Social Protection
& Public Finance Management

EXTENDING SOCIAL PROTECTION DURING TIMES OF CRISIS: THE DATA REVOLUTION

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Abstract

This working paper analyses the adaptation of social protection systems to changes in economic conditions and discusses how these can be made more responsive and inclusive during crises by leveraging newly available data systems.[1] In examining data for 106 countries from the 1980s onwards, it transpires that social protection is the most countercyclical type of public expenditure and that social assistance spending has typically been more responsive during economic contractions. Preliminary data suggests that social protection spending has been more adaptive during the COVID-19 pandemic than it was following the global financial and economic crisis of 2007–2009;[2] it is expressed by the adoption of countercyclical policy interventions in both developed and developing economies, with a strong expansion of non-contributory interventions.[3] The discussion then reviews recent policy innovations that were introduced during the pandemic to track the impact of the socio-economic crisis and identify potential beneficiaries. These innovations demonstrate that governments can respond to a crisis in a timely manner and even reach individuals who are typically outside the scope of social protection (e.g. informal workers).

Going forward, governments should aim to build social protection systems that effectively respond to diverse idiosyncratic shocks and provide support to individuals both inside and outside of formal employment. Progressing in this direction requires identifying at a national level a series of socio-economic indicators that would allow up-to-date identification of social protection needs across the entire population almost in real time. Countries can thus define specific thresholds of these indicators that will initiate automatic or semi-automatic policy responses. Nonetheless, an effective response requires rapid access to adequate public resources. Public financing strategies should therefore be adopted, including the estimation of possible financing needs, the identification of different sources of revenue and the preparation of a clear decision tree that will

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1   Social protection, or social security, is defined as the set of policies and programmes designed to reduce and prevent poverty and vulnerability across the life cycle. Social protection includes nine main areas: child and family benefits, maternity protection, unemployment support, employment injury benefits, sickness benefits, health protection, old-age benefits, disability benefits and survivors' benefits. Social protection systems address all these policy areas by a mix of contributory schemes (mainly social insurance) and non-contributory tax-financed schemes (universal/categorical and social assistance).

2   The exact dates of the global financial crisis and the ensuing great recession vary, within the period 2007–09, depending on criteria and country; for the purpose of this working paper, the term "global financial crisis" will be used to encompass both.

3   Non-contributory schemes are defined as those that normally require no direct contribution from beneficiaries or their employers as a condition of entitlement to receive relevant benefits. The term covers a broad range of schemes, including those that are universal (such as national health services), for specific subgroups of the population (e.g. for older persons) and/or means-tested (such as social assistance schemes). Non-contributory schemes are usually financed through taxes or other state revenues.

regulate the use of resources during a crisis. The paper discusses the concept of a separate fund established under the social security agency to finance crisis responses and emergency interventions.

The overarching conclusion of the paper is that new data and methodologies, which are becoming increasingly available and have been used in other areas of policy interventions, can improve the adaptability of social protection systems. Especially where informality is high, these innovations will enable developing countries to address a lack of information about the social protection needs and loss of income of the population. While the full potential of novel technologies has yet to transpire, in the meantime the socio-economic conditions of informal workers will be better known to governments, thus facilitating social protection (and taxation) mechanisms of greater pertinence.

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Acknowledgements

Introduction

This working paper addresses two questions prompted by the COVID-19 pandemic and the subsequent social protection responses. First: were social protection systems countercyclical prior to and during the pandemic? Second: what could be the medium- and long-term effects of real-time and big data on social protection systems?

The seed of this paper lies in another research project that examined the impact of social protection spending on economic growth. The Programme "Improving Synergies Between Social Protection and Public Finance Management" (hereafter, SP&PFM Programme)[4] completed a study in collaboration with the Brazilian research institute Fundação Instituto de Pesquisas Econômicas (FIPE) to estimate the multiplier effect of increasing social protection spending.[5] During the research process, the opposite question was raised: how might social protection spending change during an economic slowdown or crisis? If it increased, then its countercyclical nature would be confirmed; if not, it could be neutral or, worse still, procyclical.

In parallel to that research project, the SP&PFM Programme performed several assessments of the socio-economic impact of the COVID-19 pandemic, notably on workers of the informal economy (e.g. in Burkina Faso, Côte d'Ivoire, Ethiopia, Nepal, Sri Lanka and Togo); it also supported the design of social protection responses (e.g. in Bangladesh, Cambodia, Ethiopia, Sri Lanka and Uganda) as well as the extension of identification mechanisms (e.g. in Cabo Verde, Cambodia and Nigeria). While countries were actively considering strategies to expand their programmes, another revolution with the potential to shape social protection systems in developing countries was spreading: nowcasting models based on new data could offer real-time welfare and consumption insights. The paper explores how these innovations might transform social protection systems, particularly their adaptability during crises.

The paper is organized as follows. The first section explores the adaptation of social protection spending to changes in gross domestic product (GDP), including separate analysis by type of social protection programme (social insurance and social assistance), by country group (developing vs industrialized) and by type of economic shock (crisis or slowdown); this is followed by a subsection focusing on the COVID-19 pandemic. The second section presents the most recent innovations in both social protection policy adaptations and real-time socio-economic tracking, while the third discusses the potential of these to reshape social protection systems and provides a risk-based framework to showcase the types of risk that could be tackled through new data. Section 4 considers the key components and features of an adaptive social protection system equipped with new real-time data, with subsections on indicators, triggers and policies, while the fifth and final section examines the financial implications of adopting a countercyclical response. Lastly, some conclusions and ideas for further research are shared.

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4   The SP&PFM Programme initiated in October 2019 provides medium-term support to multiple countries aiming to strengthen their social protection systems at a national level and ensure sustainable financing. Funded by the European Union (EU), the initiative is implemented jointly by the International Labour Organization (ILO), UNICEF, and the Global Coalition for Social Protection Floors (GCSPF), in collaboration with national partners and EU Delegations in each country.

5   The findings of the research are available at: www.socialprotection-pfm.org/research

1. Responsiveness of social protection spending to economic slowdowns

This section examines the relationship between public spending in social protection and changes in GDP growth, both from a long-term perspective and during the COVID-19 crisis specifically. The aim of the analysis is to understand the extent to which social protection systems have adapted to changes in economic conditions and whether this differs between types of social protection spending, groups of countries or states of the business cycle.

Before digging into the results, two methodological issues are worth noting. The first is that the response of social protection systems cannot be fully captured by expenditure; the way in which spending is channelled (e.g. types of programmes, targeted groups) is also important.[6] The second methodological challenge refers to the fact that individual requirements of social protection are not entirely represented by the GDP growth rate. The deterioration of living standards for particular groups within a country during a crisis may not generate notable changes in economic output at the aggregate level.[7]

The analysis will tackle these potential shortcomings in two ways. Firstly, whenever possible, the analysis will go beyond studying the relationship between overall social protection expenditure and GDP growth, by distinguishing between various types of social protection spending (e.g. contributory and non-contributory interventions). Secondly, the quantitative approach will be complemented by qualitative evidence describing examples of social protection responses, especially in the examination of trends that occurred during the COVID-19 pandemic as expenditure data for this period is not yet fully available.

▶ The long-term perspective

Bearing in mind the aforementioned caveats, this subsection presents the evolution of the relationship between social protection spending and GDP growth over multiple decades. The analysis draws data from the International Monetary Fund (IMF), namely the latter's Government Finance Statistics database for social protection expenditure and its World Economic Outlook database for GDP growth rates. The IMF classifies government expenditures into seven main categories: compensation of employees, use of goods and services, consumption of fixed capital, interests, subsidies, grants, social security and other expenses.[8] Social security spending is further differentiated between social insurance (i.e. contributory social protection) and social assistance (i.e. non-contributory social protection) (IMF, 2014).[9]

The analysis covers 106 countries from 1980 to 2021, although data availability for most countries starts only in the 2000s (see Appendix table 1 for full country and time coverage). Additionally, results for the COVID-19 pandemic years 2020 and 2021 will be presented separately in the next subsection due to limited data

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6   A related problem is the potentially erroneous measurement of social protection spending. This can be particularly acute for low- and middle-income countries, where governments have more limited statistical capacity, and where social protection is provided through a variety of policy tools (e.g. in-kind assistance) that are more difficult to track.

7   This is particularly relevant for low-income countries, where certain groups (e.g. low-income individuals, rural residents) might contribute relatively little to overall GDP. This means that even sharp deteriorations in living standards for these groups (e.g. as a result of natural or climate-related disasters) will have only a limited impact on national GDP. The following sections aim to identify alternative indicators that better capture variations in socio-economic need, compared to variations in GDP growth.

8   Social security expenditures are labelled as "social benefits" in the IMF World Economic Outlook database. While there is no perfect overlap between the IMF definition of social benefit expenditures and the ILO definition of social security expenditures, for ease of exposition throughout this section the term "social security" will be used to refer to the IMF category of social benefits.

9   The IMF Government Finance Statistics Database also includes employment-related social benefits as part of social protection spending. These are "social benefits payable in cash or in kind by government or public sector units to their employees or employees of other government or public sector units participating in the scheme". This item represents a negligible share of total social protection spending in most countries, and its relationship with GDP growth rates will not be analysed independently (although it will still be included as part of total social protection spending).

(especially for emerging and developing countries). The classification of countries follows the standard income categories used by the ILO (see, for instance, ILO 2021b). However, due to problems of sample size, emerging and developing countries have been grouped together in the analysis.

The panel analysis will examine the relationship between social protection spending (dependent variable) and GDP growth (independent variable) by means of Ordinary least squares (OLS) regressions, with country and year fixed effects. The inclusion of country fixed effects is meant to account for cross-country time-invariant unobserved heterogeneity (e.g. the fact that some countries have structurally more generous social protection schemes). The inclusion of year fixed effects is meant to account for any time-varying trends that affect all countries in a similar way at the same time (e.g. eruption of a crisis). The coefficients should be interpreted as the effect of a change in GDP growth on social protection expenditure within a given country and within a given year.[10]

A final methodological point relates to the presentation of the results. The coefficients represent the change in social protection spending (measured as a share of GDP) as a result of a single percentage point change in the rate of GDP growth (e.g. a decrease from 4 to 3 per cent). For ease of exposition, all coefficients are multiplied by minus one. This means that estimates need to be interpreted as a measurement of the extent to which social protection spending increases as GDP growth decreases by 1 percentage point. Additionally, coefficient estimates that are statistically significant at conventional levels (i.e. at least at the 10 per cent level) will be denoted by full-coloured bars in all figures, while those that are not will be identified by a pattern fill.

Panel A of figure 1 presents the first set of results, by plotting coefficients for the relationship between GDP growth and different types of government spending (in accordance with the categorization used by the IMF and introduced above). Results reveal that all types of government expenditure follow a countercyclical pattern (i.e. they increase as GDP decreases). However, there is also substantial heterogeneity in their degree of responsiveness to changes in GDP. Social security spending is the most responsive type of public spending: a 1 percentage point decrease in GDP growth rate increases spending in social protection as a share of GDP by on average 0.11 percentage points.[11] Other types of government spending are also responsive to changes in the business cycle.

Panel B of figure 1 examines the responsiveness of different forms of social protection to changes in GDP growth.[12] The results reveal that spending in social assistance interventions is most responsive to changes in the business cycle. In the preferred specification with country and year fixed effects (blue bar), a 1 percentage point decrease in GDP growth rate is met with an increase in social assistance spending (expressed as a share of GDP) of around 0.8 percentage points. The increase in social insurance spending is merely 0.2 percentage points by contrast.[13] This indicates that the adaptation of social assistance spending to changes in the business cycle (i.e. a given decrease in GDP growth) is roughly four times that of social insurance spending. This conclusion holds true even in alternative specifications, where we include only year fixed effects (turquoise dot) or only country fixed effects (yellow dot), or exclude both (red dot). This result is quite surprising, since many countries have in place instruments that automatically adjust social insurance spending to the evolution of a crisis (e.g. unemployment benefit claims automatically

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10　Of course, it is possible that estimates are still biased due to a number of considerations, ranging from omitted variables (i.e. a third factor not included in the analysis, which affects GDP growth and also independently social protection spending) to reverse causality (i.e. changes in GDP being caused by changes in social protection spending, rather than the other way around). Given that solving these problems of econometric identification is beyond the scope of the present exercise, this subsection should be interpreted as simply providing descriptive, rather than causal, evidence on the relationship between GDP growth and social protection spending.

11　Given that social protection spending as a share of GDP was on average 11.3 per cent during the examined period, this means there was an increase in spending of around 0.9 per cent following a decrease in GDP growth rate of 1 percentage point.

12　Due to data limitations, the analysis differentiates between contributory and non-contributory social protection but does not present information by other programme characteristics (e.g. type of programmes being financed).

13　Here and in the rest of the analysis, it is important to highlight that the results obtained by either splitting the sample of countries (e.g. between developed, and developing and emerging countries) or by looking separately at different forms of social protection spending (i.e. social insurance and social assistance) are not necessarily weighted averages of the results obtained in the overall sample. For instance, the coefficient for overall social protection spending plotted in panel A of figure 1 is not an average of the coefficients obtained for social insurance and social assistance in panel B. This can be ascribed to different factors, notably (i) the fact that the sample for which we have separate information on both social insurance and social assistance is smaller than the sample of countries for which we have aggregate information on social protection; and (ii) the fact that models are run each time independently, implying that the relationship between the outcome of interest and the dependent variable is obtained each time using a different model.

increase with the number of unemployed). The fact that social assistance is more countercyclical than social insurance implies that the discretionary policy responses implemented by countries during crises are more countercyclical than what is achieved through automatic stabilizers. This pattern also probably hides some heterogeneity in the behaviour of social protection spending across countries as well as over different states of the business cycle, something to which the analysis now turns.

▶ **Figure 1. Responsiveness of government spending as a share of GDP to a 1 percentage point change in GDP growth rate**
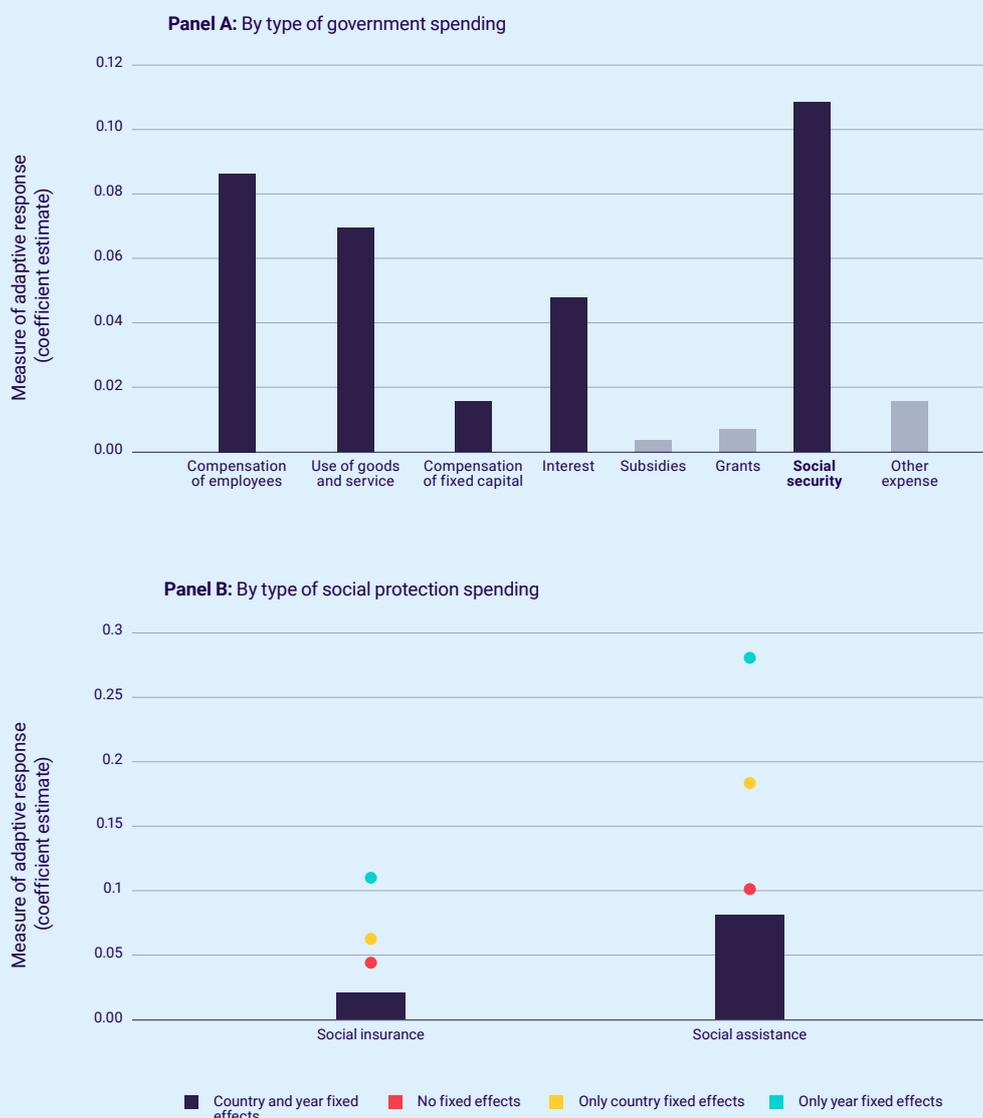
Panel A: By type of government spending

Panel B: By type of social protection spending

Note: The figure reports coefficient estimates for the effects of a 1 percentage point decrease in GDP growth rate on social protection spending (as a share of GDP). The analysis includes data from 106 countries between 1980 and 2021 (see Appendix table 1 for details). Panel A presents a coefficient estimate for each category of government spending available in the IMF Government Finance Statistics database, where the plotted coefficients are those arising from models that include both country and year fixed effects. Estimates that are not statistically significant at conventional levels are denoted with a lighter colour. Panel B presents coefficient estimates separately for social insurance and social assistance spending; additionally these results are presented with different specifications relating to the inclusion of country and/or year fixed effects.

Source: Authors' calculations based on IMF data.

Figure 2 presents the relationship between GDP growth and expenditure in social insurance and social assistance (i) by groups of countries (i.e. developed, and emerging and developing) and (ii) by different states of the business cycle (i.e. crisis or non-crisis periods).

The results presented in panel A of figure 2 indicate that the adaptation of social protection spending to changes in the business cycle has typically been greater in developed than in emerging and developing economies: six times greater over the entire period analysed.[14] The figure also shows that this correlates with the capacity to scale up social assistance measures when the economy decelerates. The higher responsiveness of social assistance spending can be connected to the greater capacity of high-income countries to (i) rapidly implement social protection responses (i.e. by drawing on the already existing policy infrastructure), as well as (ii) more easily borrow from international markets when crises erupt. By contrast, the degree of adaptation of social insurance spending to the economic cycle is relatively similar between countries and consistently smaller than that of social assistance spending, thus confirming the results obtained from the overall sample.

Panel B of figure 2 displays instead the relationship between GDP growth and social protection spending during economic crises as compared to normal periods. Crises are defined in two different ways. First, slowdowns (left part of panel B) are situations in which the GDP growth rate is lower than the average registered over the three previous years: the economy is decelerating though not necessarily in recession (e.g. a decrease in GDP growth rate from 3 to 2 per cent would also qualify).[15] Second, recessions (right part of panel B) are defined as those situations in which the country registers negative GDP growth: this means that the economy is contracting, although it could simultaneously be recovering (e.g. an increase in GDP growth rate from -3 to -2 per cent would also qualify). These two definitions of crises are worth analysing separately, as governments may well be forward-looking when adjusting social protection expenditure; the economic outlook could be as important as the current economic situation in their determination of social protection needs.

The results show that social protection spending of all types is more responsive to changes in GDP in times of economic crisis. During recessions, both social protection and social assistance spending increase substantially (the latter in particular), more than double that seen otherwise; whereas during slowdowns, social assistance expenditure is by far the most reactive. This suggests that when the economy is decelerating, but is not yet in a recession, governments typically opt to increase spending through non-contributory interventions (e.g. conditional or unconditional cash transfers); at that point, the automatically stabilizing role of contributory benefits (e.g. unemployment) may have not yet taken effect, as there are not necessarily strong signs of financial distress (e.g. the number of unemployed individuals may not be rising rapidly). However, when the economy enters a proper recession, both types of social protection spending provide a similar level of responsiveness to economic shocks. The results shed some light on the varying degree to which different types of social protection spending adapt to changes in economic conditions.

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14 However, this finding does not consider the possible role played by official development assistance or other forms of external financing, which are normally more prominent during crises in emerging and developing countries.

15 Note that this implies that, under both definitions of crises used in this paper, we focus on year-to-year GDP transitions. This is because we are interested in how responsive social protection systems have been to changes in economic conditions in the short run. However, an interesting alternative could be to measure the responsiveness of social protection spending to longer swings in economic activity.

▶ **Figure 2. Responsiveness of social protection spending as a share of GDP to a 1 percentage point change in GDP growth rate**

Panel A: By income group and type of social protection spending

Panel B: By type of business cycle crisis and type of social protection spending
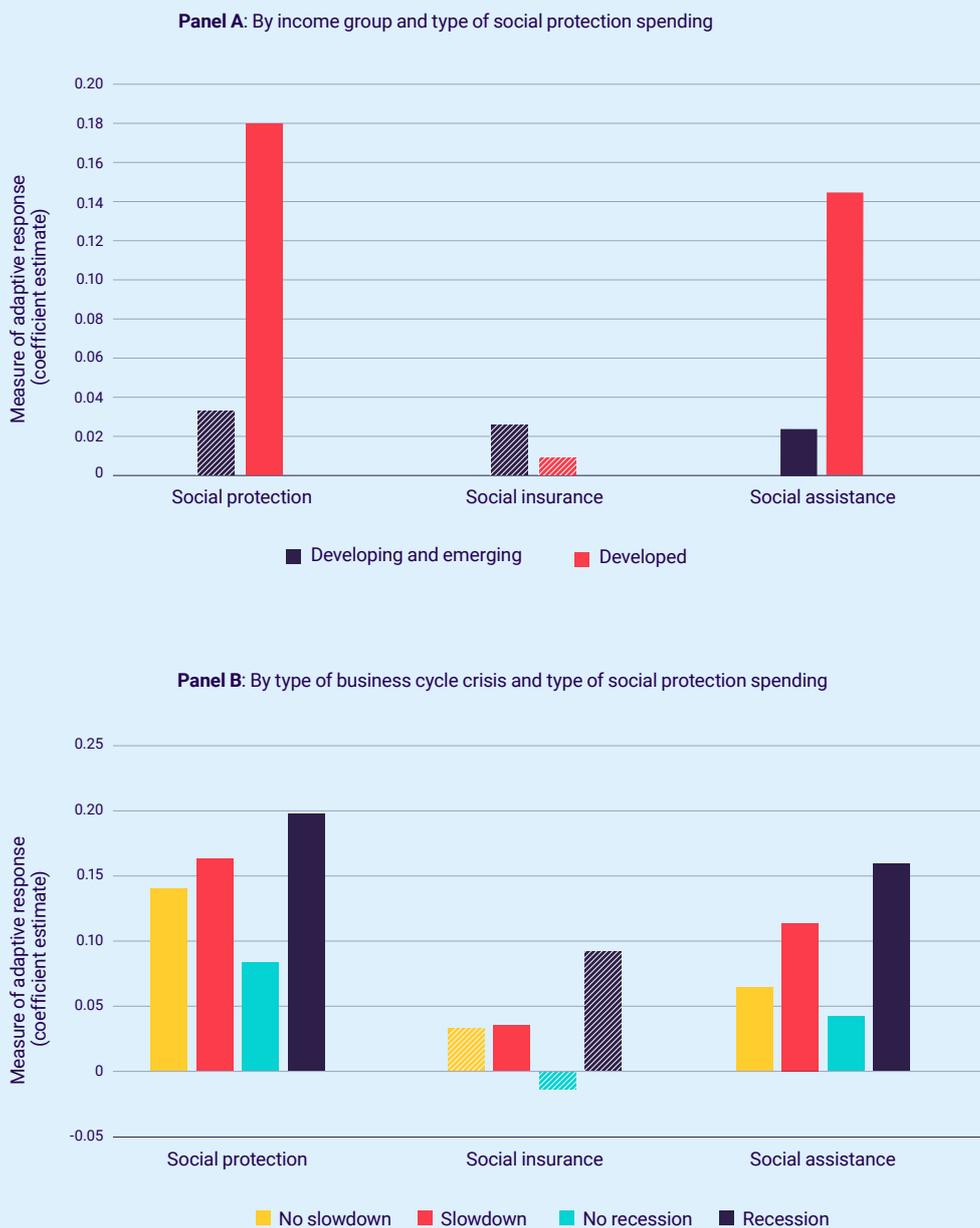
Note: The figure reports coefficient estimates for the effects of a 1 percentage point decrease in GDP growth rates on social protection spending (as a share of GDP). The analysis includes data from 106 countries between 1980 and 2021 (see Appendix table 1 for details). Coefficient estimates are presented separately by type of social protection spending and income group (panel A) and by type of social protection spending and state of the business cycle (panel B). Plotted coefficients are those derived from an OLS model with country and year fixed effects. Estimates that are not statistically significant at conventional levels are denoted with a pattern fill.

Source: Authors' calculations based on IMF data.

Overall, these results highlight that, over the last few decades, social protection systems in developed economies have been better equipped to respond to changes in economic conditions than emerging and developing economies. This is especially true for non-contributory interventions, which are essential to equally reaching vulnerable groups in the population. The findings are also interesting in light of what happened during the COVID-19 pandemic. Indeed, as mentioned in the introduction, countries around the world rapidly scaled up their social protection systems and attempted to reach groups that were historically excluded from social protection systems. This raises multiple questions. Was the social protection policy response implemented during the pandemic similar in magnitude across countries? Was it different from what countries had done during previous crises? Were these interventions effective in reaching their intended objectives? The next subsection will begin answering these questions.

▶ The COVID-19 crisis

The purpose of this subsection is to replicate the analysis presented above, but for the years of the COVID-19 pandemic. The aim is to understand whether the policy response implemented in 2020–21 differs from that adopted during previous crises, in scale and/or composition. Unfortunately, the methodological caveats mentioned at the beginning of this section are even more pertinent when examining the pandemic. Indeed, data from these years for most countries, particularly for emerging and developing economies, remains unavailable at the time of writing. These data gaps risk undermining the analysis. Additionally, the limited data points (i.e. the combination of few countries and only two years in the analysis) could result in statistical noise. For these reasons, the quantitative approach adopted thus far will be complemented by qualitative evidence from country case studies.

Panel A of figure 3 presents the results of the analysis examining the responsiveness of social protection spending to changes in GDP growth rates during the COVID-19 pandemic. For ease of comparison, the figure also plots the same relationship for the aftermath (2009–2013) of the global financial crisis.[16] Two key findings emerge. First, social protection spending was more responsive to changes in GDP during the pandemic than to the global financial crisis. A 1 percentage point decrease in GDP growth led countries to increase social protection spending by on average 0.8 percentage points in 2020–21, compared to 0.6 percentage points in the period between 2009 and 2013.[17] The second main finding refers to the differences in the type of social protection spending on which governments relied: the responsiveness of social insurance spending was only slightly higher during the pandemic period than in the years following the global financial crisis (i.e. 0.04 percentage points compared to 0.03), while that of social assistance expenditure was countercyclical in the former (i.e. it increased as GDP growth decelerated) but procyclical in the latter.

This result confirms that during the COVID-19 pandemic, governments adopted a more countercyclical policy response and relied more heavily on non-contributory interventions (ILO, 2020a; ILO, 2020b; ILO, 2020c; ILO, 2020d). That is not to say that countries resorted less to social insurance spending during the pandemic. Most notable here is the different policy approach towards non-contributory interventions. Whereas social insurance spending behaved quite similarly in response to the global financial crisis and to the pandemic (see the centre of figure 3, panel A), social assistance spending declined following the former and increased throughout the latter (see the right of figure 3, panel A).

In order to further examine this result, panel B of figure 3 presents differences in the rate of responsiveness of social protection spending following the global financial crisis and during the COVID-19 pandemic,

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16 Of course, during this comparison it is important to keep in mind the differences between the two crises: while the global financial crisis was a "standard" macroeconomic crisis, the COVID-19 pandemic generated a health emergency that almost brought the global economy to a standstill and required people to remain at home. For its purpose the analysis will compare the effect of a 1 percentage point change in the rate of GDP growth (i.e. the phenomenon of interest is the same between the two crisis episodes, irrespective of their difference).

17 Results are not fully comparable with those discussed above in section 1.A, largely due to a different sample of countries being analysed (i.e. country coverage is more limited for the pandemic period).

for different types of social security expenditure between developed, and developing and emerging economies. Two main findings emerge from this analysis.[18]

Firstly, the peculiarity of the policy response implemented during the COVID-19 pandemic was mostly driven by developing and emerging economies. In developed economies, the responsiveness of social protection spending to changes in the GDP growth rate was only slightly higher during the pandemic, compared to the global financial crisis. However, developing and emerging economies implemented a much more countercyclical policy approach in 2020 and 2021 than they did between 2009 and 2013.

Second, the two groups of countries adopted very different policy approaches with respect to the types of social protection expenditure that they used during the COVID-19 pandemic and the global financial crisis. Developing and emerging economies relied much more on social assistance spending in response to the pandemic than they did following the global financial crisis, while the responsiveness of their social insurance spending to changes in the GDP growth rate was similar for both crises.[19] By contrast, developed economies relied much more on social insurance spending during the pandemic than following the global financial crisis, while the responsiveness of their social assistance spending to changes in GDP was similar (and close to zero).

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18   As mentioned above, note that the results obtained when splitting the sample (e.g. between social insurance and social assistance) do not necessarily need to represent an average of the results obtained for overall social security.

19   However, it is important to note that, in developing and emerging countries, the rate of adaptation of social insurance and social assistance expenditure to changes in GDP growth rate was very similar during the COVID-19 pandemic (i.e. in panel B of figure 3, the two bars representing developing countries during the pandemic have a very similar height). The discussion above has highlighted that this group of countries saw an increase in the responsiveness of social assistance spending during the pandemic compared to the aftermath of the global financial crisis, while the that of social insurance spending was similar during the two periods. This means that the higher responsiveness of overall social protection spending during the pandemic in developing and emerging economies is largely explained by a change in that of social assistance spending.

▶ **Figure 3. Responsiveness of social protection as a share of GDP to a 1 percentage point change in GDP growth rate: Global Financial crisis vs COVID-19 pandemic**
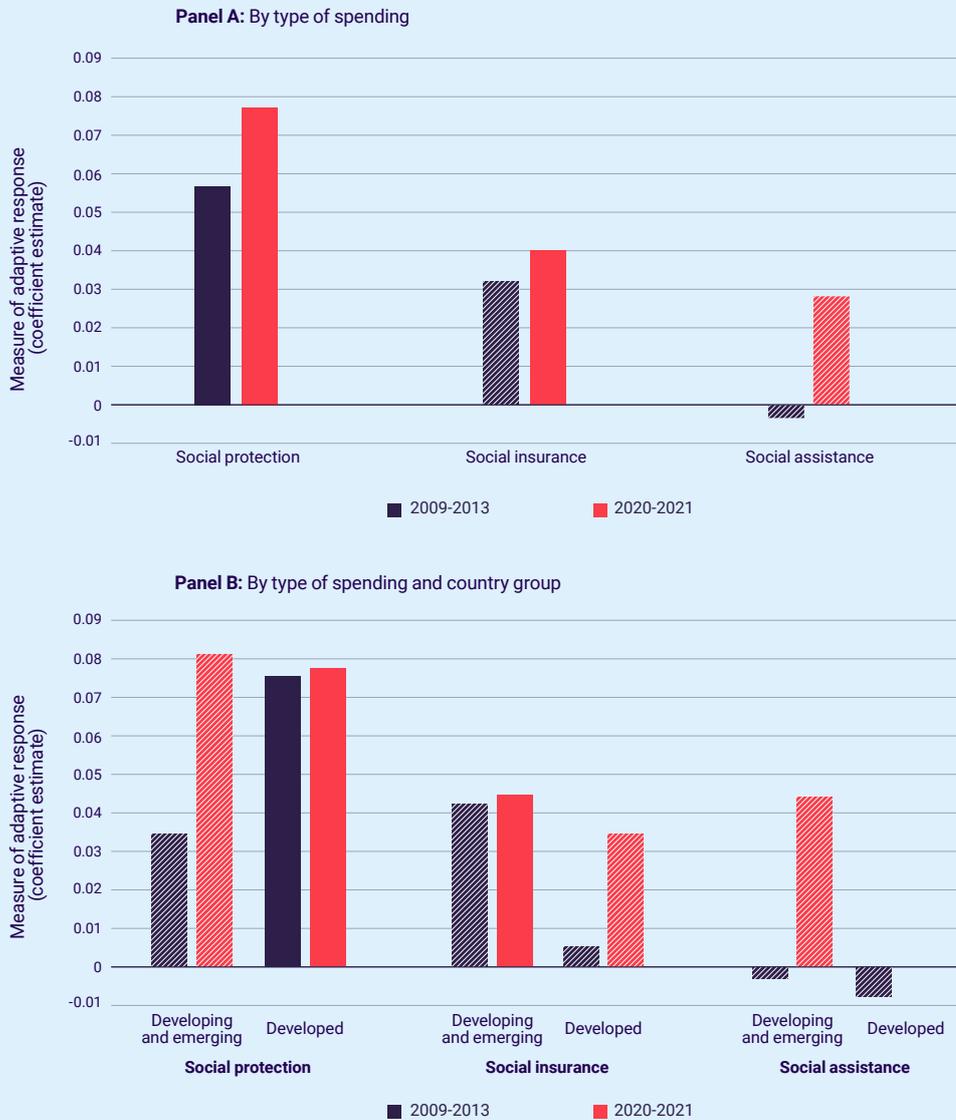
Panel A: By type of spending

Panel B: By type of spending and country group

Note: The figure reports coefficient estimates for the effects of a 1 percentage point decrease in GDP growth rates on social protection spending (as a share of GDP). Coefficient estimates are presented separately by type of social protection spending and period of crisis (panel A) and by type of social protection spending, country group and period of crisis (panel B). Plotted coefficients are those derived from an OLS model with country and year fixed effects. Estimates that are not statistically significant at conventional levels are denoted with a pattern fill.

Source: Authors' calculations based on IMF data.

Overall, the findings presented in this subsection indicate that the unique elements of the social protection response during the COVID-19 pandemic, in comparison to the global financial crisis, are (i) the adoption of a countercyclical policy approach in emerging and developing countries as well as developed countries, and (ii) a relatively stronger reliance on social assistance spending in the former and on social insurance spending in the latter. These findings are very much in line with those coming from studies that have tracked the various social protection interventions implemented globally at different stages of the crisis (Gentilini 2022; ILO 2021a).

2. Recent innovations in social protection responsiveness

The results presented in the previous section have shown how the adaptation of social protection policies to the COVID-19 pandemic was relatively unique from a historical perspective. This section will highlight some of the innovations that have made these policy responses possible. Faced with this sudden and unprecedented crisis, many governments implemented novel approaches to track social protection needs, identify beneficiaries and deliver income support benefits. The adoption of new policy approaches and mechanisms was necessary, especially at the beginning of the crisis, to rapidly deliver support to all those in need. This was particularly important given a context in which (i) many individuals lost their jobs or experienced a sharp reduction in working hours from one day to the next and (ii) the presence of health restrictions posed a challenge to established systems of beneficiaries' identification and programme delivery.

Innovations in social protection responsiveness prompted by the COVID-19 pandemic can be broadly categorized into two groups, each given a subsection here. First, significant efforts were made by governments, universities and research centres to improve the capacity to forecast and track the evolution of the crisis. These innovations were made necessary by the outbreak of the pandemic and its immediate impact on economic and social indicators, which previous data collection methods would have captured with a significant time lag. It became vital to collect real-time data in order to reliably track the evolution of the crisis. Second, innovative approaches to identify and reach potential beneficiaries were adopted by governments around the world. These innovations were precipitated by the fact that the socio-economic crisis that followed the outbreak of the pandemic affected many in the population, well beyond the groups who are typically recipients of income support. In this context, identification or screening strategies needed to be re-adapted to reach all those in need.

Of course, these two steps are closely interlinked. This is true from both a methodological perspective (e.g. the same data or institutional infrastructure can be used to both track a crisis and understand who is affected) as well as from an operational point of view (i.e. identifying the eruption of a crisis is a first step in order to be able to reach all those in need). For these reasons, in many countries, these two steps were implemented during the COVID-19 pandemic by the same government agency and/or following a similar procedure.[20]

However, the two steps have important differences that warrant their separate discussion. The most notable one, at least from a methodological point of view, is that forecasting a crisis and tracking its evolution are tasks that can be done at the aggregate or macroeconomic level (e.g. at the nationwide or regional level). By contrast, the identification of beneficiaries and the delivery of a social protection intervention necessitates some degree of individual-level data (i.e. to make sure that the income support reaches the beneficiary that has been identified). This has enormous implications with regard to the databases that can be used for the two different exercises (e.g. anonymized aggregate data could be helpful for forecasting a crisis, but not for identifying eligible individuals) as well as the public or private organizations that can conduct the different steps (e.g. providing income support to specific individuals necessitates access to confidential data, which only governmental agencies can generally handle).

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20 For instance, in many high-income countries, data from the social security system was used to both identify individuals who needed support (e.g. those who had lost their job, as observed in social security records) and to reach them (e.g. using pre-existing delivery mechanisms). By contrast, in other countries, especially in those where the institutional capacity or data availability were more limited, social security agencies partnered with governmental or non-governmental organizations (e.g. charities, local communities, research institutes) to conduct one or both of the two steps.

▶ Forecasting and tracking economic crises

The forecasting and tracking of economic crises is an area of debate. The traditional models that forecast macroeconomic outcomes have used annual (or, more rarely, quarterly) data; this data is typically only available after a relatively long delay and at a high level of geographical aggregation (e.g. nationwide or regional level). These economic models have historically been unable to track the evolution of economic crises at an adequate level of disaggregation (e.g. city or district level).

More recently, the capacity to predict and monitor economic crises has significantly improved, thanks to the increased availability of high-quality and high-frequency data. This has led to the development of a new class of models – so-called nowcasting models – whose adoption has substantially increased during the COVID-19 pandemic. Nowcasting models require the availability of high-frequency information, which is used to forecast the evolution of an indicator (e.g. GDP), that would otherwise be available through official statistics only with a considerable delay. In contrast to traditional economic models, nowcasting models do not rely on a pre-established scenario concerning the evolution of the relationship between the outcome of interest and the explanatory variables; instead, the information included in the real-time data defines this scenario. These models have the advantage of being able to swiftly adapt to changes in the macroeconomic situation and to utilize the most up-to-date information to predict the outcome of interest. Artificial intelligence (AI) can improve the performance of nowcasting models.

From this brief description, it is already clear that a key step in the construction of a nowcasting model concerns the choice of the high-frequency data that will be used to predict the main indicator of interest. Different considerations must be balanced, including the reliability of different data sources, their likelihood of being subsequently revised and their predictive power with respect to the main indicator of interest.

It is common to organize these different data sources along the lines of a pyramid: a few indicators are excellent proxies of the final outcome of interest, while many others provide valuable insights but have a relatively noisy relationship with the outcome of interest.[21] Once this pyramid of indicators has been constructed, the outcome of interest is forecast with regression-based models – including bridge equation, mixed-data sampling (MIDAS) and unrestricted mixed-data sampling (U-MIDAS) estimators. Another important feature of nowcasting models is their ability to adjust estimates automatically as soon as new information becomes available; this ensures that indicators are updated almost in real time, without the need for ad hoc interventions from the researcher (e.g. algorithmic management). Of course, individual researchers still play an important role in validating the new information, updating the data pyramid and identifying possible breaks in the series.

A range of nowcasting models have been used to track the evolution of the COVID-19 pandemic as well as its economic and labour market effects; three of them are detailed below. While these differ with respect to their main target indicators of interest (e.g. coronavirus infections, consumer confidence or labour market outcomes) as well as their geographical coverage, they all follow the methods presented above.

▶ *Economic Tracker from Opportunity Insights:* Researchers coordinated by Raj Chetty at Harvard University developed a nowcasting model at the outbreak of the COVID-19 pandemic with the objective of tracking the economic and social consequences of the crisis in the United States of America and evaluating the effects of policy responses adopted by the government (Chetty et al. 2020). Their model integrated data on consumer spending, business revenues, employment headcounts, job postings and other key economic indicators, using information from transactional data made available by private companies (e.g. credit card processors and financial service firms). These indicators, whenever possible, were disaggregated geographically (e.g. by county or ZIP code) as well as by employment sector and household income level.[22] Data from different sources was cleaned by removing outliers and seasonally adjusting the series, before being inserted in the database used for the nowcasting

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21 For instance, when nowcasting economic growth, a good indicator at the top of the pyramid would be the evolution of employment or consumption (whether weekly or monthly). Noisy indicators at the bottom of the pyramid would include data on credit card transactions, mobility information or google searches for key words (e.g. unemployment).

22 In constructing these small data cells (e.g. by county or sector of employment) attention needs to be paid to balancing research objectives with privacy considerations (i.e. by precluding the direct or indirect identification of individuals in the database). All things being equal, the use of big data allows for greater disaggregation, as each cell is populated by relatively more observations compared to traditional surveys. Still, concerns often need to be addressed in terms of data consent and data ownership.

exercise.[23] This process was automated; up-to-date estimates of the outcome of interest could thus be obtained with a very short time lag (e.g. estimation of the unemployment rate a few weeks after the publication of unemployment records). Additionally, each series was benchmarked against traditional survey information (whenever a survey tracking the same phenomenon was available) to verify its accuracy in representing the underlying population of interest. The estimates obtained by the Economic Tracker have been used for multiple purposes during the pandemic. For instance, the tracker showed that the initial reduction in consumption at its outbreak was mostly driven by high-income households – individuals who could more easily self-isolate (having a greater ability to work from home) and reduce their consumption (having a lower share of it devoted to food). The tracker also showed that the drop in employment at the outbreak of the pandemic was roughly twice as large in poor counties compared to relatively richer counties (see figure 4). Finally, the Economic Tracker was also used for evaluating the impact of public policies. In particular, the database showed the distributional effects of a cash transfer implemented by the federal government as well as the employment impact of withdrawing emergency unemployment benefits

▶ **Figure 4. Percentage change in employment nationwide and in counties with an income below or above the national median, United States, 2020–2021**
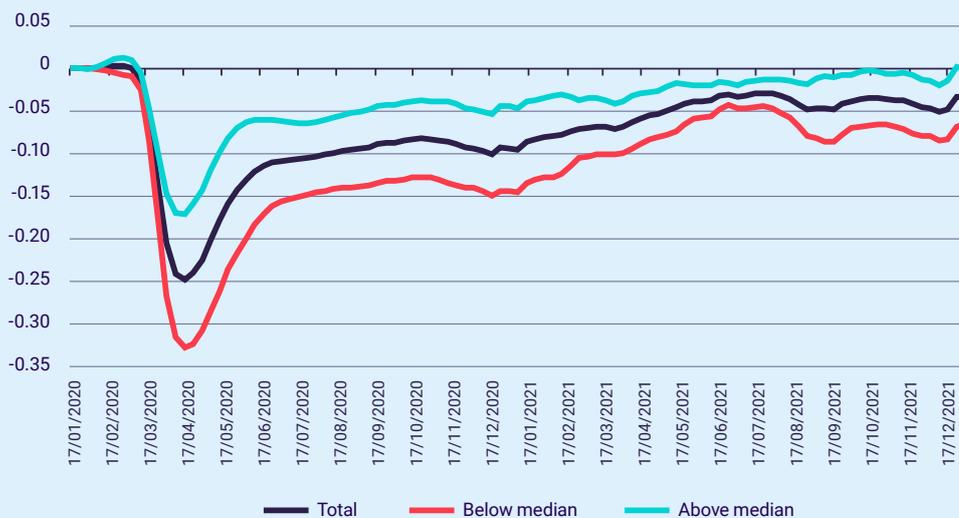
Source: Authors' calculations based on data from "Opportunity Insights Economic Tracker" (Chetty et al. 2020).

▶ *ILO nowcasting model:* The nowcasting model presented above delivers estimates of various indicators almost in real time. However, it relies on the availability of high-quality and high-frequency data that can be used to proxy the different outcomes of interest (e.g. consumption, employment, coronavirus infections). This is not possible in many emerging and developing economies, either due to data limitations (e.g. indicators being published with long time lags) or because some individual-level transactions are more difficult to track (e.g. spending in the informal economy). The ILO developed a nowcasting model at the beginning of the COVID-19 pandemic, with the objective of overcoming these problems and producing comparable estimates of the evolution of working hours during the pandemic for a large set of both developed, and emerging and developing countries (ILO 2023; Gomis et al. 2022). The methodology identified two groups of variables used to predict working hours. The first group included variables for which data was also available before the pandemic (e.g. business and consumer

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23   As a further guarantee of individual privacy, the information is not reported in levels but merely in changes (i.e. variation compared to January 2020).

confidence, retail sales, tourist arrivals, job vacancies and GDP projections); these were used as a reference point for the nowcasting exercise (i.e. defining a pre-pandemic scenario). The second group of variables had no direct economic meaning but were good proxies for the evolution of the pandemic and were available for most countries almost in real time; these included indicators of individual mobility, coronavirus containment measures and epidemiological data on the pandemic. The nowcasting methodology then followed a different procedure based on the data availability across the different countries. First, a direct nowcasting approach was used for countries that (i) had data on hours worked before the outbreak of the pandemic and (ii) had adequate availability of the high-frequency proxies needed to estimate hours worked during the pandemic. For these countries, a standard nowcasting approach was followed, which implies conducting principal component analysis to identify the main explanatory variables and then running a series of panel or time-series regressions to estimate the outcome of interest.[24] These regression results were then used to nowcast hours worked in the other group of countries (i.e. those with more limited data availability), where estimates were based on an extrapolation that exploited the minimal information available in these countries (e.g. on mobility data or pandemic restrictions). Among other things, the database showed that different groups of countries experienced different reductions in working hours because of the pandemic: these ranged from 28 per cent in lower-middle income economies to 11 per cent in upper-middle income economies (see figure 5).

▶ **Figure 5. Proportion of working hours lost due to the COVID-19 crisis, by income group (percentage)**
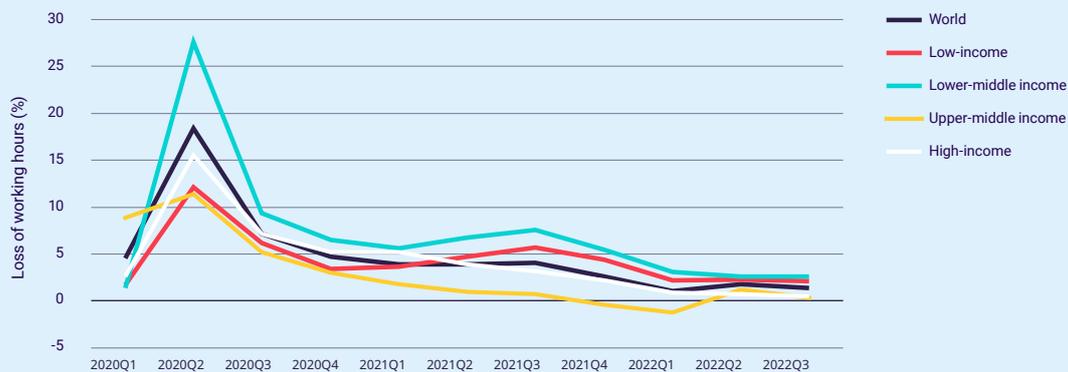
Source: Authors' calculations based on ILO modelled estimates.

▶ *Realtime Inequality:* The two previous examples were research projects that combined conventional and unconventional data to track or forecast the evolution of the economy. Real-time and high-frequency data can also be used to measure in detail a specific phenomenon – such as income inequality. This is what Thomas Blanchet, Emmanuel Saez and Gabriel Zucman do with the project "Realtime Inequality" (Blanchet et al. 2022). This project does not use unconventional data by private companies (e.g. credit card transactions or mobility data); instead, it aims to use publicly available information that is released at a relatively high frequency (e.g. monthly statistics on employment) in order to estimate an outcome of interest (in this case, income inequality) that is typically updated at a much lower frequency (e.g. annually or at longer time intervals, as it generally relies on household survey data or on administrative data from the tax authorities). The challenge is that headline statistics updated at a high frequency (e.g. employment numbers or GDP) contain no disaggregation by income level, which is needed to estimate income inequality. The methodology used to overcome this challenge involves combining a set of harmonized data sources (e.g. monthly household and employment surveys, quarterly censuses of employment and wages, and quarterly national accounts) to construct a database in which each

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24   The choice between the different models is made based on their simulated out-of-sample error.

observation is a synthetic representation of an income group, and variables associated to that observation include income and its different components. As soon as new macroeconomic data is released (e.g. new monthly GDP data), this can be used to estimate economic growth for each income group. Using this methodology, the authors find that 20 months after the outbreak of the pandemic, all income groups had reached income levels exceeding their pre-crisis value in the United States. Additionally, the data shows that labour income growth was much stronger at the lowest level of income distribution following the pandemic (see figure 6). Finally, the results indicate that the introduction of emergency interventions at the beginning of the crisis substantially increased disposable income for low-income households.

▶ **Figure 6. Real growth in total post-tax income, by income level group, United States, 2020–2022**
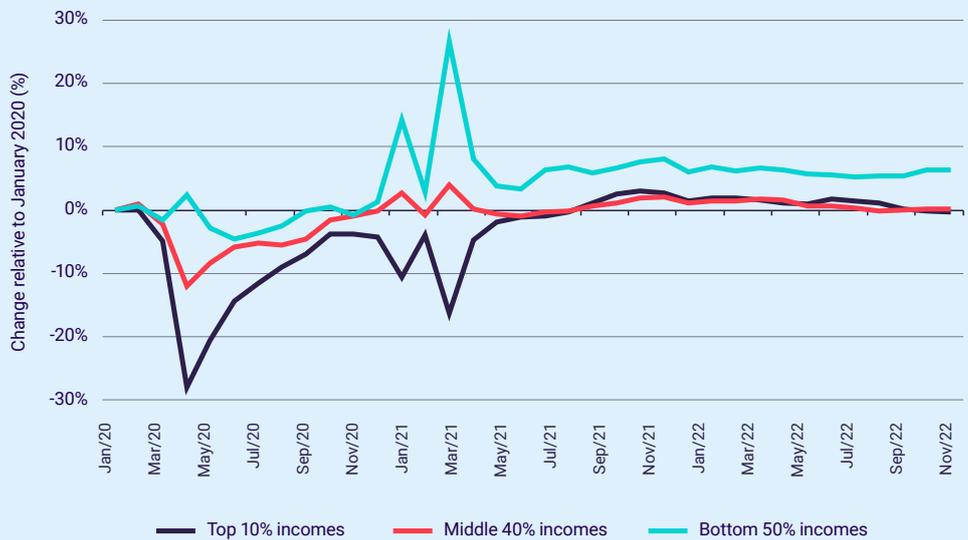
Source: Authors' calculations based on data from the "Realtime Inequality" project (Blanchet et al. 2022).

▶ Identifying and reaching beneficiaries

The strategies discussed above allow countries to forecast the eruption of an economic crisis and rapidly track its evolution. This subsection examines policies that have been implemented by governments around the world during the COVID-19 pandemic to identify and reach beneficiaries. It is important to note that most of these do not use a single data source or methodology; instead, they integrate data from different (governmental and non-governmental) sources and employ both qualitative and quantitative methods. Irrespective of the specific policy that a government adopts, this integrational approach is key to improving the capacity of a government to identify individuals outside of the formal economy.

During the COVID-19 pandemic, some governments – especially those in high-income countries – relied on pre-existing social security databases to identify individuals in need and provide them with social protection support. However, this approach will fail to reach all those in need, unless a large share of the population is either formally employed and/or included within public social security networks. Where these conditions were not met during the pandemic (i.e. in most emerging and developing economies), alternative strategies had to be explored.

▶ *Drawing on social registries:* : In April 2020, Brazil introduced an emergency cash transfer programme (*Auxílio Emergencial*); the aid scheme, though initially meant to last only a few months, was extended until October 2021. To be eligible, individuals had to report an income that was less than half the minimum wage. In addition, beneficiaries had to be without a formal job and could not be covered by other social protection schemes (except for *Bolsa Família*, the main cash transfer programme in the country before the pandemic) or labour market programmes. Participation was restricted to adults, although teenage mothers were also allowed in the programme. The benefit was equal to a monthly transfer of 600 Brazilian real. The identification of potential beneficiaries largely drew on the Unified Registry for Social Programmes (*Cadastro Único*), which contains information on all low-income households, defined as those earning less than half of the minimum wage per capita (in August 2023, this equated to 651 real per month).[25] The municipality has a key role in the management of this registry, since it is their responsibility to identify all low-income households and ensure that they are registered in the system. The information needs to be updated every time there is a relevant change in the household (e.g. a change in its composition, a new source of income or a change in address), or, alternatively, every 24 months. Cadastro Único was key to ensuring the rapid implementation of Auxilio Emergencial. Participation in the programme followed three main steps. Firstly, all individuals who were already benefiting from Bolsa Familia were automatically transferred to Auxilio Emergencial.[26] Secondly, individuals who were registered in Cadastro Único but not benefiting from Bolsa Familia also directly qualified for Auxilio Emergencial. Finally, and in order to attract individuals who may have recently become poor, households could apply through a mobile app launched for these purposes.[27] At its peak, Auxilio Emergencial reached 68.2 million beneficiaries (around one third of the total population) including virtually all low-income families, making it the world's largest cash transfer programme implemented during the pandemic. A number of studies have shown the effectiveness of the intervention in terms of cushioning the impact of the crisis.[28]

Other middle-income countries adopted similar policy approaches, namely drawing on the presence of pre-existing social registries to identify beneficiaries of new measures implemented during the COVID-19 pandemic. In Colombia for instance, a new cash transfer programme was implemented during the pandemic, with beneficiaries being identified by matching social registries with tax collection databases and integrating the resulting information with data from cell phone operators. In Egypt, a cash transfer

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25 Adjustment of the minimum wage and impact on Cadastro Único: O que é o Cadastro Único – Secretaria de Desenvolvimento Social (sedes.df.gov.br)

26 In case the Bolsa Familia benefit was larger than R$ 600, the family kept the Bolsa benefit.

27 The law included automatically all self-employed registered with the contributory social security system and all participants of the Microempreendedor Individual programme (MEI), which is a specific monotax regime for the self-employed. In case the income of any of the participants surpassed the exemption threshold for income tax, the Auxilio Emergencial payments would be recovered by the government through the income tax declaration to be filed in early 2021.

28 One statistic stands out: in 2020, household disposable income actually increased in Brazil and the increase was particularly large for low-income households, thereby generating a reduction in income inequality. Unfortunately, the success of Auxilio Emergencial occurred in parallel to the dismantling of Bolsa Familia, even if they played different roles: the former was supposed to be temporary, while the latter was a structural component of the non-contributory social protection system.

was delivered for three months to informal workers identified in the workforce databases of the different directorates. In South Africa, beneficiaries of a new cash transfer were identified by using national population registers, firm-level social security data, information on unemployment insurance claims and data on social grants receipts. Social registries were also used, together with other data sources, to identify new beneficiaries of cash transfer programmes in the Philippines and Pakistan.

The aforementioned strategies relied on pre-existing social registries to identify new beneficiaries during the COVID-19 pandemic and therefore depended upon there being previously implemented social security interventions that had reached a sufficiently large share of the population (to the extent that the available records had adequate country coverage, especially when integrated with additional data sources). In addition to this limitation, such an approach is only effective if the crisis in question hits subgroups of the population that are chronically poor or if the effects of the given crisis are sufficiently widespread and homogeneous within the population (as was the case with the pandemic in many countries). Indeed, in most cases, social registries do not allow direct observation of changes in household income or consumption, but merely contain information on households' characteristics and poverty status (updated infrequently). In these contexts, governments can use social registries to escalate support in a uniform way (e.g. by increasing the duration of unemployment benefits for all by six months) or to expand the coverage of social protection measures (e.g. by targeting the bottom 25% of the population based on poverty measures obtained using social registries, rather than the bottom 10%). However, if the crisis hits only certain groups in the population (including individuals who are not typically classified as poor), or if its effects are heterogeneous across groups, social registries will not suffice to accurately determine eligibility. In order to overcome these problems and ensure that individuals in need of support were not excluded, a number of countries relied on other data sources.

▶ *Exploiting other types of administrative registries:* Following the outbreak of the pandemic, the Togolese government introduced a series of measures to support citizens' living standards, including temporary waivers for water and electricity bills. However, social security interventions were restricted by the very limited pre-pandemic coverage of social protection and the large share of informal employment.[29] This necessitated simultaneously reverting to non-contributory types of social protection interventions and reaching beneficiaries via unconventional registries that could identify those in need (including individuals in the informal economy who had never received social protection support). In this context, the government introduced the programme *Novissi*, which provided monthly cash transfers to informal workers whose labour income was either reduced or lost due to the pandemic. The intervention was initially financed using national resources and was implemented through an inter-ministerial committee that collaborated with private companies (e.g. telecommunication).[30] In order to be eligible to participate, individuals had to be (i) Togolese citizens living in the country, (ii) above the age of 18 and (iii) informally employed. Registration simply required having a voter ID card and could be completed in a few steps over the phone, without the need for internet access (see Appendix figure 2 for the registration procedure). The voter registration system was used to check eligibility requirements. Togo had just held a general election in February 2020 and the voters' registries covered around 93 per cent of the adult population.[31] This information included each individual's name, address and occupation. If applicants to the Novissi programme were present in the voter registries and were not registered as formally employed in the social security database, their eligibility was automatically confirmed, and they received the transfer via mobile money operators. The monthly benefit had a flat component equal to 30 per cent of the minimum wage, and a top-up that was higher for women than for men. The government also organized outreach activities to encourage enrolment (e.g. radio campaigns), and set up a telephone number that individuals could call to receive support in the application process. Already within the first month of its implementation,

29   Before the outbreak of the pandemic, only 3 per cent of the Togolese population was covered by either social protection or labour market programmes and nine workers out of ten were informally employed.

30   The intervention was initially financed using government resources (i.e. the newly established National Solidarity and Economic Recovery Fund, worth US$665 million). However, additional funds were later made available by the French Development Agency, the NGO Give Directly and the World Bank.

31   While these records covered most of the national population, their coverage disproportionately excluded foreign nationals; such a gap should be tackled in future interventions.

12 per cent of the Togolese population had received the cash transfer, and by mid-2021 a quarter of the population had benefited.

Similar strategies of identification or delivery have been implemented in other countries around the world during the COVID-19 pandemic. For instance, the local government of Jalisco in Mexico administered a cash transfer specifically for workers in the informal economy; residents could apply for it by filling a simple online form and making an in-person visit to the municipality. Such strategies relied on the availability of administrative records at the individual level, as well as the presence of an institutional structure capable of cross-checking eligibility (e.g. by matching voter registries with social security records, as was done in Togo). These requirements may be particularly constraining during a crisis when a government that is already facing a number of emergencies is not necessarily in a position to scale up its organizational capacity. In such cases, alternative identification methods and straightforward delivery strategies are best adopted, even when they are less precise, as they can prove extremely useful in rapidly reaching a large share of the population. The following sections will present additionally available strategies that can render this targeting exercise as precise as possible through the use of new data systems and methodologies.

▶ *Using electricity data:* Poverty rates in Guatemala were already high before the COVID-19 pandemic, with 54 per cent of the population living on less than US$6.85 per day in 2019. Additionally, expenditure in social assistance programmes had decreased before the crisis (i.e. from 0.24 to 0.12 per cent of GDP between 2012 and 2018) and the main cash transfer programme reached only 150,000 individuals out of a population of around 17 million. At the outbreak of the pandemic, the government introduced a monthly cash transfer programme (*Bono Familia*) for low-income households. In the absence of other data sources, the government decided to determine household eligibility for the transfer using electricity consumption data provided by the national electricity company. Considered eligible were those with an electricity consumption below 200kWH during the month of February 2020. Based on this information, the government assigned a registration code to all eligible households.[32] With this code, households could register for the cash transfer programme using one of three methods (i.e. via webpage, SMS or call centres). The government, aware that not all areas of the country have regular electricity coverage, identified as much as 10 per cent of beneficiaries using other criteria.[33] Individuals could obtain the transfer at ATM machines, at the branches of 11 different banks, or at points of sale/service (POS) in select stores. Around 96 per cent of individuals who registered met the eligibility criteria and became programme participants. This led to a massive increase in the number of cash transfer beneficiaries in the country: in 2020, 2.7 million individuals received support from *Bono Familia*. Had this programme not been introduced, the increase in poverty that Guatemala experienced during the pandemic would have been almost threefold.[34]

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32 This code was communicated to households by the national electricity company via mail (e.g. when transmitting an electricity bill, or by sending an ad hoc communication in case a bill was not planned for the coming weeks).

33 In these areas, the government carried out a survey using digital tools that could determine households' socioeconomic conditions and identify potential beneficiaries.

34 The poverty rate in Guatemala increased by 5 percentage points between 2019 and 2020.

3. Implications of recent innovations for social protection systems

The previous section described some of the recent policy innovations introduced during the COVID-19 pandemic to increase governments' capacity to track and forecast the evolution of a crisis, as well as to identify and reach potential beneficiaries of social protection interventions. This shorter section summarizes the main implications of these innovations for the future of social protection systems in both developed countries and emerging and developing countries.

Before discussing the implications, we present a shock- and risk-based taxonomy (see figure 7). The top layer refers to broad-based shocks that affect almost the entire population; two recent examples are the COVID-19 pandemic and the global financial crisis. The second layer includes any other covariate socio-economic shock that affects a subgroup of the population; regional or sectoral crises are typical cases. Finally, there are the narrower shocks that are purely idiosyncratic; an individual experiencing a work-related accident, for example.

The COVID-19 pandemic has highlighted the increased capacity of most countries to scale up a major social protection response in a few weeks (see section 2); it has also vindicated the construction of adequate and comprehensive social protection systems for all, particularly for times of crisis. The identification of beneficiaries during macroeconomic shocks need not be complex: every citizen was either directly or indirectly affected by the pandemic and by the global financial crisis respectively. Both crises reaffirmed that the right to social security is a universal human right. When responding to such major shocks, government may not need to identify those who have lost their income, since it can assume that all households are affected to some extent; hence, social protection systems can respond quickly using existing registries such as *Cadastro Único* in Brazil (detailed in section 2.B) to identify additional groups of vulnerable households, beyond the usual beneficiaries. The response to macroeconomic crises can indeed be built upon pre-existing mechanisms; the key lesson is that setting up strong social registries with a broad coverage will facilitate the rapid extension of social protection coverage that is needed during crises.

▶ **Figure 7. Shock and risk taxonomy**

Broad shocks
(covariate)

Regional/sectoral
shocks (covariate)

Individual shocks
(idiosyncratic)
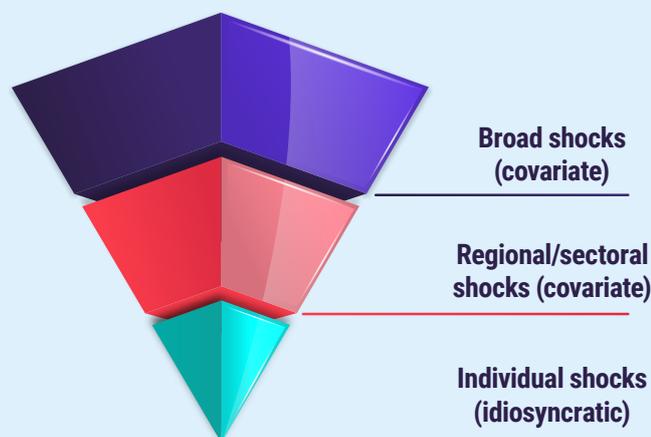
Source: Authors' elaboration.

Responding to narrower covariate shocks has proven to be more challenging. Most developing countries' labour markets are characterized by high levels of informality, to the extent that social protection systems cannot detect when workers lose their jobs, nor when salaries are rapidly cut in struggling sectors. Only the structural transformation of formal sectors employing formal workers is recognized by social security agencies, leading to automatic coverage of unemployment insurance, early retirement and so on.

Building upon the recent innovations in nowcasting models (see section 2.A), the proliferation of private and public real-time data will allow developing countries to monitor the socio-economic well-being of the population at a (very) disaggregate level. Eventually, early warning systems could be created based on an array of indicators (as will be discussed in the following section), thereby enhancing the capacity of social protection systems to identify in real time any pockets of the population struggling to maintain their livelihood. Obviously, emerging economies with significant institutional and data assessment capacity, such as Brazil, Mexico or Thailand, are ideal candidates for setting up an early warning system that uses nowcasting models to inform countercyclical responses. The dynamic feature of such a system would complement the existing registries, which, though useful, remain incapable of adequately capturing changes in welfare and identifying specific victims of economic crises.

Finally, we posit that in the long term, social protection systems will eventually be able to capture not only covariate shocks at a disaggregate level, but also idiosyncratic shocks affecting individuals, regardless of their labour market status. As discussed above, informality is a problem for social protection: since incomes are not identified, contributions are not collected, and benefits will not be paid. However, the increasing use of payment platforms, mobile phones, credit cards and so on will shrink the informal economy. If an informal business operates through a payment platform or a mobile phone app, it may no longer be considered informal, in the sense that their income could be observed by the ministry of finance of the social security agency, solving the information problem.[35] It could well be that developing countries will continue to prefer cash for the foreseeable future; however, there are signs of a paradigm shift. In India, for instance, the government demonetized the economy in 2016, withdrawing 500- and 1,000-rupee banknotes; in response, adoption of electronic payments has skyrocketed. In 2017, cash accounted for 90 per cent of payments in India; by 2021, its share had decreased to 60 per cent.[36] Brazil introduced Pix, an instant payment (IP) system, in 2020: 15 months after launch, it had 114 million individual users, over half of the Brazilian adult population (see figure 8); moreover, 9.1 million companies had signed up, equivalent to 60% of firms identified in the national financial system.

In addition to the accelerated use of formal payment methods, workers are increasingly using job platforms to look for employment, adding key information that then becomes available to social security agencies. For instance, in April 2022 there were almost 55 million LinkedIn users in Brazil, corresponding to a quarter of the population; moreover, within the age group 25 to 34 there were 33 million users.

The adoption of innovative technologies could revolutionize social protection systems, namely by solving the problem of asymmetric information. If governments were able to monitor income or labour market status at the individual level, they could tax and provide support to their population on an individual basis as needed, in line with the bottom layer of figure 7. Obviously, this scenario would close the current gap between formal and informal workers that is largely due to unobserved income data.

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35   Of course, this does not automatically guarantee that employment in this firm becomes formal. For this to happen, other conditions would need to apply (e.g. registration of the workers with the social security system, presence of a written contract, compliance with the labour legislation), all of which are not automatically guaranteed by the fact that the business processes its payments through a digital platform. See Chacaltana et al. (2018) on how the availability of new technologies can increase the effectiveness of public policies for labour formalization.

36   Source: Shift from cash to electronic payments gathers pace in India (electronicpaymentsinternational.com)

▶ **Figure 8. The evolution of instant payment system Pix, Brazil, 2021**

Users and transaction value have risen rapidly

Pix is gaining market share rapidly in a growing digital payments market[1]
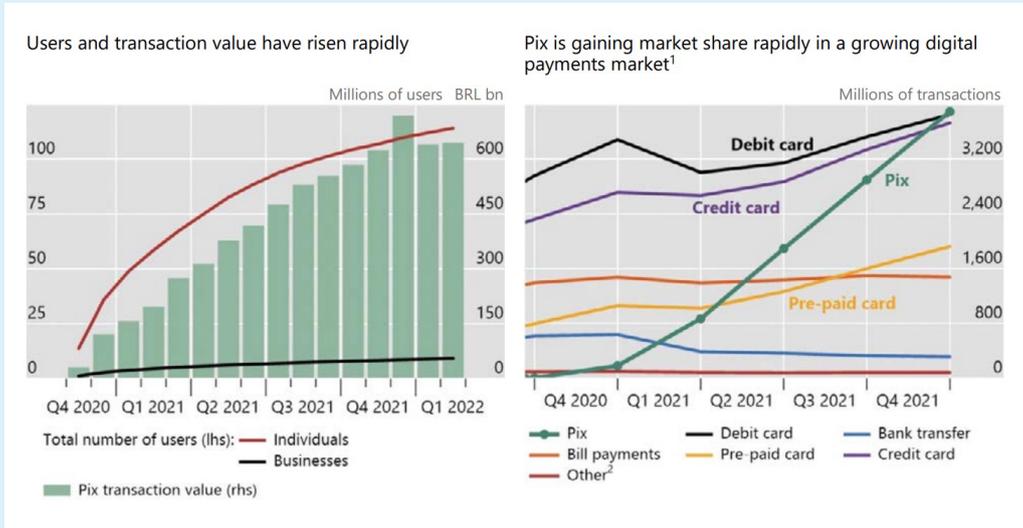
Source: Central Bank of Brazil; Duarte et al. (2022).

4. Features of responsive and inclusive social protection systems

This section details a proposal to build, using new data, an responsive social protection system that would address covariate regional or sectoral risks (the second layer of figure 7). Of course, the aim of the discussion is not to identify a one-size-fits-all approach. Indeed, the most appropriate policy responses will still depend on a series of nationwide (macroeconomic) considerations. Among others, these include the composition of the labour force (e.g. the share of informal employment, which varies between economies), the presence of other social protection and fiscal measures (e.g. unemployment benefit schemes, which are anchored in the legislation of less than 50 per cent of countries worldwide), the country's institutional capacity to design and implement social security interventions, and the availability of social registries or other administrative data sources (e.g. social security records that track individual employment spells in the formal sector).

This toolkit of a section will have three steps. Firstly, it will present indicators: the possible innovations that could be exploited to track the social protection needs of the entire population (i.e. irrespective of employment status) almost in real time, thereby allowing a government to rapidly recognise a deterioration of living standards, and respond accordingly. Secondly, this section will detail triggers: the thresholds in the evolution of indicators that a government can pre-define, and that will both signal the eruption of a crisis and activate (automatically or semi-automatically) a policy intervention.[37] Finally, the third subsection will discuss policies: the social protection or labour market responses that are most suited to different types of crises, and that are best considered by a government well before a crisis erupts.

▶ Indicators

The first step is to build an early warning system that would signal the beginning of a crisis; the main objective of this exercise is to select a series of indicators (e.g. poverty, food consumption or labour market indicators) that can allow a government to detect the eruption of a crisis and track its evolution almost in real time. Many new data collection techniques have recently become available thanks to the introduction and/or diffusion of novel technologies (some of these recent innovations have been discussed already in section 2); most remain partially or fully underutilized. Investing in these technologies could thus represent a unique opportunity for countries that are willing to increase their capacity to respond to future crises.

Traditionally, governments around the world have relied on individual or household surveys to monitor the state of the economy and track individual needs.[38] These are normally designed and implemented by the national statistical office and meant to represent the entire country.[39] The traditional survey can be a powerful tool for reaching an accurate understanding of socio-economic conditions; in guaranteeing individual anonymity and being nationally representative, they are suitable for the development of official statistics that can be updated regularly. However, not all countries regularly run individual or household surveys. Even when countries have surveys in place, these are generally separated by long time intervals. Additional time is needed to process and clean the survey data before it can be used and published. These steps, while being necessary to ensure the quality of the information, make traditional surveys not sufficient to tackle crises, when the socio-economic conditions of the population may be changing very

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37   The definition of indicators and triggers is already relatively common for other types of crises (e.g. those caused by natural or climate-related disasters). However, their application to economic crises remains very limited.

38   Censuses have also traditionally been used to measure poverty levels and map social protection needs (e.g. to target public assistance); however, given their typical infrequency, they cannot provide a sufficiently up-to-date snapshot of the population's poverty and vulnerability levels.

39   However, some countries may run surveys separately for different regions (e.g. urban versus rural areas).

rapidly and real-time updates on the evolution of individuals' social protection needs are called for. The right integration between new data sources and surveys can become the cornerstone of these systems.

Governments that wish to improve the responsiveness of their social protection systems would do well to set up additional instruments of data collection. Their data infrastructure should easily estimate those indicators that can be used to forecast the eruption of a crisis and/or track its evolution. As discussed previously, these indicators could provide unique insights on the dynamic well-being of the population, including informal workers, whose income losses typically go unrecognised by the social protection system because their salaries are not observed.

The additional information collected should be available in a timely manner in comparison to traditional surveys (e.g. with only a few weeks delay), should be focused on specific phenomena of interest (e.g. levels of poverty or consumption) and should be explicitly conducive to the delivery of social protection support (e.g. by being disaggregated enough to identify the specific individuals or groups towards which governments may wish to target social protection). Indicators should aim to meet the three criteria detailed below.

▶ *Real time:* A first condition that these indicators should meet is their capacity to track the evolution of the phenomenon in real time, or with a very short time lag. If this condition is not met, there is limited rationale for introducing unconventional strategies of data collection rather than traditional survey methods. Indeed, increasing the timeliness of the data collection exercise is crucial to shortening the time lag between the eruption of a crisis (and its impact on the population, e.g. a drop in living standards) and the delivery of social protection support. Of course, being able to observe the phenomenon of interest almost in real time is a very welcome feature, but it is also very difficult to achieve. There is no one-size-fits-all approach to solve these technical obstacles and the concrete solution will depend on the phenomenon that countries are interested in analysing. For instance, substantial progress has been made with respect to the monitoring of climate events and natural or climate-related disasters in real time.[40] However, mapping the evolution of socio-economic and labour market conditions with the same timeliness is a more complex task, since it is harder to identify those workers who are losing their jobs, or those in the informal sector who are falling sick, than it is to identify households hit by a natural disaster. By the time a consequential drop in consumption appears in survey data, months or years might have passed since the job loss. One possible solution is to rely on expenditure data that tracks the consumption of non-durable goods (e.g. food), which is more likely to react rapidly to a negative income shock. In Vietnam for instance, data on spending in supermarkets has been found to be a good predictor of economic growth (VnExpress, 2023). Another, more complex solution is provided in the United Kingdom of Great Britain and Northern Ireland by its Office for National Statistics, that publishes a weekly bulletin titled "Economic activity and social change in the UK, real-time indicators"; it uses data on credit card spending, fuel demand, housing market demand, online job adverts, business dissolutions and daily flight trips (see figure 9).[41] These indicators in a developing country with a significant informal workforce could help tackle the problem of reaching informal workers.

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40   For example, the government of Niger is using satellite data to detect droughts and distribute cash transfers to affected households. This new system of crisis detection is helping the government to deliver support between 3 to 5 months earlier than it would have by using traditional methods (World Bank 2022b).

41   See: Economic activity and social change in the UK, real-time indicators - Office for National Statistics (ons.gov.uk)

▶ **Figure 9. "Economic activity and social change in the UK, real-time indicators", 24 August 2023**

	Business insights and workforce	Consumer behaviour	Energy and housing	Transport

Indicator	Latest data compared with previous period	Latest data compared with equivalent period the previous year	Latest data compared with pre-coronavirus (COVID-19) baseline	Timeline
Total online job adverts Source Units	-2% ▼	-7% ▼	12% ▲	102 07/02/2020 — 112 18/08/2023
Potential redundancies Source Units	-3% ▼	48% ▲	-6% ▼	74 05/01/2020 — 94 13/08/2023
Employers proposing redundancies Source Units	3% ▲	42% ▲	5% ▲	60 05/01/2020 — 105 13/08/2023
Company incorporations Source Units	2% ▲	11% ▲	32% ▲	8,603 03/01/2020 — 16,546 18/08/2023
Company voluntary dissolution applications Source Units	-2% ▼	-7% ▼	2% ▲	4,810 03/01/2020 — 5,392 18/08/2023

Source: Office for Nationnal Statistics

▶ *Comprehensive coverage:* Selected indicators should cover the entire population, or at least its vast majority. It is vital that an indicator is not limited to a subgroup based on economic or labour market characteristics that are themselves going to influence the need for social protection support. For instance, social security records report individuals' employment spells in the formal economy and are able to track the evolution of earnings and unemployment almost in real time (i.e. in most countries, this is reported at monthly intervals); this data is regularly collected by the government for other purposes (e.g. for tax revenues and pension contributions) and it is generally very accurate (e.g. the information is not self-reported as it would be in traditional surveys). On the surface, social security records appear to be ideal candidates in the construction of a set of indicators to improve the adaptation of social protection systems; yet they only cover individuals in formal employment and fail to track any fluctuation in labour income among informal workers. This is an important shortcoming, since informal workers are more likely to be at risk of poverty (e.g. due to lower wages in the informal sector) and to be affected by crises (e.g. due to a lack of access to unemployment benefits in case of lay-off). Were a crisis to impact only informal workers – an extreme scenario, admittedly – social security records would convey no notable changes. This means that alternative strategies to track individuals' social protection

needs should be explored, with a view to covering the entire population. Indicators should be selected such that the distinction between formal and informal employment (or between employment and non-employment) cannot influence the observation of the phenomenon of interest. This is particularly crucial in emerging and developing countries, where formal workers often represent only a minority of the labour force.

▶ *Granularity:* A final characteristic is for these indicators to be available at the greatest possible level of disaggregation. Just as was the case in the previous section, the level of granularity may determine the response.[42] Ideally, indicators to track social protection needs should therefore be available at the individual or household level, such that they can be used to monitor individuals' needs as well as to deliver support when required. Obtaining individual-level data on social protection needs should thus represent a long-term goal of any social protection system that aims to become more inclusive and adaptive to crises. However, very often this is hindered by the fact that most data sources report information on groups rather than on individuals. For instance, consumption data from supermarkets could be obtained at the district or commune level, providing unique insights on the welfare trends of small groups, but not necessarily identifying individual consumption. Additionally, privacy considerations may prevent governments from accessing microeconomic information even when it is technically available. For these reasons, they may need to rely on more aggregate (macro- or mesoeconomic) data to estimate the social protection needs of the underlying population of interest (at least in the medium term) and then reach specific individuals or households through other strategies (e.g. estimating social protection needs at the individual level by using models that rely on more aggregate data matched with individual-level time-invariant characteristics).

As has been argued above, indicators that can most improve the adaptation of social protection systems will be able to track the phenomenon of interest (i) almost in real time, (ii) for the entire population of interest without discriminating by employment status and (iii) at the greatest possible level of disaggregation. Yet in practice, these ideal characteristics are rarely found in combination. What follows is a presentation of some concrete possibilities that can be explored by countries to track the evolution of socio-economic crises and to improve the adaptation of their social protection systems, based on novel or newly available technologies and research techniques. For each case, the discussion will highlight its advantages and shortcomings, as well as examine its feasibility in either the short and medium to long run, so that governments can choose what fits best to their purpose and/or complement different options over time.

▶ *Transactional data:* During crises, one of the main objectives of social protection systems is to deliver income support to individuals who have experienced a reduction in disposable income and a consequential reduction in consumption levels. This can be particularly problematic if individuals were already at risk of poverty, given that the crisis could throw them into a perpetual situation of material hardship and food insecurity. A reduction in consumption levels is often one of the early warning indicators that can be used to identify the emergence of a crisis; indeed, households will often adjust consumption in anticipation of a negative income shock (Pople et al. 2021).[43] Having access to accurate and real-time data on consumption is therefore highly advantageous. Ideally, this data should be disaggregated by type of consumption expenditure (e.g. durables and non-durables) and include further transactional details (e.g. amount, frequency, location, timing), especially given that information on aggregate household consumption can mask substantial heterogeneity in the types of goods that are consumed.[44] Similarly, certain consumption behaviours can signal the presence of financial distress even when total consumption expenditure remains unchanged in the short run.[45] In this context, having

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42   Some social protection interventions instead target broader geographical areas (e.g. villages or regions) or specific subgroups of the population independently from their area of residence (e.g. agricultural workers); however, this is often due to the absence of more accurate information at the individual or household level. In any case, the majority of social protection interventions are still targeted to individuals according to their specific needs.

43   For instance, an individual who is notified of their lay-off will typically adjust their consumption in anticipation of the consequential drop in labour income, even if the notice comes months before the date of their termination. In these cases, consumption data can capture the negative shock earlier than wage income data or employment headcounts.

44   For instance, an early warning system may respond to changes in food expenditure; but these can appear relatively minor if consumption is reported only at the aggregate level and if households devote a large share of their income on other expenses that adjust less to changes in the business cycle (e.g. rental costs).

45   For instance, credit-limited individuals may revert to more frequent transactions of smaller amounts and/or postpone transactions until the day they receive their salary (i.e. the so-called pay-day effect).

access to private transaction data (e.g. credit card transactions, platform payments or supermarket expenditure) can be extremely useful when measuring consumption expenditure. These indicators are not prone to measurement error and can be highly detailed. Transaction data has already been used in academic research, but its potential to track the evolution of a crisis and to direct income support towards beneficiaries remains largely underdeveloped.[46] The increasing access to credit and debit cards and to online payment systems (even in emerging and developing economies) suggests that this type of information may already be available and cover a non-negligible share of the population, at least in urban areas.[47] For instance, the Office for National Statistics in the United Kingdom publishes an aggregate indicator of spending on debit and credit cards, which tracks the evolution of consumption in the country almost in real time, as it is updated every week.[48] This would be particularly important for certain categories of workers, such as self-employed individuals who do not rely on a steady flow of labour income and who sell their products on the market.[49] Of course, the use of transaction data to increase the responsiveness of social protection systems has its flaws: this data only reports formal transactions (e.g. made via credit card, mobile app or other electronically tracked systems) and fails to capture those made in the informal economy (e.g. with cash).[50] Transactions that cannot be observed are extremely important in the context of a crisis (e.g. poor individuals who typically pay in cash or in kind are more likely to be affected by it) and they might evolve differently. For these reasons, when estimating consumption patterns for the entire population, it is best not to solely rely on potentially non-representative transaction data. Ideally, one could benchmark the evolution of the series obtained from transaction data with the same series from traditional survey measures over earlier time periods, then correct for any differences in representativeness.

▶ *Job opening data:* Labour force surveys, though they may be useful, provide employment data that is not dynamic enough to identify job losses in time. In a recession for instance, employment headcounts often decrease sometime after the economy has decelerated and firms have started experiencing financial distress. This is because both workers and employers are generally interested in preserving the employment relationship; typically, lay-offs are only used in the absence of alternative strategies. Additionally, employment legislation in many countries protects individuals from overnight job loss (e.g. by requiring notice periods). These factors may create a considerable time lag between the eruption of a crisis and its visibility in survey data. For this reason, job openings data is often considered more suitable to predict crises and track their evolution. Indeed, firms will typically cease advertising new vacancies if they forecast a reduction in their sales and profits. In the modern era, with most firms posting their vacancies online, it is also relatively easy to construct real-time measures of labour demand by aggregating job vacancy announcements across different platforms. This approach also has the advantage of being able to provide disaggregated information at the geographical level as well as by job profile (e.g. the number of vacancies posted in a given city or region and in each sector or occupation), thanks to the typically detailed information provided in online postings. It is particularly useful in the monitoring of crises that impact only specific regions or groups of workers (e.g. individuals in the tourism industry). Many job platforms now produce different indicators of job openings. For instance, LinkUp aggregates information from 60,000 companies in 195 countries, while LinkedIn provides insight into trends in labour demand for specific occupations as well as for firms' skill requirements (e.g. digital or green skills). Similar indicators can also be produced in most countries by their public employment services (PES), as these collect information on vacancies posted by firms both online and offline. The tracking of employment trends using these indicators can be very effective in high-income countries; for example, the data on job openings from LinkUp closely correlates with the same series constructed by the US Bureau of Labor Statistics. In developing and emerging economies, accurately representing

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46 For recent research using transaction data, see Naritomi (2019) who uses information on consumer transactions in Brazil to study the effects of an anti-evasion policy, or Renkin et al. (2022) who analyse the pass-through of minimum wage increases on consumer prices using supermarket prices in the United States

47 Many transaction platforms already aggregate spending data from different credit and debit card providers in order to be more comprehensive.

48 Economic activity and social change in the UK, real-time indicators - Office for National Statistics (ons.gov.uk)

49 Privacy considerations are even more serious if the government aims to measure income, rather than consumption, using this type of transactional data. The discussion here highlights the fact that this measurement could become technically feasible, irrespective of its political and social feasibility.

50 For instance, Gerard and Naritomi (2021) use transaction data in Brazil to estimate the drop in consumption of laid-off individuals, yet are able to track only 16 per cent of total household expenditure.

labour market trends with this type of data remains a challenge; yet platforms like LinkedIn, which has more than 55 million users in Brazil, offer new opportunities. Given that jobseekers generally lack a strategic incentive to hide their job search efforts, an increase in their number could indicate a looming crisis (e.g. employed individuals who fear dismissal will start looking for a job even before they are laid-off). Often, administrative records also report information on job preferences and reservation wages, thus capturing potential variation in measures of employment quality (e.g. long-term jobseekers will reduce their reservation wage when failing to secure high-paying jobs). However, this approach has its shortcomings. For instance, many individuals may be registered as jobseekers (e.g. with the public employment services) even when they are not actively searching for a job.[51] In future, those governments that invest in the regular update of their registries of vacancies and jobseekers – thereby ensuring accurate coverage and nationwide representation (e.g. across sectors, occupations or regions) – will be able to use this type of data to predict a crisis and monitor its evolution.

▶ *Spatial data:* Another option is to use the near-real-time data that is satellite imagery. Though images of Earth collected by satellites have already been extensively used to forecast and track climate-related crises (e.g. droughts, floods) and deliver support during natural or climate-related disasters, they can also serve to monitor economic shocks and deliver social protection responses. For the time being, progress is mostly limited to the research environment, in which differing contributions show how this data source can be used to predict a socio-economic crisis and track its evolution. For instance, Jean et al. (2016) use machine-learning techniques and combine night-time light data with daytime satellite images to estimate consumption and assets in five African countries. Engstrom et al. (2017) use object recognition to identify the number and density of buildings as well as other construction characteristics (e.g. building height, roof material); they match this information with geospatial data on roads to predict poverty rates in Sri Lanka. Similarly, Pandey et al. (2018) exploit the identification of roof characteristics as well as water and lighting sources to estimate poverty rates at the sub-district level in India. Game and Kang (2023a, and 2023b) assess the employment impact of transport corridors in Kenya and Rwanda, that were built to connect agricultural areas to urban markets. The results of these studies show that the construction of the new roads led to increased night-time lights, which is used as an indicator to proxy economic activity and employment. The positive effects of the intervention increase over time after the road completion. Finally, Fisker et al. (2022) use data on buildings to predict poverty rates at a very disaggregated level (110 square metres) in Sao Tome and Principe. Some programmes have already begun exploring the potential of geospatial data as a means of targeting social protection support. For instance, roof quality, as determined with object recognition, has been used as a proxy of poverty to allocate unconditional cash transfers in poor villages in Uganda and Tanzania (Abelson et al. 2014). A similar example has already been summarized in section 2.B, when presenting the targeting strategy that was adopted in Togo to deliver cash support during the COVID-19 pandemic. Spatial data thus has the potential to provide insight into the evolution of socio-economic conditions. Its use precludes typical sample selection errors based on employment status (e.g. only including formal workers) and allows for almost real-time accuracy at limited costs. However, the use of satellite imagery to track social protection needs has shortcomings. Satellite data is potentially prone to measurement error, especially if it is not matched with other types of information.[52] Satellite information computes averages in the outcome of interest (e.g. poverty rates) within a pre-defined geographical area. So if this area is relatively homogeneous in terms of its socio-economic composition and if individuals in this area are similarly impacted by a recession, then this indicator can offer an accurate and up-to-date snapshot of the phenomenon of interest; but if these conditions are not met, the indicator cannot capture the substantial heterogeneity that is present both across and within households.[53] Another shortcoming relates to the fact that indicators constructed using satellite imagery will only report

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51   Individuals may simply forget to deregister after having found a job, or may intentionally remain registered so as to qualify for some form of income support.

52   However, it is important to acknowledge the recent advancements that have been made in terms of both the availability and quality of satellite images, with additional improvements that are likely to take place in the near future. For instance, it is now possible to have information on night-time lights for all regions in the world at a rather detailed level of precision (400 x 400 meters) at the monthly level. See Game and Kang (2023a, and 2023b) for details.

53   Imagine, for instance, a neighbourhood that is populated by both high- and low-skilled workers: if a nationwide crisis were to affect only low-skilled workers, any poverty indicators obtained using satellite imagery would underestimate the drop in living standards faced by low-skilled individuals in that neighbourhood. A better estimate would be obtained if satellite images were matched with information on the skill composition of the area.

changes in the outcome of interest once individuals revert to coping strategies that are visible from the sky (e.g. reducing electricity consumption, failing to do maintenance work, reducing travel); such steps are generally taken by individuals as a last resort, long after the they have been impacted by a crisis. The consequential delay in capturing social protection needs with satellite imagery demonstrates the importance of combining multiple data sources.

The options discussed thus far have the potential to provide accurate information almost in real time, but also suffer from some shortcomings (e.g. sample selection, measurement error) compared to traditional survey methods. It is therefore worth considering whether or not indicators can be constructed using data sources that match traditional surveys in precision while being less costly and more immediate. The rest of this subsection will present two attempts that have recently been made, namely real-time phone interviews and social media interviews. Such unconventional survey strategies bridge, in a sense, the traditional survey and unconventional data; they could be used to complement either of these.

▶ *Real-time phone interviews:* Phone interviews are extremely popular as an alternative or complement to traditional in-person interviews at the individual or household level, given their cost-efficiency and practicality. Their comparative advantage is particularly strong if the survey needs to be conducted under crisis circumstances (e.g. during a conflict or a pandemic) or among marginalized groups (e.g. in remote areas). While phone interviews are a well-established practice, the recent innovation has been to design them for high-frequency delivery (e.g. biweekly or monthly). This requires (i) shortening the questionnaire by prioritizing topics that are key to the analysis and (ii) differentiating between modules that collect time-varying data (i.e. information that must be verified each time the individual is interviewed, such as their employment status or level of food security) and modules that collect time-invariant data (i.e. information that need only be collected during the first interview, such as household composition).[54] Using this approach, high-frequency phone interviews were able to deliver updated estimates of different outcomes of interest during the COVID-19 pandemic (e.g. unemployment, poverty), while maintaining high-quality standards. In many countries, it would have been impossible to track the evolution of the crisis and its impact on households' welfare without phone interviews. For instance, the World Bank leveraged the existence of a previous survey (the Living Standards Measurement Study Integrated Survey on Agriculture) to conduct phone interviews during the pandemic in Nigeria, Ethiopia, Uganda, Tanzania and Malawi. On the downside, phone interviews can sometimes report higher attrition rates compared to traditional surveys (i.e. a higher share of individuals who have been selected to participate in the survey do not respond to the questionnaire). This may bias the survey results, given that in most cases non-respondents do not constitute a random sub-sample of the population (e.g. these are individuals who have moved from their initial residence, or are temporarily not at home). Additionally, phone interviews are prone to measurement error as respondents may fail to understand some questions (e.g. how to report wages) or may strategically misreport information. These problems are often attenuated by the presence of enumerators during in-person interviews, but they are more difficult to deal with when conducting phone interviews. Fortunately, a number of statistical techniques have been developed to check whether or not a phone interview is affected by these problems and to correct for the inaccurate data (e.g. by adjusting sampling weights). Moving forward, face-to-face interviews could be complemented by phone interviews; for instance, the former could be prioritized during the first interview rounds (in order to fully explain the questionnaire and build trust in the process) and the latter then conducted as a follow-up for rapid and cost-efficient data collection.

▶ *Social media:* Social media platforms can be used to track specific trends in the economy or obtain information on certain populations of interest. Given the widespread use of social media over the last decade, these types of surveys have now become valid alternatives to standard survey interviews as well as to phone interviews. Compared to both in-person and phone surveys, interviews conducted using social media generally have lower costs, largely because respondents are asked to complete the survey autonomously (e.g. by clicking on a link that appears through social media ads); this format dispenses with the need for an enumerator. The Shift Project – a joint project at Harvard Kennedy School and the University of California, San Francisco – exemplifies the use of social media for survey purposes. The aim of the project is to track the evolution of the nature of work, especially in the service sector where

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54   Most surveys allow respondents to confirm that information provided in previous interviews on a certain topic (e.g. educational attainments, household composition) is still valid, and to update in case changes have taken place.

workers' salaries and work schedules can change with a high frequency. The project identified survey respondents employed in some large service-sector companies in the United States by using public information posted by social media users on their profiles. This sample was then reached via paid social media advertisements on Facebook and Instagram that invited individuals to take part in the survey. Of course, some of the problems mentioned above for phone interviews also apply to interviews conducted using social media;[55] indeed, some of these problems are potentially compounded when using social media to run surveys. To start with, the target population is comprised solely of individuals who have social media accounts, and while the use of social media is increasingly common, certain groups in the population may be under-represented (e.g. the elderly) or use it less frequently. Additionally, surveys that aim to target specific subgroups of the population (e.g. individuals employed by digital platforms) will rely on the self-reported employment status that social media users have chosen to post on their profile. Those who publish such information online are unlikely to be a representative sample of that subgroup. For instance, those who report working with a specific company could be relatively happier about their employment situation than those who do not; in this scenario, working conditions in a specific industry could be overestimated and the effects of a crisis underestimated (e.g. these highly committed individuals may have a lower likelihood of being dismissed). However, even in this case, certain statistical techniques could be used to correct for sample selection, non-response rates and measurement error. In the future, data reported in social media surveys could be further matched with transactional data (discussed above), as many payment platforms collaborate with social media platforms; of course, this raises questions regarding data privacy and consent, and individuals posting their personal information online should be made fully aware of the possible use of it.

▶ Triggers

The previous subsection reviewed some possible strategies to construct real-time indicators of social protection needs using unconventional data sources or real-time survey techniques. While this is a necessary first step to forecast the eruption of a crisis and/or track its evolution, it is not enough to initiate a social protection policy response; instead, a government could decide to define automatic or semi-automatic rules associated with a given policy response: when certain pre-established indicators of interest surpass a pre-established threshold (e.g. supermarket consumption decreases by more than 20 per cent or the unemployment rate reaches 10 per cent), it will automatically implement certain policy actions (e.g. initiate a cash transfer or increase unemployment benefits).

This automatization of policy reaction can be extremely useful for increasing the responsiveness of social protection systems to crises. The approval of a crisis-response package – a typically lengthy political process – is thus no longer required. Additionally, this mechanism will decrease the uncertainty faced by both firms and workers with respect to government policy actions during a crisis. Of course, the institution of automatic or semi-automatic triggers should not preclude additional ad hoc interventions; indeed, the triggered actions should represent only the starting point of the government's adaptive response, and additional measures that address any unanticipated needs must follow. Similarly, the presence of automatic or semi-automatic rules for policy interventions should not restrict the potential consultation and involvement of the social partners (e.g. organizations of workers or employers) in the crisis-response strategy; instead, their opinions should be carefully considered for both the implementation of pre-established emergency measures (e.g. how to target training programmes) and the design of further policy interventions.

The main rationale for the definition of triggers is connected to the fact that there can be turning points in crises, and that when these are reached, it is very likely that the situation will not improve unless policy action is undertaken. For instance, when unemployment increases above a certain threshold, there can be negative spillover effects for firms (e.g. consumers will have lower purchasing parity); in turn, this can have negative consequences for the labour market (e.g. a further increase in the unemployment rate), thereby setting in motion a vicious cycle. When these general equilibrium forces begin to operate, it is unlikely that the situation will improve in the absence of a government intervention; additionally, when

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55   For instance, the SHIFT project aimed to construct a longitudinal database, but in the end used only repeated cross-sectional data due to high attrition rates, which hindered the tracking of an adequate number of observations across different waves.

these spillover effects propagate to other countries, they can generate an international crisis that will itself cause additional negative feedback effects (e.g. lowering exports). A mesoeconomic crisis at the regional or sectoral level also risks worsening and spreading in the absence of a timely and adapted government response.

Another justification for the clear definition of triggers is that proactive interventions are generally more effective than reactive ones. It is easier and less expensive for a government to prevent a lay-off (e.g. by providing liquidity to enterprises facing liquidity constraints or by offering training options to individuals in need of acquiring new skills) than to provide remedies after the fact (e.g. job search assistance, unemployment benefits, active labour market policies). Additionally, proactive interventions spare both workers and enterprises from the negative consequences of an economic shock (e.g. entering unemployment, experiencing poverty, filling bankruptcy) and avert spillover effects (e.g. to other members of the household or to other companies in the same sector via supply chain effects).

A key consideration is the exact threshold at which a policy action should be triggered (e.g. which rate of unemployment should prompt a labour market policy response). Setting it at too low a level could lead to overly frequent and unjustified activation; while setting it too high could delay policy implementation and undermine its intended proactivity. For these reasons, a sensible approach may be to define a progressive system of activation whereby different policy responses are implemented when the indicator of interest reaches consecutive thresholds.

As an example, we could consider a scenario in which a government is tracking the evolution of labour market indicators (e.g. the number of jobseekers as reported from the public employment services and/or private job platforms, as discussed above). When the number of jobseekers reaches an initial threshold (e.g. 5 per cent of the working-age population is actively looking for a job), a light policy response could be activated (e.g. increased monitoring of labour market indicators and consultation with the social partners to understand causes of the crisis and its characteristics); when the same indicator reaches a higher level (e.g. 8 per cent), more substantive actions could be triggered. The specific actions will depend on the nature of the crisis (e.g. its causes, effects and distribution), but the legislation could already decide that different policy measures should be considered and implemented (e.g. training programmes if the crisis is expected to be long-term, or job-retention schemes if the economy is facing only a short-term contraction). As a final step, additional emergency actions could be envisaged when the indicator reaches a critical level (e.g. 15 per cent of the working-age population is registered as job-seeking); at that point, the government could decide to implement labour market and social protection policies to avoid a socio-economic contagion.

Before moving forward, four considerations regarding the management and use of the system of triggers must be mentioned. The first relates to the fact that the same system of triggers should be used to scale down policy responses when crises subside. For instance, if an initial policy reaction were generated by a temporary increase in the unemployment rate, it could be discontinued when that rate returned to a lower level. This can be especially important during recovery periods, when governments often debate whether or not to withdraw emergency measures that were introduced at the beginning of a recession. This policy de-escalation could be made predictable and gradual if it were linked to a clear system of triggers.

The second consideration is that triggers should not necessarily be activated at the same level of the indicator of interest throughout the country. For instance, lower thresholds could be considered for generally disadvantaged groups, who already start from a more vulnerable position in the labour market and are likely to be more impacted by a crisis (e.g. stronger scarring effects from unemployment). At the same time, it is best to avoid an excessively disaggregated approach (i.e. many different thresholds applying to many different groups), as this risks limiting policy certainty and transparency. Governments should thus work in collaboration with the social partners to identify the adequate level of detail for the triggers.

The third point to consider is that the activation of triggers cannot rely solely on the definition and constant monitoring of the indicators; it will also require constant communication and the sharing of information between different levels of government as well as with non-governmental institutions. This is particularly important in light of the fact that (i) crises can hit specific regions and/or sectors (in which case local municipalities or trade unions may be better-equipped than central government to signal the eruption of a crisis), and (ii) different sources of information are in the hands of different governmental

and non-governmental entities (such that the sharing of information may be problematic for privacy considerations, in which case it is best that an institution possessing sensitive data only communicate the observed emergence of a crisis to the central government).

A final remark concerns the development of a realistic timeline for the rollout of this early-warning system; indeed, even for the definition of triggers, it is sensible to distinguish between what is feasible in the short run and what could be achieved in the long run (i.e. more ambitious and challenging objectives). In particular, the definition of triggers could be first piloted within existing policy initiatives. For instance, the government could decide to increase the coverage or generosity of existing unemployment benefits (or relax job-search requirements) when certain indicators, such as the unemployment rate, reach a certain threshold. The unemployment insurance scheme in Chile follows this logic: unemployment benefit recipients have the right to two additional monthly transfers if the unemployment rate is 1 percentage point higher than the average rate of the last four years (ILO 2010). It is only after making this type of adjustment to existing policies (i.e. countercyclical policymaking within the intensive margin), that governments can experiment with alternative approaches, initiating new programmes that follow the evolution of pre-established indicators (i.e. countercyclical policymaking along the extensive margin). As an intermediary step, countries could also consider extending existing programmes to new groups in the population. This could be particularly effective for sectoral crises: governments could maintain an existing intervention (e.g. employment subsidy) and simply extend eligibility for it to those enterprises and workers whose sector is undergoing a temporary crisis.

▶ Policies

The compilation of real-time indicators and the definition of triggers for policy actions are meant to increase the responsiveness of existing social protection systems to crises; this third subsection provides the missing link by presenting the concrete policy interventions that should be put in place when a particular crisis hits. As with the definition of triggers, the identification of specific policy responses should balance, on the one hand, the objective of increasing the timeliness, predictability and adequacy of the policy response, with on the other hand, the competing goal of allowing governments a degree of freedom to adjust the policy response to specific circumstances. In short, the objective here is not to tie the government's hands, but instead to streamline the initial emergency policy response and create a framework within which it is possible to design further policy interventions that will continue strengthening social protection systems.

Fortunately, the literature has evidence on the effectiveness of many social protection interventions and labour market policies in both developed, and emerging and developing countries. The task for a government at this stage is to adopt the most appropriate policy approach given the crisis and under the country characteristics. For instance, if a crisis does not entail a structural reallocation of work across sectors or occupations, governments could simply rely on income support or job-retention schemes. If, however, the recession is structural, governments could consider complementing income support measures with active labour market policies to facilitate workers' reallocation from declining to expanding industries. Such structural changes are likely to happen in the future as economies will gradually shift toward more environmentally sustainable models. Additional policy instruments could be considered to support the employment and living conditions of specific disadvantaged groups, such as women, youth, persons with disabilities, certain ethnic groups and migrant workers.

Of the policy instruments that are detailed in this subsection, the first three (i.e. unemployment benefits, cash transfers and community programmes) are social protection or income-support programmes, while the other interventions (i.e. job-search assistance, wage subsidies, training programmes and public works schemes) fall within the area of labour market policies. A final intervention that is discussed in this subsection (i.e. job retention schemes) shares some features with social protection programmes as well as with active labour market policies. Importantly, in most countries, these policy instruments operate already under normal circumstances. In these contexts, the policy response would therefore consist in increasing the coverage, the level/duration of benefit and/or the type of support that is provided as part of these policies, when certain pre-established indicators reach a given threshold.

▶ *Unemployment benefits:* Unemployment benefits provide individuals with income support in case of partial or complete loss of their earnings and offer employment services to support their return to work and/or their transition to better quality jobs, in line with ILO Employment Promotion and Protection against

Unemployment Convention, 1988 (No. 168) and the Social Security (Minimum Standards) Convention, 1952 (No. 102). The level and duration of unemployment benefits could be increased during times of crisis, as has been done in Chile (ILO 2010), given that jobs are limited during recessions and the behavioural responses to benefit receipt have been shown to be smaller (Liepmann and Pignatti 2021; Marinescu et al. 2021). For policymakers, unemployment benefits can function as an economic stabilizer and can smooth recovery. Of course, a key concern is that unemployment benefits will still have only partial coverage, especially in developing countries where the labour market is dominated by informal employment, under- and self-employment. The implementation of contributory-based unemployment benefit schemes requires well-developed and functioning social insurance and labour market institutions, which may not always be established in developing countries. For these reasons, unemployment benefits should be complemented by other forms of non-contributory social protection that can reach both formally and informally unemployed workers. In any case, it is important that any support for workers who have lost their jobs or earnings be adjusted during crises, by either increasing the duration or level of benefits or relaxing the qualifying conditions and other requirements (e.g. period of contribution, job-search requirements).

▶ *Tax-funded social transfers:* When individuals are ineligible for contributory-based unemployment benefits (or when their eligibility ends), they can be supported via other forms of social security. In particular, conditional or unconditional, in-kind or cash transfers are often implemented in emerging and developing countries in order to respond to all manner of crises, not merely economic shocks (e.g. natural or climate-related disasters, food insecurity). In contrast to contributory-based unemployment benefit schemes, cash transfers through social assistance programmes normally do not have eligibility conditions that are explicitly tied to a previous formal employment spell (e.g. having been in a job for at least one year). Similarly, individuals do not automatically become ineligible for social assistance when they find a new job – especially not if these jobs are in the informal economy or on a partial basis, as eligibility criteria are often linked to an income threshold. For these reasons, social assistance programmes can better reach individuals in the informal economy (Cañedo et al. 2023). Of course, a key decision regarding social transfers relates to the way in which to identify their potential beneficiaries. Many countries rely on proxy-means testing to identify poor individuals and households; however, these indicators are typically updated at a low frequency (e.g. annually or even less frequently) and cannot adequately capture what happens when a crisis affects new groups that have not been classified as poor. Indicators like those discussed in section 4.A should therefore be used to ensure that income support reaches all individuals who have been affected by a crisis. Alternatively, social assistance can also be targeted to individuals based on their labour market status (e.g. unemployed, see an example from South Africa in section 2.B), in which case the cash transfers share some features with traditional unemployment benefit schemes (e.g. ending when individuals find a new job), while still being of a non-contributory nature (i.e. receipt of the support is not conditional on previous social insurance contributions). In any case, it is reasonable to adjust social transfers following the eruption of a crisis by increasing their level or number of beneficiaries. Not only is there a greater need for these transfers during crises, but potential disincentive effects (e.g. on labour supply) are minimal in situations where jobs are rationed (Bergolo and Cruces 2021, Bhorat et al. 2023, Bosch and Schady 2019).

▶ *Job-search assistance:* Job-search support includes all measures aimed at helping individuals –whether they are unemployed or not – in their efforts to find a new job. These are generally provided free-of-charge by the public employment services, in line with the ILO Employment Services Convention, 1948 (No. 88), but other public and private institutions can contribute. Job-search support should always be provided, regardless of the state of the economy. Given the relatively mild nature of the intervention (e.g. no direct human capital accumulation component), this should not be conceived as a policy instrument to tackle large and systemic crises. However, job-search support can be used as a powerful and relatively non-expensive tool to alleviate search and matching frictions and increase workers' reallocation from declining industries towards more productive jobs (Abebe et al. 2021; Abel et al. 2020; Bassi and Nansamba 2022, Beam 2016, Carranza et al. 2022; Franklin 2018), thereby improving working conditions and productivity; it may even prevent the emergence of a crisis (e.g. if individuals anticipate the decline of a sector and are able to move to another one).

▶ *Wage subsidies:* Wage subsidy programmes consist of temporary transfers made either directly to workers or through employers in order to support the cost of labour and to retain employment during economic downturns. Since they subsidize (formal) employment, wage subsidies are temporary and targeted interventions. However, they can be extremely effective at mitigating a macroeconomic crisis

by avoiding a large wave of dismissals (Abel et al. 2022; Levinsohn et al. 2014). Indeed, wage subsidies can help enterprises navigate such crises without laying workers off, thereby increasing their resilience as well as the speed at which they can recover in the aftermath (de Mel et al. 2019). For these reasons, wage subsidy programmes should be expanded (e.g. to new sectors, firms or types of workers) during crises.

▶ *Training programmes:* Training programmes can be extremely relevant during crises. The rationing of jobs reduces the opportunity cost for many individuals to spend time training, as they inevitably face fewer employment opportunities or earn lower wages in employment. Additionally, the acquisition of new skills can help workers transition from declining to expanding sectors where job opportunities are more likely to emerge at the end of a crisis (Alfonsi et al. 2020). For these reasons, training programmes should be considered as part of any policy response implemented during a crisis. Furthermore, such programmes could be adjusted by substituting short-term training opportunities with longer-term interventions that are generally more effective in improving individuals' employment prospects and earnings.

▶ *Public works schemes:* Public works schemes provide individuals with short-term employment opportunities (e.g. six months). The main rationale is to help individuals remain attached to the labour market and provide them with a temporary source of income (Zimmermann 2012). Additionally, public works schemes often aim to build small-scale infrastructures for the local community and can thus contribute to local development (Zimmermann 2014). Finally, these interventions are often conceived as temporary measures mostly aimed at alleviating poverty among marginalized groups, but they are also increasingly implemented in combination with job-search assistance or training programmes aimed at supporting individuals' employability over the long run. The two largest public works programmes are in India and Ethiopia (the Mahatma Gandhi National Rural Employment Guarantee Act and the Productive Safety Net Programme, respectively), although other significant interventions exist (e.g. the Expanded Public Works Programme in South Africa). There is scope for increasing the coverage of public works schemes during times of crisis, when the needs of individuals for this type of support may have increased and the costs associated with the implementation of such schemes (e.g. a displacement effect on the private sector) may be lower (Abay et al. 2022; Azam 2012; Berg et al. 2018; Deininger and Liu 2013; Galasso and Ravallion 2004; Klonner and Oldiges 2022).

▶ *Job retention schemes:* Job retention programmes lie between labour market policies and social protection programmes, and their classification will depend on specific programme features as well as country-specific circumstances. Job retention schemes provide income support in case of temporary and partial loss of earnings, often due to reduced working hours during macroeconomic slowdowns. At the same time, and similarly to labour market programmes (e.g. wage subsidies), they aim to preserve the existing employment relationship and often also include some form of training in order to ensure that individuals do not lose their job-specific skills. In general, the welfare effects of job retention schemes will be greater when countries face short crises of a non-structural nature; in these contexts, recession can cause an inefficiently high number of dismissals, with firms forced to lay off workers who have acquired valuable firm-specific human capital (Giupponi and Landais 2020; Giupponi et al. 2022). By contrast, the benefits of these interventions are less obvious when the economy is facing a structural transformation that requires workers to move across sectors and/or occupations; in these contexts, job retention schemes risk preserving jobs in declining industries. However, even during structural and long-lasting crises, job retention programmes that are targeted (e.g. to specific industries or types of enterprise) can still be welfare-enhancing, especially by way of preventing a large number of contemporaneous dismissals in the country (Cahuc et al. 2021; Kopp and Siegenthaler 2021).

This subsection has summarized the available evidence for the effectiveness of different social protection interventions and labour market policies, with a view to understanding which specific measures are most suitable for different types of economic crises. Of course, the discussion aims to provide only a roadmap for policy action; the specific design and targeting strategy of interventions should be determined by governments and the social partners on a case-by-case basis. With this caveat in mind, table 1 presents a summary of the framework, identifying the policy measures that can be considered for each type of crisis. For the purpose of the analysis, crises are simply categorized as follows: (i) short-term and limited crises of a non-structural nature (i.e. mild crises), (ii) short-term crises with greater impact that may involve some level of workers' reallocation (i.e. intermediate crises), and (iii) long-term crises of a relatively extreme nature (i.e. severe crises).

Table 1. Emergency responses to different types of crises

	Mild crises	Intermidiate crises	Severe crises
Social protection response	Contributory unemployment benefits	Contributory unemployment benefits	Contributory unemployment benefits
	Social assistance	Social assistance	Social assistance
			Community programmes
Labour market policy	Job-search assistance	Job-search assistance	Job-search assistance
	Employment subsidies	Training	Training
			Public works schemes
Other programmes	Job retention schemes	Job retention schemes	

Source: Authors' elaboration
Note: See text for the definition of the different types of crises.

5. Financing responsive social protection systems

The previous section has outlined the data and institutional mechanisms required to make a responsive social protection system technically feasible; such a system of policy response must also be adequately financed. The COVID-19 pandemic showed how public resources can be rapidly mobilized to finance social protection interventions; however, it must be noted that countries differed widely in terms of their ability to increase public spending to adapt to the crisis, and this influenced the effectiveness of policy responses across countries (Bastagli and Lowe 2021; Durán et al. 2020; Hill et al. 2021). Additionally, the relative ease with which certain governments were able to increase spending during the pandemic was, at least partially, linked to contextual factors (e.g. historically low interest rates and strong policy consensus on the need for interventions) that are unlikely to be present in future crises. All this means that, going forward, countries will likely face greater obstacles in financing emergency social protection interventions.[56] It is therefore crucial to establish well in advance the financing strategies and mechanisms that allow governments to adequately implement social protection responses when a crisis materializes. This represents the last institutional feature needed to ensure a responsive and inclusive social protection strategy (i.e. in addition to the aforementioned definition of indicators, triggers and policies).

Before examining possible financing strategies, we must acknowledge the specific challenges that can affect developing and emerging countries. Firstly, their relatively disadvantaged access to the international markets as a source of external financing (e.g. higher interest rates on sovereign bonds) represents a structural obstacle that can worsen during crises. Secondly, developing and emerging countries have a smaller tax base on which to rely, given that a large share of their labour market is informal and, therefore, is subject to neither income taxes nor social security contributions; this second structural obstacle to financing can also be compounded by crises, as tax revenues follow a procyclical trend.

It is important to differentiate between financing strategies that are feasible in the short run and more ambitious fiscal objectives that can be pursued in the long run. The first subsection that follows presents a policy proposal that would allow countries to better prepare their social protection systems for economic shocks; specifically, it discusses the possibility of establishing a separate fund under the social security agency or institution. Such a fund would allow countries to better respond to broad-based economic shocks like the COVID-19 pandemic, as well as to narrower types of covariate shocks (e.g. regionally or sectorally covariant crises, see section 3 for details). Importantly, most countries already have the data and organizational capacity to set up this type of fund and to use its resources to finance social protection interventions in response to these two types of shocks. Moving forward, countries may also drastically develop their capacity to identify the social protection needs of their entire population at the individual level, thereby blurring the usual distinction that is made between the formally and the informally employed when financing social protection responses; a comprehensive reform of the system could then be envisaged that would allow governments to tax individuals and firms that are currently considered to be informal. In this context, the rationale for a separate fund to finance emergency interventions would no longer exist, as the system of social protection would already be able to fully insure all individuals against all types of idiosyncratic shocks. However, given the starting conditions of social protection systems in most countries, the analysis here will focus on the first intermediary step that countries could consider,

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56   This was already clear in the face of economic turbulences generated by inflationary pressures, starting in late 2021. Even in this context, countries wished to intervene in order to sustain living standards (e.g. price controls on energy bills). However, the scope of the interventions was very different between developed economies – where governments were able to implement adequate measures – and developing and emerging economies, where instead governments had a much more restricted spending capacity (Gentilini et al. 2022).

namely the creation of a separate social protection fund in order to finance interventions in response to macroeconomic shocks and/or other types of covariate shocks.

▶ Establishing a separate fund under the social security agency

This section considers strategies that can strengthen fiscal management during a crisis of either broad-based (macroeconomic) or narrower (mesoeconomic) impact; one particularly promising solution is to build a separate fund under the social security agency to finance social protection responses during crises. This option is already implemented in a few countries, including Japan and the Philippines. One of the advantages of setting up a separate (and pre-financed) fund is that it will ensure the availability of resources when an emergency response is called for, which in turn will accelerate the social protection process so that support can reach all those in need as soon as early warning signals are detected.

The institution of a separate fund naturally complements the approach discussed in section 4, namely the pre-definition of indicators, triggers and policy actions. Indeed, the primary reason for a government to create such a fund is to streamline its policy response, by increasing predictability and reducing the time lag between the eruption of a crisis and the delivery of assistance to affected individuals. The proposed solution is not entirely new, as similar funds have even been used in both developed and emerging and developing economies in order to manage the risks associated with natural or climate-related disasters as well as climate change (IMF 2018; Costella et al. 2023). However, this financing strategy has rarely been adopted in response to economic crises, where the standard approach has been to simply rely on the automatic adjustment of social protection programmes during crises (e.g. automatically increasing the coverage of unemployment benefit schemes as more people are laid off) or, alternatively, to rely on ad hoc interventions and budget reallocations in order to finance new interventions.[57]

This different policy approach has been pursued despite the fact that natural or climate-related shocks and economic crises share several characteristics that may justify similar management. Firstly, private markets fail to offer perfect insurance against both types of shocks. This is because risks are often concentrated within specific subgroups of the population (e.g. certain regions for natural or climate-related shocks, or certain types of workers for economic crises), rather than being evenly spread across the population. This leads to a standard case of market failure due to adverse selection. Secondly, the occurrence of both natural or climate-related and economic shocks has increased over time: the former is the result of climate change, that is making extreme events more likely to occur and more severe; the latter is the result of increasing interconnectedness in the global economy that increases its vulnerability to macroeconomic shocks.[58] Third, there are public benefits and positive externalities from providing insurance against both types of shocks. In the case of climate shocks, these relate to rebuilding affected areas and implementing mitigation interventions that will benefit the entire community. For economic shocks, these relate to the fact that shocks hitting specific groups can generate wider negative effects also among initially unaffected groups (e.g. through a decrease in labour demand).

Resources accrued in this separate fund should be used to insure individuals and communities against risks arising as a result of macroeconomic shocks and/or narrower covariate shocks, while allowing more traditional social protection measures to insure against idiosyncratic types of shocks. This is important to preserve the fiscal sustainability of the social security emergency fund that countries should consider establishing, as well as to avoid any overlap between the new fund and existing social protection interventions (e.g. disability insurance, unemployment insurance, maternity protection). As a result of this division of responsibilities, the scope and mandate of the proposed emergency fund is smaller (i.e. it only insures against the shock generated by a crisis) than those of social protection systems overall (i.e. which

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57 This same approach has been used in many cases during the COVID-19 pandemic, and it has generated financing gaps between developed economies that could more easily reallocate resources and developing and emerging economies that were instead more fiscally restricted (IDB 2023).

58 Additionally, it is worth noting that the occurrence of both natural or climate-related and economic shocks is increasing in particular in emerging and developing countries, compared to developed economies. This is due to a combination of higher shock vulnerability (e.g. due to geographical factors for natural or climate-related shocks, and dependence on global supply chains for economic shocks) and lack of preparedness in terms of policy response, which amplifies the negative effects of the shock.

include insurance against shocks at the individual level, outside of a larger crisis).[59] However, this more limited mandate should facilitate flexible management of its resources as well as their faster disbursement in times of crisis. In other words, the insurance and protection provided under this emergency fund should be seen as a supplement to, rather than as a substitute for, existing forms of social protection; this addition would be justified, given the more frequent recurrence of economic shocks, as well as the failure of traditional social protection systems to provide adequate support against these types of shock, as has already been argued in this paper.

In this context, the key is to identify the types of economic shock against which this fund should aim to provide insurance (i.e. the macro- and mesoeconomic covariate shocks, see section 3 for details). This is a difficult exercise, which should be conducted in each country by technical and policy experts, while acknowledging that it will be impossible to clearly separate different, but interconnected, types of risks. As part of this exercise, the use of indicators and triggers outlined above could be useful. For instance, a government could decide that their emergency fund will finance the extension of unemployment benefits only to those individuals who have entered unemployment after the unemployment rate has surpassed a critical pre-established threshold (see section 4.B for details), while leaving all other unemployed individuals within the standard unemployment insurance scheme. This kind of approach ensures that resources accumulated in the emergency fund are used only to respond to the cyclical or temporary nature of the crisis, rather than to substitute other forms of insurance. Of course, it is important to guarantee that all benefit recipients (i.e. under the standard and the emergency versions of the programme) are treated equally and receive the same level of support, conditional on any other characteristic that determines eligibility.

This point also clarifies why it is important that this dedicated emergency fund be managed by the social security agency, rather than by any other government institution (such as the ministry of finance or the ministry of social security).[60] Indeed, in most countries social security agencies are already in charge of administering most social protection programmes.[61] If the purpose is to complement, rather than substitute, existing interventions, it is essential that the same institution manages both traditional and emergency types of support. This will ensure a more rapid activation of the policy, but it will also reduce the risk of overlap in the type of support provided.

▶ Size, funding and management

The discussion in the previous subsection has presented the rationale for the institution of, and the main characteristics of, a separate fund to finance social protection policy responses to broad-based and covariate economic shocks. Even if countries do decide to implement such a fund, they will still need to make decisions with respect to (i) the size of the fiscal buffer that should be built in anticipation of a crisis, (ii) its funding sources (e.g. from income taxes, property taxes or value added taxes) and (iii) how this should be used when a crisis erupts (IMF 2022).

The first step requires estimating the size of the fiscal buffer (i.e. how much governments want to set aside in anticipation of a crisis). Intuitively, fiscal contingency planning and the preparation of dedicated funds can help countries navigate a crisis; however, these resources are unlikely to suffice in the face of prolonged and severe crises. At the same time, building excessively large contingency funds can be politically challenging, since they come at the cost of other developmental objectives. There is no one-size-fits-all approach for this task; indeed, governments should consider a range of factors and assess their implications in terms of building the fiscal buffer.

▶ *Estimating the costs of a crisis:* The first consideration refers to the anticipated fiscal costs of a crisis. This estimate should be based on the probability of a crisis occurring (e.g. using historical data on crisis recurrence, updating them based on short- and long-term scenarios) as well as its expected severity.

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59   Of course, both standard social insurance and social insurance provided as part of this emergency fund could pursue redistributive goals, as these would not necessarily conflict with the different nature of their mandates.

60   Other management characteristics will be detailed below, so attention here is exclusively devoted to explaining the rationale for the social security agency being responsible for, and managing, the emergency fund.

61   If another institution is instead in charge of delivering social protection support in the country, that institution should be also in charge of managing the emergency fund discussed here.

Additionally, the estimated fiscal costs should include both the direct costs that will be faced by the government (e.g. higher fiscal expenses to finance social protection interventions) as well as all the indirect costs (i.e. due to reduced tax revenues if the economy decelerates). Of course, obtaining precise estimates of the expected costs of a crisis is a daunting task. However, governments can develop different forecasts under alternative assumptions and clearly present the assumptions that lie behind each estimate, thereby approximating the expected costs of best- and worst-case scenarios.

▶ *Assessing the possibility of borrowing on international markets:* A second important consideration refers to estimating the possibility (and costs) of borrowing from the international markets when a crisis erupts: the greater the access to international debt markets during crises, the smaller the fiscal buffer. Governments should therefore evaluate their capacity to access international markets in normal times (e.g. this will depend on the stock of public debt as well as the country's rating) and consider how financing conditions might change when a crisis erupts.

▶ *Considering the opportunity costs of building financial buffers:* The building of financial buffers shifts resources both temporally (i.e. from current to future spending) and across spending sectors (e.g. from a range of possible public investments, such as health and education, to crisis response interventions); the extent to which this is beneficial will partly depend on the indirect costs related to this reallocation of resources. For instance, if building fiscal buffers comes at the expense of reducing and/or delaying spending in infrastructure development or education, countries will face strong trade-offs in their budgeting decisions, compared to a situation in which these developmental objectives have already been achieved. This also explains why, all things being equal, developing and emerging countries will face higher opportunity costs from building financial buffers, as these countries also have the largest financing gaps and the highest investment needs.

The next decision that must be made concerns the way in which to finance such a fund, namely the type of tax revenue for which to opt (e.g. whether it be one that relies on workers or on firms, and whether it be progressive or regressive). Many different options are possible and they vary in equity and efficiency. For this reason, the composition of the fiscal buffer is as important as its size. In this respect, a number of options should be considered by a government in order to be able to finance their social protection responses during crises (Durán-Valverde et al. 2021; ILO 2017; Ortiz et al. 2019). Although these options should not be seen as alternative; indeed, the government should "use a variety of different methods to mobilize the necessary resources", in line with the provisions of the Social Protection Floors Recommendation, 2012 (No. 202). Countries could increase tax revenues (by either increasing the tax rate or the tax base, or reducing tax evasion), adopt more growth- and decent-jobs-oriented budgetary rules, as well as seek larger support from the international community in terms of financial aid and transfers.

The final consideration is management, namely the defining of procedures regarding the use of public funds during a crisis. This concerns both the use of the fiscal buffer that has been built in anticipation of a crisis, as well as the use of other traditional sources of government expenditure. These technical details will have important policy implications, as the administrative rules that determine who manages the available resources and following which specific procedures will shape the timeliness and inclusiveness of the policy response implemented by a country. Three main stages should be considered when using public funds during a crisis: (i) the authorization mechanism, (ii) the disbursement and use of resources and (iii) adaptations driven by a continuous assessment of the socio-economic situation. As has been emphasized in section 5.A, the resources allocated for emergency interventions ought to be managed by the social security institution.

▶ *Authorization:* The first stage is to define the rules that allow the use of public funds when a crisis erupts. This, in turn, requires clearly identifying both what constitutes a crisis requiring action and the authority that will be in charge of the request and approval of the allocation of funds. With respect to the first point, countries that have explicitly defined triggers (see section 4.B for details) will be able to initiate a policy response (including the allocation of funds) almost automatically. For other countries (or for crises that have not been explicitly regulated under the definition of triggers), the emergence of a crisis should be established based on the continuous evolution of the labour market and economic situation, and in consultation with the social partners and any other government or non-governmental organization. The process should be straightforward enough to preclude tardy intervention. With regard to the second point, namely the request and approval of the allocation of funds, a central role

is typically played by a ministry of finance, thereby ensuring fiscal sustainability as well as policy coherence. However, this centralized approach could potentially generate delays or tensions with other line ministries. An alternative approach would involve social security agencies both approving the use of funds and managing their use (as already detailed above); this would build on their existing capability to manage social protection measures and would shorten the time between the eruption of a crisis (e.g. as mapped using trigger indicators) and the disbursement of support (i.e. as the same institution is in charge of both steps).

▶ *Use of public funds:* Once the use of public funds has been authorized, its management and disbursement normally fall within the responsibilities of line ministries. For social security interventions, the responsible line ministries are normally the ministry of social security and the ministry of labour.[62] At this point in the decision-making process, many choices need to be made. These refer to the actual intervention that needs to be adopted, its target population and the possible system of service delivery. Section 4.C has presented a range of social protection and labour market policies that could be considered, depending on the type of crisis that countries have to face and the characteristics of the local economy. In any case, it is important that these policies are not conceived in isolation. Instead, they should be designed and implemented in accordance with the existing fiscal regime as well as with other types of policies (e.g. macroeconomic policies, skills and educational interventions). This will ensure that the effects of the policy are magnified, exploiting complementarities across different domains.

▶ *Monitoring and re-assessment*: The final stage in the decision-making process involves constantly monitoring the response to a crisis and updating policy decisions accordingly. A continuous feedback loop is in fact necessary to guarantee that the policy response remain up to date and relevant to the specific socio-economic conditions faced by the country. Of course, it requires that information on the evolution of a given crisis be updated frequently, and that the decision-making process be flexible enough to adjust policies as needed (e.g. via rapid communication among ministries). This step allows for the expansion of coverage of social protection interventions to subgroups only affected by a given crisis at a later stage, as well as the scaling up of policy responses to match an escalating crisis (see table 1 for some examples).

At each of these stages, a balance needs to be struck between two competing priorities: the rapid mobilization of resources, and the transparency and accountability of the decision-making process (IMF 2022). In particular, the timeliness of resource mobilization is essential to ensuring that the progress made in the initial stages (i.e. forecasting the evolution of a crisis, identifying potential beneficiaries of social protection interventions and understanding the most appropriate policy response) continues. At the same time, the speediness of a policy response should not come at the expense of its transparency and accountability; without the latter, a policy risks facing a political backlash, particularly if public resources are mobilized. Once again, the establishment of a separate fund with the explicit purpose of managing crisis-related interventions represents a valid solution that can circumvent these trade-offs.

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62 Of course, ministries will rely on other state agencies (e.g. the social security institute or public employment services) for the practical implementation of the policy (e.g. disbursement of cash assistance). This institutional organization will greatly vary across countries and the paper does not aim to promote the optimal approach for implementing labour market policies or social protection interventions.

Conclusions

This working paper has presented an overview of the responsiveness of social protection systems to crises. This topic has become of increasing importance with the outbreak of the COVID-19 pandemic, when countries had to respond to a universal shock that quickly created enormous pressures on households' employment and living conditions. As the pandemic evolved, social protection systems displayed extreme resilience and a capacity to swiftly adapt to changing needs and circumstances. Spending in social protection has increased rapidly around the world and innovative policy approaches have been implemented to reach all those in need, including individuals in the informal economy.

Nevertheless, not all policy approaches adopted by countries during the COVID-19 pandemic were equally effective. Additionally, some countries were constrained in their power to expand social protection coverage to new groups in the population, owing to an absence of necessary data, a limited administrative capacity to identify potential beneficiaries in traditionally marginalized groups (e.g. informal workers) and/ or a lack of public resources to finance the interventions. Consequently, it is imperative to build on the lessons learned during the pandemic by identifying precisely how to improve the adaptation of social protection schemes to changes in the population's needs, particularly during future crises (including those induced by climate change).

This paper has provided elements for countries to move in this direction. The discussion has examined the relationship between changes in GDP growth and changes in social protection spending, both from a long-term perspective (i.e. starting from the 1980s) and specifically during the COVID-19 pandemic. The results show that, during the latter, countries at all levels of economic development (i.e. not solely high-income ones, as in previous crises) adopted a particularly countercyclical policy approach, largely driven by a massive use of social assistance interventions. The policy innovations that were introduced during the pandemic have also been reviewed, including those that forecast and tracked the evolution of the crisis as well as those that could identify and reach potential beneficiaries. These innovations, which were key to ensuring an adequate social protection response, have shown that it is possible for countries to react more rapidly to crises and to reach groups that are not traditionally covered by social protection systems.

Critically, the report argues that the access to novel data and the rapid expansion of technology, including payment platforms, will revolutionize what social protection systems will be able to observe. In the short run, early warning systems could be built to identify those affected by narrow economic crises, thereby paving the way to protect them regardless of their labour market status. Furthermore, we posit that in the long run, the expansion of technology will allow social protection systems to monitor, tax and provide benefits when needed on an individual basis, thus closing the gap between formal and informal workers.

Finally, the report puts forward a proposal to build a responsive social protection system using new data to address covariate regional or sectoral risks. It has three major pillars: indicators to track social protection needs among the entire population almost in real time, triggers that activate a response and policy responses. Given the importance of ensuring that enough resources are readily available to finance these interventions, the paper proposes that a separate emergency fund be established for this purpose and managed by the social security agency. This can be used to respond to broad-based macroeconomic crises as well as to crises deriving from narrower covariate shocks.

Governments around the world are at an important crossroads in terms of building social protection systems in the aftermath of the COVID-19 pandemic (ILO 2021a). It is perfectly possible for governments to return to the policy approach that was prevalent before the outbreak of the pandemic to respond to future crises. In high-income countries, this would involve waiting for expenditure in automatic stabilizers to decrease (e.g. unemployment benefit claims decrease as the state of the business cycle improves) and withdrawing and/or substantially reducing any form of discretionary non-contributory measures that were introduced during the pandemic. In low- and middle-income countries, it would imply a return to a situation in which contributory interventions cover only formal-sector employees, while non-contributory interventions reach only a small share of the population and are not easily adaptable to changing demands for social security.

But there is another possibility: countries can instead build upon the momentum created by the COVID-19 pandemic to build robust social protection systems that are more inclusive (i.e. that reach all those in need, tending towards universalism) and more effective (i.e. that provide adequate support over the entire lifecycle for a given level of spending). This is in line with both the right-based approach to social protection promoted by the ILO and the conclusions of its "recurrent discussion on the strategic objective of social protection (social security), under the follow-up to the ILO Declaration on Social Justice for a Fair Globalization, 2008" (ILO 2021c). In particular, those conclusions call on member states to build universal social protection systems as a means "to realize the human right to social security by progressively building and maintaining nationally appropriate social protection systems, so that everyone has access to comprehensive, adequate and sustainable protection over the life cycle, in line with ILO standards." This report has shown how the use of new data and the expansion of technology could make the right to social protection a reality by blurring the divide between formal and informal workers.

References

Abay, Kibrom A., Mehari H. Abay, Guush Berhane, and Jordan Chamberlin. 2022. "Social Protection and Resilience: The Case of the Productive Safety Net Program in Ethiopia". *Food Policy* 112: 102367.

Abebe, Girum, A. Stefano Caria, Marcel Fafchamps, Paolo Falco, Simon Franklin, and Simon Quinn. 2021. "Anonymity or Distance? Job Search and Labour Market Exclusion in a Growing African City". *The Review of Economic Studies* 88 (3): 1279-1310.

Abel, Martin, Rulof Burger, and Patrizio Piraino. 2020. "The Value of Reference Letters: Experimental Evidence from South Africa." American Economic Journal: Applied Economics, 12 (3): 40-71.

Abel, Martin, Eliana Carranza, Kimberly Geronimo, and Maria Ortega. 2022. "Can Temporary Wage Incentives Increase Formal Employment? Experimental Evidence from Mexico". IZA Discussion Paper No. 15740. http://dx.doi.org/10.2139/ssrn.4285837.

Abelson, Brian, Kush R. Varshney, and Joy Sun. 2014. "Targeting Direct Cash Transfers to the Extremely Poor". In *Proceedings of the 20th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD '14).* New York, NY, USA: Association for Computing Machinery, 1563–1572. https://doi.org/10.1145/2623330.2623335.

Alfonsi, Livia, Oriana Bandiera, Vittorio Bassi, Robin Burgess, Imran Rasul, Munshi Sulaiman, and Anna Vitali. 2020. "Tackling Youth Unemployment: Evidence from a Labor Market Experiment in Uganda". *Econometrica* 88 (6): 2369-2414.

Azam, Mehtabul. 2012. "The Impact of Indian Job Guarantee Scheme on Labor Market Outcomes: Evidence from a Natural Experiment". IZA Discussion Paper No. 6548. http://dx.doi.org/10.2139/ssrn.2062747.

Bassi, Vittorio, and Aisha Nansamba. 2022. "Screening and Signalling Non-Cognitive Skills: Experimental Evidence from Uganda". *The Economic Journal* 132 (642): 471–511. https://doi.org/10.1093/ej/ueab071.

Bastagli, Francesca, and Christy Lowe. 2021. "Social Protection Response to Covid-19 and Beyond: Emerging Evidence and Learning for Future Crises". ODI Working Paper No. 614. https://odi.org/en/publications/social-protection-response-to-covid-19-and-beyond-emerging-evidence-and-learning-for-future-crises.

Beam, Emily A. 2016. "Do Job Fairs Matter? Experimental Evidence on the Impact of Job-Fair Attendance". *Journal of Development Economics* 120(C): 32-40.

Berg, Erlend, Sambit Bhattacharyya, D. Rajasekhar, and R. Manjula. 2018. "Can Public Works Increase Equilibrium Wages? Evidence from India's National Rural Employment Guarantee". *World Development* 103: 239-254.

Bergolo, M., and G. Cruces. 2021. "The Anatomy of Behavioral Responses to Social Assistance when Informal Employment is High". *Journal of Public Economics* 193.

Bhorat, Haroon, Timothy Köhler, and David De Villiers. 2023. "Can Cash Transfers to the Unemployed Support Economic Activity? Evidence from South Africa". *AFD Research Papers* 278: 1-47.

Blanchet, Thomas, Emmanuel Saez, and Gabriel Zucman. 2022. "Real-Time Inequality". Working Paper No. 30229. *National Bureau of Economic Research*. https://www.nber.org/papers/w30229.

Bosch, Mariano, and Norbert Schady. 2019. "The Effect of Welfare Payments on Work: Regression Discontinuity Evidence from Ecuador". *Journal of Development Economics* 139: 17-27.

Cahuc, Pierre, Francis Kramarz, and Sandra Nevoux. 2021. "The Heterogeneous Impact of Short-Time Work: From Saved Jobs to Windfall Effects". CEPR Discussion Paper 16168.

Cañedo, Ana P., Raissa Fabregas, and Prankur Gupta. 2023. "Emergency Cash Transfers for Informal Workers: Impact Evidence from Mexico". *Journal of Public Economics* 219: 104820.

Carranza, Eliana, Robert Garlick, Kate Orkin and Neil Rankin. 2022. "Job Search and Hiring with Limited Information about Workseekers' Skills". *American Economic Review* 112 (11): 3547-83.

Chacaltana, Juan, Vicky Leung and Miso Lee. 2018. "New Technologies and the Transition to Formality: The Trend Towards e–formality". ILO Employment Working Paper No. 247.

Chetty, Raj, John N. Friedman, Michael Stepner and The Opportunity Insights Team. 2020. "The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data". Working Paper No. 27431. *National Bureau of Economic Research*. https://www.nber.org/papers/w27431.

Costella, Cecilia, Ana Diez, Rodolpho Beazley, and Mariana Alfonso. 2023. "Shock-responsive Social Protection and Climate Shocks in Latin America and the Caribbean: Lessons from COVID-19". IDB Working Paper Series No. 1428. http://dx.doi.org/10.18235/0004740.

Debenedetti, Luciana. 2021. "Togo's Novissi Cash Transfer: Designing and Implementing a Fully Digital Social Assistance Program during COVID-19". *Innovations for Poverty Action.* https://poverty-action.org/togos-novissi-cash-transfer-designing-and-implementing-fully-digital-social-assistance-program.

Deininger, Klaus, and Yanyan Liu. 2013. "Welfare and Poverty Impacts of India's National Rural Employment Guarantee Scheme: Evidence from Andhra Pradesh". IFPRI Discussion Paper 1289, International Food Policy Research Institute (IFPRI).

de Mel, Suresh, David McKenzie, and Christopher Woodruff. 2019. "Labor Drops: Experimental Evidence on the Return to Additional Labor in Microenterprises". *American Economic Journal: Applied Economics* 11 (1): 202-35.

Duarte, Angelo, Jon Frost, Leonardo Gambacorta, Priscilla Koo Wilkens, and Hyun Song Shin. 2022. "Central Banks, the Monetary System and Public Payment Infrastructures: Lessons from Brazil's Pix". Bulletin No. 52. *Bank for International Settlements.* https://www.bis.org/publ/bisbull52.pdf.

Durán Valverde, Fabio, José Pacheco-Jiménez, Taneem Muzaffar, and Hazel Elizondo-Barboza. 2020. "Financing Gaps in Social Protection Global Estimates and Strategies for Developing Countries in Light of the COVID-19 Crisis and Beyond". ILO Working Paper 14.

Engstrom, Logan, Dimitris Tsipras, Ludwig Schmidt, and Aleksander Madry. 2017. "A Rotation and a Translation Suffice: Fooling CNNs with Simple Transformations". *arXiv* preprint arXiv:1712.02779. https://arxiv.org/abs/1712.02779

Fisker, Peter, Jordi Gallego-Ayala, David Malmgren-Hansen, Thomas Pave Sohnesen, and Edmundo Murrugarra. 2022. "Guiding Social Protection Targeting Through Satellite Data in São Tomé and Príncipe". Social Protection & Jobs Discussion Papers No. 2212. http://hdl.handle.net/10986/38222

Franklin, Simon. 2018. "Location, Search Costs and Youth Unemployment: Experimental Evidence from Transport Subsidies". *The Economic Journal* 128 (614): 2353-2379.

Galasso, Emanuela, and Martin Ravallion. 2004. "Social Protection in a Crisis: Argentina's Plan Jefes y Jefas". *The World Bank Economic Review* 18 (3): 367-399.

Game, Alina and Xi Kang. 2023a. "Employment Impact Assessment of the Merille-Marsabit Road, Isiolo-Moyale Transport Corridor in Kenya". ILO.

———2023b. "Employment Impact Assessment of the National Feeder Roads Programme, Rwanda". ILO.

Gentilini, Ugo, Mohamed Bubaker Alsafi Almenfi, Hrishikesh Tirumala Madabushi Matam I, Giorgia Valleriani, Yuko Okamura, Emilio Raul Urteaga, and Sheraz Aziz. 2022. "Tracking Global Social Protection Responses to Inflation – Living paper v. 4". Social Protection & Jobs Discussion Papers No. 2215. © World Bank, Washington, DC. http://hdl.handle.net/10986/37441

Gentilini, Ugo. 2022. *Cash Transfers in Pandemic Times: Evidence, Practices, and Implications from the Largest Scale Up in History.* Washington, DC: World Bank. http://hdl.handle.net/10986/37700

Gerard, François, and Joana Naritomi. 2021. "Job Displacement Insurance and (the Lack of) Consumption-Smoothing." *American Economic Review* 111 (3): 899-942. https://www.aeaweb.org/articles?id=10.1257/aer.20190388.

Giupponi, Giulia, and Camille Landais. 2020. "Subsidizing Labor Hoarding in Recessions: The Employment and Welfare Effects of Short Time Work." CEPR Discussion Paper 13310.

Giupponi, Giulia, Camille Landais, and Alice Lapeyre. 2022. "Should We Insure Workers or Jobs During Recessions?". *Journal of Economic Perspectives* 36(2): 29-54.

Gomis, Roger, Paloma Carrillo, Steven Kapsos, Stefan Kühn and Avichal Mahajan. 2022. "The ILO Nowcasting Model: Using High-frequency Data to Track the Impact of the COVID-19 Pandemic on Labour Markets". *Statistical Journal of the IAOS* 38: 815 – 830.

Hill, Ruth, Christoph Lakner, Daniel Gerszon Mahler, Ambar Narayan, and Nishant Yonzan. 2021. "Poverty, Median Incomes, and Inequality in 2021: A Diverging Recovery". World Bank Working Paper, 11 February 2021. https://documents1.worldbank.org/curated/en/936001635880885713/pdf/Poverty-Median-Incomes-and-Inequality-in-2021-A-Diverging-Recovery.pdf.

ILO. 2010. *Chile: Unemployment Insurance: More Protection in a Context of Crisis.* https://www.ilo.org/americas/publicaciones/observatorio-de-la-crisis/WCMS_LIMD3_17_EN/lang--en/index.htm.

——— 2020a. "COVID-19 Crisis and the Informal Economy: Immediate Responses and Policy Challenges". https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/briefingnote/wcms_743623.pdf.

——— 2020b. "Extending Social Protection to Informal Workers in the COVID-19 Crisis: Country Responses and Policy Considerations". *Social Protection Spotlight*, 8 September 2020. https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---soc_sec/documents/publication/wcms_754731.pdf.

——— 2020c. "Social Protection Responses to the COVID-19 Crisis: Country Responses and Policy Considerations". *Social Protection Spotlight*, 23 April 2020. https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---soc_sec/documents/publication/wcms_742337.pdf.

——— 2020d. "Social Protection Responses to the COVID-19 Pandemic in Developing Countries: Strengthening Resilience by Building Universal Social Protection". *Social Protection Spotlight*, May 2020. https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---soc_sec/documents/publication/wcms_744612.pdf.

——— 2021a. *World Social Protection Report 2020–22: Social Protection at the crossroads – in pursuit of a better future.* https://www.ilo.org/global/publications/books/WCMS_817572/lang--en/index.htm.

——— 2021b. *World Employment and Social Outlook: Trends 2021.* https://www.ilo.org/global/research/global-reports/weso/trends2021/lang--en/index.htm.

——— 2021c. *Building the Future of Social Protection for a Human-centred World of Work: A Recurrent Discussion on the Strategic Objective of Social Protection (Social Security), under the Follow-Up to the ILO Declaration on Social Justice for a Fair Globalization, 2008.* ILC.109/V https://www.ilo.org/ilc/ILCSessions/109/reports/reports-to-the-conference/WCMS_780953/lang--en/index.htm.

——— 2023. *ILO Modelled Estimates: Methodological Overview.* https://www.ilo.org/ilostat-files/Documents/TEM.pdf.

IMF. 2014. *Government Finance Statistics Manual 2014.*

——— 2018. "How to Manage the Costs of Natural Disasters". *How-To Notes*, No. 2018/003 https://www.imf.org/en/Publications/Fiscal-Affairs-Department-How-To-Notes/Issues/2018/06/11/How-to-Manage-the-Fiscal-Costs-of-Natural-Disasters-45941.

Jean, Neal, Marshall Burke, Michael Xie, W. Matthew Davis, David B. Lobell, and Stefano Ermon. 2016. "Combining Satellite Imagery and Machine Learning to Predict Poverty", *Science* 353(6301): 790–794 DOI: 10.1126/science.aaf7894.

Klonner, Stefan, and Christian Oldiges. 2022. "The Welfare Effects of India's Rural Employment Guarantee". *Journal of Development Economics* 157.

Kopp, Daniel, and Michael Siegenthaler. 2021. "Short-Time Work and Unemployment in and After the Great Recession." Journal of the European Economic Association 19 (4): 2283–321.

Levinsohn, James, Neil Rankin, Gareth Roberts, and Volker Schöer. 2014. "Wage subsidies and youth employment in South Africa: Evidence from a randomised control trial". Stellenbosch Economic Working Papers 02/2014. https://resep.sun.ac.za/wp-content/uploads/2017/10/wp-02-2014.pdf.

Liepmann, Hannah, and Clemente Pignatti. 2021. "Welfare Effects of Unemployment Benefits when Informality is High". ILO Working Paper No. 39. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_816114.pdf.

Marinescu, Ioana, Daphné Skandalis, and Daniel Zhao. 2021. "The Impact of the Federal Pandemic Unemployment Compensation on Job Search and Vacancy Creation". *Journal of Public Economics* 200: 104471.

Naritomi, Joana. 2019. "Consumers as Tax Auditors". *American Economic Review* 109 (9): 3031-72 https://www.aeaweb.org/articles?id=10.1257/aer.20160658.

Ortiz, Isabel, Anis Chowdhury, Fabio Durán-Valverde, Taneem Muzaffar and Stefan Urban. 2019. *Fiscal Space for Social Protection: A Handbook for Assessing Financing Options*. ILO. https://www.ilo.org/secsoc/information-resources/publications-and-tools/books-and-reports/WCMS_727261/lang--en/index.htm.

Pandey, Rajiv, Praveen Kumar, Kelli M. Archie, Ajay K. Gupta, P. K. Joshi, Donatella Valente, and Irene Petrosillo. 2018. "Climate Change Adaptation in the Western-Himalayas: Household Level Perspectives on Impacts and Barriers". *Ecological Indicators* 84: 27-37. https://doi.org/10.1016/j.ecolind.2017.08.021.

Pople, Ashley, Ruth Hill, Stefan Dercon, and Ben Brunckhorst. 2021. "Anticipatory Cash Transfers in Climate Disaster Response". Centre for Disaster Reduction Working Paper No. 6.

Renkin, Tobias, Claire Montialoux, and Michael Siegenthaler. 2022. "The Pass-Through of Minimum Wages into U.S. Retail Prices: Evidence from Supermarket Scanner Data". *The Review of Economics and Statistics* 104 (5): 890–908. https://doi.org/10.1162/rest_a_00981.

VnExpress. 2023. "Vietnam's economic locomotive begins to gather pace again". 10 July 2023. https://e.vnexpress.net/news/business/economy/vietnam-s-economic-locomotive-begins-to-gather-pace-again-4627477.html.

——— 2022b. "Tackling Food Insecurity with Satellites and Cash: Five Lessons from Niger". World Bank Blog. 13 December 2022. https://blogs.worldbank.org/climatechange/tackling-food-insecurity-satellites-and-cash-five-lessons-niger.

Zimmermann, Laura. 2012. "Labor Market Impacts of a Large-Scale Public Works Program: Evidence from the Indian Employment Guarantee Scheme". IZA Discussion Paper No. 6858. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2158000.

——— 2014. "Public Works Programs in Developing Countries have the Potential to Reduce Poverty". *IZA World of Labor* 2014: 25. doi:10.15185/izawol.25.

Appendix: Additional tables and figures

Table 1. Time coverage for countries included in the analysis					
	Start year	End year		Start year	End year
Afghanistan	2006	2017	Egypt	2002	2015
Albania	2005	2021	El Salvador	2002	2020
Argentina	2002	2004	Estonia	1995	2021
Armenia	2004	2021	Finland	1980	2021
Australia	1980	2021	France	1980	2021
Austria	1980	2021	Georgia	1995	2021
Azerbaijan	2008	2019	Germany	1980	2021
Barbados	2003	2004	Greece	1995	2021
Belarus	2003	2020	Guatemala	2014	2020
Belgium	1980	2021	Honduras	2003	2020
Bolivia	1986	2007	Hong Kong, China	2002	2020
Bosnia and Herzegovina	2005	2021	Hungary	1981	2021
Brazil	2010	2021	Iceland	1980	2021
Bulgaria	1990	2021	Indonesia	2008	2020
Burkina Faso	2021	2021	Iran, Islamic Republic of	1980	2009
Cambodia	2019	2020	Ireland	1980	2021
Canada	1990	2021	Israel	1980	2020
Cape Verde	2008	2016	Italy	1985	2021
Chile	1980	2020	Japan	1994	2020
China	2005	2020	Jordan	2008	2018
Colombia	1998	2020	Kazakhstan	2000	2020
Congo	2001	2014	Kenya	2014	2020
Costa Rica	2002	2020	Korea, Republic of	2007	2020
Côte d'Ivoire	2018	2020	Kuwait	2001	2006
Croatia	1995	2021	Kyrgyzstan	2014	2021
Cyprus	1995	2021	Latvia	1995	2021
Czech Republic	1995	2021	Lesotho	2003	2007
Denmark	1980	2020	Lithuania	1995	2021

Luxembourg	1980	2021	**Samoa**	2012	2021
Macau, China	2001	2020	**Saudi Arabia**	2018	2020
Malaysia	1996	2001	**Senegal**	2015	2020
Maldives	1980	2009	**Serbia**	2007	2020
Malta	1995	2021	**Singapore**	1980	2021
Mauritius	2002	2021	**Slovakia**	1995	2021
Mexico	1990	2020	**Slovenia**	1992	2021
Mongolia	1992	2021	**Somalia**	2017	2020
Morocco	2002	2011	**South Africa**	1993	2020
Myanmar	2012	2019	**Spain**	1980	2020
Namibia	2016	2018	**Sweden**	1980	2021
Nepal	2019	2020	**Switzerland**	1980	2021
Netherlands	1980	2020	**Tajikistan**	2003	2004
New Zealand	2009	2021	**Tanzania, United Republic of**	1995	2014
North Macedonia	2006	2020	**Thailand**	2021	2021
Norway	1980	2021	**Timor-Leste**	2010	2019
Paraguay	2005	2021	**Tunisia**	2008	2012
Peru	1995	2020	**Turkey**	2008	2021
Philippines	2012	2017	**Uganda**	2015	2020
Poland	1984	2021	**Ukraine**	2001	2021
Portugal	1987	2021	**United Arab Emirates**	2011	2020
Republic of Moldova	2002	2021	**United Kingdom**	1980	2021
Romania	1980	2021	**United States**	1980	2021
Russian Federation	2000	2020	**Uzbekistan**	2011	2020
Rwanda	2014	2020	**Yemen**	2002	2012

Note: The table reports the first and last available year for the 106 countries included in the analysis conducted in section 1. This does not mean that the full data series is available for the entire period between these dates.

▶ **Figure 1. Social protection spending by country groups**
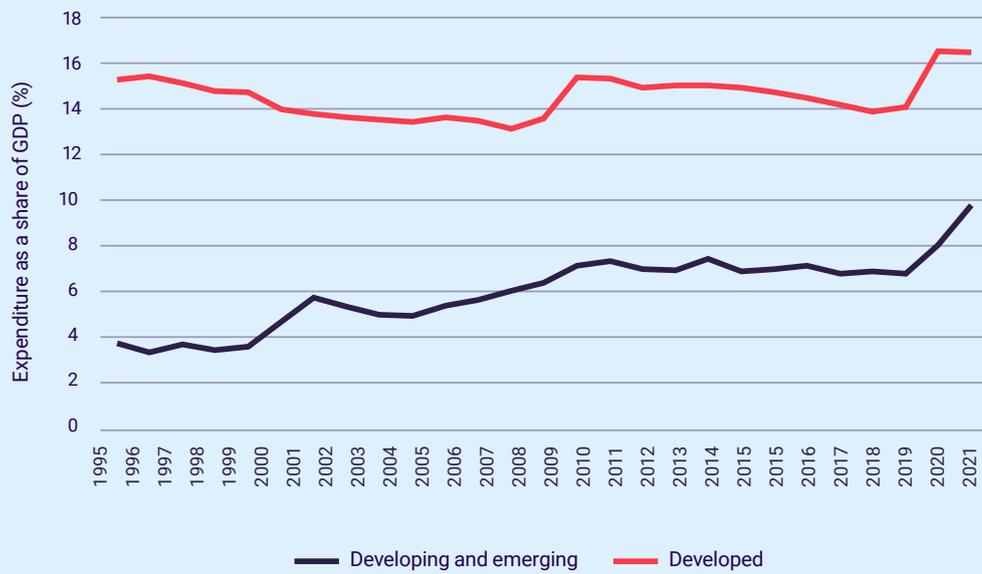
Source: Authors' calculations based on IMF Government Finance Statistics.

Note: The figure reports the average spending in social protection (expressed as a share of GDP) between 1995 and 2021. The definition of the country groups (i.e. type of economy) follows the standard ILO classification (see in the text for details). The average across countries is unweighted (i.e. each country counts equally, irrespective of its size in the global economy). The sample composition changes across years, depending on data availability (see Appendix table 1 for details).

▶ Figure 2. Registration procedures for the NOVISSI programme in Togo

Step	Prompt (FRENCH)	Prompt (ENGLISH)	Data entry possible
1	Taper le *855#	Dial *855#	
2	NOVISSI : Programme de Revenu Universel de Solidarité Tapez 1 pour continuer	NOVISSI: Cash Transfer Programme Press 1 to continue	NUM
3	Veuillez choisir une option pour continuer : 1- S'inscrire au programme NOVISSI 2- Quitter 0- Précédent	Please choose an option to continue: 1- Register for NOVISSI programme 2- Quit 0- Go back	NUM
4	Taper le numéro de la carte d'électeur. (Mettre les tirets): 0- Précédent	Enter your voter ID number* (including dashes): 0- Go back *The voter ID number is a 19-digit number with dashes	NUM (with dashes)
5	Taper le numéro NSF écrit sur la carte d'électeur: 0- Précédent	Enter the NSF* number indicated on the voter's ID card *The NSF is a second code only printed on the card which serves as a guarantee that the applicant is in possession of the card being used to register.	NUM
6	Taper le nom écrit sur la carte d'électeur: 0- Précédent	Enter the surname indicated on the voter's ID card	ALPHA
7	En vous enregistrant sur cette platforme, vous acceptez de partager vos données personnelles qui seront utilisée dans le cadre du programme NOVISSI Taper OK pour confirmer	By registering on this platform, you agree to share your personal information to be used for the purposes of the NOVISSI programme. Tap OK to accept	
8	SMS CONFIRMATION : Bienvenue dans le programme NOVISSI. Vous serez contacté si vous êtes éligible. Votre numéro Flooz ou T-money est [PHONE NUMBER USED FOR REGISTRATION]	SMS CONFIRMATION: Welcome to the NOVISSI programme NOVISSI. We will contact you if you are eligible. Your Flooz or T-money number is [PHONE NUMBER USED FOR REGISTRATION]	

Source: Debenedetti, Luciana (2021), Innovations for Poverty Action, p. 4