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Income Support Programs and COVID-19 in Developing Countries

by Johanna Fajardo-Gonzalez and Carlos Eduardo Sandoval

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Abstract

The COVID-19 pandemic has threatened the livelihoods of the most vulnerable households in developing countries. In response, several countries have launched income support programs (ISPs). We evaluated the likely impact of these programs on the weekly growth rate of confirmed COVID-19 cases and deaths across 62 developing countries between January and December of 2020. Event study results suggest that implementation of ISPs reduced the weekly growth rate of cases and deaths. A heterogeneity analysis found that ISPs seemed effective in reducing the growth of cases and deaths related to COVID-19 in middle-income countries and the growth rate of cases in low-income countries as well as those countries with high informality in the labor market. Difference-in-difference estimates using the Callaway and Sant'Anna (2020) estimation strategy indicated that ISPs decreased the COVID-19 case growth rate by 12.1 percentage points and the death growth rate by 22.9 percentage points.

Introduction

1

The spread of COVID-19 and the restrictions imposed to control the extent of the virus caused a considerable decline in economic activity and in working hours during 2020 (ILO, 2020). Losses in working hours quickly translated into large losses in labor income. The International Labor Organization (ILO) estimates that the labor income worldwide declined 10.7 percent during the first three quarters of 2020, reaching 15.1 percent in lower- to middle-income countries. In response to the negative COVID-19 effects on labor markets, several countries launched social protection programs. The number of countries that introduced social protection programs more than quadrupled between March 2020 and December 2020, with some regional variations. Social assistance programs (e.g., cash-based transfers, public works, in-kind transfers, utility and financial support) are predominant in Sub-Saharan Africa, South Asia, Latin America and the Caribbean, whereas the Middle East, North Africa, Eastern Europe and Central Asia mostly rely on social insurance programs (e.g., paid leave/unemployment, health insurance support, pensions, disability benefits, and social security contributions). Cash-based transfers, in particular, represent nearly one-third of the total social protection responses, with about 430 programs implemented in 166 countries (Gentilini et al., 2020).

Lockdowns and stay-at-home measures have been the main non-pharmaceutical interventions adopted to control the spread of the virus. Nonetheless, the availability and access to social protection programs, more specifically income support programs, may have also helped individuals comply with social-distancing mandates and reduced the number of infections and COVID-19-related deaths. In this paper, we provide suggestive evidence on the effect that the implementation of income support programs (ISPs) have had on the growth of COVID-19 confirmed cases and confirmed deaths in developing countries during 2020.[3] To do so, we used data from the Oxford University COVID-19 Government Response Tracker (OxCGRT), which provides cross-national and cross-temporal measures of the implementation of ISPs, as well as confirmed COVID-19 cases and deaths since January 2020.

Using weekly data, we conducted an event study that accounts for variation in the timing of ISP implementation. We found evidence that suggests that ISPs are associated with a reduction in the growth rate of COVID-19 cases and COVID-19-related deaths some weeks after their introduction. Estimations by subgroups of income and labor informality suggest that ISPs are effective in reducing the growth of cases and deaths related to COVID-19 in middle-income countries, while the effect on case growth is only significant in countries with informality rates above 50 percent. Recent developments in econometric methods show that the estimation of difference-in-difference models using two-way fixed effects produces biased results when treatment timing is staggered, as it is in the present study (Goodman-Bacon, 2018; de Chaisemartin and d'Haultfoeuille, 2020; Sun and Abraham, 2020). To provide unbiased estimates of the ISP effects on COVID-19 outcomes, we have followed Callaway and Sant'Anna (2020) and found a negative average treatment effect of 12.1 percentage points on the case growth rate and of 22.9 percentage points on the death growth rate for our sample of developing countries.

This paper contributes to the growing literature on the effects of non-pharmaceutical interventions on COVID-19 health outcomes (Courtemanche et al., 2020; Dave et al., 2020; Friedson et al., 2020; Qiu et al., 2020) by studying the effects of income support programs in developing countries. This study complements the analysis of Asfaw (2021), who found a negative effect of ISP implementation on COVID-19 cases and deaths in a cross-country analysis, by: (a) focusing on developing countries; (b) extending the sample by adding at least six months of data; and (c) providing difference-in-difference estimates that account for the staggered nature of ISP implementation.

The paper is organized as follows. Section 2 describes the data used in the analysis, and Section 3 outlines the empirical strategy. Section 4 presents the main findings, and Section 5 concludes the research.

[3] Developing countries are defined as those that are low-, lower-middle, and upper-middle-income countries, according to the most recent World Bank classification.

Data

2

2.1 COVID-19 Cases and Deaths

To assess how ISPs likely affected confirmed COVID-19 cases and death growth, we used official data provided by the Oxford University COVID-19 Government Response Tracker (OxCGRT) for 62 developing countries. Instead of using daily data, as reported by OxCGRT, we counted confirmed cases and confirmed deaths in a seven-day interval (or week) to smooth the data, avoid heterogeneity caused by high-frequency observations, and reduce daily data measurement errors. We then used the inverse hyperbolic sine transformation[4] of the weekly cases and deaths to calculate the corresponding weekly growth rates.[5] Our dataset spans from January 22, 2020 through December 31, 2020 and includes countries that did not experience drastic changes in the report of cases and deaths during this period.[6]

Table 1. Descriptive Statistics

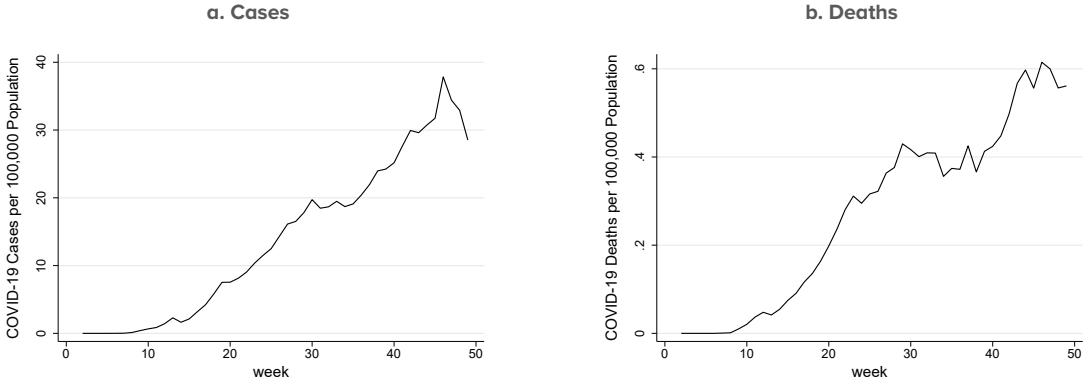
VARIABLE	OBS	MEAN	STD. DEV.	MIN	MAX
Weekly COVID-19 deaths (per 100,000)	2,976	0.28	0.73	0.00	8.20
Weekly COVID-19 cases (per 100,000)	2,976	13.90	35.48	0.00	553.09
Weekly COVID-19 death growth rate	2,976	0.06	0.67	-4.03	4.28
Weekly COVID-19 cases growth rate	2,976	0.14	0.88	-7.60	8.35

Source: Authors' calculations using data from the Oxford University COVID-19 Government Response Tracker (OxCGRT).

Table 1 shows descriptive statistics for the confirmed COVID-19 cases and deaths per 100,000 inhabitants and the growth rate of cases and deaths from January 22, 2020 through December 31, 2020, for the pooled sample of 62 countries. Simple statistics show that the average weekly rate of deaths per 100,000 inhabitants was 0.28. As expected, the rate of cases per 100,000 inhabitants is higher, with a mean of 13.9 cases per 100,000 inhabitants. During the observation period, the deaths due to COVID-19 show an average growth of 6 percent per week, while the number of cases grew 14 percent on average.

Figure 1 shows the evolution of COVID-19 cases and deaths in the pool of developing countries. Panel (a) shows the evolution of cases from the end of January 2020. The number of cases increased continually up

Figure 1. Evolution of COVID-19 Cases and Deaths in Developing Countries



Source: Authors' calculations using data from the Oxford University COVID-19 Government Response Tracker (OxCGRT).

[4] This transformation, $\log\left(x_t + \sqrt{x_t^2 + 1}\right)$ is an approximation that allows calculating the natural logarithm when $x_t = 0$.

[5] That is, $\log\left(x_t + \sqrt{x_t^2 + 1}\right) - \log\left(x_{t-1} + \sqrt{x_{t-1}^2 + 1}\right)$

[6] One example is Peru. In the dataset, we observed a change of 3,529 deaths between week 24 and week 25. Other countries excluded are Argentina, Bolivia, China, Democratic Republic of Congo, Ecuador, Kiribati, Turkey, Sudan, Tonga, Turkmenistan, and Zambia.

to week 44, except for the period between weeks 30 and 35 when the number of weekly cases remained flat at approximately 20 cases per 100,000 inhabitants. Around week 45, the number of cases reached its peak, and the year 2020 ended with a decreasing trend. Panel (b) shows the evolution of the number of deaths per 100,000 inhabitants. As expected, the shape of the curve closely follows that of the number of cases.

2.2 Income Support Programs

The OxCGRT also provides information on the implementation of ISPs in response to the pandemic. These programs are provided by governments in the form of covered salaries or direct cash payments to people who lost their jobs or could not work during the pandemic, including payments to firms to cover payroll. In our dataset, once a country started the ISP payments, it continued to make them until the end of the study period; that is, we did not have any countries that switched their programs on and off. As of December 31, 2020, 40 (64.5 percent) countries in our sample implemented ISPs (see Figure 2 for an evolution of ISP implementation by country and week).

Figure 2. Timing of ISP Implementation by Country