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Minimizing COVID-19 Transmission Cases: Do Policies and Institutions Matter?

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Abstract

This paper examines the effects of institutional factors and government policy responses on COVID-19 infection cases. It applies the Random Effects and GMM estimation techniques to panel data to explore the relationship between COVID-19 cases on the one hand and institutions and government policy responses on the other. The paper finds that the nature and timing of policy responses matter and that institutions play a crucial role in explaining observed infection cases across countries. The results also indicate that high population density and previous experience with infectious diseases are important factors in explaining infection cases across countries. One of the policy implications of our findings is the importance of timely policy intervention at the national level in reducing infection cases. The findings also underscore the need to enhance coherence between health measures and socio-economic policies.

Key words: COVID-19 pandemic, Infection, GMM estimation, Institutions, Policies

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1. Introduction

The World Health Organization (WHO) declared the coronavirus (COVID-19) disease a pandemic in March 2020. As of 26 May 2020, 5.59 million cases had been confirmed worldwide and 347,872 people had died. By 25 August 2021, the number of cases had increased exponentially to nearly 214 million and the number of deaths to 4.5 million. The United States is the most affected country with about 38 million confirmed cases and 630, 838 deaths as of 25 August 2021. The US figures represent 18 percent of the global cases and 14 percent of the global number of deaths. Developing countries, such as India and Brazil, have also been badly hit by the pandemic, with India recording about 33 million cases and 435,758 deaths and Brazil recording about 21 million cases and 575,742 deaths as of 25 August 2021.

The pandemic has a devasting impact on the global economy and is slowly reversing the gains in economic and social performance made by countries over the past few decades, with dire consequences for efforts to achieve the Sustainable Development Goals (SDGs) by the target date of 2030. We are expected to get through this pandemic, but life will never be the same and there are likely to be profound changes in the way businesses and governments operate. The crisis began as a health problem, but quickly metamorphosized into an economic turmoil with dire consequences for households, enterprises, and governments. With the recent discovery of highly effective vaccines by, among others, Pfizer-BioNtech, Moderna, Oxford-AstraZeneca, Johnson & Johnson, and Sinovac, the world is beginning to see a light at the end of the tunnel. Despite this breakthrough, there is still uncertainty regarding the duration of the pandemic given the increasing mutation of the virus and the fact that many developing countries still do not have access to adequate supplies of the vaccines. This pandemic is unique in the sense that it is a health crisis that has degenerated into a global socio-economic crisis. Its impact is significant, mounting, and likely to be with us for quite some time. It is also evident that the pandemic will have long-term socio-economic impact on poor and vulnerable countries, such as those in the least developed countries (LDCs), because of their weak health systems, crammed living conditions, and the lack of the human and financial capacities to respond and cushion the impact of the crisis on their economies (Kovacevic and Jahic, 2020).

Two main strands of literature have emerged since the onset of the pandemic. The first strand focuses on identifying the impact of the pandemic on macroeconomic variables of interest such as output growth, employment, poverty, and inequality. Many of these studies adopt a global, multi-sector computable general equilibrium framework calibrated to data to examine the effects of the pandemic on economies. For example, Bekkers et. al. (2020) examined the macroeconomic effects of COVID-19 on growth based on optimistic and pessimistic scenarios. In the optimistic scenario, economies are expected to experience a V-shaped recovery from the crises, while in the pessimistic scenario recovery is expected to be L-shaped. Based on the optimistic scenario, global growth declined by 4.8 percent in 2020 relative to the benchmark without pandemic and in the pessimistic scenario it declined by 11.1 percent. In the model, the pandemic affects economies through three channels: a reduction in labour supply arising from lockdowns; a reduction in demand and supply in specific sectors; and an increase in trade costs due to travel restrictions and border controls.

United Nations (2021) estimates that because of the pandemic global output fell by 4.3 percent in 2020, with wide variations across regions. In the developed economies, output is estimated to have declined by 5.6 percent and in the developing economies by 2.5 percent. While the magnitude of the decline in growth seems to be more in developed countries, within developing regions several countries experienced large declines in growth in 2020. In Maldives output growth declined by 20.4 percent, in Barbados by 16 percent, in Peru by 13 percent, in India by 9.6 percent, in the Philippines by 8.8 percent, in Botswana by 8.5 percent, and in Cabo Verde by 8.4 percent. Undoubtedly, these output losses have had dire consequences for employment, government revenue, and poverty. For example, ILO (2020) estimates that at the global level the crisis led to the loss of about 420 million full-time-equivalent jobs. Furthermore, Sumner et al (2020) show that the economic contraction associated with the pandemic could increase global poverty by as much as 420-580 million people in 2020 relative to 2018.

The second strand of literature on the pandemic examines factors behind the number of COVID-19 cases and deaths. Brown and Ravallion (2020) investigated the role of poverty, income inequality and other socioeconomic characteristics in explaining infection rates across counties in the United States. Eichenbaum, Rebelo and Trabandt (2020) examined the interaction between economic decisions and epidemics. Ellison (2020) showed that incorporating heterogeneity in the frequency with which different population groups engage in risky interactions into models is important to avoid biased estimates of the impact of containment measures.

This paper fits into the second strand of literature on the pandemic. It attempts to identify the role of key institutional factors and government policy responses in explaining COVID-19 infection cases across countries. The quality of healthcare systems, availability of social protection coverage, the degree of inequality and poverty, vulnerability to diseases, fiscal space and government responses are some of the factors that have been identified as possible explanations for the variations in infection and mortality rates across countries and regions. But the role of the quality and nature of institutions have not been integrated into the analysis. The paper fills this gap. It examines whether the quality and nature of institutions have implications for COVID-19 infection cases, which is important given the wide disparities in the number of cases observed across countries. For example, as of 25 August 2021, the US accounted for about 18 percent of global cases and 14 percent of deaths. Furthermore, India accounted for 15 percent of cases and 10 percent of deaths, while Brazil accounted for 10 percent of cases and 13 percent of deaths. These facts suggest that the causes of transmission may vary across countries and regions and should be integrated into the analyses to derive useful policy recommendations on how to contain the virus and build back better. In this context, the paper is an important contribution to the extant literature on the pandemic.

The paper adopts the Random fixed effects estimation as the baseline model and the Generalized Method of Moments (GMM) estimation is also employed to control for endogeneity effects in the estimation. The paper uses the Oxford COVID-19 Government Response Tracker (OxCGRT) database to capture the government policy responses to the COVID-19 pandemic. The key institutional variables used in the estimation are the economic and political risk indicators provided by the International Country Risk Guide (ICRG).

The main findings of the paper are as follows: First, the nature and timing of policy responses matter for mitigation of COVID-19 infections. In particular, policies are more effective when they are adopted early during the initial phases of the pandemic. Second, institutions play a crucial role in explaining observed infection cases across countries. The paper finds that countries characterized by high degrees of law and order and less internal conflicts tend to have lower infection cases. But it also finds that there are aspects of good institutions that can also increase infection cases. For example, having better bureaucratic quality (or good governance) in a country may also make it more challenging for the government to unilaterally impose restrictive measures needed to control the spread of the virus. Third, the paper finds that high population density increases the number of COVID-19 cases while previous experience with infectious diseases (such as tuberculosis) reduces it.

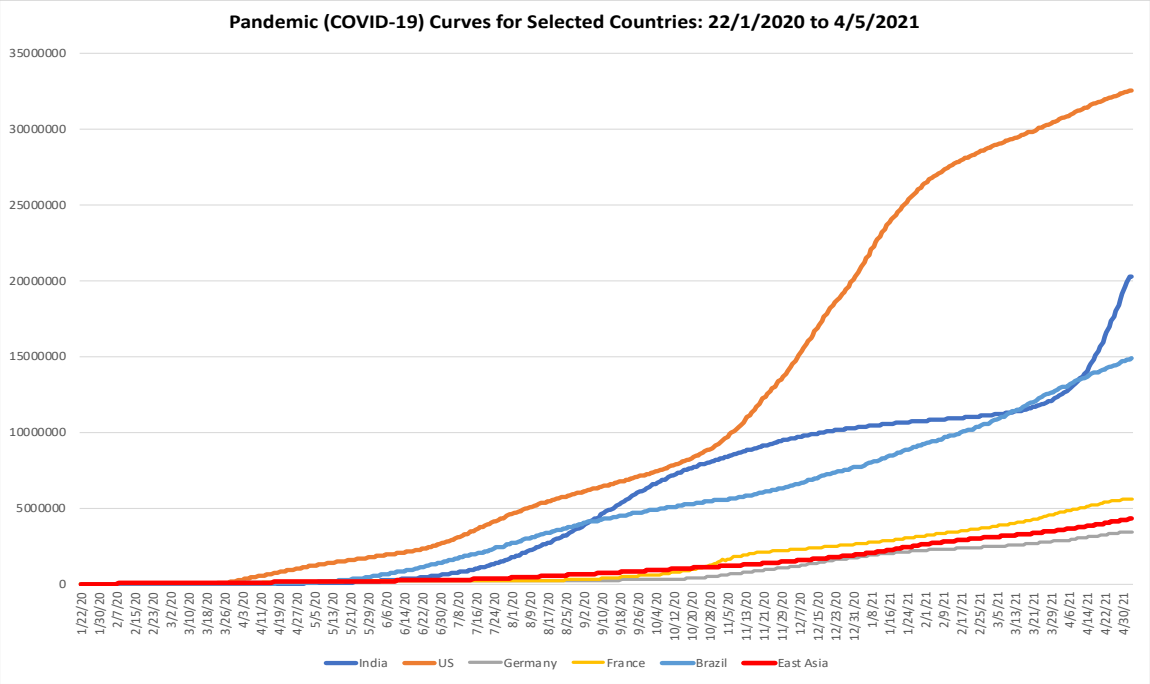
One of the policy implications of our findings is the importance of timely policy intervention at the national level in reducing infection cases. Another policy implication of our findings is the need to enhance coherence between health policy and socio-economic policies. The results of our study also underscore the importance of pre-existing health infrastructure and experience in dealing with infectious diseases (such as tuberculosis and HIV programmes) in reducing COVID-19 infection cases.

The paper is organized as follows. The next section highlights the differences in the COVID-19 pandemic cases across key countries and regions. Section 3 presents the institutional variables used in the estimation and discusses their relationship with the number of COVID-19 cases. The empirical framework adopted, and the results of the estimations performed are presented in Section 4. The policy conclusions are discussed in Section 5.

2. Trends in COVID-19 Cases for Selected Countries and Regions

At the onset of the COVID-19 crisis in the first half of 2020, most of the confirmed cases were in the developed world, particularly the United States and European countries. Since then, it has spread rapidly to the developing world, with India and Brazil being the most affected. Figure 1 presents the pandemic curve for selected countries and region. It shows the rising cases of COVID-19 pandemic in developing countries, such as Brazil and India, as developed countries are showing signs of mitigation against the pandemic. The cases in India have been increasing exponentially, since 1 March 2021, from 11.2 million on 1 March 2021 to nearly 20.2 million by 5 April 2021 and about 33 million by 25 August 2021. Similarly, in Brazil, the number of cases rose from 10.5 million on 1 March 2021 to 14.8 million by 5 April 2021 and about 21 million by 25 August 2021. Despite the recent increase in infection rates in some of the large developing countries, the United States is the still the leading country with the highest number of cases. However, it should be noted that the developed countries are showing signs of mitigating and flattening the pandemic curve with the number of cases falling in the United States and the pandemic curves for Germany, France, and East Asia flattening. The adoption of social isolation policies and the acceleration of vaccination programmes in developed countries seem to have contributed to the mitigation of the pandemic and thus flattening of their curves.

Figure 1. COVID-19 Pandemic Curve for Selected Countries



Source: Source: Johns Hopkins School of Public Health (2020), COVID-19 Pandemic. Novel Coronavirus (COVID-19) Cases Data. https://data.humdata.org/dataset/novel-coronavirus-2019-ncov-cases

The devastating effects of COVID-19 are clearly reflected in various forecasts of the impact on global and regional GDP. For example, the United Nations estimates that global output fell by 4.3 percent in 2020, while the World Bank estimates that global GDP fell by 3.5 percent in 2020 (World Bank, 2021). Table 1 shows the initial relief and stimulus packages provided by the respective selected countries to mitigate the negative impact on the economy, businesses, and workers (in the right-hand column).

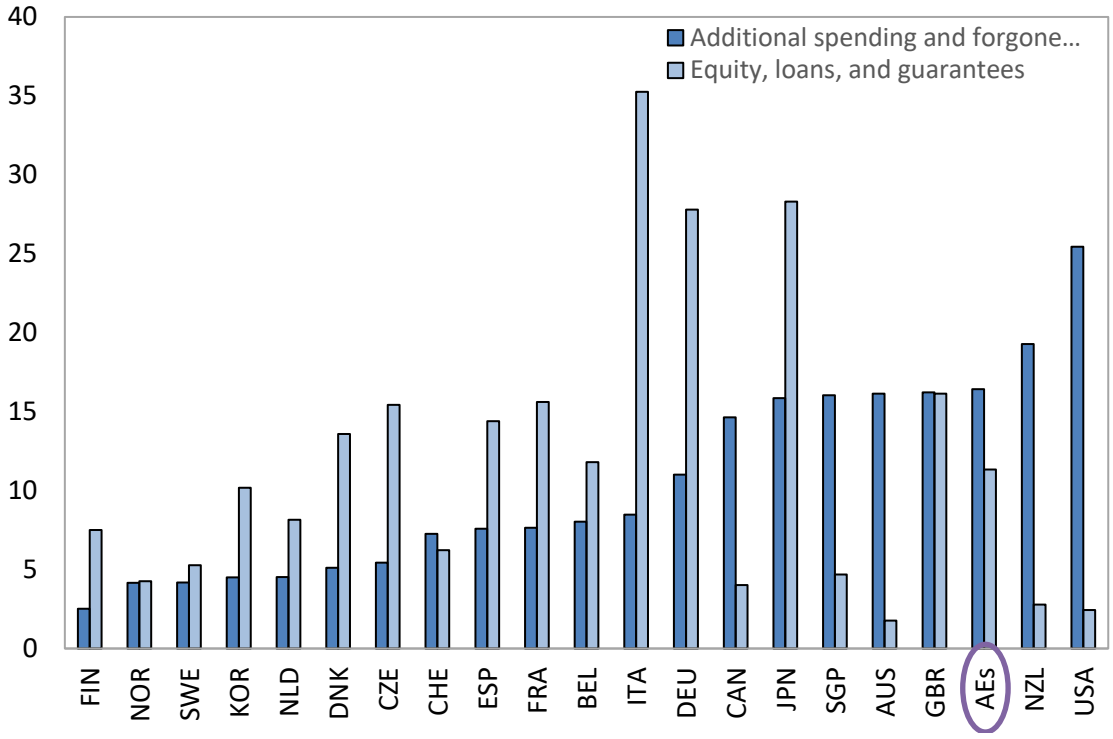
Table 1: Forecast of Impact of Global Pandemic (COVID-19) on Selected Countries' GDP in 2020 and Relief Packages

Countries	GDP (%)	Relief and Stimulus Packages*
Italy	–8.87	€25 billion (March 2020), €55 billion (May 2020), €25 billion (August 2020), €5.4 billion (October 2020), €72 billion (May 2021)
Australia	-0.28	A$312 billion (as of 1 July 2021)
Japan	–4.70	¥117 trillion (total second package) (7 April 2020), ¥117 trillion (May 2020), ¥73 trillion (December 2020)
Republic of Korea	–0.95	KRW 10.9 trillion (March 2020), KRW 14.3 trillion (April 2020), KRW 35.1 trillion (July 2020), KRW 71.1 trillion (July 2020), KRW 14.9 trillion (March 2021), KRW 33.3 trillion (July 2021)
France	–8.11	€180 billion (as of November 2020), €100 billion (2021 budget on recovery plan)
United States	–3.50	$2.20 trillion (26 March 2020)
Germany	–4.89	€156 billion (March 2020), €130 billion (June 2020), €60 billion (March 2021)
Indonesia	-2.07	IDR 579.8 trillion (in 2020)
China	2.30	RMB 4.9 trillion (as of 2020)
India	-7.96	INR 20 trillion ($267 billion) (Announced by PM on 12 May 2020)

COVID-19 = coronavirus disease, GDP = gross domestic product.
Notes: '$' refers to United States dollars, unless stated otherwise.
* The announcement date is shown in parentheses.
Sources: World Bank (2021) and the relief packages as reported at IMF COVID-19 Pandemic Policy Tracker (https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#S)

It is also interesting to observe that the level and amount of relief and stimulus packages provided by developed and developing countries differ significantly based on the macroeconomic and fiscal conditions of the respective countries. The discretionary fiscal response and loan guarantees by developed and developing countries (as of March 2021) are presented in figures 2A, 2B, and 2C below.

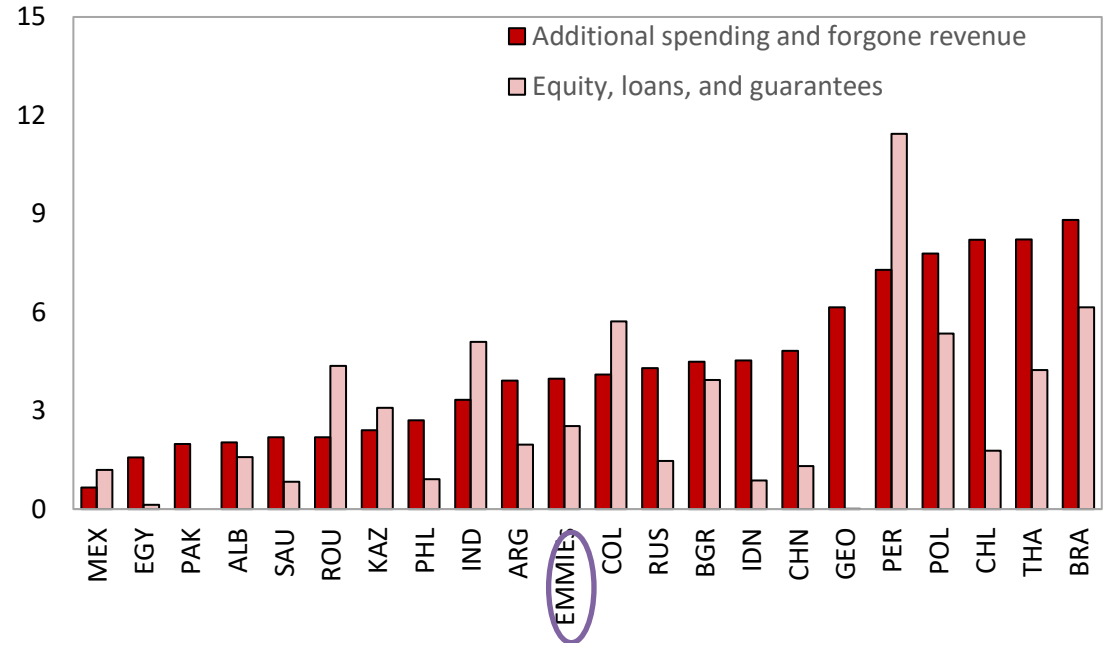
Figure 2A: Discretionary Fiscal Response by Developed Countries (% of GDP)



Sources: Database of Country Fiscal Measures in Response to the COVID-19 Pandemic; and IMF staff estimates.
Note: Estimates as of March 17, 2021. Numbers in U.S. dollar and percent of GDP are based on April 2021 World Economic Outlook Update unless otherwise stated. Country group averages are weighted by GDP in US dollars adjusted by purchasing power parity. Data labels use International Organization for Standardization country codes.[1] AEs = advanced economies
https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19

[1] Developed Countries (AEs = advanced economies): FIN=Finland, NOR=Norway, SWE=Sweden, KOR=South Korea, NLD=Netherlands, DNK=Denmark, CZE=Czech Republic, CHE=Switzerland, ESP=Spain, FRA=France, BEL=Belgium, ITA=Italy, DEU=Germany, CAN=Canada, JPN=Japan, SGP=Singapore, AUS=Australia, GBR=United Kingdom, NZL=New Zealand, US=United States
Developing Countries (EMMIEs = emerging market and middle-income economies): MEX=Mexico, EGY=Egypt, PAK=Pakistan, ALB=Albania, SAU=Saudi Arabia, ROU=Romania, KAZ=Kazakhstan, PHL=Philippines, IND=India, ARG=Argentina, COL=Columbia, RUS=Russian Federation, BGR=Bulgaria, IDN=Indonesia, CHN=China, GEO=Georgia, PER=Peru, POL=Poland, CHL=Chile, THA=Thailand, BRA=Brazil
Less Developed Countries (Low and lower middle-income developing countries): NGA=Nigeria, NER=Niger, MMR=Myanmar, BGD=Bangladesh, VNM=Vietnam, CIV=Ivory Coast, ZMB=Zambia, HND=Honduras, KEN=Kenya, ETH=Ethiopia, GHA=Ghana, SEN=Senegal, UZB=Uzbekistan, GNB=Guinea-Bissau

Figure 2B: Discretionary Fiscal Response by Developing Countries (% of GDP)



Sources: Database of Country Fiscal Measures in Response to the COVID-19 Pandemic; and IMF staff estimates.
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https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19

Figure 2C: Discretionary Fiscal Spending by Less Developed Countries (% of GDP)