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Strengthening Income Stabilization through Social Protection in Emerging and Developing Economies

The Brazilian Experience

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ABSTRACT: Social protection programs are crucial for stabilizing household income, especially during crises. Brazil's response to the pandemic, the Auxilio Emergencial (AE) program, demonstrated the value of a resilient social safety net and digital tools. This study assesses AE's effectiveness in income stabilization, poverty reduction, and inequality. Results show that the pre-pandemic social protection system would have only buffered about a quarter of income loss, with unemployment insurance more significant for higher-income households, and social safety net transfers crucial for lower-income households, especially those in informal employment. AE successfully supported lower-income households during the pandemic, but its generosity went beyond the stabilization of income, resulting in large fiscal costs.

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WORKING PAPERS

Strengthening Income Stabilization through Social Protection in Emerging and Developing Economies

The Brazilian Experience

Prepared by Fernanda Brollo, Gabriel Lara Ibarra, and Ricardo Campante Vale[1]

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Contents

Glossary

AE	Auxilio Emergencial
BFP	Bolsa Familia Program
BraSim	Tax-benefit microsimulation tool developed by the World Bank
CAIXA	Caixa Econômica Federal
CEQ	Commitment to Equity
CNIS	Cadastro Nacional de Informações Sociais
EMDEs	Emerging and Developing Economies
EMEs	Emerging Market Economies
GDP	Gross Domestic Product
ILO	International Labour Organization
IMF	International Monetary Fund
LICs	Low-Income Countries
MTFFs	Medium-term Fiscal Frameworks
PKH	Program Keluarga Harapan
PIX	Brazilian fast payment system
PNADC	Pesquisa Nacional por Amostra de Domicílios Contínua (Continuous National Household Sample Survey)
PPP	Purchasing Power Parity
SSNs	Social Safety Nets

Executive Summary

Social protection programs play a vital role in safeguarding households against income and employment losses, especially during large crises. In such dire circumstances, initiatives like unemployment income support and targeted transfers not only reduce the risk of financial distress and long-term well-being deterioration for individuals but also help cushion the adverse impact on overall demand, thereby expediting economic recovery. The experience gained from the COVID-19 pandemic and the global financial crisis that began in 2008 has shown the potential of social protection to support households during systemic shocks. This includes automatic stabilizers designed to offer timely, targeted and temporary support to households during adverse events and discretionary transfers. Most governments in EMDEs cannot rely on automatic stabilizers to respond to systemic shocks given the large size of the informal sector in these countries. Many of them have utilized discretionary measures, with broad-based cash transfers being a prominent strategy, to offer direct income support to households during the pandemic.

The COVID-19 pandemic has emphasized the crucial elements of effective social safety nets (SSNs) for scaling up and stabilizing household income during crises. This paper outlines the essential features of robust SSNs, vital for successful expansion in the face of systemic shocks. These include strong information systems with universal identification, integrated social registries, and efficient data management. Implementation capacity, incorporating integrated administrative systems and electronic payment methods, is crucial for efficient cash transfers. Additionally, strong institutional arrangements, such as government leadership and effective coordination mechanisms, are vital for a rapid and effective SSN response. Creating fiscal space in advance is also imperative for building adaptive SSNs that can swiftly scale up during shocks.

The paper analyzes in detail the COVID response in Brazil and highlights the importance of the response design and the key elements mentioned above for an implementation of an effective response. To address the challenges posed by the pandemic, Brazil capitalized on its resilient SSN system and digital resources to roll out the Auxilio Emergencial (AE) program in April 2020. During its peak, the AE program had extensive coverage, reaching about 60% of the Brazilian population, including both direct and indirect beneficiaries. However, due to relatively high-income thresholds for eligibility, a significant portion of benefits went to households in upper quintiles of the income distribution.

This paper analyzes the effectiveness of AE in stabilizing incomes during the pandemic and its effects on poverty and inequality. The analysis starts with simulations of labor market conditions and incomes during the pandemic. The BraSim tax-benefit simulation tool designed for Brazil, developed by the World Bank, is then utilized to model the effects of taxes and social benefits in three scenarios: 1) the pre-pandemic social protection system, offering a counterfactual perspective; 2) the combination of pre-pandemic social benefits and the Emergency Aid program, representing the actual policies during the pandemic; and 3) a counterfactual Emergency Aid program with reduced benefits. The results indicate that the pre-pandemic social protection system would have provided limited income stabilization, buffering only about a quarter of income loss on average. This effect varies among income groups, with unemployment insurance playing a larger role for higher-income households and social safety net transfers being more significant for lower-income households, helping to mitigate their vulnerability to negative labor market shocks, particularly among those reliant on informal jobs and self-employment.

I. Introduction

Social protection programs are not only key to reduce poverty and promote human capital, but it can also play a vital role in safeguarding households against income and employment losses, especially during large crises.[1] These programs become particularly crucial when individuals struggle to secure new employment, maintain a basic standard of living, and experience simultaneous declines in the real incomes of multiple household members. In such dire circumstances, initiatives like unemployment income support and targeted transfers not only reduce the risk of financial distress and long-term well-being deterioration for individuals but also help cushion the adverse impact on overall demand, thereby expediting economic recovery. The experience gained from the COVID-19 pandemic and the global financial crisis that began in 2008 has shown the potential of social protection to support households during systematic shocks. This includes automatic stabilizers designed to offer timely, targeted and temporary support to households during adverse events and discretionary transfers.

Social protection programs in advanced economies can automatically stabilize household income and consumption during adverse events, a feature notably absent in most emerging and developing economies. Social protection programs, such as unemployment income support and means-tested guaranteed minimum income schemes, automatically expand following negative shocks, helping smooth incomes and consumption, and acting as spending-side automatic stabilizers.[2] In most emerging and developing economies (EMDEs) the absence of such automatic stabilizers, exacerbated by large informal sectors, and limited administrative capacity, made it challenging to provide adequate support during crises.

In this context, many governments have utilized discretionary measures through Social Safety Net (SSN) programs. Broad-based cash transfers were a prominent strategy, to offer direct income support to households during the pandemic. Cash transfers have proven to be versatile and suitable for addressing various crises, especially in situations where other measures may be insufficient due to the crisis's severity or feasibility challenges, such as a high level of informality in the labor market. Cash transfers are typically progressive, as their proportional impact on disposable income is more significant for low-income households compared to their wealthier counterparts. However, their effectiveness relies on the government's ability to identify and verify eligible recipients and deliver payments efficiently, which can be challenging in low-income countries with limited information and capacity, particularly for the most vulnerable individuals with limited ties to the formal economy.

It is unclear to what extent SSNs in EMDEs can provide income stabilization and how discretionary measures to scale up SSN programs contribute to this. This paper discusses the effectiveness of SSNs in EMDEs and highlights the key elements that facilitate a rapid expansion in face of systemic shocks. In this context, we

[1] Social protection instruments can be broadly categorized into three types: Social Safety Net (SSN), Social Insurance (SI), and Labor Market Programs (LMPs). SSN programs, often known as social assistance, provide non-contributory transfers to ensure a minimum economic well-being, including cash and in-kind transfers, fee waivers, school feeding, public works, and social pensions. SI programs are contributory interventions addressing changes in income due to old age, sickness, or disability, encompassing pensions, sick leave, maternity/paternity benefits, and health insurance. LMPs aim to protect against income loss from unemployment or actively assist individuals in finding employment and increasing earnings capacity. See MIF 2022 for more details.

[2] Automatic stabilizers are mechanisms built into government budgets that increase (reduce) spending or reduce (increase) taxes when the economy contracts (expands). They primarily include, on the revenue side, income taxes and, on the spending side, unemployment income support and other social protection programs.

analyze in detail the effectiveness of the COVID response in Brazil in terms of income stabilization and its effects on poverty and inequality. Brazil's social protection system distinguishes itself from many other emerging and developing economies due to its effective use of the Bolsa Familia program (BFP), a large conditional cash transfer initiative that has significantly contributed to reducing inequality and poverty. Brazil has established a robust infrastructure for identifying potential BFP program beneficiaries, confirming eligibility, and delivering payments. This includes the Cadastro Unico, a social registry that encompasses approximately half of Brazil's population and is employed by over federal 20 programs to determine households' eligibility based on various income thresholds. While Brazil's formal sector workforce is relatively extensive compared to other countries in LAC, but still with high informality and limited unemployment insurance coverage.

In response to the COVID-19 pandemic, Brazil capitalized on its resilient SSN system and digital resources to roll out the Auxilio Emergencial (AE) program in April 2020. The AE program leveraged digital tools and existing social registry data for beneficiary identification, with eligibility verification based on multiple administrative records. The program initially providing a monthly basic income of BRL600 to informal workers, self-employed individuals, and the unemployed with specific income criteria. It was later extended until the end of 2021, with progressively stricter selection criteria and lower benefit amounts, eventually leading to its phasing out. During its peak, the AE program had extensive coverage, reaching about 51 percent of the Brazilian population with 90 percent of households in the bottom 40 percent of the income distribution. [3, 4] However, due to relatively high-income thresholds for eligibility, a significant portion of benefits went to households in the upper quintiles of the income distribution. Despite its high fiscal cost, the program played a crucial role in cushioning lower-income households from pandemic-induced income loss and increased financial inclusion.

This paper is organized as follows. Section 2 discusses the role of social protection in income stabilization during large shocks in EMDEs. Section 3 discusses the Brazilian experience with AE and employs microsimulations to estimate the effects of the program on income stabilization over the income distribution, poverty and inequality.

II. Social protection and income stabilization in emerging and developing economies

Social protection systems in advanced economies have programs that automatically scale up following adverse shocks, helping to stabilize household income and consumption. Social protection programs, such as unemployment income support and means-tested guaranteed minimum income schemes, automatically expand following negative shocks, helping smooth incomes and consumption and acting as spending-side automatic stabilizers. In most advanced economies, contributory employment insurance schemes, which provide a temporary partial replacement of past labor income, are the first line of defense against negative income shocks for most households (Dolls, Fuest, and Peichl 2012; IMF 2020). In some countries, unemployed

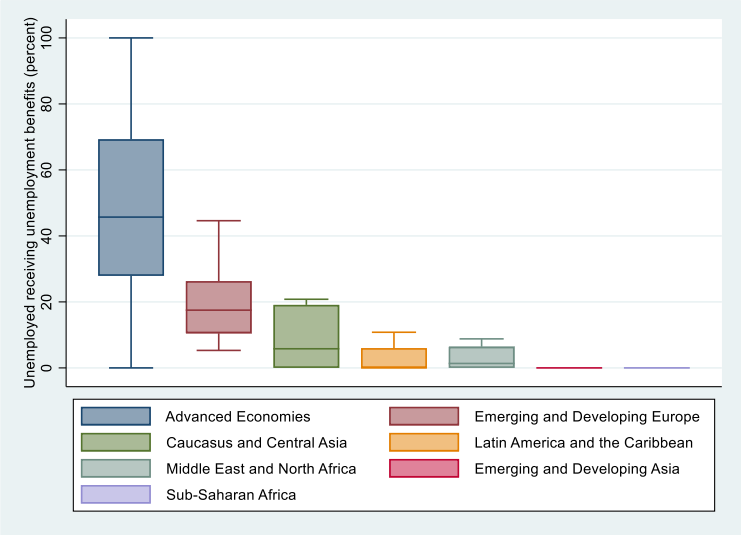
[3] This is the peak of the coverage as captured by the PNAD-Covid phone surveys done between May and September 2020. As reported by Lara Ibarra and Campante Vale (2022, 2023) surveys in Brazil usually underestimate the coverage of social programs in Brazil when compared with administrative records, therefore the actual proportion of individuals directly and indirectly benefited by AE could be even higher.

[4] According to administrative records, AE was given to over 68 million individuals in 2020, representing 34% of the Brazilian population Data from the PNAD-Covid Survey suggested that a half the households received the benefit, whereas some simulations suggest the direct and indirect beneficiaries could have reached 60% of the population.

workers who do not meet the criteria for receiving contributory benefits or have exhausted their entitlement, may receive non-contributory unemployment assistance benefits, which are mostly funded through general taxation and are usually means tested. Some advanced economies have other programs that can protect working-age households from falling into poverty, such as guaranteed minimum income schemes (Coady et al. 2021). All these social protection programs help to stabilize household income following adverse shocks, although the degree of stabilization varies significantly across advanced economies, depending on the policy instruments used and the design of benefit entitlements.

In contrast, social protection systems in most emerging and developing economies lack programs that automatically scale up. Spending-side automatic stabilizers are much less prevalent in emerging and developing economies (EMDEs). For instance, while in advanced economies almost half of unemployed workers receive unemployment benefits, the coverage of unemployment income support schemes in most EMDEs is very limited (Figure 1). This partly reflects the absence of such schemes in many countries. Indeed, according to ILO (2021), 103 countries, mostly EMDEs, lack unemployment income support programs. And even in those EMDEs that have unemployment protection schemes, the fraction of unemployed workers actually receiving benefits tends to be relatively low due to the exclusion of many categories of workers, high rates of long-term unemployment, and restrictive qualifying conditions.

Figure 1. Coverage of unemployment income support programs by region (percent, latest available)

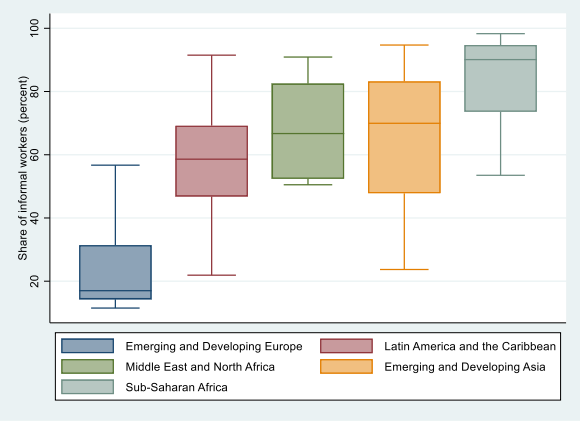


Note. Box plots with 25th percentile and 75th percentile boundaries. Whiskers indicate variability outside the upper and lower quartiles. Horizontal line shows median.
Source: ILO. Staff calculations.

The low prevalence of spending-side automatic stabilizers in most EMDEs reflects large informal sectors and limited administrative capacity. Unemployment insurance schemes typically cover formal workers and are financed, at least partly, by employer and employee contributions. High labor market informality in many EMDEs limits the coverage of contributory schemes, especially among lower-income households (Figures 2 and 3). Unemployment income support programs (both contributory and non-contributory) are further hindered in many EMDEs by other characteristics of labor markets, including large shares of self-employment and of short-term, seasonal, part-time and multi-employer work, and by insufficient information and limited administrative capacity. Unemployment benefits are difficult to manage in countries with high informality, as it is

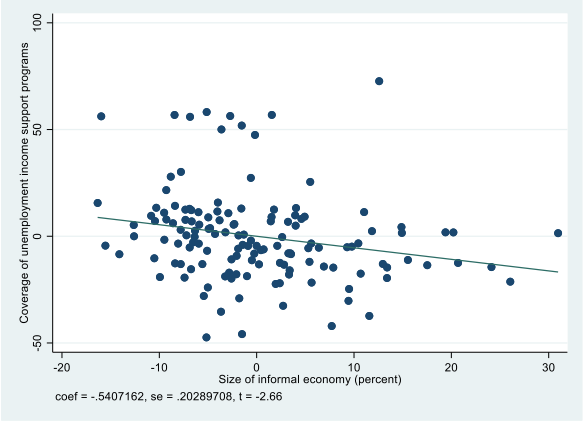
hard to verify eligibility (e.g., informal employers do not report when workers are fired or hired; workers may claim unemployment insurance benefits while working in the informal sector, etc.). In addition, many EMDEs have insufficient technical and administrative capacity to effectively provide job search and placement services, which are key for the functioning of unemployment benefit schemes. As a result, in most EMDEs income support to the unemployed is mostly provided through SSN programs.

Figure 2. Labor market informality, by region (percent, latest available)



Note. Box plots with 25th percentile and 75th percentile boundaries. Whiskers indicate variability outside the upper and lower quartiles. Horizontal line shows median.
Source: ILO. Staff calculations.

Figure 3. Coverage of unemployment income support programs and informality



Note. Cross-sectional country-level regressions controlling for (log) GDP per capita.
Source: ILO; Medina and Schneider (2018). Staff analysis.

In the absence of significant spending-side automatic stabilizers, countries may take discretionary measures to scale up social safety net programs in response to shocks.[5] SSN programs can increase the resilience of poor and vulnerable households by improving their capacity to prepare for, cope with, and adapt to negative shocks, thus ensuring that they do not fall into poverty or become trapped in poverty following these shocks (Grosh et al. 2011; World Bank 2020a). SSN cash transfers, for example, can provide an income that enables households to undertake preparedness measures (such as saving) and support adaptation, for instance by allowing household to invest in less risky assets. Once a negative shock hits, transfers provide income support to households, ensuring a minimum level of well-being and reducing the need to resort to destructive coping strategies that result in a deterioration of their physical and human capital. However, in order to effectively contribute to stabilizing household income and consumption, SSN programs need to temporarily scale-up following adverse shocks, increasing the amount or duration of benefits for existing beneficiaries that face income losses (vertical expansion) and/or expanding benefits to new individuals and households that were negatively impacted by the shock (horizontal expansion). Most SSN programs in EMDEs are not designed to automatically scale up, as they typically do not have mechanisms to keep track of whether current beneficiaries and non-beneficiaries meet the eligibility criteria in real time and do not allow for frequent entry and exit of beneficiaries and for automatic adjustments of benefit levels. Many programs also have limits on the maximum

[5] Some SSN programs in EMDEs include mechanisms to automatically scale up in response to specific shocks. For example, the number of beneficiaries of Ethiopia's Productive Safety Nets Program increases if there is warning of impending drought. Similarly, Kenya's Hunger Safety Net Program cash transfer program has clear triggers specifying who is covered by the scheme, as well as the amount and duration of benefits, depending on drought conditions.

number of beneficiaries, in many cases based on geographic targeting criteria. As a result, policymakers in EMDEs must take deliberate measures for SSNs to scale up when faced with negative shocks.

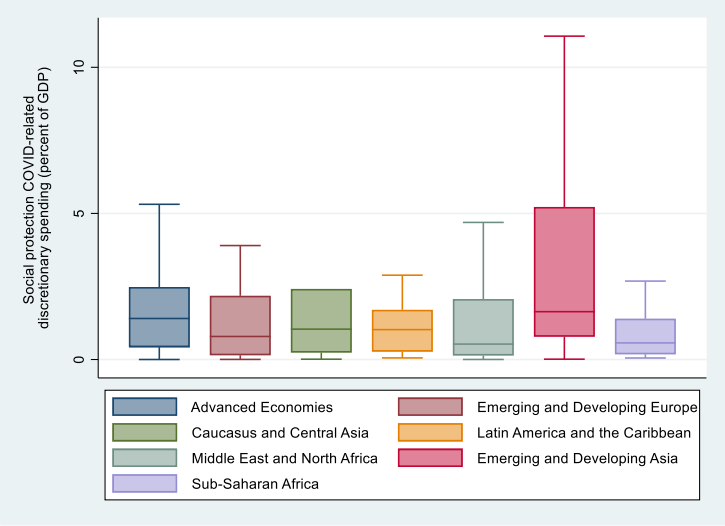
Relying on discretionary measures may limit the ability of social safety nets to quickly respond to the needs of individuals affected by shocks, potentially reducing their role in stabilizing income and consumption. Discretionary measures by policymakers may be affected by information, decision, and implementation lags, which may impair their timeliness and effectiveness. In addition, due to political factors, discretionary measures may be harder to scale-back once incomes recover, resulting in higher fiscal costs. On the other hand, it may be easier to tailor the policy response to a particular shock when relying on discretionary measures than when following pre-set criteria. It is unclear to what extent SSNs in EMDEs provide income stabilization and how discretionary measures to scale up SSN programs contribute to this.

The pandemic has highlighted the key role that fiscal policy, and in particular social protection spending, plays in protecting vulnerable households from adverse shocks. Governments took unprecedent fiscal measures in response to the COVID-19 emergency. Fiscal actions enabled health systems and provided emergency lifelines to households and firms. By doing so, fiscal policy also mitigated the contraction in economic activity. Discretionary fiscal measures announced to fight the economic impact of the pandemic globally reached $16.9 trillion (averaging about 7.5 percent of GDP at the country level), with social protection spending accounting for at least 20 percent of this (IMF 2021; Gentilini et al. 2022).[6,7] Spending in pandemic-related social protection measures averaged 2 percent of 2019 GDP in advanced economies and 2.2 percent in emerging market economies (EMEs), and was lower in low-income countries (LICs), reaching only 1.2 percent of GDP. There was large variation in social protection spending across regions, as well as across countries within a given region, with some countries, including Aruba, Fiji, Malaysia, Ukraine, and the United States, spending over 7 percent of 2019 GDP (Figure 4). Particularly, Brazil spent over 4.4 percent of its GDP in transfers to families, among the AE, BFP expansion and BEm – a program that complemented wages in formal companies that committed to suspend or reduce working journeys but keep the employment after crisis.

[6] For details see the Fiscal Monitor Database of Country Fiscal Measures in Response to COVID-19 at https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19.

[7] Data on social protection spending is only available for a subset of the programs announced, so this figure should be considered as a lower bound estimate. See Gentillini et al. (2022) for further discussion.

Figure 4. Discretionary COVID-related social protection spending, by region (share of 2019 GDP)



Note. Box plots with 25th percentile and 75th percentile boundaries. Whiskers indicate variability outside the upper and lower quartiles. Horizontal line shows median.
Source: Gentilini et al (2022). World Economic Outlook. Staff calculations.

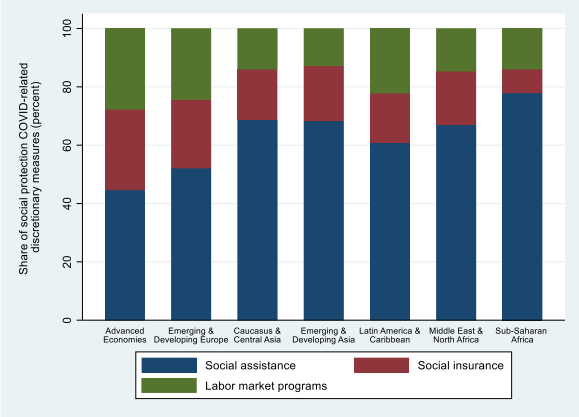
The discretionary social protection measures introduced by countries to support households during the pandemic reflect, to a large extent, the structure of existing social protection systems and labor market informality.

In advanced economies, which tend to have strong contributory social insurance systems and low labor market informality, pandemic-related measures focused on strengthening labor market and social insurance programs in various ways, including by expanding eligibility for unemployment benefits to those not traditionally covered and relaxing eligibility requirements; increasing benefit levels, including additional one-off cash benefits; extending paid leave benefits; and introducing new employment retention schemes or expanding existing ones (Figures 5 and 6).

EMDEs with sufficient existing capacity scaled-up their SSNs, expanding coverage to reach more people and increasing benefit levels. Some countries expanded existing programs, while other introduced new programs. Relatively generous cash transfers were the most commonly used tool. For instance, Indonesia increased the number of beneficiaries and the benefit amounts of its flagship conditional cash transfer program (Program Keluarga Harapan – PKH) and its food assistance program (Sembako). It also introduced a new unconditional cash transfer covering about nine million additional households that were not receiving benefits from these programs. Brazil introduced the *Auxílio Emergencial* (Emergency Aid) program—a temporary means-tested cash transfer targeting informal workers and vulnerable households, which reached about 68 million individuals.

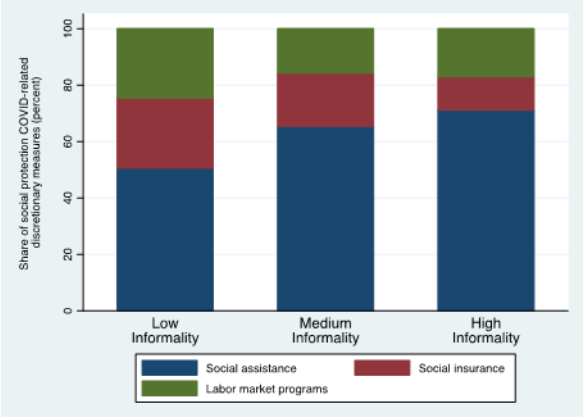
EMDEs with weak SSN systems in many cases faced difficulties in expanding coverage and reaching vulnerable households due to limited administrative capacity and lack of basic infrastructure to identify those in need and deliver assistance to them in a timely and cost-effective manner.

Figure 5. Composition of discretionary COVID-related social protection measures, by region



Source: Gentilini et al (2022). Staff calculations.

Figure 6. Composition of discretionary COVID-related social protection measures, by informality level



Note. Countries are classified into terciles based on the size of the informal economy.
Source: Gentilini et al (2022); Medina and Schneider (2018). Staff calculations.

During the pandemic, many EMDEs leveraged digital tools and big data to expand SSN coverage. Scaling-up SSN coverage requires several steps, such as outreach (e.g., communicating to the potential target population and building awareness about the program), intake and registration of potential beneficiaries (e.g., collecting identifying information and information on income and/or other relevant socio-economic characteristics on potential beneficiaries), assessing needs and conditions (e.g., verifying income information), determining eligibility and making enrollment decisions, and distributing benefits. During the pandemic many countries used new technologies to facilitate some of these steps. In many cases, beneficiary intake and registration were carried out using mobile technology. Some governments, including Brazil, Indonesia, and Thailand, opted to implement more direct registration processes by creating dedicated websites and mobile device application (app). Some countries collected information on household characteristics from non-standard sources to select new beneficiaries. For instance, Togo selected households to be enrolled in cash transfer programs based on satellite and phone record data using machine learning algorithms. Nigeria used a new targeting method based on census data and high-resolution satellite imagery to map the poorest urban areas and target benefits. Digital payment systems, especially through mobile money, were used in several countries to distribute benefits.

Innovative approaches relying on new technologies enabled rapid SSN coverage expansions, but there could be important trade-offs involved. Information collected through some of these innovative approaches may be less accurate than information collected through more traditional methods. For instance, self-reported income collected online or through mobile applications may be less reliable than income information collected through in-person registration at local government offices or through door-to-door visits. This can lead to leakage of benefits to higher-income households that may not require assistance, resulting in larger fiscal costs. This problem is more relevant when SSN coverage expansions are longer-lasting and in countries that lack the ability to cross-check registrations with administrative datasets and countries that lack progressive taxation. In addition, relying on digital technologies for beneficiary selection, registration, and intake could lead to the exclusion of low-income households that may not have access to digital tools and/or may be hard to reach through digital mechanisms. The effectiveness of targeting approaches based on non-traditional data sources

in reaching the targeted population and avoiding inclusion errors still needs to be assessed.[8] There are important trade-offs between allowing a more rapid and timely expansion of SSNs in response to shocks and a better targeted (and less fiscally costly) expansion. Different objectives may be prioritized in different contexts and determining the right approach requires a comprehensive analysis of the trade-offs involved. The right combination of tools to expand coverage will depend on the capabilities of the SSN (including existing tools and information systems, and even physical infrastructure) as well as on the specific country context.

The experience during the pandemic has highlighted that SSNs require various features to be able to effectively scale up and help to stabilize household income and consumption. Scaling-up coverage and benefit levels to protect households adversely hit by an income shock requires being able to accurately identify those in need and deliver assistance to them in a timely and cost-effective manner. This, in turn, requires three key features:

Strong information systems. This includes universal and robust identification systems and the ability to collect and verify current identification and socio-economic information (e.g., data on household characteristics and family composition, employment, and income), as well as the capacity to store and manage this information and to share it in a timely manner. Countries that had integrated social registries with up-to-date information and good coverage of the poor and the vulnerable population leveraged these systems to identify new beneficiaries for pandemic-related cash transfer programs and to deliver assistance to them.[9] This was the case of Chile's Ingreso Familiar de Emergencia, Colombia's Ingreso Solidario, and Pakistan's Ehsaas Emergency Cash, among others. Some countries that lacked unified social registries but had well-integrated sources of administrative data, including registries of beneficiaries of different social protection programs, civil registries, and tax records, were able to leverage this information to scale-up SSN programs and verify eligibility, as illustrated by the case of Argentina. Countries that lacked social registries and interoperable sources of administrative data, or where those systems had low coverage of the vulnerable population and out-of-date information, faced difficulties identifying those in need and had to collect new information under tight timeframes, with challenges for eligibility verification.

Strong implementation capacity. This includes the capacity to deliver benefits to the intended beneficiaries in a reliable, cost-effective, and timely manner. This requires administrative systems for service delivery, integrated across social protection programs, as well as robust systems for informed decision-making and accountability enhancement (e.g., grievance mechanisms, monitoring and evaluation systems, etc.). Ministries in charge of SSNs should have the required human resource capabilities. Electronic payment systems can help to increase the efficiency and transparency of cash-transfer delivery. Indeed, during the pandemic many EMDEs relied on digital payments to distribute cash transfers. While digital payments can be beneficial, they require an adequate payment ecosystem, including a strong legal framework for digital payments, interoperable payments infrastructure, broad electronic payments acceptance, strong cash out networks, and financial literacy. For instance, Pakistan has effectively implemented a new biometric payment system, which combines limited mandate account with a savings wallet. Payments were delivered through branchless baking platforms and ATMs of two commercial banks. Colombia implemented a harmonized payment system where beneficiaries were able to withdraw benefits from accounts in banks of their choice. Brazil launched a new instantaneous credit and debit banking system (Pix).

[8] Aiken et al. (2022) analyze the case of Togo and find that relying on phone record data and machine learning algorithms to target SSN transfers would lead to lower exclusion and inclusion errors than a simple geographic targeting approach but would underperform compared to targeting transfers using data from a comprehensive social registry.

[9] Social registries can be broadly defined as "information systems that support outreach, intake, registration, and determination of potential eligibility for one or more social programs." (World Bank 2017).

Strong institutional arrangements. This includes national policies, strategies and laws. Government leadership and clear roles and responsibilities of the different government entities involved in social protection are critical. Strong coordination mechanisms can help to enhance the efficiency and effectiveness of the SSN response to shocks, by reducing duplications, avoiding unnecessary delays, and improving the response to the needs of affected populations. Governments also need to establish clear standards and procedures to guide the integration of nongovernmental organizations and humanitarian actors.

Strong fiscal frameworks. Building adaptive social safety nets that can rapidly scale up in response to shocks also requires creating the necessary fiscal space in advance. Strong public finances are key to allow countries to rapidly increase SSN spending in response to shocks without undermining fiscal and macroeconomic stability. Flexible and sustainable financing, preferably including progressive income tax systems, is essential for creating the fiscal space to allow SSN spending to effectively play its stabilization role. This requires strong Medium-term Fiscal Frameworks (MTFFs) that reflects other spending needs and revenue mobilization capacity, as well as credible economic reforms. Strong MTFFs help build fiscal buffers and can also facilitate the withdrawal of discretionary fiscal measures as the economy recovers.

III. The role of social protection in stabilizing household incomes - The case of Brazil

To better understand to what extent social protection systems in EMDEs provide income stabilization and how discretionary measures to scale up SSN programs in response to shocks can contribute to this, we analyze the case of Brazil. This section quantifies the stabilization effects of existing social protection programs and discretionary social protection measures introduced in response to the COVID pandemic using the *BraSim* tax-benefit microsimulation tool developed by the World Bank (2023b). We analyze the following simulations. The first one is a hypothetical scenario considering labor market conditions in 2020 and estimating the level of income stabilization that pre-existing social protection programs would have provided, based on the rules that were in place in 2019. The second simulation estimates the actual level of income stabilization provided by social protection programs in 2020, including discretionary measures introduced to scale up social protection in response to the pandemic. A third simulation studies the effects of discretionary measures using lower benefits than the ones put in place in the country.

To perform the simulations, we combine a tax-benefit analysis (called BraSim) with scenarios simulated from labor market actual data. BraSim uses the PNADC 2019 household survey microdata to perform welfare analysis. BraSim complements the readily available data reported by families with estimates about employment contributions and benefits, taxes, and social programs that are not part of the original PNADC questionnaire. By recreating the taxes and benefits over the original data, it is also possible to simulate policy and economy changes and assess their distributional impacts. For these simulations, following Olivieri (2020), we first recreate the labor market conditions during the pandemic period using actual labor market data. To do this, we estimate a multinomial logit model reassigns individuals to different labor market status to ultimately match aggregate labor market indicators found in the data. Matched indicators include employment across the three big economic sectors (i.e., agricultural, manufacture, services) including formal or informal status, as well as labor market participation of the working-age population. Individuals that are predicted to switch into a new employment sector have their labor income estimated through a Mincer-type equation regression model. Having labor attributes alongside demographic characteristics as inputs, the microsimulation proceeds to the next step of calculating the rest of the income components. By simulating several variations of the application of the social protection

program, we can then study the hypothetical implications on overall household income, poverty and inequality. BraSim largely follows the Commitment to Equity (CEQ) methodology (Lustig 2023), which inspired several fiscal incidence analysis microsimulations tools for dozens of countries across the globe[10] (More details of the methodology are described in Annex I).

Brazil's social protection system has some important characteristics, especially compared to other EMDEs, that have facilitated its role in stabilizing household incomes during the pandemic. Brazil has in place several different SSN and social insurance programs focused on different objectives, with relatively high coverage of the population in some cases. The mainstay of Brazil's SSN system is the Bolsa Familia Program (BFP), one of the largest conditional cash transfer programs in the world. BFP provides cash transfers to poor households, conditional on school attendance and use of maternal and child health services. In 2019, about 20 percent Brazil's population was beneficiary of the program, which had a budget equivalent to 0.4 percent of GDP. BFP has not only contributed to directly reducing inequality and poverty, especially extreme poverty, but has also led to improvements in education and health indicators (Oliveira and Soares 2013; de Brauw at al. 2015; de Souza et al. 2019; Ramos et al. 2021). Brazil also has a relatively large formal sector workforce, compared to other EMDEs, with some unemployment benefits and savings mechanisms in place.[11] Unemployment benefits are quite generous, equivalent to the average of the wages received on the three months pre-unemployment and paid up to five months of unemployment spell, but only cover a small fraction of the unemployed. This low coverage reflects, among other factors, that a large share of the workforce (informal workers, the formal self-employed) has no right to unemployment benefits, a relatively short payout period which excludes workers with longer unemployment spells, and the presence of many workers with intermittent and short job spells who do not meet the eligibility criteria (World Bank 2020c).

Brazil has provided near-universal access to contributory and non-contributory pensions to its older population. Social pensions (*Benefício de Prestação Continuada*, BPC) and rural pensions (which are de facto non-contributory) cover about 35 percent of the 65 years and older population, and their benefit amounts are much higher than those of other SSN programs (World Bank 2017). In addition, Brazil has in place a robust infrastructure to identify potential SSN program beneficiaries, verify eligibility, and deliver payments, including its social registry (*Cadastro Unico*) which covers about half the Brazilian population and is used by more than 20 federal programs to identify households at different income eligibility thresholds.

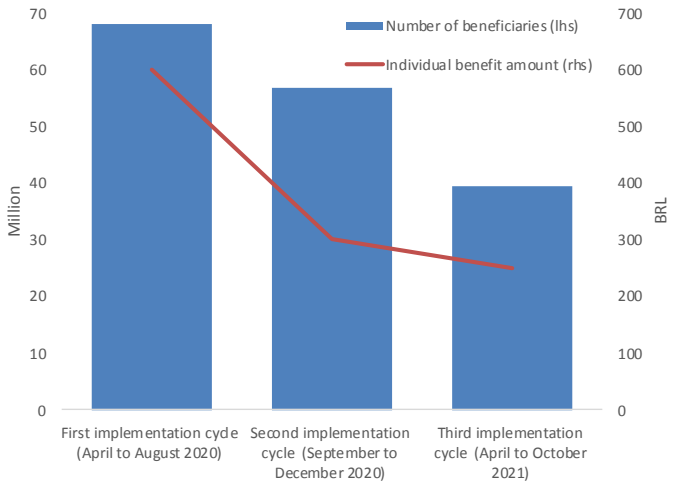
In response to the COVID-19 pandemic, the Brazilian government introduced a temporary targeted cash transfers program offering a basic income to informal workers, self-employed, and unemployed. Launched in April 2020, the Emergency Aid (*Auxílio Emergencial*, AE) program initially offered a temporarily monthly basic income of BRL600 to all adults without a formal job, not receiving any other social benefits (except for Bolsa Familia) and belonging to a household with per capita monthly income up to half the minimum wage or total monthly household income up to three times the minimum wage. In addition, participants could not have had annual taxable gross income greater than BRL28.5 thousand in 2018. Up to two adults per family could receive benefits and the payment was doubled for female heads of single-parent families with children. Bolsa Familia beneficiaries were allowed to temporarily migrate to the AE program to receive its higher benefits.

[10] As of December 3, 2023, the CEQ metadata had statistics for a hundred fiscal incidence analysis across 74 different countries. Please see https://commitmentoequity.org/datacenter for more details.

[11] Formal private sector dependent workers have access to three income protection mechanisms: unemployment insurance (*seguro desemprego*), employer-funded compulsory savings accounts (*Fundo de Garantia do Tempo e Serviço*, FGTS), and severance pay (*multa*), paid by the employer and corresponding to 40 percent of the FGTS account balance.

AE was originally intended to be a temporary program, though was extended twice through end-2021, with tighter selection criteria and lower benefit levels introduced over time resulting a gradual phase out of the program. AE was initially designed to last for three months, from April to June, but was extended for two more months, until August 2020. Between September and December 2020, a new program cycle (*Auxílio Emergencial Residual*) was introduced, including tighter eligibility rules, which resulted in a 13 percent reduction in the number of beneficiaries, as well as a 50 percent reduction in individual benefit amount, to BRL300 (Figure 7). The payment for female heads of single-parent families with children was reduced (from twice to 1.5 times the standard benefit) and a monthly eligibility reassessment was introduced. The AE program was discontinued between January and March 2021, but the worsening economic outlook amid a rebound of the pandemic led to the launch of a new cycle of the program in April 2021. In this third cycle, benefits were restricted to one person per family and the individual benefit amount was reduced to BRL250. In addition, the eligibility criteria became more restrictive, establishing that both per capita and total family income should be below the program thresholds (before only one of these conditions was required to qualify for the program). This resulted in a 30 percent drop in the number of beneficiaries.

Figure 7. Number of Auxílio Emergencial beneficiaries and individual benefit amount, by program implementation cycle



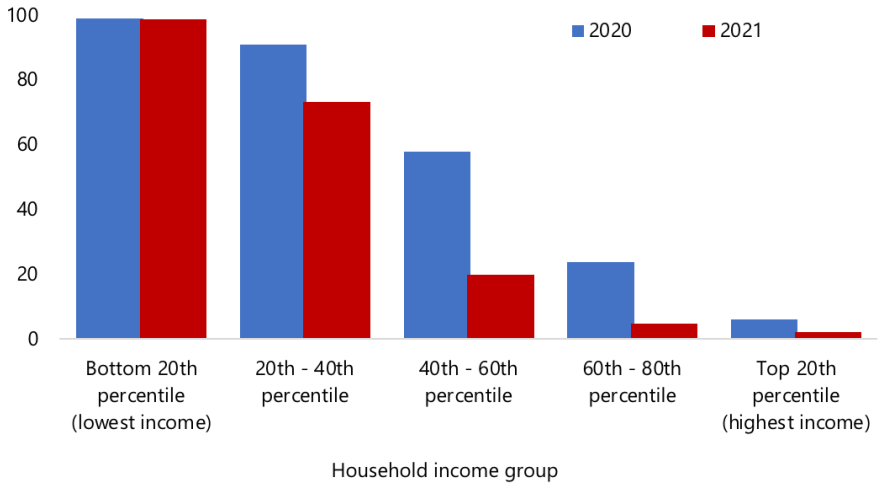
Source: Lara de Arruda (2021a); Staff analysis.

The high coverage of the AE program, as well as its generous benefit levels, resulted in high fiscal costs, reaching almost 4 percent of GDP in 2020. During this first implementation cycle, AE had up to 68.2 million direct beneficiaries, equivalent to 34 percent of the Brazilian population, reaching more than 60 percent of the population when including both direct and indirect beneficiaries (calculated to include all family group members). Coverage of individuals in the bottom 40 percent of the income distribution was about 90 percent, suggesting that the program could play an important role in cushioning lower-income households from the income loss caused by the pandemic (Figure 8).[12] But due to the relatively high income thresholds considered to determine eligibility, the coverage of households in the third and fourth quintiles of the income distribution

[12] The share of the population in each quintile receiving AE benefits is estimated based on microsimulations. We do not use data from the household survey (PNADC) on benefit incidence because income from direct government transfers, including AE, is usually underreported in PNADC. For instance, while administrative records indicate over 68 million AE recipients in 2020, only about 20 million are observed in PNADC. See Lara Ibarra and Campante Vale (2022) for more discussion on this issue.

was also quite high and in 2020 more than a third of benefits went to households in the top 60 percent of the income distribution. The tighter eligibility conditions introduced in 2021 not only reduced the overall number of beneficiaries, but also helped to focus resources on lower-income households. In addition to its high coverage, AE benefits were quite generous relative to national benchmarks. For example, the AE benefit amount during the first cycle of the program was about three times higher than PBF's average benefits and equivalent to more than 50 percent of the national minimum wage. Spending on AE was equivalent to almost ten times the annual cost of BFP. Tighter eligibility criteria and smaller benefits significantly lowered AE spending in 2021, reaching about 0.6 percent of GDP.

Figure 8. Estimated share of population receiving Auxílio Emergencial, by income group



Sources: BraSim tax-benefit tool; IMF staff estimates.
Note. Estimates are based on microsimulations and consider all members of households that receive benefits.

To rapidly scale up SSN coverage, the AE program successfully leveraged existing social registry information and used digital applications to identify new beneficiaries, relying on comprehensive administrative records to verify eligibility. Three channels were used to select AE beneficiaries. First, BFP beneficiaries were included in AE when the benefit amount under this program exceeded their BFP benefits. Second, individuals included in the social registry that were not BFP beneficiaries were considered to be automatic applicants to AE. Third, CAIXA (*Caixa Econômica Federal*), a government-owned commercial bank, created a website and a mobile app for people who were not included in the social registry to apply for AE. The app and website allowed citizens to apply, check the status of the application, and provide additional information (upon request). Online applications required some basic information, without having to submit supporting documentation.[13] There was also the possibility of assisted registration at post offices, but take-up was very low. All applications were subject to an eligibility verification process based on cross-checking administrative records. This process initially relied on the 17 administrative databases that form the National Social Information Registry (*Cadastro Nacional de Informações Sociais*, CNIS), which includes all labor-related data, such as salaries, social security contributions, and social security benefits, as well tax identification numbers. Eligibility verification processes became more robust as the program advanced, with other administrative records being gradually included,

[13] Online applications were limited to the first three months of the program (between April 7 and July 2, 2020). Beneficiaries in the second and third phases of the program were restricted to first phase beneficiaries, without the possibility of new applications.

resulting in over 40 major government databases being used to verify eligibility. There were almost 60 million online applications, of which about two-thirds were considered eligible. Out of about 68.2 million AE beneficiaries during the first implementation cycle, 19.5 million were BFP beneficiaries, 10.5 million were already included in the social registry but did not receive BFP, and 38.2 million were online applicants that were not included in the social registry. AE successfully leveraged the robust social safety net information systems that were in place before the pandemic and also led to several improvements and innovations, including the collection of new information on more than 38 million individuals that were not part of the social registry, building a comprehensive database of administrative records, and increasing interoperability among government databases. Going forward it would be important to leverage these efforts by combining digital strategies with in-person service channels, both for registration and for verifying self-declared information and checking eligibility criteria and expanding and updating the information collected through the online application.

Clear definition of responsibilities and coordination across all government agencies involved was key to the successful and timely implementation of AE. AE was coordinated by the Citizenship Ministry (*Ministerio de Cidadania*, MC), with CAIXA and Dataprev (a public company responsible for developing data management and processing systems) as key implementing partners. The MC was responsible for leading and overseeing the AE. CAIXA has branches in most Brazilian municipalities and traditionally supports PBF operations, including by managing the social registry and executing and distributing payments. It performed a similar role in AE and also developed and maintained the website and app for applicants that were not part of the social registry. Dataprev was responsible for developing and managing the database comprised of administrative records that was used to verify eligibility. In addition to these three main players, AE implementation relied on an unusually large number of central government institutional actors, such as in error and fraud control (audit and comptroller bodies) and to correct errors of exclusion (the judiciary) (Lara de Arruda et al. 2022). Although Brazil traditionally delegates social assistance services to subnational governments through a participatory, inter-federative system, subnational governments were not given any specific responsibility in the implementation of AE. The MC took several measures to increase the transparency in the AE program, including the development of a specific web page for active accountability with updated data on coverage and spending and contracts executed to operationalize the program.

AE benefits were distributed through digital payments, leveraging CAIXA's experience in managing SSN transfer payments and relying on innovative solutions to foster financial inclusion. AE benefits were disbursed through existing channels for beneficiaries of BFP (Bolsa Familia payment cards, accounts in CAIXA, and social cards) and by direct deposit to new beneficiaries with an existing bank account. The main payment innovation was the introduction of a simplified all-digital savings account offered by CAIXA to AE beneficiaries, which can be operated through an app developed by the bank and pays the same interest as basic savings accounts in Brazil. This digital social savings account is free and includes free transactions: two ATM withdrawals per month, three monthly transfers to other banks, unlimited transfers within CAIXA, and two monthly statements. To open the account, AE beneficiaries only need to input in the CAIXA app their tax identifier and the code they received after finalizing their AE application. No other information is needed, as CAIXA uses information collected through the AE application process to conduct customer due diligence. The digital social savings account allows AE beneficiaries to make purchases using a virtual debit card and through the CAIXA app in merchants with QR code enabled Points of Sale (POS). The account also allows beneficiaries to make payments through PIX, the fast payment system launched by the Central Bank of Brazil in November 2020. PIX allows free person-to-person transfers and merchant payments in real-time on a 24/7 basis. PIX helped to mitigate some of the limitations of the virtual debit card for face-to-face purchases, by allowing users of digital social savings accounts to make payments even when their virtual card is not

compatible with the machines used by retailers (Lara de Arruda et al. 2021b). It is estimated that 40 percent of AE beneficiaries did not have a bank account before the pandemic, so the introduction of the digital social savings accounts has fostered financial inclusion.

To quantify the income stabilization effects of the AE program relative to those of the pre-pandemic social protection system, the analysis uses micro-simulations.[14] We first simulate labor market conditions and incomes during the pandemic.[15] Then the tax-benefit simulation tool—BraSim, developed by the World Bank—is used to simulate how taxes and social benefits would have responded to labor market conditions observed in three different scenarios:7 (i) pre-pandemic social protection system, which provides a counter-factual scenario to understand what would have happened in the absence of the Emergency Aid program; (ii) considering the pre-pandemic social benefits and the Emergency Aid program, which reflects the policies actually in place during the pandemic; and (iii) a counterfactual Emergency Aid program with lower benefits (BRL 200, or one-third of the initial benefit) and same coverage. The simulation results suggest that:

1. The pre-pandemic social protection system would have provided a more limited degree of income stabilization. We start our analysis by estimating the effects of the pandemic shock on employment and incomes in 2020, assuming that the rules of social protection programs and taxes are those prevalent in 2019. We also assume that the BFP program does not scale-up automatically, so that the number of beneficiaries remains unchanged and households that did not receive BFP in 2019 but would qualify for the program following the negative income shock in 2020 do not received BFP benefits. We estimate that average net market income per capita fell by 5.3 percent in 2020 due to the effects of the pandemic-related shock on labor markets and per capita disposable income would have decreased by 4.1 percent under the social protection programs that were in place in 2019 (Figures 9 and 10). Therefore, on average, the pre-COVID social protection system would have buffered only about a quarter of the income loss. While the extent of income stabilization is similar across income groups, the composition varies, with unemployment insurance playing a larger in income stabilization for higher-income households and social safety net transfers being more important for lower-income households. Poorer households have lower formality rates and thus depend more on informal jobs and self-employment, without access to unemployment income support. Although social safety net transfers do not automatically scale up, they account for a material share of the disposable income of households in the lower income quintiles and help to reduce their exposure to negative labor market shocks.
2. AE boosted income for many households. Average per-capita disposable income rose by 2.1 percent in 2020 despite the large decline in market income. The income boost was larger for lower-income households (Figure 11). The income stabilization effects of the Emergency Aid program far exceeded that of the pre-pandemic safety net. The program helped reduce temporarily the poverty and inequality during the health crisis. The poverty rate dropped from 28.4 to 21.6 percent from 2019 to 2020 (Figure 12).[16] The temporary decline in extreme poverty was even more, from 7.5 to only 2.3 percent during 2019-20.9 As the program phased out by end-2021, poverty and inequality picked up again in the

[14] See Annex I for details on the microsimulation methodology.

[15] In this simulation, while the negative income shock makes more households qualified for the Bolsa Familia program, the number of beneficiaries is assumed to remain unchanged. In late 2019 and early 2020, about 1½ million families who met the eligibility criteria were not included in the Bolsa Familia program owing to budget constraints.

[16] Brazil does not have an official methodology to estimate monetary poverty. Thus, we use two often used administrative threshold to estimate poverty. Poverty status is assigned whenever the per-capita household income is less than half of minimum wage. Extreme poverty status is, defined using the Bolsa Familia eligibility thresholds.

simulations, though remained below their 2019 levels. In contrast, if only the pre-pandemic tax-benefits system had been in place, poverty would have risen significantly.

3. An alternative counter-factual program—set at one-third of actual initial benefits—with same eligibility criteria would have remained effective in stabilizing household income for vulnerable households at a fiscal cost of 2.3 percent of GDP. Under this alternative scenario, households in the bottom 60 percent of the income distribution would have experienced a rise in disposable income on average, albeit smaller than that in the second scenario (Table 1). Poverty and inequality would have decreased temporarily in 2020, though by less than the baseline simulations.

Figure 9. Composition of per capita disposable income, by income group (2020, percent of 2019 disposable income)

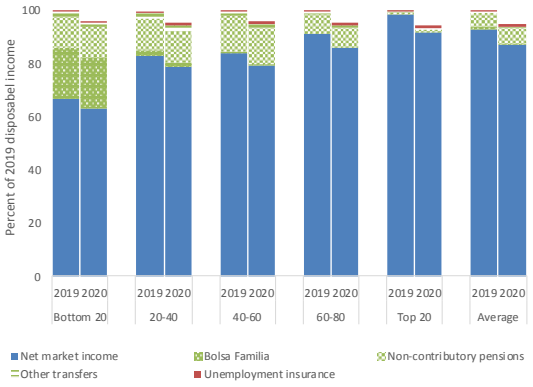
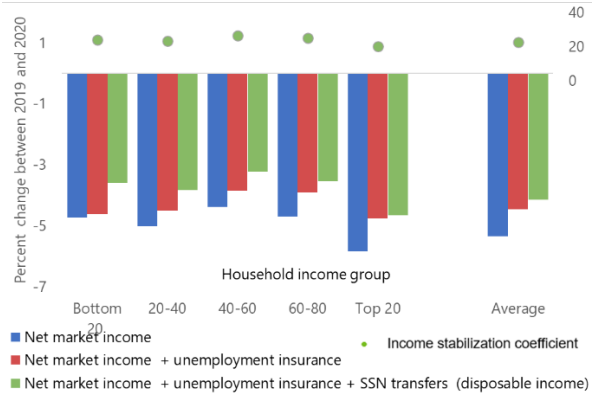
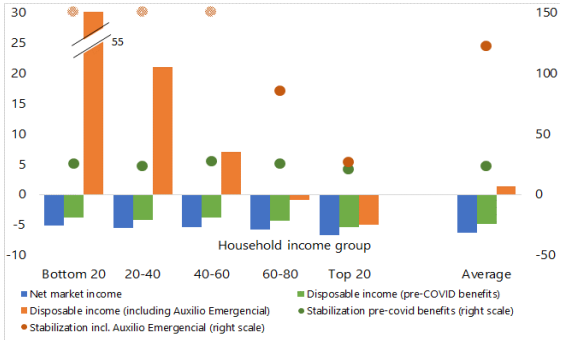


Figure 10. Change in per capita net market income and disposable income, by income group (2020)



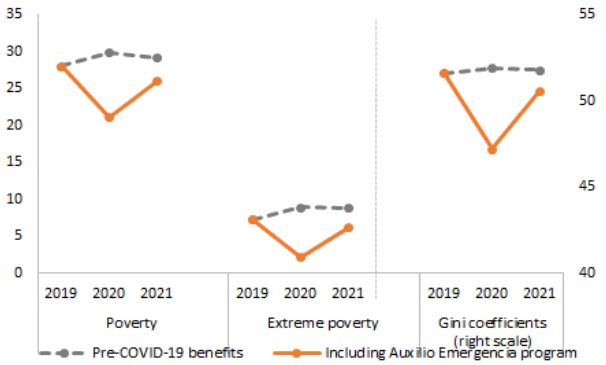
Sources: BraSim tax-benefit tool; IMF staff estimates.
Note: Estimates are based on microsimulations. Net market income includes contributory pension benefits received. Stabilization coefficient (green dots) is defined as (1-percent change in disposable income/percent change in market income)*100

Figure 11. Brazil: Change in Per-Capita Income across Household Income Quintiles, 2020 (Percent change, left scale; percent, right scale)



Sources: BraSim tax and benefit tool and IMF staff estimates.
Note: Estimates are based on microsimulations. Net market income includes contributory pension benefits received. Stabilization coefficient is defined as (1-percent change in disposable income/percent change in market income)*100. Stabilization coefficients including the Emergency Aid program for the bottom 60 percent of households (pale orange dots) are larger than 230 and are not drawn to scale.

Figure 12. Brazil: Evolution of Poverty and Income Inequality during the Pandemic, 2019−21 (Percent, left scale; Gini coefficients, right scale)



Sources: BraSim tax and benefit tool; IMF staff estimates.
Note: Estimates are based on microsimulations. Poverty is defined as per-capita household income less than half of minimum wage. Extreme poverty is, defined using the Bolsa Familia eligibility thresholds. Income inequality is based on disposable income after taxes and transfers.

Table 1. Scenarios of Auxilio Emergencial Program—A Comparison

Changes between 2019 and 2020	Pre-COVID19 benefits	Including discretionary cash transfer (the Emergency Aid Program)	
		Simulated results based on actual program	Simulated results based on less generous benefits (One-third of initial benefits)
Percentage change in disposable income	-4.1	2.1	-0.7
Bottom 20th percentile	-3.6	55.9	25.2
20th-40th percentile	-3.8	21.8	10.6
40th-60th percentile	-3.2	7.7	3.1
60th-80th percentile	-3.5	-0.1	-1.5
Top 20th percentile	-4.7	-4.2	-4.4
Average income stabilization coefficient	23	139	86
Change in poverty rate (2020)	1.9	-6.8	-2.5
Change in income inequality (Gini coefficients)	0.3	-4.4	-2.2
Fiscal cost (percent of GDP)	-	4.2	2.3

IV. Concluding remarks

The analysis of Brazil's social protection system in response to the COVID-19 pandemic highlights significant insights for Emerging Market and Developing Economies (EMDEs). Even in a country like Brazil, characterized by a robust social protection infrastructure, existing programs are not inherently designed for automatic scaling during crises, as demonstrated by the limited income stabilization effects observed pre-pandemic. However, Brazil's success in rapidly implementing discretionary measures mostly through SSNs, such as the Emergency Aid (AE) program, underscores the critical role of strong information systems, implementation capacity, and institutional arrangements.

The AE program, designed to address the income loss caused by the pandemic, showcased the importance of strong pre-existing SSN in enabling a quick response to shocks, as well as the need of careful response design to meet an effective stabilization effect and avoid excessive fiscal costs. The social protection system in place before the pandemic, following 2019 rules, would have provided limited income stabilization. The COVID-19 response through AE program significantly increased income for households, despite a substantial decline in market income. The income stabilization effects of the AE program exceeded those of the pre-pandemic safety net. Temporary reductions in poverty and extreme poverty were observed during the program's implementation, consistently with findings in other work (Lustig and others 2021, Lara Ibarra and Campante Vale 2023). However, initial benefit amounts were set at the height of uncertainty about the size of the pandemic-induced economic shock and their high levels resulted is high fiscal costs. An alternative program, set at one-third of the actual initial benefits with the same eligibility criteria, would have effectively stabilized household income for vulnerable households, while poverty and inequality would have decreased temporarily in 2020, though less than in the baseline simulations.

Annex I. Methodology

The income, poverty, and inequality estimates for the different scenarios are obtained through a combination of nowcasting and simulations. The first step follows the methodology in Olivieri (2020) and couples data on labor market outcomes for each year with microdata from the 2019 household survey (PNADC) to estimate labor income. Then we use BraSim, a microsimulation model of the Brazilian population developed in 2019 by the World Bank, to simulate taxes, contributions, and transfers to obtain estimates of net market income (including contributory pensions) and disposable income.

Estimates of labor incomes for 2020 and 2021 are nowcasted following a two-step process. First, all working-age individuals observed in the microdata are assigned a labor market status to recreate actual aggregate labor market statistics. Working-age individuals can be inactive, unemployed, or work in one of six sectors: agriculture, industry, and services, either formal or informal. We first estimate the probability that each individual belongs to each of these categories, based on the predicted values of a multinomial logit regression estimated using historical data. After that, a sequential reallocation process is carried out until the working age population is distributed in way that matches actual data. The observed outcomes to be matched are the net results of inflows and outflows from each category. For instance, if 10 individuals lost their jobs and 7 other individuals moved from unemployment to employment, the microsimulation makes 3 individuals lose their jobs. The 3 selected individuals are those with highest probabilities of becoming unemployed according to the predicted values of the estimated multinomial logit model. Second, the income of those individuals that move into a new sector is predicted through a set of Mincerian equation regressions.

After obtaining the estimates of labor income for 2020 and 2021, we use BraSim to calculate the disposable income for all households under the different scenarios. The tool allows the modeling and estimation of households' receipt of various transfers. For instance, unemployment insurance and the country's flagship cash transfer program, Bolsa Familia, are modeled. For the pandemic biennium 2020-2021, the emergency transfers are included. Other non-labor income sources such as alimony, rents, financial investment returns, and scholarships are reported in the original household survey and added up to estimate disposable income. Following the Commitment to Equity (CEQ) methodology, BraSim estimates the incremental impact of different fiscal policy (taxation and benefits) on take home income. BraSim estimates four of the CEQ concepts of income: 1) gross market income is household income received from market activities prior to any taxation or subsidy; 2) net market income is the gross market income minus direct taxes and social security contributions and plus contributory pension benefits received; 3) disposable income adds government transfers to the net market income; and 4) consumable income deducts indirect taxes from disposable income.

BraSim is an incidence analysis tool that models partial equilibrium implications of changes to policies. The tool does not model behavioral changes and does not consider general equilibrium implications. That is, the model assumes that household and individual decisions, such as employment and consumption level, are not affected by changes in policies. Following Olivieri (2020) to simulate the labor market status, as described earlier, implies that the employment level incorporated in all the three scenarios of this paper's analysis is treated as an exogenous variable which was already impacted through the actual AE program and is not affected by our simulated changes in the social safety network. The tool works on a synthetic population based on the household survey that was adjusted to better approximate official tax collection, program participation rates, and the composition of the labor market, including detailed modeling of various contract types.

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