation has the potential to result in more significant welfare losses for low-income individuals, rendering them more vulnerable to these types of shocks.** Households' vulnerability to higher prices may depend not only on the magnitude of the price increases, but also on households' income and consumption patterns. Given that the HICP monitors the expenses associated with a representative basket of goods, the index provides a reasonable estimate of the extent to which an average household experiences inflation. As such, overall inflation, as well as food inflation, may not accurately mirror the inflation experienced by the worse off because their spending habits diverge from those of the average household. Households at the bottom of the income distribution spend a larger share of their income on food, so that higher prices create a challenge for these households. For instance, in 2019, in Romania, the first decile allocated approximately 51 percent of their expenditure to food, whereas in Poland, it was around 38 percent. In contrast, the top decile in both countries spent only about 25 percent and 13 percent of their overall expenditure on food items, respectively (figure 2)[4]. As a consequence, it is foreseeable that the poorest decile will consistently experience higher food inflation rates compared to the average population and the wealthiest decile. Given that a substantial portion of the poorest

[3] https://www.ecb.europa.eu/press/projections/html/ecb.projections202503_ecbstaff~106050a4fa.en.html#toc6

[4] Figure A.1 in Annex shows food and non-alcoholic beverages consumption shares across each decile of the distribution. The results show a decrease in food consumption share as overall expenditure increases.

decile's income is allocated to essentials, this group has limited flexibility to cope with food price hikes.

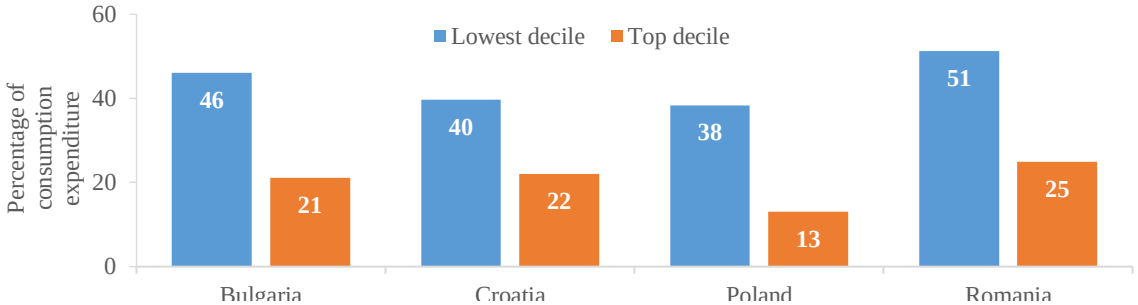
## Figure 1 Total and Food Price Evolution in Selected EU Countries, January 2019–February 2025




*Source*: Eurostat (prc_hicp_midx), 2019M1–2025M2. Food includes food and non-alcoholic beverages, and energy includes electricity, gas, and other fuels.

https://ec.europa.eu/eurostat/databrowser/view/prc_hicp_midx/default/table?lang=en&category=prc.prc_hicp

## Figure 2 Household Share of Consumption of Food and Nonalcoholic Beverages, Bottom Decile vs. Top Decile, Selected EU Countries, circa 2019




*Source*: Own elaboration based on estimates using HBS data. Deciles are constructed based on consumption expenditure.
*Note*: The years are Bulgaria: 2019, Croatia: 2017, Poland: 2019, and Romania: 2019.

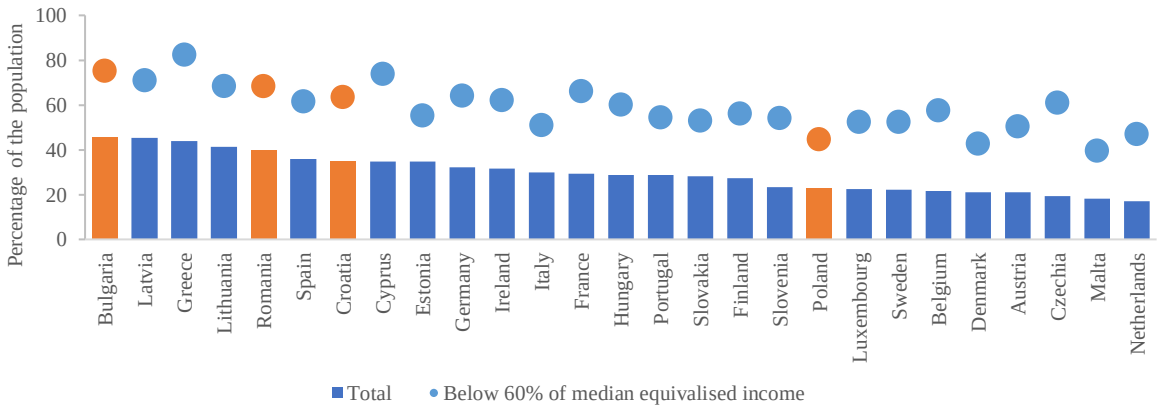
**Previous empirical evidence consistently shows that food inflation tends to have a disproportionate impact on low-income households.** In Ethiopia, low-income groups faced higher food inflation (approximately 7–9 percentage points [p.p.] compared to high-income groups from 2020 to 2021 (Nuru 2023), while in Greece, vulnerable populations such as pensioners and the unemployed were disproportionately impacted by inflation during the period between 1999 and 2004, especially due to food price increases (Mitrakos and Zografakis 2005). Similarly, food price hikes in low-income countries adversely affect both low-income consumers and small producers (Mellor 1975). In Pakistan, recent inflation was mildly progressive overall, but food inflation drove significant welfare losses for lower-income households (O'Donoghue et al. 2023). Ivanic and Martin (2008) show that global food price surges between 2005 and 2007 significantly increased poverty in nine developing countries, particularly among poor net food consumers. De Janvry and Sadoulet (2009) find that rural households in India were more negatively affected than urban ones by rising food prices, despite some rural households having farming as their livelihood. De Hoyos and Medvedev (2011) extend this analysis globally for the period between 2005 to 2008, showing that a 5.6 percent real increase in food prices raised the extreme poverty headcount by 1.7 p.p. Returning to the country level, Vu and Glewwe (2011) find that food price increases between January 2007 and September 2008 in Vietnam raised the poverty rate by 1.1 p.p. These findings underscore the disproportionate harm that food price shocks do to poorer households and, in turn, the need for policies that protect vulnerable populations from price volatility and account for the distributional impacts of inflation, which can exacerbate existing inequalities and poverty.

**Many poor households face heightened vulnerability to economic shocks, including price shocks, due to their limited financial resources and inadequate safety nets.** These households often lack substantial savings and are forced to allocate most of their income to essential needs, leaving little room to absorb unexpected expenses such as medical emergencies or job loss (Atkinson and Stiglitz 2015; World Bank 2018). Additionally, limited access to credit exacerbates their financial instability because they may struggle to obtain loans due to poor credit histories or lack of collateral (IMF 2017). In many developing countries, ineffective social safety nets further compound this issue, leaving these households without adequate support in times of crisis (OECD 2019). Furthermore, the precarious nature of their employment and the increased health risks among low-income families contribute to their vulnerability. Precarious jobs often come with fewer benefits and higher health risks, making it harder for these households to mitigate financial shocks (Deaton 2013). The broader context of economic inequality also plays a role, as the concentration of wealth among the affluent leaves poorer households with fewer resources to protect against financial risks (Piketty 2014).

**In the EU, recent household surveys show that households are grappling with the considerable challenge of safeguarding themselves against abrupt price fluctuations that can profoundly impact their financial stability.** Notably, in Bulgaria, Romania, and Croatia, over 35 percent of survey participants reported they were unable to manage unforeseen expenses, marking the highest share within the EU countries, whereas in Poland, it was relatively lower but still a

substantial proportion of approximately 22 percent (figure 3). The situation is more dire for those with lower incomes. In Bulgaria, Romania, and Croatia, between 64 and 75 percent of individuals earning less than 60 percent of the median equivalized income reported being ill-prepared to handle unexpected financial burdens, while in Poland, in the same income bracket, the corresponding proportion was lower but still exceeded 45 percent. This highlights the disproportionate burden faced by lower-income households.

**Figure 3. Inability to Face Unexpected Financial Expenses in EU Countries, 2024**




*Source*: Eurostat (ILC_MDES04), 2024.

https://ec.europa.eu/eurostat/databrowser/view/ILC_MDES04__custom_70943/bookmark/table?lang=en&bookmarkId=8e195f40-5d4b-40db-9a11-49a57cef26f5

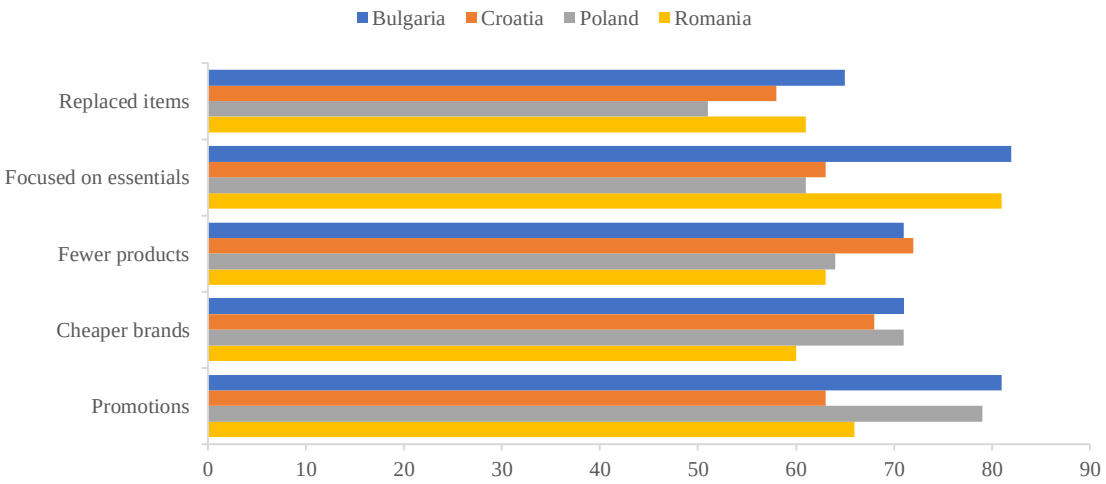
**Despite the adoption of various coping strategies, the rising cost of living presents substantial challenges for households.** As living expenses continue to rise, many households struggle to manage their budgets effectively, leading to increased financial stress and a reduced quality of life. First, households are often forced to allocate a larger share of their income to basic necessities such as food, housing, and utilities. Research by the OECD (2021) highlights that rising costs in these areas can disproportionately affect lower-income families, who already spend a significant portion of their income on essentials. This increased expenditure leaves less room for savings or discretionary spending, exacerbating financial pressures. Second, as the cost of living increases, real income, or income adjusted for inflation, tends to erode. According to the International Monetary Fund (IMF) (2020), this erosion can reduce households' purchasing power, making it more difficult for them to cover daily expenses and unforeseen costs. The decrease in real income often leads to a greater reliance on debt and other short-term financial solutions, which can further strain household finances. Third, to mitigate the impact of rising living costs, households may employ various coping strategies, such as cutting nonessential expenses, seeking additional sources of income, or drawing on savings. However, these strategies are not always sufficient. The World Bank (2022) notes that while these measures can provide temporary relief, they often fall short of addressing the underlying financial pressures caused by sustained increases in living costs.

Fourth, the financial strain resulting from rising living costs can also have detrimental effects on mental health. Studies have shown that economic stress is linked to increased levels of anxiety and depression (Deaton 2013). Households facing persistent financial difficulties may experience a decline in overall well-being, which can further compound their economic challenges. Finally, the rising cost of living often exacerbates existing inequalities, disproportionately impacting low-income households. As noted by Piketty (2014), those in lower income brackets are more vulnerable to the effects of inflation and rising costs, which can deepen economic divides and perpetuate cycles of poverty.

**In the EU, recent rapid surveys conducted by the World Bank suggest that the rising cost of living has created significant challenges for households, even though they are implementing coping strategies as they try to make ends meet.** Notably, about two-thirds of consumers have made concerted efforts to reduce their expenditures by altering their purchasing behavior in the face of higher prices (figure 4). As of June 2023, more than 70 percent of Bulgarians and Croatians reported buying fewer products overall; this was the case with 64 and 63 percent of Polish and Romanian consumers, respectively. Furthermore, consumers reported having adapted their shopping habits, with approximately two out of three consumers in the four selected EU countries implementing money-saving strategies, such as opting for more affordable brands or taking advantage of discounted products. However, many households were still facing difficulties making ends meet. For Romania, the proportion of households reporting increased difficulty in making ends meet nearly doubled between the spring of 2021 (37 percent) and the summer of 2022 (63 percent). Similar upward trends were observed for Croatia (from 33 percent to 58 percent), Bulgaria (from 33 percent to 46 percent), and Poland (from 48 percent in the spring of 2021 to 55 percent in the fall of 2022). The most vulnerable households faced even greater adversity. For instance, 7 out of 10 Croatian and Romanian households within the bottom 40 percent of the income distribution reported challenges in making ends meet in spring 2022.[5]

[5] The "make ends meet" numbers are based on previous household survey rounds.

**Figure 4. Changes in Consumption Patterns in Response to Rising Prices in Bulgaria, Croatia, Poland, and Romania, 2023**



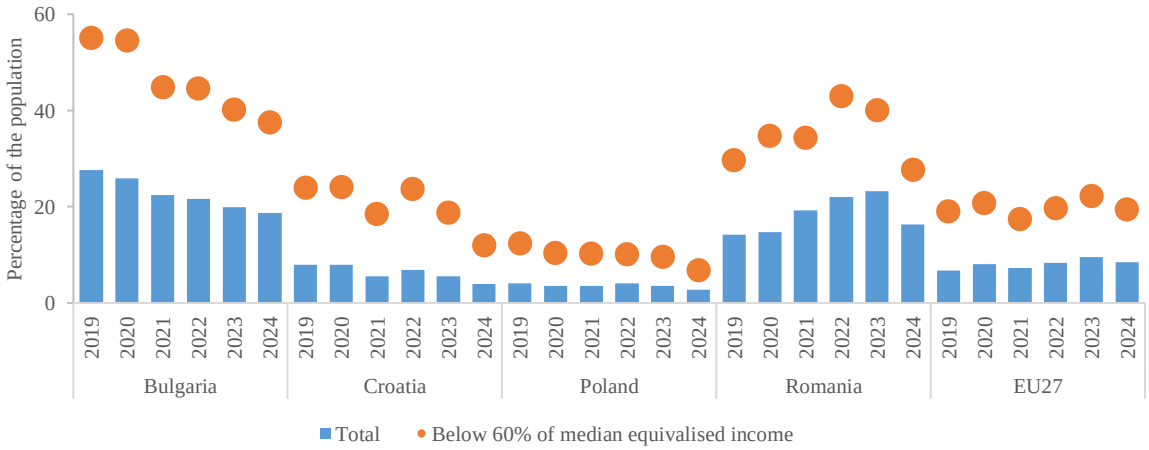

*Source*: An elaboration using data from the World Bank rapid surveys conducted in June 2023.
*Note:* "Replaced items" means that households waited to replace needed household items and clothes; "Focused on essentials" means that households focused mostly on essential goods (for example, food, utilities, gas); "Fewer products" means that households bought fewer products overall; "Cheaper brands" means that households bought cheaper brands; and "Promotions" means that households chose promoted brands that were discounted.

**Low-income households encounter difficulties in accessing proper nutrition, and this situation becomes even more challenging in a context of rising food prices and economic pressures.** This situation affects both the quantity and quality of food available to these households, with significant implications for their health and well-being. The rise in food prices has led to greater difficulties for low-income households in securing proper nutrition, resulting in increased food insecurity, nutritional deficiencies, and adverse health outcomes. First, the escalation in food prices has heightened food insecurity among low-income households. FAO, IFAD, UNICEF, WFP, and WHO (2022) define food insecurity as limited or uncertain access to adequate food, which can lead to malnutrition. For many low-income families, the increased cost of food forces them to cut back on essential items or purchase less-nutritious food, worsening food insecurity**.** Second, financial constraints often lead to diets lacking essential nutrients. According to the 2018 Global Nutrition Report (Global Nutrition Report 2018), low-income households are more likely to experience deficiencies in vitamins and minerals due to their limited budgets. This can result in various health issues, including impaired immune function and developmental delays in children. Third, inadequate nutrition has serious health implications. Research by Gropper (2023) and EUPHA-FN, EUPHA-CHR, and WHO/Europe (2021) links poor nutrition to a higher prevalence of chronic diseases, such as obesity, diabetes, and cardiovascular conditions. Low-income individuals, who may already face barriers to health care, are at increased risk due to insufficient dietary intake. Finally, the rising cost of food imposes additional economic strain on

low-income households, as it often leads to their prioritizing immediate survival over long-term health. The International Food Policy Research Institute (IFPRI) (2022) notes that these financial pressures can force households to allocate a larger portion of their income to food, leaving less for other essential needs, such as health care and education. Addressing these challenges requires comprehensive policies that focus on improving food access and affordability for vulnerable populations.

**In the EU, low-income households are encountering increasing difficulties in accessing proper nutrition.** The rise in food prices has exacerbated the situation for households unable to afford a proper meal.[6], with varying impacts across different countries from 2019 to 2024. Bulgaria has seen a steady decline from 2019 to 2024, while Croatia and Poland exhibit relatively low and stable rates, with only minor fluctuations over time. Romania, in contrast, shows a noticeable increase peaking around 2022–2023 before improving slightly in 2024 (figure 5). This challenge is particularly acute for those with lower incomes. In Bulgaria and Romania, a high proportion of households earning less than 60 percent of the median income struggled to afford a meal with meat, chicken, and fish every other day, significantly surpassing the EU-27 average of 19 percent. In Croatia, the corresponding figure stood at about 12 percent, and in Poland it was 7 percent. These trends highlight the potential distributional impact of rising food inflation on household income and living conditions and the urgent need for targeted measures to alleviate the negative impact among vulnerable households.

**Figure 5. Inability to Afford a Meal with Meat, Chicken or Fish Every Other Day, Selected Low-Income EU Countries vs. EU-27, 2019–24**




*Source*: Eurostat (ILC_MDES03), 2019–24.

https://ec.europa.eu/eurostat/databrowser/view/ilc_mdes03/default/table?lang=en

[6] This indicator refers to households' ability to afford a meal with meat, chicken, and fish every other day, among the items observed at the household level to calculate the severe material and social deprivation rate in the EU.

**In this context, this research paper aims to quantify the potential poverty and distributional impact of rising food inflation on household income and living conditions in these four EU countries and the implications of government response measures.** Examining the distributional impacts of rising food prices is crucial because low-income households spend a larger portion of their income on food, making them more vulnerable to price increases. Understanding these impacts aids in the identification of how food price inflation exacerbates poverty and inequality, and in turn, in the design of targeted policies to protect the most affected.

**The paper is organized as follows.** Section II describes recent policies and interventions to alleviate the negative impacts of rising inflation in the four EU countries and role of the different indexation approaches used. Section III details the methodology used in the study, including a brief description of the different data sources used and the criteria for their selection, and the analytical framework employed. Section IV discusses the results of the analysis, including the distributional impacts of rising prices and the policy simulations. Section V provides policy insights and concludes.

## II. Recent Policies and Interventions

**Effective social safety nets play a crucial role in protecting individuals from food inflation, especially in the short term.** Policies that offer targeted assistance to low-income households struggling with rising food prices are essential for ensuring economic resilience. Subsidized programs such as food vouchers or cash transfers that directly address immediate needs are more effective than universal measures, because the former allocate resources to those who need them most. In designing these policies, fiscal constraints must be considered, with a focus on cost-efficient and adequate support. Targeted interventions help limit fiscal strain while providing more generous aid to the most vulnerable populations. Additionally, it is essential to adjust benefit levels in line with inflation to prevent the erosion of support over time, ensuring that assistance remains impactful in mitigating food insecurity. By prioritizing vulnerable groups and maintaining fiscal discipline, governments can shield low-income households from the worst effects of rising food prices without overextending their budgets.

**A look at the research comparing cash and in-kind transfers for food assistance reveals mixed findings.** While cash transfers are often assumed to be superior, beneficiaries frequently prefer in-kind transfers (Hirvonen and Hoddinott 2020). This preference is particularly strong among food-insecure households and in areas with high food prices. In-kind transfers can provide insurance against price volatility, especially benefiting poor households in developing countries with poorly integrated markets (Gadenne et al. 2021). However, some studies find little evidence supporting paternalistic motivations for in-kind transfers, because cash recipients do not indulge in vices and consume equally nutritious foods. The choice between cash and in-kind transfers can also affect local economies differently. In-kind transfers tend to lower food prices, benefiting consumers, while cash transfers can increase prices, potentially reducing the net value of the

transfer. These effects are more pronounced in remote areas with less market competition (Cunha 2014).

**All EU countries have social transfer programs in place that aim to alleviate the negative welfare impact of economic shocks.**

**Some countries have also implemented in-kind transfers, such as food vouchers, to counteract rising food prices**.

**In June 2022, Romania's government introduced the Support for Romania program to address the rising energy and food costs through a series of measures, including distributing food vouchers (Tichete sociale pentru produse alimentare și mese calde).** These vouchers were initially available through December 2022; the program was later extended and is still active[7]. The program targeted vulnerable groups, including pensioners and disabled individuals with severe to moderate disabilities whose monthly net income was below a specified threshold, families with at least two dependent children or single-parent families with income below a set threshold, families receiving guaranteed minimum income, and homeless individuals, as regulated by current legal provisions.

**In Bulgaria, the monthly ceiling for voluntary food vouchers for employees—exempt from income tax and social security contributions—was more than doubled, rising from BGN 80 to BGN 200 per employee per month starting in 2022 as an anti-crisis measure**. This change has encouraged more employers to offer these vouchers as a fringe benefit. Additionally, amendments to the Corporate Tax Law (Article 209a), approved by the National Assembly, introduced electronic meal vouchers on January 1, 2024. To mitigate the effects of energy inflation, the Bulgarian government implemented a mix of tax relief and non-tax measures, including subsidies, VAT reductions and exemptions, and energy price caps (World Bank, 2024).

**Similarly, in Croatia, the government introduced price caps on electricity and gas in 2021 to address rising energy and food prices.** These efforts were expanded in 2023 to include reduced VAT on energy products, lower fuel excise duties, and increased social benefits for disadvantaged groups. To ensure domestic supply, an export ban on natural gas was also implemented. Although these interventions in Croatia were largely untargeted and incurred a significant fiscal cost (approximately 1.5 percent of GDP in 2023), they were effective in protecting household incomes. In 2025, the Ministry of Economy introduced a new decision on direct price control measures in retail trade, expanding the list of capped products from 30 to 70, covering staple foods and other essential goods. While Croatia extended the VAT cut on heating in 2025, there was no general

[7] https://mmuncii.ro/j33/index.php/ro/comunicare/comunicate-de-presa/7195-cp-sprijin-beneficiari-carduri-alimente-22022024

VAT reduction on food in 2024; however, targeted VAT reductions on certain basic food items were implemented in 2022 to help mitigate inflationary pressures.

**The effectiveness of social protection systems in bolstering household resilience in the face of rising food prices is significantly influenced by the indexation approaches used.** Indexation refers to the process of adjusting benefit levels or thresholds in response to changes in the cost of living or inflation. Systems that employ infrequent or irregular revisions to these thresholds or benefit levels are particularly vulnerable to the impacts of rising inflation. With such systems, the failure to update benefits regularly means that households may not receive timely adjustments to their assistance, exacerbating the financial strain caused by increasing food prices. Consequently, these households may struggle more to maintain their purchasing power and meet basic needs, underscoring the importance of regular and responsive indexation mechanisms to ensure that social protection remains effective in mitigating the adverse effects of inflation.

**In Poland, eligibility thresholds are irregularly updated, which in recent high-inflationary periods has contributed to the loss of eligibility of low-income working households for transfers and to the declining adequacy of benefits among beneficiaries.** Poland is among the 13 EU member states that periodically update their minimum income support, in contrast to the 10 member states that have automatic indexation systems in place to regularly account for changes in the cost of living. The income thresholds used to determine access to, as well as the level of benefits received under the main social assistance programs, are subject to review every three years to determine whether an update is warranted.[8] Subsequent to the assessment of the social intervention threshold, the government can freeze or adjust the income thresholds and rules determining allocations. Means-tested family benefits have been updated more irregularly than minimum income support, upon the issuance of a decree from the Council of Ministers, with the latest update made in 2016. For both, there are no mechanisms in place to account for periods of rapidly changing prices, which can occur both within the course of a year and between the three-year reviews. Holding the thresholds constant at these times will reduce both the share of households eligible for the scheme (particularly among low-income working households, who may see wages rise albeit at a pace lower than prices) and the real value of the financial support received by households, diminishing its adequacy. The irregular updating of thresholds, therefore, reduces the ability of the system to support household resilience at a time when the share of households in need of such support is rising (European Commission 2022a, 2022b; OECD 2022).

[8] The decision to update the income criteria is made by the government in consultation with social partners on the basis of the review conducted every three years of the social intervention threshold (*próg interwencji socjalnej*). The threshold is set by the Institute of Labor and Social Affairs (Instytut Pracy i Spraw Socjalnych), an independent research institute. The method of determining the threshold is established in the Regulation of the Act on Social Assistance, and the levels are subsequently used to inform government decisions regarding the income criteria for social assistance benefits. Family benefits are paid to families with children conditional on their new income being below a specific threshold.

**In Romania, most social benefits include legal indexation mechanisms, yet adjustments for inflation have not been applied consistently.** The Social Reference Indicator (Indicatorul Social de Referință - ISR) was introduced as a reference for calculating various benefits, but its value has not been updated systematically, undermining real benefit levels. Key programs tied to ISR include the Minimum Inclusion Income (Venitul Minim de Incluziune - VMI), both the inclusion and child-support components, the child-rearing allowance (whose minimum threshold is set relative to ISR), disability allowances for adults and children (calculated as a percentage of ISR based on disability severity), the monthly placement allowance, and the adoption accommodation and support allowances. Several labor-market benefits, such as unemployment benefits, the insertion bonus, subsidies for employers hiring at-risk youth, and incentives for employers of students, are also linked to ISR. Separately, certain benefits - like the universal child allowance - are directly indexed to inflation. However, others (for example, the heating aid and the HIV food allowance) lack automatic indexation and are adjusted only via annual government decisions, which has resulted in eroding their real value over time. Moreover, even for benefits with legally mandated indexation, implementation can be delayed or suspended by subsequent normative acts.

**In Bulgaria, the government implemented a reform effective June 1, 2023, aimed at expanding the reach and availability of social support for individuals**. This was achieved by raising the former Guaranteed Minimum Income (GMI) indicator to 30 percent of the relative poverty line. This adjustment had an impact on associated social programs, including the Monthly Social Allowance (MSA) and the heating allowance. Anticipated outcomes of these parametric adjustments include a more favorable indexation of benefits over time because these benefits are now connected to the changes in the relative poverty line. Consequently, the amounts change with the changes in median income (Robayo-Abril and Cabrera 2024).

**Croatia is working to improve the adequacy and transparency of social benefits through the Croatian Recovery and Resilience Plan.** This reform focuses on providing better support for vulnerable groups and aims to reduce inequalities. Key elements of the reform include consolidating existing benefits into a single, streamlined program to enhance coverage and fairness while minimizing administrative burdens. This initiative is part of the National Plan against Poverty and Social Exclusion for 2021–2027, which aims to lower the at-risk-of-poverty rate to below 15 percent and improve living conditions for those facing severe material deprivation. The reform will involve changes to the legal framework, including the newly adopted Social Welfare Act. By the end of 2024, the plan includes increasing the guaranteed minimum benefit, fully integrating it with other social benefits, enhancing evaluation and monitoring processes, and introducing indexation for future benefits.[9]

[9] https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/croatias-recovery-and-resilience-plan/croatias-recovery-and-resilience-supported-projects-reforms_en#increasing-the-adequacy-and-transparency-of-social-benefits.

# III. Methodology

## Data

**To evaluate the distributional consequences of higher food prices, this analysis draws on several data sources, including the most recent rounds of the Household Budget Surveys and the European Union Survey of Income and Living Conditions (EU-SILC).**

**First, the present study uses data from Household Budget Surveys (HBS), which measure household expenditures on goods and services, as well as providing information on income and certain demographic and socioeconomic characteristics.** These surveys provide detailed insights into household consumption patterns, which enable the assessment of changes in the overall consumer surplus stemming from higher food prices. Expenditure data in the HBS follow the classification of Classification of Individual Consumption According to Purpose (COICOP), developed by Eurostat, and allow us to correctly identify food-related spending components. Each EU member state conducts the HBS independently, leading to limited comparability across countries within the EU. These surveys are carried out based on a gentleman's agreement, meaning that the surveys' frequency, timing, content, and structure can differ between countries. Detailed survey methodological information is provided below.

**The Bulgaria Household Budget Survey (HBS) aims to collect reliable data on income, expenditures, consumption, and living standards of the population, tracking changes over time.** It uses ordinary households as its observational units, which can be single individuals or groups of people sharing a dwelling and budget, but not institutional households. [10] The sample is representative at the national and urban-rural levels, but not at more detailed geographic levels. Data collection covers a wide range of expenditure categories, including food.[11]

**The Romanian HBS aims to collect data on consumption expenditures, though household characteristics and, to some extent, income are also covered. The Romanian HBS's sampling strategy** is similar to that of the Bulgarian HBS, and they cover similar expenditure categories, including food.[12]

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[10] The Bulgaria HBS employs a two-stage cluster sampling method based on territorial units, selecting census enumeration areas in the first stage and households within those areas in the second. Sample sizes vary over the years, having peaked at 6,000 households and adjusting to 3,060 households since 2010, divided into three subsamples surveyed quarterly. The selection process has evolved from proportional to nonproportional to enhance accuracy in smaller regions. Households are chosen randomly and participate voluntarily, with replacements from the same cluster if necessary.

[11] https://www.nsi.bg/en/content/3218/household-income.

[12] The Romania uses a two-stage stratified sampling approach. In the first stage, 792 survey centers from the Population and Housing Census were selected. These centers were chosen using a stratified and balanced method based on county and residence area criteria, creating 88 layers. This selection formed the Multifunctional Sample of Territorial Areas (Master Sample EMZOT 2011), which has served as the sampling frame for subsequent household surveys. The EMZOT includes 450 urban and 342 rural survey centers across all counties and Bucharest Municipality. In the second stage, 9,504 permanent dwellings were systematically selected each quarter that were divided into three monthly waves of 3,168 dwellings each. These dwellings, treated as secondary

**The Croatia HBS, conducted every three years, gathers data on household spending, socioeconomic characteristics, and housing conditions.** Participants provided data through two methods: keeping a 14-day consumption diary for daily expenses on food, beverages, tobacco, cleaning products, and newspapers, and responding to interviews concerning other household expenditures. This survey helps answer questions about average spending on food, housing costs, and the prevalence of durable goods like dishwashers.[13]

**The Poland HBS plays an important role in the analysis of the living standards of the population**. It is the basic source of information on the outgoings, quantitative food consumption, receipts, and other aspects of the living conditions of particular groups of the population. The data obtained from the HBS allows for the analysis of the living conditions of the population and for the evaluation of the impact of various factors on the living conditions of the main population groups and their differentiation.[14]

**To obtain comparable cross-country estimates, we rely on the latest harmonized HBS from each country**.[15]

**Second, to assess the impact on internationally comparable income poverty rates and to model the potential mitigating role of government transfers, we use the most recent available EU-SILC data that includes information on household income and social transfers.** For most countries, this analysis relies on the 2020 EU-SILC (reflecting 2019 incomes) and the 2019 Household Budget Survey (HBS).[16] Although EU-SILC data up to 2021 (for 2020 incomes) were available at the time of research, we chose to use pre-COVID-19 data to avoid pandemic-related income distortions and data collection issues. For Poland, the latest available data was from the 2019 EU-SILC (reflecting 2018 incomes).

**The EU-SILC is a primary source of cross-national data on income, poverty, social exclusion, and living conditions within the EU.** It provides annual, harmonized microdata on income distribution and living conditions, which allows for comparative analysis across countries. The

sampling units, were chosen from each survey center, with 12 dwellings selected quarterly or 4 dwellings monthly. For more information, see:

https://insse.ro/cms/files/Rapoarte%20de%20calitate/ABF/HBS_ESQRS_A_RO_2020_0000_EN.pdf.

[13] https://dzs.gov.hr/in-focus/survey-researches/household-budget-survey/1788

[14] The sample selection method for the HBS involves a geographically stratified, two-stage sampling scheme with varying probabilities at each stage. In the first stage, primary sampling units (PSUs) are statistical regions or groups of regions, selected based on updated records from the National Census. The sampling frame tracks address characteristics and dwelling numbers, with the minimum number of addresses required varying by locality size, leading to a total of approximately 30,000 PSUs. The sample size was reduced over time, being 30,432 dwellings yearly in 2022. Two subsamples were used in 2022: one from 2020 and another from 2021, each consisting of 634 PSUs (15,216 dwellings yearly). Allocation of PSUs is based on the square root method to minimize relative errors and ensure data publication for smaller voivodships. Strata are defined by agricultural activity and wealth, with oversampling in specific strata to enhance precision.

[15] We use the ECAPOV consumption aggregate, which follows the World Bank's definition and harmonization of the consumption aggregate. The consumption aggregate is the nominal household consumption expenditure divided by the household size, the temporal consumer price index (CPI), and the spatial CPI, whenever available.

[16] An exception is Croatia, which uses the 2017 Household Budget Survey (HBS), and Poland, which uses the 2019 EU-SILC data.

survey covers topics such as household income, housing, labor status, education, and health, helping policy makers monitor social policies and design interventions to address inequality and social exclusion across the region. According to the EU-SILC Framework Regulation, data must be based on a nationally representative probability sample of the population residing in private households within the country, regardless of language, nationality, or legal residence status. All private households and individuals ages 16 and over living in these households are eligible for participation. However, individuals living in collective households or institutions are generally excluded from the target population. The EU-SILC employs a two-stage stratified sampling method. In the first stage, Census enumeration units serve as the primary sampling units. In the second stage, the sampling units are dwellings. The initial stage involves stratification, which is organized into 88 distinct strata that include both urban and rural regions, as well as counties.[17]

**In the EU-SILC survey, individuals considered income poor can be identified using the international poverty line of USD 6.85 per day (2017 PPP), allowing for cross-country comparability.** The World Bank uses this higher poverty line to measure and monitor international poverty in countries with a low incidence of extreme poverty. This line is derived as the median value of the national poverty lines of upper-middle income countries.

**Given this paper's objective—to assess the role of social assistance in mitigating the distributional impacts of rising food inflation in four EU countries—we rely on household survey data to identify beneficiaries and simulate the effects of changes in social assistance program design.** While administrative data can provide more precise program-specific information, it is often unavailable across countries or lacks the income and demographic detail necessary for distributional analysis. In contrast, survey data—particularly from the EU-SILC—offer harmonized, cross-country comparable microdata that enable consistent assessment of the incidence and adequacy of social transfers along the income distribution.

**We adopt the direct identification method, classifying beneficiaries based on self-reported receipt of social exclusion benefits in EU-SILC.** In this survey, means-tested non-contributory programs are captured under variable HY063 ("means-tested, non-contributory social exclusion not elsewhere classified")[18]. This refers to benefits in cash or kind (except health care) that are specifically intended to combat social exclusion, but are not covered by any other specific social protection function. This method is well-suited for cross-country comparative analysis and

[17] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:EU_statistics_on_income_and_living_conditions_(EU-SILC)_methodology_%E2%80%93_sampling&oldid=576166#Sampling_frame

[18] These include means-tested social assistance (GMI), heating allowances, and other benefits aiming to support low-income families with children.

leverages the EU-SILC's harmonized design to examine distributional outcomes consistently across countries.

**While practical and widely used, this approach does have some limitations.** Respondents often do not provide enough detail to clearly distinguish between different types of non-contributory means-tested programs—such as minimum income schemes or heating allowances—making precise attribution of benefits to specific schemes difficult. Moreover, reported benefit amounts can differ from administrative data, mainly due to systematic underreporting. This is particularly common among lower-income households, who may face challenges in recalling benefit details, may misclassify income sources, or may underreport due to stigma or confusion (Bargain et al., 2012; Figari et al., 2012; Lynn et al., 2004; Bollinger & Tasseva, 2023; Meyer, 2019). However, EU countries have made significant progress in incorporating administrative data and registers into traditional surveys, such as SILC, to mitigate some of the limitations of traditional survey data, and minimize the differences between survey and administrative records estimates (Nguyen et al, 2025). These limitations may affect the accuracy of estimates of social transfers' generosity and program targeting. Nonetheless, the EU-SILC remains a critical source for analyzing the distributional impact of social transfers, particularly in a cross-country context where administrative data are not consistently available or comparable. Our analysis recognizes these challenges and interprets results with due caution, while highlighting the comparative insights uniquely enabled by survey data.

**The social exclusion benefits captured in EU-SILC primarily reflect core poverty-targeted, means-tested programs—commonly referred to as guaranteed minimum income schemes-but also other schemes.** Since they also include smaller or temporary benefits, there are usually discrepancies between the number of beneficiaries identified in the survey and those recorded in administrative data, which typically report program-specific figures. These inconsistencies have implications for estimating fiscal costs: simulations based on EU-SILC data may over- or underestimate the number of social assistance beneficiaries, potentially inflating or deflating projected program expenditures unless carefully calibrated with administrative data.

**We focus specifically on social assistance because, among the broader set of social protection instruments—including social insurance, labor market programs, and universal transfers—it is the principal mechanism designed to protect low-income households from economic shocks such as food inflation**. Social assistance includes targeted interventions such as cash transfers, food vouchers, and other forms of direct support for those with limited means. These programs play a critical role during periods of economic instability, offering timely relief to the most vulnerable populations. Their targeted nature allows policymakers to direct limited resources to those most affected by rising food prices, ensuring a more effective response to the challenges posed by the current cost-of-living crisis.

**The cumulative food inflation from 2019 to 2023 is calculated using CPI data from Eurostat.**

## Conceptual Framework

**This research paper uses a framework that simulates the welfare impacts of rising food prices using microsimulations and selected household price elasticities and expenditure shares.** Deaton (1989) initially developed a framework for analyzing the welfare impacts of price shocks. Adapting this framework to Brazil, Ferreira et al. (2012) document how rising food prices disproportionately impact poorer households, increasing poverty and inequality. Their findings show the vulnerability of low-income households, who spend a significant portion of their income on food, making them more vulnerable to price fluctuations.

**This analysis examines the distributional welfare implications of rising food prices and potential government response measures**. The paper assesses changes in the overall consumer surplus in response to food price increases (Deaton 1989). As such, the results of these simulations can only be interpreted as short-run marginal welfare impacts (Ferreira et al. 2012). Recognizing that households can substitute food items in response to price fluctuations, we consider a price elasticity of food demand (Freund and Wallich 1996). The distributional impact of the change in food prices can be obtained by examining the implied changes in the consumer surplus, which can be approximated as follows:

$$\Delta CS/E = \omega(\Delta p/p)(1 + \varepsilon\,(\Delta p/2p)),$$[19]

where $\Delta CS$ is the change in the consumer surplus, $E$ is the household's expenditure, $\omega$ is the initial expenditure share in food items before price changes, $p$ is the food price, and $\varepsilon$ is the food price elasticity of demand. These are also known as purchasing power parity (PPP) losses.

**Notice that when ε is zero, this estimate of the direct welfare impact implicitly presumes that households do not substitute away from food products, so it should be interpreted as either an estimate of the short-run impact (that is, before households can adjust food consumption for other goods) or as an upper bound of the long-run estimate.** In Appendix Table A.1, we analyze alternative scenarios (under different ε) to test the sensitivity of the results to this parameter. Specifically, we make different assumptions on how elastic the demand for food is to price changes based on the available literature, and find that the results are not sensitive to the chosen parameter. The ability of households to substitute for other goods, thus, will be captured by different price elasticities, which will vary across the income distribution (as the poor usually have less ability to substitute).

[19] Deaton (1989) and Freund and Wallich (1996).

**We implement this approach using the HBS and the EU-SILC survey rounds available for the EU countries Bulgaria, Croatia, Poland, and Romania.** First, we estimate the food shares using the country's HBSs by decile. We impute them for each household in the EU-SILC by assuming a one-to-one relationship between consumption and income deciles. To do so, we assume the same food share across households in the same decile. Then, we simulate the change in consumer surplus for each household in the EU-SILC using (1) the estimated decile-dependent shares[20], (2) a range of price elasticities (decile dependent), and (3) a potential range of food prices from the Eurostat Harmonized Indices of Consumer Prices (HICP) over the period 2019–24. Finally, we use the PPP losses to estimate one counterfactual income distribution for the observed change in food prices and another for the observed change in energy prices. Since consumption patterns may also vary within each decile, we also conduct robustness tests using consumption centiles.

**In our microsimulations, we also evaluate the potential impact of income-support initiatives on vulnerable populations facing rising food prices.** Social safety nets play a crucial role in shielding households from various risks. Simulations can be further refined to accommodate government transfers received by households. We thus broaden the simulations in order to assess the distributional effect of increasing government benefits aimed at helping households cope with the impact of rising food prices (Ferreira et al. 2012). To this end, these simulations incorporate this income effect into the calculation of the change in consumer surplus by increasing social assistance benefits. This income effect can be calculated by adding the percentage change in public transfers to the change in consumer surplus. As such, the welfare impact plus the income effect is $\omega(\Delta p/p)(1+\varepsilon\,(\Delta p/2p))+\Delta\tau/\tau$, where $\tau$ is the transfer component (Ferreira et al. 2012). We then reestimate key welfare indicators, such as the poverty headcount, poverty gap, and inequality measures.

**Key Assumptions**. In assessing the cumulative welfare effect of higher food prices as well as government transfers, the analysis assumes that the percentage change in welfare for each decile aligns equally between the HBS and the SILC data sets (Ferreira et al. 2012). Furthermore, the analysis considers varying degrees of hypothetical food price increases, ranging from 20 to 40 percent, that approximate the observed price increases in the analyzed countries from 2019 to 2023, alongside different elasticities contingent upon household welfare. Table 1 outlines the data sources and simulation parameters, including food price increases of 20, 30, and 40 percent, and elasticity assumptions across income deciles used in the simulations.

[20] Robustness test for different shares using centiles, instead of deciles, are presented in the Annex.

**Table 1 Simulation Parameters and Data Sources**

| Concept | Bulgaria | Croatia | Poland | Romania |
|---|---|---|---|---|
| HBS | 2019 | 2017 | 2019 | 2019 |
| EU-SILC | 2020 | 2020 | 2019 | 2020 |
| Food price increase | 20%, 30%, and 40% | | | |
| Elasticity | Elasticity zero for deciles 1–3; elasticity -0.25 for the rest[21] | | | |

*Source:* Own elaboration.

**Some caveats apply.**

**First, the microsimulations focus on households primarily as consumers, which means they are adversely affected by the rising prices of the food they consume; it does not explicitly account for households' being both producers and consumers of food**. It is important to note that some households may be food producers: for these producer-consumers, higher food prices could result in increased income from their agricultural outputs, potentially offsetting some of the negative effects of higher food prices on their consumption. Thus, the financial impact of rising food prices could be mitigated or even reversed for these households, as they benefit from the higher prices they receive for their produce. Identifying the sources of income for household food producers in the EU-SILC data presents challenges for several reasons. First, the data only provides information on the individual's employment sector, such as agriculture, and their job type, such as self-employed, without explicitly indicating whether an individual is a farmer. Second, while we can observe a household's total income, the data set does not include details on input costs or sales, making it difficult to account for the effects of price shocks. For these reasons, the simulations only account for the impact on consumption and do not consider households as food producers. As a result, the simulations offer a partial view of the overall impact of food price changes, omitting the potential advantages that some households could experience through their production activities. Undertaking research with more comprehensive data could provide a fuller picture by incorporating both consumption and production aspects, yielding a more nuanced understanding of the economic effects of rising food prices.

**Second, given the data limitations, it is not possible to take into account within-country spatial variation in prices, which could be an additional source of distributional impacts.** Unfortunately, there are no subnational Consumer Price Indexes (CPIs) in the four EU countries

[21] Robustess tests for different price elasticities are presented in the Annex.

considered. Subnational data, especially for food CPIs, would be valuable for a more granular understanding of regional disparities and convergence in economic conditions.

**Finally, the simulation does not incorporate indirect and general equilibrium effects.** Specifically, it focuses only on the direct effects and abstracts from the indirect effects, behavioral responses, and general equilibrium effects (Ferreira et al. 2012). This means that while the present research addresses the immediate and observable impacts, it does not account for the secondary or cascading effects that may arise as a result of these direct impacts. For instance, it does not explore how changes in food prices might trigger significant shifts in consumer behavior or affect the prices of other goods, which could further influence overall economic conditions. It should also be noted that it does not consider holistic income shifts that could help households cope with the impact of rising food prices. For policymakers, addressing the direct effects of rising food prices is crucial for designing effective short-term relief measures. Immediate assistance, such as cash subsidies or food aid programs, can be implemented based on direct effects, helping to alleviate the burden on affected households quickly. Indirect and general equilibrium effects, by contrast, involve more complex interactions within the economy, such as changes in labor markets, shifts in production, and broader economic adjustments. While important, these effects are of secondary importance compared to those if energy inflation[22], and are harder to isolate and quantify in the short term, making it practical to first address direct effects before exploring more complex dynamics.

# IV. Results

## Distributional Impacts of Rising Food Prices

**Food inflation has likely pushed a large share of the vulnerable into poverty, and the impact of rising food prices disproportionately affects the less well-off.** According to our microsimulation findings, the direct consequences of food price inflation are welfare-reducing across all four countries. For example, a hypothetical food price hike of approximately 20 percent, consistent with the observed price changes between 2019 and 2023, is anticipated to result in a short-term increase in poverty rates—measured at the upper-middle-income poverty line of USD 6.85 per day (2017 PPP)—ranging from 0.3 to 1.1 p.p. in Poland and Romania, respectively (figure 6, panel a). These poverty changes are robust to variations in the assumed price elasticities, as shown in Appendix Table A.1. The increases in poverty rates become even more pronounced with hypothetical food price increases of 30 and 40 percent. In the former scenario, the increases in the poverty rate range from 0.5 p.p. in Poland to 1.9 p.p. in Romania. In the latter scenario, the

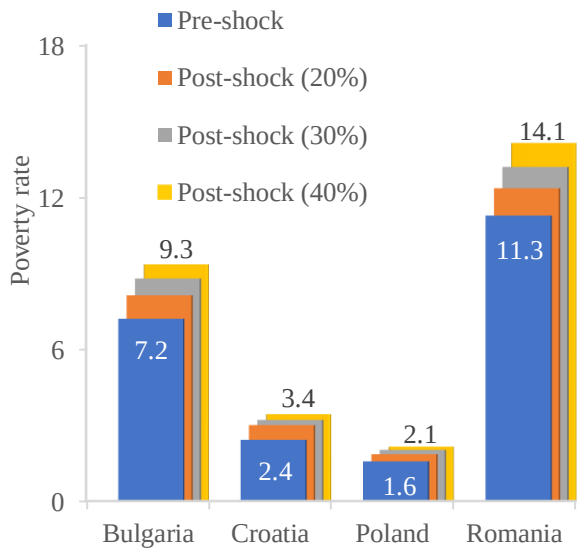
[22] The indirect effects of energy inflation—i.e., the transmission of higher energy prices through other goods and services—are generally larger and more pervasive than those of food inflation. In contrast, In contrast, food inflation is largely direct, with limited second-round effects because food is consumed rather than used as an intermediate input in most production processes (except in food industries), and wages or contracts are not typically indexed to food prices alone.

increases are even greater, being 0.6 p.p. and 2.9 p.p. for the two countries, respectively. Since these are counterfactual simulations, they isolate the effect of food price increases alone, holding all else constant. In contrast, actual poverty trends between 2019 and 2022—using the same poverty line—showed declines in Croatia (-2.2 p.p.), Bulgaria (-2.6 p.p.), and Romania (-3.6 p.p.), while Poland saw a modest increase of 0.5 p.p. This divergence suggests that other factors, such as rising labor incomes or additional government support, may have helped offset the poverty-increasing effects of food inflation during this period.

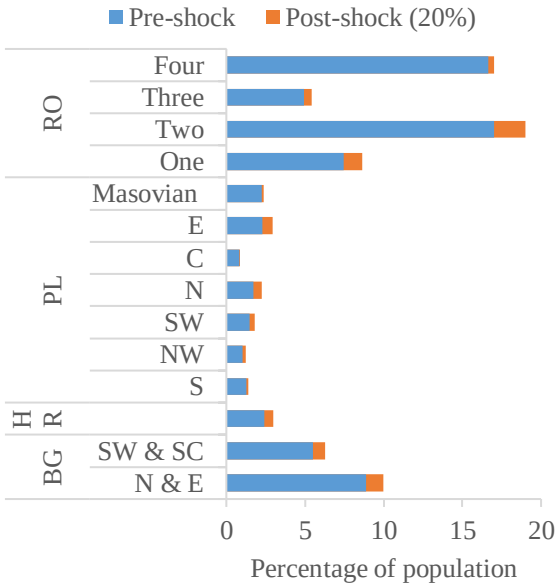
**Certain areas of these countries are expected to experience more significant impacts from rising food prices.** In Poland, Croatia, and Romania, rural households are expected to be somewhat more exposed to these effects compared to densely populated urban as well as semi-urban areas. However, it is crucial to acknowledge that these simulations do not consider households as food producers, which may lead to the overestimation of impacts in rural areas, where consumption of self-produced food may shield households engaged in the agricultural sector. The impact of higher food prices also varies substantially across regions. For example, the increase in poverty is notably more pronounced in Northern Poland and Nord-Vest and Centru Romania, in relative terms, compared to other parts of the countries (figure 6, panel b).

## Figure 6. Food Inflation Could Lead to Significant Increases in Poverty and Income Inequality in the Absence of Social Protection Measures

*a.* Simulated Changes in Poverty due to Food Inflation, USD 6.85 Poverty Line (2017 PPP)



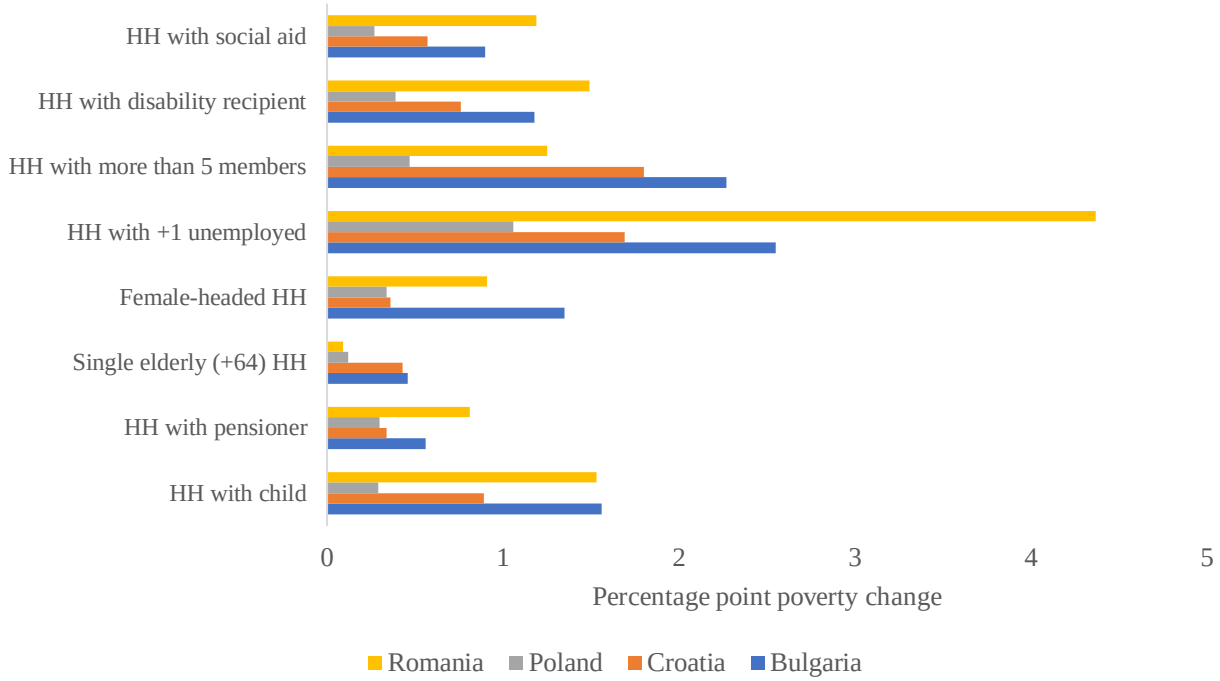

*b.* Simulated Changes in Poverty due to Food Inflation by Region




*Source*: Own elaboration based on data from the most recent surveys, as in Table 1.
*Note*: "Pre-shock" refers to poverty rates when no food price increase has taken place, and "Post-shock" refers to the simulated increase in poverty rates after food price increases of 20%, 30%, and 40%. The figure does not assume government support. RO One is Nord-Vest and Centru, RO Two is Nord-Est and Sud-Est, RO Three is Sud-Muntenia and Bucaresti-Ilfov, and RO Four is Sud-Vest and Vest.

**The simulations show noticeable differences in how food price shocks affect poverty rates across various sociodemographic groups in Bulgaria, Croatia, Poland, and Romania.** Households with unemployed members see the most dramatic increases, particularly in Romania (4.4 p.p.) and Bulgaria (2.5 p.p.). Households with children are also hit especially hard, with Romania experiencing a rise of 1.5 p.p. Larger households (with over five members) are also significantly affected, with increases of 2.3 p.p. in Bulgaria and 1.8 p.p. in Croatia (figure 7). The findings thus underscore the need for targeted policies to protect these vulnerable groups from the adverse effects of food price shocks.

### Figure 7. Food Inflation Disproportionately Affects Households with Unemployed Members, Children, or Larger Family Sizes



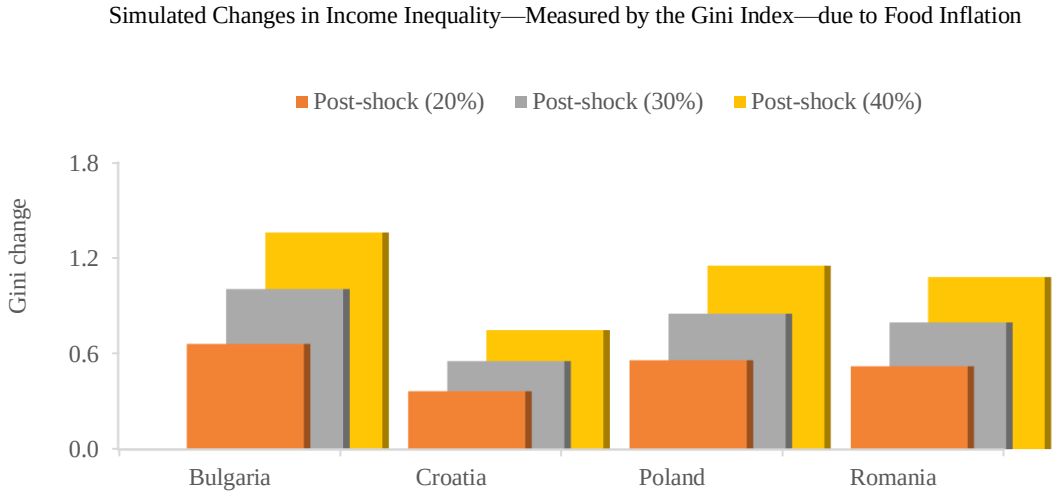

*Source*: Own elaboration based on the most recent surveys, as in Table 1.
*Note*: The figure shows the simulated welfare changes after a 20 percent food price increase using the USD 6.85 per day poverty rate (2017 PPP).

**The varying impacts along the income distribution could contribute to increased income inequality.** When we examine the potential consequences of a 20 percent increase in food prices, we anticipate a short-term rise in the Gini coefficient ranging from 0.66 to 0.36 Gini points in Bulgaria and Croatia, respectively (figure 8).[23] Income inequality increases even further with 30

[23] The Gini coefficient is a statistical measure of inequality that ranges from 0 to 1, where higher values represent a higher degree of equality.

percent and 40 percent food price increases. In the former scenario, the Gini coefficient increases by about 1 in Bulgaria and 0.5 in Croatia. In the latter scenario, these figures rise by approximately 1.4 in the former and 0.7 in the latter.

**Figure 8. Rising Food Prices Could Have a Significant Impact on Income Inequality in the Absence of Social Protection Measures**



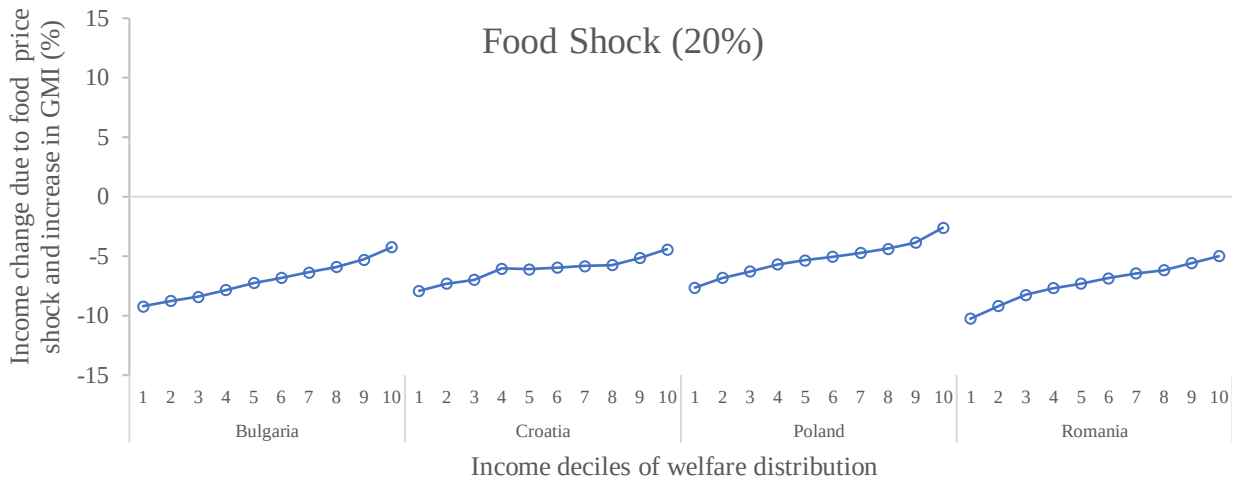

*Source*: Own elaboration based on data from the most recent surveys, as in Table 1.
*Note*: Welfare is estimated in U.S. dollars using 2017 PPPs in all countries. "Post-shock" refers to simulated increases in poverty rates after food price increases of 20%, 30%, and 40%. The figure does not assume government support.

**The increase in income inequality results from an asymmetric impact on welfare across the entire income distribution.** The rise in food prices is simulated to have adverse effects on the well-being of individuals across all four countries, leading to a decline in purchasing power. The estimated price incidence curve depicts the percentage reduction in income for each percentile of the income distribution (figure 9).[24] On average, the effects on welfare are significant, ranging from a 4.4 p.p. decrease in Poland to a 7.5 p.p. decrease in Romania. Furthermore, these impacts exhibit a regressive pattern in all countries, with more substantial losses observed among lower-income households. Specifically, welfare reductions range from approximately 10.3 to 7.7 p.p. in the poorest decile to a reduction of about 5 to 2.6 p.p. in the top decile. As previously discussed, these findings primarily result from lower-income households allocating a larger share of their expenses to food and having limited capacity to substitute these essential items with other goods. Additional price scenarios are presented in the annex. Moreover, in Appendix Figure A.3, we simulate the effect along centiles of the income distribution, and find that the effect is concentrated among the bottom (below the 5$^{th}$ percentile). Consistent with the findings across the distribution,

[24] The price change incidence curve (Ferreira et al. 2012) is equivalent to the growth incidence curve developed by Ravallion and Chen (2003).

the estimated poverty impacts remain similar in magnitude when the analysis is conducted using centiles instead of deciles.

**Figure 9 . Household Income Is Simulated to Fall along the Welfare Distribution**




*Source*: Own elaboration based on the data from the most recent surveys, as in Table 1.
*Note*: The figure presents price incidence curves, that is, the median percentage reduction in income at each decile of the income distribution. Welfare is estimated in U.S. dollars using 2017 PPP. "Food Shock (20%)" refers to the simulated impact after a food price increase of 20 percent.

## Policy Simulations

**The effectiveness of a social transfer program hinges on three key factors: its coverage among the poor, the adequacy of the support provided, and its ability to respond to economic shocks.** In the EU, last-resort social assistance schemes are generally well-targeted, focusing their support on lower-income households. However, their coverage and generosity remain limited.[25] According to EU-SILC data, coverage among the poorest households (first income decile) ranges from 8.6 percent in Poland to 30.5 percent in Bulgaria. In terms of generosity, the share of income provided through social transfers in the first decile varies from around 1.6 percent in Poland to 4.4 percent in Croatia. These figures indicate that although social assistance is concentrated among the poorest, the level of support remains modest in most countries.

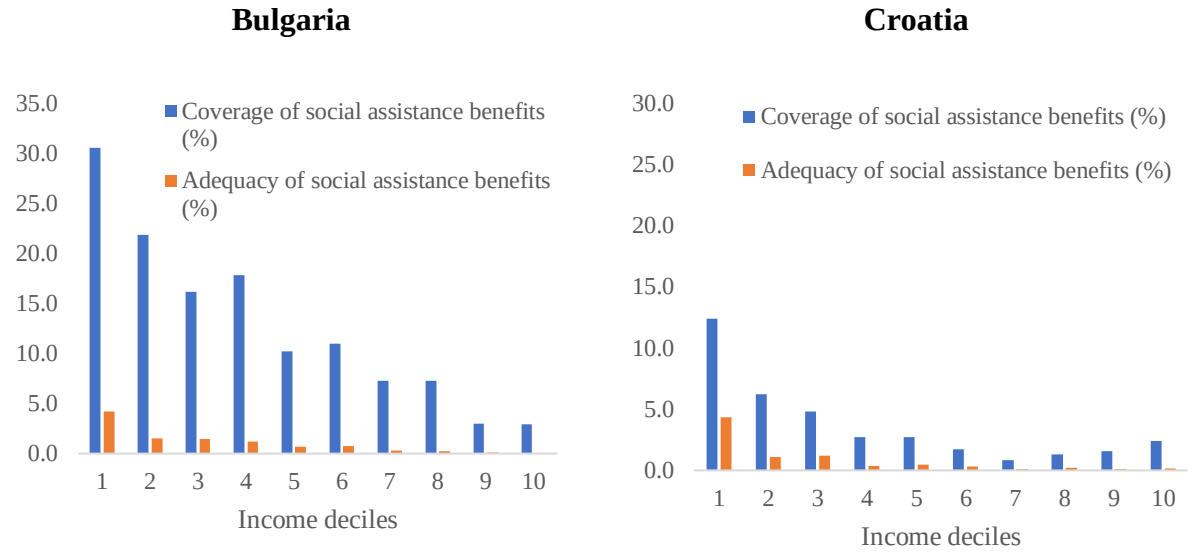
**A closer look at the distributional profile of social assistance in Bulgaria, Croatia, Poland, and Romania confirms that, in the baseline year, programs were highly progressive, with income support concentrated in lower-income deciles.** Coverage at the bottom of the income distribution was particularly pronounced in Bulgaria and Croatia, where approximately 30.5 percent and 12.4 percent of first-decile households receive assistance, respectively. Romania and

[25] Noncontributory means-tested social exclusion transfers are captured in the EU-SILC by the variable *hy063*.

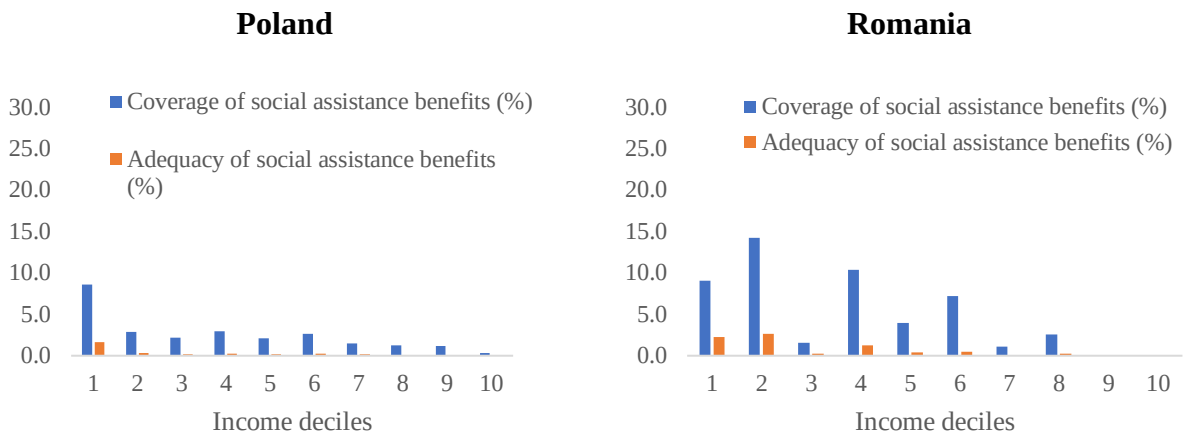
Poland registered lower coverage rates—9.1 and 8.6 percent in the bottom decile—reflecting more limited program reach. In all four countries, the share of beneficiaries dropped off sharply beyond the first income decile, underscoring a strong emphasis on poverty targeting (figure 10).. Additionally, analysis by income decile (Appendix Figure A.4) reveals that although the majority of benefits are directed to the poor, non-negligible shares are also received by middle-income households, raising questions about horizontal efficiency and scope for improved targeting.

**Ensuring the adequacy of social assistance transfers[26] remains a challenge.** Among households in the lowest decile, social assistance adequacy was highest in Croatia (4.4 percent), followed closely by Bulgaria (4.2 percent). In contrast, Romania and Poland allocated more modest benefit amounts, with income shares of 2.3 and 1.6 percent, respectively (figure 10). These figures highlight that social assistance provided relatively limited income support in most cases.

**Figure 10. Coverage and Generosity of Social Assistance Varies along the Income Distribution and across Countries, Baseline**



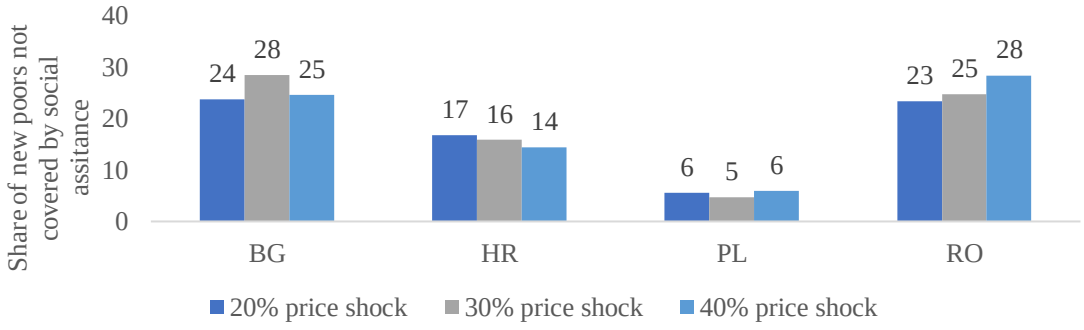

[26] Benefit generosity is defined as the total amount of transfers received by all beneficiaries in a population group, expressed as a share of the total income of that group.




*Source*: Own elaboration based on data from 2019 EU-SILC (survey year) for Poland and 2020 EU-SILC (survey year) for the rest. "Social assistance" includes those benefits included in variable "social assistance not elsewhere classified", which includes benefits in cash or kind (except health care) specifically intended to combat social exclusion where they are not covered by one of the other functions. These estimates do not capture the performance of specific GMI programs or recent social protection reforms implemented in the countries after 2020.

**Our simulation of food price increases shows that a significant share of those pushed into poverty are not covered by social assistance (figure 11).** In Romania, for example, between 23 and 28 percent of the newly poor, depending on the price increase scenario, would remain outside the reach of existing social assistance programs. Similarly, Bulgaria would see between 24 and 28 percent of its new poor uncovered, while Croatia and Poland would experience somewhat lower but still concerning gaps. This demonstrates the need for an expansion of social assistance programs to ensure vulnerable households are not left behind during economic shocks, especially as food prices surge. Failing to include these new individuals below the poverty line could exacerbate poverty and inequality, increasing the long-term social and economic consequences for these countries.

**Figure 11. Shares of New Poor (USD 6.85 per Day, 2017 PPP) Not Covered by Existing Social Assistance Schemes under 20%, 30%, and 40% Price Scenarios**




*Source*: Simulations based on data from the most recent surveys, as in Table 1.
*Note*: The figure shows the simulated shares after the food price increases under the three different scenarios. "Food Shock (x%)" refers to the impact after a 20, 30, or 40% food price increase.

**Therefore, the policy approach being modeled aims to provide temporary, targeted cash assistance to those affected by food insecurity and low incomes. It leverages existing well-targeted programs to reduce the administrative costs associated with creating new benefits.** The strategy is based on the evidence that current social transfers are well-targeted but limited in their level of support or generosity.

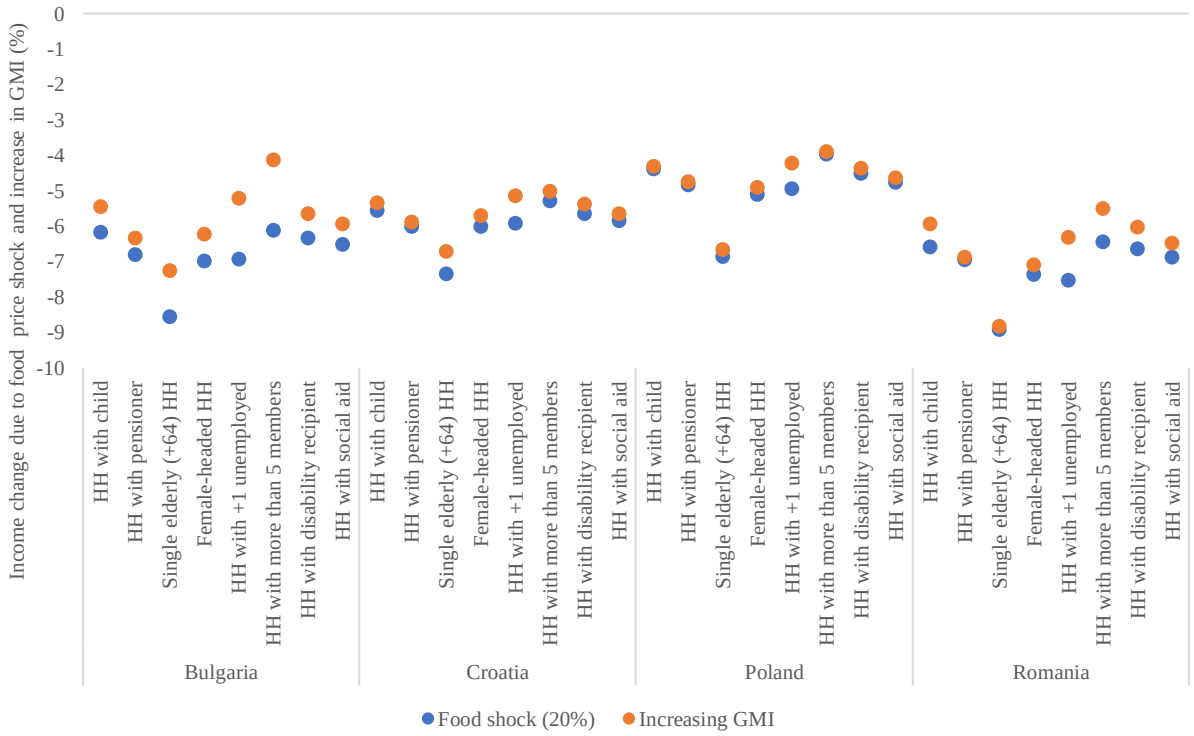
**Policy simulations show that the adverse effects of higher food prices on the extreme poor can be partially mitigated by expanding existing means-tested transfers.** For instance, increasing by 50 percent the benefit size of noncontributory means-tested social-exclusion transfers, keeping the target population the same, serves as a coping measure to mitigate the income reduction experienced by the less well-off (figure 12). However, because these transfers predominantly target individuals with lower incomes, most of the mitigating impact occurs within the first decile of income distribution in most of the countries under study, with limited benefits observed in other income groups. In Croatia, we find the largest change in the first decile, which can be attributed to the larger baseline generosity of social assistance among the four countries (figure 10). Many of the near or new poor would not be covered by these programs; the proportion of vulnerable individuals who would become poor and who would not benefit from non-contributory means-tested social-exclusion transfers varies from approximately 6 percent in Poland to around 28 percent in Romania, with a 20 percent rise in food prices. Increasing benefits for existing beneficiaries would effectively bolster their income, but would leave a significant portion of the population without protection. Expanding coverage to assist the newly impoverished could effectively contain the rise in poverty rates. However, it is not always simple to expand coverage when dealing with unexpected shocks, and doing so may also contribute to increased inequality among those in poverty. Simulation results for different food price shock scenarios (30 percent and 40 percent) are presented in the Annex, Figure A.2.

**Figure 12. Microsimulation Results: Expanding Social Assistance Could Partially Mitigate the Adverse Effects of Rising Food Prices on the Extreme Poor**

*Source*: Simulations based on data from the most recent surveys, as in Table 1.
*Note*: Welfare is estimated in USD using 2017 PPPs. The figure shows the simulated welfare percentage changes after the food price increases, using incidence curves to represent the percentage reduction in income at each decile of the income distribution. "Food Shock (20%)" refers to the simulated impact after a 20% food price increase, while "Increasing GMI" refers to the impact after increasing GMI by 50%.

**The impact of means-tested transfers varies when examining vulnerable subgroups across the countries under study.** Running the same simulation with a 50 percent increase in benefits for noncontributory social-exclusion transfers while holding the coverage of the programs constant yields results indicating that income losses for certain subgroups would be partially mitigated. For instance, in Bulgaria, households with unemployed members or with more than five members would see their income losses decrease by 1.7 and 2 p.p., respectively. In Croatia, households with unemployed members would see a reduction of 0.8 p.p., and in Poland, the same group would experience a decrease of 0.7 p.p. In Romania, households with unemployed members or with more than five members would experience reductions of 1.2 and 0.9 p.p., respectively (figure 13). These findings illustrate that the benefits of transfers are concentrated in households with unemployed members or with over five members. The impact is more limited for the rest of the household types.

**Figure 13. Microsimulation Results: Expanding Social Assistance Could Partially Mitigate the Adverse Effects of Rising Food Prices on Vulnerable Subgroups**




*Source*: Simulations based on data from the most recent surveys, as in Table 1.
*Note*: Welfare is estimated in USD using 2017 PPPs. The figure shows the simulated welfare percentage changes after the food price increases. "Food Shock (20%)" refers to the simulated impact after a 20% food price increase, while "Increasing GMI" refers to the impact after increasing GMI by 50%.

**Expanding social assistance to mitigate the distributional impacts of food price inflation presents important trade-offs for policymakers**. While simulations show that increasing the adequacy of last-resort programs can substantially reduce income losses among the bottom decile, these gains come with fiscal implications. Scaling up benefits, even modestly, can require a non-negligible share of public resources, particularly in countries where social protection spending is already constrained. For instance, depending on the simulated scenario, expanding social assistance could cost between 0.04 and 0.08 percent of 2019 GDP-PPP in constant prices across the four countries.[27] Policymakers must therefore weigh the benefits of immediate poverty reduction against the sustainability of increased fiscal commitments, especially in contexts of limited budgetary space and competing priorities. Careful design, improved targeting, and gradual scaling could help balance these considerations while enhancing the responsiveness and equity of safety nets.

[27] As the caveats of the fiscal estimates were discussed in Section II, we present ranges here to reflect this uncertainty.

# V. Conclusions and Policy Insights

**Amid the post-pandemic economic recovery in 2021, the surge in food prices became a significant concern, particularly for households at the lower end of the income spectrum, who had fewer resources to absorb these shocks.** Inflation has shown a marked increase, with consumer prices in the EU rising by about 23.3 percent between February 2021 and February 2025, according to Eurostat's HICP. This increase was primarily driven by food price inflation, which surged by approximately 33 percent during the same period. In the four countries analyzed in this paper—Bulgaria, Croatia, Poland, and Romania—the inflationary trend was even more pronounced. Overall price indices rose between 30.4 percent in Croatia and 37.9 percent in Romania, with prices for food and nonalcoholic beverages increasing by more than 43 percent across these countries. The post-pandemic surge in food prices poses significant risks, potentially exacerbating poverty and undermining food security. This paper examines the distributional effects of rising food prices on household income and living conditions in these countries, as well as the implications of government response measures. Households' vulnerability to rising prices hinges not only on the extent of price increases but also on households' income and consumption patterns. Low-income households allocate a larger portion of their spending to food, making them particularly susceptible to price hikes. For instance, in Romania, the poorest decile allocates approximately 51 percent of its expenditure to food, while in Poland, it is around 38 percent. In contrast, the wealthiest deciles in each country spend only about 25 and 13 percent of their overall expenditure on food items, respectively. Consequently, rising food prices can lead to more significant welfare losses for low-income individuals, rendering them highly vulnerable to future economic shocks of this type.

**Many households, particularly those with lower incomes, struggle to cope with abrupt price fluctuations and unforeseen expenses.** A significant proportion of individuals in countries like Romania, Croatia, and Poland have reported that they are unable to manage unexpected financial burdens. This challenge is further exacerbated by the fact that despite implementing various coping strategies, such as reducing expenditures and altering purchasing behavior, a considerable number of households still find it difficult to make ends meet. This situation has led to increased difficulties in low-income households accessing proper nutrition. In some countries, the inability to afford a proper meal every other day has risen, notably in Croatia, Poland, and Romania. Vulnerable households, particularly those with lower incomes, have found it increasingly challenging to secure adequate nutrition, highlighting the potential distributional impact of rising food inflation on household income and living conditions.

**The analysis evaluates the distributional welfare implications of rising food prices through simulations, focusing on households primarily as consumers.** These simulations reveal that higher food prices have a short-term adverse impact on welfare across all four countries analyzed—Bulgaria, Croatia, Poland, and Romania. Poverty rates increase significantly among certain vulnerable groups. Households with unemployed members experience the most dramatic rises, particularly in Romania (4.4 percentage points) and Bulgaria (2.5 percentage points).

Households with children are also severely affected, with poverty rates rising by 1.5 percentage points in Romania. Larger households (with over five members) face notable increases as well, including 2.3 percentage points in Bulgaria and 1.8 percentage points in Croatia. Moreover, a 20 percent rise in food prices is expected to exacerbate income inequality, as reflected in short-term increases in the Gini index across all four countries. These findings highlight the urgent need for targeted policies to mitigate the adverse effects of food price shocks on the most vulnerable groups.

**In summary, rising food prices pose a significant challenge to low-income households in the countries analyzed**. This paper underscores the importance of targeted government interventions to alleviate the negative impact on vulnerable households and emphasizes the need for comprehensive and well-targeted measures that consider both short-term and long-term implications.

**How can effective mitigation measures be designed to protect the most vulnerable?**

**Effective social safety nets are essential for shielding low-income households from the adverse effects of food inflation, particularly in the short term.** Our policy simulations indicate that increasing the benefit levels of well-targeted social assistance programs can effectively mitigate income losses among lower-income groups. Programs such as food vouchers or cash transfers, which directly address immediate needs, tend to outperform universal measures by channeling resources to those who need them most. When designing such interventions, fiscal constraints must be considered to ensure cost-efficiency and adequacy of support. Targeted measures not only alleviate fiscal pressure but also deliver substantial assistance to the most vulnerable populations. By focusing on these groups and maintaining fiscal discipline, governments can address the negative effects of rising food prices without overextending budgets.

**The effectiveness of policy measures also hinges on the ability of social protection systems and tax structures to adjust to inflation**. Expanding coverage and regularly assessing the need for updates to thresholds and benefits levels in inflationary periods may be necessary to provide adequate protection to all vulnerable individuals impacted by rising food prices. Social protection systems that update benefit levels or eligibility thresholds infrequently often fail to provide timely support during periods of rapid inflation, leaving affected households without adequate assistance. Similarly, tax systems that are not indexed to inflation may unintentionally increase the tax burden as nominal incomes rise, reducing households' real purchasing power. The absence of regular adjustments in social protection benefits and tax system parameters exacerbates the impact of inflation, underscoring the importance of responsive indexation to protect households' purchasing power and ensure access to essential needs. While some countries have recently implemented commendable reforms in their social protection systems, there remains significant scope for improvement. By adopting inflation-responsive measures in both social protection and taxation, governments can more effectively safeguard households against the financial pressures of rising food prices, while ensuring that support reaches those who need it most. A related policy recommendation, highlighted by Lokshin et al. (2025), is that social protection systems could also

account for the fact that lower-income households face a higher CPI than the one observed at the national level, suggesting more granular benefit adjustments.

# Annex

## Additional Figures

**Figure A.1 Household Share of Consumption of Food and Nonalcoholic Beverages, by Deciles, Selected EU Countries, circa 2019**

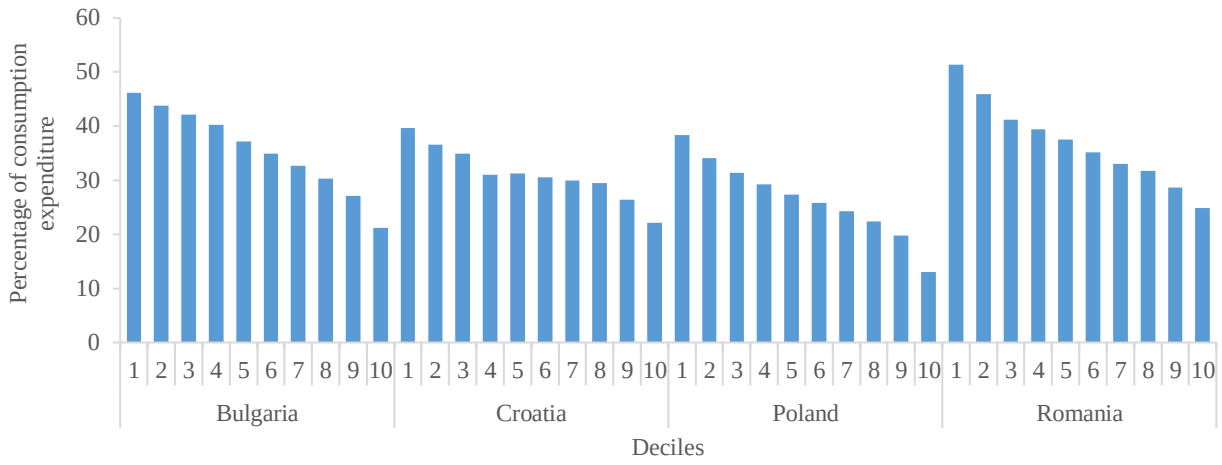
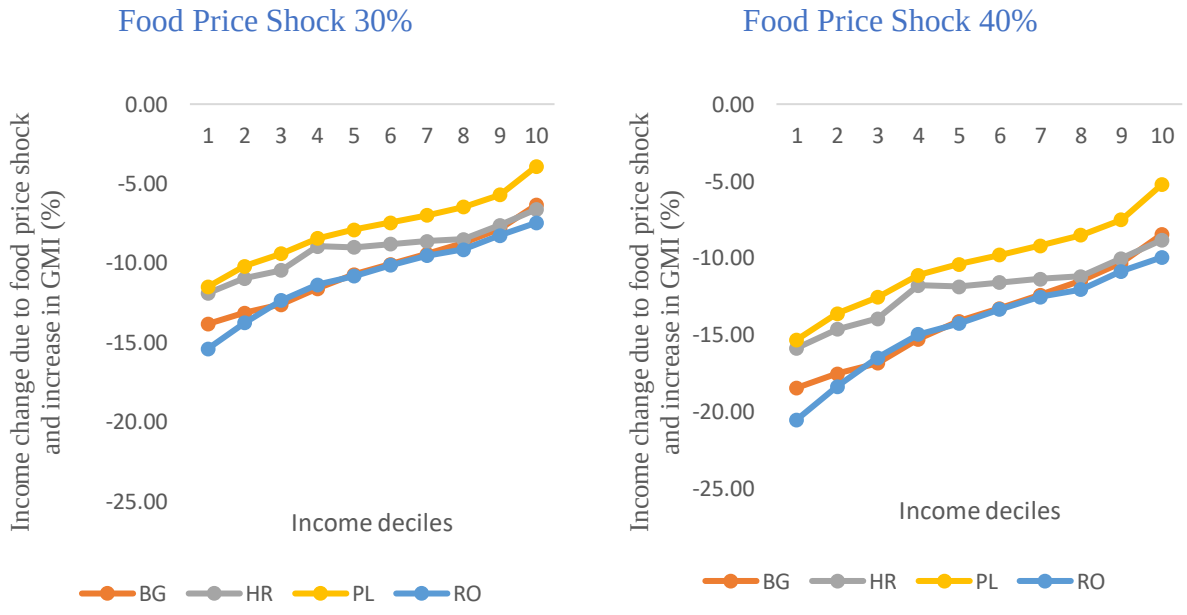
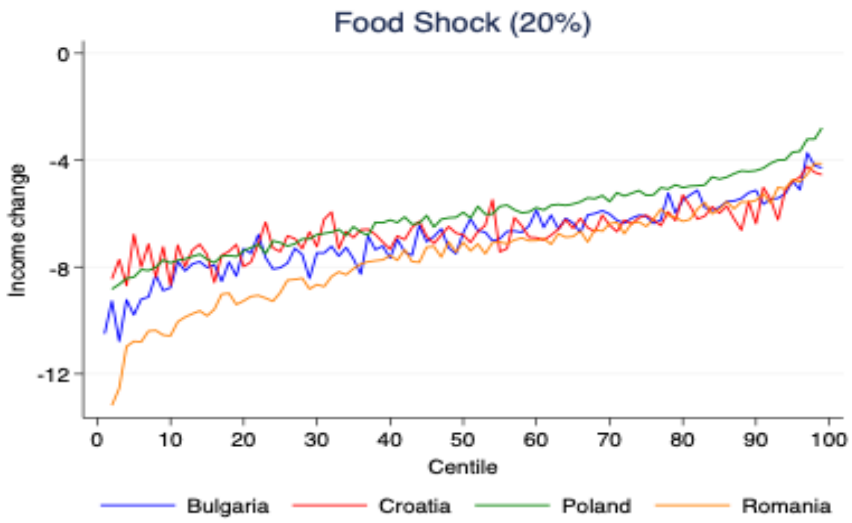



**Figure A.2 Household Income Simulations for Different Food Price Shocks along the Welfare Distribution**



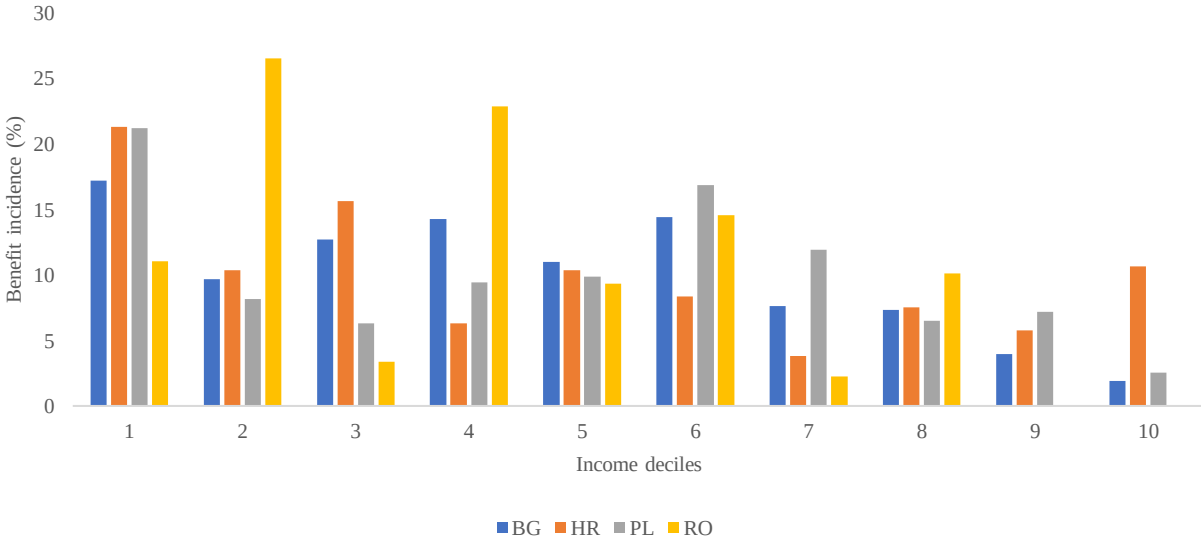

*Source*: Simulations based on data from the most recent surveys, as in Table 1.
*Note*: Welfare is estimated in USD using 2017 PPPs. The figure shows the simulated welfare percentage changes after the food price increases. "Food Shock (x%)" refers to the simulated impact after a food price increase of x%.

## Figure A.3 Household Income Simulations for 20% Food Price Shocks along the detailed Welfare Distribution




*Source*: Simulations based on consumption shares from Lokshin et al. (2025).
*Note*: Welfare is estimated in USD using 2017 PPPs. The figure shows the simulated welfare percentage changes after the food price increases. "Food Shock (20%)" refers to the simulated impact after a 20% food price increase.

## Figure A.4 Targeting of Social Assistance by Deciles




*Source*: Own elaboration based on data from the EU-SILC from the 2019 survey year for Poland, and the 2020 survey years for Bulgaria, Romania, and Croatia.

# Additional Tables

## Table A.1 Sensitivity of poverty changes in percentage points (20% shock) when decreasing the elasticity values

| | Baseline elasticities | minus 0.05 | minus 0.1 | minus 0.15 | minus 0.2 |
|---|---|---|---|---|---|
| BG | 0.928 | 0.928 | 0.922 | 0.922 | 0.909 |
| HR | 0.580 | 0.580 | 0.580 | 0.580 | 0.580 |
| PL | 0.286 | 0.286 | 0.286 | 0.286 | 0.286 |
| RO | 1.080 | 1.056 | 1.056 | 1.056 | 1.056 |

*Source*: Simulations based on data from the most recent surveys, as in Table 1.
*Note: Welfare is estimated in USD using 2017 PPPs. The figure shows the simulated welfare percentage point changes after the food price increases.*

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