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The role of social protection and tax policies in cushioning crisis impacts on income and poverty in low- and middle-income countries

A rapid scoping review

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Abstract: In the wake of the COVID-19 pandemic, several countries enacted tax and social protection measures to help mitigate the economic hardship faced by individuals and households. This experience underscores the need to better understand the impact of such programmes on incomes and poverty during crises, especially in low- and middle-income countries (LMICs) where they are most needed. This paper reviews existing empirical literature on the subject, conducting a scoping review on quantitative studies published between 2000 and 2022. Following a structured selection approach, we identify 38 studies about the role of social protection and taxation in LMICs during periods of crisis. The results reveal that LMICs often enact both vertical and horizontal expansions of existing unconditional cash transfer schemes during crises, although the applications vary by geography. Our research also suggests a sharp increase in recent studies because of the COVID-19 pandemic, and a large variety of methods used to study the subject. In terms of effects, social protection can help cushion households against crises, but the effect size depends on the policy adopted, country context, and type of crisis. The minimal empirical evidence about tax policy studies do not enable us to draw conclusions.

Key words: social protection, taxation, crises, developing countries

JEL classification: O23, H12, H24, H55

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1 Introduction

Social protection and taxation have become a fundamental tool for governments and international organizations to achieve the Sustainable Development Goals worldwide. Recently, the COVID-19 pandemic forced many countries to implement or expand social protection programmes to mitigate the adverse effects on people's lives. Social protection policies as a tool for cushioning against the crisis received increased attention especially from governments in developing countries, where a large share of the population does not benefit from the existing tax and benefit system, even during non-crisis conditions. In addition, taxation policies are perceived to play a fundamental role in mitigating aggregate shocks. Not only can the government waive or reduce taxes during crises, but people who pay taxes also have access to many benefits, such as unemployment or health insurance. However, little is known about the role of social protection and tax policies as a means of mitigating the effects of crises on income and poverty.

This study focuses on two main concepts: social protection and taxation. Although social protection is a common concept and widely used by researchers and policy-makers, there is no single, broadly shared definition for it. General knowledge defines social protection as a human right and a series of policies to prevent poverty and vulnerability throughout life (ILO 2017). However, there are substantial differences in the depth of coverage of social protection policies across countries and regions. While in high-income countries the share of the population not covered by social protection is only 25.8 per cent, it is 68.8 per cent in lower-middle-income countries and as high as 80.9 per cent in low-income countries (World Bank 2022).

Taxation is generally defined as an imposition of obligatory levies on individuals or corporations by governments to fund the provision of public goods. In contrast to other sources of government revenue, taxes are compulsory duties and cannot be compromised or replaced by something else. In addition to providing public goods, governments often use taxes to accomplish other goals, such as correcting externalities in a competitive market and alleviating income inequality (Kay 1986). The equalizing feature of direct taxes increase as progressivity rises. Therefore, taxation policy encompasses the existing tax system but also the use of tax waivers or tax exemptions during adverse economic cycles.

In this study, we conduct a systematic search of academic and grey literature databases to better understand the role of social protection and taxation as shock-response policies in developing countries. Our work focuses on quantitative studies that use micro data to assess impacts on poverty, income, and assets at the level of the individual, household, or family. This approach, focusing specifically on studies that apply quantitative analysis to micro data, represents an important contribution to the literature, which often utilizes other methodologies and more aggregate data. We also consider the following exogenous crises in our review: financial, epidemiological, macroeconomic, and natural disaster crises. The search protocol was conducted between February and July 2022 and focused on studies published in English between 2000 and 2022.

The main results of the scoping review shows that a higher number of relevant studies focus on social protection (36) than on taxation (8) as a policy used to respond to a crisis. Six studies explore both subjects, leaving only two papers that focus exclusively on tax policy to mitigate adverse shocks. These six studies have in common the fact that they all use static microsimulation approaches, which enable the exploration of the role of both pre-existing tax-benefit systems and policies created to mitigate the respective shock. The studies in this review only include developing country settings, while most studies excluded by the search protocol deal with developed countries.

This can be explained by the limited availability of micro data from most low- and middle-income countries, which reduces the opportunities for research. This limitation was particularly strong for the tax-related searches, where a substantial share of papers focused on developed countries.

Our main results can be summarized as follows. The COVID-19 pandemic led to a considerable increase in papers studying the contribution of social protection measures in mitigating the associated shocks. A number of insightful synthesis reports were also identified, such as a review of cash transfers during the pandemic by Gentilini et al. (2022). The papers use a wide range of methods, from quasi-experimental and experimental approaches to microsimulation studies, as well as a diverse set of outcome measures related to poverty and income. This diversity in methods and outcomes makes it quite challenging to narrow this search to a systematic review or a meta-analysis. The studies also cover all continents and all major economic crises from the study period, such as the global financial crisis, various national crises, weather shocks, health epidemics, and the COVID-19 pandemic.

Taken together, the selected studies broadly indicate that social protection and tax policies do help mitigate negative economic shocks to individuals and households. The results vary considerably between countries, crises, and policies adopted, but our review supports the finding that these shock-responsive policies are largely effective in lowering poverty or raising income levels within LMICs, at least in the short term.

Our study makes an important contribution to the literature by providing a detailed, systematic, and reproducible search that focuses specifically on the available evidence of the role that social protection and taxation policies—namely, those responding to crises—have played within LMICs over the last 20 years. Conversely, existing literature reviews focus solely on the role of social protection in mitigating the effects of the COVID-19 pandemic (Abdoul-Azize and el Gamil 2021; Mawani et al. 2021), the effects of COVID-19 on children (Aurino and Giunti 2022), and on macroeconomic policies in general before the pandemic (Embrett et al. 2021). Other broad literature reviews have also not been as clear or transparent in documenting their search criteria (Oxford Policy Management 2017). This review, the first of its kind to our knowledge, offers a comprehensive overview of the quantitative evidence on this subject. We imagine it will be a useful resource to both academics and practitioners in the field.

The rest of the paper is structured as follows. The second section draws on existing research to discuss the theory and channels through which social protection and tax policies can reduce poverty or increase incomes. It is followed by a section on the methodology, covering study objectives and design, key definitions, and the search protocol. The fourth section presents the main results of the scoping review, and the last section offers concluding remarks.

2 Mechanisms of social protection and taxation to alleviate crises

The political economy literature that assesses the effects of social and macroeconomic policies establishes several mechanisms through which public policies interact with poverty outcomes. Social protection and tax exemptions are both preventative and protective. In other words, these policies serve as mechanisms to protect against unanticipated shocks, both as precautionary measures and as immediate sources of relief.

Social protection is widely understood as an instrument to alleviate poverty. It does so both through direct targeting of poor households and through the positive externalities that result from government spending. Directly, redistributive transfers smooth household consumption and

protect asset holdings in the face of a shock or crisis; indirectly, they contribute to investment in human capital, asset creation, and income and employment multipliers. From a Keynesian standpoint, tax cuts and social spending positively affect aggregate demand and output, which stimulates economic growth and income (Hemming et al. 2002). In theory, this effect benefits the entire economy, including the poor.

For poor households specifically, social protections are particularly important in providing a source of financial assistance that is not necessarily subject to macroeconomic fluctuations (Bertranou and Maurizio 2012). Social support and fiscal policies may provide immediate resources to combat temporary shocks and also allow for the accumulation of assets, which help to overcome socio-economic barriers to achieve long-term economic stability (Barrientos et al. 2005). At least for crises of manageable intensity, targeted programmes are especially helpful in mitigating instances of poverty traps by addressing specific economic vulnerabilities and creating a productive safety net for the poor (Barrett et al. 2002; Carter and Janzen 2018). Social protection is therefore critical not just in assisting vulnerable groups to remain above the poverty line, but also in facilitating their long-term economic development.

On a cautionary note, social protection and fiscal policies are not fool proof and can in some cases contribute to sustaining poverty. Conditional protection policies, in particular, may limit a household's ability to invest in its own human capital and lead to inefficient use of resources (Carter and Janzen 2018). By crowding out asset protection and subjecting the poor to additional vulnerabilities, these policies may contribute to poverty traps amongst the chronically poor (Barrett et al. 2002). Social protection programmes may also fall short of achieving poverty reduction goals simply because their effective implementation is conditional on a robust administrative apparatus (Slater 2011). Despite these caveats, well-designed social protection measures can help overcome market failures and contribute to economically efficient outcomes (Dercon 2011).

Social protection policies remain an important tool to alleviate poverty and protect against income losses. There is a strong consensus that these measures, whether provided through direct or indirect means, can help protect household assets during crises and provide additional resources to withstand unanticipated exogenous shocks. Drawing on this conclusion, our work examines the impact of these social protection programmes during times of crisis, when the recipients are most vulnerable and the effects may be amplified.

The scoping review also focuses on developing countries, where the effects of crises are generally more severe due to low living standards, high risk of poverty, informality, and more limited social protection coverage. According to the World Bank (2022), the population not covered by any kind of social protection amounts to 68.8 per cent in lower-middle-income countries and 80.9 per cent in low-income countries. These shares are much higher than in high-income and upper-middle-income countries (25.1 and 35.8 per cent, respectively). This stylized fact becomes critical in the context of crises, such as the COVID-19 pandemic, in which the vulnerable population is in most need of support and at highest risk of poverty or extreme poverty.

3 Methodology

3.1 Objectives of the scoping review

The main goal of this scoping review is to identify, compile, and analyse academic literature on social protection and tax policies during crises in low- and middle-income countries (LMICs). We

focus on studies that apply quantitative methods to micro data and assess the impacts of relevant policy measures on income and poverty levels. Our specific objectives are to:

- Identify relevant research on the topic from the early 21st century (2000–12);
- Bring attention to the estimated effects of these policies in developing country contexts;
- Identify gaps and patterns in the literature; and
- Synthesize the existing knowledge in terms of methods, data, crises, policies, and findings.

As a result, we provide condensed information, drawing on best available evidence, on whether the respective policies are effective in protecting citizens against crises in LMICs, and on the conditions under which these policies are effective or ineffective.

We developed a scoping review protocol to achieve these objectives. The protocol is based on PRISMA-ScR, the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols for Scoping Review. Specifically, we follow the guidelines developed by Arksey and O’Malley (2005).

A scoping review is a literature review that follows the best practices of the systematic review literature but differs in the main objectives and questions. While systematic reviews focus on narrower sets of questions and produce statements to guide decision-making, scoping reviews aim to identify the types of available evidence and related knowledge gaps (Arksey and O’Malley 2005; Munn et al. 2018). Scoping reviews are also more flexible in terms of the literature search and the screening of articles, and do not require having two or more authors to read each paper.

The rest of this section details the practical implementation of the protocol, outlining the definitions used to guide the literature search and information on the search strategy itself, including study inclusion criteria and targeted publication databases.

3.2 Definitions and restrictions

Table 1 presents the typology of social protection used in the study. The first three categories have been adopted for searches of shock-responsive policies: social assistance, social insurance, and labour market programmes. Social assistance is defined as cash or near cash transfers, where individual contributions do not determine receipt. Social insurance is defined as cash or near cash contributions where eligibility is determined based on personal or employer contributions. Labour market programmes are defined as actions to support employment and livelihoods, enabling families to have sufficient income.

Table 1: Social protection categories and examples

Category	Examples
Social assistance	Conditional or unconditional cash transfers, food vouchers, in-kind transfers, childcare benefits, birth grants, family allowances, death benefits, child benefits, maternity and paternity benefits, universal basic income, minimum income, non-contributory unemployment benefits, housing subsidies, child and elderly care, disability and pension grants
Social insurance	Contributory old-age pensions, disability pensions, health insurance, survivorship pensions, occupational injuries, sickness/injury leave, maternity/paternity assistance, retirement pensions
Labour market programmes	Labour market training (vocational, life skills), job search programmes, wage subsidies, employment measures for the disabled, cash, in-kind grants and loans to support entrepreneurship, unemployment insurance (contributory and non-contributory)
Social care services	Pre- and post-natal services, parenting education, centered-based childcare, health care

Source: adapted from Abdoul-Azize and el Gamil (2021) and Oxford Policy Management (2017).

Besides its relevance during normal times, social protection has become one of the main strategies to cushion the impact of crises and shocks on citizens. Table 2 offers a typology of *changes* in government-sponsored social protection policies that are particularly relevant to periods of crisis, including the COVID-19 pandemic that is used for the examples. We limit this research to cover three categories of social protection changes: vertical expansion, horizontal expansion, and piggybacking.

Table 2: Categories, definitions, and examples of changes in social protection during the COVID-19 crisis

Categories	Definition	Example from the COVID-19 crisis
Vertical expansion	Increasing the benefit amount or the duration of eligibility for existing beneficiaries	Unconditional Cash Transfer BSSP – Mozambique
Horizontal expansion	Adding new beneficiaries to an existing programme, often via relaxing eligibility conditions	COVID-19 response packages especially in the developing world
Piggybacking	Using the administrative framework of an existing programme to deliver assistance under a new but separate programme, sometimes involving a new policy measure	CoronaVoucher – Brasil

Note: two other strategies include ‘shadow alignment’, run by a parallel humanitarian system, and ‘refocusing’, which reorganizes an existing programme to better target the most vulnerable population in case of budget cuts. Studies involving these two strategies are not assessed in this review.

Source: adapted from Oxford Policy Management (2015, 2017).

Our second definition of interest has to do with taxation. In addition to social protection measures, we review the literature on the role of direct and indirect taxes in cushioning against crises in developing countries. We are interested in research on the effects of both existing tax policies, acting as automatic stabilizers, and policy reforms enacted in response to a shock. In both cases, related keywords include, for instance, tax collection, tax waivers, income taxes, and direct and indirect taxes. Note that the mitigating role of direct tax policies depends on the level of tax compliance. A lower number of individuals and firms paying taxes may also reflect a more limited coverage of the formal social protection system, such as unemployment and health insurance.

The third definition of interest is the concept of crisis. First, note that throughout the study, we use crises and shocks interchangeably (Gentilini et al. 2022). Shocks are either exogenous events that affect many individuals simultaneously (covariate; e.g. droughts) or endogenous events that affect individuals differently over their life spans (idiosyncratic; e.g. illness). In this study, we are interested in covariate shocks that affect many individuals in the same country at a specific time. Such shocks may differ substantially in their characteristics such as length, lasting for short (Ebola) or long periods of time (COVID-19 pandemic). We focus on exogeneous events such as disease outbreaks, climate shocks, and financial crises that have affected the income and poverty levels of households in low- and middle-income countries between 2000 and 2022.

3.3 Search strategy

This scoping review adopts a number of criteria that each study has to satisfy to be eligible for inclusion. First, an eligible study needs to be published between January 2000 and April 2022. Second, it needs to cover at least one low- or middle-income country. Third, the study needs to focus on social protection or taxation policies defined above as a tool to cushion against some covariate shock. Fourth, it must apply some quantitative method and focus on changes in incomes, assets, or poverty at the individual, family, or household level. Finally, it should use some micro data. Table 3 describes the detailed inclusion and exclusion criteria.

Table 3: Summary of the inclusion and exclusion criteria

Domain	Inclusion criteria	Exclusion criteria
Setting and types of crises	Low- and middle-income countries or developing countries affected by financial, epidemiological, macroeconomic, or environmental shocks	High-income or developed countries
Relevant population	Working age population (of age 18 to 65) in the formal or informal sector	Individuals younger than 18 years
Dimensions of outcomes	Income, poverty, assets	Inequality, child outcomes, health outcomes, education outcomes, demographic shifts
Programme typology (if social protection research)	Social assistance, social insurance, social protection, labour market programmes	Social care, social services
Programme typology (if taxation research)	Taxation, tax policy, tax, tax collection, direct tax, indirect tax, income tax, tax waivers	Subsidies
Methodology	Quantitative studies at the individual or household level; use of micro data (i.e., peer-reviewed working papers, reports, impact evaluation studies, microsimulation studies)	Qualitative studies; quantitative studies at the level of the national economy, or those that do not use micro data

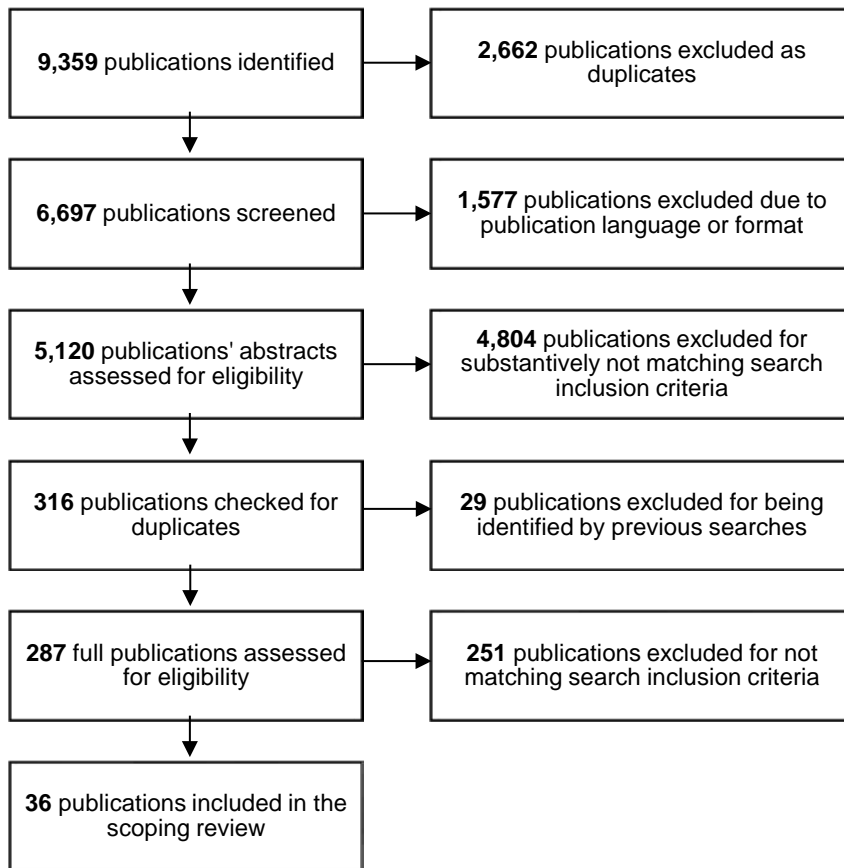
Note: note that programme typologies are presented in separate rows for searches covering social protection and taxation measures as crisis responses, respectively.

Source: authors' elaboration.

We conducted the searches for relevant documents between April and June of 2022, focusing on publications in economic, social science, and political science journals. The first round of searches was conducted using Google Scholar. Search results were then corroborated by re-running all searches through three other black-and-white databases (Web of Science, Scopus, and EconLit) and five grey literature databases (EUROMOD, UNU-WIDER, World Bank, ICTD, and the International Journal of Microsimulation). The final step involved manually scanning the bibliographies of relevant publications and pre-existing literature reviews. A detailed description of the search strategy, including search terms and results, is available in the appendix.

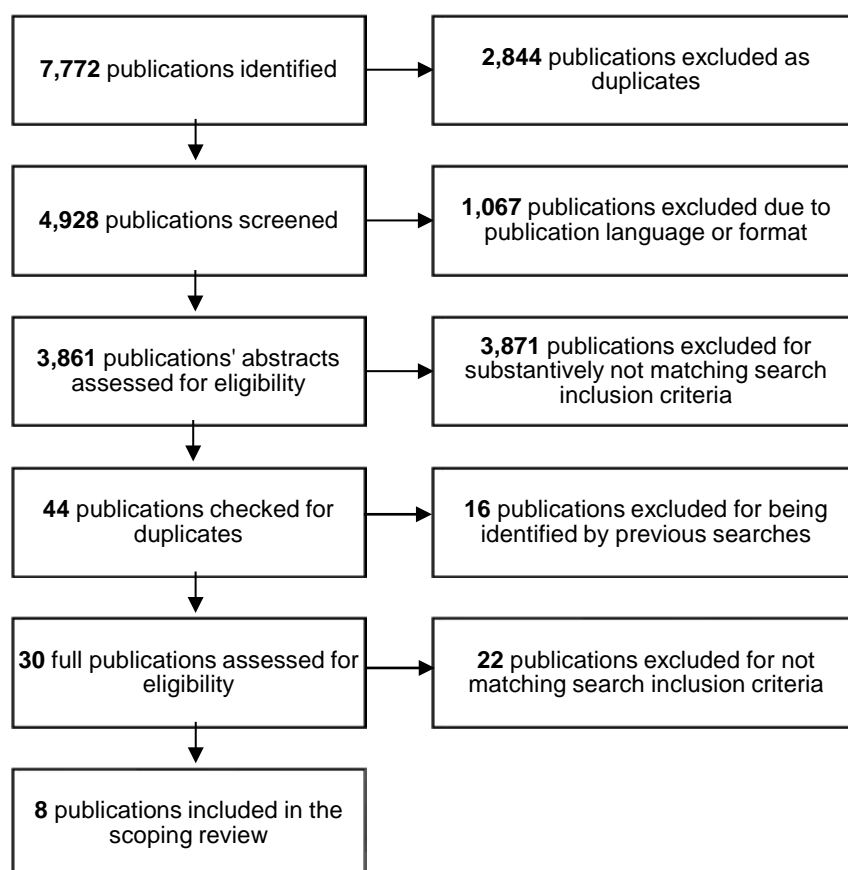
Figure 1 presents a PRISMA diagram with the search results for social protection, and Figure 2 presents the corresponding results for taxation. After the initial searches, unique articles were divided among team members for the screening of titles and abstracts based on the eligibility criteria. Publications were disqualified first based on publication language and format, then based on information in the title and abstract, and finally based on the full content of the work. The final list of papers for full reading was organized in a spreadsheet where we collected the main information from each paper, such as i) type of publication; ii) year of publication; iii) outlet name; iv) outcomes studies; v) direction of effect found; vi) crisis studied; vii) social protection or taxation policy enacted, and viii) method used. Online team meetings were held to discuss any questions and concerns regarding eligibility and the papers included. As suggested by Figures 1 and 2, searches for social protection and taxation were conducted separately.

Figure 1: PRISMA diagram for social protection



Source: authors' elaboration.

Figure 2: PRISMA diagram for taxation



Source: authors' elaboration.

4 Results

4.1 Overview

In this section, we present the main results of the two systematic searches that were conducted. As shown in Figures 1 and 2, the final number of papers included in the scoping review differs considerably between those covering social protection measures and those covering taxation measures. Using our inclusion criteria, we identified 36 relevant studies about the role of social protection during crises in developing countries, and only eight relevant studies about the role of taxation. As six papers were common to both searches, only two papers were exclusively about the role of tax policies in cushioning crises in developing countries. This does not necessarily mean that taxation is an irrelevant policy instrument to respond to crises; many relevant studies do in fact address the relationship between taxation and crises (Keen et al. 2010; OECD 2020). Instead, it reflects our narrow inclusion criteria, leaving us with only these two papers that study taxation as a crisis response policy in low- and middle-income countries, using micro data and quantitative methods to understand the impacts on incomes, assets, and poverty.

The six papers that deal with the role of both taxation and social protection use the same methodology, SOUTHMOD tax-benefit microsimulation models. Therefore, we divide the presentation of the results into three subsections. First, we present the main findings of the social protection search. Second, we present the main results from the papers that study both social protection and taxation. Finally, we discuss the papers found in the search focusing on taxation.

One of the main challenges for researchers producing studies about the impacts of crises and the cushioning effects of policies to mitigate the associated shocks is the availability of up-to-date data. For instance, the studies that use experimental or quasi-experimental approaches rely on relatively recent, high-quality data, which is not available in many developing countries. This is one reason why microsimulation methods can be useful in estimating policy impacts in these settings. The related studies may use relatively old data, but the data can be updated using country-specific consumer price indices and then used to simulate more recent policy rules.

The results suggest that social protection policies effectively reduce poverty during crises in developing countries. Twenty-seven (69.2 per cent) studies found a negative effect on poverty (that is, reducing poverty levels), while only three (7.7 per cent) studies reported a positive effect (that is, increasing poverty levels). Seven studies (17.9 per cent) did not report poverty outcomes but provided evidence that social protection policies increased the income or assets of beneficiary families during crises. The two papers about taxation pointed to similar results, suggesting that those policies can also protect incomes during crises, mitigating the increase in poverty.

4.2 Papers on social protection

Table 4 provides a synthesis of the findings from the social protection papers. The first striking finding evident from this table is the substantial increase in the number of publications after the COVID-19 pandemic. The papers published between 2020 and 2022 represent 44 per cent of the findings. Accordingly, among all papers, COVID-19 was the crisis studied the most, representing 33 per cent of the results.

The papers studying the COVID-19 pandemic vary considerably in the methods used. The papers that rely on causal identification strategies however tend to use the characteristics of social protection policies to isolate the desired effect. For instance, Bottan et al. (2021) explore the minimum age of 60 years to become eligible to an old-age pension scheme in Bolivia. They find that the programme had a positive impact on food security. Londoño-Vélez and Querubín (2022) use a randomized control trial (RCT) linked with administrative and survey data in Colombia to study the introduction of a new unconditional cash transfer to one million households in poverty. They find that the programme had modest positive effects on financial health and food access. It is important to point out that, while RCTs are the gold standard procedure to evaluate a public policy, it is very difficult to implement them during crises. Policy-makers are required to make fast decisions, and limiting a given benefit to only a share of the population is generally out of the question.

Not surprisingly, considering that many poor people in developing countries work in small agricultural businesses, weather shocks are the second most studied crisis. Most of the papers adopt a similar empirical strategy. First, they estimate the impact of the climate event on the outcomes. They usually use the deviation of historic rainfall or temperature as the weather shock measure. Then, they interact this measure with an indicator of whether the individual received benefits via some policy, such as a cash transfer. Fitz and League (2021) use this approach to assess how the Brazilian cash transfer programme Bolsa Família cushions the weather shocks for poor families in Brazil. They find that rainfall shocks cause an increase in children who work and that the cash transfer programme mitigates this effect. They also show that Bolsa Família may act as a partial safety net that stabilizes human capital investments during shocks. Asfaw et al. (2017) apply a similar strategy to Zambia, studying the Child Grant Programme. The cash transfer mitigates the decline in food and non-food expenditures and calorie intake.

We also found some papers that showed null or negative effects of social protection measures during crises. Dietrich and Schmerzeck (2019), for example, show that Kenya's Hunger Safety Net

Programme did not have a significant impact on nutrient availability. Their method exploits the exposure of drought, measured by satellite imagery, and the isolation of a local food market during the 2011 drought in the Horn of Africa.

After COVID-19 and weather shocks, national economic crises come third in the list of crises studied the most, followed by food and health crises, respectively. Somewhat surprisingly, we only found two papers that study how social protection measures mitigated the global financial crisis within developing countries in 2008.

Table 4: Characteristics of identified papers, social protection

Characteristics	N	Per cent
<i>Publication type</i>		
Journal article	20	55.6
Working paper	15	41.7
Book chapter	1	2.8
<i>Region</i>		
Africa	18	50.0
Asia	6	16.7
Latin America	10	27.8
Middle East	1	2.8
Many	1	2.8
<i>Type of crisis</i>		
COVID-19	12	33.3
Weather shocks	7	19.4
National economic crisis	6	16.7
Food crisis	5	13.9
Health crisis	3	8.3
2008 financial crisis	1	2.8
Other	2	5.6
<i>Programme type</i>		
Cash transfer	16	44.4
COVID-19 response package	7	19.4
In-kind food, food voucher, income support	4	11.1
Others	9	25.0
<i>Methods</i>		
Microsimulation	9	25.0
Experimental evaluation (e.g. RCTs)	2	5.6
Quasi-experimental evaluation (DiD)	11	30.6
Quasi-experimental evaluation (RDD, PSM, IV)	2	5.6
OLS, binary outcomes, and panel data analysis	5	13.9
Other	7	19.4
<i>Publication year</i>		
2020–22	16	44.4
2015–19	12	33.3
2000–14	8	22.2

Note: under the categories for different study characteristics, the same publication may belong to one or more categories (e.g. use one or more research methods). Information is not always available for each paper. DiD refers to difference-in-differences; RCT to randomized control trial; OLS to ordinary least squares; PSM to propensity score matching; RDD to regression discontinuity design; and IV to instrumental variable.

Source: authors' elaboration.

4.3 Papers on social protection and taxation

We identified six studies that explore the role of taxation and social protection as crisis response mechanisms. All of these studies use the EUROMOD framework for static microsimulation models applied to the context of developing countries. Most of the models are part of the SOUTHMED project. Furthermore, each study focuses on the impact of the COVID-19 pandemic and estimates the distributional effects of both existing tax and benefit systems and the discretionary policies created to cushion the impacts of the pandemic. The papers cover a comprehensive pool of countries, such as Ghana, Mozambique, Tanzania, Uganda, and Zambia (Lastunen et al. 2021); South Africa (Barnes et al. 2021); Ecuador (Jara et al. 2021); Indonesia (Wright et al. 2021); Malawi (Magalasi 2021); and Peru, Colombia, Bolivia, and Ecuador (Avellaneda et al. 2021).

In general, the results suggest that the pre-existing tax and benefit system had very limited potential to mitigate the adverse effects on income and poverty, with the size of the effect varying considerably across income distribution and with the degree of informality. Higher-income households benefited more from automatic stabilizers. Among the countries studied, automatic stabilizers had the largest impact in Ecuador.

The studies provide two additional contributions. First, they list in detail the discretionary policies implemented in each country during the pandemic and, second, they try to simulate the impact of those policies in cushioning against the resulting income shocks. The policies vary considerably between countries. For instance, Mozambique introduced a top-up to an existing conditional cash transfer (equal to the value of the benefit over two months) and reduced utility tariffs. Zambia followed a similar policy but discontinued an existing school meal programme, while Tanzania and Uganda barely enacted any additional policies. The discretionary policies had a more significant impact on households in the bottom of the income distribution. The largest impacts observed were of the policies adopted in Ecuador, Malawi, and Zambia, including especially social cash transfers. In Ghana, the discontinuation of a large school meal programme had an effect in the opposite direction, increasing poverty and reducing the disposable income of poorer families.

These microsimulation studies help shed light on the combination of existing and discretionary tax and benefit policies during crises, namely the COVID-19 pandemic. However, they also have limitations that require caution in the interpretation of the results. First, they do not account for behavioural responses, such as changes in the consumption profile of families. Second, they simulate the COVID-19 shock by using external data and assuming that a share of workers transitioned to unemployment and lost their income. Noting these caveats, they do provide important contributions to the literature, especially considering the limited availability of up-to-date data to investigate the causal impacts of tax and benefit policies during crises and in developing country settings.

4.4 Papers on taxation

As mentioned, the systematic search resulted in only two papers that explore the effect of taxation in mitigating the effects of crises in developing countries. Pham (2020) uses a quasi-experimental design to study the effects of temporary corporate income tax cuts in Viet Nam. The policy was implemented as a response to the global financial crisis in 2008. She found that investment increased during the year when the policy was in place but reduced back to the pre-policy level after the tax cuts were discontinued. However, she did not find evidence of increased labour demand among firms when the policy was in place.

Jellema et al. (2017) develop a computable general equilibrium model to study the impact of fiscal policy measures in Indonesia as a response to the Asian financial crisis. The measures encompass a series of fiscal policy expansions, including significant fuel subsidy reforms and the redirection of public spending toward public programmes targeting poorer populations. Their results suggest that fiscal policy has the potential to reduce poverty in the country.

5 Concluding remarks

This scoping review sought to map out the relevant academic literature about the role of social protection and taxation in mitigating the impact of crises in low- and middle-income countries. We followed the best guiding principles of systematic literature searches, included studies that applied a quantitative method to micro-level data, and focused on impacts upon assets, income, and poverty between 2000 and 2022.

Interestingly, the review identified a relatively small number of studies that satisfy our inclusion criteria—a total of 36 papers on social protection and eight papers on taxation. Several factors can help explain this result. First, many developing countries have major data availability restrictions, or for other reasons suffer from a lack of up-to-date micro data sets. Second, the nature of a crisis may itself limit opportunities for timely data collection. This was a common challenge with lockdowns and social distancing during the COVID-19 pandemic; as an example, many developing countries discontinued data collection for national household surveys in 2020. Third, discretionary policy responses during crises typically need to be implemented quickly and targeted to the entire eligible population. Devising appropriate empirical research strategies is difficult without policies with distinct treatment and control groups.

While related research is limited by such factors, the literature identified in this scoping study does offer important insights. One is that social protection and tax policies can help alleviate the effects of economic shocks. This is a result that tends to hold true regardless of the developing country or methodology in question. Effect sizes do, however, vary substantially depending on the policy, country, and type of crisis.

More generally, this review shows that the COVID-19 crisis has brought impact evaluation literature to the forefront, also in front of policy-makers. The pandemic has highlighted the importance of both effective policy responses to exogenous shocks and the rigorous assessment of such measures. Future research should take advantage of alternative data sources, such as online and mobile phone data, to evaluate policy responses to crises using quasi-experimental methods. Future work should also exploit non-experimental methods such as microsimulation modelling—which circumvents some of the above-mentioned challenges—but combine them with behavioural extensions or applications with micro–macro linkages.

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Appendix A: List of papers

Table A1 summarizes the papers included in this scoping study.

Table A1: Summary of papers

Authors	Region or country	Type of policy	Type of crisis or shock	Methodology	Measure of poverty or income (DV)	Effect on poverty (+ or -)	Effect on income (+ or -)
<i>Social protection (including papers that deal with social protection and taxation)</i>							
Schwab (2019)	Yemen	Cash transfer	Conflict	DiD	Agricultural assets	NA	+
Paul et al. (2021)	Zambia	Cash transfer	COVID-19	Macro-microsimulation	Headcount poverty, disposable income	-	NA
Magalasi (2021)	Malawi	Cash transfer	COVID-19	Microsimulation	Headcount poverty, disposable income	+	+
Londoño-Vélez and Querubín (2022)	Colombia	Cash transfer	COVID-19	RCT	Financial health, food access	-	NA
Bassier et al. (2021)	South Africa	Cash transfer	COVID-19	Simulation – other	Poverty level and FGT	-	+
Bliss et al. (2018)	Niger	Cash transfer	Food crisis	DiD	Food security	NA	-
Annan and Sanoh (2018)	Niger	Cash transfer	Multiple crises	OLS	Consumption	NA	+
Gitter et al. (2013)	Nicaragua	Cash transfer	National economic crisis	DiD	Household consumption and expenditures	-	NA
Galasso and Ravallion (2004)	Argentina	Cash transfer	National economic crisis	PSM	Household income and poverty rates	-	+
Dietrich and Schmerzeck (2019)	Kenya	Cash transfer	Weather shock	AIT	Expenditure and nutrients consumption	-	+
Premand and Stoeffler (2020)	Niger	Cash transfer	Weather shock	DiD	Consumption, food security, and household welfare	-	NA
Lawlor et al. (2019)	Zambia	Cash transfer	Weather shock	DiD	Food consumption, food security	-	NA

Mideros et al. (2013)	Cambodia	Cash transfer	Weather shock	Mixed quantitative methods	Household consumption, labour participation, and income level	-	+
Fitz and League (2021)	Brazil	Cash transfer	Weather shock	OLS	School attendance and child labour	-	NA
Macours and Premand (2012)	Nicaragua	Cash transfer	Weather shock	RCT	Consumption and income	NA	+
Asfaw et al. (2017)	Zambia	Cash transfer	Weather shock	RCT	Food and non-food expenditure, caloric intake	-	+
Köhler and Bhorat (2021)	South Africa	COVID-19 response package	COVID-19	Microsimulation	Headcount poverty	-	NA
Avellaneda et al. (2021)	Andean region	COVID-19 response package	COVID-19	Microsimulation	Headcount poverty, disposable income	-	+
Lastunen et al. (2021)	Austral Africa	COVID-19 response package	COVID-19	Microsimulation	Headcount poverty, disposable income	+	+
Jara et al. (2021)	Ecuador	COVID-19 response package	COVID-19	Microsimulation	Headcount poverty, disposable income	-	+
Barnes et al. (2021)	South Africa	COVID-19 response package	COVID-19	Microsimulation	Headcount poverty, disposable income	-	+
Wright et al. (2021)	Indonesia	COVID-19 response package	COVID-19	Microsimulation	Headcount poverty, disposable income	-	NA
Savy et al. (2020)	Senegal	Food vouchers	Food crisis	DiD	Food security	-	NA
Phadera et al. (2020)	Iraq	In-kind food	National economic crisis	PSM	Household vulnerability to poverty	-	NA
Doocy et al. (2020a)	Somalia	In-kind food, food voucher, cash transfer	Food crisis	DiD + PSM	Nutrition	-	NA
Cockburn et al. (2014)	Somalia	In-kind food, food voucher, cash transfer	Food crisis	DiD + PSM	Nutrition	-	NA
Richardson et al. (2017)	Sierra Leone	Income support	Health crisis	Logistic	Food security	-	NA
Levy S. (2008)	Mexico	Pool of social programmes	National economic crisis	Other	Wages, price of assets	NA	+ (SR) - (LR)
Bottan et al. (2021)	Bolivia	Pension	COVID-19	RDD	Financial resilience, food security	-	+
Bakhshinyan et al. (2019)	Armenia	School meal programme	2008 financial crisis	FGT poverty index	Poverty level and FGT	-	-

Ingrid and Liem (2017)	Indonesia	Social health insurance	Health crisis	DiD	Household consumption	-	NA
Neelsen et al. (2019)	Thailand	Universal health coverage	Health crisis	DiD	Labour income, household consumption	NA	NA
Cho and Ruthbah (2021)	Bangladesh	Workfare programme	Food crisis	IV	Household expenditures	NA	+
Kiendrebeogo et al. (2017)	Developing countries	Social spending on health and education	National economic crisis	Panel	Headcount poverty	-	NA
Guzman (2016)	Chile	Labour reform and minimum wage increase	National economic crisis	Probit	Labour force participation	+	NA
Doocy et al. (2020b)	Somalia	In-kind food, food voucher, cash transfer		Other	Maternal and child nutrition	-	+
<i>Taxation (only)</i>							
Pham (2020)	Viet Nam	Corporate tax cuts	2008 financial crisis	DiD	Firm investments, profits, labour demand	-	NA
Javella et al. (2017)	Indonesia	Fiscal package	Asia crisis	Microsimulation (computable general equilibrium model)	Headcount poverty	-	+

Note: DiD refers to difference-in-differences; RCT to randomized control trial; OLS to ordinary least squares; PSM to propensity score matching; RDD to regression discontinuity design; AIT to average intention to treat; IV to instrumental variable; FGT to Foster–Greer–Thorbecke indices; SR to long run; and LR to long run.

Source: authors' elaboration.

Appendix B: Databases and criteria for selecting papers

This appendix briefly describes the databases and criteria used for including papers in this scoping review. The specific search terms and counts of papers identified from different databases are presented in Appendix C (social protection) and Appendix D (taxation).

The process of identifying papers for this scoping review was conducted in April and May 2022, with consideration of papers focusing on the impact of shock-responsive social protection policies on income and poverty levels in low- and middle-income countries. The corresponding search process focusing on the impact of tax policies was conducted in June 2022.

There were seven databases used for searching papers on both social protection and tax policies as crisis responses:

1. Google Scholar (<https://scholar.google.com/>)
2. Web of Science (<https://www.webofknowledge.com/>)
3. Scopus (<https://www.scopus.com/>)
4. EconLit (<https://www.aeaweb.org/econlit/>)
5. UNU-WIDER (<https://www.wider.unu.edu/publications>)
6. EUROMOD (<https://euromod-web.jrc.ec.europa.eu/research/publications>)
7. International Journal of Microsimulation, IJM (<https://www.microsimulation.pub/>)

Due to a large search volume, searches used to identify papers covering both social protection and tax response were spread out over several days to avoid suspicions of web scraping. The first round of searches was conducted using Google Scholar. Then, in order to capture as many relevant papers as possible, search results were corroborated in three ways:

1. By re-running all searches with relevant specifications through three additional black-and-white databases (Web of Science, Scopus, and EconLit);
2. By re-running all searches with relevant specifications through three grey literature databases (UNU-WIDER, EUROMOD, and IJM); and
3. By manually scanning the bibliographies of relevant recent publications and pre-existing literature reviews for references to ensure that no eligible papers were overlooked.

The inclusion and exclusion criteria that guided the design of particular search terms and eventual selection of papers are presented below in Table B1. The resulting search terms were identified and conceptualized as follows (see Appendices C and D for details):

1. The following three terms were used interchangeably to refer to a social policy intended to safeguard individuals and households from economic hardship (used in social protection searches): *social protection*, *social assistance*, and *social insurance*.
2. For tax-related searches, the key search words used were: *taxation*, *tax policy*, *tax program*, *tax collection*, *tax waivers*, *direct tax*, and *indirect tax*. These were used both in groups of three and separately, and combined with terms *crisis* or *shock* and/or *income* or *poverty*.
3. The following terms referring to specific social protection applications were also considered with social protection searches on Web of Science, Scopus, and EconLit: *conditional cash transfer*, *unconditional cash transfer*, *cash transfer*, *food voucher*, *birth grants*, *family allowances*, *death benefit*, *child benefit*, *in-kind transfers*, *income guarantee*, *universal basic income*, *unemployment benefits*, *insurance benefits*, *sick leave*, *social pensions*, *disability grants*, *childcare*, *care for the elderly*, *fee waivers*, *school feeding*, *school vouchers*, *tax reduction*, and *tax waivers*.

4. With social protection searches using the UNU-WIDER, EUROMOD, and the IJM databases, we simply searched for the terms *shock* or *crisis*, or combined those terms with *social protection*, *social insurance*, and *social assistance*.

Table B1: Summary of the inclusion and exclusion criteria

Domain	Inclusion criteria	Exclusion criteria
Setting and types of crises	Low- and middle-income countries, developing countries	High-income countries, developed countries
Shock or crisis	Financial, epidemiological, macroeconomic, financial, or natural disasters	Humanitarian, famines
Relevant population	Working age population (of age 18 to 65) in the formal or informal market	Individuals younger than 18
Dimensions of the outcomes	Income, poverty, assets	Inequality, child outcomes, health outcomes, education outcomes, demographic shifts
Programme typology, searches focusing on social protection as a crisis response	Social assistance, social insurance, social protection, labour market programmes	Social care, social services
Programme typology, searches focusing on taxation as a crisis response	Taxation, tax policy, tax, tax collection, direct tax, indirect tax, income tax, tax waivers	Subsidies
Methodology	Quantitative studies at the individual or household level; use of micro data	Qualitative studies; quantitative studies at the level of the national economy, or those that do not use micro data

Note: note that programme typologies are presented in separate rows for searches covering social protection and taxation measures as crisis responses, respectively.

Source: authors' elaboration.

Table B2 lists the final counts of publications included in the scoping review from different databases, separately for social protection and tax measures as crisis responses. The detailed search protocols, search entries, and results are available in Appendix C (social protection) and Appendix D (taxation).

Table B2: Counts of publications included in the scoping review from different databases

Database	Number of included publications, social protection as a crisis response	Number of included publications, taxation as a crisis response
1. Google Scholar	117	3
2. Web of Science	80	8
3. Scopus	23	2
4. EconLit	59	10
5. UNU-WIDER	5	2
6. EUROMOD	3	1
7. International Journal of Microsimulation	0	2
References	0	2
Total	287	30

Source: authors' elaboration.

Appendix C: Search protocols and results—social protection as a crisis response

C.1 Google Scholar

Due to the large volume of publications available in the Google Scholar database, we carried out a series of preliminary searches with different permutations of the terms *social protection*, *social assistance*, and *social insurance*, along with several other key terms aligning with the inclusion criteria. These searches included different configurations of the words ‘*quantitative*’, ‘*impact*’, ‘*shock*’, ‘*crisis*’, ‘*income*’, and ‘*poverty*’, for each of the three terms (*social protection*, *social assistance*, and *social insurance*).

All entries were manipulated using the following search operators:

- *allintext*, so that the engine searched for all terms within the text;
- “*term*”, so that the engine searched each term as a whole;
- (“*shock*” OR “*crisis*”), so that the search engine searched for these terms ‘as a group’.

The beginning and end dates were not specified, meaning that the search spanned all publications from all years in the database.

A total of 42 initial Google Scholar searches were conducted. The full list of these preliminary search entries and counts of results are presented in Tables C1A, C1B, and C1C, covering terms *social protection*, *social assistance*, and *social insurance*, respectively. Each table includes both the total number of results as well as the total excluding patents and citations.

Table C1A: Preliminary search entries and results, social protection: Google Scholar

Search entry (social protection)	Total	Total excluding patents and citations
allintext: "social protection" + "quantitative" + ("impact" OR "outcome")	61,200	57,100
allintext: "social protection" + "quantitative" + ("impact" OR "outcome") + "shock"	15,500	14,300
allintext: "social protection" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income")	41,000	38,400
allintext: "social protection" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty"	37,300	34,900
allintext: "social protection" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income") + ("low income" OR "middle income")	17,700	16,900
allintext: "social protection" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	18,000	16,400
allintext: "social protection" + ("quantitative analysis" OR "quantitative estimate") + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income") + ("low income" OR "middle income")	3,390	3,380
allintext: "social protection" + ("quantitative analysis" OR "quantitative estimate") + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	3,100	3,090
allintext: "social protection" + ("policy" OR "program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	3,380	2,900
allintext: "social protection" + ("policy" OR "program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	3,090	2,650
allintext: ("social protection policy" OR "social protection program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	1,340	1,150

allintext: ("social protection policy" OR "social protection program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	1,310	1,120
allintext: ("social protection policy" OR "social protection program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	192	165
allintext: ("social protection policy" OR "social protection program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	185	159
Total results	206,687	192,614

Source: authors' elaboration.

Table C1B: Preliminary search entries and results, social assistance: Google Scholar

Search entry (social assistance)	Total	Total excluding patents and citations
allintext: "social assistance" + "quantitative" + ("impact" OR "outcome")	41,800	41,300
allintext: "social assistance" + "quantitative" + ("impact" OR "outcome") + "shock"	8,490	8,480
allintext: "social assistance" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income")	25,000	25,100
allintext: "social assistance" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty"	22,200	22,300
allintext: "social assistance" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income") + ("low income" OR "middle income")	14,400	14,300
allintext: "social assistance" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	13,100	13,100
allintext: "social assistance" + ("quantitative analysis" OR "quantitative estimate") + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income") + ("low income" OR "middle income")	1,990	1,990
allintext: "social assistance" + ("quantitative analysis" OR "quantitative estimate") + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	1,800	1,800
allintext: "social assistance" + ("policy" OR "program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "exogenous shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	1,980	1,700
allintext: "social assistance" + ("policy" OR "program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "exogenous shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	1,790	1,540
allintext: ("social assistance policy" OR "social assistance program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	709	609
allintext: ("social assistance policy" OR "social assistance program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	674	578
allintext: ("social assistance policy" OR "social assistance program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	142	122
allintext: ("social assistance policy" OR "social assistance program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	136	117
Total results	134,211	133,036

Source: authors' elaboration.

Table C1C: Preliminary search entries and results, social insurance: Google Scholar

Search entry (social insurance)	Total	Total excluding patents and citations
allintext: "social insurance" + "quantitative" + ("impact" OR "outcome")	53,100	51,500
allintext: "social insurance" + "quantitative" + ("impact" OR "outcome") + "shock"	12,800	12,300
allintext: "social insurance" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income")	31,100	29,800
allintext: "social insurance" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty"	21,900	21,100
allintext: "social insurance" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income") + ("low income" OR "middle income")	15,100	14,700
allintext: "social insurance" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	12,300	11,900
allintext: "social insurance" + ("quantitative analysis" OR "quantitative estimate") + ("impact" OR "outcome") + ("shock" OR "crisis") + ("income" OR "income level" OR "level of income") + ("low income" OR "middle income")	2,280	2,220
allintext: "social insurance" + ("quantitative analysis" OR "quantitative estimate") + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	1,710	1,670
allintext: "social insurance" + ("policy" OR "program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "exogenous shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	2,280	1,960
allintext: "social insurance" + ("policy" OR "program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "exogenous shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	1,710	1,470
allintext: ("social insurance policy" OR "social insurance program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	631	539
allintext: ("social insurance policy" OR "social insurance program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	504	430
allintext: ("social insurance policy" OR "social insurance program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	130	111
allintext: ("social insurance policy" OR "social insurance program") + ("quantitative analysis" OR "quantitative estimate") + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	91	78
Total results	155,636	149,778

Source: authors' elaboration.

Based on these preliminary search results, we surmised that the literature was robust and that the search terms used correspond to a very large number of publications. Therefore, we selected a series of more narrowly defined searches. The searches were specified with an appropriate number of inclusion criteria keywords to produce a Google Scholar search through which we could systematically download all citations into a matrix.

As shown in Table C1D, a total of six searches were run to identify relevant papers.

Table C1D: Narrowed-down search entries and results, social protection: Google Scholar, 20 and 21 April 2022

Search entry	Total	Total excluding patents and citations	Identified	Date
<i>Social protection</i>				
("social protection policy" OR "social protection program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	1,340	1,150	980	20 April
("social protection policy" OR "social protection program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	1,310	1,120	980	21 April
<i>Social assistance</i>				
("social assistance policy" OR "social assistance program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	709	609	700	20 April
("social assistance policy" OR "social assistance program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	674	578	663	21 April
<i>Social insurance</i>				
("social insurance policy" OR "social insurance program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + ("income" OR "income level") + ("low-income" OR "middle income")	631	539	619	20 April
("social insurance policy" OR "social insurance program") + "quantitative" + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	504	430	492	21 April
Total results	5,168	4,426	4,434	

Source: authors' elaboration.

This **Identification Stage** produced **N = 4,434** initially identified publications that were collected and arranged into a matrix with identifying meta information. Following Table C1D, these publications can be disaggregated as follows:

- Social protection + income = 980 publications
- Social protection + poverty = 980 publications
- Social assistance + income = 700 publications
- Social assistance + poverty = 663 publications
- Social insurance + income = 619 publications
- Social insurance + poverty = 492 publications

From here, we checked for and removed all duplicates within each search result. Within-term duplicates are listed below:

- Social protection + income: 980 – 19 duplicates = 961 publications
- Social protection + poverty: 980 – 19 duplicates = 961 publications
- Social assistance + income: 700 – 10 duplicates = 690 publications
- Social assistance + poverty: 663 – 10 duplicates = 653 publications
- Social insurance + income: 619 – 6 duplicates = 613 publications
- Social insurance + poverty: 492 – 3 duplicates = 489 publications

An additional $N = 67$ publications were removed as duplicates, leaving $N = 4,367$ publications. We then checked for and removed all duplicates across each search result. $N = 2,223$ cross-search duplicates were removed, resulting in $N=2,144$ unique publications.

In the **Screening Stage**, these $N = 2,144$ publications were screened as follows:

- First, all dissertations and theses ($N = 397$) were detected and removed.
- Second, the search yielded several foreign language papers ($N = 13$) that were removed.
- Third, book reviews ($N = 4$) and inaccessible publications ($N = 42$) were eliminated.
- Fourth, an additional $N=102$ publications were removed as duplicate papers.

A total of $N = 558$ publications were removed in this stage.

In the **Eligibility Stage**, the remaining $N = 1,586$ publications were deemed eligible for review. The abstract, and in some cases the substantive content, of each paper was reviewed to determine if the publication fit the search criteria. Some publications were themselves summaries or review pieces and were removed from the set of selected papers. In total, $N = 1,469$ publications were removed at this stage that did not substantively meet the inclusion criteria.

In the **Included Stage**, a total of $N = 117$ publications remained from the Google Scholar search.

C.2 Web of Science

The above search protocol was then replicated in three additional black-and-white literature databases: Web of Science (Section C.2 here), Scopus (C.3), and EconLit (C.4).

In addition to searches on *social protection*, *social insurance*, and *social assistance*, in these academically oriented databases we opted to use a range of more specified search terms referring to specific social protection policy applications (see details in Appendix B, and Tables C2, C3, and C4 below).

In Web of Science, a total of 24 searches were conducted, of which 21 yielded results. The search entries and counts of results are listed in Table C2.

As for paper selection:

- In the **Identification Stage**, $N = 1,730$ publications were identified, with $N = 123$ duplicates detected and removed.
- In the **Screening Stage**, $N = 1,607$ unique publications were screened. Of these, we removed $N = 197$ foreign language papers, $N = 3$ book reviews, $N = 1$ correction items, $N = 1$ news items, and $N = 44$ other items. In total, $N = 246$ publications were removed.
- In the **Eligibility Stage**, $N = 1,361$ publications were reviewed for eligibility. $N = 1,276$ papers were removed that did not substantively meet the inclusion criteria. In addition, $N = 5$ papers were removed for having been identified earlier by the Google Scholar search results.
- In the **Included Stage**, $N = 80$ unique publications remained from the Web of Science search.

Table C2: Search entries and results: Web of Science, 22 April 2022

Search entry	Results
"social insurance" + crisis OR shock	283
"social assistance" + crisis OR shock	155
"social protection" + crisis OR shock	727
"cash transfer" + crisis OR shock	123
"food voucher" + crisis OR shock	3
"birth grant" + crisis OR shock	0
"family allowance" + crisis OR shock	3
"death benefit" + crisis OR shock	5
"child benefit" + crisis OR shock	8
"in-kind transfer" + crisis OR shock	2
"income guarantee" + crisis OR shock	4
"universal basic income" + crisis OR shock	30
"unemployment benefit" + crisis OR shock	3
"insurance benefit" + crisis OR shock	8
"sick leave"+ crisis OR shock	46
"social pension" + crisis OR shock	6
"disability grant" + crisis OR shock	1
"childcare" + crisis OR shock	193
"elderly care" OR "care for the elderly" + crisis OR shock	84
"fee waiver" + crisis OR shock	9
"school feeding" + crisis OR shock	13
"school voucher" + crisis OR shock	0
"tax reduction" + crisis OR shock	24
"tax waiver" + crisis OR shock	0
Total results	1,730

Source: authors' elaboration.

C.3 Scopus

In Scopus, a total of 24 searches were conducted, of which 23 yielded results. The search entries and counts of results are listed in Table C3.

As for paper selection:

- In the **Identification Stage**, **N = 1,836** publications were identified, with **N = 77** duplicates detected and removed.
- In the **Screening Stage**, **N = 1,759** unique publications were screened. Of these, we removed **N = 177** foreign language papers and **N = 172** reviews. In total, **N = 349** publications were removed.
- In the **Eligibility Stage**, **N = 1,410** publications were reviewed for eligibility. **N = 1,385** papers were removed that did not substantively meet the inclusion criteria. In addition, **N = 2** papers were removed for having been identified earlier by the Google Scholar or Web of Science search results.
- In the **Included Stage**, **N = 23** unique publications remained from the Scopus search.

Table C3: Search entries and results: Scopus, 22 April 2022

Search entry	Results
"social insurance" + quantitative	116
"social assistance" + quantitative	97
"social protection" + quantitative	143
"cash transfer" + quantitative	107
"food voucher" + quantitative	4
"birth grant" + quantitative	0
"family allowance" + quantitative	5
"death benefit" + quantitative	6
"child benefit" + quantitative	14
"in-kind transfer" + quantitative	5
"income guarantee" + quantitative	1
"universal basic income" + quantitative	6
"unemployment benefit" + quantitative	39
"insurance benefit" + quantitative	41
"sick leave" + quantitative	187
"social pension" + quantitative	6
"disability grant" + quantitative	5
"childcare" + quantitative	293
"elderly care" OR "care for the elderly" + quantitative	718
"fee waiver" + quantitative	1
"school feeding" + quantitative	29
"school voucher" + quantitative	4
"tax reduction" + quantitative	8
"tax waiver" + quantitative	1
Total results	1,836

Source: authors' elaboration.

C.4 EconLit

In EconLit, the search parameters were set to English-language-only publications and all source types except for dissertations, easing the screening process. A total of 24 searches were conducted, of which 18 yielded results. The search entries and counts of results are listed in Table C4.

As for paper selection:

- In the **Identification Stage**, **N = 739** publications were identified, with **N = 100** duplicates detected and removed.
- In the **Screening Stage**, **N = 639** unique publications were screened. Of these, **N = 27** book reviews were removed. In total, **N = 27** publications were removed.
- In the **Eligibility Stage**, **N = 612** publications were reviewed for eligibility. **N = 534** papers were removed that did not substantively meet the inclusion criteria. In addition, **N = 19** papers were removed for having been identified earlier by the Google Scholar, Web of Science, or Scopus search results.
- In the **Included Stage**, **N = 59** unique publications remained from the EconLit search.

Table C4: Search entries and results: EconLit, 22 April 2022

Search entry	Results
“social insurance” + (crisis OR shock)	164
“social assistance” + (crisis OR shock)	56
“social protection” + (crisis OR shock)	275
“cash transfer” + (crisis OR shock)	75
“food voucher” + (crisis OR shock)	0
“birth grant” + (crisis OR shock)	0
“family allowance” + (crisis OR shock)	0
“death benefit” + (crisis OR shock)	3
“child benefit” + (crisis OR shock)	4
“in-kind transfer” + (crisis OR shock)	3
“income guarantee” + (crisis OR shock)	1
“universal basic income” + (crisis OR shock)	10
“unemployment benefit” + (crisis OR shock)	37
“insurance benefit” + (crisis OR shock)	10
“sick leave” + (crisis OR shock)	12
“social pension” + (crisis OR shock)	3
“disability grant” + (crisis OR shock)	1
“childcare” + (crisis OR shock)	54
(“elderly care” OR “care for the elderly”) + (crisis OR shock)	10
“fee waiver” + (crisis OR shock)	0
“school feeding” + (crisis OR shock)	3
“school voucher” + (crisis OR shock)	0
“tax reduction” + (crisis OR shock)	20
“tax waiver” + (crisis OR shock)	0
Total results	739

Source: authors' elaboration.

C.5 UNU-WIDER

The above search protocol was then replicated in three grey literature databases: UNU-WIDER (Section C.5 here), EUROMOD (C.6), and the International Journal of Microsimulation (C.7).

In these databases, we simply searched for the terms ‘shock’ or ‘crisis’, or combined those terms with *social protection*, *social insurance*, and *social assistance* (see details in Appendix B, and Tables C5, C6, and C7 below).

In UNU-WIDER, a total of six searches were conducted, each of which yielded results. The search entries and counts of results are listed in Table C5.

Table C5: Search entries and results, social protection: UNU-WIDER, 22 April and 4 May 2022

Search entry	Results	Date
crisis and social protection	96	22 April
shock and social protection	66	22 April
crisis and social assistance	84	22 April
shock and social assistance	49	22 April
crisis and social insurance	28	22 April
shock and social insurance	29	22 April
pandemic	160	4 May
Total results	512	

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 512** publications were identified, with **N = 53** duplicates detected and removed.
- In the **Screening Stage**, **N = 459** unique publications were screened. Of these, **N = 372** were removed, including several blog posts.
- In the **Eligibility Stage**, **N = 87** publications were reviewed for eligibility. **N = 81** papers were removed that did not substantively meet the inclusion criteria. In addition, **N = 1** paper was removed for having been identified earlier in black-and-white literature search results.
- In the **Included Stage**, **N = 5** unique publications remained from the UNU-WIDER search.

C.6 EUROMOD

In EUROMOD, the search parameter was refined to cover the “Tax and benefit systems” Research Area. Two searches were conducted, using terms ‘crisis’ and ‘shocks’, both of which yielded results. These search entries and counts of results are listed in Table C6.

Table C6: Search entries and results, social protection: EUROMOD, 30 April 2022

Search entry	Results
crisis	58
shock	12
Total results	70

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 70** publications were identified, with **N = 5** duplicates detected and removed.
- In the **Screening Stage**, **N = 65** unique publications were screened. Of these, **N = 25** were removed.
- In the **Eligibility Stage**, **N = 40** publications were reviewed for eligibility. **N = 37** papers were removed that did not substantively meet the inclusion criteria. No papers were removed for having been identified in black-and-white literature or UNU-WIDER search results.
- In the **Included Stage**, **N = 3** unique publications remained from the EUROMOD search.

C.7 International Journal of Microsimulation (IJM)

In IJM, the search parameter was refined to cover Research Areas “Tax and benefits” and “Pensions and retirement”. Two searches were conducted, using terms ‘crisis’ and ‘shocks’, both of which yielded results. These search entries and counts of results are listed in Table C7.

Table C7: Search entries and results, social protection: International Journal of Microsimulation, 30 April 2022

Search entry	Results
crisis	23
shock	15
Total results	38

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 38** publications were identified, with **N = 14** duplicates detected and removed.
- In the **Screening Stage**, **N = 24** unique publications were screened. Of these, no publications were removed.
- In the **Eligibility Stage**, **N = 24** publications were reviewed for eligibility. **N = 22** papers were removed that did not substantively meet the inclusion criteria. **N = 2** papers were removed for having been identified earlier in black-and-white literature, UNU-WIDER, or EUROMOD search results.
- In the **Included Stage**, **N = 0** unique publications remained from the IJM search.

C.8 References

Finally, the bibliographies for several recent papers (all published after 2020) were manually reviewed to identify any missing publications that are eligible based on the criteria used. From this review, **no publications** were included in the study.

Appendix D: Search protocols and results—taxation as a crisis response

D.1 Google Scholar

In Google Scholar, we carried out a series of preliminary searches with different permutations of the term *taxation* (grouping together *tax policy and tax program*; *tax collection and tax waivers*; and *direct tax and indirect tax*) along with several other key terms aligning with the inclusion criteria (*'quantitative'*, *'impact'*, *'shock'*, *'crisis'*, *'income'*, *'poverty'*, and *'middle-'* or *'low- income country'*). In the preliminary search, the results using *taxation* were significantly larger than identical searches for more detailed typology terms, so we opted to use the more specified terms when conducting searches using this database. All entries were manipulated using the following search operators:

- *allintext*, so that the engine searched for all terms within the text;
- *"term"*, so that the engine searched each term as a whole;
- (*"shock"* OR *"crisis"*), so that the search engine searched for these terms 'as a group'.

The beginning and end dates were not specified, meaning that the search spanned all publications from all years in the database.

A total of 18 initial Google Scholar searches were conducted. The full list of these preliminary search entries and counts of results without patents and citations are presented in Table D1A.

Table D1A: Preliminary search entries and results, taxation: Google Scholar

Search entry	Total excluding patents and citations
allintext: "taxation" + "quantitative" + ("impact" or "outcome")	154,000
allintext: "tax policy" + "quantitative" + ("impact" OR "outcome")	43,000
allintext: "taxation" + "quantitative" + ("impact" or "outcome") + ("shock" OR "crisis")	87,300
allintext: "tax policy" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis")	26,400
allintext: "taxation" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty"	44,400
allintext: "tax policy" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty"	11,200
allintext: "taxation" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "income"	73,800
allintext: "tax policy" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "income"	24,200
allintext: "tax policy" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	6,080
allintext: "tax policy" + "quantitative" + ("impact" OR "outcome") + ("shock" OR "crisis") + "income" + ("low income" OR "middle income")	9,670
allintext: "tax policy"+ ("quantitative analysis" OR "quantitative estimate") + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	930
allintext: "tax policy"+ ("quantitative analysis" OR "quantitative estimate") + ("impact" OR "outcome") + ("shock" OR "crisis") + "income" + ("low income" OR "middle income")	1,670
allintext: ("tax policy" OR "tax program") + "quantitative analysis" + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	924
allintext: ("tax policy" OR "tax program") + "quantitative analysis" + ("shock" OR "crisis") + ("impact" OR "outcome") + "income" + ("low-income" OR "middle income")	1,650
allintext: ("tax collection" OR "tax waivers") + "quantitative analysis" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	699

allintext: ("tax collection" OR "tax waivers") + "quantitative analysis" + ("impact" OR "outcome") + ("shock" OR "crisis") + "income" + ("low income" OR "middle income")	940
allintext: ("direct tax" OR "indirect tax") + "quantitative analysis" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	384
allintext: ("direct tax" OR "indirect tax") + "quantitative analysis" + ("impact" OR "outcome") + ("shock" OR "crisis") + "income" + ("low income" OR "middle income")	555
Total results	487,802

Source: authors' elaboration.

From this preliminary search, we selected a series of more narrowly defined searches. The searches were specified with an appropriate number of inclusion criteria keywords to produce a Google Scholar search through which we could systematically download all citations into a matrix.

As shown in Table D1B, a total of six searches were run to identify relevant papers.

Table D1B: Narrowed-down search entries and results, taxation: Google Scholar, 7 and 8 June 2022

Search entry	Total excluding patents and citations	Identified	Date
("tax policy" OR "tax program") + "quantitative analysis" + ("shock" OR "crisis") + ("impact" OR "outcome") + "income" + ("low-income" OR "middle income")	1,650	980	8 June
("tax collection" OR "tax waivers") + "quantitative analysis" + ("impact" OR "outcome") + ("shock" OR "crisis") + "income" + ("low income" OR "middle income")	940	980	8 June
("direct tax" OR "indirect tax") + "quantitative analysis" + ("impact" OR "outcome") + ("shock" OR "crisis") + "income" + ("low income" OR "middle income")	555	544	7 June
("tax policy" OR "tax program") + "quantitative analysis" + ("shock" OR "crisis") + ("impact" OR "outcome") + "poverty" + ("low-income" OR "middle income")	924	975	8 June
("tax collection" OR "tax waivers") + "quantitative analysis" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	699	745	8 June
("direct tax" OR "indirect tax") + "quantitative analysis" + ("impact" OR "outcome") + ("shock" OR "crisis") + "poverty" + ("low income" OR "middle income")	384	374	7 June
Total results	5,152	4,598	

Source: authors' elaboration.

This **Identification Stage** produced **N = 4,598** publications that were collected and arranged into a matrix with identifying meta information. Following Table D1B, these publications can be disaggregated as follows:

- Tax policy/tax program + income = 980 publications
- Tax collection/tax waivers + income = 980 publications
- Direct/indirect tax + income = 544 publications
- Tax policy/tax program + poverty = 975 publications
- Tax collection/tax waivers + poverty = 745 publications
- Direct/indirect tax + poverty = 374 publications

From here, we checked for and removed all duplicates within each search result. Within-term duplicates are listed below:

- Tax policy/tax program + income: 980 – 21 duplicates = 959 publications

- Tax collection/tax waivers + income: 980 – 17 duplicates = 963 publications
- Direct/indirect tax + income: 544 – 14 duplicates = 530 publications
- Tax policy/tax program + poverty: 975 – 33 duplicates = 942 publications
- Tax collection/tax waivers + poverty: 745 – 9 duplicates = 736 publications
- Direct/indirect tax + poverty: 374 – 10 duplicates = 364 publications

An additional N = 104 publications were removed as duplicates, leaving N = 4,494 publications. We then checked for and removed all duplicates across each search result. N = 2,017 cross-search duplicates were removed, resulting in N = 2,477 unique publications.

In the **Screening Stage**, these N = 2,477 publications were screened as follows:

- First, all dissertations and theses (N = 597) were detected and removed.
- Second, foreign language papers (N = 2) were removed.
- Third, book reviews (N = 22) and inaccessible publications (N = 2) were eliminated.

A total of N = 623 publications were removed at this stage.

In the **Eligibility Stage**, the remaining N = 1,854 publications were deemed eligible for review. The abstract, and in some cases the substantive content, of each paper was reviewed to determine if the publication fit the search criteria. Many publications reviewed did not meet the inclusion criteria and were removed principally because the research:

1. Was not set in the context of a crisis;
2. Was deeply theoretical without applied examples;
3. Considered only high-income countries like the US and EU countries; or
4. Analysed outcomes at the national or regional levels, without considering individual- or household-level implications.

In total, N = 1,851 publications were removed at this stage that did not substantively meet the inclusion criteria.

In the **Included Stage**, a total of N = 3 publications remained from the Google Scholar search.

D.2 Web of Science

The above search protocol was then replicated in three additional black-and-white literature databases: Web of Science (Section D.2 here), Scopus (D.3), and EconLit (D.4).

In these databases, we also opted to utilize specific search terms for programme typologies, running searches for each term individually (*taxation, tax policy, tax collection, direct tax, indirect tax, income tax, and tax waivers*). These searches were also further limited to include terms *crisis or shock* and *income or poverty*, i.e. the two outcomes of interest (see details in Appendix B, and Tables D2, D3, and D4 below).

In Web of Science, a total of seven searches were conducted, each of which yielded results. The search entries and counts of results are listed in Table D2.

Table D2: Search entries and results, taxation: Web of Science, 7 June 2022

Search entry	Results
"taxation" + crisis OR shock + income OR poverty	430
"tax policy" + crisis OR shock + income OR poverty	97
"tax collection" + crisis OR shock + income OR poverty	12
"direct tax" + crisis OR shock + income OR poverty	4
"indirect tax" + crisis OR shock + income OR poverty	3
"income tax" + crisis OR shock + income OR poverty	288
"tax waivers" + crisis OR shock	1
Total results	835

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 835** publications were identified, with **N = 173** duplicates detected and removed.
- In the **Screening Stage**, **N = 662** unique publications were screened. Of these, we removed **N = 59** foreign language papers and **N = 16** corrections, editorials, and reviews. In total, **N = 75** publications were removed.
- In the **Eligibility Stage**, **N = 587** publications were reviewed for eligibility. **N = 579** papers were removed that did not substantively meet the inclusion criteria. No papers were removed for having been identified earlier by the Google Scholar search results.
- In the **Included Stage**, **N = 8** unique publications remained from the Web of Science search.

D.3 Scopus

In Scopus, a total of seven searches were conducted, of which six yielded results. The search entries and counts of results are listed in Table D3.

Table D3: Search entries and results, taxation: Scopus, 7 June 2022

Search entry	Results
"taxation" + crisis OR shock + income OR poverty	351
"tax policy" + crisis OR shock + income OR poverty	90
"tax collection" + crisis OR shock + income OR poverty	13
"direct tax" + crisis OR shock + income OR poverty	12
"indirect tax" + crisis OR shock + income OR poverty	16
"income tax" + crisis OR shock + income OR poverty	319
"tax waivers" + crisis OR shock	0
Total results	801

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 801** publications were identified, with **N = 183** duplicates detected and removed.
- In the **Screening Stage**, **N = 618** unique publications were screened. Of these, we removed **N = 50** foreign language papers and **N = 45** reviews, editorials, surveys, and notes. In total, **N = 95** publications were removed.

- In the **Eligibility Stage**, **N = 523** publications were reviewed for eligibility. N = 513 papers were removed that did not substantively meet the inclusion criteria. In addition, N = 8 papers were removed for having been identified earlier by the Google Scholar or Web of Science search results.
- In the **Included Stage**, **N = 2** unique publications remained from the Scopus search.

D.4 EconLit

In EconLit, a total of six searches were conducted, each of which yielded results. The search entries and counts of results are listed in Table D4.

Table D4: Search entries and results, taxation: EconLit, 7 June 2022

Search entry	Results
"taxation" + crisis OR shock + income OR poverty	758
"tax policy" + crisis OR shock + income OR poverty	92
"tax collection" + crisis OR shock + income OR poverty	18
"direct tax" + crisis OR shock + income OR poverty	8
"indirect tax" + crisis OR shock + income OR poverty	10
"income tax" + crisis OR shock + income OR poverty	308
"tax waivers" + crisis OR shock	1
Total results	1,195

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 1,195** publications were identified, with N = 275 duplicates detected and removed.
- In the **Screening Stage**, **N = 920** unique publications were screened. Of these, N = 47 book reviews, N = 39 dissertations, and N = 26 foreign language papers were removed. In total, N = 112 publications were removed.
- In the **Eligibility Stage**, **N = 808** publications were reviewed for eligibility. N = 793 papers were removed that did not substantively meet the inclusion criteria. In addition, N = 5 papers were removed for having been identified earlier by the Google Scholar, Web of Science, or Scopus search results.
- In the **Included Stage**, **N = 10** unique publications remained from the EconLit search.

D.5 UNU-WIDER

The above search protocol was then replicated in three grey literature databases: UNU-WIDER (Section D.5 here), EUROMOD (D.6), and the International Journal of Microsimulation (D.7).

In UNU-WIDER, a total of nine searches were conducted, eight of which yielded results. The search entries and counts of results are listed in Table D5.

Table D5: Search entries and results, taxation: UNU-WIDER, 17 and 18 June 2022

Search entry	Results	Date
"taxation" + crisis OR shock	6	17 June
"tax policy" + crisis OR shock	30	17 June
"tax collection" + crisis OR shock	14	17 June
"direct tax" + crisis OR shock	18	17 June
"indirect tax" + crisis OR shock	0	17 June
"income tax" + crisis OR shock	27	17 June
"tax waivers" + crisis OR shock	3	17 June
crisis and tax	94	18 June
pandemic and tax	44	18 June
Total results	236	

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 236** publications were identified, with **N = 47** duplicates detected and removed.
- In the **Screening Stage**, **N = 189** unique publications were screened. Of these, **N = 154** were removed.
- In the **Eligibility Stage**, **N = 35** publications were reviewed for eligibility. **N = 32** papers were removed that did not substantively meet the inclusion criteria. **N = 1** paper was removed for having been identified earlier in black-and-white literature search results.
- In the **Included Stage**, **N = 2** unique publications remained from the UNU-WIDER search.

D.6 EUROMOD

In EUROMOD, seven searches were conducted, five of which yielded results. These search entries and counts of results are listed in Table D6.

Table D6: Search entries and results, taxation: EUROMOD, 17 June 2022

Search entry	Results
"taxation" + crisis OR shock	7
"tax policy" + crisis OR shock	28
"tax collection" + crisis OR shock	0
"direct tax" + crisis OR shock	4
"indirect tax" + crisis OR shock	0
"income tax" + crisis OR shock	32
"tax waivers" + crisis OR shock	0
Total results	71

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 71** publications were identified, with **N = 32** duplicates detected and removed.
- In the **Screening Stage**, **N = 39** unique publications were screened. Of these, **N = 8** were removed.
- In the **Eligibility Stage**, **N = 31** publications were reviewed for eligibility. **N = 28** papers were removed that did not substantively meet the inclusion criteria. In addition, **N = 8**

papers were removed for having been identified earlier in black-and-white literature or UNU-WIDER search results.

- In the **Included Stage**, **N = 1** unique publication remained from the EUROMOD search.

D.7 International Journal of Microsimulation

In IJM, two searches were conducted, using terms ‘crisis’ and ‘shocks’, both of which yielded results. These search entries and counts of results are listed in Table D7.

Table D7: Search entries and results, taxation: International Journal of Microsimulation, 17 June 2022

Search entry	Results
crisis	21
shock	15
Total results	36

Source: authors' elaboration.

As for paper selection:

- In the **Identification Stage**, **N = 36** publications were identified, with **N = 13** duplicates detected and removed.
- In the **Screening Stage**, **N = 23** unique publications were screened. Of these, no publications were removed.
- In the **Eligibility Stage**, **N = 23** publications were reviewed for eligibility. **N = 21** papers were removed that did not substantively meet the inclusion criteria. No papers were removed for having been identified earlier in black-and-white literature, UNU-WIDER, or EUROMOD search results.
- In the **Included Stage**, **N = 2** unique publications remained from the IJM search.

D.8 References

Finally, the bibliographies for several recent papers (all published after 2020) were manually reviewed to identify any missing publications that are eligible based on the criteria used. From this review, **N = 2 publications** were included in the study. These publications are two book chapters from an edited volume that were included in the final matrix.