COVID-19 in Developing Economies

Edited by Simeon Djankov and Ugo Panizza

A VoxEU.org Book

CEPR Press

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Developing economies after COVID-19: An introduction

Simeon Djankov and Ugo Panizza

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The COVID-19 pandemic started in China but soon moved to Europe and the US. At the beginning of the pandemic, it was hoped that warm weather would shield many developing countries from the virus. This hope has not been realised. Cases of infection in Africa, South Asia and Latin America are still growing.

Figure 1   Number of COVID-19 reported cases (top 30 countries)
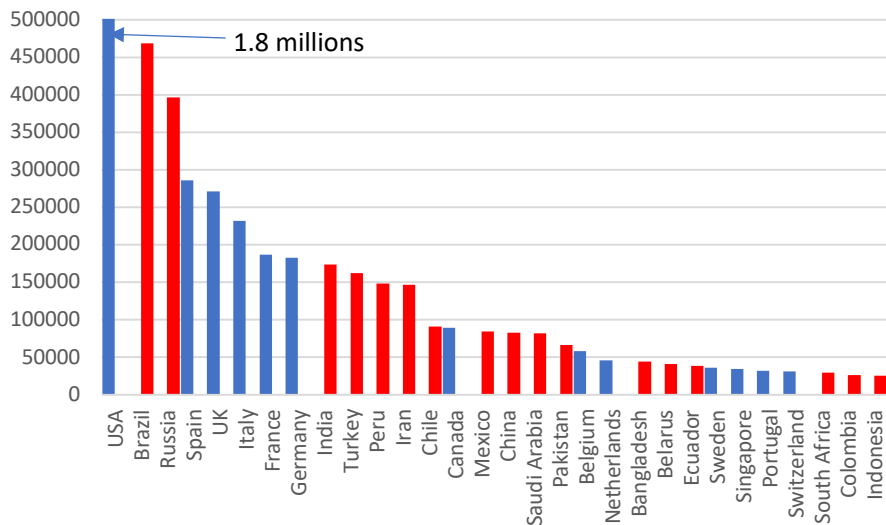
Source: Own elaborations based https://www.worldometers.info/coronavirus/#countries retrieved on 7 June 2020.

At the time of writing, 17 of the 30 countries with the highest number of reported cases are in the developing world (Figure 1). This is not only due to the fact that many developing and emerging countries have large populations. If we focus on cases per inhabitants in countries with a population of at least 5 million, we find that about half of the countries in the list are developing or emerging market economies. (Figure 2). And Figures 1 and 2 underestimate the problem as the number of reported cases is closely linked to testing capacity, which is likely to be limited in many developing and emerging

market countries.[1] Even developing countries with low infection rates are facing large negative economic shocks linked to the effect of the pandemic on commodity prices, capital flows, world trade, collapsed domestic demand and tourism.

Figure 2 Number of cases per million inhabitants (countries with population of at least 5 million and at least 1,000 cases in million inhabitants)
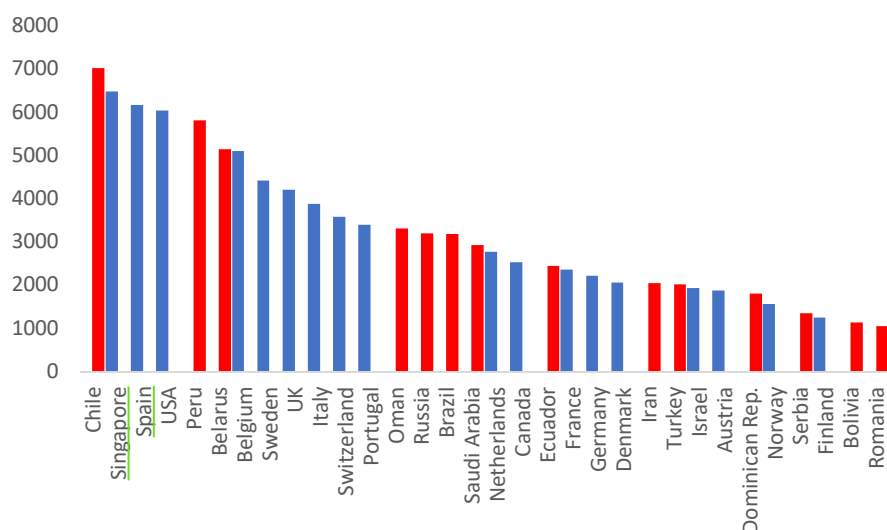
Source: Own elaborations based on https://www.worldometers.info/coronavirus/#countries retrieved on 7 June, 2020.

There is a large and rapidly growing literature on the economic effects of COVID-19 in advanced economies (for summaries, see Baldwin and Weder di Mauro, 2020a, 2020b). Research that focuses on developing and emerging market countries is more limited. The objective of a new Vox eBook (Djankov and Panizza 2020) is to summarise the early work focusing on developing and emerging markets in a way which is accessible to non-specialised readers.

Developing and emerging market countries differ from advanced economies in both the structure of the economy and the tools that can be used to implement macroeconomic policies aimed at reducing the amplitude and the economic costs of recession associated with the pandemic (see the chapter by Hevia and Neumeyer). The most important amplifying factors include:

- Pre-existing high levels of poverty and inequality.

- A large share of informal workers or workers employed in micro-firms.

- A small share of jobs that can be done from home.

- A large tourism sector in some countries.

- A high prevalence of within-country unrest, violent riots and civil wars.

- Relatively small public sectors and tax revenue bases.

- Limited fiscal space.

- Precarious access to international financial markets.

This eBook is divided into five sections. The first three sections frame the problem, present regional perspectives, and discuss how the pandemic affects poverty, inequality and informality. The last two sections discuss policy responses and highlight the macro-financial effects of the crisis, including a narrative on the role of the international financial institutions.

The impact of the pandemic on world GDP growth is massive. While in October 2019, the IMF estimated that 2020 world GDP growth would be close to 3.4%, the IMF now forecasts that in 2020 world GDP will contract by 3%. This is a 6.4 percentage points swing, with substantial downside risk remaining.

The global contraction affects every country covered by the IMF forecasts. Figure 3 compares 2020 growth forecasts issued in October 2019 with growth forecasts issued in April 2020 and shows that there is no single country above the 45-degree line. The figure also shows that income per capita will contract in most countries. In October 2019, the IMF expected that in 2020, 165 countries would have positive real per capita GDP growth and 23 countries would observe a contraction in GDP per capita. The most recent IMF forecasts indicate that there will only be 16 countries with 2020 positive growth in GDP per capita. For the sake of comparison, in the aftermath of the global financial crisis, nearly 80 countries registered positive growth in income per capita.

The global economic impact of the pandemic is due to the fact that the economic risk of COVID-19 is distinct from its health risk. In their chapter, Noy et al. compare these two risks and show that, in some instances, the two might be orthogonal. This is especially the case for countries that have a small number of reported cases, but are heavily reliant on tourism receipts and have fairly limited fiscal space for battling the ensuing recession.

Figure 3   Expected 2020 real per capita GDP growth (October 2019 versus April
2020 WEO forecast)
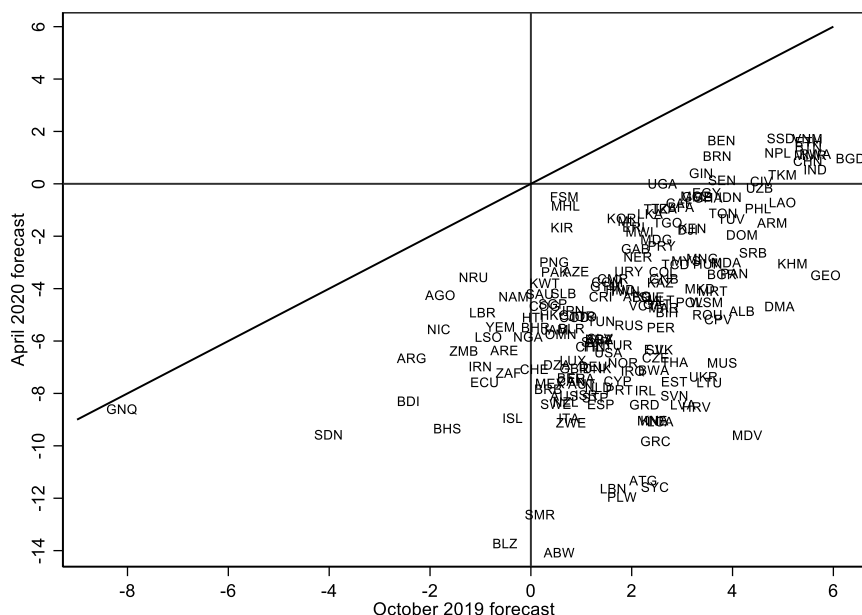
Source: Own elaborations based on IMF World Economic Outlook (WEO) data.

The authors use a disaster risk model to estimate the magnitude of the economic collapse facing different countries. Their findings suggest that the economic risk is most pronounced in the poorest parts of the world, and especially in sub-Saharan Africa and some parts of South and Southwest Asia – all areas that currently seem to be only moderately exposed to the disease itself.

Djiofack et al. develop a CGE model to assess the impact in sub-Saharan Africa and find that based on past experiences of similar crises – notably the 2014 Western Africa Ebola crisis – COVID-19 is likely to create a lasting impact on labour productivity due to its adverse effect on human capital and infrastructure. Their estimates suggest that African GDP would be permanently 1% lower than in the no-COVID optimistic scenario, where the disease is rapidly contained. In the catastrophic scenario where the crisis lasts more than 18 months, GDP would be 4% lower for more than a decade.

The collapse in global output has led to a drop in commodity prices, especially oil and petroleum-related products. The spot price of Brent oil went from over $60 per barrel in December 2019 to $20 in mid-April and is now hovering at around $35. The International Energy Agency expects subdued global oil demand and oil futures suggest

that oil prices will not reach $40 per barrel until the end of 2022. Arezki et al. assess how these developments impact economic growth in oil-exporting countries in the Middle East and North Africa. They show that growth forecasts released in May 2020 were on average 6.1 percentage points lower than those released in December 2019. They also show that low oil prices are bad news for oil-importing countries in the Middle East and North Africa because these countries will suffer from reduced foreign direct investment, remittances, tourism, and official assistance from oil exporters in the regions. These elements are especially important for Yemen, Jordan, Egypt and Lebanon, where remittances from oil exporters are well above 4% of GDP. The drop in remittances will be particularly costly in countries like Jordan with a precarious fiscal situation, in Lebanon where the pandemic overlaps with an unprecedented financial and debt crisis, and in conflict countries like Yemen.

Latin America has a reputation for being a high-risk region – whenever the US sneezes, emerging Latin America catches a cold. However, the region is more heterogenous than it used to be. Levy Yeyati and Valdes show that Peru and Chile quickly regained access and in parallel announced sizeable fiscal reactions, Colombia, Mexico, and Uruguay were able to access capital markets at higher rates and have now limited space for manoeuvre, and a final group of countries including Argentina, Brazil and Ecuador have no access to private capital and are left with official and multilateral lending only.

Figure 4   A baseline scenario for Latin America
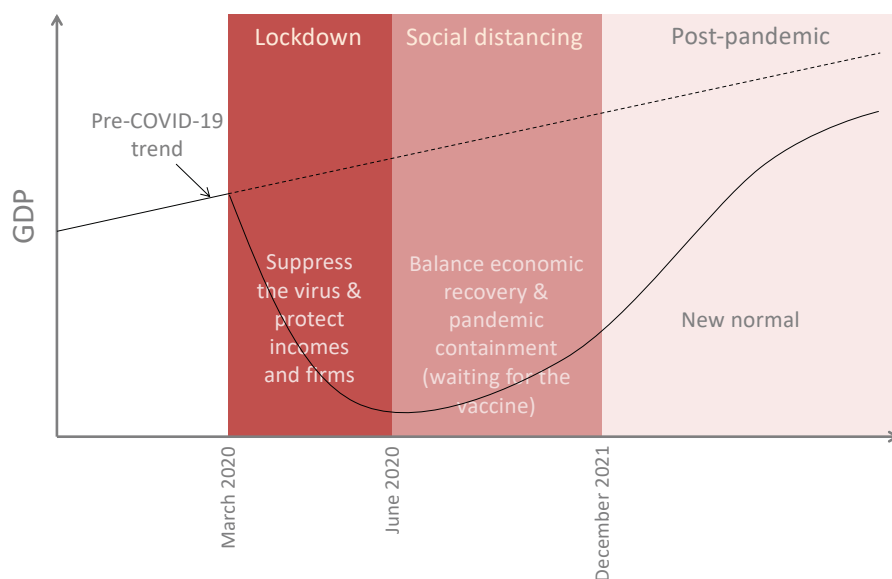
Source: Levy Yeyati and Valdés (in this volume).

The authors conclude that Latin America may suffer a long period of on/off lockdowns and social distancing that may be a drag on economies well into 2021, recovery will be slow, and that the region will endure permanent output losses (Figure 4). Poverty and fiscal accounts will be dire for a while and fiscal resources will not be enough for many Latin American countries as governments must include next year in their emergency budget.

Developing Asia is an interesting case. It includes countries with very strict containment measures, yet the region will contribute to nearly one quarter of the global GDP loss associated with the pandemic. Within the region, East Asian economies are expected to observe smaller contractions as these countries have been able to contain domestic outbreaks through aggressive testing and contact tracing, and have avoided stringent containment measures. However, tourism-dependent countries in the Pacific sub-region are expected to observe large drops in GDP even if none of these countries has had a significant outbreak. One methodological contribution of the chapter by Abiad et al. is to show that stringency measures are a good predictor of economic outcomes and can be used to design right-sized policy responses to the pandemic-induced economic recession.

Figure 5   The Tourism Dependence Index
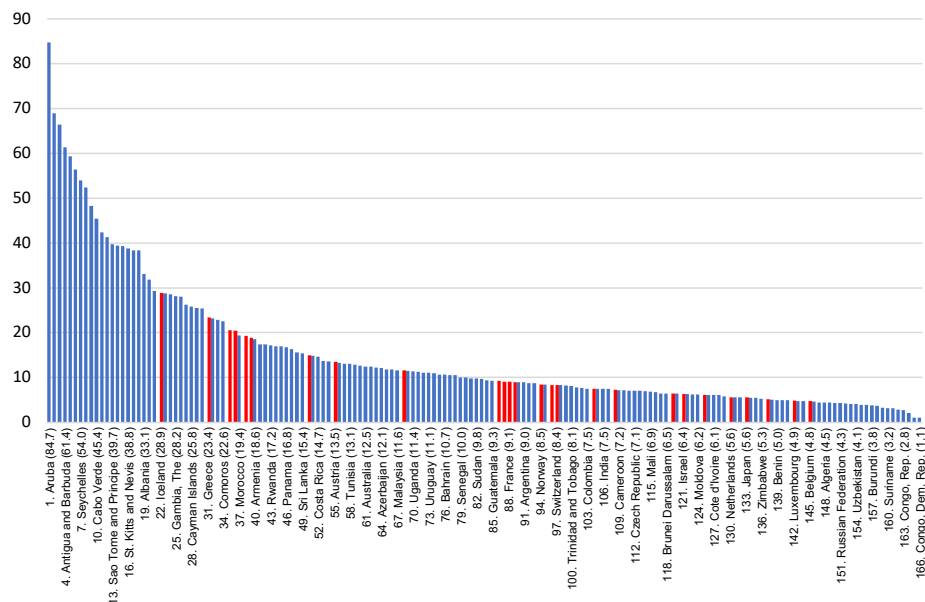
Note: The blue bars represent developing and emerging market countries and the red bars advanced economies

Source: Data collected by Henry Mooney and María Alejandra Zegarra

Mooney and Zegarra build a Tourism Dependence Index which allows assessing the impact of the crisis on global tourism. Their chapter focuses on the specific case of Latin America and the Caribbean (the Caribbean includes, five of the ten most tourism-dependent countries in the world) and show that the impact of the COVID-19 pandemic on tourism flows to the Caribbean is without precedent in terms of its speed and severity. While, their simulations focus on the LAC region, their conclusion also applies to all tourism-dependent countries which, as shown in Figure 5, tend to be low- and middle-income countries.

We next move to a global perspective of the COVID crisis. Gómez et al. use data from the International Coronavirus Survey to explore how individuals' behaviours and perceptions to cope and respond to the COVID-19 pandemic vary between low/middle-income countries and high-income countries. Their analysis shows three main findings. First, in low/middle-income countries, individuals report complying less with the containment measures implemented by governments. Second, when comparing low/middle-income and high-income countries, people in the former see their governments as having overwhelmingly under-reacted to the pandemic and as more untrustworthy and unreliable. Third, individuals in low/middle-income countries express higher levels of worries and depression, with females being more worried and depressed than men.

Perceptions are important because divergent beliefs about the 'facts on the ground' can be a source of social tension that can ultimately lead to conflict during economic crises.[2] While restrictions on mobility may reduce conflict incidence in the short run, losses of income and different perceptions about who is responsible for the economic crisis and which groups bear the greatest costs can amplify underlying ethnic and religious tension and end up increasing conflict incidence. Berman et al. study these effects. Using a counterfactual exercise, they find that most countries that imposed a shutdown would have experienced higher levels of conflict in the absence of the shutdown. However, they also find that this reduction in conflict does not apply to countries with very low incomes and that shutdown policies have an ambiguous effect on violence against civilians in more fractionalised countries. This latter finding suggests that the pandemic may amplify inter-religious and inter-ethnic tension and that violence may explode once mobility restrictions are relaxed.

There are two views on the long-run effect of COVID-19. The 'Schumpeterian' view postulates that crises can a have a cleansing effect and increase long-term productivity by eliminating inefficient firms. An alternative view is that, especially in the presence of credit constraints, protracted crises destroy entrepreneurial knowledge with negative

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2   For a discussion on the links between conflict and development, see Ray and Esteban (2017).

consequences on long run growth. Bosio et al. use data from World Bank Enterprise Surveys to study how long firms in a sample of 34 low- and lower-middle-income economies can survive without revenues. They find that the median firm in a low-income country can survive between 6 weeks and 18 weeks and that in middle-income countries the median survival time range between 7 weeks and 11 weeks.

This disturbing microeconomic picture points to the potential for massive job losses and a rapidly growing budget deficit for 2002, 2021, and perhaps some years after that. To address the former, Cespedes et al. develop a model to show that the elimination of jobs in a pandemic is inefficient because of the interaction of two ingredients: (i) while workers may be unproductive during the pandemic, eliminating jobs harms productivity in the recovery; and (ii) employers may be unable to preserve jobs during the pandemic because of frictions that limit the credit needed to pay wage bills. If, in particular, credit limits depend on the value of firms, the model yields amplification effects and unemployment–productivity–asset price-adverse loops, possibly leading to multiple equilibria. In this context, the most effective responses are unconventional policies that relax the financing constraints underlying inefficient job losses.

Developing and emerging market countries have a large share of informal workers (about two-thirds of the labour force) and high poverty levels. Section III of the eBook focuses on how the pandemic will affect informality, inequality, and poverty.

Over the past decades there has been marked progress in reducing global poverty. The share of the world population that lives on less than $1.90 a day has fallen from nearly 36% in the early 1990s to less than 10% in the most recent surveys. The COVID-19 pandemic will reverse this trend and cause the first increase in global poverty since 1998. Valensisi evaluates the effect of COVID-19 on global poverty using three different poverty lines ($1.90/day, $3.20/day and $5.50/day). He finds that the pandemic will erode much of the poverty-reduction gains recorded over the last decade. The baseline case suggests that the number of people living in extreme poverty (below $1.90/day) could increase by 68 million in 2020 alone, and that the increase in poverty could reach 100 million in a downside scenario. The impact is larger when one focuses on the higher poverty lines. In this case, the number of people living in poverty is expected to increase by 140 million in the baseline scenario.

Valensisi's estimates focus on changes in GDP and assume that the crisis will not affect income distribution. However, the pandemic is likely to increase income inequality as less-skilled people are often unable to work from home and are either more likely to suffer job loss or have to continue working outside home and thus face a greater risk of being infected. In many developing and emerging countries, low-income households will also suffer an impact on non-labour income due to a decline in remittances, as the

pandemic affects the livelihoods of migrants. Furceri et al. use data from past epidemics to estimate the effect of COVID-19 on inequality and job prospects. They find that past crisis events were associated with increases in the Gini coefficient and larger reductions in employment for workers with low levels of education compared workers with a higher education. These findings are in line with the hypothesis that the current pandemic could lead to a large increase in inequality which, in turn, will amplify its effect on poverty.

One key challenge and paramount policy objective is the preservation of livelihoods and skills. Nonvide critically evaluates the economic policy responses implemented by ten African countries (three in North Africa and seven in Sub-Saharan Africa) and shows that these measures often exclude informal workers, who account for 86% of total employment in Africa. As worker retention schemes are unlikely to work in the presence of a high degree of informality (Dhingra 2020), Nonvide suggests that cash transfer programmes and larger social assistance systems need to be a key component of the policy response in Africa.

Dhingra also focuses on informal workers. She starts from the observation that, in advanced economies, governments have implemented or expanded schemes to support the income of households and workers affected by the pandemic. However, these policies require substantial state capacity and well-developed tax and benefits infrastructures. As these elements are missing in many developing and emerging market countries, income support policies are hard to implement, making the cost of missing work immense in a situation in which many households already live below or close to the poverty line and have no savings. Dhingra studies the case of India, where the lockdown has tripled the urban unemployment rate, and suggests that a universal job guarantee programme is an appealing policy option for getting people back to work once the acute phase of the pandemic is over. The main advantages of such a scheme are its self-targeting nature and the fact that it helps people develop work skills.

The chapters in Section IV of the book discuss some of the policy responses in the post-COVID recovery phase. These span areas from job protection (Bircan et al.) and work from home (Gottlieb et al.) to a streamlined bankruptcy procedure (Balloch et al.) and regulatory reforms to increase firm productivity (Djankov et al.). The last chapter of this section by Freund et al. discusses the disruption of global value chains brought by COVID-19.

Job losses are already staggering in many developing economies. Bircan et al. survey early policy responses in 38 economies in Central, Eastern and South-Eastern Europe, Central Asia and the Southern and Eastern Mediterranean. Around 30% of jobs are at risk in these countries (Figure 6). Early policy responses in middle-income economies

have focused on income support to individuals and firms. Yet limited administrative capacity to disburse funding and, to a lesser extent, fiscal constraints have been hampering these efforts. There is a strong case for tailoring policy response to the available administrative capacity and fiscal space. In the longer term, administrative systems could be put in place that enable governments to quickly provide targeted assistance to firms and workers across different sectors of the economy.

Gottlieb et al. take a different angle, popular in the discussion around the future of work. They examine the feasibility and implications of working from home in developing countries. As a large number of countries have implemented social distancing policies, the share of employment which can be done at home will play a critical role in determining economic outcomes during and in the aftermath of the pandemic. They show that the share of employment that can be done from home varies significantly with countries' incomes: in urban areas, this share is only about 20% in poor countries, compared to close to 40% in rich ones (Figure 6). This result is largely driven by the prevalence of self-employed workers in low-income countries. They further show that educational attainment, formal employment status and household wealth are positively associated with the possibility of working from home, reflecting the vulnerability of various groups of workers.

Figure 6   Share of urban workers who can work from home
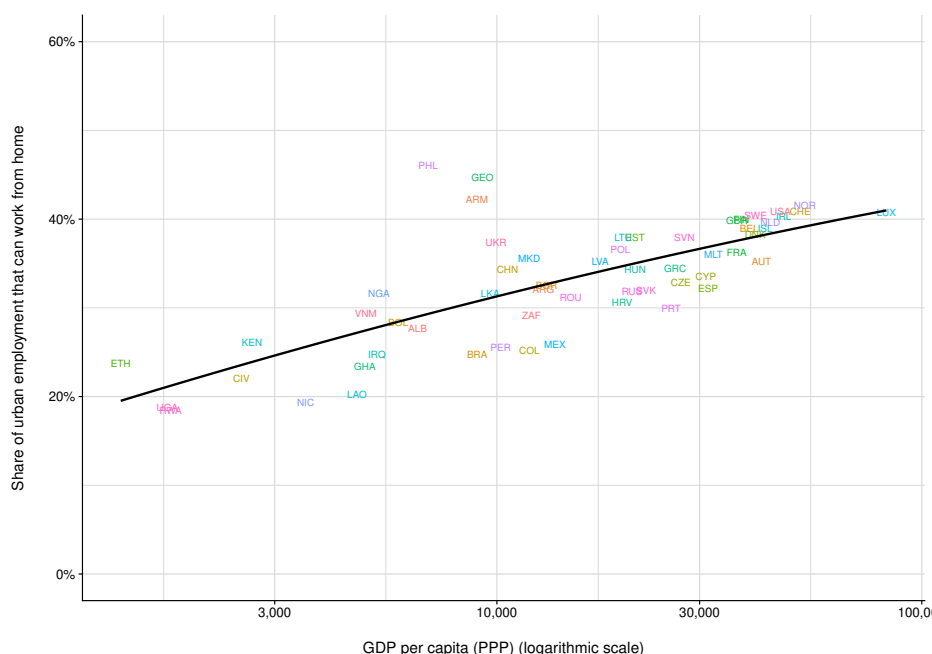
Continuing with the jobs theme, Woodruff uses the example of Bangladesh to demonstrate that export-oriented firms are an important source of post-COVID growth in developing economies. Large, formal firms typically have relationships with banks and a solvency buffer. They also provide a conduit for reaching a part of the labour force. Using the example from the garment sector in Bangladesh, Woodruff shows how concessionary loans have successfully been used to leverage limited government resources. The export sector also provides foreign currency earnings particularly important for countries that import a significant part of their basic food budget. The viability of exports will depend on international demand, but also on keeping the domestic part of the supply chain open – a task for policymakers.

An even bigger challenge for policymakers in developing economies is assisting firms to survive the adverse effects of COVID-19. Most forms of government assistance provided so far reduce firms' operating costs. Their debts keep accumulating, however, and the resulting debt overhang will be a drag on economic recovery. Balloch et al. argue that policies are needed to restructure the debt of a large number of firms throughout the economy. They propose one such policy, which includes an extended bankruptcy stay, followed by a write-down of government claims on a firm conditionally on a comparable write-down agreed by the firm's private creditors. The proposed procedure makes efficient use of fiscal resources, discourages healthy firms from claiming they are distressed, and can be combined with debt-equity swaps for large firms.

In the meantime, governments can do a lot to improve the environment for doing business. Djankov et al. show that fiscal crises, particularly following a pandemic of the magnitude of COVID-19, spur regulatory reform (for example, in registering property, trading across borders, protecting investors and resolving bankruptcy). Such reforms also display systematic patterns: countries reform when their neighbours have done so. These reforms make the functioning of existing firms a little easier. They also stimulate new entrepreneurship.

The WTO estimates that world merchandise will plummet by between 13% and 32% in 2020 due to the COVID-19 pandemic and that trade is likely to fall more steeply in sectors characterised by complex value chain linkages, particularly in electronics and automotive products. As the world recovers, will the pandemic durably alter patterns of trade? The chapter by Freund et al. studies whether some developing countries benefit from the disruption of global value chains (GVCs) brought by the pandemic. To understand how shocks influence GVCs, they examine the impact of the 2011 earthquake in Japan and show that imports shifted away from the affected input source and towards developing countries that had a revealed comparative advantage in the input. While these results cannot be mechanically applied to the current situation, the

observed pattern of switching may be relevant because pre-COVID import dependence on China was high, as was China's export similarity with other developing countries. Increasing real wages in China were already creating incentives for firms to find new suppliers, and the pandemic may accelerate this shift, especially for developing countries that adopt reforms to take advantage of these opportunities.

Corral and Gatti take a long-term look, discussing the range of interventions needed to mitigate the impacts of COVID-19 on human capital. Immediate strategies to address schooling losses require designing and implementing school re-opening protocols sensitive to the particularities of COVID-19. At a minimum, these involve protective facilities and supplies, health screening, and social distancing. The rollout of tailored resources that teach material to the required level, especially for disadvantaged children, is urgently needed in many settings to make up for lost learning. These interventions need to be followed up by deeper reforms that sustain access to schooling. These could promote children's learning at all stages – starting from cognitive stimulation in the early years, then continuing to nurture relevant skills throughout childhood and adolescence. The building blocks for success include better prepared teachers, better managed schools, and incentives that are aligned across the many stakeholders in education reform.

The chapters in Section V focus on financial factors. Advanced economies can borrow large amounts at little extra cost (see the chapter by Bolton et al.). Moreover, they benefit from flight-to-safety funding from national investors liquidating their foreign holdings. In other words, the financing that advanced economies rely on comes in part from emerging market economies where, ironically, the financial needs are more pressing. Therefore, it is not surprising that about 100 countries have already approached the IMF for financial assistance.

In response to this crisis, the Group of 20 leading economies agreed to a temporary debt service standstill on bilateral official loan repayments from a group of 76 of the poorest countries (the so-called IDA countries). This is a positive first step, but the agreement needs to be extended along two dimensions. First, the exclusive focus on the poorest countries leaves out many low- and middle-income countries that already face severe economic strains. Second, a key constituency missing from the G20 plan is private creditors, whose participation is sought only on a voluntary basis. Although they are not the most important creditors of IDA countries, they are crucial for middle-income countries, where they hold the majority of the sovereign debt.

The standstill described by Bolton et al. has the following advantages: (i) all participating creditors would be treated equally; (ii) all issues related to the identification of eligible crisis amelioration expenditures, conditions precedent to drawdowns and post-disbursement monitoring would be centralised and administered by a multilateral institution; and (iii) it can be implemented immediately, a critical feature as this crisis rages.

Real-time macroeconomic data for developing and emerging market countries are hard to find, and well calibrated models can help policymakers in calibrating appropriate responses. Benigno et al. link the COVID crisis to previous known crises, with a particular application to Mexico. They estimate a new model of business cycles and financial crises driven by occasionally binding financial frictions which lead to sudden stops in international capital flows. While their model is calibrated using data for Mexico, the framework has general applicability and is a useful laboratory to evaluate crisis dynamics. They show that occasionally binding borrowing constraints, in particular, are mechanisms that create amplification of regular business cycle shocks. In the case of the COVID-19, which did not originate in the financial sector, suddenly binding financial frictions in capital markets can powerfully amplify the initial impulse.

The section includes three chapters which focus on the role of the exchange rate and foreign currency borrowing. Using the experience of previous crises, Corsetti et al. argue that flexible exchange rates can help to complete local currency-denominated debt contracts ex ante, by supplementing portfolio returns and allowing developing economies to maintain access to international investors. They also show that while the co-movement between exchange rates and capital outflows is low on average, it becomes strong during global crises and, in such a context, depreciation become destabilising.

Local currency bonds issued by emerging market countries have been hit particularly hard by the COVID-19 pandemic, with massive bond portfolio outflows driven by the exit of foreign investors. This exit triggers sharp surges in bond yields and exchange rate depreciation. Hoffman et al. show that the size of cumulative bond portfolio outflows during the COVID-19 crisis eclipses those observed during the height of the great financial crisis (GFC) in 2008 and during the taper tantrum in 2013. This comparison demonstrates the important channels of interaction between EME portfolio flows, exchange rates and local currency bond yields during periods of large capital outflows.

The chapter describes the mutually reinforcing interactions of currency fluctuations and financial market outcomes in EMEs arising from 'original sin redux' (Carstens and Shin 2019) and lays out the key mechanisms of this channel and how it has played out during the pandemic. It then reviews the policy response of EME central banks in particular through the launch of bond purchase programmes, acting as buyers of last resort to

calm market dislocations. The chapter shows that these interventions were successful in restoring investor confidence and did not lead to higher inflation expectations. There is, however, cross-country variation which depends on the soundness of the local policy framework.

Like Corsetti et al., Hoffman et al. emphasise the importance of credible and effective global and regional financial safety nets, reinforced by short-term liquidity support and bilateral lines from other central banks like the swap and repo facilities announced by the US Federal Reserve

Esteves and Sussman compare how markets reacted to the COVID-19 shock in advanced economies and emerging markets. They show that foreign exchange markets reacted strongly to the pandemic and that emerging markets initially suffered a larger depreciation than advanced economies, but that emerging economies' exchange rates stabilised relative to advanced economies' by the end of March. They suggest that the immediate response of monetary authorities in the largest advanced economies also improved the outlook for emerging economies. Noy et al. show that the economic cost of COVID-19 is not necessarily correlated with its health risk, and Esteves and Sussman show that this is also the case for the financial channel. Specifically, they show that death rates have an effect on exchange rate devaluations in advanced economies but not in emerging market countries.

The evidence presented by Esteves and Sussman suggests that markets treated this crisis as another global financial shock, as opposed to an idiosyncratic health crisis. As the early phase of the pandemic disproportionately touched advanced nations, markets penalised the financial assets of emerging nations more, which at that point had barely been affected by COVID (apart from China). On the positive side, despite the growing pace of contagion among EMEs, emerging market economies are benefitting from the normalisation of global financial markets. The crisis exposes, again, the vulnerabilities of emerging markets to global shocks even though their death rates continue to be lower, emphasising the need to build up liquidity reserves and for an international safety net, as also suggested by Corsetti et al. and Hoffman et al.

The challenge is staggering. The IMF puts a conservative estimate on the financing needs of emerging market countries of $2.5 trillion. This amount is in addition to an estimated $5.6 trillion of emerging economy syndicated loans and bonds coming due in 2020. Already over 120 countries have sought assistance from the IMF, a significantly higher number than in previous crises.

The two Bretton Woods institutions are providing liquidity at a brisk pace. The IMF has shown a "whatever it takes" resolve, and the World Bank has made available $14 billion in immediate support.[3] The two institutions should now:

- set priorities for financing liquidity constraints throughout all developing countries, ensuring that their resources do not get siphoned off to existing clients;
- create new ways to reach vulnerable populations, especially people working in the informal economy;
- establish an advisory programme for countries whose corporate sector faces genuine insolvency as opposed to liquidity constraints; and
- start debt sustainability discussions, expanding the official moratorium to all low- and middle-income countries and forcing the restructuring of payments to private creditors.

When the COVID-19 crisis exploded in China, markets were sanguine and few expected a global economic crisis. Things changed rapidly when the virus hit Europe and the US, leading to a global lockdown and the deepest economic contraction in several generations. Even though most developing countries were spared by the first wave of the epidemic, their economies were hit hard as they suffered large external and financial shocks.

Things are now improving in the advanced economies, with the pandemic under control in most European countries, and at this stage the markets are not pricing a devastating second wave. However, things may get worse in some developing countries in Africa and Latin America which are registering an increase in their numbers of cases and which, because of their starting conditions characterised by high poverty, informality and limited fiscal space, may suffer long-lasting consequences from the pandemic.

The international community should step up by providing aid, technical assistance and debt relief so that countries will not need to decide between saving lives and servicing their debts.

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Section I

Economic and social impact of COVID-19

1 A perfect storm: COVID-19 in emerging economies

Constantino Hevia and Andy Neumeyer
Universidad Torcuato Di Tella

This chapter argues that developing countries will be harder hit by the pandemic than advanced economies. They must navigate a perfect storm formed by domestic restrictions on economic activity imposed by social distancing and an external front with collapsing exports, dwindling remittances, and tightening international credit conditions. The restrictions on economic activity fall more heavily on these economies, which have large informal sectors and a smaller scope for home working. The deeper recession expected for emerging economies will hit hard their tax revenues at the same time they need to spend more for social insurance and health. The IMF could provide the necessary financial help these economies need, but not for long and at the risk of not being stabilise global sovereign debt markets as a lender of last resort. Given these challenges, it is vital that economists and epidemiologists work together on coordinated health and economic policy responses to COVID-19 designed for developing countries.

As the novel coronavirus disease COVID-19 has no pharmaceutical treatment or vaccine, societies have adopted different form of social distancing to contain the spread of the disease. Figures 1 and 2 show Google mobility trends[1] for places of work (dashed lines) and for retail and recreation such as like restaurants, cafes, shopping centres, theme parks, museums, libraries, and movie theatres (solid lines).[2] The figures show that even though the epidemic spread of COVID-19 is a global shock and the virus knows no borders, its effects on social interactions in shopping venues and in workplaces is heterogenous.

Figure 1   Google Mobility Trends for selected advanced economies (weekly moving average) to 22 May 2020
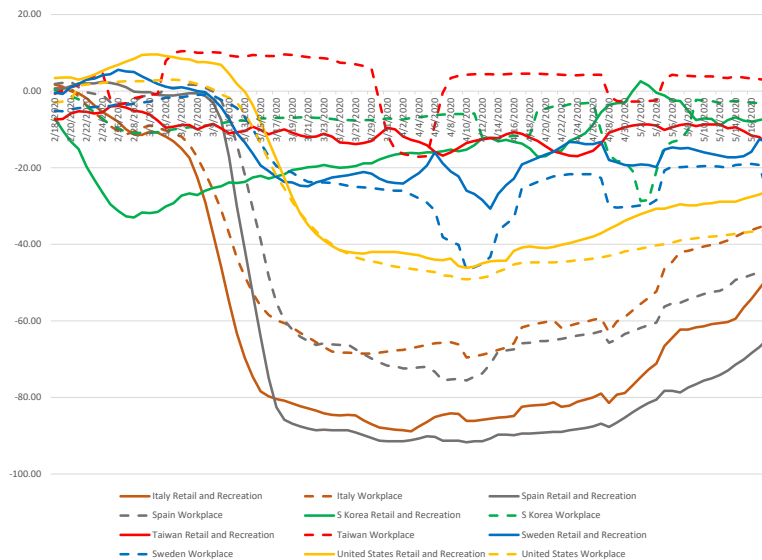
Figure 2   Google Mobility Trends for selected emerging economies (weekly moving average) to 22 May 2020
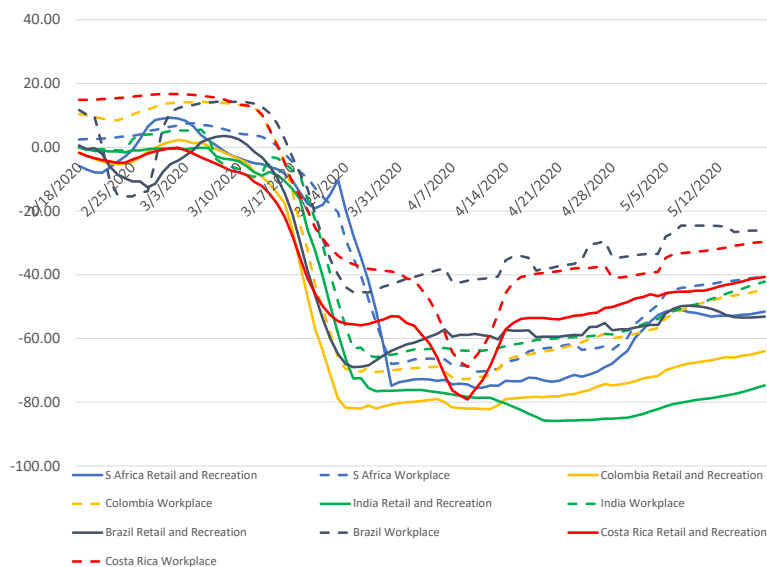
Social distancing is the result of individual decisions and the direct and indirect effects of government policies. In societies where there are effective containment policies, people do not avoid social economic interaction – as we can see in the data for Taiwan and South Korea. In Spain and Italy, as well as in many developing countries such as India, voluntary and mandated social distancing is much more stringent. As is the case in advanced economies, in emerging ones there is also heterogeneity in the response to the pandemic. Costa Rica, for example, was very successful in containing the epidemic with more moderate social economic distancing than its peers. In most countries, except for Sweden and the US, the contraction in time spent working is smaller than that in the time spent at consumption venues; and this difference is bigger in emerging economies.

The social distancing described by the mobility data has direct and indirect economic costs that depend on its depth, persistence, and on the ability of societies to adjust to it. The scope for teleworking, access to online shopping, the depth of financial markets, and the ability of governments to support firms and people with transitory income shocks have an impact on the economic cost of COVID-19.

In a world in which social distancing lasts for a short period of time – say, a quarter – the downturn may not be persistent. Part of the economy shuts down for a period and then people return to their normal business. The fall in economic activity is like a great vacation. In a model in which there are borrowing constraints, labour market search frictions and rest unemployment, Buera et al. (2020) show that this turns out to be the case for a shock in which 30% of firms shut down for a quarter. However, even for short-lived social distancing, when firms have large fixed costs that reduce their working capital and some workers are reallocated to other jobs during the shutdown, the recovery is slower when the economy re-opens. This ripple effects of the shutdown occur because of frictions in credit and labour markets. For the employee-employer matches that are destroyed, either because the employee found another job or because the position disappeared, firms and workers have to search for each other in the labour market and this takes time. For credit-constrained firms that have lost working capital during the shutdown, it will take time to accumulate it again to restore their scale. Some firms will be forced into bankruptcy (Chapter 19 in this volume)

The persistence of social distancing and the uncertainty about its duration may have additional indirect effects that amplify the initial economic downturn and may slow the recovery:

- The reshaping of supply chains and new forms of working, telecommuting and a lower scale of operation reduce efficiency.

- The persistence of slow economic activity and unemployment may delay the recovery as some jobs may disappear and some workers find new jobs. After spikes in unemployment, matching workers and vacancies in the recovery is usually a slow process.

- Many firms with little working capital and limited credit lines are likely to go out of business, especially in industries with intensive social contact (e.g. travel and entertainment).

- Financial stability is threatened as households and businesses experiencing income shocks may have problems servicing their debts, reducing bank capital.

- Aggregate demand may fall beyond the original supply shock. Investment is likely to fall, agents with a stable income will increase their precautionary savings (due to the uncertainty about the pandemics duration) and the demand for goods in ongoing activities may fall due to complementarities with the demand for shut-down goods.[3]

The economic disruption of the social distancing brought about by COVID-19 has already had an immense economic cost. US data reveal that between the week of 8-14 March and the week of 10-16 May, the employment rate fell 28% and the unemployment rate increased from 4.5% to 24.8%. Hours worked per working age adult declined 30% in April, over 60% of work hours were from home, compared with roughly 10% in 2017-2018. Aggregate real personal consumption expenditure fell 19% between February and April 2020 despite an increase in aggregate real personal disposable income of 11.3%.

To put things in perspective, the maximum unemployment rate since 1948 in the US was 10.8% in 1982 and the highest value was 24.9% in 1933. An optimistic hypothetical exercise on output is to assume that output is 20% below 'normal' for one quarter and then returns to normal the rest of the year. The year-on-year average growth rate for 2020 in this scenario would be -5%. This fall in GDP would be twice the size of the largest drop in GDP in the US after World War II. If the quarter-on-quarter drop of the order of 20% or 25% persists, we would be facing a global recession of the proportion of the Great Depression. In 1929, it took three years for GDP to drop 26.7%. Today we are thinking about a drop in GDP of this magnitude in one quarter.

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3   Guerrieri et al. (2020) show that when agents with negative income shocks are unable to borrow and there are strong complementarities between the demand of goods in essential and non-essential activities aggregate demand may fall more than aggregate supply, amplifying the initial shock.

Data on the impact of COVID-19 in emerging economies are still scant as social distancing measures were implemented later and there are lags in statistical reporting. Early data for some countries that implemented social distancing measures in mid and late March indicate severe downturns. In India, urban employment fell 31% between March and April; in Peru, employment fell 25% in the quarter February-April 2020 with respect to the previous year; in Colombia, employment in April was 24.5% lower than in April 2019 while the share of workers working less than 20 hours a week increased from 17% of employed persons to 57.4%; in Chile, seasonally adjusted economic activity fell 14% between February and April; and in Argentina, the same variable fell 10% between February and March.

We expect the economic downturn in emerging markets to be more profound than in advanced economies as they have less scope for working remotely, they are hit by additional adverse external shocks, they have shallower financial markets, and their governments lack the resources to implement the palliative fiscal policies implemented by developed economies.

In emerging economies, a large share of the labour force is employed in very small firms and workers have a relatively low level of education.[4] These features of developing countries increase the direct cost of social distancing because the share of jobs that can be done from home is much smaller than in richer countries (chapter 17 of this eBook). The smaller scope for teleworking will likely deepen the effect of social distancing on employment and GDP in emerging economies. Informality also makes it more difficult for governments to reach people deprived of their livelihoods by the pandemic.

The indirect effects of social distancing are likely to be bigger in emerging economies because they have smaller financial markets and their governments have less access to credit. In an economy with perfect insurance, agents that generate income would transfer resources to those that transitorily do not. Thus, each agent's consumption would be independent of their idiosyncratic income shock and would move with aggregate consumption. Of course, in reality there is no perfect insurance, especially against the risk of pandemics. One way of partially achieving this risk-sharing in the absence of perfect insurance is for the interest rate to rise so that agents with revenues have incentives to consume less and lend money to those who lose income. This is unlikely to happen for two reasons. It is uncertain that borrowers will be willing and able to repay these debts. Potential lenders, uncertain about their future income, may prefer to stay liquid. Governments with fiscal space use the credibility of their future

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4   In Latin America, for example, 53% of employment is in firms of five workers or less with about eight years of formal education. This firms are typically informal and in non-essential sectors (Busso et al. 2012).

ability to tax to address this problem – the US, Denmark, Perú, and Chile, for example, announced fiscal packages to cushion the effect of social distancing of over 10% of GDP. These programmes transfer resources from future taxpayers to those who lost income. These transfers include income support for unemployed workers as well as loans or direct grants to firms to cover their fixed costs, especially their labour costs, and increase their chances of surviving the crisis. Central banks are playing an active role financing firms, sub-national, and national governments at the same time as they provide additional liquidity demanded by precautionary savers.

In many emerging economies sovereign borrowing to smooth the COVID-19 shock is not feasible. To a large extent, this is because they find it more difficult to credibly commit future tax revenues to pay for a fiscal expansion today. The negative correlation between income per capita and the ability to tax may explain why poor countries have less access to financial markets. Figure 3 shows that middle- and low-income countries indeed have lower debt-to-GDP ratios at the same time as their share of government revenues allocated interest payments on sovereign debt are higher than in advanced economies.

Figure 3   General government gross debt-to-GDP and interest expenditure-to-tax revenue ratios, 2019
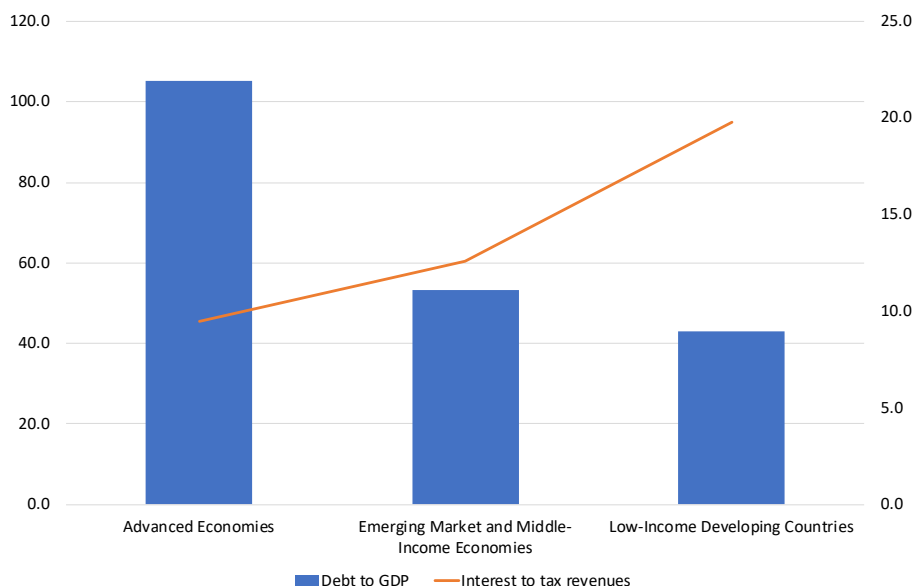
Source: IMF Fiscal Monitor, April 2020

Not only it is more difficult for emerging economies to borrow abroad to smooth the shock, but there is also a flight to quality away from their liabilities. The previous hypotheses are supported by data on portfolio flows. Between 24 February and 30 March, institutional and retail money funds in the United States increased their assets by 19%.[5] This flight to quality resulted in sudden capital outflows from emerging economies. The speed and magnitude of portfolio outflows from emerging economies signal that it will be very hard for their governments and corporations to issue debt to finance their transitory fall in income due to COVID-19. Only the most solid countries will be able to issue debt. Credit spreads for selected sovereigns in Latin America tell the same story.

Emerging economies face additional sources of hardship. Commodity exporters are facing a sharp fall in the price of their exports. Bloomberg's index of commodity prices fell over 20% since the pandemic broke out in China,[6] mainly driven by oil prices. For many countries – rich and poor – tourism accounts for more than 20% of exports. (For a discussion on the impact of the pandemic on tourism in Latin America and the Caribbean see chapter7). If social distancing and restrictions to international travel remain in place for several quarters, these countries will have to reduce imports or find other sources of foreign currency.

Unemployment in advanced economies will reduce immigrant remittances to their home countries. Figure 4 shows that, for many poor countries, remittances received from abroad account for more than 10% of GDP. Early data from Central American countries indicate that remittances fell by 40% in the latter part of March. Dwindling remittances and social distance restrictions at home may rapidly deplete the recipients' liquid assets.

Policymakers in less developed countries face a very difficult policy dilemma. They have to protect their societies from the pandemic with a weak health infrastructure. At the same time, prolonged social distancing policies in economies already hit by large negative global shocks could be devastating;[7] more so because they will have a hard time financing the social insurance policies that palliate the cost of social distancing. A policymaker that decides to contain the epidemic must consider the epidemiological

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5   https://fred.stlouisfed.org/graph/fredgraph.png?g=qHGq
6   https://www.bloomberg.com/quote/BCOM:IND
7   The combined effect of social distancing polices, exogenous drops in foreign income and financial tightening on economic activity and employment is hard to estimate. Hevia et al. (2020) simulate how the combination of these shocks impacts the economy in a laboratory setup where agents understand the health consequences of their economic choices and have heterogenous access to financial markets. Results are still unreliable for publication.

uncertainties of COVID-19. In particular, that social distancing policies may to be with us for several more quarters, until herd immunity is attained naturally or through a vaccine.

Figure 4   Per-capita income and remittances
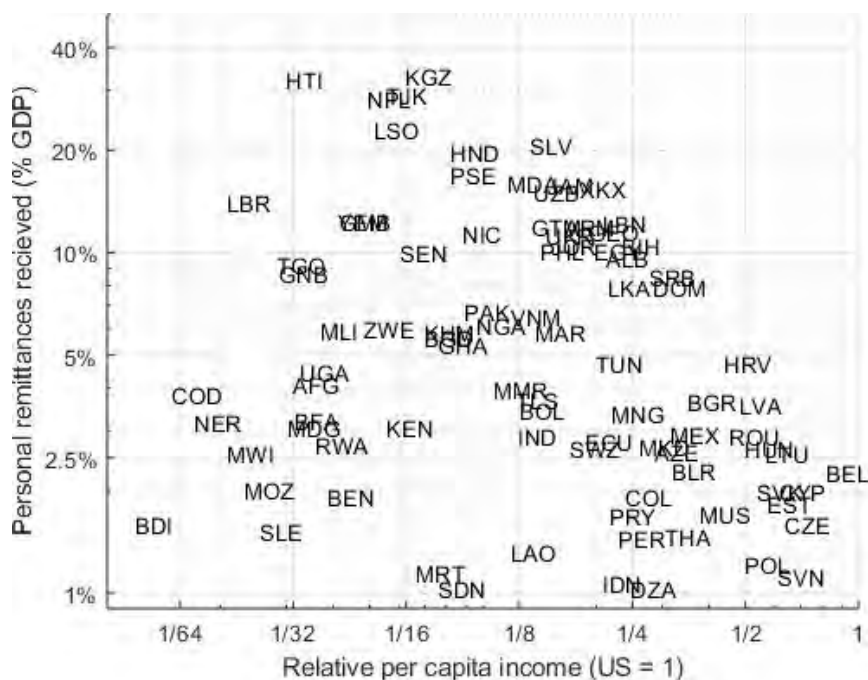
The IMF and The World Bank have jointly pledged $1,160 billion to help emerging economies deal with COVID-19. This is a staggering number, which represents 6.8% of the aggregate GDP of low- and middle-income countries (excluding China). These funds should cover the financing needs posed by the pandemic for developing countries with difficulties to access global financial markets as well as the IMFs primary mission of providing stability to global financial markets (for a discussion of the role of the Bretton Woods institutions in the pandemic see chapter XX).

Back-of-the-envelope calculations indicate that these funds should suffice to help low- and middle-income countries navigate through the pandemic only for a short period.[8] The COVID-19 recession stresses public finances due to revenue falls and the demand for transfer payments. On the income side, we assume that the recession reduces tax revenue by 1.2% for each percentage point drop in GDP and that, on average, these

economies collect taxes for 15% of GDP.[9] This implies that for an average fall in GDP of 10% for 2020, tax revenues in these countries could fall by 1.8% of GDP, or approximately $300 billion. On the expenditure side, we consider how much it would cost to transfer to 30% of the labour force, 30% of the average per capita income of the economy for a quarter. This is a generous transfer programme considering that hours worked seem to have fallen by 30% and that it mostly hits low income households. Such a programme would cost 1.5% of GDP, or approximately $250 billion per quarter.[10] This scenario is optimistic as the fall in emerging market GDP of 10% is smaller than the global fall in GDP of 12% forecasted by the Bank of England. It envisions a very sharp recovery in the second half of 2020 and only one quarter of transfers to the private sector. Nevertheless, it entails an additional fiscal deficit of 3.2% of GDP. Resources would be more stringent if the deep recession extends as the fall in annual GDP will be larger and the income support will have to last longer.

On the other hand, IMF resources may not be enough to ensure global financial stability. Amid the fiscal strains induced by the COVID-19 recession, some countries may find it difficult to roll over their debt. Table 1, which excludes highly indebted European countries, shows the expected national fiscal deficits and maturing debt for selected emerging economies as of April 2020. An epidemic of speculative runs on government debt (Cole and Kehoe 2000) could deplete IMF resources fast. The expected gross financing needs of Brazil, India, Mexico, Turkey, Indonesia, and Poland for the current year add up to around $1 trillion dollars, or the total lending capacity of the IMF.

The difficult trade-offs faced by policymakers in emerging economies raise the question of how much consumption should a society forgo to avoid the deaths associated with COVID-19. Economists have developed frameworks to answer this question. Jones et al. (2020) compute the trade-off between the forgone utility of consumption lost due to the increased probability of dying and the utility of current consumption. Their baseline estimate with US parameters is that the cost of letting the epidemic run with no intervention is about 25% of one year's consumption. The cost of a one-year lockdown in a less developed country is probably higher.[11]

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9   The short run elasticity of tax revenue to GDP is from Dudine and Tovar Jalles (2017). The average tax-to-GDP ratio for countries with a population above 1 million and an income per capita of less than 60% of the US is 0.15. The average GDP weighted tax-to-GDP ratio for the same economies is 0.14.

10 This number is computed as 0.3 x 0.3 x 2/3 x 3/12, the fraction of workers who lost jobs x replacement ratio x labour share of income x fraction of annual time

11 Alvarez et. al. (2020), Eichenbaum et. al (2020) and Greenstone and Nigam (2020) evaluate this tradeoff using the US governments value of statistical life. The first two find that early protracted interventions containing the epidemic are optimal despite their economic cost. The latter estimate the value of saved lives due to social distancing at USD 8 trillion (around 60% of yearly consumption).

Table 1 Gross financing needs for selected emerging countries

	Maturing debt	Budget deficit	Gross financing Needs	Maturing debt	Budget deficit	Gross Financing Needs	Cumulative gross financing needs	GDP (2019)
	% of GDP			USD billions				
Brazil	9.16	9.35	18.50	169	172	341	341	1,841
India	3.61	7.42	11.04	101	208	309	650	2800
Mexico	7.36	4.20	11.56	88	50	139	788	1200
Turkey	5.09	7.48	12.56	38	55	93	881	740
Indonesia	2.88	5.01	7.89	32	56	89	970	1126
Poland	5.07	6.73	11.80	31	41	71	1,042	605
Thailand	5.21	3.45	8.66	27	18	45	1,087	520
Malaysia	6.61	4.20	10.81	24	16	40	1,127	370
Hungary	14.00	2.99	16.99	24	5	29	1,156	170
Russia	1.30	4.84	6.14	23	85	107	1,263	1750
Philippines	4.94	3.36	8.30	18	12	29	1,293	355
Ukraine	9.35	8.21	17.56	13	11	25	1,317	140
Romania	3.82	8.87	12.69	10	22	32	1,349	250
Colombia	1.63	2.46	4.09	6	9	15	1,364	370
Perú	2.02	7.09	9.11	4	16	20	1,384	220

Source: IMF Fiscal Monitor, April 2020.

Targeted social distancing policies that isolate a smaller subset of the population can moderate the economic cost of containing the pandemic. One often proposed targeted intervention strategy is to isolate only persons that are infectious testing and tracing cases. This has been successfully implemented in Taiwan and South Korea which expect much smaller contractions in economic activity. However, this approach has proven elusive even in advanced countries with efficient bureaucracies, high-quality health infrastructure, and ample fiscal space.

Another policy that has been advocated is to target isolation only to more at-risk categories such as older individuals (Bairoliya and Imrohoroglu 2020, Ray et. al. 2020, Acemoglu et al. 2020, World Bank 2020). This strategy might be of interest in some emerging markets which face a younger population, but it might be challenging to implement in a context where there is extensive cohabitation of multiple generations.

To sum up, the COVID-19 pandemic has the potential to be the largest macroeconomic shock of the past 100 years. Moreover, it is likely to hit low- and middle-income countries particularly hard. Many developed economies will be able to mitigate its impact and social cost by redistributing resources from safe workers to the hardest hit (Glover et al. 2020). These types of policies are unlikely to be available in emerging economies, which will then suffer in an extremely acute fashion the trade-off between health and wealth.

Given this, it is of vital importance that economists and epidemiologists work together to design coordinated targeted health and economic policy responses to covid-19 that are appropriate for developing countries.

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2 The economic risk of COVID-19 in developing countries: Where is it highest?

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We measure the economic risk of COVID-19 in developing countries using pre-pandemic data sources. Following the standard conceptual model of disasters, we use data from 2014-2018 to compute measures of exposure, vulnerability, and resilience of the local economy to the economic shock of the epidemic. We find that the economic risk of this pandemic is particularly high in the poorer parts of the developing world. The economic risk from COVID-19 is not located concentrated in China, where the virus originated, or where most of the confirmed cases are currently found (in the United States and Western Europe). Rather, the highest economic risks are in sub-Saharan Africa and the poorest parts of South Asia, regions that do not get much global attention in normal times, and get even less when the media's interest has turned to tragedies happening in places such as Bergamo in Italy and New York City.

The economic risk of COVID-19 is distinct from its health risk – in some instances, the two might even be orthogonal. In fact, even in countries or regions with no significant case load or associated mortality, the economic risk associated with the pandemic may be very high. Seychelles and Fiji, for example, both have fewer than 20 reported cases and no mortality, but both are heavily reliant on tourism receipts and have fairly limited fiscal space for battling the ensuing recession. Other countries with more significant, but still easily manageable, caseloads also find that they have access to very few resources to prop-up struggling firms, to extend the safety nets that are required to support their vulnerable populations during lockdowns, and to prevent deeper and longer-lasting recessions

Many of the current attempts to estimate the likely economic impact of the epidemic rely on epidemiological modelling coupled with macroeconomic models of the economy. These productively replicate the same modelling approach used in the economics of climate change literature – the integrated assessment models (IAMs), which that couple global climate models with macroeconomic models. In these IAMs,

the connection between the climate and economic models is usually stipulated to be between temperature (the climate) and productivity (the macroeconomy). In the new pandemic IAMs, the causal link can be on the supply side, because of the lockdown policies enacted or productivity losses because of the disease impact, or on the demand side (either because of the disease, or because of the lockdowns) (e.g. Baqaee and Farhi 2020, Çakmakli et al. 2020, McKibbin and Fernando 2020).

Especially in a pandemic with as wide-reaching and global impacts as COVID-19, it is likely that the shock will lead to deep (even if temporary) structural changes inside and outside all affected economies, so that the structural parameters are unlikely to remain the same and equilibrium models might not provide a good dynamic representation of the economy. Another approach would be to use disequilibrium models (e.g. Mandel and Veetil, 2020), but these still require reliance on constant input-output data.

Another potential approach to assess the pandemic's likely impact is to extrapolate from the impact of similar past events. The two most notable comparisons that are frequently being made are SARS, a very similar coronavirus that hit several countries in Asia in 2003, and the global 1918-1919 flu pandemic. SARS, however, was a much more limited event that hit only a few countries and disappeared as quickly as it appeared (Shields and Noy 2019), and the 1918-19 pandemic took place in a world just emerging from a debilitating world war, a world significantly less globalised and with a much more limited and diminished ability to provide public health services. It is therefore not clear how much we can learn from these two comparisons.

Consequently, we take a different approach, and in order to estimate the likely magnitude of the economic risk facing different countries, we use a disaster risk modelling framework. As defined by the United Nations Disaster Risk Reduction Office (UNDRR 2017), a disaster is "a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts. The effect of the disaster can be immediate and localized, but is often widespread and could last for a long period of time."

The basic framework we use is taken from this UNDRR framework. It assesses disaster risk as constructed around four concepts – hazard, exposure, vulnerability, and resilience – and it is the interaction of these four that leads to the disaster's economic consequences. The hazard in these frameworks is the natural trigger – in the present circumstances, it is the SARS-Cov-2 virus which causes the COVID-19 infectious disease.

However, we hypothesise that in the case of the COVID-19 pandemic – and especially in developing countries where the pandemic has, for now, not grown as explosively as in a few wealthy countries with a temperate climate – the economic risk is almost completely decoupled from the hazard (infection) risk. It is mostly determined by exposure, vulnerability, and resilience, and therefore this risk has very different spatial variability than the spread of the virus. In contrast, in most of the pandemic IAMs, the hazard component is an important link; and so it was in the 1918-19 flu pandemic (Shields and Noy 2019 argue that this decoupling was also present, to a lesser extent, during SARS).

Exposure in the UNDRR definition refers to the population and the economic activities that are located in areas that are exposed to the pathogen or that are indirectly exposed to the behavioural changes that are induced by the presence of this pathogen (e.g. Epstein 2009). Vulnerability, in this case, refers to the ability of the pathogen to adversely affect the exposed economy. A higher degree of vulnerability will lead to a more adverse outcome for the economy, given the same exposure to the SARS-Cov-2 virus.

Resilience, in this framework, is conceptualised as the ability of the economy to bounce back given the magnitude of the shock (generated by the intersection of the hazard, exposure, and vulnerability). The degree of resilience in a system (in this case, the economy) is thus determined by the speed with which the recovery process occurs, and when the system reverts back to its pre-shock level or arrives at a new steady state (a new economy). A more resilient economy, in this framework, is one that manages to minimise the post-shock cumulative loss of income during the recovery process for a given size of the shock (Hallegatte 2014).

As Prager et al. (2017) note, it is often not plausible for resilience policies to be pursued during the rapid phase of the spread of the epidemic. More likely are policies to make up for lost production once the epidemic has abated and prepare the economy for the recovery period while the epidemic is still ongoing (as many governments are trying to do now for COVID-19). The ability to implement such policies, as determined by both financial and institutional capacity, is therefore an important determinant of economic resilience.

Our aim here is not to precisely measure the likely consequence of this pandemic. Rather, we aim to comparatively evaluate where the economic risk of COVID-19 is currently concentrated in the developing world – defined as all countries that the World Bank categorised, in 2019, as middle-income or low-income.

In a previous paper (Noy et al. 2019), we analysed the economic risk of a generic epidemic, while in Noy et al. (2020a) we made global comparisons of the risk associated with COVID-19. Here, instead of focusing on a generic emerging infectious disease event, or on the global comparisons, we focus on developing countries. The main motivation for this focus on a narrower sample is the realisation that while much of the current spread of the disease is in the high-income countries, much of the economic risk is in the developing world (Noy et al. 2020b).

In Figure 1, we show the comparative current spread of the disease – i.e. the hazard – in the developing country sample we analyse. This is a current measure of the hazard; and given the discussion above, we will not be using it in the analysis that follows. Another reason for not using these case counts is that these are known to depend, to a very large extent, on the testing regime in place. We therefore have doubts over the comparability of these figures. It is worth noting that, suspiciously, the available data suggest that the virus has been slower to spread among some of the poorest countries – for example, most of sub-Saharan Africa, Laos, Myanmar, North Korea, Venezuela, Syria, and Papua New Guinea.

In the following sections, however, we show that the economic risk, as we measure it, is actually most pronounced in the very poorest parts of the world, and especially in sub-Saharan Africa and some parts of South and Southwest Asia – all areas that currently seem to be only moderately exposed to the disease itself.

Figure 1   COVID-19 hazard map in developing countries
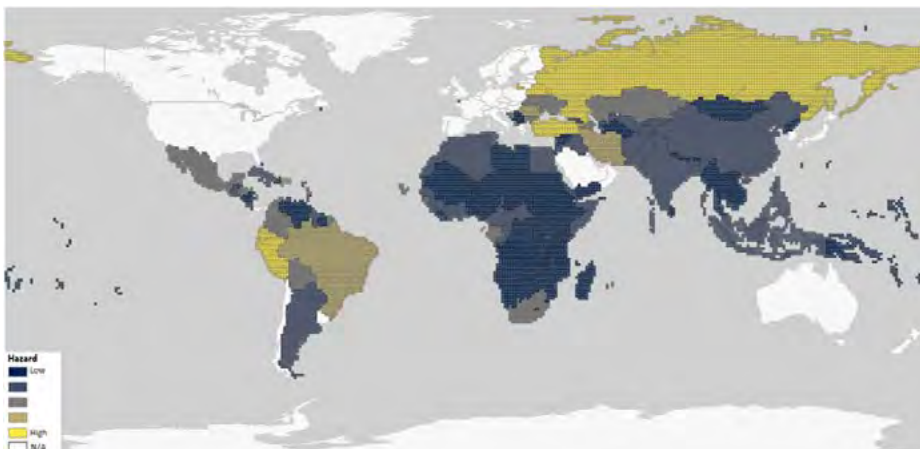
Note: Hazard calculated as the ratio of the number of confirmed cases to population. Data updated: 17 May 2020.

Methodology

All of our analysis below is done at the grid-cell level, rather than at the country level, but some of the data we use are only available at the country level. Where available, we use the more spatially detailed grid-cell level data. Measured at the level of grid cells, g, we model the risk associated with the economic impact of the pandemic as a linear combination of a local economy's exposure and vulnerability to it, minus its resilience:

$$\widehat{Risk_g} = \alpha + \beta_1 Exposure_g + \beta_2 Vulnerability_g - \beta_3 Resilience_g \tag{1}$$

We collect a group of sub-national and national measures from recent years (2014-2018) to proxy for exposure, vulnerability, and economic resilience. The selection of variables is based on the literature measuring disaster risk, as reviewed in Yonson and Noy (2018), and on our observations of the current experience with COVID-19. We then use principal component analysis (PCA) to compute a standardised index for each exposure, vulnerability, and resilience. Using the first component of the exposure, vulnerability, and resilience indices, we compute a comprehensive risk index in relation to the economic risk of epidemics. In our simplest specifications, we assume equal weights ($\beta_i = \beta_j$; for all i and j); in alternative algorithms, we estimate the β_i based on a regression algorithm, using the number of disability-adjusted life years (DALYs) lost due to communicable diseases, in each country, in the last year for which this data is available.

Results

Figure 2 shows the descriptive information and PCA results of all variables we use to measure exposure, vulnerability, and resilience. The principal component index is the output of linear combination of the original variables. We use the first principal component for each exposure, vulnerability, and resilience index (as the first component accounts for most variation in the data and contribute the most explanation in the combining procedure).

Economic activities, demographic measures, and infrastructure density all positively explain exposure. High-income areas with better healthcare quality (as measured by lower infant mortality, health spending, hospital infrastructure) are related to less vulnerable areas. Tourism areas and high numbers of elders are associated with higher vulnerability. For resilience, areas with higher social, and cultural disparity have a lower index. Countries having lower ratio of government debt and higher expenditure are more resilient.

Figure 2   Descriptive data and principal component analysis (PCA) results
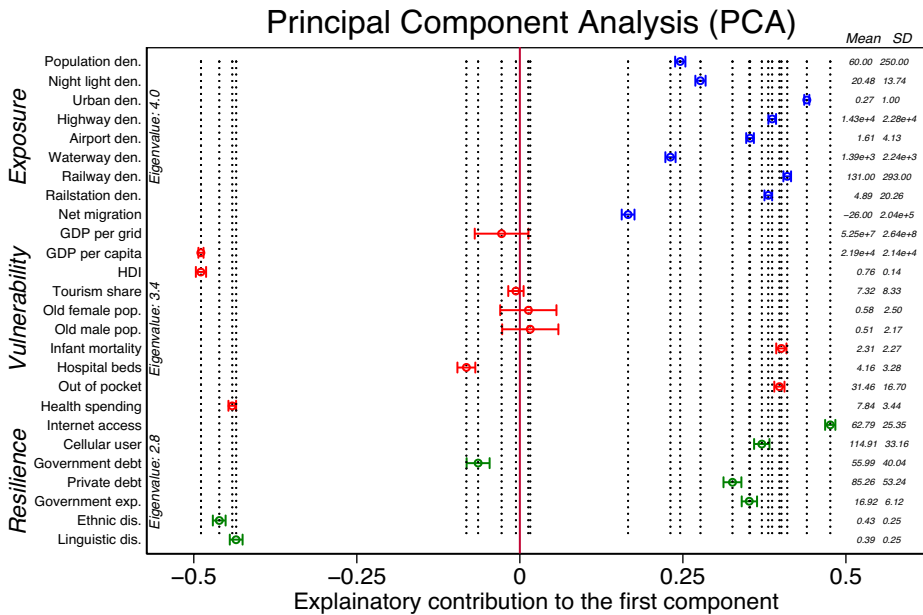
Notes: The lower and upper caps represent standard errors of each variable in the first component. The two columns on the right represent the mean and standard deviation of each variable.

We normalise all exposure, vulnerability, and resilience indices from the first component of the PCA in Figure 2. We calculate the economic risk by an equal-weight linear combination of the three indices: exposure, hazard and resilience.

We find, in Figure 3, that the economic risk of epidemics is especially high in most of Africa, South Asia (especially Pakistan and Nepal and some areas in India), and Laos. Interestingly, the areas of greatest exposure to the prevalence of COVID-19 are not where the economic risks are highest (Peru, Russia, Turkey). The economic risk is high in Africa and South Asia, as these are the most vulnerable areas, with low income and healthcare quality. Resilience, intentionally or otherwise, also plays a role in reducing the economic risk from epidemics. For example, in East Asia (China and Vietnam) the resilience is high due to less fractionalised socio-cultural characteristics (lower ethnic and linguistic disparity) and high capacity for policy mobilisation associated with a high ratio of domestic credit to the private sector (to GDP) and high levels of government expenditure (as a share of GDP). While Brazil, the Mercosur countries, Turkey, China and Russia are estimated to have lower economic risks because their domestic economies are focused on larger amount of exports, and are less reliant on the most vulnerable sectors like tourism.

Figure 3 Economic risk of COVID-19 using equation 1
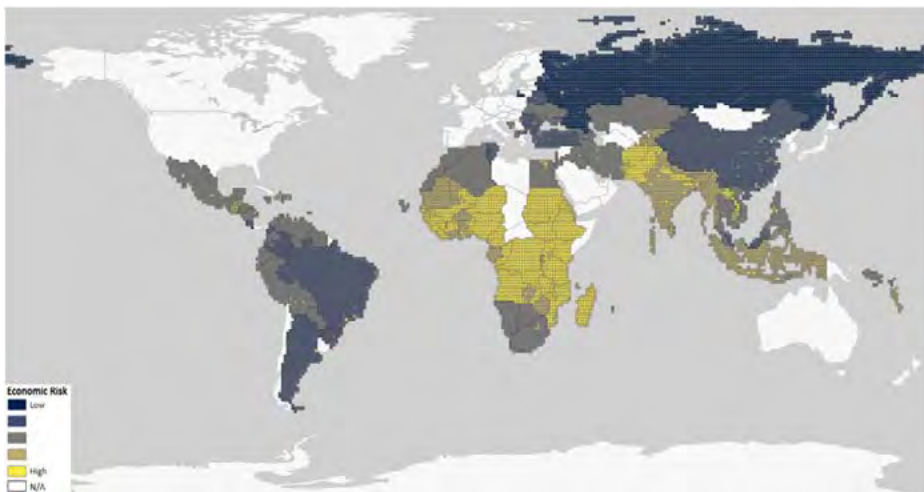
Notes: Observations are divided into five classes by Jenks natural breaks classification method which optimally minimises the average deviation from each class and maximises the deviation across classes.

In Figure 4, we restrict our analysis to all low- and lower-middle-income countries. This allows us to focus on those countries where the risk is highest. Not surprisingly, the bigger country with the highest risk is the Democratic Republic of the Congo (DRC), and the other highest concentrations of economic risk associated with the pandemic are in much of the rest of Central Africa, and besides some expected differences, however, the results presented in Figure 3 and Figure 4 are very similar. Low-income countries in Central Africa and Southwest Asia remains among the highest risk areas.

Figure 4 Economic risk of COVID-19 for low- and lower-middle-income countries
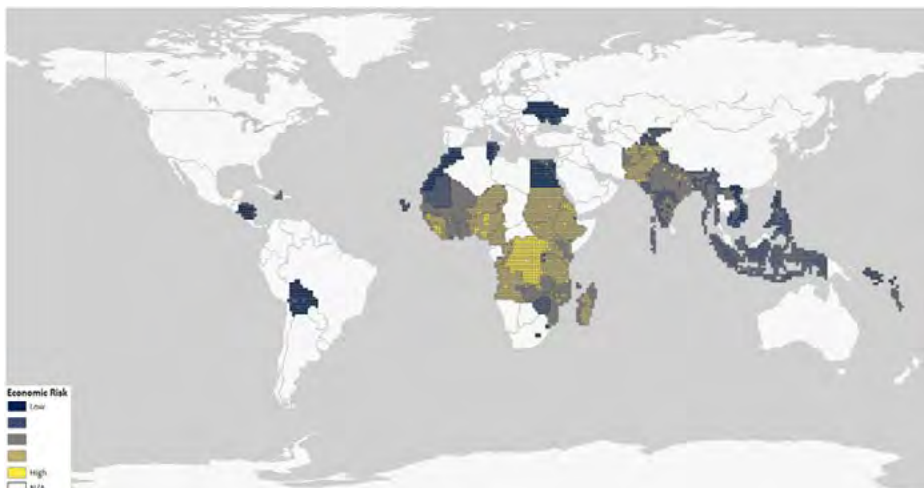
A less ad-hoc weighting scheme, instead of the equal-weights assumption in Figures 3 and 4, relies on the DALY measure of overall disease burden as collected by the WHO. Since previous DALYs associated with communicable disease are the outcome of previous events, it could be a good source for understanding the interactions between the (mostly zoonotic) hazard, and exposure, vulnerability, and resilience to it. DALYs are the sum of years lost due to ill-health, disability or premature death from communicable diseases. Weights for each of the three dimension components are derived by OLS regression with the country-level DALYs as the dependent variable, as in equation 2 (we assign the same DALY value for all grid cells within each country):

$$DALY_g = \alpha + \beta_1 Exposure_g + \beta_2 Vulnerability_g + \beta_3 Resilience_i + \varepsilon_g \qquad (2)$$

The estimated weights and the constant are then plugged into the risk function, which now places considerably more weight on exposure than on resilience and vulnerability:

$$\widehat{WRisk}_g = 0.02 + 0.74 Exposure_g + 0.20 Vulnerability_g - 0.04 Resilience_g \qquad (3)$$

The spatial patterns of the DALY-weighted risk map in Figure 5 are somewhat similar to those observed in the unweighted maps (Figures 3 and 4).

Figure 5   Economic risk of COVID-19 using the DALY-weighted index
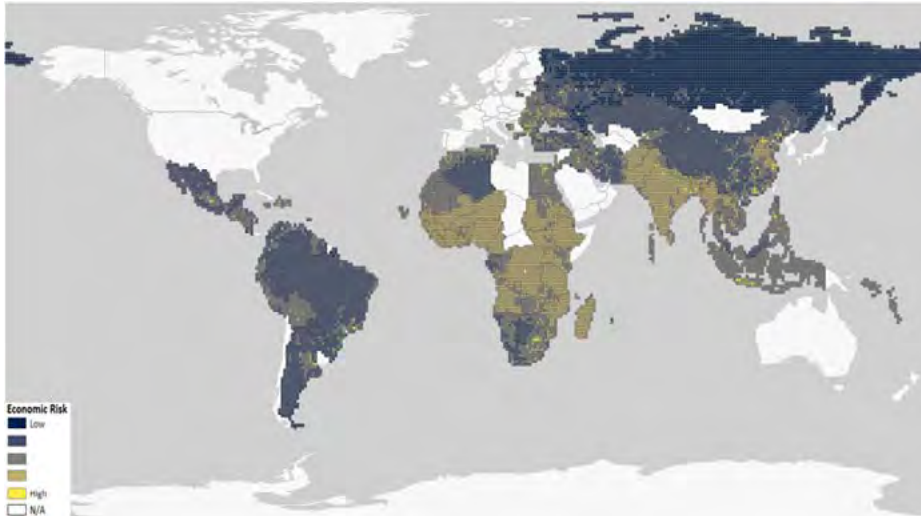
As before, the areas at highest risk of economic losses from epidemics remain sub-Saharan Africa and South Asia. But, much of Central Asia, and South East Asia are considered less risky with this approach, as are other areas that are relatively poor, but not so densely populated (as is Central America, for example). The other distinctive difference is that the diversity of the economic risk by grid-cells. With this DALY-based index, much of the weight comes from spatially detailed exposure index, so the risks can now be identified with a better spatial resolution, and are found to be especially high in densely populated grids (e.g. East China, South Europe).

Discussion and conclusions

The economic consequences of an epidemic, like any other natural hazard shock, can be delineated into damages, direct losses, and indirect losses (Noy 2016). Direct losses include lost income and output due to death and symptomatic illness as well as increased healthcare costs. If measured through the standard statistical tools used by governments to evaluate the cost of life (the value of statistical life, or VSL), the experienced direct costs of the COVID-19 pandemic due to illness and mortality are probably smaller than the indirect losses caused by it. This is, of course, especially true now for countries in which the epidemic has not yet spread indiscriminately, but that are very exposed to the global shock it created (for example, tourism-dependent economies like Fiji).

As public health systems have improved over the past century, this pandemic's health impacts are unlikely to be of the magnitude of the 1918-19 influenza pandemic, though it may still be of catastrophic scale. Especially worrying are those countries whose public health systems have not developed enough in the last century. However, what may be more salient is the pandemic's economic consequences. The exposure, vulnerability, and resilience to these economic consequences were not ameliorated as much even when public health systems are at their best.

Globalised trade and investment, increased tourism and labour flows, and the more recent advent of social media are all likely to have amplified behavioural responses and created additional vulnerabilities, thus potentially exacerbating the economic losses that will be experienced before this pandemic is over, and making it a much bigger economic event than the 1918-1919 influenza pandemic.

Besides the measurable differences we are able to control for, like public health, there are also distinctions within the developing world that may be important. Even within countries with similar level of incomes, there are differences that may make the epidemic and its consequences worse. Economic informality is one such distinction that is most likely important (but is not measured here). Bosio and Djankov (2020), for example,

describe the ways in which informality makes it much more difficult for governments to intervene productively and reduce the duration or depth of the COVID-19 economic downturn.

Another difference that is difficult to measure but is well known to be important in determining recovery is social capital (Aldrich 2012). There are several ways in which social capital may reduce both the health toll and the economic cost of this crisis – one example is that in societies with higher degrees of bonding social capital, mutual assistance is likely to ameliorate some of the more damaging distributional consequences of the shock.

To summarise, what is most apparent from our analysis is that the economic risk from COVID-19 is not located mostly in China, where the virus originated and spread first. Nor, as we found in Noy et al. (2020a), is it where most of the confirmed cases are currently found – in the United States and Western Europe. Rather, the highest economic risks are in countries and regions that do not get much global attention in normal times, and get even less in the midst of the frantic reporting from the immediate frontlines of the pandemic's spread. This is unfortunate as, ultimately, the economic costs will be borne there, away from the public eye.

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Annex: Details of variables

	Variable name	Description	Unit of measurement	Kind of indicators	Spatial availability	Year released/ updated	Data coverage by grid	Source
1	COVID-19	Number of confirmed cases per 1 million people	Number of people	Hazard	Country-level	17 May 2020	100%	Worldometer
2	Population density	Number of persons per square kilometre in 2015	Number of people per km2	Exposure	Resolution: 0.5' (1 km)	2017	100%	(CIESIN, 2018)
3	Night-time lights	Night-time light intensity in 2016	Index	Exposure	Resolution: 1.5' (3 km)	2017	100%	Román et al. (2018)
4	Urban built-up	Human impact on land by urbanization activity	Index	Exposure	Resolution: 0.5' (1 km)	2014	100%	Tuanmu and Jetz (2014)
5	Transport networks in 2016	Highway density Airport density Waterway density Railway network Rail station density	Index	Exposure	Resolution: <1 km	2016	100%	Lloyd et al. (2017)
6	Net migration	Number of in-migrants minus out-migrants	Number of people	Exposure	Resolution: 0.5' (1 km)	2015	100%	de Sherbinin et al. (2015)
7	GDP per capita	Gross Domestic Product per capita (PPP) per grid in 2015 (constant 2011 USD).	USD	Vulnerability	Resolution: 5' (10 km)	2018	98%	World Bank (WDI)
8	HDI	Human Development Index [0-1]	Index	Vulnerability	Resolution: 0.5' (1 km)	2018	100%	Kummu et al. (2018)
9	Tourism	Share of travel and tourism to GDP	Percent	Vulnerability	Country level	2018	94%	World Bank (WDI)

	Variable name	Description	Unit of measurement	Kind of indicators	Spatial availability	Year released/updated	Data coverage by grid	Source
10	Old population density	Number of female/male aged 70 or more per square kilometre in 2020	Number of people per km2	Vulnerability	Resolution: 0.5' (1 km)	2017	100%	WorldPop and CIESIN (2018)
11	Infant mortality rate	The number of children who die before their first birthday per 1,000 births in 2017	Proportion	Vulnerability	Resolution: 0.5' (1 km)	2018	100%	(CIESIN, 2019)
12	Hospital beds	The number of hospital beds per 1,000 population	Number of beds	Vulnerability	Country level	2015	95%	World Health Organization (WHO)
13	Out-of-pocket	Share of Out-of-Pocket Expenditure on Healthcare	Percent	Vulnerability	Country level	2014	96%	World Bank (WDI)
14	Health spending	Total health care expenditure as GDP	Percent	Vulnerability	Country level	2014	96%	World Bank (WDI)
15	Internet access	Share of population using the Internet	Percent	Resilience	Country level	2017	99%	World Bank (WDI)
16	Cellular user	Mobile cellular subscriptions per 100 people	Numeric	Resilience	Country level	2017	99%	International Telecommunication Union (ITU)
17	Public and private debt	Ratio of central government debt to GDP Ratio of domestic credit to private sectors to GDP	Percent	Resilience	Country level	2018	98%	IMF and WDI
18	Government expenditure	Ratio of government expenditure to GDP	Percent	Resilience	Country level	2018	98%	World Bank (WDI)
19	Socio – Cultural disparity	Ethnic disparity [0-1] Linguistic disparity [0-1]	Index	Resilience	Country level	2016	99%	Alesina et al. (2003)

3 Assessing COVID-19's economic impact in sub-Saharan Africa: Insights from a CGE model

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This chapter uses a computable general equilibrium model to investigate the likely economic impact of the COVID-19 pandemic in sub-Saharan Africa. We simulate three scenarios: (1) a rapid and effective policy response in sub-Saharan Africa implying that the spread of COVID-19 is contained by early July 2020; (2) a slow and ineffective policy response that prolongs the pandemic through 2021; (3) a worst-case scenario combining scenario 2 and border closures within the region. The decline in regional GDP in 2020 relative to a reference scenario (where the pandemic never occurs) ranges from 5.7% in the relatively optimistic scenario to 7.65 in the pessimistic scenario. The pandemic would lower revenues from taxes and fees while raising spending, leading to a substantial deterioration in the fiscal deficit. Household income would plummet as labour force participation falls. The poor would be disproportionately affected, as many are employed in agriculture and low-end services, where output would fall sharply.

Despite a late arrival, the COVID-19 outbreak has spread rapidly across sub-Saharan Africa in recent weeks. As of 20 May, 191,000 cases of COVID-19 were confirmed[2] with 2,834 deaths. The lack of testing capacity in many countries suggests that these figures most likely understate the true number of infections. South Africa has the largest outbreak in the region with 17,200 confirmed cases (Figure 1). The country has declared a national state of disaster and announced a number of measures to curb the spread of the virus, including a travel ban on foreign nationals from high-risk countries, prohibition of public gathering of more than 100 people, and school closures. Rising outbreaks have also emerged in West Africa (Burkina Faso, Côte d'Ivoire, Senegal, Ghana, and Nigeria), Central Africa (Cameroon, Gabon, Congo, DRC, Chad) and East Africa (Tanzania, Uganda, Rwanda and Kenya). These developments have prompted

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1   We would like to thank to our colleagues Andrew Burns, Cesar Calderon, Gerard Kambou, and Doerte Doemeland, for their valuable comments and contributions.

2   The number of COVID-19 cases was taken from the Center for Systems Science and Engineering at Johns Hopkins University.

these governments to put in place various containment measures, including travel bans, restrictions on public assemblies, and school closings.

Figure 1   COVID-19 confirmed cases in sub-Saharan Africa
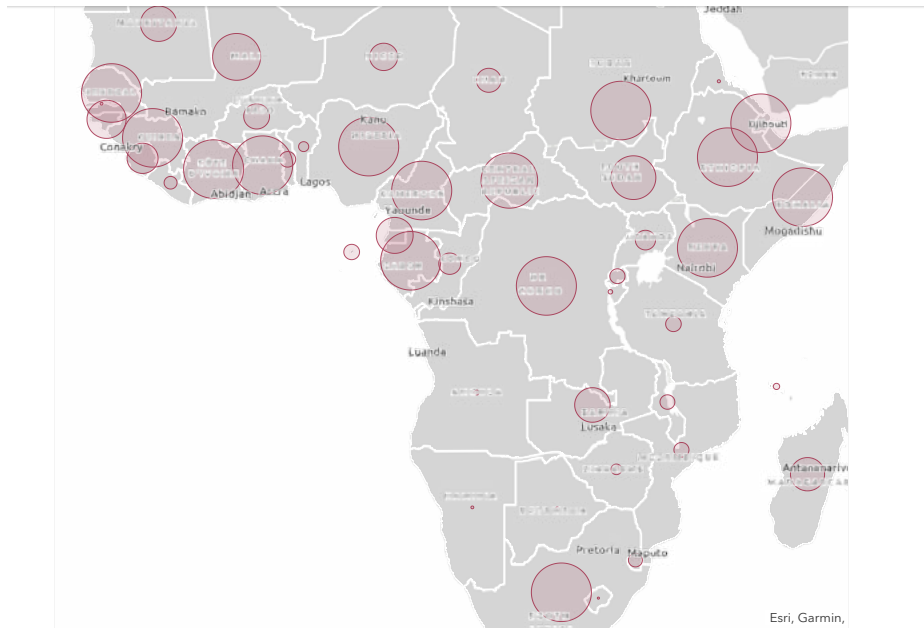
Source: Africa Centre for Disease Control, https://africacdc.org/covid-19/

This chapter uses a computable general equilibrium model to investigate the likely economic impact of the COVID-19 pandemic on sub-Saharan Africa. The impact is estimated using simulations with ENVISAGE, a global computable general equilibrium (CGE) model developed by the World Bank for analysis of the impact of policy changes and economic shocks in developing countries (Van der Mensbrugghe 2019).

Scenarios

Three scenarios are considered based on the following factors: (1) regions and countries affected by the outbreak, (2) the effectiveness of policy responses, and (3) the anticipated length of the crisis. All the three scenarios assume a severe slowdown in economic activity in China, the United States, the European Union, and the rest of the world (Table 1).

Scenario 1: Global spread and severe cases in Africa

This scenario assumes that containment measures in advanced countries are only lifted after three months as outbreaks slow. A sizeable share of domestic private consumption (as well as businesses) that requires social interaction ceases during this period. It is also assumed that the pandemic fades and activity recovers slowly in China amid a global slump. Under this scenario, global growth will fall by up to 3.5 percentage points in 2020, reflecting a sharp slowdown in the United States, the euro area, and China, before picking up in 2021 as the effects of the COVID-19 virus fades and global activity gradually recovers.

This scenario assumes that the surveillance systems are ineffective and that the COVID-19 outbreak will spread to all countries in sub-Saharan Africa. It also assumes that the policy response is fast and effective, so that new cases no longer occur within three months (as appears to have been the timing in China). In this scenario, the outbreak ends by early July 2020. It also assumes that the propagation profile of the epidemic would be close to the 2014 Ebola outbreak in Guinea, where the number of cases reached 2,707 in 2014 and 1,097 in 2015. Therefore, the economic impact of the 2014 Ebola crisis in Guinea is used as a proxy to calibrate the exogenous domestic shocks for this scenario. The size of the shocks are scaled for each affected country according to the Epidemic Preparedness Index (EPI).

Scenario 2: Global spread and a catastrophic outbreak in Africa

This scenario assumes the policy response is slow and ineffective in affected countries, leading to a much larger number of cases and deaths in 2020, as well as additional cases in 2021, before the virus is contained. The propagation profile of the pandemic under this scenario will be close to the 2014 Ebola outbreak in Sierra Leone (the most affected country), where the number of cases reached 9,446 in 2014 and 4,676 in 2015. Therefore, the economic impact of the 2014 Ebola crisis in Sierra Leone is used as a proxy to calibrate the exogenous shocks for this scenario.

Scenario 3: Global spread and non-cooperative African response

This scenario assesses the effect of a non-cooperative African response to the COVID-19 virus. The only difference compared with scenario 2 is that a blockade on sub-regional trade in Africa is imposed (Table 1).

Table 1   Scenario assumptions

	Scenarios	Severity of epidemic in Africa	Length of the crisis	Transmission channels	Type of cooperation
1	Global spread, severe in Africa	Medium - China and the rest of the world severely affected - 54 African countries severely affected - Limited number of cases - Lockdowns and border closures	Rapidly contained (3 months)	1) Global shocks (oil prices, tourism flow) 2) Domestic short-term shocks (labour market participation, trade cost increase, investment reduction) Domestic shocks calibrated based on the effect of the 2014 Ebola crisis in Guinea and scaled by the Epidemic Preparedness Index	No trade blockade
2	Global spread, catastrophic in Africa	High As scenario 1 but with high number of cases	Slowly contained (crisis continues through 2021)	Global shocks and domestic short-term shocks as in scenario 1 but domestic shocks calibrated based on the effect of 2014 Ebola crisis in Sierra Leone	No trade blockade
3	Global spread and non-cooperative in Africa	As scenario 2	As scenario 2	As scenario 2	Regional trade blockade

Main assumptions to determine the magnitude of the shocks

The impact of COVID-19 on African economies simulated by the model considers two categories of transmission channels: (1) channels related to international shocks, and (2) channels related to domestic shocks. A key challenge for this exercise is to determine the magnitude of the shocks for each transmission channel.

International channels

The following assumptions are made:

Oil prices
We assume that oil production in the rest of the world increases by 15% due to the use of idle capacity following the lift of the cap on oil production for the main oil producers and that global energy demand would fall by 20%. The size of the shocks is defined to match the difference between the current commodity price projections and commodity price projections before the crisis.

Tourism flows
The magnitude of the shocks is defined as the difference between current tourism flow projections and the tourism flow projections before the crisis. The tourism shocks applied to our simulations (Table 2) reflect the impact on tourism observed during the SARS crisis. The simulation is implemented as an increase in the transaction cost and a 2% decline in total factor productivity in the tourism sector due to idle capacity caused by weakening demand.

Foreign direct investment
FDI declines because of increased uncertainty about the future and interruptions to international travel and communication. For African countries, the magnitude of the shocks simulated corresponds to the reduction in FDI inflows observed during the 2014 Ebola pandemic in West Africa (Table 2).

Domestic channels

In addition to the international transmission mechanisms, the scenario reflects domestic responses by governments to prevent infection from spreading and to cushion the impact of the outbreak on the economy. It also captures 'avoidance behaviour', as fear of the disease causes behavioural changes in the main economic actors. The domestic channels through which economies would be affected by avoidance behaviour are as follows:

Labour market participation effect
Fear, controls, and restrictions on the movements of workers are likely to affect the household labour supply decision negatively, at least for the households that can afford to stop working. The size of the shock corresponds to the level of change observed in West Africa during the Ebola crisis in 2014 for African countries, and it is not implemented for other countries.

Capital utilisation
Avoidance of workplaces by workers will cause capital to be left idle and increased uncertainty would cause some investments to be postponed or cancelled. Two types of shocks are considered to implement the fall in capital utilisation. For African countries, the size of the shock is calibrated to correspond to the level of change observed in West Africa during the Ebola crisis in 2014 (Table 4). For other countries, the capital utilisation shock is calibrated to generate the level of GDP projected under the crisis scenarios (Table 3).

Labour productivity effect
Two types of shocks are considered to simulate the reduction in labour productivity. For African countries, the magnitude of the productivity shock is determined based on the decline in labour productivity observed during the West Africa Ebola crisis in 2014. For other countries, changes in labour productivity are calibrated to generate the level of GDP projected under the crisis scenarios.

Trade
It is assumed that trade transaction costs increase for goods and services from all countries. The size of the shock is calibrated to match the increase in unit export and import prices during the West African Ebola crisis.

Regional trade

In the last scenario, trade between sub-Saharan African countries is reduced around 90%, to reflect the consequences of a noncooperative approach, again by increasing trade costs.

As indicated above, domestic shocks will be calibrated based on changes to the main variables in Guinea and Sierra Leone during the 2014–16 Ebola crisis, as calculated by World Bank (2019):

Table 2   International shocks

Variables	Low Case
Tourism flows	-15.0
Economic slowdown in:	
United States	-6.9
China	-7.0
European Union	-7.5
Rest of the world (ROW)	-6.6
Oil production in ROW	15.0
Oil demand	-20.0

Source: Authors' calculations

Table 3   Percentage deviation from 2000–13 trend during the 2014–16 Ebola crisis

Variables	Low Case	High Case
LFP	-0.3	-0.9
GFCF	-6.6	-41.8
FDI	-40.0	-34.9
Export unit value	10.9	16.9
Import unit value	9.7	12.0
Labour productivity	-5.7	-19.9

Source: Authors' calculations

The figures in Table 3 have been scaled according to country-specific conditions. We assume that all countries would be affected differently, depending on the density of urban population and the country preparedness for the epidemic.

Results: Simulation analysis

Short and medium-term economic effects of COVID-19

Growth effect of COVID-19
• Continent-wide effect

Our estimates suggest that the immediate impact of COVID-19 on growth in sub-Saharan African economies would be substantial, even under the most optimistic scenario of a quick and efficient response. Under Scenario 1, the CGE estimates show that GDP would be lower than in the pre-crisis scenario by about 5.7% in 2020 and 1.0% in 2021 (Figure 1): growth in the region would decline from 2.6% in 2019 to -2.5% in 2020 (Figure 2).

Figure 1   Impact of COVID-19 on real GDP, 2020–21 (% deviation from baseline)
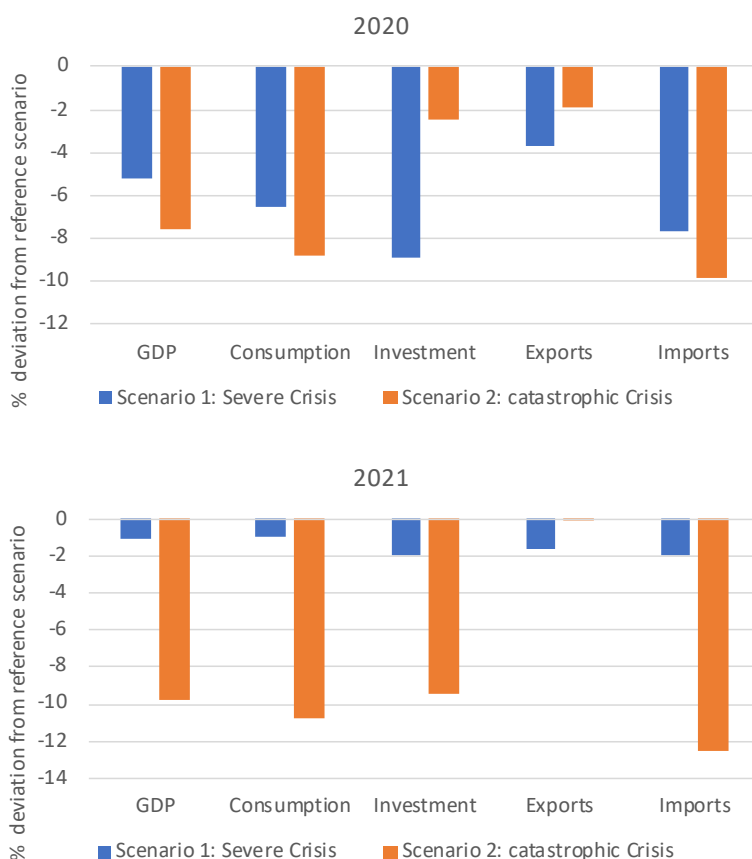
Source: CGE model results

Figure 2   Effect of COVID-19 on sub-Saharan Africa's growth rate (real GDP annual growth rate, %)
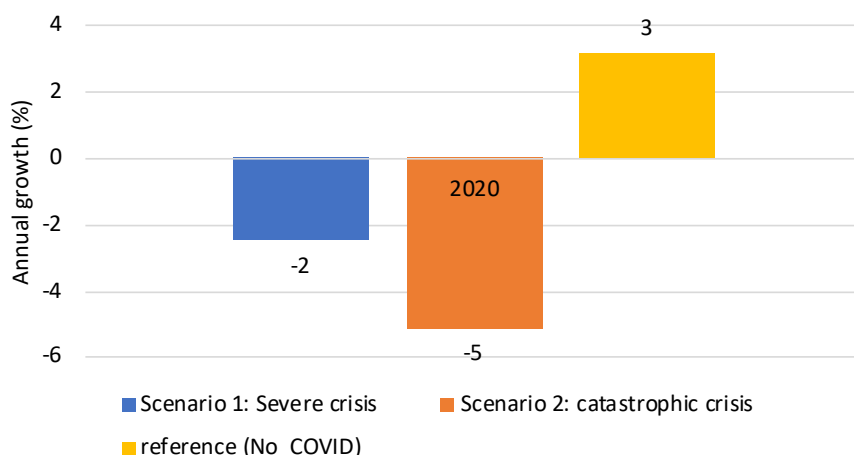
Source: CGE model results

The decline in sub-Saharan Africa's GDP in 2020 is due to lower exports (4% lower), private investment (8%), and private consumption (6%). The change in exports is due to higher trade costs (Figure 3). Investment is lower for at least two reasons: (1) the reduction in FDI and postponement of domestic investments (Figure 3); and (2) lower government savings (an increase in the deficit) and lower household savings, as lower labour market participation combined with lower productivity reduces household income. The deterioration in the fiscal balance increases interest rates and thus suppresses private investment. There is a positive contribution to GDP associated with lower imports.

Under a more pessimistic scenario (scenario 2), sub-Saharan Africa's GDP would be 7.6% lower than in the baseline in 2020 and 9.8% in 2021 (Figure 1).

On average across countries, 45% of the impact of COVID-19 on sub-Saharan Africa's GDP is driven by domestic shocks under scenario 1. However, if the medical crisis is not rapidly addressed, the negative effect of domestic restrictions will become worse. Our estimates show that about 65% of the impact of COVID-19 on sub-Saharan Africa's GDP would be driven by domestic shocks under a 'catastrophic' scenario (scenario 2). The most important transmission channel of these effects at the national level is the reduction in productivity, followed by reduced capital utilisation and increased trade transaction costs.

The commodities channel, led by the fall in the oil price, is the main driver of international shocks. However, reduced FDI flows and declining tourism also play an important role in reducing growth.

Figure 3   GDP impact by source of shocks, domestic versus international
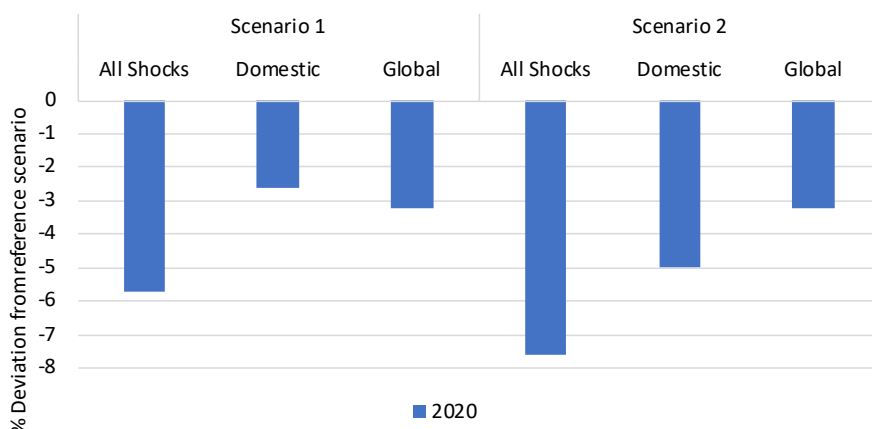
Source: CGE model results

• Sub-regional growth effect

The short-term impact of COVID-19 on growth will vary across countries according to trade openness, dependence on commodities, tourism, and epidemiologic preparedness. In terms of resource groups, the CGE estimates show that oil-producing countries are hit the hardest due to a combination of a fall in international price and demand (Figure 4). Similarly, growth among metals-exporting countries would decline sharply, as reduced global demand leads to a fall in mineral production.

The impact of COVID-19 on the region's three largest economies – Nigeria, South Africa and Angola – is substantial, reflecting lower prices for crude oil (Angola and Nigeria) and industrial metals (South Africa), capital outflows, and the effects of containment measures (Figure 4). The impact of domestic shocks on South Africa would be lower than that in many other countries in the region, thanks to the country's higher EPI (62.2). The effect of international shocks related to COVID-19 on Nigeria is less pronounced compared with Angola and South Africa, given Nigeria's low level of openness. However, Nigeria is hit the hardest by domestic shocks, as the country's low EPI signals a lower capacity to mitigate the effects of the crisis.

Figure 4   Impact of COVID-19 in sub-Saharan Africa by resource group

GDP effect
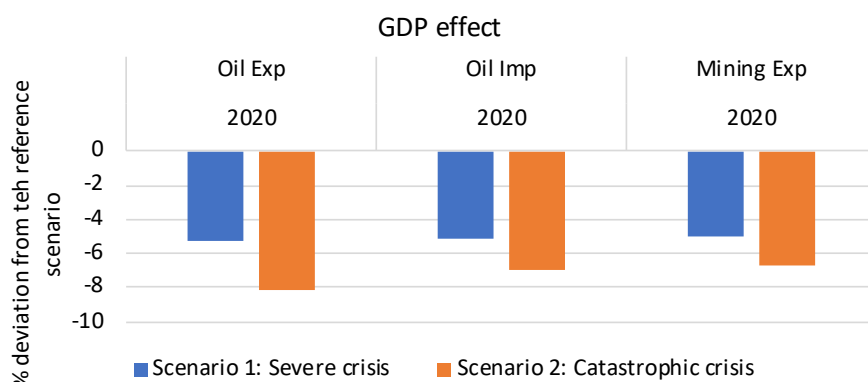
Source: CGE model results

Among the four sub-regions considered in this study, Central Africa, which includes most of the region's oil exporters, is the most affected (Figure 5). Central Africa's vulnerability is not only due to the sub-region's high dependence on oil products, but also to poor preparation for an epidemic, as indicated by low EPIs.

Figure 5   Impact of COVID-19 by sub-region

GDP by regions
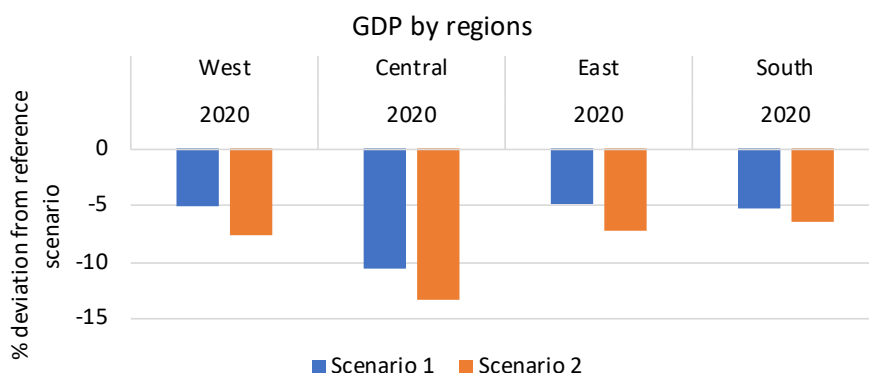
Source: CGE model results

East Africa is the least affected sub-region. Most East African countries are net oil importers and seem to be better prepared to manage the crisis than are most other sub-regions (second to Southern Africa). In West Africa, where outbreaks are spreading rapidly, the impact of COVID-19 is severe due to the region's exposure to mining products and tourism, as well as the poor level of preparation for an epidemic.

Fiscal effects of COVID-19

The COVID-19 pandemic is likely to have a substantial impact on the fiscal accounts of African economies. Under the optimistic scenario, the revenue collected by Sub-Saharan African countries would be 12% lower than in the reference scenario (Figure 6). As the level of spending is kept high by necessity to fight the epidemic, a decline in revenue would lead to a substantial deterioration of the overall fiscal balance.

Under the pessimistic scenario (scenario 2), revenues would be about 16% lower in 2020 compared with the no-COVID-19 scenario, leading to an increase of 3.5 percentage points in the overall deficit compared.

Figure 6   Fiscal effect of COVID-19 in sub-Saharan Africa: Revenue loss in 2020 (% of GDP)
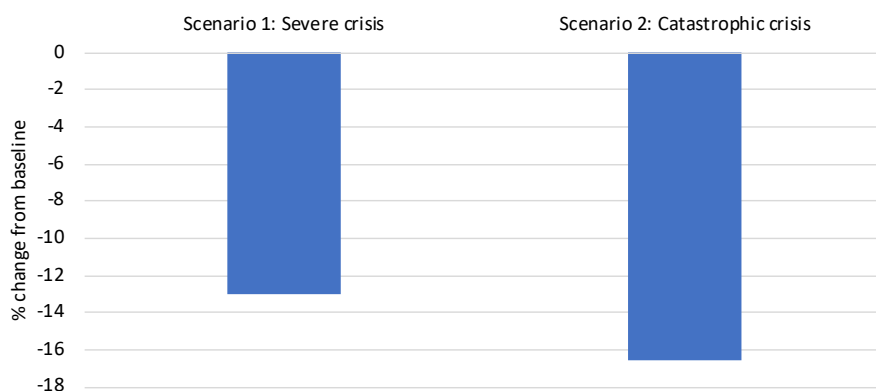
Source: CGE model results

Distributional effect of COVID-19

The COVID-19 crisis would adversely affect nearly every sector of the economy. The sharp declines in the services and agriculture sectors are indications that the crisis would severely hit the poorest and the most vulnerable, and in particular it would greatly affect women, who depend heavily on these activities in Africa. Our estimates indicate that the manufacturing production would increase as a result of COVID-19 outbreak. Under our most optimistic scenario (scenario 1), manufacturing sector production would be about 5% higher than in the no-COVID scenario in 2020. The manufacturing sector seems to benefit from the increased transaction cost of international trade that is making local production more competitive.[3]

Effects of non-Cooperative policy responses

A disorderly, non-cooperative response to the pandemic would accentuate the negative impact of COVID-19 among countries in sub-Saharan Africa (Figure 9). Scenario 3 assumes that the absence of cooperation among African regional trade partners would lead to trade blockage. The level of GDP under this scenario would be 8.5% lower than in the baseline in 2020. The blockade of regional trade would also disproportionately affect the poor, particularly agricultural workers and unskilled workers in the informal sector. An extensive literature demonstrates that regional trade in Africa is dominated by informal activities and the exchange of commodities across land borders and is engaged in mostly by the poorest and the most vulnerable, particularly women (Kirk et al. 2017).

A disorderly, non-cooperative response to the pandemic, leading to an increase in trade restrictions, will also contribute to the risk of food security crisis in SSA countries.

Long-term economic effects of COVID-19

Most of the effects of the pandemic, notably demand shocks, will be temporary and vanish in the long term. However, depending on the severity and the length of the crisis, it could have some lasting impacts on capital accumulation and productivity, due to a deterioration in the health system (as it is difficult to replace doctors and nurses who become ill or die) and in the level of human capital more generally (Huber et al. 2018). Based on past experiences of similar crises, notably the 2014 Western Africa Ebola crisis, COVID-19 is likely to create a lasting impact on labour productivity due to its adverse effect on human capital and infrastructure.

To assess the long-term impacts of COVID-19 we use the same scenarios described above.

Our estimates suggest that GDP would be permanently 1% lower in the optimistic scenario (Figure 7). In the catastrophic scenario where the crisis lasts more than 18 months, GDP would be 4% lower, almost permanently. The results suggest that in the absence of policy interventions, an 'L-type recovery' where sub-Saharan Africa would not return back to the pre-COVID19 levels of the GDP although year-on-year growth rates would recover to pre-COVID-19 levels.

Figure 7   Long-term effect of COVID-19 on sub-Saharan Africa's real GDP (% deviation from the reference scenario)

2025

Scenario 1: Severe Crisis   Scenario 2: catastrophic Crisis

2030

Scenario 1: Severe Crisis   Scenario 2: catastrophic Crisis
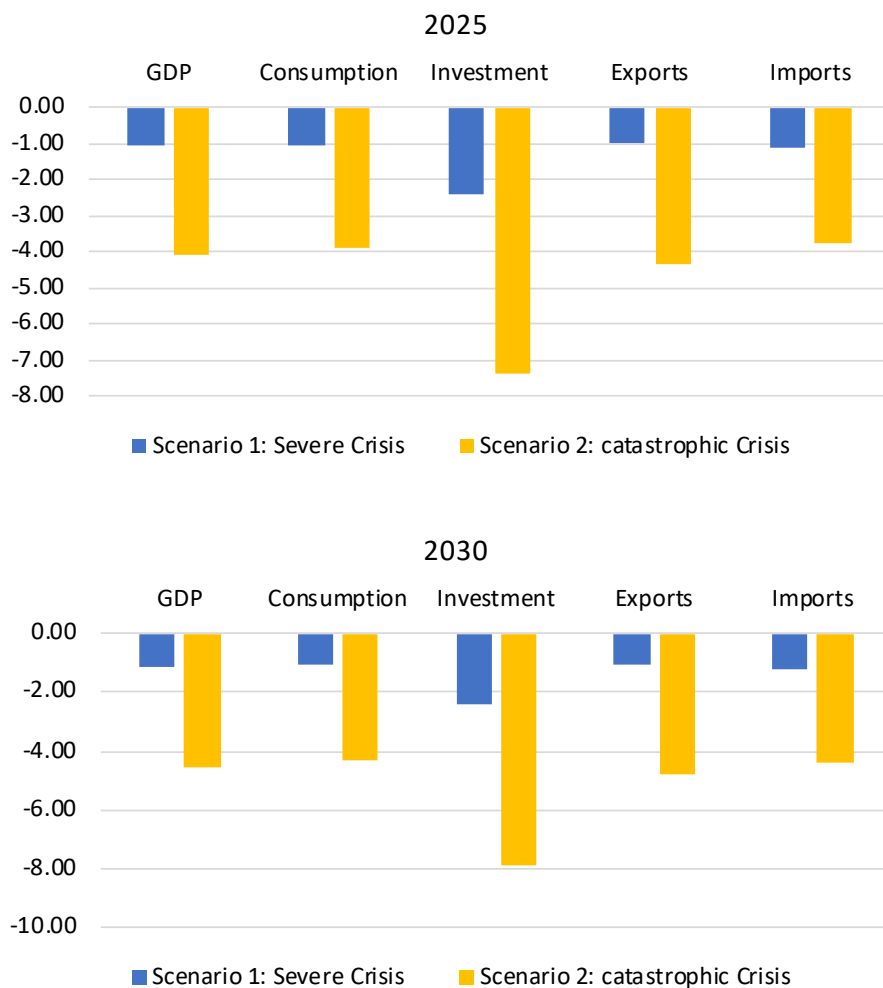
Source: CGE model results

Conclusion

The economic impact of COVID-19 in Africa will be devastating. The collapse of global demand and domestic measures required to contain the spread of the disease are having a severe economic impact. A failure to rapidly contain the spread of the virus will significantly intensify the economic impact of domestic restrictions. The decline

in incomes will be particularly large for the poor and vulnerable, who are also likely to be affected disproportionately by a reduction in agricultural production both in terms of rural incomes and food consumption. There is considerable uncertainty over the future and the evolution of the disease, the success of innovations in treatment and prevention, and the economic implications.

The scenarios developed in this chapter inevitably rely on a series of assumptions that are unlikely to be perfectly accurate. Nevertheless, the CGE scenarios do provide a sense of the orders of magnitude that could be expected, the allocation of losses across sectors and countries, and the main channels of transmission. The results underly the critical role that policies will play in containing the epidemic, limiting the short-term impact on incomes, and supporting recovery. The scenarios also emphasise how a failure of international cooperation would accentuate the negative effects. The region may experience its first recession in twenty-five years and suffers a serious setback to its development efforts. The policy response package needs to emphasise cross-border regional solutions and avoid sudden stops in economic activities, especially those critical to the poor.

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4   Coping with a dual shock: A perspective from the Middle East and North Africa

Rabah Arezki, Rachel Yuting Fan, and Ha Nguyen
World Bank

Countries in the Middle East and North Africa face a dual shock from the COVID-19 pandemic and a collapse in oil prices, which have severely affected the economies of the region and threaten livelihoods, especially those of informal workers. To deal with the dual shock, governments should focus first on responding to the health emergency and the associated risk of economic depression – which includes supporting the private sector and vulnerable households. While efforts to actively reduce leakages should start now to ensure the relief and stimulus funds reach the right target, fiscal consolidation should be postponed until the recovery from the pandemic is well underway.

Countries in the Middle East and North Africa (MENA) face both a COVID-19 pandemic and a collapse in oil prices. The novel coronavirus that causes COVID-19 has spread globally. The virus has infected many millions of and caused hundreds of thousands of deaths.

The virus first spread severely to Iran and then to other countries in MENA (see Figure 1, as of 10 May 2020). Although the number of cases per capita in Qatar and Bahrain appear higher than in the rest of the region, that may be because they have done more testing than most other countries in the region (see Figure 2). The measures of infection are limited because they are contingent on testing capability. The low level of infections in fragile countries – such as Libya, Syria and Yemen – is almost certainly misleading, the result of a lack of testing capability that results in severe underreporting of the spread of the virus.

Figure 1   Total COVID-19 cases per million people
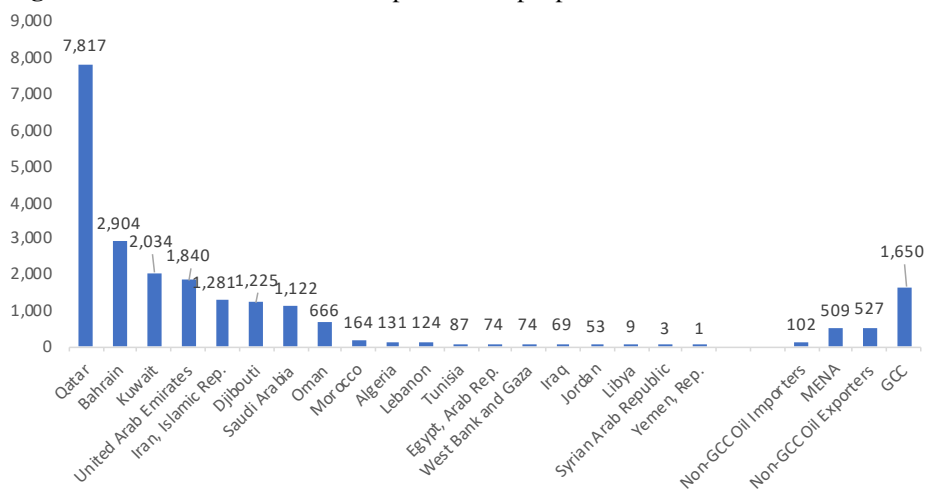
Source: Worldometer. Data are as of 10 May 2020.

Figure 2   COVID-19 tests per million people
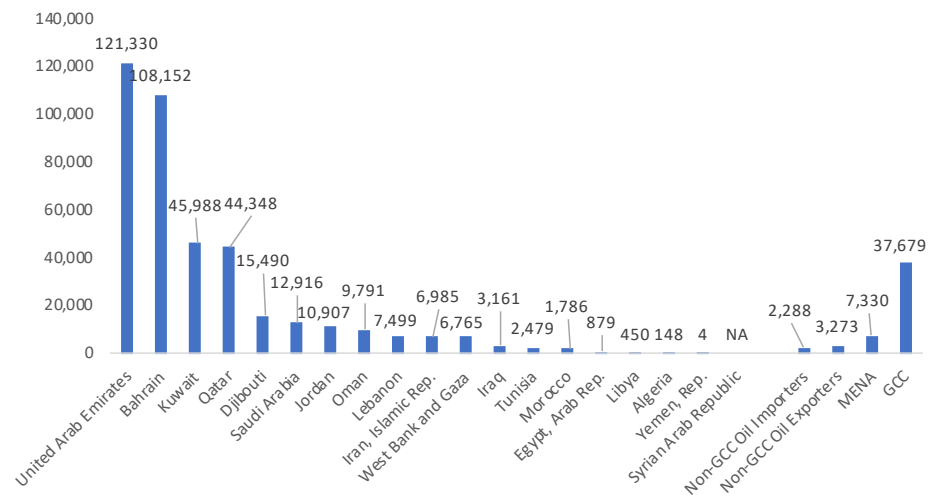
Source: Worldometer. Data are as of 10 May 2020.

The ability to contain the virus depends in part on the strength of public health systems – including testing and contact-tracing capabilities – which tend to be relatively weak in MENA countries. Indeed, countries in the region fare poorly in the Global Health Security (GHS) Index that measures preparedness for epidemics and pandemics[1]. MENA ranks last among the world's regions in two components of the index that are critical to fighting the pandemic: "epidemiology workforce" and "emergency preparedness and response planning". But there is substantial quality and preparedness among some MENA health systems, with those in the Gulf Cooperation Council (GCC: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates) better prepared than others. Under these circumstances, the need for transparency and freer information flows is pervasive and the region risks dramatic consequences if it does not expeditiously address both during this health crisis[2].

The virus not only claims lives; its spread confronts MENA countries with both a negative supply shock and a negative demand shock (Baldwin and Weder di Mauro 2020). The negative supply shock comes first from a reduction in labour – directly because workers get sick with COVID-19 and indirectly from travel restrictions, quarantine efforts, and workers staying home to take care of sick family members or children. Supply is also affected by a reduction in materials, capital, and intermediate inputs due to disruptions in transport and businesses in MENA countries.

The negative demand shock is both global and regional. Economic difficulties around the world and the disruption of global value chains reduce demand for the region's goods and services – most notably, oil and tourism. Regional demand also declines as a result of the abrupt reduction in regional business activity and concerns about infection – both of which reduce travel. In addition, uncertainty about the spread of the virus and the level of aggregate demand hurts the region's investment and consumption. Collapsing oil prices further depress demand in MENA, where oil and gas is the most important sector in many economies. Finally, financial market volatility could further disrupt aggregate demand.

Because of their exposure to oil and gas exports, a collapse in the prices of petroleum-related products is likely the most significant channel through which effects of the COVID-19 are felt in MENA countries. Oil prices have declined sharply, reflecting a drop in global oil demand. This drop in turn is caused by the global supply and demand collapse associated with social distancing measures. Oil demand is not expected to

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1   The index was jointly developed by the Nuclear Threat Initiative, the Johns Hopkins Center for Health Security, and the Economist Intelligence Unit. Data were released in 2019. The index consists of six categories: prevention; detection and reporting; rapid response; health system; compliance with international norms; and risk environment.
2   See Arezki et al. (2020b) for a documentation of the lack of transparency and data disclosure and its economic and social impact in the MENA region.

rebound soon[3]. In May 2020, the International Energy Agency (IEA) said it expects global oil demand in 2020 to contract by 8.6 million barrels-per-day (mb/d), or 9%, compared with 2019 (IEA 2020). The futures curve suggests that the market expects oil prices to remain low – not reaching $40 per barrel until the end of 2022 (see Figure 3).

Figure 3   Spot and forecasts of the price of Brent oil

Brent Oil Prices and Futures
(U.S. dollars a barrel; expiration dates on x-axis)
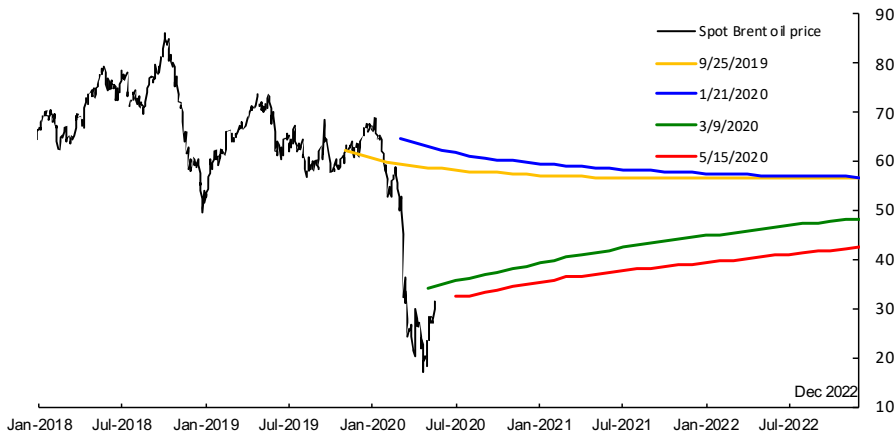
Source: Bloomberg, L.P.

Note: The black line indicates the spot price of Brent crude oil. The colored lines illustrate the futures prices of Brent crude oil on September 25, 2019, when the October 2019 MENA Economic Update was produced; January 21, 2020, when the first case of coronavirus was reported in the United States; March 9, 2020 after the disintegration of the OPEC+ alliance; and the closing on May 15, 2020.

Economic consequences

Output loss

The macroeconomic impact of the dual shock has hit MENA countries hard. The macroeconomic costs of COVID-19 and the oil price collapse in terms of growth can be gauged using changes in consensus growth forecasts compiled by Focus Economics. The 1 May 2020 consensus growth forecasts for the MENA region were, on average, 5.1 percentage points lower than those released in December 2019 (see Panel A of Figure 4). The most significant downgrade was for developing oil-exporting countries (–6.1 percentage points), followed by the GCC (–4.7 percentage points) and developing oil importing countries (–4.3 percentage points). These downgrades can be interpreted as the growth costs of the COVID-19 pandemic and the collapse in oil prices.

Figure 4   Changes in consensus growth forecasts (percentage of GDP)

Panel A: By MENA country groups
(May 2020 minus December 2019 forecasts)

Panel B: MENA region by time of forecasts

Legend Panel A:
- MENA
- GCC
- Developing Oil Exporters
- Developing Oil Importers

Legend Panel B:
- March 2020 - December 2019
- April 2020 - December 2019
- May 2020 - December 2019
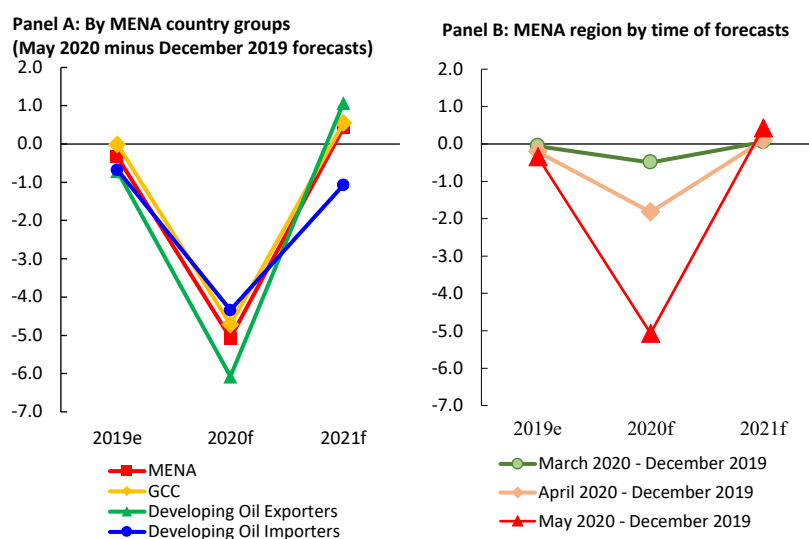
Source: Focus Economics, 2020.

Notes: "MENA" includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE, Algeria, Iran, Iraq, Yemen, Egypt, Jordan, Lebanon, Morocco, and Tunisia. "GCC" includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE. "Developing Oil Exporters" includes Algeria, Iran, Iraq and Yemen. "Developing Oil Importers" includes Egypt, Jordan, Lebanon, Morocco and Tunisia

The growth costs for 2020 have grown larger as more information has become available. The 2020 growth downgrade for MENA, using December 2019 forecasts as the baseline, was 0.5 percentage points in March 2020, 1.8 percentage points in April 2020, and 5.1 percentage points in May 2020 (see Panel B, Figure 4). These intensifying downgrades reflect an increasingly pessimistic private-sector view of the cost of the crisis.

Lower prices are generally good for oil-importing countries and bad for oil exporters. But in the MENA region it is likely that lower oil prices will hurt both importers and exporters – exporters directly and importers indirectly from reduced foreign direct investment, remittances, tourism, and official assistance from the exporters. Remittances from the GCC have been substantial in many MENA countries (see Figure 5). In addition, official development assistance (ODA) from the GCC is critical for many developing MENA countries (see Figure 6). Lower oil prices could threaten the sustainability of remittances, investment, and aid flows from the GCC. As Panel A of Figure 4 shows, the economies of developing oil importers are expected to suffer heavily in 2020.

Figure 5   Remittances from GCC to developing MENA in 2019
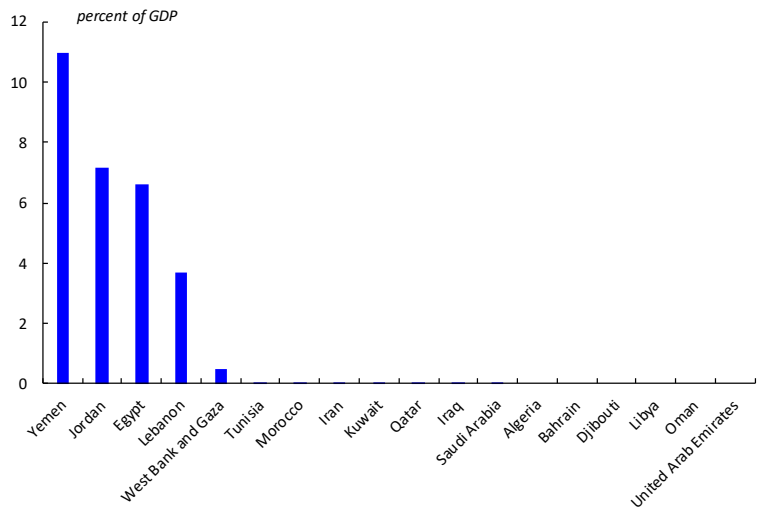
Source: World Bank.

Notes: Blue bars indicate total remittances received from GCC countries in 2019, as a share of receiving country's GDP of the same year. Algeria, Bahrain, Djibouti, Libya, Oman and United Arab Emirates didn't receive remittances from GCC countries in that year.

Figure 6   Official development assistance (ODA) flows from GCC to developing MENA
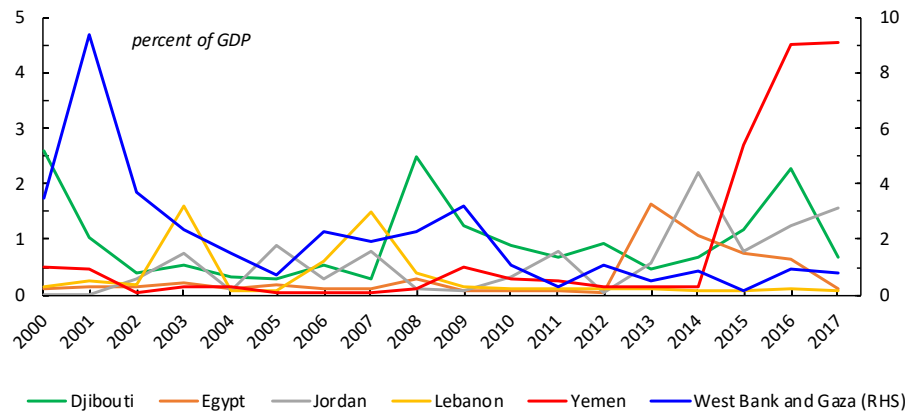
Sources: OECD Stat, World Bank World Development Indicators, and World Bank staff calculations. ODA flows are for the GCC countries that report data--Kuwait, Saudi Arabia, and the United Arab Emirates.

Among MENA countries, growth downgrades are not correlated with exposure to oil exports, supporting the notion that oil importers in MENA can suffer from the decline in oil prices because of their connection to MENA oil exports through remittances, investment and capital flows. Growth downgrades for 2020 are positively correlated with the GHS index. This suggests that for countries with a stronger capability to prevent and mitigate pandemics, economic growth will fall relatively less than for countries not so well situated (see the partial correlation scatterplots in Figure 7).

Figure 7   Growth downgrades, oil export exposure and health security

Panel A: Growth downgrades and GHS
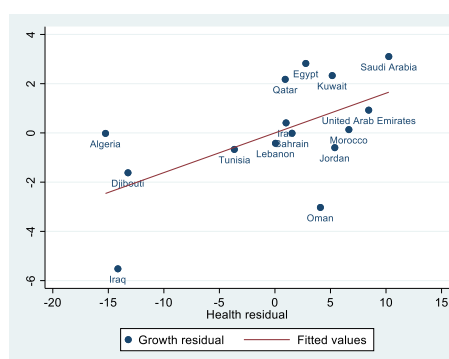
Panel B: Growth downgrades and oil export exposure
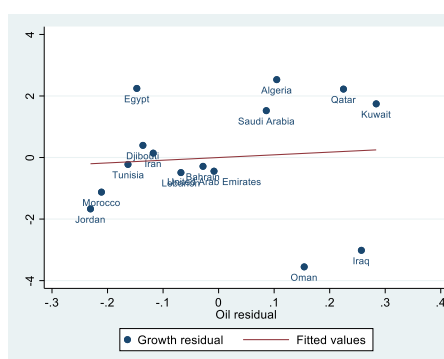
Source: Arezki and others (2020b).

Poverty and social consequences

Most MENA countries have dual labour markets. One is an oversized public sector that encompasses such employers as public administration and state-owned enterprises. The public sector accounts for a large fraction of total employment. This is a part of a long-standing, implicit social contract in which politically significant groups – such as the educated middle class, and members of key sects and ethnic groups – receive guaranteed employment and subsidies in exchange for tolerating cronyism, corruption by elites and little to no government accountability or citizen voice. The other labour market is a large informal sector with little job security and virtually non-existent social protections (World Bank 2019). Figures 8 and 9 show that self-employment and other informal employment are widespread in many MENA economies.

COVID-19 could further deepen inequality in MENA. Workers in the formal economy, who typically enjoy social protections and a predictable stream of income, are likely to fare better during lockdowns. For the self-employed and informal workers, lockdowns are difficult to sustain. Hand-to-mouth informal workers have little access

to social protection and no income if they do not work. In other words, lockdowns might exacerbate inequality and further raise tensions in a region already low on social harmony.

Figure 8   Self-employment in MENA

percent of total employment
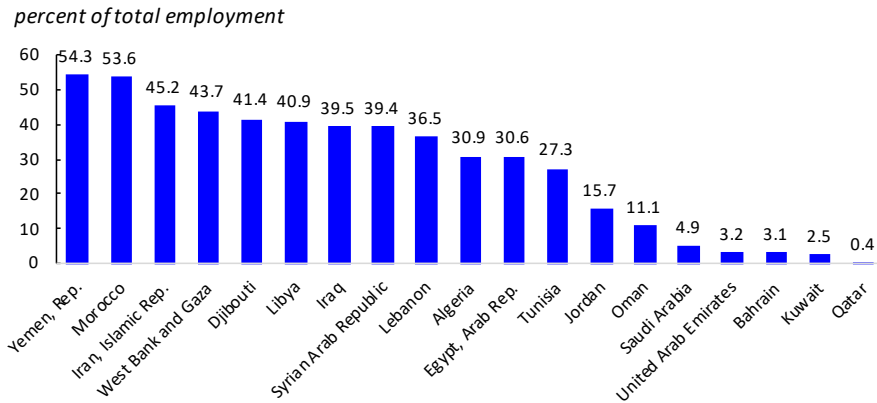
Source: International Labor Organization.

Note: Bars indicate self-employment as a percentage of total employment in 2018, modeled ILO estimate. Self-employed workers are, according to International Labor Organization, those workers who, working on their own account or with one or a few partners or in cooperative, hold the type of jobs defined as a "self-employment jobs." i.e. jobs where the remuneration is directly dependent upon the profits derived from the goods and services produced. Self-employed workers include four sub-categories of employers, own-account workers, members of producers' cooperatives, and contributing family workers.

Figure 9   Informal employment in MENA

percent of total employment
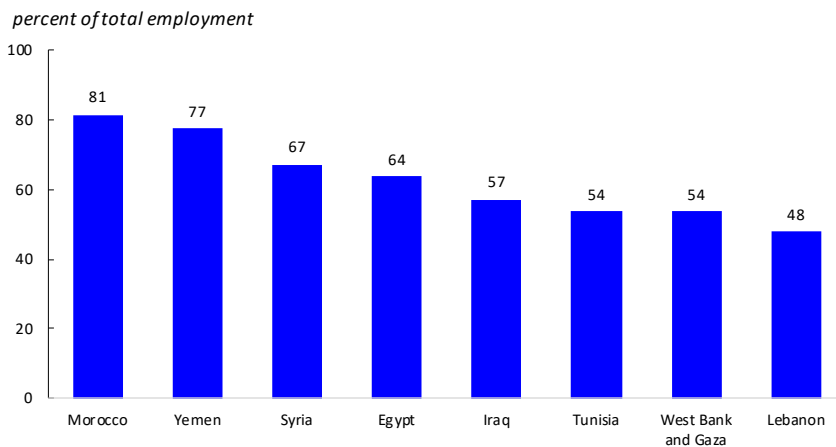
Source: International Labor Organization; and World Bank I2D2 dataset.

Note: Bars indicate informal employment as a percentage of total employment based on the most recent available data: Egypt, 2017; Iraq 2012; Lebanon, 2011; Morocco, 2009; Syria, 2003; Tunisia, 2010; West Bank and Gaza, 2018; Yemen, 2014.

The economic shock of the COVID-19 crisis could increase poverty across the region. Those most at risk of falling into poverty are the self-employed and informal-sector workers, who lack any form of social protection, and those working in vulnerable sectors directly hit by COVID-19 – such as tourism, retail, textile, and garment industries, particularly in Lebanon, Tunisia, Morocco, and Egypt. People living in conflict zones, refugees in camps and those living in informal settlements are particularly vulnerable to the disease because of living conditions that are often congested and lacking in reliable access to quality health services. Migrant workers – many of whom are in GCC countries – are excluded from safety nets available to citizens and are at outsized risk as well.

The impact of the dual shocks on poverty can be assessed by applying the poverty rate-to-growth elasticity for each MENA country to the changes in GDP growth forecasts by Focus Economics. Poverty-to-growth elasticities for eight developing MENA countries were estimated by Mahler et al. (2020). Table 1 reports the poverty rates for the seven countries in 2019. Table 2 reports the expected increases in poverty rates from the dual shock as a percentage of the population at different poverty thresholds.

Table 1   Poverty rates in 2019

Country	Poverty rate in 2019 (% of population)		
	International poverty rate ($1.9 in 2011 PPP)	Lower middle-income poverty rate ($3.2 in 2011 PPP)	Upper middle-income poverty rate ($5.5 in 2011 PPP)
Algeria	0.3	2.4	22.1
Egypt	2.8	24.2	68.9
Iran	0.4	3.5	15.2
Iraq	1.9	16.0	54.6
Jordan	0.2	2.9	23.4
Morocco	0.6	5.6	25.6
Tunisia	0.2	2.8	16.4

Source: Mahler, Lakner, Aguilar and Wu (2020)

Table 2 Projected changes in poverty rates due to the dual shock

| Country | Poverty rate changes due to the dual shock (% of population) | | | | | |
| | International poverty rate ($1.9 in 2011 PPP) | | Lower middle-income poverty rate ($3.2 in 2011 PPP) | | Upper middle-income poverty rate ($5.5 in 2011 PPP) | |
	2020	2021	2020	2021	2020	2021
Algeria	0.1	0.1	0.6	0.4	3.5	2.4
Egypt	0.9	1.1	1.8	2.7	2.7	4.2
Iran	0.2	0.1	0.6	0.4	1.7	1.2
Iraq	0.8	0.7	3.5	3.1	5.3	4.8
Jordan	0.0	0.0	0.4	0.4	3.1	2.9
Morocco	0.1	0.1	0.9	0.8	2.6	2.3
Tunisia	0.0	0.0	0.4	0.4	2.0	1.8

Source: Authors' calculations, based on country-specific poverty rate to growth elasticities by Daniel Mahler, and growth forecasts for 2020 and 2021, issued by Focus Economics, comparing between December 2019 edition and May 2020 edition.

Note: First, expected poverty rates for the hypothetical non-dual-shock scenario using Focus Economics' 2020 and 2021 consensus growth forecasts are calculated, based on December 2019 edition. Then expected poverty rates for the dual-shock scenario using Focus Economics' revised 2020 and 2021 consensus growth forecasts are calculated, based on May 2020 edition. The differences in poverty rates between the two scenarios are reported in this Table. Measured in poverty rate changes in percentage of population.

Policy response

MENA countries reacted quickly to the dual shocks, putting in place health-related steps such as social distancing and taking a range of fiscal and monetary measures. Because they have sizeable buffers, the GCC governments were able to implement large fiscal and monetary policies to help soften the impact of the two shocks on the public and formal private sectors - mainly through eased lending and wage support (see Table A1). Developing MENA countries, some with international help, have also taken many fiscal and monetary measures (see Table A2). Egypt and Tunisia received loans from the IMF to cope with their large and urgent financial needs. Many countries have postponed taxes, enhanced unemployment benefits, and transferred cash to vulnerable households. Jordan and Iraq supported small and medium-sized enterprises through a moratorium on interest payments or postponement of customs duties.

Because the dual shock will have a persistent effect, it is important to look beyond COVID-19 and reflect on the sustainability and efficacy of policies. The following is a framework to guide the policy response:

- **Tailoring policy responses**. Authorities should postpone fiscal consolidation associated with the persistent drop in oil price and its spillovers until the recovery from the pandemic is well underway. Instead, the focus should be on reallocating spending to deal with the immediate crisis and spending more efficiently. Authorities should boost spending on health – including to produce or acquire test kits and contact tracing technology, to mobilize and pay health workers, to add health infrastructure, and to prepare for vaccination campaigns. Scaling up testing and contact tracing for COVID-19 is especially important to determine the dimensions of the infection and to detect and isolate cases, which will be a factor in deciding whether and how to reopen the economy without causing a second wave of infections.

- **Supporting the private sector.** A combination of bailouts, eased credit conditions and monitoring is needed to support the private sector, including small and medium-sized enterprises. Many MENA countries are implementing different measures to support the private sector (see Tables A1 and A2). The support, with relevant conditions, will help firms survive the income crunch and prevent mass layoffs. Governments must prioritise strategic sectors – importantly, network industries and such services as transport, logistics, distribution and finance – to protect production capacity and support a future recovery. Governments should focus on elements of business environment regulation, especially bankruptcy work-outs and bankruptcy reforms (Bosio et al. 2020a) to resolve corporate difficulties and associated corporate debt restructurings. Sovereign wealth funds, money printing where inflation is low, and international borrowing can all be utilised to support the private sector and soften corporate distress. Taking advantage of low interest rates, Qatar and UAE raised US$10 billion each by mid-May to bolster finances and address liquidity issues. Bailout measures of strategic firms and sectors also could be considered, while ensuring bailouts do not have a lasting impact on market the ability of firms to enter and leave markets (contestability).

- **Supporting vulnerable households, including expatriate workers in the GCC**. Cash transfers to vulnerable households would help protect them and support consumption. This includes the large expatriate labour force in the GCC countries. As important, supporting the expatriate labour force, especially the low-skilled, would speed up economic recovery and retard further spread of COVID-19 when the workers return to their home countries or when they come back to work in the GCC. Because many developing countries in the MENA region have both a large labour share and borrowing constraints, targeted assistance is vital and should be larger relative to the size of the economy than similar efforts in advanced economies. Some MENA countries – such as Tunisia, Iran and Iraq – support poor households through cash transfers and other financial assistance (see Table A2).

- **Reducing leakages**. The first step in reducing leakage is to set and design targeted policies that identify clearly the intended beneficiaries with appropriate incentive schemes – for instance, ensuring that banks do not offer easier credit conditions exclusively to their existing customers. Widespread informality makes identifying recipients more difficult, which impedes targeting. Leakages can also occur because of insufficient control of corruption and/or inadequate limits on the degree of monopolization of the economy, both of which can result in a diversion of the relief and stimulus funds. Without control of corruption, there is a high risk of appropriation of funds by individuals in charge of implementing relief programmes or by providers of goods and services.

  Freeing information flows, increasing transparency, and data disclosure to reduce leakages are crucial elements in in target cash transfers, which themselves will be essential to ensuring a flattening of the spread of the virus, hastening the economic recovery, and limiting the rise in poverty. Successful models of quickly deploying technology, including digital, to fight COVID-19 and target assistance should be analysed and replicated.

- **Supporting regional and global effort to contain the crisis**. Halting the spread of the novel coronavirus and its economic and social consequences will be made more difficult by empty government coffers. Many MENA countries have large balance of payments and fiscal deficits. Many also carry high sovereign-risk premiums. For those countries, additional foreign borrowing on private markets will be difficult. Moreover, countries with fixed exchange rates will find it difficult to use helicopter money because of the tension between money printing and maintenance of the peg. The region will need international support to navigate this difficult period.

  The GCC, a major source of bilateral aid, has an important role to play in furthering the initiative to limit the ballooning of future costs and the risk that delays in response to the COVID-19 epidemic could result in failed states. The G20, presided over by Saudi Arabia in 2020, has agreed to debt relief for low-income countries to free up funds to fight the pandemic. More can be done. The agreement can be extended in two ways. First, the effort can be expanded to include middle-income countries, many of which also face severe strain and need help. Second, private-creditor participation, now voluntary, should be required. Otherwise some of the money countries save from official debt relief might be used to repay private creditors rather than as intended, to fight the pandemic (Bolton et al. 2020).

- **In the medium run, reforming the role of the state and promoting fair competition**. The shock has demonstrated the inequality of the dual labour market and, more broadly, of the old social contract. To move to more equal societies,

countries must simplify and promote a universal social protection system to replace the fragmented systems that benefit the few and exclude most. The replacement of the old, inequitable social contract should be accompanied by public service reforms that retain talented workers, remove unfair protections for – or shut down – state-owned and crony enterprises, improve public procurement (Bosio et al. 2020b), while providing everyone a basic income and health care. Basic income and health services can be funded by both a levy on wealth levy and an enlarged tax base, as informal workers and enterprises enter the formal sector. In addition, the large reduction in corporate subsidies and increased tax revenues that will occur when the state-owned and crony companies operate in a more transparent manner will provide new revenue sources.

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Table A1   Fiscal and monetary policy responses in the GCC countries

Countries	Monetary and fiscal measures
Bahrain	(i) $740 million awarded for contracts in essential/vulnerable sectors (ii) Delay of bank loan instalments (iii) Waiver on electricity and water bills (iv) Unemployment fund to sustain wages of 100k workers. (v)Cumulative policy rate cut of 125 bps.
Oman	(i) Measures amounting to $20 bn; (ii) reduction in capital conservation buffer to 1.25% from 2.5% (iii) raising loan to financing ratio to 92.5% from 87.5%, (iv) deferment of loan instalments (iv) lowering interest rates.
Kuwait	(i) Government measures amount to $1.6 billion (ii) $30.3 million for an emergency response program (iii) CBK cut capital adequacy requirements by 2.5% and eased the risk weighting for SMEs to 25% from 75%. (iv) raising maximum lending limit and maximum financing limit (v) CBK stimulus package of $16.5 billion for additional bank lending. (vi) cumulative policy rate cut of 125 bps.
Qatar	(i) $22.6bn stimulus package. (ii) The response includes customs, utility bill exemptions and loan payments suspension; (iii) $2.7 billion announced for stock purchases (iv) cumulative policy rate cut of 100 bps.
Saudi Arabia	(i) A SAR 70 billion ($18.7 billion or 2.8% of GDP) private sector support package was announced on March 20. The package includes the suspension of government tax payments, fees, and other dues to provide liquidity to the private sector and an increase in available financing through the National Development Fund. (ii) A SAR 50 billion ($13.3 billion, 2.0% of GDP) package to support the private sector, particularly SMEs, by providing funding to banks to allow them to defer payments on existing loans and increase lending to businesses. (iii) A SAR 9 billion ($2.4 billion) to compensate citizens working in facilities affected by repercussions of the pandemic; a monthly compensation of 60% of the registered wage in social insurance for three months with a maximum of SR 9,000 monthly. (iv) SAR 50 billion to expedite payment of the private sector dues, offering facilities to commercial, industrial and agricultural sectors, postponing payment of electricity bills and paying salaries of those engaged in passenger transport activities. (v) SAR 47 billion in order to raise the health sector's readiness.
United Arab Emirates	(i) Raised LTV ratio for first time mortgages by 5 percentage points. (ii) Banking sector exposure limit for real estate raised to 30% (iii) $13bn in collateralized lending at 0% (iv) Lower capital requirement on SME loans (v) Banks allowed to tap capital buffers. (vi) cumulative policy rate cut of 125 bps.

Sources: International Monetary Fund, Nasser Saidi & Associates, JP Morgan and Kingdom of Saudi Arabia Authorities. Data are as of May 17, 2020.

Table A2   Fiscal and monetary policy responses in developing MENA countries

Country	Fiscal and monetary measures
Algeria	(i) government to lower current spending by 50% (ii) tax postpones (iii) allowance and cash transfers to vulnerable households (iv) reserve requirement ratio lowered to 6% (v) main policy rate lowered by 25.25 basis points to 3.00% (vi) several measures to cut the import bill by at least USD 10 bn (6% of GDP)
Djibouti	(i) Increased in health and emergency spending in support of households and firms affected by the pandemic (ii) The Central Bank of Djibouti has stepped up financial sector surveillance.
Egypt	(i) Received $2.8 billion in emergency financing from the IMF (ii) urgent financial allocations of EGP 12.5bn to state-run bodies in March - April (iii) government spending of EGP 36bn in FY 2020/2021 on health, high school education, and social solidarity sectors (iv) large cut of the fuel subsidy (v) gas and electricity price reduction for industrial use (vi) tax reduction/exemptions on stamp taxes, capital gains, dividends, real estate, etc. (vii) Central Bank of Egypt to cancel EGP 9.9 bn of loans and to provide EGP 20bn to support stock market.
Iran	(i) Moratorium on tax payments due to the government for 3 months; (ii) subsidized loans for affected businesses and vulnerable households (iii) extra funding for the health sector (iv) cash transfers to vulnerable households and (v) support to the unemployment insurance fund. The Central Bank of Iran has (i) announced funds to import medicine (ii) agreed with commercial banks that they postpone loan repayments; (iii) offered temporary penalty waivers for customers with non-performing loans
Iraq	The Central Bank of Iraq has (i) collected donations from financial institutions (ii) announced a moratorium on interest and principal payments by SMEs through its directed lending initiative and (iii) encouraged banks to extend loan maturities. The authorities have (i) reduced spending in non-essential areas and set budgetary allocations to the Ministry of Health; (ii) introduced a cash transfer scheme, targeting workers in the private sector that do not receive salaries or benefits from the government.
Jordan	(i) postponed tax (ii) allocated 50% of the maternity insurance revenues (JD 16 million) to material assistance for the elderly and the sick; (iii) introduced price ceilings on essential products; (iv) postponed of 70% of customs duty value for selected companies and the reduced social security contributions from private sector establishments (from 21.75 to 5.25%); (v) Central Bank of Jordan reduced most policy rates by 150 basis points (vi) announced $704.5 million soft financing program for SMEs
Lebanon	Central Bank of Lebanon to provide banks and financial institutions five-year 0% interest rate credit lines in dollars equivalent to the value of exceptional loans that are granted to their customers.

Country	Fiscal and monetary measures
Libya	(i) Announced a package of LD 500 million in emergency COVID-19 related spending, believed to support the health system in expanding testing and responding to a possible surge in infections (ii) announced a 20% pay cut for civil servants.
Morocco	(i) Unemployment benefits (ii) Tax deferrals (iii) The central bank reduced the policy rate by 25 bps to 2.0% (iv) financial support to SMEs and self-employed
Tunisia	(i) Tax debt delay (ii) Postponed taxes on SMEs (iii) Delayed repayment of low-income employee loans (iv) Provide financial assistance to poor families.
West Bank and Gaza	(i) distributed some 98,000 food baskets and paid financial assistance to about 125,000 households.(ii) plans to spend 0.7% of GDP to cover short-term critical gaps related to COVID-19 (iii) recruiting medical specialists and planning to purchase testing toolkits and other medical equipment (iv) planning to 0.1% of GDP to support workers and for unemployment benefits (v) cancelling penalties for late submission of tax returns, extending the tax filing deadline. The Palestine Monetary Authority has (i) postponed monthly/periodic loan repayments to all borrowers (ii) prohibited the collection of fees, commissions or additional interest on deferred payments (iii) considering establishing a fund to provide soft loans to SMEs impacted by the crisis.

Sources: International Monetary Fund, Nasser Saidi & Associates, JP Morgan. Data are as of May 17, 2020.

5   The impact of COVID-19 on developing Asian economies: The role of outbreak severity, containment stringency, and mobility declines

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Asian Development Bank

Most global and regional analyses of COVID-19's economic impact apply same-sized shocks to outbreak-affected economies. In this chapter we use country-specific information on outbreak severity, stringency of containment measures, and declines in mobility outside the home to calibrate the size of domestic demand declines resulting from the outbreak. These domestic demand declines – as well as sizeable declines in international tourism receipts – are fed through the Asian Development Bank's Multi-Region Input-Output Tables to capture spillovers through trade and production linkages. The scenarios suggest a global impact of between $6.1 trillion and $9.1 trillion relative to a no-COVID baseline, equivalent to a loss of 7.1%–10.5% of global GDP. About 22% of the global loss accrues to developing Asian economies, where the impact is estimated at between $1.3 trillion and $2.0 trillion, or 5.7%–8.5% of developing Asia's GDP.

Introduction

For macroeconomists in Asia and elsewhere, it has been a challenge keeping up with this fast-moving pandemic. In the three months since March 2020, researchers at the Asian Development Bank (ADB) released three assessments of how the COVID-19 outbreak has affected developing Asia and the world. The first assessment by Abiad

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et al. (2020) was released on 6 March, at a time when the total number of cases stood at 85,000 and China accounted for 93% of the global total. The second assessment appeared in the Asian Development Outlook report released on 3 April, when global cases had just passed the half-million mark and the epicentre of the pandemic had moved to Europe and the US. A third assessment by Park et al. (2020) was released on 15 May, when global cases had crossed the 4 million mark and with China accounting for just 2% of COVID-19 cases worldwide.

This chapter provides the latest update of the impact of the COVID-19 pandemic on developing Asia. Like the first two ADB assessments, it uses ADB's Multi-Region Input Output Tables (MRIOT) to calculate how external and domestic demand shocks brought about by COVID-19 propagate through the region's trade and production linkages.[2] Determining the magnitude of these shocks has been a challenge, and one advantage of this updated assessment is that data on Q1 GDP are now available for a wider set of countries.

Related to this, one innovation in this chapter relative to the three prior ADB analyses and most other global analyses is that domestic demand shocks are calibrated based on what is happening in each country. Specifically, we use country-specific information on outbreak severity, the stringency of various containment policies, and the decline in mobility outside the home to estimate how severe the downturn in each economy will be.

The links between containment stringency, reduced mobility, and economic activity

Data on outbreak severity, proxied by COVID-19 cases per million people, comes from the COVID-19 Dashboard of Johns Hopkins University. The stringency of various containment policies – including school and workplace closures, travel and transport bans, stay-at-home requirements, and restrictions on large gatherings and public events – comes from Oxford University's COVID-19 Government Response Tracker. And measures of the decline in mobility outside the home come from Google's COVID-19 Community Mobility Reports. All three indicators cover almost all developing Asian economies, are comparable across countries, and are updated on a daily basis.

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2   The ADB MRIOT captures all domestic and international sectoral linkages across 62 economies (which account for 90% of global GDP), with each economy disaggregated into 35 sectors. The ADB MRIOT is updated to 2018. Park et al. (2020) use the computable general equilibrium framework of the Global Trade Analysis Project (GTAP) model.

As Figure 1 shows, within Asia the stringency of containment measures and the decline in mobility has been relatively high in South Asia (an average stringency of 88 and an average mobility decline of -52%), largely reflecting India's strict lockdown measures. It has been low in East Asia (an average stringency of 57 and an average mobility decline of -8%), as economies in that sub-region have used aggressive testing and contact tracing instead of strict lockdown measures. There are substantial variations within each sub-region as well.

Figure 1   Average stringency and mobility in developing Asia and its sub-regions

Average Stringency by Region

■ Average stringency (using 2018 population as weights) ■ Average stringency (using GDP as weights)

Average Mobility by Region

■ Average Mobility (using 2018 population as weights) ■ Average Mobility (using GDP as weights)
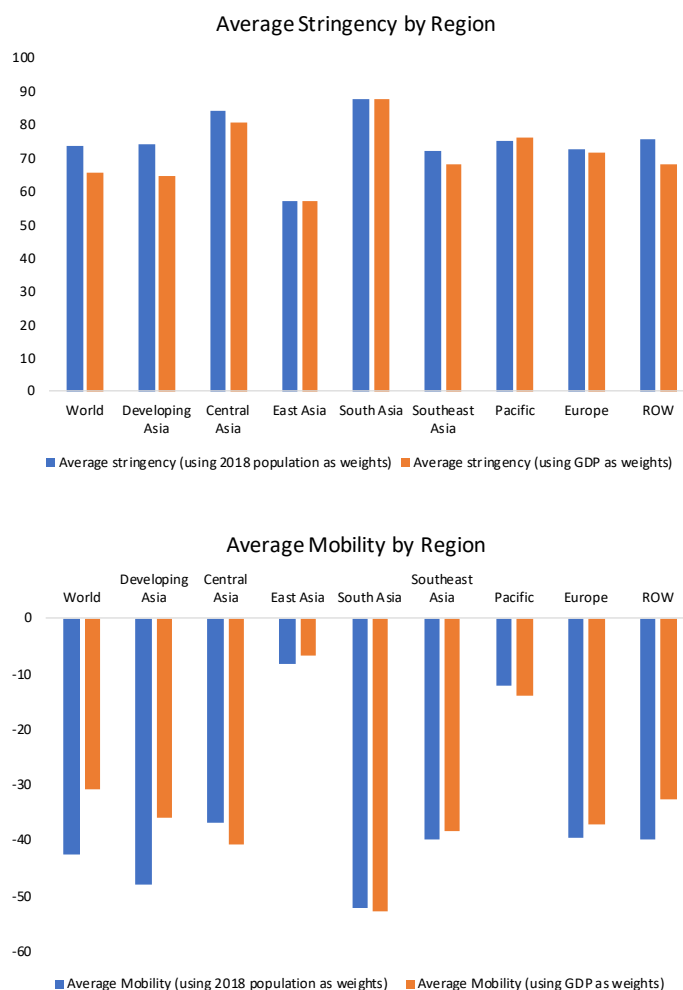
Source: Asian Development Outlook database, Oxford University, Google, authors' calculations.

For the 31 economies with data available, average stringency and average mobility in Q1 2020 are both strongly associated with the decline in GDP growth in that quarter (Figure 2). It is reassuring and important to confirm this strong relationship between stringency and mobility on the one hand, and economic activity on the other. But Q1 outcomes are of only limited use in determining the overall economic impact of COVID-19, because in most countries except China, the biggest hit to activity only came after the first quarter of 2020. What we need instead is an assessment of how activity over a longer period – say, for 2020 as a whole – is likely to be affected by the pandemic.

Figure 2 Q1 2020 stringency, mobility, and Q1 GDP growth declines
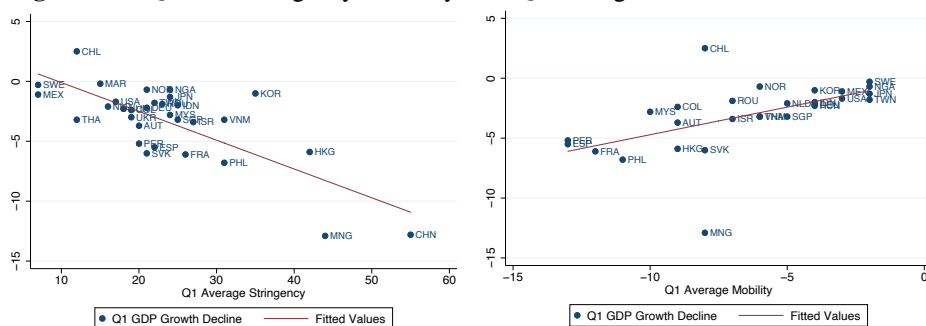
Notes: The Q1 2020 GDP growth decline is calculated relative to Q4 2019 GDP growth. Stringency is the Q1 average of the stringency index, and mobility is the Q1 average of non-residential components of Google's mobility index.

Sources: CEIC Data Company, Oxford University, Google, and authors' estimates.

To address this, one additional innovation in this chapter is the use of crowdsourced assessments to estimate the size of the COVID-19-induced domestic demand shock for all of 2020. Specifically, forecast revisions for 2020 consumption and investment growth from the May 2020 Consensus Forecasts reports are used, where the revision is measured relative to pre-COVID forecasts taken from the December 2019 Consensus Forecast reports.[3] These forecasts incorporate all information available to forecasters, including data releases, severity of outbreaks, and policies (including lockdowns) in these countries.

Figure 3 shows how consumption and investment growth forecast revisions are correlated with outbreak severity, stringency of containment measures, and declines in mobility.

Figure 3 Scatterplots of consumption and investment growth revisions vs average stringency, mobility, and outbreak severity
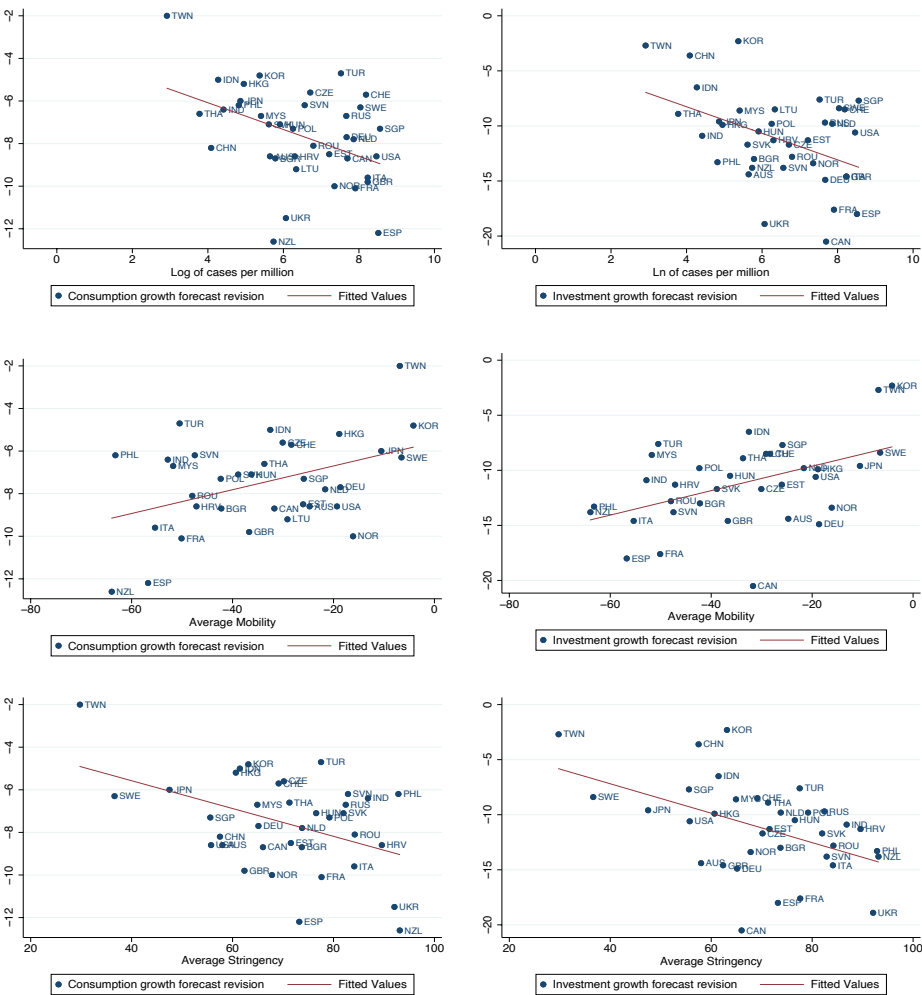
Source: Consensus Economics, Oxford, Google, and authors' estimates.

Table 1   Regression of consumption and investment revisions on stringency, mobility, and outbreak severity

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Revisions to 2020 Consumption growth forecast						Revisions to 2020 Investment growth forecast					
Average stringency	-0.0653** (0.0255)			-0.0592*** (0.0204)		-0.0219 (0.0271)	-0.134*** (0.0330)			-0.122*** (0.0281)		-0.0224 (0.0604)
Average mobility		0.0558** (0.0258)			0.0530** (0.0208)	0.0387 (0.0308)		0.111*** (0.0364)			0.107*** (0.0287)	0.0896 (0.0632)
Ln cases per million			-0.628** (0.231)	-0.572*** (0.186)	-0.718*** (0.169)	-0.715*** (0.165)			-1.205*** (0.426)	-1.082*** (0.329)	-1.097*** (0.322)	-1.088*** (0.327)
Constant	-2.962 (1.783)	-5.583*** (0.892)	-3.568** (1.535)	0.285 (1.689)	-1.033 (1.191)	0.0449 (1.424)	-1.846 (2.530)	-7.409*** (1.490)	-3.437 (2.721)	4.300 (2.765)	-0.458 (2.290)	0.392 (2.832)
Observations	36	34	37	36	34	33	36	34	37	36	34	33
R-squared	0.192	0.181	0.189	0.349	0.430	0.455	0.226	0.226	0.196	0.384	0.410	0.411

Robust standard errors in parentheses. Collinearity between average stringency and average mobility (correlation -0.82) results in both variables becoming insignificant if included simultaneously, as in columns 6 and 12. *** p<0.01, ** p<0.05, * p<0.1

Source: authors' estimates.

The regression results reported in Table 1 confirm the statistically significant relationship between the variables.[4] Because we are using mobility, stringency, and outbreak severity for prediction purposes and not for causal inference, direction of causality is not an issue. The point estimates suggest that a 10-percentage point increase in stringency is associated with an additional downward revision of about 0.6–0.7 percentage points in consumption growth, and of 1.2–1.3 percentage points in investment growth. Similarly, a 10-percentage point decline in mobility is associated with an additional downward revision of about 0.5 percentage points in consumption growth, and of 1.1 percentage points in investment growth. These regressions can then be used to generate predicted values for consumption and investment declines, for the economies that are not covered by Consensus Forecasts.

The Great Tourism Collapse

Apart from declines in domestic demand in outbreak-affected economies, another channel through which the COVID-19 pandemic will affect many Asian economies is through tourism. This is true not just for highly tourism-dependent economies such as the Maldives and the island economies of the Pacific, but even for larger economies such as Thailand and Cambodia. The tourism assumptions in this analysis reflect the almost complete collapse in global travel from COVID-19, as well as an expected protracted return to travel once restrictions and lockdowns are lifted. For the handful of countries that have April tourist arrivals data (Fiji, Georgia, Japan, Nepal, and Viet Nam), the year-on-year contraction in tourist arrivals was abysmal – declines ranged from 94% in Georgia to 100% in Nepal. More worrisome from a forward-looking perspective, in a survey commissioned by IATA in April only 14% of respondents said they would travel as soon as bans are lifted, 47% said they would wait a month or two, 28% would wait six months or so, and the remaining 11% said they would wait a year or had put off travel for the foreseeable future (Figure 4).

Figure 4   Travel plans after bans are lifted
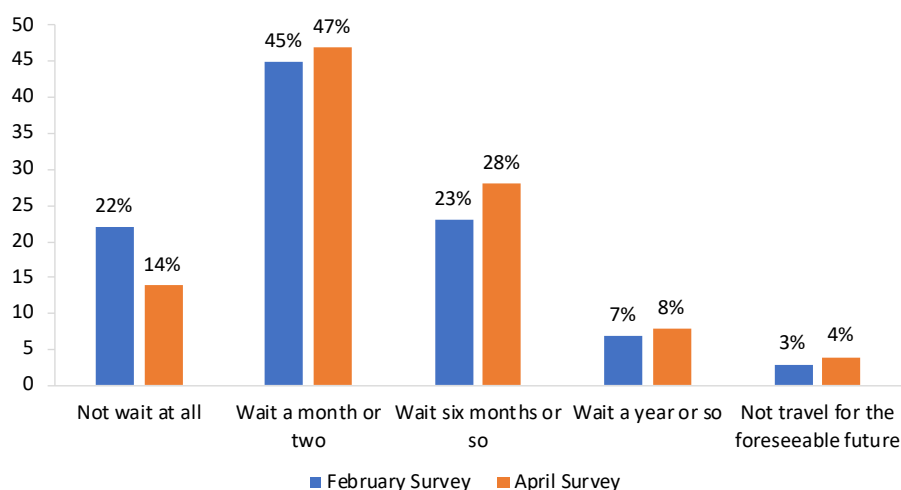
Source: IATA.

The collapse in travel, and likely delay in its rebound, suggest a decline in international tourism receipts of between 56% to 81% this year. We consider two scenarios in our analysis: a shorter containment scenario which assumes that it takes three months for countries to get their domestic outbreaks under control and start to normalise economic activity and end travel bans (roughly consistent with China's experience); and a longer containment scenario where it takes six months (if, for example, there are recurrent waves of outbreaks). Combining this with the global halt in travel and the survey results above, the 'effective no-travel period' for the shorter containment scenario is about 6.7 months, implying a decline in international tourism receipts of about 56% for the year (6.7 months/12 months).[5] In the longer containment scenario, the 'effective no-travel period' is 9.7 months and implies an 81% decline in international tourism receipts for the year. The estimate of a 56%–81% decline in tourism this year is consistent with the IATA's own estimates of a 60%–80% decline. The implied decline in international tourism receipts in each DMC, expressed as a share of GDP, can be found in Figure 5.

Figure 5   COVID-19's impact on international tourism receipts in developing Asia (in % of GDP)
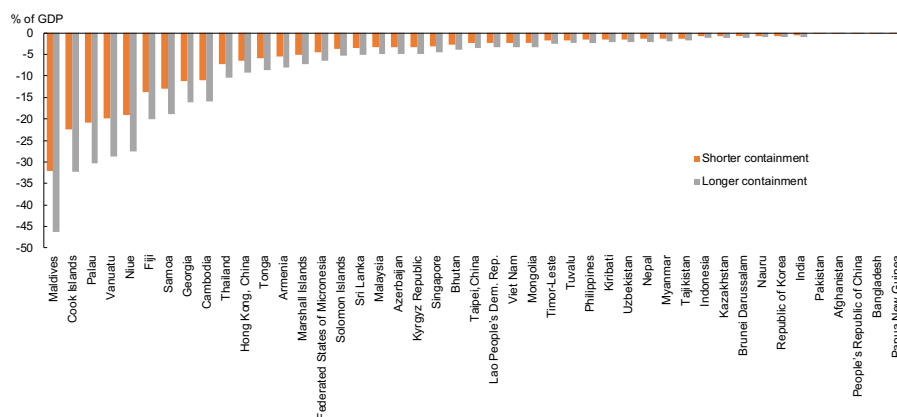
Source: Authors' estimates.

Spillovers through trade and production linkages

The estimated domestic demand and external demand shocks – where the latter includes tourism shocks as well as outbreak-induced declines in domestic demand in many of the world's economies – are fed through the ADB's Multi-Region Input-Output Tables to capture spillovers through trade and production linkages. The methodology is identical to the one used in the aforementioned ADB analyses, and is described in greater detail there.

One can quantify the effect of global spillovers (excluding tourism) on a country by running the model with no shock applied to a country's domestic demand or to its tourism receipts. This can be calculated for each of the 24 developing Asian countries covered in the ADB MRIOT. Not surprisingly, the impact of global spillovers on each economy is closely related to how open an economy is to international trade. Using exports to GDP ratio as a proxy for openness and sensitivity to external demand, Figure 6 confirms that more open economies will experience larger spillovers from weak external demand, under both shorter and longer containment scenarios. A regression of global spillovers on country openness finds a statistically significant relationship, with about 68% of the variation in the magnitude of global spillovers accounted for by variation in openness. This regression can then be used to estimate global spillover impact for economies not covered by ADB's MRIOT.

Figure 6 Calculated global spillovers (% of GDP) and exports to GDP under shorter and longer containment scenarios
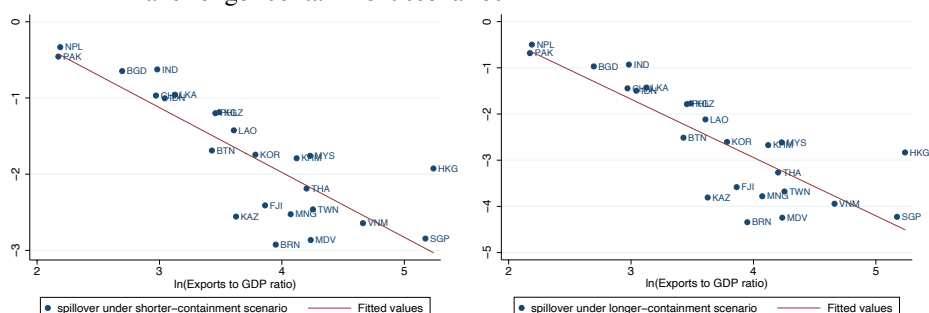
Source: World Bank, April 2020 Asian Development Outlook Database, authors' estimates.

Global and regional impact

The scenarios suggest a global impact of $6.1 trillion–$9.1 trillion relative to a no-COVID baseline, equivalent to a loss of 7.1%–10.5% of global GDP (Table 2). About 22% of the global loss accrues to developing Asian economies, where the impact is estimated at $1.3 trillion–$2.0 trillion, or 5.7%–8.5% of regional GDP. These global and regional estimates are in line with those released by the ADB on May 15 using the GTAP model (Park et al. 2020). As a share of GDP, the losses to developing Asian economies are smaller than for the US or Europe. Within the region, East Asian economies are expected to be hit less hard – as noted earlier, these economies have been able to contain domestic outbreaks through aggressive testing and contact tracing, and have avoided stringent containment measures and the associated sharp declines in mobility. The Pacific sub-region also sees a somewhat smaller impact as none of its countries has had a significant outbreak and Papua New Guinea (the largest economy, which accounts for 68% of the sub-region's GDP) is only minimally affected. But this sub-regional aggregate figure masks the large impact of COVID-19 on Pacific island economies that are heavily tourism-dependent; in many of these economies, the GDP loss from COVID-19 is in the double-digits.

Table 2   Estimated global and regional losses due to COVID-19 (relative to a no-COVID baseline)

	GDP (%)		GDP ($ billions)	
	Shorter containment	Longer containment	Shorter containment	Longer containment
World	-7.1	-10.5	-6065.7	-9051.6
Developing Asia	-5.7	-8.5	-1309.8	-1955.4
Central Asia	-8.6	-12.7	-31.1	-46.3
East Asia	-5.1	-7.6	-820.5	-1227.2
Southeast Asia	-7.2	-10.6	-213.0	-315.4
South Asia	-7.0	-10.4	-243.6	-364.1
The Pacific	-4.8	-7.1	-1.7	-2.4
United States	-8.0	-12.0	-1646.6	-2461.8
Europe	-9.1	-13.6	-1715.1	-2556.6
Rest of the World	-5.9	-8.8	-1394.2	-2077.7

Source: Authors' estimates.

The estimated impact of the COVID-19 pandemic on 45 developing Asian economies is presented in Figure 7. We stress that these are estimated impacts relative to a no-COVID baseline, and are not growth forecasts; neither do they reflect the views of ADB country teams, whose forecasts in ADB (2020) incorporate judgements on many factors not accounted for in this analysis. These include effects through oil and commodity prices, remittances, capital flows, uncertainty, financial stress and volatility, and perhaps most importantly, policy responses that in some countries will provide a substantial countervailing force to COVID-19's impact. The sectoral decomposition of the impact in the 24 developing Asian economies covered by the ADB MRIOT are presented in Figure 8.

Figure 7 COVID-19's impact on developing Asian economies
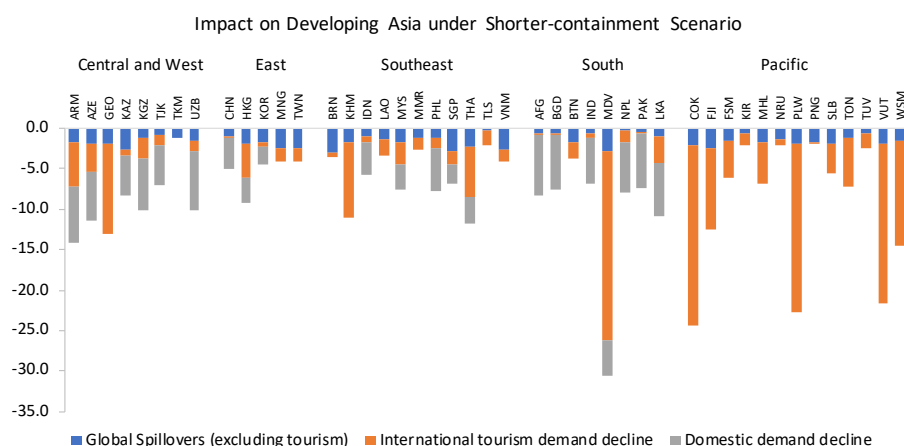
Note: Domestic demand declines are assumed only for economies with significant outbreaks (more than 1,000 cases).

Source: Authors' estimates.

Figure 8 Sectoral impact on developing Asian economies under shorter-containment scenario
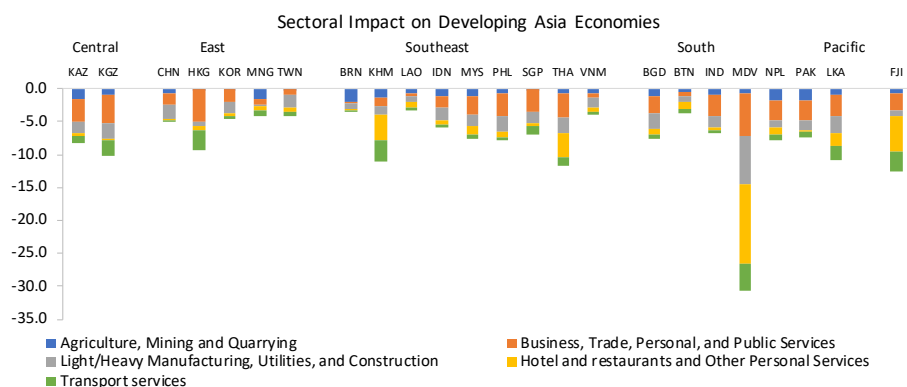
Note: Sectoral impacts are available only for 24 developing Asian economies covered by the ADB Multi-Region Input-Output Tables (MRIOT).

Source: Authors' estimates.

Conclusions

It has been challenging for policymakers in developing Asia to determine to what extent economic activity will decline in their countries, as the lagged release of official statistics – which could itself be exacerbated by the outbreak – provides insufficient guidance in this fast-moving pandemic. This chapter shows that high-frequency data that are available for most countries – on outbreak severity, stringency of containment measures, and declines in mobility outside the home – can provide useful information on the expected decline in domestic demand a country is likely to experience. Such timely information is vital for governments trying to design right-sized policy responses to the outbreak-induced economic crises.

While the analysis here provides some insights on the magnitude of the declines developing Asian economies face, it says nothing about what lies on the other side of the downturn. The region's policymakers are already shifting their focus to what the recovery might look like. At present, prospects for a V-shaped recovery similar to what was seen during the 2003 SARS epidemic look unlikely. The process of normalising economic activity will be hampered by continued social distancing and possible recurrences of outbreaks. And even if individual countries succeed in normalizing domestic activity, they will be held back by a very weak external environment and potentially disrupted supply chains. It is thus likely that the region's recovery from COVID-19 will be a gradual one.

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6 COVID-19 in Latin America: How is it different than in advanced economies?[1]

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Most analyses of the socioeconomic impact of COVID-19 rely on data from advanced and East Asian economies, for good reasons: those countries were hit first by the pandemic. This debate contrasts with the realities in Latin American countries, not only because of economic restrictions but also because the pandemic dynamics have been surprisingly difficult to control in several countries. Countries that shied away from severe lockdowns are topping daily case rankings, but others that adopted lengthy and stringent measures early on still have a growing number of cases. In this chapter, we discuss how the combination of a limited fiscal and financial space and a precarious labour market, against the backdrop of a delicate political landscape, poses severe challenges to the intensity and the socioeconomic management of the policy response to the pandemic in the region.

There is no single region homogenous enough to dismiss country-specific characteristics. Even the main Latin American economies offer plenty of cross-country variation to extract lessons. In this chapter, we focus on a few countries that have enough diversity in terms of initial conditions, fiscal space and sanitary and economic responses to the COVID-19 pandemic to reduce the analysis to a single pattern. In what follows, we attempt to organise ideas around four distinct characteristics that single out these countries from the rest in ways that are essential to understand the policy response and the economic impact:

1. their high sensitivity to the global financial cycle;

2. limited fiscal space (albeit with mostly well stablished inflation targeting regimes);

3. prevalence of dual labour markets and informality within quite unequal societies; and

4. a generalised political disenchantment with liberal democracies.

Sensitivity to the financial cycle

In advanced countries, flight to quality represents a silver lining of the crisis. As interest rates drop – and in this case, hover around zero – governments are allowed to fund massive fiscal packages with little immediate concern for financial sustainability. With no exceptions, the opposite happens in emerging Latin America, at least for some time: the search for reserve assets led to unprecedented outflows from the region, and to a rise in sovereign spreads that offset the decline in international rates. For some countries (Chile, Peru) this was temporary, and external conditions soon became more convenient than before the pandemic. But for several countries (Colombia, Mexico, Uruguay, Brazil) it represented a warning about their limited policy space and sovereign credit rating fragility; and for others (Argentina), a reminder about the difficulties of engaging in countercyclical policies. This restriction is softer in emerging Asia, where sovereign spreads increased half than in Latin America, and also in emerging Europe, where countries have significantly less debt.

Latin America has a reputation for being a high-risk (high-beta) region – whenever the US sneezes, emerging Latin America catches a cold. Times have changed, though. While the positive correlation with risk (either global risk or global risk aversion, it is hard to characterise what the usual risk proxies are truly capturing) and with global factors in general remains, betas are often less than one and have not increased in the past months –with the exception of Argentina and Ecuador, which have been bordering a default since late 2019 and explain nearly all the increase in betas (see Figure 1).

This highlights two potential limits to the policy response: the increasing cost of making up for capital outflows and the resulting foreign exchange pressure with more debt issuance; and the difficulty of funding fiscal packages capturing part of the vast and growing global liquidity. We can identify two separating lines for this dual limit. A first group of countries (Peru and Chile) quickly regained access and, in parallel, announced sizeable fiscal reactions. For a second group (Colombia, Mexico, Uruguay), access is more expensive, but ultimately available. Mexico, for example, issued a record US$6 billion in late April; Colombia did it successfully in May. But they have limited space to manoeuvre – access is contingent on doing little and prioritising debt dynamics. A final group has no access (Argentina, Ecuador) – or it is too expensive (Brazil) – and are left with official and multilateral lending only.

Figure 1   Betas of Latin American EMBI spreads to the EMBI global (logarithmic scale) – 2020 and before
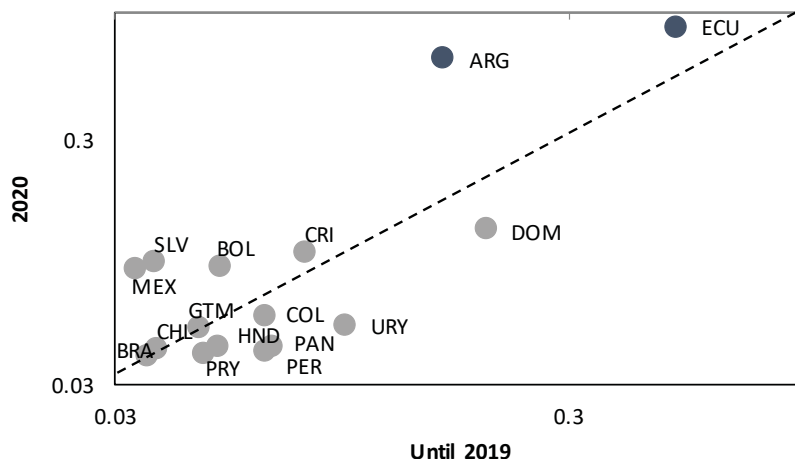
Note: Each point represents de betas of the local EMBI spread with respect to the global EMBI spread, estimated, for the periods October 2007-December 2019 and January 2020 to May 2020. No between-period difference is statistically significant except for the two countries that defaulted on their sovereign debt in 2020: Argentina and Ecuador.

Source: Central Bank of Panama based on JP Morgan.

Limited fiscal space, ample monetary reaction

Reflecting their initial fiscal space and financing restrictions mentioned above, the fiscal policy reaction has been rather heterogeneous. Except for a couple of cases (the same two that have ample access to global markets), the other countries entered this COVID-19 period with significant restrictions. Table 1 presents key fiscal variables before the crisis. Argentina was facing debt restructuring, and Brazil's debt-to-GDP ratio increased hefty 30 percentage points in the last five years to almost 90% (losing investment grade in 2015). Another group (Mexico and Colombia, and to some extent Uruguay) had credit ratings barely above investment grade. Expected fiscal deficits were no unusually large, revealing high debt and efforts to contain debt dynamics. Other than Argentina, spreads were ex-ante relatively low, reflecting markets had credibility on policies.

Table 1 The pre-COVID-19 fiscal picture

	Debt/GDP	Balance/ GDP	Primary balance/GDP	S&P Credit Rating	5y CDS
	(a)	(b)	(b)	(c)	(c)
Argentina	88.7	-2.7	1.1	CCC-	5456
Brazil	89.5	-6.9	-1.4	BB-	102
Chile	27.9	-2.1	-1.6	A+	48
Colombia	52.9	-0.9	1.8	BBB-	77
Mexico	53.4	-2.6	0.9	BBB+	80
Peru	26.7	-1.4	-0.1	BBB+	50
Uruguay	67.4	-2.7	-0.2	BBB	n.a.
Emerging markets	53.2	-5.0	-3.0	n.a.	n.a.

Notes: (a) End-2019 debt to GDP ratio as per April IMF Fiscal Monitor. (b) 2020 forecast as per October 2019 IMF Fiscal Monitor. (c) End-January 2020.

The policy reactions have also been a mixed bag in terms of size. The microeconomics have been similar: health spending supplements, cash and in-kind transfers to vulnerable families most affected by lockdowns, and SME support. However, the macroeconomic response has been quite diverse. Using their fiscal space, Peru and Chile have announced large spending packages. At the other extreme, Argentina and especially Brazil have announced relatively generous spending given their budgetary situation. It is as if the future position were not relevant. In the middle, countries that are close to losing investment grade have been more careful, trying to keep their deficits more contained.

A similar picture emerges when we compare the change in the 2020 current expected fiscal result and what was expected in October last year. Chile and Peru present the most significant deficit increases. In the intermediate debt-level countries, the deficit increments are more limited and similar to the highly indebted ones.

Funding for these deficits continues to be primarily market-based (except for Argentina). Interest rates have not increased, in part thanks to QE-like efforts by central banks (Brazil, Chile, Colombia) and the meagre global rates. Ten-year interest rates are higher today than six months ago only in Brazil. Argentina is the only country where the fiscal reaction depends exclusively on cutting other spending and direct central bank financing; there is a real chance that inflation truly unhinges there.

The monetary response has been broadly similar across countries, except for Argentina, where fiscal dominance still prevails. Banking on previously gained credibility of inflation-targeting (IT) regimes and (luckily) limited current price pressures, central banks have cut monetary policy rates (MPRs) quite aggressively for the previous standards (Table 2). Except for Mexico, the other countries are at record low MPRs or at effectively the zero lower bound. The majority of central banks have also injected significant liquidity through new or extended facilities to fund rollovers and new credit in tandem with government (partial) credit guarantee schemes. It is too soon to evaluate the results, but anecdotal information suggests that the system is at least not repeating the 2009 credit crunch. The aggressive monetary accommodation will not influence aggregate demand much today, but it is helpful to limit bankruptcies. It represents an unusual example of how investing in institutions has a high return. Uruguay, in contrast, with relatively higher inflation and a framework based on monetary aggregates, has seen a smaller short-run interest rate adjustment (of 100 basis points to 10%).

Table 2 Monetary policy reaction in inflation-targeting countries

	Change since end-Jan 2020 (basis points)	Current MPR (end-May 2020)	Current MPR – inflation target	Historical comparison
Brazil	-150	3.00%	1.00%	Record low
Chile	-125	0.50%	-2.50%	ZLB
Colombia	-150	2.75%	0.25%	Record low
Mexico	-175	5.50%	2.50%	Previous low 3%
Peru	-200	0.25%	-1.75%	Record low and ZLB

Source: Central Banks.

In this context, what does the current international financial architecture bode for the region? The answer critically depends on the group of countries we consider. Mexico and Colombia already had IMF Flexible Credit Lines for quite some time, but never drawn. This line is preventive and for countries with strong fundamentals and charges a small commitment fee (60 basis points for higher access tranches). Colombia renewed its facility in early May 2020 (for 385% of quota, or $10.8 billion), and so did Mexico in November 2019 (for 500%, or $61 billion). Chile (100%, or $23.8 billion) and Peru (600%, or $11 billion) recently asked to have access, which is expected to be approved. Brazil and Mexico, in turn, are eligible for Fed swaps of up to $30 billion each. For comparison, note that the new IMF facility for rapid access for BoP needs (RFI) is rather small (80% of quota).

In sum, there is close to $170 billion in committed liquidity for these countries in the form of different facilities using older IMF facilities and the Fed. Still, many countries are left out, and the IADB does not have a balance sheet to substitute for other mechanisms. Countries with more limited access to capital markets may need other arrangements for benefitting from low global rates. One could think here of regional pooling arrangements to recycle global liquidity – an issue we return to in the concluding remarks.

Peculiarly stringent lockdowns in precarious and elusive labour market

Labour markets have been at the centre of policy concerns globally, and are particularly at risk in Latin America for two reasons.

The first reason is that, as in many developing economies elsewhere, they are precarious – that is, a large share of the labour force (about 60% on average, against roughly 15% for non-Latin American OECD economies) is either independent (self-employed with no labour stability or benefits) or informal, or both (Figure 2).[2]

The second reason why labour markets are particularly stressed in the region is that lockdowns have been generally tougher than in the rest of the world – more so in more precarious labour markets (Figure 3).

Both the de jure and the de facto severity of the measures (as proxied by Oxford's Stringency Index and Google's Workplace Mobility Index, respectively) correlate positively with the precariousness ratio. And, to the extent that precarious jobs are the ones most directly exposed to cyclical contractions, let alone an engineered activity lockdown, such a correlation only flags the dramatic job impact of the interaction of tight lockdowns and precarious markets.

Figure 2   Latin American labour markets

Precarious employment in urban total employment (%)

Per capita GDP and labor market precariousness
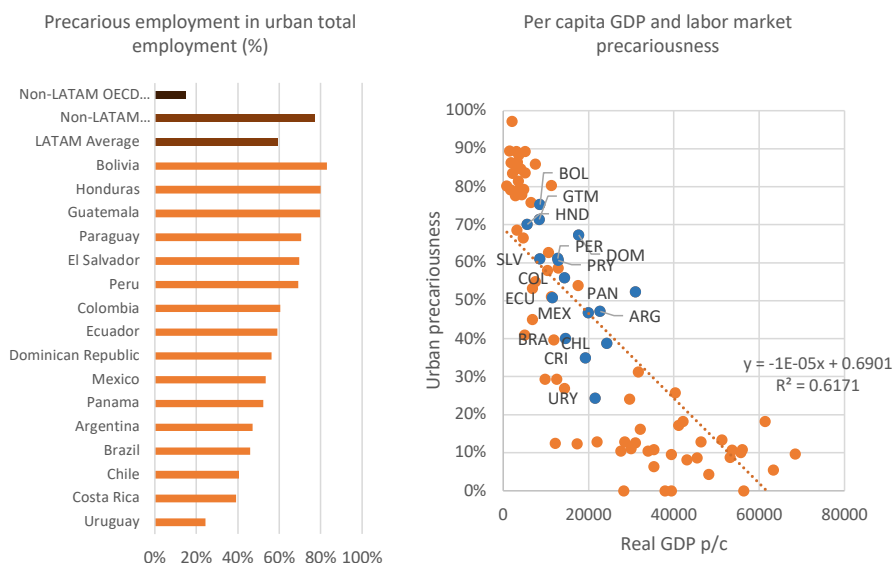
Source: Own estimates based on ILO and The World Bank.

Figure 3   Lockdowns and labour markets
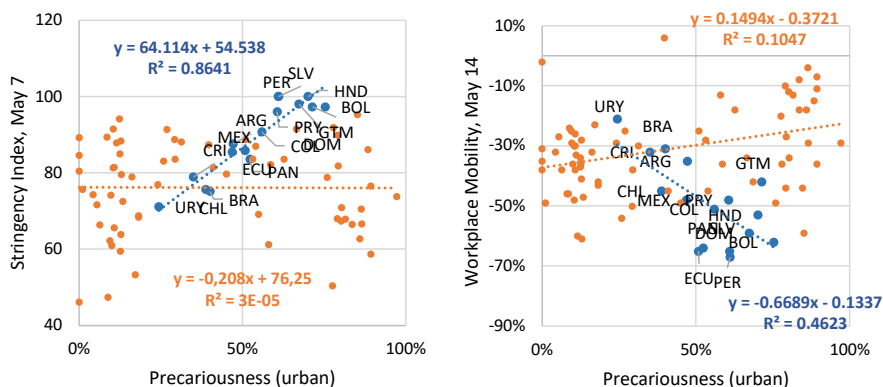
Sources: Own estimates based on ILOSTAT, Oxford COVID-19 Government Response Tracker and Google Covid-19 Community Mobility Reports.

The interaction between precarious labour markets and lockdowns has an additional negative consequence, this time related to the policy response. A considerable part of the fiscal package on the region is typically comprised of job subsidies for formal salaried workers (including other job-related assistance such as paid leave and furlough, unemployment insurance or even temporary bans on layoffs), and cash and food

transfers for the rest. But, because job assistance is limited to registered employment, only a fraction of the private labour force is protected, leaving the majority with only welfare transfers (if anything, as identifying who is in need is quite difficult). In other words, precarious workers are not only hit harder, but they are also assisted more softly. They remain elusive to the existing social safety net, as governments lack the instruments to preserve those labour relationships or stabilise their income. Hard to instrument through labour policies, the response reverts to basic income policies, with a loss in human capital and growing inequality.

All this is coupled with increases in poverty that preliminary estimates from CEPAL put at, on average, roughly 3% (above 5% for Argentina, Brazil, Ecuador and Nicaragua; see Figure 4).

Figure 4   Poverty and extreme poverty in Latin America: Post-COVID-19 forecasts
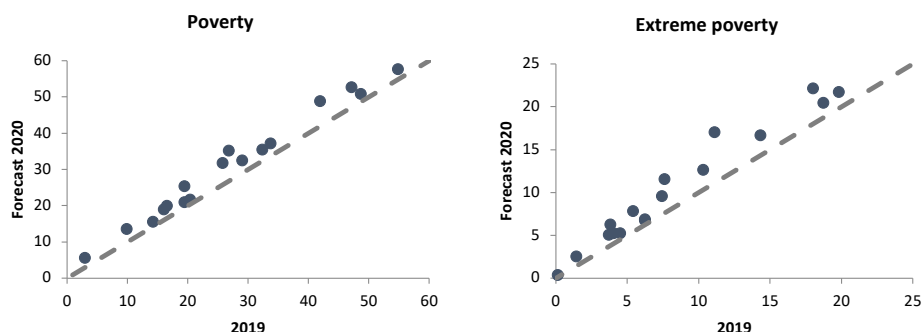
Note: The forecast corresponds to the worst-case scenario, without considering government measures to mitigate COVID-19 impact. Source: Cepal (2020). https://repositorio.cepal.org/bitstream/handle/11362/45527/5/S2000325_es.pdf

Trade and growth

Of course, behind these dynamics, there are at least two COVID-related real shocks. To the internal shock of the already discussed lockdowns, we need to add an external shock: terms of trade and export volumes. Trade will likely be a key determinant of the ongoing economic depression, both as a disruption in the flow of global value chains (which account for a large share of the fall in industrial activity due to the shortages of imported inputs) and a decline in global demand (the most relevant for the region). Expected exports have dropped significantly, even though the main export prices (metals, agriculture) have not declined much. The one exception is oil, as reflected in the expected export collapse in Colombia, which will have significant implications for their fiscal accounts.

How is all this reflected in national income? While it is still too early to tell, a quick comparison between the current consensus 2020 growth forecasts and those made only three months ago yields downward revisions of between 5% and 9%. The extent of the lockdowns explains only part of these revisions. But their extension, and the way governments deal with political fatigue, will be critical for what we believe will be a very long transition to a new post-pandemic normal. Recent data suggest the situations is deteriorating even more.

Political discontent

Some of the main countries in the region come from a period of massive protests and an indictment of the system in terms of its capacity to fully deliver on the promises of equality of access. In that sense, the crisis represents a test to incumbent governments, and may define whether the region moves towards the national populism of Bolsonaro and López Obrador, or preserves the hegemony of moderate (centrist) coalitions.

Against this backdrop, the length and the stringency of the policy response would be critical to define the political outcome. For example, the worst combination would be a long pandemic disruption with an intense upfront response, as this could exhaust fiscal and psychological fuel in the first half of the marathon while paving the road for organized social discontent in the second half.

While any prognosis of the development of the crisis is still highly uncertain – including when a vaccine will be available to what countries and in what order – there is a growing consensus that the post-lockdown social-distancing transition to a post-pandemic normal will take the larger part of 2021, and that, as in other deep economic crises, the recovery will be partial: the IMF estimates that activity will converge to a growth path 5% below its pre-COVID trend.

We picture an end-2020 landscape with the economy recovering slowly; substantial unemployment – both latent (contained by job retention subsidies and employee furlough) and disguised (as unemployed freelancers are often recorded as inactive); zombie firms kept alive by publicly guaranteed, significant unpayable loans; and a dual income distribution of protected salaried workers and welfare recipients. All this as a preamble to a very long, transitional 2021 (Figure 5).

Figure 5   A baseline scenario
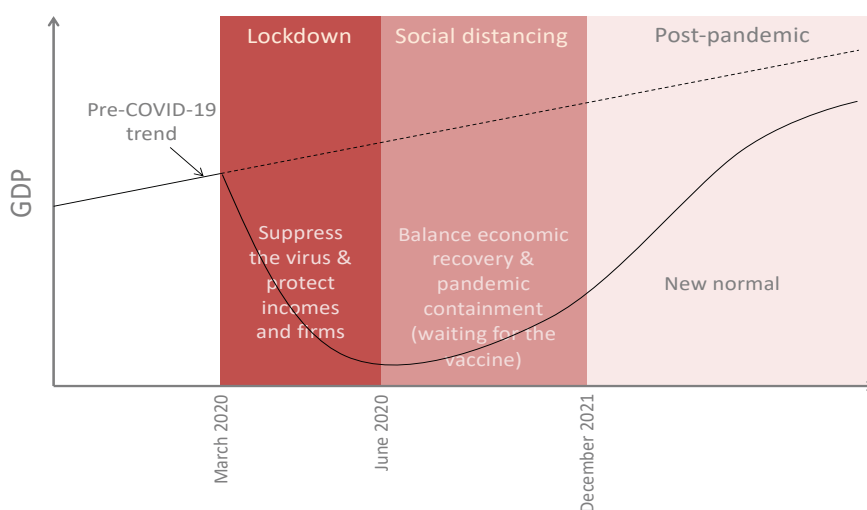
Indeed, in a curious pattern that seems unique to Latin America, the duress of the virus containment phase again correlates negatively with the degree of political stability: unstable countries are imposing the most stringent lockdowns.

In this context, as the virus threat subsides and emergency fatigue sets in, today´s strengthened incumbents may suffer as the economy takes long to recover, thereby reordering political priorities. How long can incumbents hold the upper hand? The answer to this question will influence decisively three medium-term impacts of the crisis: (i) the degree to which the massive fiscal stimulus can be unwound to restore fiscal sustainability in an economy that might recover much more slowly than in 2009; (ii) the new demands (labour regulations, enhanced access to quality public health, broader social safety nets) that leaders and budgets may face, as institutions are perceived to have failed; and, more generally, (iii) the fate of Latin America´s embattled democracies – will they backslide into polarisation and authoritarian regimes, as many fear, or will the crisis revitalise the vanishing political centre with a new reform agenda?

Again, initial conditions will in part determine the answer to these questions. Whereas indebted economies with an already heavy tax burden, such as Argentina or Brazil, may find it more difficult to fund a 'new' social pact, countries like Chile, Peru and, to a lesser extent, Colombia and Uruguay (all with access to foreign savings and a lite tax system) could find the fiscal space to meet citizen´s demands (temporarily appeased by the lockdown) and replenish their constituencies. While the result will naturally

depend on the quality of the leadership in each case, fears that the power concentration implicit in the pandemic emergency response will feed into autocratic practices is far from obvious: the result, however, will depend critically on the way governments plan for this 18-month marathon.

Conclusions

Once we add the economic uncertainty going into 2021 and extend our policy planning and funding horizon to 18 months, it is easy to see that fiscal resources will not be enough for many Latin American countries. Governments must include next year in their emergency budget, build the largest war chest they can, and administer it wisely.

The international financial architecture is adequate for some, but lacking for most economies in the region. A few countries have wisely requested an IMF Flexible Credit Line (FCL), but they are the same that can profit from capital markets access to benefit from low global rates. As noted above, for many others, access has become more expensive or impossible, further reducing their fiscal space. Many of them will likely sign up for the new IMF Rapid Financing Instrument, an unconditional (but modest) source of immediate liquidity. But short-term liquidity is not going to pay for next year's fiscal package. To cushion the economic (and political) stress to come, there is a need for additional vehicles that recycle, at a reasonable cost, the global liquidity back into the countries it is flowing out from. This is particularly the case now, when historically low interest rates invite international financial institutions to leverage their ratings with almost no impact on funding costs.

It is becoming clear that the recovery will be slow, and that the region will endure permanent output losses. Poverty and fiscal accounts will be dire for a while. The temptation to alleviate this burden by resorting to the financial support of the local banking sector, even at the risk of mispricing credit risks – or risk perceptions – is immense. It is critical, however, that the policy response keep an eye on the health of the financial system and avoid overly stressing it. A banking crisis in this context would be unmanageable.

Much in the same way as it is time to stop reacting and start planning for a prolonged crisis, this planning needs to be explicit about when and how to unwind the current income-support effort to switch to growth-support mode. Too often in the past, temporary responses have become permanent, stressing fiscal accounts and distorting labour markets and thus inhibiting private sector investment and activity, essential to reignite a fiscally exhausted economy. On the other hand, the toolkit to support growth in the transition and post-pandemic periods is far from evident. Off-the-shelf Keynesian

therapies are ill-equipped to heal dual labour markets and highly indebted firms; pro-growth policies will require surgical precision and razor-sharp scalpels. As the region plans to come out of an economic depression, expectations and credibility will also be crucial. All of the above would need to be thought and communicated in advance.

Under the current consensus, Latin America may suffer a long period of on/off lockdowns and social distancing that may drag economies well into 2021. After a less-than-stellar decade, the region is risking another ten-year loss.

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7 Extreme outlier: The pandemic's unprecedented shock to tourism in Latin America and the Caribbean

Henry Mooney and María Alejandra Zegarra

Inter-American Development Bank[1]

The COVID-19 crisis will have devastating implications for countries around the world – particularly tourism-dependent economies. Our chapter highlights that many Latin American and Caribbean countries are among the most dependent in the world on the tourism sector, making them particularly vulnerable. Using shock simulations applied to activity in the tourism sector, we highlight how potentially damaging the pandemic could be for output, employment, and the balance of international payments across the region. Our analysis suggests the pandemic is likely to imply an unprecedented shock, and that governments in the region will have to look beyond traditional policy tools to safeguard their economies and citizens and ensure that the tourism sector – both operators and those employed by the sector – will be in a position to resume its substantial contribution when the crisis dissipates. The COVID-19 shock represents an unprecedented extreme outlier event, and government efforts to protect the sector and their citizens must be equally unparalleled.

In this chapter, we examine the evolving economic and employment consequences of the COVID-19 outbreak, with a special focus on the tourism sector in the Latin American and Caribbean (LAC) region.

In this context, we: (i) build a Tourism Dependency Index (TDI) to assess the significance of tourism for the LAC region, including relative to other countries across the world; (ii) consider historical shocks to tourism to determine whether this crisis has precedents; (iii) develop shock simulation scenarios highlighting how potentially damaging the pandemic could be for both employment and output for countries across the region; and (iv) consider the implications of the COVID-19 crisis shock to tourism for the balance of payments positions of countries in the region. Our analysis suggests that

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for countries that depend on tourism, the pandemic is likely to imply an unprecedented shock, and that governments in the region will have to look beyond traditional policy tools in their efforts offset the impact of the shock for their economies, and to ensure that the tourism sector is in a position to resume its substantial contribution when the crisis dissipates.

COVID-19 shock transmission channels

From an economic perspective, there are two broad shock transmission channels for most countries affected by the crisis:

- *The domestic impact of the illness and preventative measures*. The most significant and devastating implications of this crisis are its impact on people's health and wellbeing. The costs associated with this dimension of the COVID-19 outbreak are incalculable. In addition to lost lives and productivity from infected persons, preventative measures – including closed borders and economies – will have significant implications for output, government revenue, employment, and productivity. We will not focus on these domestic issues directly, though it is clear that preventative measures – particularly at the border – will contribute to the shock via its implications for tourism from abroad and within countries themselves.

- *External shocks to physical, trade, and financial flows.* The shock to cross-border physical, trade, and financial flows has been significant and, for some sectors and countries, without historical precedent. Shocks to manufacturing, the demand for commodities, and both travel and tourism have been widespread. In the case of international tourism, the shock has been almost absolute. In this context, even when travel restrictions can be removed safely, the impact of the crisis on incomes will likely have a prolonged adverse effect on tourism demand for some time. We focus on the economic and financial implications of this dimension of the external shock, particularly given the extreme dependence of many countries in Latin American and the Caribbean on this sector.

Tourism's significance for Latin America and the Caribbean

The impact of this crisis for individual countries will differ depending on the structure of the economy, and the transmission channels through which the shock propagates. In general, the two most significant conduits for shock transmission will include international trade in goods and services and financial flows. For many countries in

Latin America and the Caribbean, both channels are significant, particularly the trade channel, which includes two key sectors for many economies – tourism and commodities exports.

As a first step towards assessing possible implications on tourism of the crisis, we develop a new index of countries' dependence on the sector. Our Tourism Dependency Index (TDI) is calculated using five-year averages (latest available, currently from 2014 to 2018) for the contribution of tourism to: (i) total export receipts; (ii) output as a share of real GDP; and (iii) employment, as a share of total national employment. The range is from zero to 100, with 100 representing total dependence on the sector.

As highlighted in Figure 1, many of the 35 countries in Latin America and the Caribbean for which data was available displayed significant dependence on the sector, with nearly a dozen Caribbean countries featuring in the top 20 on a global ranking of 166 countries with available data. In fact, the most tourism-dependent country in the world based on this measure is Aruba (1st out of 166 countries globally), with other Caribbean nations including Antigua and Barbuda (4th), the Bahamas (5th), St. Lucia (6th), and Dominica (9th) rounding out the top 10.

Figure 1   Tourism Dependency Index (2018): Latin America and the Caribbean
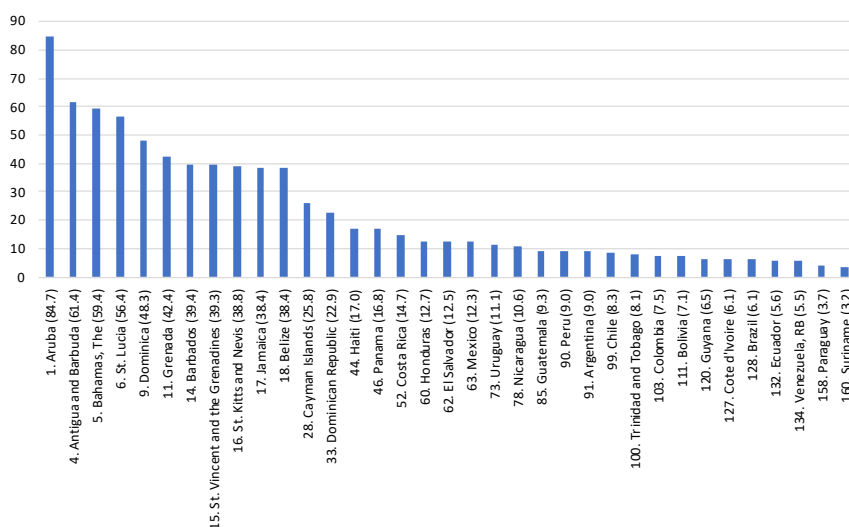
Notes: The Tourism Dependency Index (TDI) is calculated using 5-year averages (2014-2018) for the total contribution of tourism to total export receipts, GDP, and employment for each country. The range is from zero to 100, with 100 representing total dependence on the sector. TDI for 35 countries in Latin America and the Caribbean for which data was available displayed. The digit preceding the country name represents its rank out of 166 countries around the world for which data was available.

Source: Authors' calculations based on data from World Bank Development Indicators and World Travel and Tourism Council databases.

To put LAC countries' dependence on tourism in more granular perspective, in the case of Aruba – the most tourism dependent country in the world – the sector accounted for an average of about three-quarters of export receipts, and nearly 90% of both overall output and employment from 2014 to 2018 (Table 1). While many of the most tourism-dependent countries in the LAC region are from the Caribbean, the sector is still comparatively significant for some of the largest countries in the Americas. For example, from 2014 to 2018, tourism accounted for an average of about 16% of both economic output and employment in Mexico, and about 10% of both GDP and employment for Uruguay, Argentina, and Chile. In Brazil, tourism was responsible for about 8% of employment, representing hundreds of thousands of jobs.

Table 1   Indicators of tourism dependence for LAC countries

	Tourism Dependency Index (TDI) (2018)	Tourism Dependency Index (TDI): Rank out of 166 Countries Globally (2018)	Tourism Receipts (percent of total exports) Ave. (2014-218)	Total Contribution to GDP (percent of total GDP) Ave. (2014-218)	Total Contribution to Employment (percent of total employment) Ave. (2014-218)	Passenger Tourism Arrivals (per year) Ave. (2014-218)
Aruba	84.7	1	77.2	87.9	89.3	1,110,300
Antigua and Barbuda	61.4	4	81.0	54.5	48.8	256,000
Bahamas, The	59.4	5	75.2	47.5	55.6	1,504,600
St. Lucia	56.4	6	80.9	40.1	48.4	362,400
Dominica	48.3	9	75.8	36.3	32.9	73,900
Grenada	42.4	11	83.0	22.9	21.4	162,800
Barbados	39.4	14	40.5	39.0	38.9	617,800
St. Vin. and Grenadines	39.3	15	73.6	23.2	21.4	76,200
St. Kitts and Nevis	38.8	16	63.0	27.1	26.6	117,400
Jamaica	38.4	17	55.1	31.6	28.7	2,242,200
Belize	38.4	18	39.6	40.1	35.6	392,800
Cayman Islands	25.8	28	19.3	28.3	30.1	406,800
Dominican Republic	22.9	33	36.3	16.9	15.6	5,891,540
Haiti	17.0	44	33.2	9.6	8.4	468,040
Panama	16.8	46	22.4	13.9	14.1	1,880,800
Costa Rica	14.7	52	19.6	12.5	12.2	2,817,800
Honduras	12.7	60	10.1	15.0	13.2	859,250
El Salvador	12.5	62	17.8	10.5	9.4	1,482,860
Mexico	12.3	63	4.8	15.7	16.4	35,424,400
Uruguay	11.1	73	14.1	9.8	9.4	3,127,000
Nicaragua	10.6	78	11.1	11.3	9.4	1,452,600
Guatemala	9.3	85	12.3	8.3	7.4	1,574,000
Peru	9.0	90	9.3	9.8	8.0	3,773,200
Argentina	9.0	91	7.6	10.0	9.5	6,860,400
Chile	8.3	99	4.8	10.2	9.9	5,193,200
Trinidad and Tobago	8.1	100	6.2	7.8	10.3	406,200
Colombia	7.5	103	11.4	5.7	5.6	3,264,200
Bolivia	7.1	111	8.5	6.9	6.1	993,000
Guyana	6.5	120	4.9	7.1	7.5	236,400
Cote d'Ivoire	6.1	127	2.8	8.3	7.3	1,452,000
Brazil	6.1	128	2.7	8.2	7.5	6,498,600
Ecuador	5.6	132	6.8	5.2	4.9	1,856,200
Venezuela, RB	5.5	134	1.6	8.1	7.0	668,500
Paraguay	3.7	158	2.7	4.8	3.9	1,187,400
Suriname	3.2	160	4.1	3.0	2.8	253,500

Notes: The Tourism Dependency Index (TDI) is calculated using 5-year averages (2014-2018) for the total contribution of tourism to total export receipts, GDP, and employment for each country. The range is from zero to 100, with 100 representing total dependence. TDI for 35 countries in Latin America and the Caribbean for which data was available displayed. Color scale represents the relative contribution of the variable when compared to other countries (red = highest / blue = lowest).

Source: Authors' calculations based on data from World Bank Development Indicators and World Travel and Tourism Council databases.

Taken together, our Tourism Dependency Index and various related indicators suggest that countries in the LAC region are likely to suffer more than most in terms of the COVID-19 generated shock. In this context, a relevant question is whether there is a precedent in recent history for the COVID-19 shock, that might shed light on what we can expect for countries in this region.

Historical shocks to tourism: Precedents?

There have been several shocks over the past two decades that are likely to have affected global demand for tourism. In this context, we identified six episodes since 2000 (Table 2): (1) the 9/11 attacks (September 2001); (2) the Severe Acute Respiratory Syndrome (SARS) outbreak (November 2002 to July 2003); (3) the global financial crisis (December 2007 to June 2009); (4) the 2009 flu pandemic (H1N1) (January 2009 to August 2010); (5) the Ebola outbreak (December 2013 to June 2016); and (6) the Zika outbreak (April 2015 to November 2016). While these six shock episodes differ in their nature, origin, and duration, they all had some effect on global travel and tourism flows.

Table 2   Historical precedents? Shocks to tourism for Latin American and Caribbean countries

Event	Type	Start	End
9/11 attacks and aftermath	Terrorism	September 2001	September 2001
SARS outbreak	Epidemiological	November 2002	July 2003
Global financial crisis	Financial/Economic crisis	December 2007	June 2009
2009 flu pandemic (H1N1)	Epidemiological	January 2009	August 2010
Ebola outbreak	Epidemiological	December 2013	June 2016
Zika virus outbreak	Epidemiological	April 2015	November 2016

Notes: Other phenomena that occurred during these periods may also have had implications for tourism.
Source: Prepared by the authors.

A review of these shock episodes relative to tourism arrivals to the LAC region reveals that an appreciable decline in flows across LAC in aggregate was only observed during one of these six shock horizons – namely, the global financial crisis.[2] After year-on-year growth in tourism arrivals to the region as a whole from 2003 through 2008, arrivals declined by about 4% in 2009, before growth resumed the following year through 2019 (Figure 2).

Figure 2 Historical precedents? Shocks to tourism arrivals in Caribbean countries
(tourism arrivals per year in the LAC region, indexed in 2000 (=100))
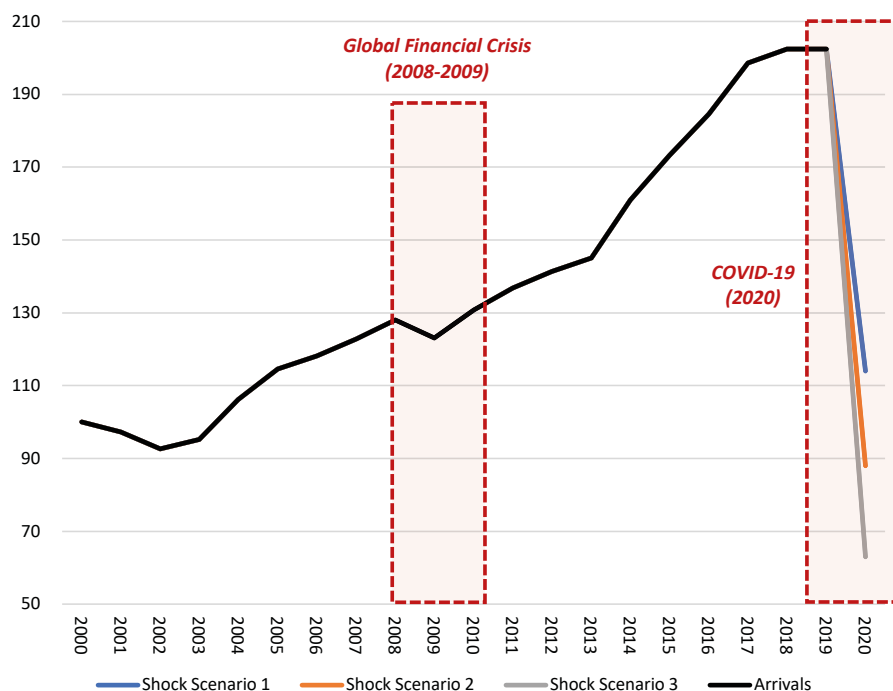
Source: Authors' calculations based on data from World Bank and World Trade and Tourism Databases.

Note: Shaded area intended to highlight the decline that occurred following the financial crisis.

In terms of how the financial crisis and other periods of decline over the past two decades compare to the current situation, it is difficult to draw parallels. A review of tourism arrivals between 2000 and 2018 reveals that the largest single-year reduction was about 5% relative to the previous year in 2002. The near-complete shutdown of both passenger air travel and cruise ship activity beginning in March 2020 would imply a much larger shock to tourism arrivals and related receipts for 2020, and perhaps beyond. We develop shock scenarios for tourism reflecting the complete dissipation of activity during the second quarter of 2020, and plausible paths for the sector's recovery later in the year (see Table 3). These scenarios – which are very much in line with views expressed by experts representing the sector[3] –suggest that the shock to flows could be in the range of between approximately 40% and 70%, making the implications of the COVID-19 crisis for tourism an extreme outlier when compared to all available historical data (Figure 2).

Shock scenarios for COVID-19's impact on LAC tourism

Given that the shock to tourism driven by the COVID-19 outbreak is without precedent, simulations can provide some indications of potential implications. To this end, we define three shock scenarios reflecting possible recovery paths for tourism demand and flows to the region for 2020. These three scenarios (see Table 3) assume that while the first quarter of 2020 was largely uninterrupted[4], the second quarter (Q2) saw a total loss of tourism activity. Scenario 1 assumes that tourism flows are about 50% lower than the historical norm in Q3, but only a 25% loss of activity relative to the norm in Q4. Assumptions for Scenarios 2 and 3 are more pessimistic and detailed in Table 3.

Table 3   Representative shock scenarios for tourism flows to Latin America and the Caribbean (loss of activity relative to historical norms)

	Scenario 1	Scenario 2	Scenario 3
Q2 2020	100%	100%	100%
Q3 2020	50%	75%	100%
Q4 2020	25%	50%	75%
Cumulative	43.8%	56.3%	68.8%

Note: All scenarios assume that tourism flows were largely uninterrupted for Q1.

Our simulations do not take into account historical seasonal arrival patterns for each of the shock horizons owing to data limitations. We do, however, acknowledge that this is important to the exercise given the large seasonal fluctuations in tourist arrivals for many countries in the region – for example, for some countries in the Caribbean, arrivals increase by as much as 200% between high seasons (generally October to April) and the lower-volume period.[5]

In addition, our scenarios do not take into account shocks to other sectors (e.g., merchandise or commodities trade[6]), or possible offsetting implications of policy measures (e.g., domestic stimulus or employment support measures). Similarly, we do not take into account the potential non-linear properties of such a shock, particularly the fact that shorter duration shocks are likely to have less severe implications for businesses

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4   As noted above, data from the UNWTO suggest that global tourism was adversely affected during the first quarter of 2020.

5   In separate publications, we undertake similar shock simulations taking seasonality into account for countries in the Caribbean for which we had access to more granular monthly arrival data; see Mooney et al. (2020) for details.

6   For example, the fall in oil prices, if sustained, represents a positive offsetting effect on net oil importers.

(e.g., hotels, restaurants, service providers, etc.) than a prolonged crisis. For example, a short-lived shock may not require broad-based lay-offs or extended closures, whereas a prolonged shock could force businesses to make more severe adjustments.

Tourism-based shocks to economic output

Against this backdrop, results of our simulations (Table 4) highlight how severe a shock to economic output the crisis could imply for many countries in the region. Note that we apply these shock scenarios to the World Trade and Tourism Council's (WTTC) estimates for the direct[7] contribution of tourism to each country's economic output. Replicating these simulations using the WTTC's estimates for the total (both direct and indirect[8]) contribution of the sector would result in larger impacts.[9]

Shock magnitudes range from as much as a 19 and 13 percentage point loss in real GDP relative to pre-crisis expectations for Aruba and the Bahamas, respectively (under the most severe Scenario 3), to as little as about a one percentage point loss in the most dire scenario for a country with modest tourism receipts like Suriname. Similarly, while the potential impact of the shock is relatively small for large LAC economies such as Mexico and Brazil, these countries could still see losses in real output of as much as 5 percentage points and 2 percentage points of GDP, respectively.

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7   The WTTC defines direct contribution as GDP generated by industries that deal directly with tourists, including hotels, travel agents, airlines and other passenger transport services, as well as the activities of restaurant and leisure industries that deal directly with tourists. See WTTC/Oxford Economics (2019) for more detail.

8   The WTTC defines the indirect contribution to include capital investment by tourism-related industries, government spending on tourism (e.g. promotion activities), supply chain effects on local business, and induced effects from spending by those employed in the tourism sector, etc. See WTTC/Oxford Economics (2019) for more detail.

9   For the results of such an exercise for Caribbean countries, see https://blogs.iadb.org/caribbean-dev-trends/en/covid-19-tourism-based-shock-scenarios-for-caribbean-countries/

Table 4   Tourism shock scenarios: Impact of the COVID-19 outbreak on economic output

(Scenarios 1-3: percentage point loss of real GDP relative to pre-crisis baseline estimates for 2020)

	Tourism Dependency Index	Direct Contribution of Tourism Sector to GDP	Scenario 1	Scenario 2	Scenario 3
	(2018)	(2018)			
Aruba	84.7	27.6	12.1	15.5	19.0
Antigua and Barbuda	61.4	13.1	5.7	7.4	9.0
The Bahamas	59.4	19.2	8.4	10.8	13.2
St. Lucia	56.4	15.6	6.8	8.8	10.7
Dominica	48.3	12.3	5.4	6.9	8.5
Grenada	42.4	6.9	3.0	3.9	4.8
Barbados	39.4	13.1	5.7	7.4	9.0
St. Kitts and Nevis	38.8	6.6	2.9	3.7	4.5
Belize	38.4	15.0	6.5	8.4	10.3
Jamaica	38.4	10.5	4.6	5.9	7.2
Cayman Islands	25.8	8.3	3.6	4.7	5.7
Dominican Republic	22.9	5.4	2.4	3.0	3.7
Haiti	17.0	3.4	1.5	1.9	2.3
Panama	16.8	5.9	2.6	3.3	4.1
Costa Rica	14.7	5.1	2.2	2.9	3.5
Honduras	12.7	5.6	2.4	3.1	3.8
El Salvador	12.5	4.1	1.8	2.3	2.8
Mexico	12.3	7.2	3.1	4.0	4.9
Nicaragua	10.6	6.1	2.7	3.5	4.2
Guatemala	9.3	3.0	1.3	1.7	2.0
Argentina	9.0	3.7	1.6	2.1	2.5
Peru	9.0	3.8	1.7	2.2	2.6
Chile	8.3	3.4	1.5	1.9	2.3
Trinidad and Tobago	8.1	2.8	1.2	1.6	1.9
Colombia	7.5	2.1	0.9	1.2	1.5
Bolivia	7.1	2.8	1.2	1.6	1.9
Guyana	6.5	2.7	1.2	1.5	1.8
Brazil	6.1	2.9	1.3	1.6	2.0
Ecuador	5.6	2.3	1.0	1.3	1.6
Paraguay	3.7	1.8	0.8	1.0	1.2
Suriname	3.2	1.3	0.5	0.7	0.9

Notes: The Tourism Dependency Index (TDI) is calculated using 5-year averages (2014-2018) for the total contribution of tourism to total export receipts, GDP, and employment for each country. The range is from zero to 100, with 100 representing total dependence. TDI for 35 countries in Latin America and the Caribbean for which data was available displayed. Color scale represents the relative contribution of the variable when compared to other countries (red = highest / blue = lowest).

Source: Authors' calculations based on data from World Bank Development Indicators and World Travel and Tourism Council databases.

Tourism-based shocks to employment

Table 5 highlights the results of simulations using the same shock scenarios (defined in Table 3) to illustrate the potential implications of COVID-19 for employment. As above, for highly dependent countries such as Aruba, Bahamas, and St. Lucia, anywhere from 12 percent (Scenario 1) to as much as 20 percent of the labour force (Scenario 3) could be adversely affected by the pandemic. For larger economies in the LAC region, the share is smaller, but the absolute values are large because tens of thousands, or even millions of workers in case of Mexico and Brazil, are directly employed by the sector.

Table 5 Tourism shock scenarios: Impact of the COVID-19 outbreak on employment

(Scenarios 1-3: percentage point loss of employment, as a share of total employment)

	Tourism Dependency Index	Direct Employment in Tourism Sector		Scenario 1	Scenario 2	Scenario 3
	(2018)	(persons, 2018)	(percent share of employment, 2018)			
Aruba	84.7	14,405	29.9	13.1	16.8	20.6
Antigua and Barbuda	61.4	5,014	13.6	5.9	7.7	9.4
The Bahamas	59.4	54,147	26.5	11.6	14.9	18.2
St. Lucia	56.4	21,021	27.3	11.9	15.4	18.8
Dominica	48.3	4,224	11.3	4.9	6.3	7.8
Grenada	42.4	3,154	6.4	2.8	3.6	4.4
Barbados	39.4	17,938	13.7	6.0	7.7	9.4
St. Kitts and Nevis	38.8	1,644	6.5	2.9	3.7	4.5
Belize	38.4	21,380	12.9	5.7	7.3	8.9
Jamaica	38.4	113,738	9.4	4.1	5.3	6.5
Cayman Islands	25.8	3,520	9.9	4.3	5.6	6.8
Dominican Republic	22.9	211,710	4.8	2.1	2.7	3.3
Haiti	17.0	124,542	2.8	1.2	1.6	2.0
Panama	16.8	118,896	6.3	2.8	3.6	4.3
Costa Rica	14.7	109,102	5.3	2.3	3.0	3.6
Honduras	12.7	194,152	4.8	2.1	2.7	3.3
El Salvador	12.5	102,791	3.6	1.6	2.0	2.5
Mexico	12.3	4,038,540	7.6	3.3	4.3	5.2
Nicaragua	10.6	124,081	4.7	2.1	2.6	3.2
Guatemala	9.3	173,306	2.6	1.1	1.5	1.8
Argentina	9.0	664,275	3.5	1.5	2.0	2.4
Peru	9.0	414,112	2.5	1.1	1.4	1.7
Chile	8.3	286,932	3.5	1.5	2.0	2.4
Trinidad and Tobago	8.1	23,802	3.7	1.6	2.1	2.5
Colombia	7.5	550,697	2.4	1.0	1.3	1.6
Bolivia	7.1	122,875	2.4	1.0	1.3	1.6
Guyana	6.5	8,637	2.9	1.3	1.6	2.0
Brazil	6.1	2,393,160	2.6	1.1	1.5	1.8
Ecuador	5.6	160,713	2.2	1.0	1.2	1.5
Paraguay	3.7	46,058	1.4	0.6	0.8	0.9
Suriname	3.2	2,463	1.2	0.5	0.7	0.8

Notes: The Tourism Dependency Index (TDI) is calculated using 5-year averages (2014-2018) for the total contribution of tourism to total export receipts, GDP, and employment for each country. The range is from zero to 100, with 100 representing total dependence. TDI for 35 countries in Latin America and the Caribbean for which data was available displayed. Color scale represents the relative contribution of the variable when compared to other countries (red = highest / blue = lowest).

Source: Authors' calculations based on data from World Bank Development Indicators and World Travel and Tourism Council databases.

Tourism-based shocks to the balance of payments

Another key dimension of the external shock to tourism relates to financial flows linked to the balance of payments (BOP). These flows can take the form of payments related to trade (i.e., receipts and payments for exports and imports of goods and services), portfolio or other financing and investment flows, or transfers (e.g., official transfers or private remittances). This dimension of the shock is also important as it brings into view a number of related implications of the crisis for many countries – particularly as it relates to external sustainability, the availability of finance, and the potential for exchange rate movements.[10]

Tourism receipts represent a large share of overall exports, and an important source of foreign exchange earnings for many tourism-dependent economies in Latin America and the Caribbean. As highlighted in Figure 3, for many countries in the LAC region for which data are available, tourism receipts are significantly larger than current account balances – sometimes by an order of magnitude. In this context, the COVID-driven shock to this sector is likely to imply an unprecedented blow to external balances and sustainability for these countries.

Figure 3   Tourism receipts versus current account balances in LAC (% of GDP)

Notes: (*) Data for 2017 for Aruba, and (**) 2016 for Barbados, and 2018 for all other countries.

Source: Authors' calculations based on data from World Bank Development Indicators, IMF, and World Travel and Tourism Council databases.

The shock to tourism will also affect other flows within the BOP, including lower imports[11] and a potential reduction in the volume of investment from abroad in related and other sectors. Similarly, as confidence and both private and public sector balance sheets deteriorate owing to the economic shock – i.e. many governments will be forced to borrow more with lower revenues – external financing may become scarce and more costly.[12]

Table 6 uses the same three shock scenarios (Table 3) previously applied to output and employment to illustrate the potential implications of COVID-19 for exports receipts and the current account. As noted above, this is a partial simulation, as the import content of tourism could be significant. For simplicity, we do not account for this factor, meaning that our simulations are likely to overestimate the shock to net exports. That said, the magnitudes of these simulated shocks are quite significant, with highly dependent countries potentially facing substantial losses of export receipts, which even under the least-severe scenarios are often much larger in magnitude than historical current account balances. No country can sustain a significant increase of the current account deficit without obtaining additional financing from abroad, so shocks of this magnitude are likely to imply the need for adjustment in terms of the volume of imports. So while we do not mean to suggest that current account deficits would widen by, for example, between about 30 to over 40 percentage points of GDP in the case of Aruba (depending on the shock applied), what is clear from this exercise is that the crisis will force many tourism-dependent countries to undergo significant adjustments in terms of their commercial and financial transactions and relationships with international partners. Similarly, there could be unprecedented pressures on exchange rates and financing flows, requiring difficult decisions and adjustments on the part of both public and private sectors.

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11 The shock to tourism and economic performance will lower imports for at least two reasons: (i) tourism generates its own demand for imports of intermediate goods, such as fuel, food, and other related materials; and, (ii) a shock to incomes and employment will reduce demand for imports, including fuel, and other consumables.

12 For example, if local businesses see earnings fall and prospects deteriorate, their financial viability and creditworthiness will ultimately affect the cost and volume of financing and investment available from abroad. Similarly, increasing risk aversion on the part of would-be foreign investors is also likely to translate into costs and other implications for funding. Finally, actual or anticipated exchange rate movements linked to the COVID-19 crisis could also affect the willingness of foreign investors and financial entities to invest.

Table 6   Tourism shock scenarios: Impact of the COVID-19 outbreak on export earnings

(Scenarios 1-3: loss of export receipts in percentage points of GDP)

	Tourism Dependency Index (2018)	Share of Export Receipts (2018) (percent share of exports)	Current Account Deficit (2018*.**) (percentage points of GDP)	Scenario 1 (percentage points of GDP)	Scenario 2 (percentage points of GDP)	Scenario 3 (percentage points of GDP)
Aruba	84.7	73.7	1.1	28.2	36.3	44.3
Antigua and Barbuda	61.4	61.4	-7	19.5	25.0	30.6
The Bahamas	59.4	70.8	-12.1	11.0	14.2	17.3
St. Lucia	56.4	68	5.4	19.4	24.9	30.5
Dominica	48.3	55.3	-40.9	7.6	9.7	11.9
Grenada	42.4	60.3	-9.8	14.7	18.9	23.1
Barbados	39.4	67.3	-9.4	16.1	20.7	25.3
St. Kitts and Nevis	38.8	33.4	-7.2	9.2	11.8	14.4
Belize	38.4	42.2	-8.3	10.7	13.8	16.9
Jamaica	38.4	60.9	-1.8	10.5	13.4	16.4
Dominican Republic	22.9	38.2	-1.4	4.0	5.2	6.3
Haiti	17	37.9	-3.6	3.2	4.1	5.0
Panama	16.8	25.7	-8.2	5.3	6.8	8.3
Costa Rica	14.7	20.3	-3.3	3.1	4.0	4.9
Honduras	12.7	7.3	-5.3	1.0	1.3	1.6
El Salvador	12.5	16.1	-4.8	2.1	2.7	3.3
Mexico	12.3	5.3	-1.9	0.9	1.2	1.5
Nicaragua	10.6	15.6	0.6	2.9	3.8	4.6
Guatemala	9.3	10	0.7	0.8	1.0	1.3
Argentina	9	8	-5.2	0.6	0.7	0.9
Peru	9	9.1	-1.6	1.0	1.3	1.6
Chile	8.3	6.7	-3.1	0.9	1.2	1.5
Colombia	7.5	14.6	-3.9	1.2	1.5	1.8
Bolivia	7.1	9.9	-4.5	1.1	1.5	1.8
Guyana	6.5	8.1	-27.6	1.5	1.9	2.4
Brazil	6.1	2.6	-2.2	0.2	0.2	0.3
Ecuador	5.6	11	-1.3	1.1	1.5	1.8
Paraguay	3.7	3.8	-0.2	0.6	0.8	0.9
Suriname	3.2	2.2	-3.3	0.6	0.8	1.0

Notes: The Tourism Dependency Index (TDI) is calculated using 5-year averages (2014-2018) for the total contribution of tourism to total export receipts, GDP, and employment for each country. The range is from zero to 100, with 100 representing total dependence. TDI for 35 countries in Latin America and the Caribbean for which data was available displayed. Color scale represents the relative contribution of the variable when compared to other countries 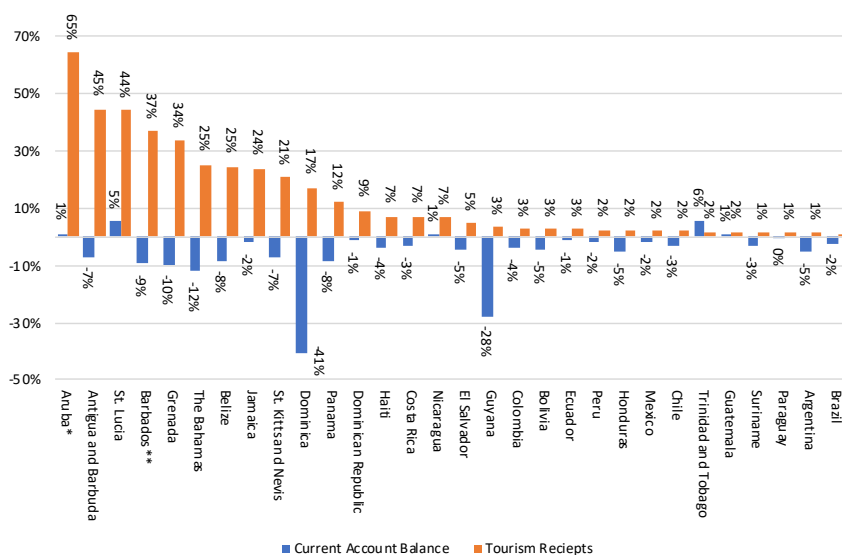(red = highest / blue = lowest). Shocks applied to 2018 export receipts and volumes. (*) Data for 2017 for Aruba, and (**) 2016 for Barbados, and 2018 for all other countries.

Sources: Authors' calculations based on data from the World Bank, IMF, and World Travel and Tourism Council.

Conclusions and policy implications

In summary, we have shown that some countries in the LAC region are among the most dependent in the world on international tourism for output, employment, and export revenues. Even for larger and more diversified economies in the region, tourism supports the lives and livelihoods of millions of citizens in aggregate. We also show that the impact of the COVID-19 crisis on tourism flows to the region is without precedent in terms of its speed and severity – an extreme outlier. Using simulations and plausible scenarios for the trajectory of the COVID-19 shock, we highlight that for some countries in the LAC region, the direct impact of the crisis could have devastating implications.

Governments around the world have undertaken measures to prevent the spread of the virus, and also to support their citizens and economies through the shock. While most traditional policy tools have been activated in an attempt to dampen its impact, the nature of this crisis has blunted their efficacy. Economic policies are well suited to the objectives of demand and supply management during normal times – i.e. when people are free to transact. The fact that governments have ordered whole sectors to shut down and asked citizens to stop participating in many economic activities presents an unprecedented hurdle to traditional forms of stimulus. This is doubly relevant for tourism, where there has been an absolute prohibition of activity.

While a detailed discussion of policy interventions is beyond the scope of this chapter, policymakers from tourism-dependent countries should focus on interventions aimed at ensuring that operators in the sector and those who rely on it for employment are insulated from the shock, to the extent possible, such that they are able to once again play vital roles in the future. There is nothing that can be done to replace or stimulate demand for tourism in the short run, but governments can provide focused and tailored support to preserve productive assets, help replace lost incomes for individuals engaged in the sector, and use the interim period to prepare the ground for the resumption of activity under uncertain circumstances. The COVID-19 shock to tourism in Latin America and the Caribbean represents an unprecedented extreme outlier event, and government interventions to support the sector and their citizens must be equally unparalleled.

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Annex 1 Tourism flows to Latin America and the Caribbean

Table A1   International tourism Arrivals to Latin America and the Caribbean (aggregated)

	Number of arrivals	Arrivals (2000=100)	Arrivals (change over previous year)
2000	55,998,811	100	na
2001	54,473,623	97	-2.7%
2002	51,873,755	93	-4.8%
2003	53,341,735	95	2.8%
2004	59,435,336	106	11.4%
2005	64,151,875	115	7.9%
2006	66,136,764	118	3.1%
2007	68,776,473	123	4.0%
2008	71,710,622	128	4.3%
2009	68,943,482	123	-3.9%
2010	73,253,699	131	6.3%
2011	76,578,867	137	4.5%
2012	79,169,698	141	3.4%
2013	81,239,103	145	2.6%
2014	90,166,654	161	11.0%
2015	96,998,899	173	7.6%
2016	103,358,520	185	6.6%
2017	111,174,515	199	7.6%
2018	113,348,451	202	2.0%

Source: World Bank Development Indicators databases.

Section II

Behaviour, perceptions and survival during COVID-19

8 Behaviours, perceptions and mental wellbeing in high-income and low/middle-income countries at the beginning of COVID-19 pandemic

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The COVID-19 pandemic has created many challenges for governments and their citizens across the world. Using data from the International Coronavirus Survey, this chapter explores how individuals' behaviours and perceptions around coping and responding to the COVID-19 pandemic varied between low/middle-income countries and high-income countries at the start of the pandemic. The analysis reveals three main findings. First, in low/middle-income countries, individuals report complying less with the behavioural measures implemented by governments, especially with keeping social distancing of 2 metres. Second, when comparing low/middle-income and high-income countries, people in the former tend more to see their government as having under-reacting to the pandemic and as more untrustworthy and unreliable. Third, individuals' in low/middle-income countries express higher levels of worry and depression, with women being more worried and depressed than men.

The outbreak of COVID-19 in early 2020 has massively disrupted the lives of people in the entire world and has affected all spheres of social and economic activity. In the first week of April 2020, more than half of the Earth's population found itself under some form of lockdown imposed by national or local governments with the aim of containing the spread of the global pandemic (Hale et al. 2020). From country to country, lockdowns differed in terms of their stringency. In general, most non-essential businesses and organisations were obligated to close down. Non-food stores, bars,

restaurants, cinemas, theatres, museums, and educational facilities such as schools and universities, to name a few, all had to close their doors to customers and the public in general.

As we progress to another stage of the COVID-19 pandemic, questions emerge about the onset of the crisis. Did individuals adhere to the restrictions, regulations and recommendations enacted by governments across the world? And did individuals in high-income and in low/middle-income countries behave differently in coping with and responding to COVID-19?

In this chapter, we compare individuals in low/middle-income countries with those in high-income countries, analysing the extent to which they have adhered to the behavioural measures implemented by governments at the very start of pandemic (end of March to early April 2020) and identifying the main differences and similarities. Specifically, we analyse self-reported actual behaviours and assess whether government restrictions, regulations and recommendations were followed or ignored by the public.

We then go beyond actual behaviours and explore the subjective beliefs and perceptions of the public when evaluating the response of both their own country's government and fellow citizens to the COVID-19 outbreak. We also explore the public's perception of the effectiveness of government measures undertaken to slow down the spread of the disease. Finally, we evaluate the mental wellbeing of each respondent by assessing their COVID-specific worries and depression levels.

For developing countries, understanding how the population is behaving and coping with the COVID-19 pandemic is important because they have an urgent priority to re-start the economy. Moreover, while there is no vaccine available, governments will need to rely on people's adherence to behavioural measures – namely, keeping a safe distance, avoiding social gatherings, washing hands, and reducing social contact in general.

Comparisons between low/middle-income and high-income economies are drawn from a global online survey conducted at the onset of the COVID-19 pandemic that used a large convenience sample (n > 110,000) of visitors to the International Coronavirus Survey website.[1] Individuals were invited to participate in the study using social media platforms, academic and educational networks, national news media and agencies, and NGOs and professional organizations between 20 March and 5 April 2020.

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1   https://covid19-survey.org/

The dataset used for the analysis includes participants from 58 countries, each with at least 200 respondents. This corresponds to a total sample of 109,800 individuals (Fetzer et al. 2020a). As of 7 April, the countries surveyed accounted for 92% of all known COVID-19 cases globally and for 93% of known deaths.[2] For our comparative analysis, we use the World Bank's classification of economies based on a country's income (World Bank 2019). We classify the 58 countries into two groups: high-income countries (32 countries) and low/middle-income countries (26 countries) (for the full list of countries in each group, see Appendix A). We use individual-level observations for our analysis.

While Fetzer et al. (2020) examine the reactions of the public to the COVID-19 outbreak at the aggregate level, in this chapter we go beyond this examination to compare the behaviours and reactions in the high- and low/middle-income world. Additionally, we highlight results divided by gender, as we observe vastly different self-reported behaviours and beliefs according to gender (Fetzer et al. 2020b).

- Individuals in high-income countries report a higher level of compliance with behavioural measures than those living in low/middle-income countries.

First, we asked people to self-report to what extent they adhered to five important behavioural measures that help prevent the spread of coronavirus: washing hands, staying at home, not attending social gatherings, keeping a distance of 2 metres from others (social distancing), and informing people around them when experiencing symptoms of sickness. The responses were given on a scale from 0 ("does not apply at all") to 100 ("applies very much"). Using the responses for each individual, we created an index based on the sum of the responses to the variables above. This index could therefore range from 0 to 500, with higher numbers indicating greater adherence to the guidelines. At the very early stages of the COVID-19 outbreak, people in both high- and low/middle-income economies reported high rates of adherence to the preventive measures; in both groups, the reported index was over 400 (see Figure 1). However, we still observe a significant difference between low/middle- and high-income groups in the levels of adherence to the measures (Appendix B). In low/middle-income countries, people report complying significantly less with behavioural measures. This is worrisome. Given that it is harder for low/middle-income countries to cope with the consequences of the crisis,[3] these countries should be those taking full advantage of preventive behavioural measures aimed at slowing the transmission of the virus.

Figure 1   Self-reported behavior index of compliance with social distancing measures for low/middle-income and high-income countries
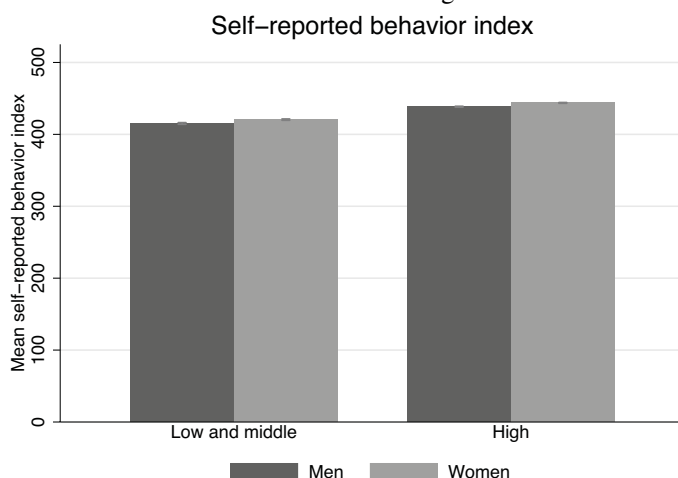
Note: The self-reported behaviour index was built by summing the five questions related to protective behaviours. Each question has a possible answer between 0 to 100, so the index has a total range of 0 to 500. Higher numbers indicate a higher degree of compliance with protective behaviours.

Table 1   Self-reported behaviour on five behavioural measures which aim to slow down the spread of COVID-19 in low/middle-income and high-income countries

		Low- and middle-income			High-income		
		Men	Women	All	Men	Women	All
Stay at home	Mean	77.929	78.509	78.268	81.533	82.187	81.894
	S.D.	27.308	27.002	27.132	22.617	22.784	22.727
Avoid social gatherings	Mean	87.790	88.906	88.399	92.315	92.854	92.600
	S.D.	27.308	26.532	27.008	20.827	20.282	20.552
Keep a distance	Mean	68.191	68.099	68.104	80.043	81.250	80.683
	S.D.	30.883	30.920	30.927	23.893	24.375	24.197
Inform about symptoms	Mean	90.627	92.803	91.844	92.811	94.784	93.888
	S.D.	21.849	19.099	20.393	18.394	15.989	17.176
Wash hands	Mean	90.623	92.185	91.479	91.719	92.673	92.194
	S.D.	21.184	19.145	20.095	19.191	18.014	18.630

Note: For each variable, participants in the survey were asked to state to what extent statements described their behaviour in the last week, on a scale from 0 ("does not apply at all") to 100 ("applies very much"). The exact specification of the statements can be found at https://osf.io/zgfjc/

We also note that the differences in the behavioural index are mainly driven by the 'self- distancing' measure – that is, people in low/middle-income countries are much less likely to keep a 2m distance from others (p<0.001, Table 1). This suggests that policymakers in these countries should pay special attention to this measure and promote it amongst the public. Interestingly, women in both country groups reported greater compliance with the advised behaviours than did men.

• Survey participants believe that the reaction of their fellow citizens to the pandemic is insufficient.

We assessed whether respondents believed the reaction of their country's fellow citizens was "too extreme (1)", "appropriate (3)", or "not sufficient (5)", assessed on a five-point scale. Participants in both low/middle-income and high-income economies tend to think that their fellow citizens reacted insufficiently to the pandemic, with more than 60% of respondents viewing the reaction as insufficient in both groups of countries. This feeling of an insufficient public response is a little stronger in women than in men in both regions (see Figure 2).

Figure 2 Perceived reaction of the public

Perceived reaction of the public
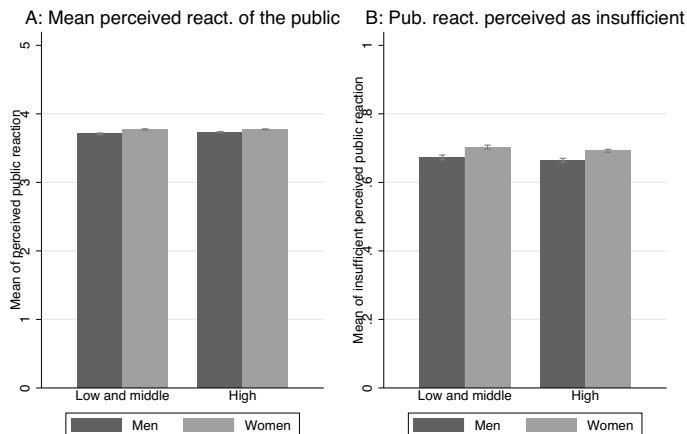
Note: Panel A shows the mean rating of how the respondents perceived their fellow citizens reacting to the pandemic. The question asked participants to rate the reaction of their fellow citizens from 1 ("the reaction is too extreme") to 5 ("the reaction is not at all sufficient"). Panel B presents differences in the proportion of individuals who perceived the reaction of the public as insufficient; in other words, the proportion of participants who answered either 4 or 5 to that question.

- In low/middle-income countries, people tend more to see their government as having under-reacted to the pandemic and as less trustworthy and reliable than people in high-income economies.

We estimated how people view the reactions of their country's government to the pandemic by asking whether respondents believed the reaction of the government to the pandemic was "too extreme" (1), "appropriate" (3), or "not sufficient" (5), assessed on 5-point Likert scale. In both high-income and low/middle-income countries, the proportion of respondents who believed the reaction of the government was "appropriate" was exceptionally low (under 5%). A slightly higher percentage of people believed the reaction of their government was "extreme" or "too extreme" at the onset of pandemic (under 11% in both regions). In both high-income and low/middle-income regions of the world, the majority of citizens surveyed viewed the reactions of their governments as "somewhat" or "not at all" sufficient (see Figure 3). Perceptions of an insufficient governmental response were more pronounced in low/middle-income countries, where over 65% of respondents perceived that their governments did not react "sufficiently" to the pandemic, compared to just over 55% in high-income countries. In addition, feelings of an insufficient governmental response were greater in responses of female respondents.

We also assessed people's attitudes towards their government in general. As expected, and as is shown in previous research (OECD 2013), perceptions of an insufficient government reaction in low/middle-income countries were accompanied by much lower levels of trust in the government caring for its citizens (see Figure 4, panel A). Respondents from these countries also believed that their government has been less truthful about the outbreak than did respondents from high-income countries (see Figure 4, panel B). A vast majority of respondents in high-income economies expressed that they "somewhat" or "strongly" trusted the government (>50%) and that they believed their government was either "somewhat" or "very" truthful about the coronavirus outbreak (>55%). However, only a minority of respondents in low/middle-income countries expressed a similar level of trust (a little lower than 30%) and that their governments offered truthful information about the state of the pandemic (a little higher than 30%; see Figure 4, panel B). Again, in low/middle-income countries, we find significant gender differences in beliefs, with men trusting the governments more and having a stronger perception that their government has been truthful.

Figure 3   Perceived reaction of the government

Perceived reaction of the government
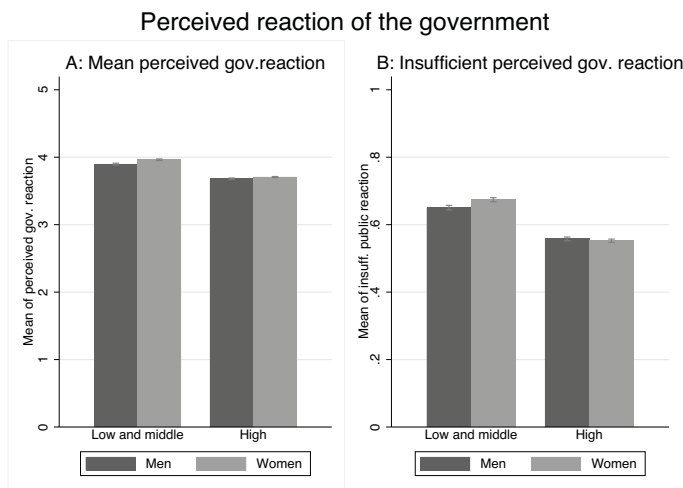
Note: Panel A shows the mean rating of how individual perceived reaction of their governments, from 1 (the reaction is "too extreme") to 5 (the reaction is "not at all sufficient"). Panel B presents differences in the proportion of individuals who perceived the reaction of the government as insufficient; in other words, the proportion of participants who answered either 4 or 5 to that question.

Figure 4   Perceived truthfulness and government trust

Perceived truthfulness and government trust
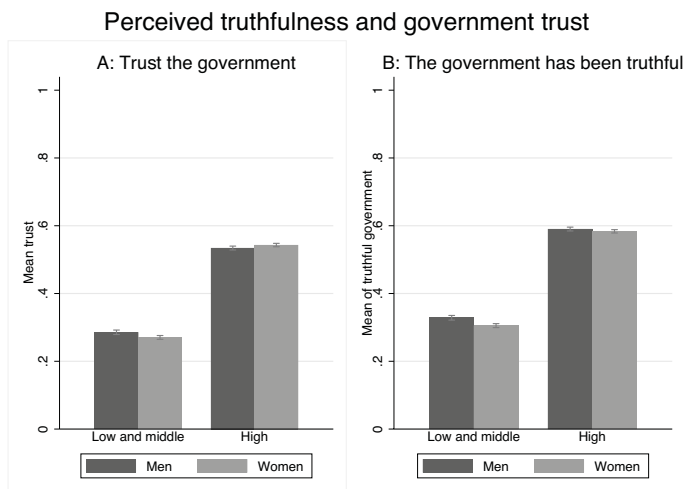
Note: Panel A shows the proportion of people who either "somewhat" or "strongly" trusted their government to take care of its citizens; that is, the proportion of people who answered 4 or 5 on a 5-point scale to the question: "How much do you trust your country's government to take care of its citizens?" (1 = "strongly distrust" to 5 = "strongly trust"). Panel B shows the proportion of individuals who believed that their government has been "somewhat" or "very" truthful about the COVID-19 outbreak; that is, the proportion of people who responded either 4 or 5 to the question "How factually truthful do you think your country's government has been about the coronavirus outbreak?" on a 5-point scale (1 = "very untruthful" to 5 = "very truthful"). The exact wording of the questions can be found at: https://osf.io/zgfjc/

- Overall, participants in both country groups believe that the behavioural measures are effective in slowing down the pandemic, and highly support financial punishment for risky behaviours that may spread the disease.

We further assessed whether the public in high- and low/middle-income countries held similar beliefs about the effectiveness of the behavioural measures.

First, we tried to understand whether survey participants in both country groups held similar beliefs about the necessity of introducing behavioural measures due to the coronavirus outbreak. We asked participants whether they think that in their country: 1) people should cancel participation in social gatherings; 2) people should not shake other people's hands; 3) all shops other than particularly important ones – such as supermarkets, pharmacies, post offices, and petrol stations – should be closed; and 4) there should be a general curfew. The participants answered "yes" or "no" to each of these questions. Overall, there was a consensus across countries on the necessity of such measures. In both groups, however, the public was most sceptical about the introduction of a general curfew. While cancelling social events and avoiding handshakes gained the support of more than 90% of the public in both regions, support for a general curfew did not reach 80% among respondents in either group of countries. These numbers suggest that when implementing stricter measures, such as a general curfew, governments must pay more attention to how these are communicated to the public.

Table 2   Personal beliefs about coronavirus measures

		Low- and middle-income			High income		
		Men	Women	All	Men	Women	All
Cancel social events	Mean	0.978	0.988	0.984	0.970	0.973	0.972
	S.D.	0.147	0.108	0.127	0.171	0.162	0.166
Avoid handshakes	Mean	0.949	0.972	0.962	0.970	0.972	0.971
	S.D.	0.220	0.166	0.192	0.169	0.164	0.167
Close stores	Mean	0.798	0.838	0.821	0.808	0.819	0.814
	S.D.	0.401	0.368	0.384	0.394	0.385	0.389
Implement a curfew	Mean	0.748	0.795	0.774	0.653	0.668	0.661
	S.D.	0.434	0.404	0.418	0.476	0.471	0.473

Note: Each variable represents personal beliefs of the participants on whether each of the behavioural measures should be implemented, where 1 = "yes" and 0 = "no". The table means are the proportions of individuals who agreed with the implementation of the preventive measures. The exact wording of the questions can be found at https://osf.io/zgfjc/

Second, we assessed the perceived effectiveness of the social distancing measures by asking the participants how effective they felt these measures were in slowing down the spread of the coronavirus. The responses were given on a 5-point scale from 1 ("not at all effective") to 5 ("very effective"). In both low/middle- and in high-income countries, respondents believed that measures were rather effective, although participants in high-income countries feel that these measures are marginally more effective. Again, we find a strong gender effect: men in high-income countries saw these measures as more effective than did men in low/middle-income countries, while the opposite was the case for women in low/middle-income countries.

Figure 5   Perceived effectiveness and financial punishment

Effectiveness of measures and financial punishment
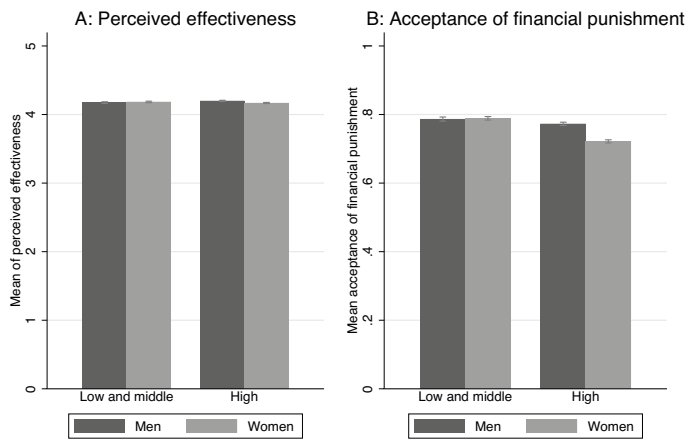
Note: Panel A shows how participants perceived effectiveness of the recommended protective measures. Specifically, participants responses to the question on perceived effectiveness of recommended protective measures were coded from 1 ("not at all effective") to 5 ("very effective"). Panel B presents the proportion of individuals who agreed that risky behaviours should be financially punished (question: "Should risky behaviours, which might enable further spread of the coronavirus, be financially punished?" 1 = "yes"; 0 = "no"). The exact wording of the questions can be found at https://osf.io/zgfjc/

Participants expressed overall agreement (>70% of respondents) that risky behaviours that may enable further spread of the coronavirus should be punished financially. However, while support for financial punishment was equal among men and women in low/middle-income economies, in high-income countries support for such punishment was considerably lower among women than among men.

- Individuals in low/middle-income countries show higher levels of worry and depression, with women being more worried and depressed.

Finally, we find much higher levels of COVID-related worries and depression levels in low/middle-income countries at the onset of the COVID-19 outbreak than in high-income countries. In our sample, respondents from low/middle-income economies expressed significantly more COVID-19 related worries and reported overall higher depression levels. In addition, for both worries and depression, women report significantly higher levels than men.

Figure 6   Mental health indexes
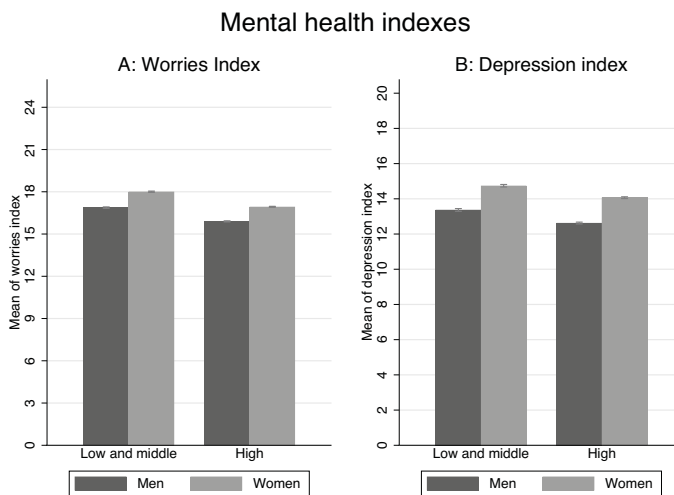
Note: Panel A shows the Worries Index, which is the sum of five questions related to worries levels, each one measured on a 5-point scale from 1 ("does not apply at all") to 5 ("strongly applies"). Panel B shows the Depression Index, which is the sum of responses to eight questions of the PHQ-8 depression scale, where each question is measured on a 4-point scale from 1 ("not at all" to 4 ("nearly every day"). Higher numbers represent higher levels of depression. The exact description of the questions can be found at https://osf.io/zgfjc/

Conclusions

In this chapter, we discuss findings from the International Survey on Coronavirus, in which over 100,000 respondents were asked about self-reported behaviours as well as their perceptions and beliefs about the behavioural measures – social distancing, avoiding social gatherings, washing hands, and reducing social contact in general – implemented by governments at the beginning of coronavirus outbreak. We examined the responses of individuals from 32 high-income and 26 low/middle-income countries who participated in the survey from 20 March to 5 April 2020. Although we find that there are similarities between these two groups of countries, we also find significant

differences in the way people in these two regions behave and perceive the behavioural measures. More specifically, while in both high-income and low/middle-income countries people adhere to the guidelines of social distancing and view these measures as effective, there significant differences in the extent to which people report following those measures themselves, and how they feel generally about the governmental response and that of their fellow citizens.

We have identified several important messages for policymakers.

First, the good news is that the messages recommending behaviours to help stop the transmission of the disease are being heard by people in both country groups. The not-so-good news is that self-reported compliance rates are significantly lower in low/middle-income countries, and they are mainly driven by fewer people following the 2m social distancing rule. Since low/middle-income countries are potentially more vulnerable to the consequences of the crisis, governments from these countries should put additional effort into promoting preventive behaviours among their citizens, championing the 2m distance rule in particular.[4] Additionally, we found significant gender differences in terms of adherence to social distancing behaviours, with men less likely to comply. Therefore, special attention should be paid to promoting these behaviours amongst the male population, where possible, though gender-specific messages and communication campaigns.

Second, we find that, overall, the public believes that social-distancing measures are effective in fighting the pandemic. These beliefs do not, however, translate directly into public trust in the government. In both country groups, the respondents viewed their fellow citizens' reactions and the government's response to the pandemic as overwhelmingly insufficient. Moreover, participants from low/middle-income economies also view their governments as less trustworthy. This is despite the tremendous efforts and economic sacrifices made by countries to slow down the spread of the virus. Such public perceptions suggest that there is room for government officials and policymakers to not only improve the measures taken to battle COVID-19, but to also communicate in a much clearer fashion the steps they are taking to fight the health crisis and why. Creating public awareness and generating transparency of governmental actions are both essential for building public trust.

Next, we find that the vast majority of the population support financial punishment for those who are breaking the rules and potentially increasing the risk of further spreading the virus. Interestingly, the group that has less support for such measures is women in

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4 https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

high-income countries. These results suggest that, in general, financial punishments have gained significant support and therefore should not be extremely difficult for policymakers to implement. Nonetheless, policymakers should remember that some groups are less supportive of such measures than are others. Careful and transparent communication, especially to more sceptical groups, can help governments introduce effective financial punishment measures.

Finally, we found that the respondents from our survey reported relatively high levels of worry and depression at the onset of pandemic. This is understandable given all the personal, societal, health and economic uncertainties surrounding the outbreak in late March to early April 2020. Though our sample was not representative and cannot tell us much about the absolute depression rates among different countries, we believe that conclusions can still be drawn by comparing these indices across countries. Overall, it is concerning that both the depression and worries indices are higher for respondents from low/middle-income countries, and that they are exacerbated for female respondents. These results suggest that the most vulnerable groups in terms of income are also more vulnerable in terms of their mental health reaction to COVID-19. Recently, researchers have stressed the importance of studying the effect of COVID-19 on mental health (Holmes et al. 2020). Mental wellbeing is a part of the UN Sustainable Development Goals, and governments all over the world should take immediate action to ensure not only high levels of physical health, but also high-quality mental health of their citizens. Given that low/middle-income counties have scarcer resources to fight the consequences of the pandemic, it is absolutely necessary to take measures, before it is too late, to prevent people's mental health in those countries from deteriorating. Such measures should be more effective and cheaper than reactive measures to fight mental illnesses once they develop. Special attention should be paid to the mental health of women, so that the most vulnerable groups in society do not suffer a fallout from the workforce and society in general due to poor mental health.

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Appendix

Table A1   Observations by country

	Income group	Observations			
		Male	Female	Other	**Total**
United States	High Income	4500	6969	152	11621
United Kingdom	High Income	5518	5788	109	11415
Germany	High Income	5392	5105	128	10625
Sweden	High Income	1824	3974	76	5874
Switzerland	High Income	1826	2368	21	4215
Canada	High Income	1016	1833	34	2883
France	High Income	1287	1515	34	2836
Spain	High Income	1160	1178	12	2350
Italy	High Income	978	885	13	1876
Netherlands	High Income	611	808	18	1437
Qatar	High Income	379	886	23	1288
Austria	High Income	515	572	8	1095
Australia	High Income	313	635	14	962
Finland	High Income	359	430	9	798
Ireland	High Income	360	346	10	716
Latvia	High Income	198	480	1	679
Hungary	High Income	169	454	4	627
Slovakia	High Income	286	329	1	616
Japan	High Income	353	243	5	601
Belgium	High Income	262	319	1	582
Portugal	High Income	174	386	2	562
Chile	High Income	241	310	1	552
Poland	High Income	229	293	8	530
Denmark	High Income	241	266	4	511
Singapore	High Income	189	235	2	426
Israel	High Income	172	237	1	410
New Zealand	High Income	117	261	5	383
Greece	High Income	151	203	3	357
Norway	High Income	158	147	2	307
South Korea	High Income	173	130	0	303

	Income group	Observations			
		Male	Female	Other	**Total**
Czech Republic	High Income	121	143	2	266
Uruguay	High Income	143	99	1	243
Brazil	Upper Middle Income	4443	7139	77	11659
Belarus	Upper Middle Income	1080	2617	9	3706
Russia	Upper Middle Income	2036	1359	18	3413
Mexico	Upper Middle Income	1457	1877	14	3348
Turkey	Upper Middle Income	1347	1516	15	2878
Peru	Upper Middle Income	1185	872	10	2067
Colombia	Upper Middle Income	961	902	12	1875
Argentina	Upper Middle Income	511	398	5	914
Romania	Upper Middle Income	283	534	3	820
Albania	Upper Middle Income	252	445	5	702
Venezuela	Upper Middle Income	357	303	4	664
South Africa	Upper Middle Income	170	392	5	567
Dominican Rep.	Upper Middle Income	250	307	1	558
Malaysia	Upper Middle Income	220	320	1	541
China	Upper Middle Income	253	164	5	422
Bulgaria	Upper Middle Income	112	221	1	334
Thailand	Upper Middle Income	110	193	10	313
Ecuador	Upper Middle Income	195	107	1	303
Indonesia	Lower Middle Income	686	923	10	1619
Ukraine	Lower Middle Income	414	1040	8	1462
India	Lower Middle Income	625	387	5	1017
Viet Nam	Lower Middle Income	206	642	16	864
Philippines	Lower Middle Income	237	521	13	771
Kenya	Lower Middle Income	216	184	1	401
Morocco	Lower Middle Income	189	187	10	386
Nigeria	Lower Middle Income	158	88	4	250
	Total	**47368**	**61465**	**967**	**109800**

Table A2   Statistical tests of differences in the mentioned variables

Variable	Diff. mean	Std. err.	Level	Relation
Comparing responses of men in high- vs low/medium-income countries				
Self-reported behaviour index	-23.2606	0.702	***	H>L&M
Perceived reaction of the public	-0.0246	0.0082	***	H > L&M
Insufficient reaction of the public	0.008	0.0045	*	L&M > H
Perceived reaction of the Government	0.2161	0.0084	***	L&M> H
Insufficient perceived reaction of the Government	0.0926	0.0046	***	L&M > H
Trust the government	-0.2486	0.0046	***	H > L&M
Government Truthful	-0.2618	0.0046	***	H >L&M
Perceived effectiveness of the measures	-0.0256	0.0077	***	H > L&M
Acceptance of financial punishment	0.014	0.0039	***	L&M > H
Anxiety index	0.9757	0.0328	***	L&M > H
Depression Index	0.7448	0.0449	***	L&M > H
Comparing responses of women in high- vs low/medium- income countries				
Self-reported behaviour index	-23.2468	0.5944	***	H > L&M
Perceived reaction of the public	-0.002	0.0071		H >L&M
Insufficient reaction of the public	0.0111	0.0038	***	L&M > H
Perceived reaction of the Government	0.2567	0.0072	***	L&M > H
Insufficient perceived reaction of the Government	0.1217	0.004	***	L&M > H
Trust the government	-0.2726	0.004	**	H > L&M
Government Truthful	-0.2783	0.004	***	H > L&M

Variable	Diff. mean	Std. err.	Level	Relation
Perceived effectiveness of the measures	0.0157	0.0067	**	L&M > H
Acceptance of financial punishment	0.0672	0.0036	***	L&M> H
Anxiety index	1.0722	0.0292	***	L&M > H
Depression Index	0.6769	0.0436	***	L&M> H
Comparing responses of men vs women in low/medium- income countries				
Self-reported behaviour index	-5.3408	0.8223	***	F> M
Perceived reaction of the public	-0.063	0.0089	***	F> M
Insufficient reaction of the public	-0.0301	0.0046	***	F> M
Perceived reaction of the Government	-0.0648	0.0093	***	F> M
Insufficient perceived reaction of the Government	-0.0236	0.0047	***	F> M
Trust the government	0.0152	0.0044	***	M > F
Government Truthful	0.0231	0.0046	***	M > F
Perceived effectiveness of the measures	-0.0108	0.0085		F> M
Acceptance of financial punishment	-0.0021	0.004	***	F> M
Anxiety index	-1.1286	0.0353	***	F> M
Depression Index	-1.3721	0.0537	***	F> M
Comparing responses of men vs women in high-income countries				
Self-reported behaviour index	-5.327	0.5098	***	F> M
Perceived reaction of the public	-0.0403	0.0065	***	F> M
Insufficient reaction of the public	-0.027	0.0036	***	F> M
Perceived reaction of the Government	-0.0242	0.0066	***	F> M

Variable	Diff. mean	Std. err.	Level	Relation
Insufficient perceived reaction of the Government	0.0055	0.0039		M > F
Trust the government	-0.0088	0.0039	**	F > M
Government Truthful	0.0067	0.0038	*	M > F
Perceived effectiveness of the measures	0.0305	0.0061	***	M > F
Acceptance of financial punishment	0.0511	0.0034	***	M > F
Anxiety index	-1.0321	0.0268	***	F > M
Depression Index	-1.44	0.0372	***	F > M

Note: This table presents all the results for the t-test of the variables in the survey comparing M: males, and F: females, in L&M: low and medium, and H: High Income countries. In the first column, "Variable", there is a key explanation of the variable. The second and third columns, "Diff. mean" and "Std. err.", are the mean and the standard error of the difference. The fourth column is the level of significance [No stars: $p>=0.1$, *: $p<0.10$, **: $p<0.05$, ***: $p<0.01$]. The seventh column is the relation observed in the comparison. Note: This table presents all the results for the t-test of the variables in the survey comparing M: males, and F: females, in L&M: low and medium, and H: High Income countries. In the first column, "Variable", there is a key explanation of the variable. The second and third columns, "Diff. mean" and "Std. err.", are the mean and the standard error of the difference. The fourth column is the level of significance [No stars: $p>=0.1$, *: $p<0.10$, **: $p<0.05$, ***: $p<0.01$]. The seventh column is the relation observed in the comparison.

Table A3   Interpretation of the variables

Variable	Interpretation
Self-reported behaviour index	This index was built by the sum of five questions related to self-reported protective behaviour over the past week. Each question has a possible answer between 0 to 100, so the index has a total range between 0 and 500. Higher numbers indicate a higher degree of compliance with protective behaviours.
Perceived reaction of the public	Rate given by the participants about the reaction of their fellow citizens to COVID outbreak, from 1 {"the reaction is too extreme") to 5 ("the reaction is not at all sufficient").
Insufficient reaction of the public	Dichotomic variable that is equal to 1 if participants answer 4 or 5 to question on the perceived reaction of the public described above.
Perceived reaction of the government	Rate given by the participants about the reaction of their government from 1 ("the reaction is too extreme) to 5 ("the reaction is not at all sufficient").
Insufficient perceived reaction of the government	Dichotomic variable that is equal to 1 if participants answer 4 or 5 to question on the perceived reaction of the government described above.
Trust in the government	Participants' response to the question on how much do they trust their government to take care of its citizens was measured on a 5-point scale (1 = "strongly distrust" to 5 = "strongly trust"). The dichotomic variable "Trust in the government" is equal to 1 if participants answer 4 or 5 to the question.
Truthfulness of government	Participants' response to the question on how factually truthful they think their government has been about the coronavirus outbreak was measured on a 5 point scale (1 = "very untruthful" to 5 = "very truthful"). The dichotomic variable "Government Truthful" is equal to 1 if participants answer 4 or 5 to the question.
Perceived effectiveness of the measures	Participants of the survey rated the effectiveness of the social distancing measures to slow down the spread of coronavirus on a 5-point scale (1 = "not at all effective" to 5 = "very effective").
Acceptance of financial punishment	Participants' response to the question on whether they thought that risky behaviours, that might enable further spread of the coronavirus, should be financially punished, where 1 = "yes" and 0 = "no".
Anxiety index	This index is the sum of five questions related to anxiety levels measured on a 5-point scale from 1 ("Does not apply at all") to 5 ("Strongly applies"). Higher numbers represent higher levels of anxiety.
Depression index	This index is the sum of eight questions from the PHQ-8 depression questionnaire with each item measured on a 4-point scale from 1 ("Not at all") to 4)("Nearly every day"). Higher numbers represent higher levels of depression.

Note: The exact description of the questions can be found here: https://osf.io/zgfjc/

9 Conflict in times of COVID-19

Nicolas Berman, Mathieu Couttenier, Nathalie Monnet and Rohit Ticku

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This chapter discusses the potential impacts of the spread of COVID-19, and the restriction policies that it has triggered in many countries, on conflict incidence worldwide. Based on anecdotal evidence and recent research, we argue that imposing nation-wide shutdown policies diminishes conflict incidence on average, but that this conflict reduction may be short-lived and highly heterogeneous across countries. In particular, conflict does not appear to decline in poor, fractionalised countries. Evidence points to two potential ways in which COVID-related restriction policies may increase conflict: losses in income and magnified ethnic and religious tensions leading to scapegoating of minorities.

On 31 March 2020 the UN Secretary General, Antonio Guterres, cautioned that the coronavirus epidemic could lead to "enhanced instability, enhanced unrest, and enhanced conflict". The effect could be severe for the vulnerable populations – those caught up in war and persecution, or those living in densely populated areas with dismal state capacity (United Nations 2020). Critically, countries have responded with varying degree of restrictions to limit the spread of coronavirus. The policy response to COVID-19 can itself have a bearing on conflict situations.

Anecdotal evidence suggests that restrictions on mobility to flatten the epidemic curve have mixed effects on conflicts worldwide. We provide examples of both surges in violence but also ceasefires:

1. In Chad and Nigeria, Boko Haram has stepped up attacks on state forces during the COVID-19 pandemic. On 23 March, Boko Haram carried out the deadliest terror attack in Chad, when it attacked an army base and killed 92 soldiers. These events occurred a few days after the first restrictions on gatherings were implemented. In Nigeria – on March 24th, a day after the implementation of stay-at-home restrictions

– a Boko Haram faction ambushed an army convoy, killing at least 47 soldiers[1]. These operations indicate that the Islamist group could be taking advantage of the COVID-19 crisis and of the weakening of states resources to unleash violence and recruit new members.

2. In Pakistan, protests and political violence has recently risen up to the pre-pandemic levels.[2] On 5 May, tens of thousands of factory workers launched a major agitation in the city of Sindh to protest against non-payment of wages and widespread job losses due to COVID- related restrictions.[3]

3. In India, though the lockdown has terminated nationwide protests against the mistreatment of Muslims, there has been a resurgence of incidents of physical violence against members of the Muslim minority, in addition to hateful messages on social media, since it was discovered that a Muslim religious gathering was the source of many coronavirus cases – a fact that the Hindu nationalist government publicised widely.[4]

4. The Libyan National Army (LNA) of Khalifa Haftar declared a unilateral ceasefire during the holy month of Ramadan. The move came amidst international appeals for a humanitarian truce so that state authorities could focus on dealing with the coronavirus pandemic.[5] The extent to which the ceasefire is successful depends on the international mediation between the ruling LNA and the Libyan government-in-exile.[6]

5. The COVID-19 crisis has forced Israeli and Palestinian authorities to cooperate closely in battling the pandemic.[7] The Israeli government organised training workshops for Palestinian medical teams, donated testing kits, and sent thousands of personal protective equipment (PPE) to the West Bank and Gaza. The Palestinian government also accepted US$25 million, as part of previously withheld taxes, from the Israeli government to ease the economic burden of the pandemic.

Conflict worldwide

Figure 1   Conflict-related incidents, 2020

a) Conflict

b) COVID-19 related events
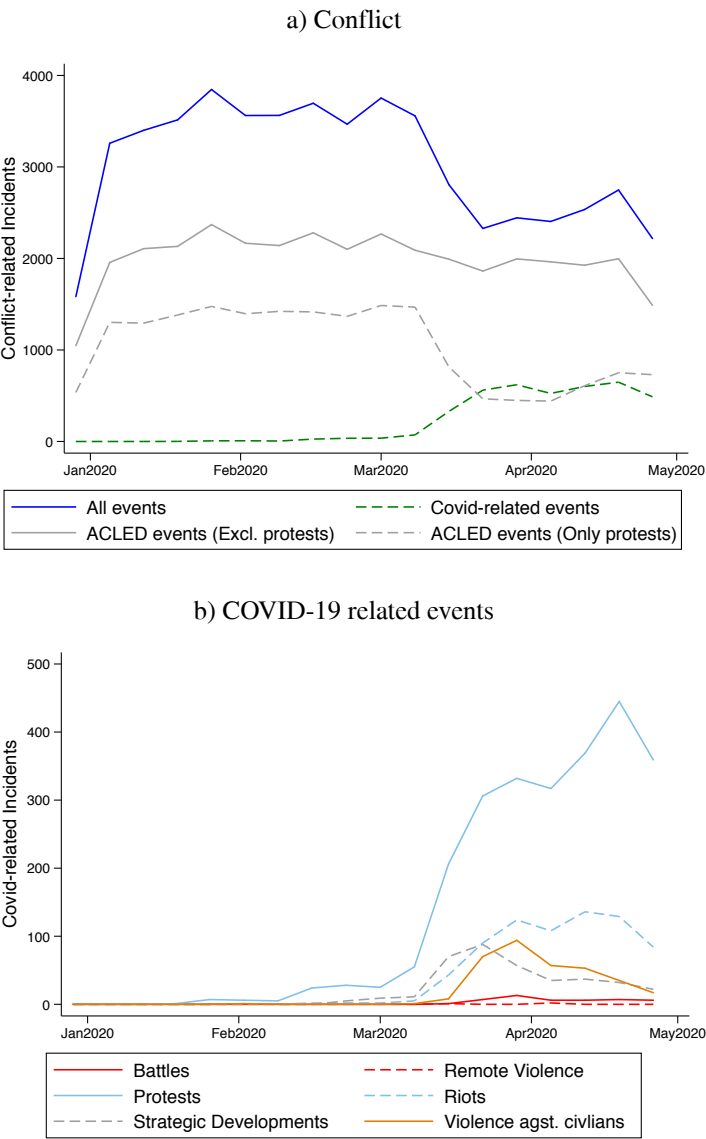
Source: Authors' computations from ACLED. From 1 January 2020 to 30 April 2020.

Going beyond anecdotal evidence, the analysis of the Armed Conflict Location and Event Data (ACLED) project (Raleigh et al. 2020), which provides real-time information on worldwide conflict, is very instructive.[8] From March 2020 onward, the total number of events dramatically declines (Figure 1a). Mid-March 2020, it is 25% lower than the number of events at the same period of the previous year; in the first half of April 2020, it is 30% to 35% lower than in the first half of April 2019. The drop appears to be partly driven by protests, though even after excluding protests the conflict events fall by almost 25% in March-April 2020 compared to the previous year. However, starting in mid-April, protests slightly increase, as well as other violent events, for a temporary period.

Figure 1a also plots the number of events identified as being directly related to COVID-19. In the last weeks, such events represent more than a third of the total number of observed events, with 97% of the countries affected by COVID-related events. Latin American countries – such as Mexico, Brazil, Chile and Colombia – and Asian countries – such as India and Pakistan – show the highest number of incidents, while central African countries are the least responsive. In Figure 1b, the total number of COVID-related conflictual events are separated by their nature. Demonstrations are the leading categories for which COVID-related events have arisen, with an overall share of 63% for protests and 18% for riots.

Two crucial features of the ACLED dataset shed light on the changes in the characteristics of violence since the shutdown. First, the data inform us on the nature of violence, i.e. whether the event is related to battles, remote violence, protests, riots, strategic development, and violence against civilians. Figure 2a depicts the trends for each of these types of violent incidents since the beginning of 2020. A striking pattern emerges: protests are the only category for which we can observe a large drop in the number of instances starting early March, accounting for 67% of the average number of protests between January and end of February. By April, protests display a new increase, yet not back to its mean. Other types of events do not show significant differences since January. A second important feature of the ACLED dataset is information on the different actors that are involved, such as state forces, rebel groups, political militia, identity militia, rioters, protesters, and civilians. Figure 2b depicts the trends for each of these actors involved in conflict events since the beginning of 2020. The same pattern emerges for protesters, while the number of incidents involving other actors remain quite stable over the period.

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8   The data contain daily information on conflict events with specific details on the nature and the actors on both sides of the conflicts; data downloaded on 18 May 2020.

Figure 2   Evolution of conflict events across events and actors

a) Events

b) Actors
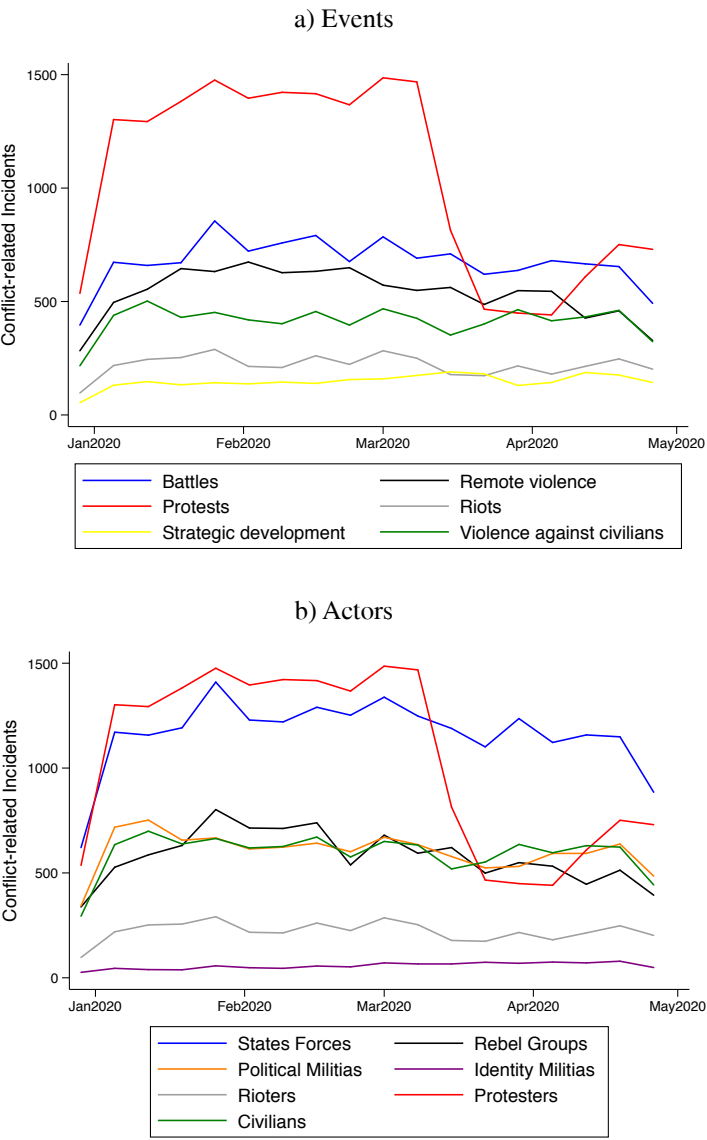
Source: Authors' computations from ACLED. From 1 January 2020 to 30 April 2020.

Shutdown policies

Based on the anecdotal and unconditional evidence on conflicts above, we go a step further (Berman et al. 2020).[9] The Oxford COVID-19 Government Response Tracker (OxCGRT) systematically assembles daily information on several policy responses governments have implemented from such as the closings of school, workplaces and public transport, travel restrictions (internal and international), limitations of public gatherings, and stay-at-home requirements (Hale et al. 2020). We restrict our attention on all COVID-related policy responses, with an emphasis on measures that restrict mobility. We construct a binary restriction measure, which switches to 1 when governments have implemented nationwide school and workplace closings as well as restrictions on internal movements.[10] We refer to this measure as 'shutdown policies' below. Using this definition, 70 out of 116 countries in the sample have enforced shutdown policies between 6 March and 28 April. Our empirical analysis generates four main results:

- First, there is a clear negative correlation between the restrictions and the incidence of conflict. The point estimate suggests that shutdowns are associated with a 7 percentage point drop in overall conflict incidence, and with 0.36 fewer events (i.e. a 8.9% drop in the total daily number of conflict events). On top of that, we find that the reduction of conflict incidence is gradual: starting a week before the governments' responses, and stronger three weeks after the policy is implemented. This indicates that actors involved in violence may already have begun adjusting their behaviour in anticipation of the policy change. However, five weeks after implementation, conflict goes down to its pre-shutdown level. This could suggest either a retaliation effect or a lack of compliance.

- Second, shutdown policies are negatively correlated to battles, protests and violence against civilians. The effect is most significant for protests which decline by 9 percentage points. The significant decline in protests is plausibly due to shutdown measures increasing the cost of individual participation in an activity where the benefit is shared by all sympathisers, irrespective of their participation.

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9   The results presented below use the same methodology but with updated data. While in Berman et al. (2020) we stop on 18 April, we updated the data to be able to cover the entire month of April 2020 (data downloaded on 15 May 2020).

10 In Berman et al. (2020), we also consider a continuous index of restrictions, and the specific case of stay-at-home policies.

- Third, political militia, protesters and civilians are the actors for which there is a decrease of violence (7.2, 9.1 and 4.7 percentage points, respectively). For the other categories of actors – state forces, rebel groups, identity militia and rioters – restrictions have a negative but statistically insignificant effect on the level of conflict.

- Fourth, our results suggest that how violence react to shutdown policies is strongly correlated to specific-country characteristics. Conflict does not appear to significantly decrease post-restrictions in countries with low GDP per capita, while it does in countries with relatively high income per capita. This difference appears to be mostly driven by a stronger drop in protests in the latter case. On the other hand, and consistent with the scapegoating narrative mentioned above, we find that conflict does not decrease in countries with high religious or ethnic fractionalisation. This effect is mostly driven by events involving civilians, political militia and state forces. These results suggest that the negative effect of mobility restrictions on conflict could be tempered by a rise in violence against minorities – especially religious ones.

What about a world without shutdown?

Here we perform a counterfactual exercise where we estimate the average change in conflict incidence compared to a hypothetical 'no shutdown' situation, based on the data and methodology from Berman et al. (2020). We take into account a set of country-specific characteristics, in particular ethnic and religious fractionalisation and income per capita, which are found to significantly influence conflict responses. We find that most countries which imposed a shutdown would have experienced higher levels of conflict in the absence of a shutdown (Figure 3). The conflict response exhibits some heterogeneity across countries, however, and two patterns emerge. First, the steepest decline in conflict incidence appears in European and Latin American countries. Second, shutdown policies are predicted to have actually increased conflict probability in many African countries, in particular in countries of the African Great Lakes region such as Uganda, Kenya and Rwanda, as well as in Western and Central African countries such as Nigeria and Chad, echoing the anecdotal evidence mentioned previously.

Figure 3   Contribution of shutdown policies to conflict incidence
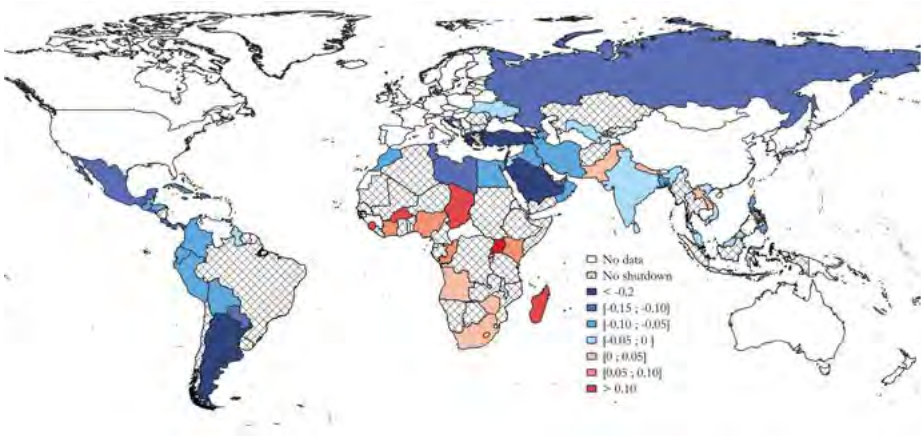
Note: This figure plots estimated effect of shutdown policies on average conflict incidence, by country, compared to a counterfactual situation where no policy would have been implemented. Source: Authors' computation from ACLED data from 1 January 2020 to 30 April 2020. See Berman et al. (2020) for more details.

Underlying mechanisms and concluding remarks

Overall, the results in Berman et al. (2020) point to several potential mechanisms through which COVID-related restrictions might be impacting conflict. First, by reducing mobility, such restrictions impact individual mobilisation capacity, which explains the decline in the protests worldwide. However, this reduction in the number of protests is not observed in countries with very low income, which suggests that the economic effect of shut- and lockdown policies might trigger additional (mostly peaceful) conflict. This effect might also relate to the fact that shutdown policies limit the capacity of low-income states to fight against the opposition (Berman et al. 2011). Second, we find consistent evidence that shutdown policies have an ambiguous effect on violence against civilians in more fractionalized countries. This indicates that the negative effect of mobility restriction on violence could be tempered by a rise in inter-religious and inter-ethnic violence. This result is in line with the literature which suggests that epidemics can intensify underlying ethnic or religious tensions and lead to scapegoating of minorities (Jewab et al. 2019, Voigtländer and Voth 2012).

Given the preliminary nature of the data, and the short time span currently available, more work is surely needed. For instance, future research could try to further explore cross-country heterogeneity in conflict responses, and consider within-country characteristics, such as urbanization and local income levels. Given the current collapse in many commodity markets, how natural resources rich regions will react to the spread of the virus is surely an important question as well. For instance, the chapter by Rabah

Arezki, Rachel Yuting Fan, and Ha Nguyen in this volume shows how countries in the Middle East and North Africa (MENA) are currently hit by a dual supply and demand shock, the latter being partly driven by the collapse in oil prices. Meanwhile, the Gulf Cooperation council (GCC) countries, which are large providers of bilateral aid and investment, may have more limited resources to finance operations, which could worsen the conflict situation in the region.

The COVID-19 pandemic has exacerbated conflict in already fragile states. In parts of Western Africa and in the greater Sahel region, rebel groups have used the state preoccupation with COVID-19 crisis to escalate violence and step up recruitment. The state counter-insurgency operations have resulted in rising violence against the civilians, which can fuel further unrest. A unilateral ceasefire at the local level is unlikely to be credible. The current crisis calls for a unified response in form of a global ceasefire that is wholeheartedly endorsed by the UN Security Council.

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10 Survival of firms in developing economies during economic crisis

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World Bank

With lockdown measures in place worldwide, cash flow represents a significant concern for firms across multiple sectors. This chapter estimates the survival time of more than 11,000 firms in 34 low-income and lower-middle-income economies. Under the assumptions that firms have no incoming revenues, the median survival time across industries ranges from 6 to 28 weeks. Once collapsed export demand is taken into account, the median survival time falls to between 6 and 18 weeks.

Economists traditionally explain the closure of firms during recessions with Schumpeter's (1934) creative destruction theory, where during downturns small and less-efficient firms are the ones to exit the market. In times of extreme economic distress, however, firms in every country are reeling from the inability to do business as usual. To make things worse, many sectors see collapsed demand and economic uncertainty stretching for months, if not years. In a pandemic, governments rightly focus on dealing with the health aspects first, and only then on the recovery of the economy once the immediate danger of the pandemic is over.

But businesses worldwide are rapidly running out of cash. In the US, firms have cash reserves to last anywhere between three weeks and six months. Restaurants, for example, have less than a month of cash on hand (Didier et al. 2020). Analysis of 12 high- and middle-income countries across Africa, Central Asia, Europe, Latin America, and the Middle East shows that the median survival time of small firms across industries ranges from 8 to 19 weeks (Bosio et al., 2020).

This breathing period is extended with government programmes already in place to support worker retention through subsidising jobs, freezing interest payments on loans, and extending new bank credit. This extension differs across industries – it helps labour-intensive sectors more, and firms with established lines of credit benefit more as well.

Still, other payments – like rent and cost of materials – are weighing on businesses. Exporters are unable to ship goods due to disrupted transport links. Even when transport is possible, new trade restrictions may apply or demand has simply collapsed.

In this chapter we apply the hypotheses in our earlier work (Bosio et al. 2020) to low-income and lower-middle-income countries. In a scenario fashioned after the current pandemic period – where firms have no revenues due to a lockdown or collapsed demand – the median firm in a low-income country has enough retained earnings and other sources of financing to last from 6 (in retail) to 28 weeks (in manufacturing). In middle-income countries, the median survival time ranges from 7 weeks (in retail) to 11 weeks (in manufacturing). Once collapsed export demand is taken into account (Baldwin 2020a), the median survival time falls to between 6 and 18 weeks in low-income countries, while for lower-middle-income countries remain roughly the same.

Across countries, the median Uzbek firm is the most liquidity constrained, while the median Gambian firm has the most breathing space. The former has a 6-week buffer in retained earnings and other sources of financing, the latter a 15-week buffer.

Countries and firms covered in the analysis

The calculations use data for 15,150 businesses from the World Bank's Enterprise Surveys conducted in 34 economies that have had a survey completed in the last five years, and that have a sample size that allows for sectoral breakdowns.

The World Bank Enterprise Surveys are establishment-level surveys conducted on a stratified random sample of small (5-19 employees), medium (20-99 employees), and large establishments (over 100 employees). The questionnaire includes a wide range of topics, from infrastructure to management practices, labour, and performance. The survey is administered to businesses with at least 1% private ownership, that are not cooperatives, and that were in full operation for the entirety of the last completed fiscal year. The sector of coverage includes all manufacturing (ISIC 3.1 Rev 15-37); Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods (50-52); Hotels and restaurants (55); Transport, storage and communications (60-64); and Computer related activities (72). The sample contains a total of 15,150 interviews with top managers or owners, and more than two-thirds of sampled firms (11,013) submitted income statement and balance sheet data (Table 1). Exporters account for between 8% (Guinea) and 44% (Morocco) of the sample.

Table 1   Sample details

Country	Income group	Survey year	Last completed fiscal year	Survey sample size	Number of firms with full income statement data	Number of exporters in the sample
Benin	Low	2016	2015	136	122	44
Bolivia	Lower-middle	2017	2016	361	225	53
Cambodia	Lower-middle	2016	2015	373	367	58
Cameroon	Lower-middle	2016	2015	344	257	75
Chad	Low	2018	2017	132	60	24
Côte d'Ivoire	Lower-middle	2016	2015	351	218	63
Egypt	Lower-middle	2016	2015	1,797	1,429	394
El Salvador	Lower-middle	2016	2015	708	438	196
Eswatini	Lower-middle	2016	2015	131	78	38
The Gambia	Low	2018	2017	133	117	25
Guinea	Low	2016	2015	137	40	11
Honduras	Lower-middle	2016	2015	320	188	53
Kenya	Lower-middle	2018	2017	978	725	304
Kyrgyz Republic	Lower-middle	2019	2018	349	232	79
Lao PDR	Lower-middle	2018	2017	327	152	45
Lesotho	Lower-middle	2016	2015	138	71	36
Liberia	Low	2017	2016	131	117	14
Mali	Low	2016	2015	161	88	54
Moldova	Lower-middle	2019	2018	331	270	99

Country	Income group	Survey year	Last completed fiscal year	Survey sample size	Number of firms with full income statement data	Number of exporters in the sample
Mongolia	Lower-middle	2019	2018	360	336	29
Morocco	Lower-middle	2019	2018	788	521	345
Mozambique	Low	2018	2017	595	550	123
Myanmar	Lower-middle	2016	2015	598	560	58
Nicaragua	Lower-middle	2016	2015	329	272	51
Niger	Low	2017	2016	122	49	30
Rwanda	Low	2019	2018	360	355	123
Sierra Leone	Low	2017	2016	132	115	14
Tajikistan	Low	2019	2018	326	137	45
Togo	Low	2016	2015	144	108	58
Ukraine	Lower-middle	2019	2018	1,305	688	417
Uzbekistan	Lower-middle	2019	2018	1,215	806	209
West Bank and Gaza	Lower-middle	2019	2018	348	277	79
Zambia	Lower-middle	2019	2018	594	519	125
Zimbabwe	Lower-middle	2016	2015	596	526	98
Total				**15,150**	**11,013**	**3,469**

Firms that export are defined as any establishment that has sales through direct or indirect exports. We assign exporter status to companies based on their response to the following question: "In the last completed fiscal year, what percentage of this establishment's sales were: (a) national sales, (b) indirect exports (sold domestically to third party that exports products), (c) direct exports?" In cases where the respondent answers affirmatively to option (b) or (c), the exporter designation is applied.

How to estimate survival time

As direct measures of cash-on-hand or cash accessible with ease are not available, we make several assumptions. In all cases, our assumptions are conservative – they serve to increase survival times. The reason for this choice is to have a lower bound on the possibility of firms resorting to bankruptcy.

To calculate the survival time of firms, we take net retained earnings for the past year as the numerator (assuming that all such earnings have been saved and are liquid and available for businesses to use). We expand the numerator with the availability of firms to 'tap' credit. In particular, we keep the ratio of retained earnings to external financing (as reported for the previous year) constant and assume that the same amount of external financing is available throughout periods of economic distress.

Next, we assume that wages and other employee expenses are covered fully by government crisis-response programmes. As a result, the denominator represents only fixed costs such as rent, machinery maintenance, and cost of materials. As profits are given in the data as the 'gross profit margin', we reduce it by subtracting the statutory corporate income tax rate, 15% dividends, and 10% depreciation expenses.

The channels through which businesses finance their working capital indicates the reliance on profits. In Guinea, for example, approximately 91% of the day-to-day operations of an average firm are financed through retained earnings. Firms in Cambodia, Sierra Leone, and the Kyrgyz Republic also finance their operations out of retained earnings. In contrast, firms in Honduras and El Salvador rely substantially on external financing (Figure 1). On average, retained earnings finance about three-quarters of working capital.

Figure 1   Percent of working capital financed through retained earnings on average
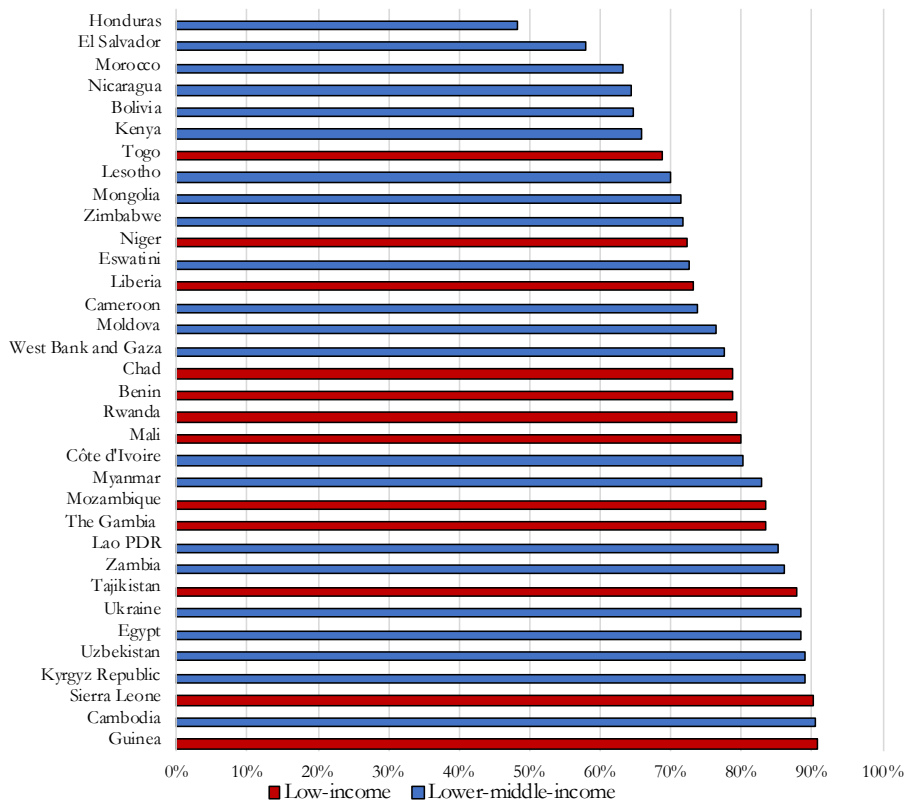
We use these data to expand the numerator, by taking the ratio of internal to external financing of working capital as constant over the period of extreme economic distress. In reality, financing may dry up if banks are unwilling to lend. Alternatively, government-sponsored programmes may expand access to external finance. The data are aggregated into three sectors (manufacturing, retail, other services) and we apply an outlier drop of any firm that has a survival time of over 260 weeks.

Can productive firms die?

The literature on firm survival in distress rests on two hypotheses. The first is that firm survival occurs primarily on the basis of productivity differentials – i.e. small and less efficient firms, as well as younger firms, have lower chances of surviving than their more efficient counterparts (Jovanovic 1982, Hopenhayn 1992, Melitz 2003, Melitz and Ottaviano 2008). The second hypothesis is that during economic downturns the collapse in aggregate demand raises competitive pressures and thus makes productivity differentials an even bigger factor in determining exit patterns (Hall 1995, Caballero and Hammour 1994, Gomes at al. 2001).

The empirical studies, however, suggest a different pattern. Some papers find that the 'creative destruction' effect is weaker than expected. Barlevy (2003), for instance, shows that during times of economic distress this effect may not hold in the presence of credit constraints, because efficient firms may be hurt disproportionally due to their higher financial needs. Ouyang (2009) provides evidence that times of economic distress destroy high-productivity firms during their infancy. A number of studies also suggest that labour market regulations and policies governing firm dynamics can be particularly relevant in distorting the process of firm selection in presence of negative shocks, because they allow relatively inefficient firms to survive (Foster et al. 2008).

A second strand of the literature is based on an observation that times of extreme economic distress create a hostile business environment (Cefis and Marsili 2019). During such periods, a collapse in consumer expenditures often goes along with an increase in uncertainty, which makes economic transactions more difficult to accomplish (Bloom 2014). Firms' relationships with buyers and suppliers become less reliable (Accetturo and Giunta 2019). Financial institutions lack sufficient information to correctly evaluate credit merit, with the consequent rise of credit constraints (Djankov et al. 2007, Ivashina and Scharfstein 2010).

A third strand of the literature looks at systemic financial distress. If governments take no action during periods of severe economic downturns, significant sections of the economy may remain distressed for a long period of time, resulting in large, socially unacceptable losses in output and employment. This realisation has led to the search for arrangements that would automatically trigger orderly processes to resolve systemic financial distress, as in Mexico during the 1996–1998 crisis (Mulás 2001) or Indonesia and Thailand during the East Asia crisis (Claessens et al. 2001a).

In a systemic crisis, the government's first role is to define rules that lead to efficient private restructuring efforts. Creditor profiles are important, as in the case of Indonesia where corporate sector debt was largely owed to foreign investors (Claessens et al. 2000). Some studies have shown that acquisitions by foreigners usually end up in fire sales, resulting in a net transfer of wealth from the crisis economies (Pulvino 1998). Even high-productivity companies lose value and end up liquidated or sold piecemeal. In the event that these private initiatives prove insufficient for acceptably resolving distress, the government's second role lies in providing direct assistance to keep firms operating as going concerns (Claessens et al. 2001b).

The previous literature leaves us with two testable hypotheses: either (1) economic distress periods are associated with mass exit of inefficient firms and hence are beneficial for long-term productivity and economic growth; or (2) such periods result in indiscriminate exit of firms due to collapsed demand and increased uncertainty, resulting in deleterious long-term effects. We take these two hypotheses to the data in the next section.

How long can firms last?

Retailers have the shortest survival time, with the median business running out of savings in about six and a half weeks of no revenues (Figure 2). Firms in the manufacturing sector have higher survival times on average, of between 11 (lower-middle-income) and 28 weeks (low-income). This is because their profit margins (and hence retained earnings) tend to be higher. It is perhaps counterintuitive that firms in low-income countries have more reserves in the manufacturing sectors.

Figure 2   Median survival time based on fixed costs by sector
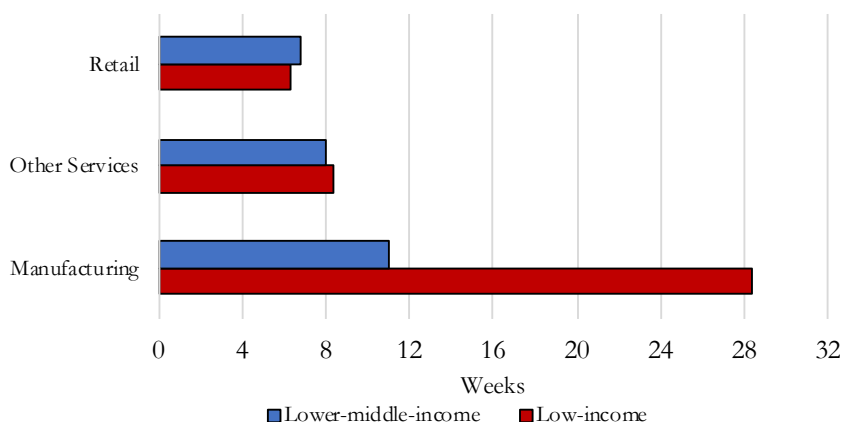
Note: Data are extracted from the World Bank Enterprise Surveys. Number of Observations: 10,267

Three reasons may explain this result. First, by assumption, the government pays salaries throughout the distress period. As firms in low-income countries are more labour intensive, they can draw on retained earnings longer. A simple calculation, using the same approach as used by Dewenter and Malatesta (2001), reveals that low income economies have a much higher employees-to-sales ratio in US deflated dollars relative to lower-medium income economies. Second, competition among manufacturing firms is more intense in lower-middle income countries than in low-income countries: 77% of firms in low-income economies have five or more competitors, while the same figure is slightly higher at nearly 80% in lower-middle-income economies. Such competition may serve to reduce retained earnings. Third, government owned firms tend to have excess employment (Boycko et al. 1996). Firms with some government ownership make up about 2% in low-income economies, and less than 1% in lower-middle-income economies.

Figure 3 shows the median survival time by country, which ranges between 6 weeks (Uzbekistan) and 15 weeks (The Gambia). Cambodian, Guinean, and Tajik firms are as cash-constrained as Uzbek firms (also at 6 weeks) and have a survival time that is less than half that of the median Honduran or Lesothan firm (14 weeks). The median business in Chad, Mali, Sierra Leone, and Togo can last 9 weeks – one week longer than the median business in, for example, Egypt and Mozambique (eight weeks).

The median survival time exhibits significant variation across countries within a given sector. For example, the median manufacturing Myanmar firm has a survival time of 7 weeks, whereas the median firm in the same sector in Liberia can last 36 weeks. Substantial variation is also present across sectors within a given country.

The mean survival time is longer, suggesting heterogeneity among firms and the likelihood that some firms can persist even in extreme economic hardship. In lower-middle-income countries, services firms can survive a total lack of revenues for 13 weeks, while businesses in manufacturing sectors can survive on average for up to 24 weeks.

The differences across countries between the average and median survival time persist. While the median business in Togo is estimated to run out of cash in 9 weeks, on average businesses have the means to survive for about 20 weeks, or more than twice as long. Results for other countries are more similar: in Tajikistan the average firm will run out of cash in about 7 weeks, close to the median value of 6 weeks.

Figure 3   Median survival time based on fixed costs by country
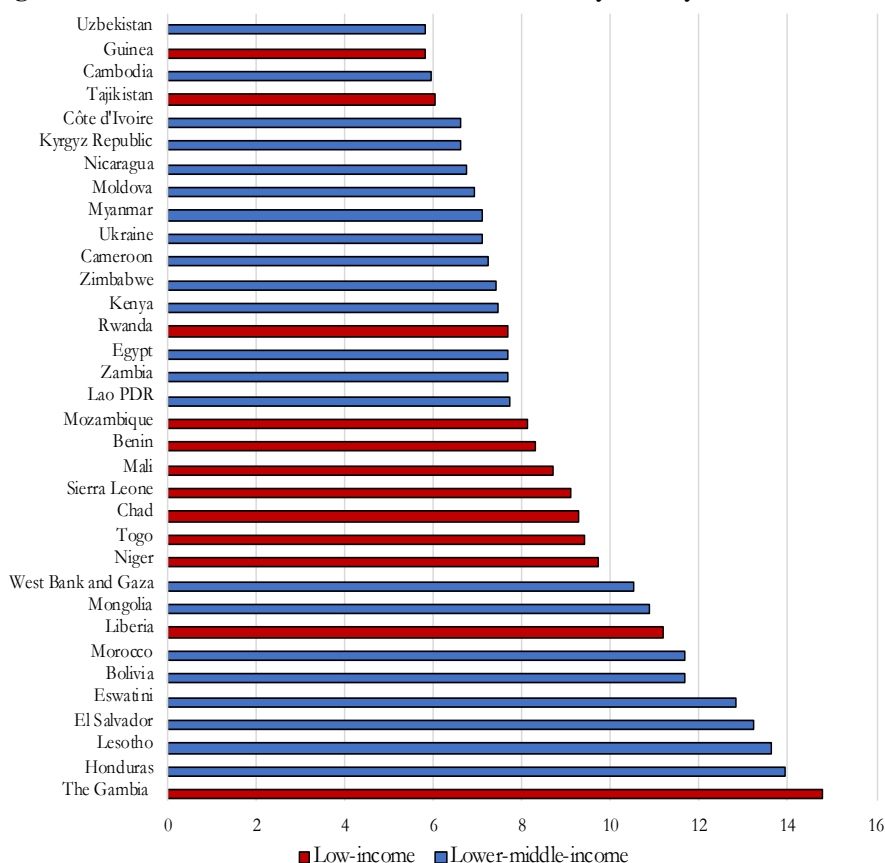
Finally, we redo the analysis shown in Figures 2 and 3, this time assuming that exporters lose access to their external financing. Such financing is likely to be related to receipts in foreign currency or is in the form of letters of trade credit (Javorcik 2020). Figure 4 shows that manufacturers in low-income countries are most adversely affected by the collapse of export demand, with survival times reduced from 28 to 18 weeks. Conversely, retailers and the provision of other services are mildly affected and remain the two sectors where firms are estimated to run out of working capital the fastest.

Figure 4   Median survival time (adjusted for exporters) based on fixed costs by sector
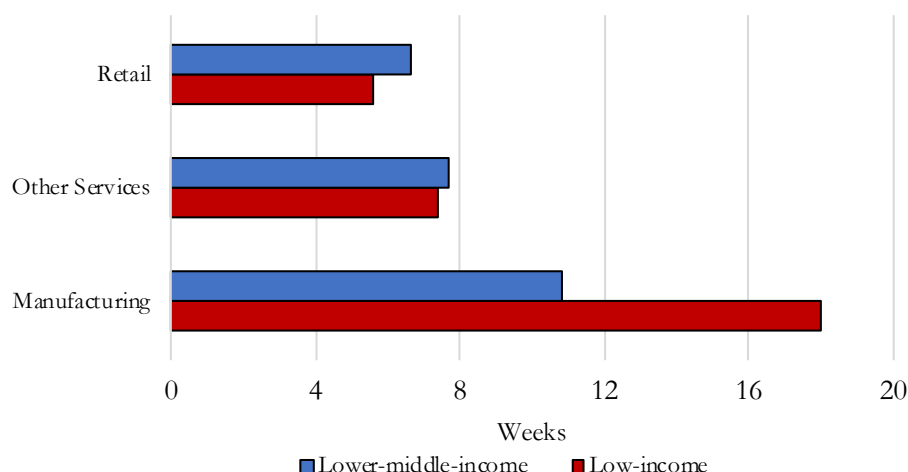
Note: Data are extracted from the World Bank Enterprise Surveys. Number of Observations: 10,358.

Firms in Bolivia and Morocco are the most negatively affected by the hypothetical loss in external financing. Both countries their median survival time reduced by close to one month, going from approximately four months (12 weeks), down to 8 weeks (Figure 5). Guinea, which has the lowest trade exposure of about 8% (and has among the highest proportion of working capital financed through retained earnings, at 91%) maintains a median survival time of 6 weeks under this scenario. Niger and Lesotho each see a reduction of their median survival time by more than 2 weeks relative to the baseline scenario in Figure 3.

Previous analyses have shown that exporters are among the most productive firms in any economy (Wagner 2007). As exports are among the most affected sectors of the economy during periods of economic distress that involve health concerns, productive firms are, in effect, subjected to financial strain beyond that of the median firm. The Schumpeterian (1934) theory of creative destruction no longer holds. Government policies for retaining jobs and rescuing firms are needed (Baldwin 2020b).
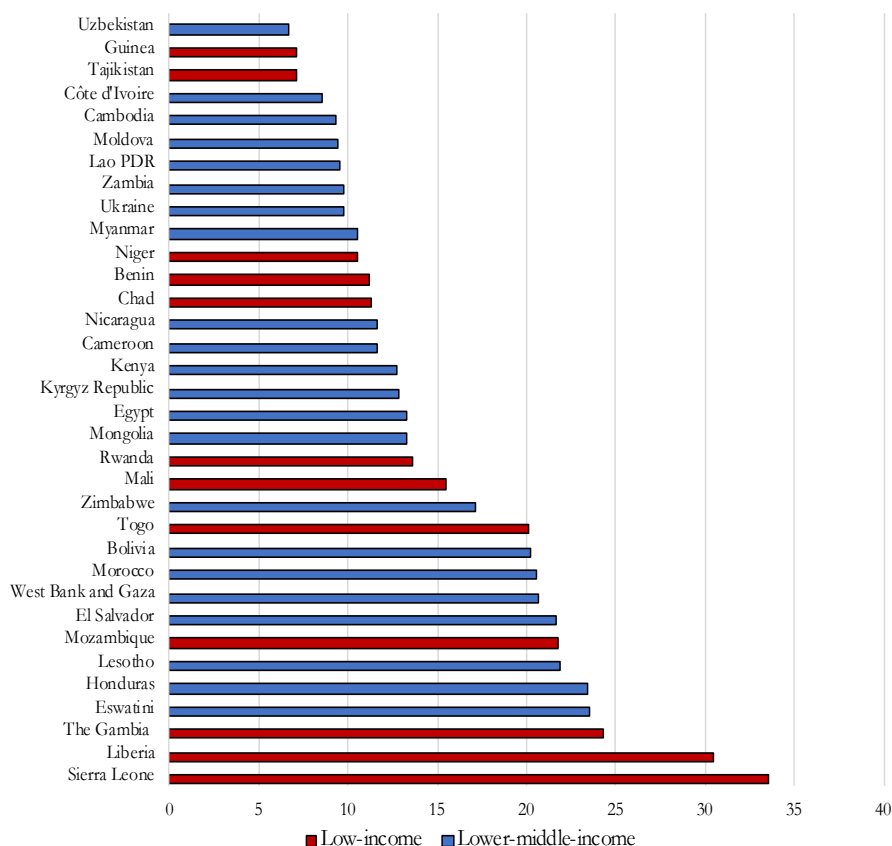
Figure 5 Mean survival time based on fixed costs by country

Note: Data are extracted from the World Bank Enterprise Surveys. Number of Observations: 10,267.

What can governments do?

Previous crises have taught us that when facing economic disasters, governments and central banks need to do as much as they can early on to mitigate the effects. How far a country falls and how fast it recovers depends on the policy response (Reinhart and Reinhart 2018). The results in this chapter suggest that significant government response is warranted to prevent mass insolvency.

The primary action is to suspend bankruptcy procedures, which often dictate that illiquid firms' assets get transferred to their secured creditors, mostly banks. A number of countries have already taken action. For example, in France bankruptcy law normally allows 45 days from the moment a debtor can no longer pay its debts to file for

bankruptcy. The new ordinance says that the firms will have three months after the end of the state of emergency (i.e. as things now stand, until September 2020) to file for bankruptcy if needed. The German parliament passed a temporary suspension of firms' obligation to file for bankruptcy. The suspension is valid until September 2020, with an extension to March 2021 – a one-year delay so firms can stand on their feet.

However, these measures are only relevant for countries where the practice of insolvency is established (about half of the countries in our sample). In others, the risk is a surge in foreclosure proceedings both in and outside of courts. Here, a response can proceed in two steps.

First, governments – with the support of central banks – need to establish clear moratoriums on loan payments. Some countries from our sample have already taken this step. The Uzbek central bank has suggested that banks defer loan payments for firms in sectors affected by COVID-19. El Salvador adopted a three-month deferral on specific loans for firms affected by the pandemic (vehicle credit, credit card, and mortgages). Microlenders in Egypt have been instructed to consider delays, on a case-by-case basis, of up to 50% of the value of monthly instalments for affected clients.

The Central Bank of West African States (BCEAO) has set up a framework for banks and microfinance institutions to accommodate demands from firms with repayment difficulties. The framework recommends renewable three-month postponement periods for debt service filing, without the need to classify such postponed claims as non-performing.

Second, governments need to establish and incentivise out-of-court workout frameworks. Workouts are non-statutory agreements between a debtor and creditors with the aim of easing the debtor's debt burden so that it can maintain its business activities (World Bank 2017). Out-of-court workouts have no judicial participation. These informal restructuring processes allow for flexible and confidential alternatives to insolvency and debt enforcement and can save viable firms by giving them much-needed breathing space. Yet, private banks need to be incentivised, especially in countries where foreclosure is the main outcome of illiquidity. One option is tax incentives.

In our sample, as of mid-May 2020, Cambodia is the only country that has issued new guidelines to financial institutions on loan restructuring for borrowers experiencing financial difficulties. These guidelines are limited to priority sectors: tourism, garment, and construction, among others.

Then comes the biggest challenge for policymakers: how to deal with informality. Informality is huge in low- and middle-income countries, accounting for an average of 70% of all workers aged 15-64 in the 23 countries from our sample where the data are available. In Benin, Chad, Côte d'Ivoire, Honduras, Mali, and Mozambique, more than 90% of jobs are in the informal sector (Figure 6).

Figure 6   Share of informal jobs (aged 15-64)
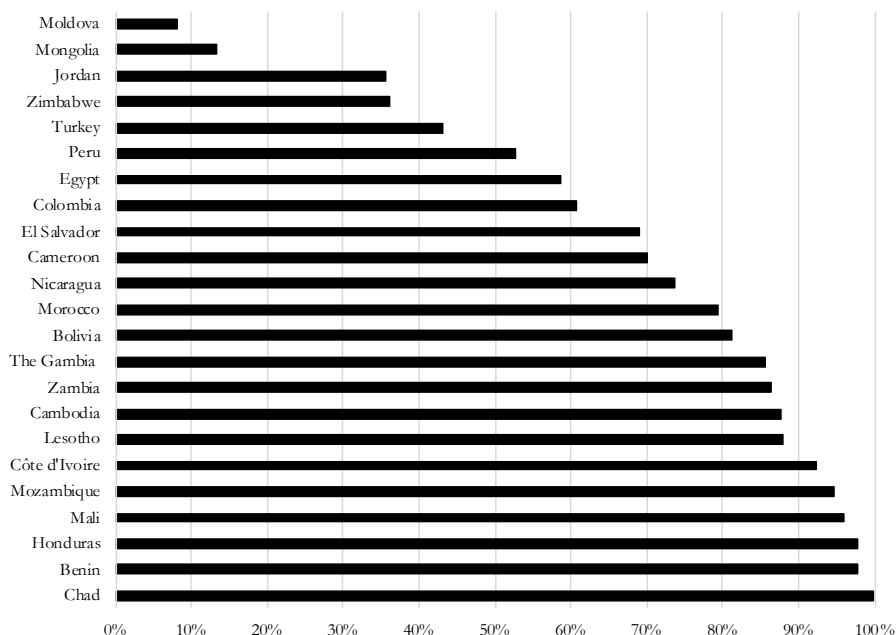
Note: Data are extracted from the World Bank's JOIN database using the latest available year for each country.

Finding policy solutions to address informality during a crisis is one of the biggest challenges globally for poor and emerging countries. This is because workers in informal businesses are not able to take advantage of the various job retention schemes governments offer. Neither are these workers able to claim temporary unemployment benefits. Furthermore, business owners have no recourse to credit guarantees or small-business grants, also popular as crisis response. India, where over half the GDP is produced by the informal sector, symbolises this challenge. For these countries, transactions are largely outside the fiscal reach of the government, both in terms of taxes and transfers (Ray et al. 2020).

Some governments are considering programmes that provide access to crisis assistance in return for firms turning formal, but research shows that this transformation is unlikely to happen (Bruhn 2012). Instead, governments should view informal businesses as providing subsistence livelihoods to poorer households. To improve their wellbeing during the crisis, these are best reached through standard cash transfer programmes. Countries with existing cash-transfer programs can immediately broaden eligibility and increase the size of the benefit. India is doing just that (Dhingra 2020).

Some countries from our sample are working on finding solutions. Côte d'Ivoire has established a fund of 100 billion FCFA ($167 million) to support its informal sector after the health crisis (modalities are pending as of mid-May 2020). The government of Egypt has set a payment of 500 Egyptian pounds ($31) per month for three months for workers in the informal sector.

Conclusions

We use firm-level data to produce estimates of the liquidity available to firms under different scenarios of economic distress. We demonstrate that the variation in this survival time is significant across sectors and countries. In all cases, however, the evidence suggests that urgent government action is needed if firms are to survive this unexpected economic downturn.

Perhaps more importantly, our analysis does not find support for the Schumpeterian view that economic crises cleanse the private sector of inefficient firms. In all our hypothetical scenarios, firms suffer untimely death regardless of age, size and productivity level. We posit that extreme economic distress caused by a hypothetical pandemic is responsible for this result.

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11 Macroeconomic policy responses to a pandemic[1]

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COVID-19 has required lockdowns and other measures affecting workers that amount to a massive productivity shock. To alleviate the impact of that shock, many countries have enacted policies to avoid job losses, including subsidising payrolls and providing financial support to firms that commit to retaining workers. The elimination of jobs in a pandemic is inefficient because of the interaction of two ingredients: (1) while workers may be unproductive during the pandemic, eliminating jobs harms productivity in the recovery; and (2) employers may be unable to preserve jobs during the pandemic because of frictions that limit the credit needed for paying the wage bill. If, in particular, credit limits depend on the value of firms, the model yields amplification effects and unemployment-productivity-asset price adverse loops, possibly leading to multiple equilibria. In this context, the most effective responses may be unconventional policies that relax the financing constraints underlying inefficient job losses.

The world has seen many economic crises. But never before has it witnessed a crisis triggered by governments telling firms to suspend operations and workers to stay home. COVID-19 is a negative supply shock of unprecedented size.

One of the most difficult aspects of managing this crisis is how to keep the population locked down while avoiding massive job losses. A firm holds much of its productive capital in the workers it has recruited, hired and trained. If the crisis forces an entrepreneur to fire those workers, the firm´s future productivity will suffer.

But why would private employers choose to dismiss workers instead of preserving those jobs until the pandemic is over? One answer is that employers may not be able to afford to pay wages once production and sales collapse, even if only temporarily. To keep paying the wage bill, the entrepreneur needs credit. And credit is notorious for being available at all times except when you really need it – in a crisis.

A bank may step in and lend, but it will typically ask for collateral. The catch is that smaller firms often do not have assets they can pledge. And larger firms find that at a time of great uncertainty the value of the physical and financial assets they hold is severely depressed, so those assets are not much good as collateral. The upshot is that many firms may be unable to borrow. And if credit does not flow, millions of jobs will be lost and massive amounts of entrepreneurial capital will be destroyed.

This story is a fair description of the current plight of many firms around the world. It suggests that permanent losses in productive capacity could be avoided by easing financial constraints. But loose ends remain. What determines the value of collateral? And how is that value related to the productivity of the firm and to the amount of labour it is forced to shed during the crisis? The story also begs many policy questions: What can governments do? Do conventional monetary and fiscal policies work in such a situation? If not, are there alternative policies that help support collateral values, save jobs and preserve firms´ entrepreneurial capital?

To think about the answers, in a recent paper (Céspedes et al. 2020), we develop a minimalist macroeconomic model that emphasises the interaction of two essential components. The first component is that cutting jobs during the pandemic can impair productivity in the recovery phase. The second component is that firms face financial constraints in the form of credit limits that depend on the value of assets that they can pledge as collateral.

In our model, labour productivity falls drastically in an initial phase of the pandemic but returns to its normal level in a recovery phase – provided jobs are preserved. Hence employers would like to avoid job cuts during the pandemic, even if this implies a wage bill that exceeds production and sales. But the number of jobs that can be saved depends on employers' credit limits and, therefore, on the value of their collateral.

Assuming that the collateral of entrepreneurs includes the value of their firms, the two components of the model interact. The value of firms is determined by expectations of profitability and, therefore, of productivity during the recovery period. But this in turn depends on employment, which may be limited by the value of firms.

The model then implies amplification effects and an unemployment-asset price deflation doom loop à la Fornaro and Wolf (2020). In addition, multiple equilibria may arise in which employment, productivity, and asset values may be high or low according to market optimism or pessimism.

Our model casts useful light on policy alternatives. Conventional fiscal and monetary policy are ineffective, since the problem is not a shortage of aggregate demand. Cutting

interest rates has an indirect effect via asset prices – firms are constrained not by the price of loans, but by the available quantity of loans – but that effect may be small if the initial real interest rate is low. By contrast, there are several unconventional policies – wage subsidies, helicopter drops of liquid assets, equity injections, and loan guarantees – that, if sufficiently large, can keep the economy in a high-employment, high-productivity equilibrium in the aftermath of a pandemic.

All of these policies can restore efficiency by relaxing financial constraints. But because they entail channelling resources to firms beyond what incentive-compatible borrowing limits would permit, entrepreneurs may be tempted to misbehave, leaving taxes unpaid (in the case of a wage subsidy or a helicopter drop), absconding with profits instead of distributing them as dividends (in the case of equity injections), or defaulting on debts (in the case of loan guarantees). So, the policies will be feasible insofar as government is willing and able to do what private agents cannot – namely, deploy the power of the state to make sure all relevant financial obligations are fulfilled.

Most of the unconventional policies require the government to spend resources upfront, at a time of crisis when revenues are down. So, to fight the economic consequences of the pandemic, governments will need to run deficits (albeit for reasons that are different from the traditional Keynesian reasons). And private sector firms, which have to keep paying wages while their sales and productivity are sharply down, will also be running deficits. A country that adopts anti-virus policies is therefore likely to run a current account deficit. The capacity to borrow, for both the government and the nation as a whole, becomes critical. Emerging market economies that are rationed out of capital markets may find they cannot afford anti-crisis policies unless the rest of the world channels fresh resources to them.

Our model

In our paper, we study a pandemic episode in an economy that is small and open. The focus is on two periods which can be thought of as an initial contagion phase followed by a recovery phase. There is a single tradable good in each period, and an internationally traded bond. Households and entrepreneurs live side by side. Households work, save and may lend resources to entrepreneurs. Entrepreneurs produce and may borrow to finance operations.

The model's action is with firms and their borrowing and production decisions. Output is produced using labour only. The pandemic shock means that labour productivity collapses in period 1 so that, in the absence of adjustment costs, firms would reduce labour employment in that period. But we assume that finding the right workers and

hiring them takes time and is costly, so that if an entrepreneur fires them today, she will not be able to resize the firm's labour force to a different optimal level in the future. The extreme version of this assumption, which we adopt, is that labour input is set in period 1 and cannot be changed in period 2.

In the first period, because of the virus, labour produces no output. In the second period, the virus subsides and output depends on both employment and labour productivity. A key assumption is that productivity itself depends on employment, denoted by $\bar{n}$. If in response to a shock the firm is forced to shed crucial employees and take employment below a certain threshold n, productivity will drop.

We assume that productivity is large relative to wages so that the typical entrepreneur would choose to make employment as large as possible, at a level n. In the absence of other frictions, firms would retain the workers they had before the pandemic even if they temporarily produce nothing, because period 2 profits will be large enough to justify paying wages in period 1 to retain workers.

Firms have no income in period 1, so they must borrow to pay wages. The sum borrowed, d, depends on the level of employment and the entrepreneurs' initial holdings of liquidity. We call this the CD schedule (for credit demand). It slopes up in (*n,d*) space because the higher is employment, the more the firm has to borrow to pay wages in period 1. Note that CD must hold in any equilibrium.

Realistically, however, financial constraints may prevent firms from operating at maximum scale. Assuming that there is an upper limit to the firm's debt then places also a ceiling on employment. In our paper, the assumption is that the debt limit is given by the value of the firm. To prevent default from happening, lenders demand the firm´s shares as collateral.

If borrowing constraints bind in equilibrium, the debt level *d* must equal the value of the firm. We call this the FC schedule. It has that shape (piece-wise linear, mathematicians call it) because productivity can be high or low depending on whether employment is above or below $\tilde{n}$. And FC slopes up in (*n,d*) space, because higher employment means higher profits, which in turn enlarge the value of collateral and the amount that firms can borrow.[2]

Figures 1-3 depict equilibria with the help of the FC and CD schedules. Depending on parameter values, equilibria can be constrained and unconstrained, and multiple outcomes can coexist (in which case equilibrium is pinned down by self-fulfilling

2   We assume that the FC schedule is always flatter than CD.

expectations). Here we provide only a graphical and intuitive treatment. Readers interested in the technical details can consult our paper.

Figure 1 depicts the case of a single unconstrained equilibrium at $\bar{n}$. At $\bar{n}$ the amount of debt, given by $\bar{d}$, is less than the value of the firm. This confirms that the firm can finance maximum employment without violating its borrowing constraint.

Figure 1   Single unconstrained equilibrium at $\bar{n}$
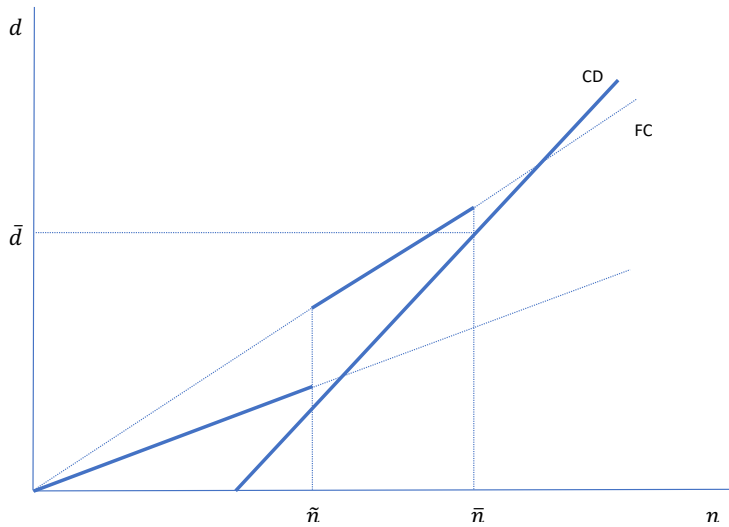
From the figure it is apparent that given FC, the unconstrained equilibrium is more likely if CD is lower. This would happen if the firm's initial net worth is sufficiently large, so that the firm can afford to borrow little and still not shed labour when the virus hits. Likewise, given CD an unconstrained equilibrium is more likely if the FC schedule is steeper, which is the case if labor productivity is high.

Because an unconstrained equilibrium involves full employment and productivity is as high as can be, there is no efficiency case for policy intervention in the case of Figure 1. Note that this means that the occurrence of a pandemic is not, by itself, enough justification for active policy.

Things change if firms' initial wealth is lower or financial constraints are more stringent. Then the economy can have a single constrained equilibrium, as depicted in Figure 2. Here firms cannot hire $\bar{n}$ workers because that would require more collateral than they have: at $\bar{n}$ the amount of debt implied by CD exceeds the value of the firm, given by

FC. Firms must then reduce employment to n^h, the highest level they can finance given the value of the firm.

Because both the CD and FC schedules slope up, the economy responds to adverse shocks with large magnification effects, in what one might call an unemployment and asset price deflation doom loop (Fornaro and Wolf, 2020). For instance, if starting at an equilibrium such as that in Figure 2, the firm starts out with one fewer dollar of initial net worth, its capacity to hire workers and pay wages goes down by more than one dollar, with the multiplier reflecting reduced access to outside finance through an drop in the value of the firm.

Figure 2   Single constrained equilibrium
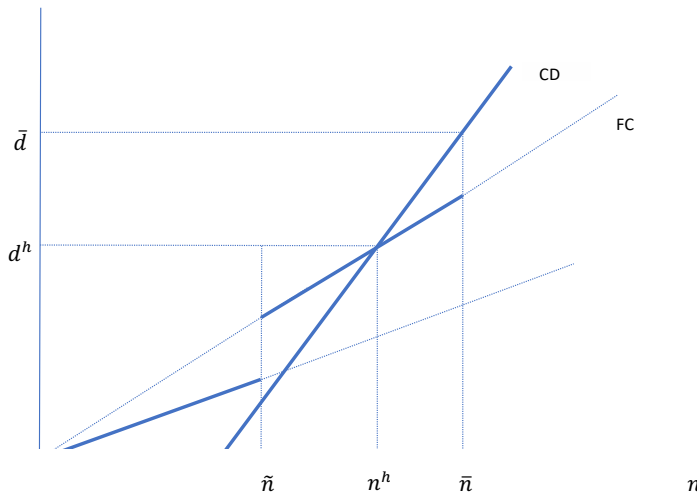
The case in Figure 3 involves two borrowing-constrained equilibria, with employment at the low level n^l and the high level n^h. If potential share buyers are optimistic, strong collateral values enable firms to borrow and raise employment above $\tilde{n}$. Productivity is high, making optimism self-fulfilling. Conversely, pessimism causes low share prices, reducing access to finance. Employment falls and expectations of low productivity are justified.

Figure 3   Multiple constrained equilibria
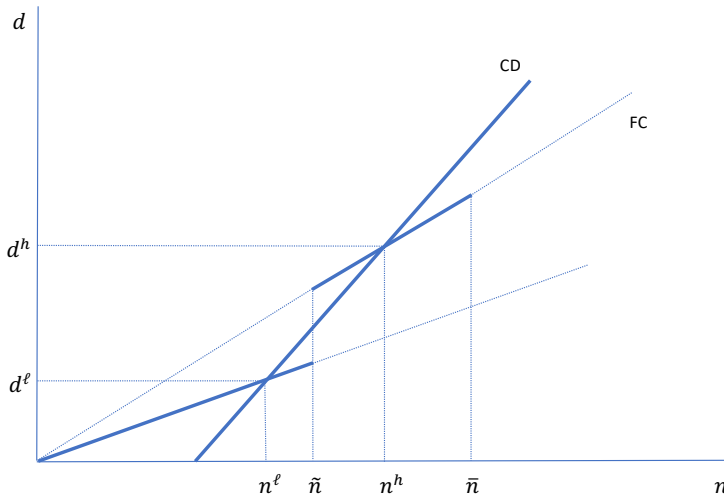
Policy alternatives

In our model, conventional demand management policies are ineffective. The problem arising from the virus is one of supply. Demanding more goods from the representative firm has no impact if the firm is constrained from producing them. Raising government expenditures on goods does not help alleviate the firm's bottlenecks, which are financial in nature.

Interest rate cuts can help, but not in the usual way. Lowering rates can increase the value of firms and, in a financially constrained equilibrium, relax credit limits. While there is no money in our model, we can glimpse how lower interest rates might work by considering a policy of government interest subsidies to firms.

Suppose that in period 2, when loans came due, firms would only pay a fraction of the market rate and the government would pay the rest. This reduces the interest rate that firms effectively face. Firm values, which are determined by future (pledged) profits discounted back to the present, must then go up. Credit limits are relaxed as an implication, allowing firms to raise employment if they were financially constrained.

In practice, however, this policy can be of limited use. If the starting world interest rate ρ is close to zero, there is little room to subsidise interest costs. And in an uncertain environment, asset prices are unlikely to be very responsive to interest rate subsidies.

Given these difficulties, are there other policies with a higher chance of being effective? In our model, the crucial issue is to enable firms to survive the initial contagion period without shedding too many jobs. This suggests several unorthodox policies that temporarily help firms finance wage costs and retain workers.

The simplest such policy is to have the government pay the firms' wage bills, so that employment can remain at the optimal level $\bar{n}$. Such a policy causes the CD curve to shift right and become flatter, as in Figure 4. Equilibrium moves from point A to point B. Employment goes up, reflecting that the wage subsidy reduces firms' financing requirements and therefore also makes it less necessary to shed workers in period 1.

In Figure 4, the wage subsidy is large enough to bring about full employment $\bar{n}$. Of course, this requires the government to have enough fiscal space to borrow and fund the operation.

Figure 4   Wage subsidies
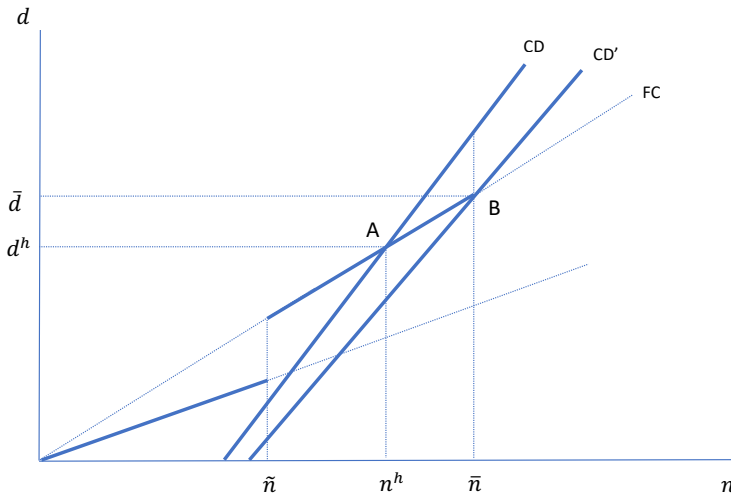
Note that the possibility of multiple equilibria makes the policy problem more delicate. If the initial situation is one with two constrained equilibria, as in Figure 3, a wage subsidy may take the economy to an equilibrium with employment at $\bar{n}$, but it may not if expectations are adverse: depending on the minimum efficient scale and other parameters, the subsidy may not be enough to eliminate the multiplicity of equilibria.

Because there are no imperfections other than the borrowing constraint and the pecuniary externality that gives rise to multiple equilibria, in this model the issuance

of liquidity through government bonds does not create net wealth. So, this policy is not very different to the one in which the government pays the firms' wage bills.

Wage subsidies and helicopter drops help protect employment by providing firms with liquid resources they can use to bypass binding finance constraints. But they do not attempt to alleviate the severity of those borrowing constraints. Other policies go further in that direction. One alternative is an equity injection, by which we mean that government temporarily acquires ownership and control of firms in exchange for initial liquidity provision.

In order to illustrate how equity injections might work, imagine that without government intervention the economy would settle on a unique equilibrium like the one described in Figure 2. In this equilibrium, entrepreneurs would like to raise employment to $\bar{n}$, but they cannot borrow the amount they would need to finance the additional wage costs.

To correct this situation, the government may inject resources into a firm and as a result acquire control rights. These control rights imply, in particular, that in period 2 the government can secure repayment out of the firm's final profits.

In terms of Figure 2, the equity injection would move CD to the right until it intersects FC at the full employment level $\bar{n}$. An interesting fact is that the injection does not need to be as large as the additional amount firm needs to retain the workers that will ensure full employment.

Why? Because the equity injection leads to higher share prices, allowing the firm to borrow more. The policy is particularly effective since government resources are leveraged up, in the sense that the injection allows the firm to finance an increase in the wage bill of more than e, the difference reflecting better access to outside finance through an increase in the value of the firm.

So, equity injections can be powerful tools. They can be so, however, on the assumption that they give the government the power to seize a fraction of the firm's profits that cannot be pledged to other outside investors, perhaps because it has acquired control (seats on the board of the company) in exchange for the equity injection.

In the absence of formal board appointments, the government could impose conditions regarding dividend payments, stock buybacks and executive compensation, so as to ensure that the resources from the equity injection are first used to hire $\bar{n}$ workers and raise productivity, and then in period 2 to pay the corresponding dividends and debt service.

An obvious caveat is that equity injections, coupled with temporary government control, make sense for firms above a certain size. It would make little senses for government to inject equity and attempt to run the corner shop or restaurant down the street.

Similar observations apply to credit guarantees, in which the government promises lenders to pay a fraction of their loans outstanding in case of default by the firm. In terms of the previous figures, the credit guarantee would move the FC schedule counter-clockwise from the origin.

It is apparent that a large enough guarantee would be able to raise employment to $\bar{n}$ So, this policy might seem like a win-win: it would deliver the full-employment, high-productivity equilibria without requiring fiscal resources in period 1. But there is a catch: the guarantee may expose the government to moral hazard. From the perspective of the entrepreneur it would be optimal to default in period 2 and abscond.

So, credit guarantees, like equity injections, may not sufficient by themselves. In order to make the guarantees incentive-compatible, the government would have to combine them with a strengthening of the incentives for the entrepreneur to repay. That is exactly what some European governments have done, excluding from loan guarantees those companies that operate out of tax havens. Alternatively, the government could again condition the provision of a guarantee to the suspension of dividend payments or the limiting of executive compensation.

Conclusions

Several unconventional policies – wage subsidies, liquidity injections, equity injections, and loan guarantees – if sufficiently large, can keep the economy in a full-employment, high-productivity equilibrium in the aftermath of a pandemic.

What these policies all have in common is that government provides entrepreneurs with resources in excess of what borrowing constraints, which are really incentive constraints, would have allowed. The policies differ in terms of the implied enforcement requirements, since the entrepreneur has an incentive to abscond with a share of the profits, leaving taxes unpaid (in the case of a wage subsidy or a liquidity injection), dividends unpaid (in the case of equity injections), or debts unpaid (in the case of loan guarantees). So, the policies will be feasible insofar as government is able to do what private agents cannot – namely, compel entrepreneurs to play by the rules.

Keep in mind that the unconventional policies analysed in our paper may not be applicable to firms and workers in informal sectors, which easily amount to more than half of the economy in some developing and emerging nations. On the other hand,

even if unconventional policies only help formal agents directly, they can also benefit informal ones indirectly. And if the policies lead to a stronger economic recovery, they may provide incentives for agents in the informal sector to adhere to lockdowns and social distancing directives, therefore reducing the size and consequences to them of the 'health shock' (Chang and Velasco 2020).

All these unconventional policies become more complex in the presence of multiple equilibria. The size of the intervention necessary to make full employment feasible is not necessarily one that will rule out other less attractive equilibria with lower employment and potentially lower productivity. A larger intervention may rule out the bad equilibria, but it will necessarily be a more expensive intervention, which may not be affordable for governments with limited fiscal space.

Fiscal space is a big issue. In all of our exercises above, we assumed that the government could borrow more or run down assets in period 1. That is not problematic for most advanced economies, but could be a difficult issue for many emerging market governments, whose ability to borrow large amounts may be severely limited, particularly during a pandemic-driven crisis.

Moreover, constraints on international borrowing could also be an obstacle to the implementation of unconventional policies. In all scenarios, policies involve inducing the firm to run a deficit (it keeps paying wages even though it has no revenue) and prompting the government to run a deficit (spend today and raise taxes tomorrow). So, the country as a whole will be running a current account deficit.

Who will finance the current account gap? Only a few countries are short-term net creditors, in the sense of holding more short-term claims on the rest of the world than the rest of the world holds on them. For all other countries, the only way out in the event of a pandemic is to borrow abroad. But it could well be that the country is rationed out from international private capital markets, or that international capital markets effectively freeze for a period of time, as it happened in 2008-09. Then the country as a whole (the private and public sectors) would not have access to the necessary resources to finance the interventions required to guarantee the full-employment, high-productivity outcome.

In theory, official lending, either on a bilateral basis or through multilateral lenders such as the IMF or the World Bank, could make up the difference. But one thing this crisis has confirmed is that multilateral lenders have nowhere near the volume of resources required, and their main shareholders (the large advanced countries plus China) are reluctant to provide more capital. Large shareholders like the US have also refused to provide more short-term international liquidity via an extraordinary issue of

SDRs. So, for many countries living through this pandemic, welfare-improving policy interventions may be unattainable simply because of lack of resources from abroad.

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Section III

COVID-19 effects on informality, poverty and inequality

12 COVID-19 and global poverty: A preliminary assessment

Giovanni Valensisi

United Nations Conference on Trade and Development (UNCTAD)[1]

This chapter provides a preliminary assessment of COVID-19's impact on global poverty, consistent with the IMF's April 2020 growth forecasts. The analysis shows that the fallout of the pandemic will have dramatic consequences, eroding much of the gains recorded over the last few years in terms of poverty reduction. Our baseline case suggests that globally the number of people living below $1.90 per day poverty line could increase by at least 68 million in 2020. The fallout of the pandemic will also exacerbate the geographic concentration of poverty. This represents a significant setback and, absent effective support and international cooperation, will pose a critical threat to the achievement of the UN 2030 Agenda for Sustainable Development.

As the number of COVID-19 cases continues its rise, the global economy braces for a shock of unprecedented severity and complexity, expected to trigger "the worst recession since the Great Depression" (IMF 2020: v). In a context already characterised by slow trend growth, heightened inequalities and sharp policy uncertainties, the pandemic has triggered simultaneous supply and demand shockwaves, with direct ramifications into the financial sphere (Baldwin and Weder di Mauro 2020a, 2020b). For developing countries, this is compounded with dropping commodity prices, falling FDI and remittance flows, capital flow reversals and – in many cases – looming debt vulnerabilities (UNCTAD 2020a, 2020b, 2020c, 2019, IMF 2020).

If it is too early to predict the depth and duration of the crisis, it is nonetheless clear that its socioeconomic costs cannot be overemphasised. The International Labour Organization has recently warned that employment losses could be close to 300 million worldwide, and that 1.6 billion workers in the informal economy are at immediate risk of seeing their livelihoods reduced (ILO 2020a). It also estimated that in 2020 there

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could be between 9 and 35 million additional people in working poverty, most of whom are living in developing countries (ILO 2020b, McKibbin and Fernando 2020). Vos, Laborde and Martin have analysed the potential impact of the pandemics on poverty using IFPRI's MIRAGRODEP model (Vos et al. 2020, Laborde et al. 2020). In their latest analysis, the authors find that under a scenario corresponding to a 5% contraction in world output, and absent any intervention, over 140 million people could fall into extreme poverty in 2020 (Laborde et al. 2020). Sumner et al. (2020)[2] simulate the impact of arbitrary consumption shocks of -5%, -10% and -20%, and find that the number of people living in extreme poverty could increase by between 85 and 419 million. Using IMF growth forecasts, Gerszon Mahler et al. (2020) find that the number of people pushed below the $1.90/day poverty line will increase by between 40 and 60 million.

This chapter builds on these studies and provides a preliminary assessment of the impact of COVID-19 on all commonly used international poverty lines. My findings suggest that COVID-19 will cause a significant setback in efforts to eradicate extreme poverty and reinforce its geographic polarisation. If at a global level the shock is likely to erode the progress achieved in the last two or three years, in regions such as Latin America and sub-Saharan Africa it might wipe out the gains of the last eight years (even more so in the Middle East and North Africa, where headcount ratios were already on the rise prior to COVID-19, and the latter shock is compounded with protracted situations of conflict).

This chapter is structured as follows. The next outlines the methodology and caveats. This is followed by a presentation of the global and regional estimates, and an exploration of a more pessimistic scenario than the one forecasted by the IMF. The final section summarises and concludes.

Data, methodology and caveats

My estimates for the impact of COVID-19 on global poverty are based on three steps. In the first step, I assess the economic impact of the crisis by using different vintages of IMF forecasts for GDP per capita (in constant 2011 international dollars). Specifically, I use the IMF's October 2019 and April 2020 World Economic Outlook forecasts (IMF

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2   In earlier simulations, the authors had emphasised that the impact on poverty is "quite sensitive" to the channel of transmission of the shock to domestic producers, whether it is through trade, through total factor productivity, or disruption of production due to confinement (Vos et al. 2020).

2020, 2019).[3] Differences in forecasts portend a 3% contraction in world output for the year 2020, and a substantial downward revision of the global GDP per capita growth estimates from +1.1% to -2.2% (Figure 1). Although the fallout of the pandemic is expected to significantly affect all regions, Asian economies are expected to maintain positive growth, on average. All other regions will face a contraction of per-capita income.

Figure 1 Annual growth rate of GDP per capita in constant PPP, 2020
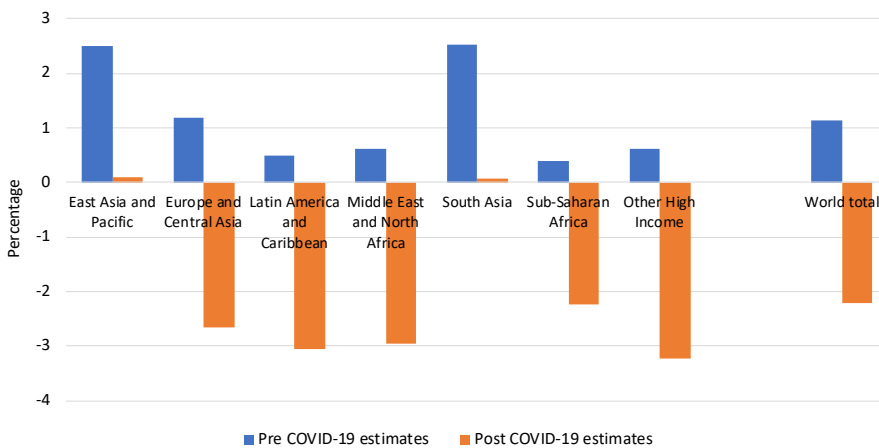
Source: Author's computation based on IMF (2019, 2020).

The second step uses pre- and post-COVID-19 growth rates to 'line-up' the corresponding poverty estimates using PovcalNet (a World Bank computational tool containing the official poverty estimates at the country, regional and global level). The procedure follows closely Sumner et al. (2020). Denoting by z_0 the poverty line in the reference year (typically 2018) and by xt the forecasted growth rate of GDP per capita in year t, the new poverty estimate is obtained by revising the poverty line (in 2011 purchasing power parity) with the following formula:

$$z_t = \frac{z_0}{\prod_{i=1}^{t}(1+x_i)}.$$ (1)

As the poverty line is negatively correlated with x_i, a decrease in growth is associated with a higher poverty line.

In the third step, I estimate the poverty impact of COVID-19 by comparing the poverty measures obtained by applying the pre- and post-COVID-19 growth estimates released by the IMF in October 2019 and April 2020.[4] Population data for 2020 – drawn from the latest World Population Prospects (UNDESA 2019) – are utilised to translate changes in the headcount ratios into corresponding variations in the number of poor.

A few caveats are in order. First, it is implicitly assumed that GDP per capita growth mirrors in an equivalent rise of households' welfare measured by surveys; that is, the consumption of all households is assumed to expand at the same rate as GDP per capita. While this is in line with the typical method used by the World Bank to 'line up' poverty estimates from different years, empirical evidence shows that only a fraction of the growth in national accounting variables trickles down to households. Hence the effect of growth on poverty might be over-estimated (Newhouse and Vyas 2018, Korinek et al. 2006).

Second, I assume no change in that income distribution. It is, however, reasonable to expect that the poorer segments of the population will be the hardest hit by the epidemic, at least in urban areas. For example, strict social distancing is likely to exert a disproportionate effect on informal workers, daily labourers and employees in small businesses, which have meagre resources to weather the confinement without major disruptions. Similar distributional concerns are relevant in this phase, and critical on a longer-term in shaping the path and speed of poverty reduction (Lakner et al. 2019). However, the working assumption of a distribution-neutral shock is retained here for practical reasons, since distributional aspects vary from country to country and do not easily lend themselves to generalisations.[5]

Third, the negative impact of the pandemic on households' welfare may be felt through other channels than the pure short-term income dimension analysed here. Some non-monetary channels may trigger adverse long-term effects, creating path-dependency from 'transient poverty' into 'chronic poverty'. For example, health-related problems may permanently lower productivity, or when poor households are forced to take their kids out of school to cope with a temporary crisis, this might lower income prospects over the long term, with knock-on effects that are not accounted in my simulations.

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4   In order to tease out the effect of the pandemics from that of routine revisions of growth rates during the year 2019, in the pre- and post-pandemic scenarios we only modify the forecasted growth for the year 2020.

5   For example, in so far as it may trigger the layoff of employees in formal establishments but not a complete halt to the informal economy, the downturn may actually push formal employees into informality, with ambiguous distributional effects. Analogously, while the fallout of COVID-19 might have adverse distributional impacts in urban areas, this may not necessarily be the case at a national level, especially in countries where urbanization is limited. Rural areas, which tend to be characterized by more prevalent and deeper forms of poverty, have so far been largely spared from the direct fallout of the pandemic, and in several developing countries anecdotal evidence points to a large migration away from congested locked-down cities.

Fourth, there is massive uncertainty in the growth forecasts used in my exercise. This uncertainty is openly acknowledged by the IMF itself, in view of the unprecedented nature of the crisis and of the fact that future economic prospects are partly contingent on the evolving policy responses adopted at a national and international level (IMF 2020, Baldwin and Weder di Mauro 2020a). Most of the growth risk is on the downside.

These qualifications suggest that the figures presented below are conservative estimates of the poverty impact of COVID-19.

Results: The short-term impact of COVID-19 on global poverty

Broadly speaking, the impact of COVID-19 on poverty is explained by the interplay of three context-specific factors:

1. *The severity of the health crisis*, which determines the human and social costs, as well as the type, breadth and duration of policy responses (including social distancing, confinements, travel bans and the like).
2. *The nature and magnitude of the economic fallout*, which, in turn, is partly linked to structural issues, such as dependence on primary commodities or key markets and value chains badly hit by the downturn, availability of fiscal space, etc.
3. *The relative weight of people clustering just above each specific poverty line*, who may be pushed into poverty by the decline in per capita income.

In many developing countries the economic fallout of COVID-19 might have greater welfare consequences than the health emergency itself. While it is too early to disentangle the various channels through which this situation is impacting households' welfare, there is growing evidence it is primarily taking its toll on formal employment, especially in sectors highly reliant on global value chains (such as garments, transport or tourism), as well as on declining revenues from informal jobs notably in the trade and retail (UNECA 2020, Reuters 2020).

The short-term impact of coronavirus on poverty at a global level is depicted in Figure 2. In the case of the $1.90/day poverty line, the global headcount ratio is estimated to increase by 0.9% in 2020 alone, which translates into 68 million additional people living in extreme poverty. This implies that the COVID-19 shock will erode the poverty-reduction progress made in the last three years, bringing the poverty incidence back to a level similar to that of 2017.

The impact is larger if we focus on the higher poverty lines, namely, $ 3.20/day and $5.50/day. The corresponding headcount ratios increase by nearly 2 percentage points (from 20.8% to 22.6% in the former case, and from 40% to 41.9% in the latter), reflecting in both cases an increase of over 140 million in the number of poor people worldwide.

Figure 2   Changes in global international poverty due to COVID-19, 2020
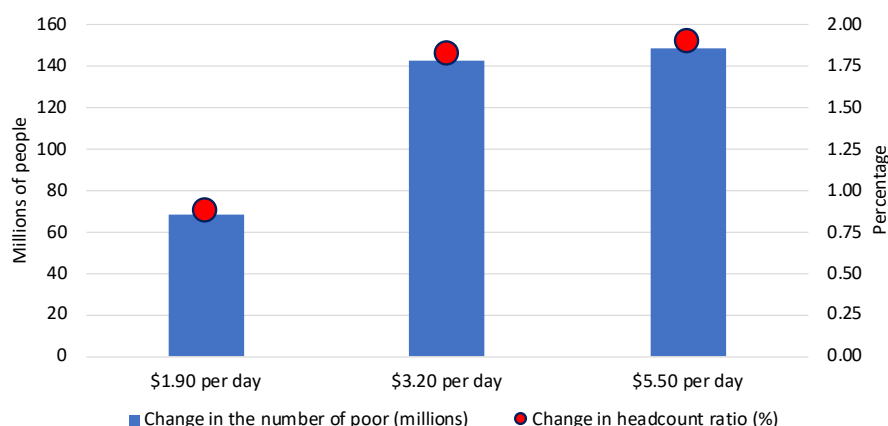
Source: Author's computation based on PovcalNet (April 2020) and IMF (2019, 2020).

Figure 3 described the impact of the pandemic across regions, reflecting both the magnitude of induced changes in poverty headcount ratios and each region's different population sizes. In absolute terms, sub-Saharan Africa stands out as the worst-hit region with reference to extreme poverty: the 2020 headcount ratio is estimated to increase by 2.7 percentage points in the wake of the pandemic, with 31 million more people living in extreme poverty compared to what would have occurred if the pre-COVID-19 growth forecasts had materialised. The impact is also large in South Asia, where the number of people in extreme poverty is 23 million greater than the one that would have prevailed in the absence of COVID-19, as the latter shock is likely to stall previous progress in poverty reduction. These two regions account for roughly 80% of the increase in the number of people living in extreme poverty as a result of the pandemic. Extreme poverty is also expected to become more widespread in other developing regions (especially the Middle East and North Africa), but the increases there are relatively more circumscribed.

Figure 3   Distribution of the changes in the number of poor people, by region and poverty lines
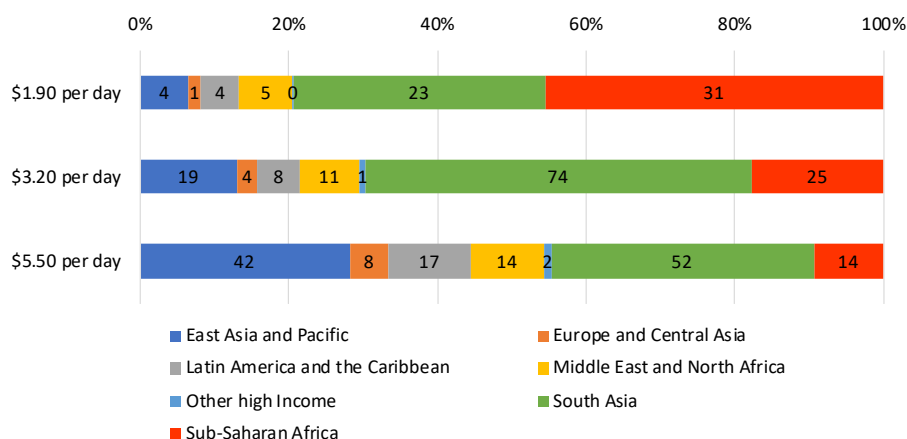
Note: The labels of the graph report the absolute changes in the number of poor people in millions.

Source: Author's computation based on PovcalNet (April 2020) and IMF (2019, 2020).

As one considers higher poverty lines, the effects of the pandemic become geographically more widespread, and the distribution of its impacts also changes. Focusing on the $3.20/day poverty line, South Asia accounts for half of the global impact, with 74 million more poor compared to what would have happened in the absence of COVID-19, followed by sub-Saharan Africa with 25 million. East Asia and Pacific, as well as Middle East and North Africa, also witness increases in the number poor exceeding 10 million people. The situation is more nuanced in relation to the $5.50/day poverty line. If South and East Asia account for the bulk of the impact in line with their large population, significant deteriorations will take place also in Latin America and Caribbean, Middle East and North Africa, and sub-Saharan Africa.

A full appreciation of the impact of the COVID-19 requires contextualising the above figures within long-term historical trends in poverty headcount ratios (Figure 4).[6] Broadly speaking, three sets of regions can be identified in this respect:

- In Europe and Central Asia, the pandemic leads to large economic costs, but since the overwhelming majority of the population enjoys living standards that are far higher than those implied by the international poverty lines, this only translates into marginal increases in poverty headcounts.

- In South Asia and East Asia and Pacific – where income per capita growth was progressing at a rapid pace before the outbreak – the impact of the pandemics is felt essentially 'through' a sharp slowdown in the rate of poverty reduction.

- In the remaining regions, the crisis provokes an upsurge in poverty rates, thereby reversing earlier downward trends (in Latin America and Sub-Saharan Africa) or accentuating an already deteriorating situation (in the Middle East and North Africa). The outbreak of COVID-19 brings back the headcount ratio to the levels of 2012 in the case of Latin America and Caribbean, to 2011 in the case of sub-Saharan Africa, and to 1986 in the case of the Middle East and North Africa.

These estimates suggest that the pandemic will cause a significant setback in efforts to eradicate extreme poverty, as per Sustainable Development Goal (SDG) 1. Moreover, the fallout of the epidemics will reinforce the geographic polarization of poverty, with sub-Saharan Africa and South Asia accounting for the lion's share of the impacts, at least in relation to the two lowest poverty lines.

Figure 4 Headcount ratios by region and poverty line (1990-2018 plus estimates for 2020)
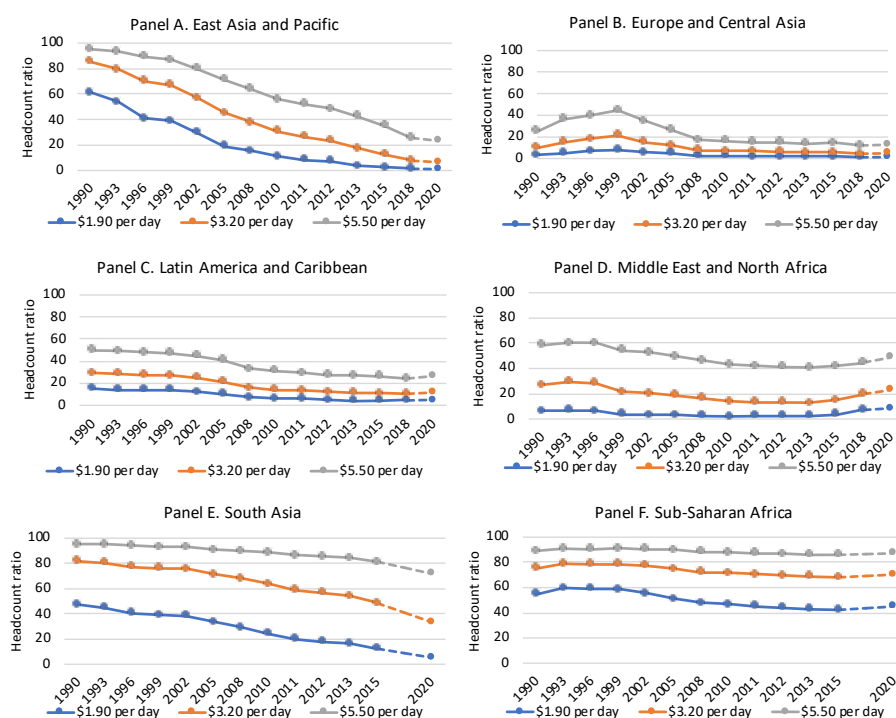
Source: Author's computation based on PovcalNet (April 2020) and IMF (2019, 2020).

Sensitivity analysis

A critical issue is the high degree of uncertainty surrounding IMF's growth estimates, and their rather optimistic underlying assumptions. It is thus instructive to examine the sensitivity of the above results to a more pessimistic growth scenario. The latter is obtained by assuming that GDP per capita growth in 2020 would ultimately be two percentage points lower than the IMF's forecasts.

In this scenario, close to 100 million additional people could fall into extreme poverty worldwide, of which 43 million would be in sub-Saharan Africa and 35 million in South Asia (Figure 5). When considering higher poverty lines – namely, $3.20 and $5.50/day – the pessimistic scenario implies that approximately 200 million additional people would fall into poverty. The impact on poverty would in this case be more visible across all developing regions, but Asia would be worst hit (with South Asia, in particular, accounting for over half of the increase in the number of people below the $3.20/day poverty line and over one third of those living below $5.50/day).

Overall, the magnitude of the potential socioeconomic costs of a more pessimistic scenario than the one envisaged by the IMF underscores the importance of revitalising international cooperation and doing "whatever it takes" to effectively prevent a deeper and longer-lasting downturn. The latter risks not only provoking wider socioeconomic strains, but also turning transient forms of poverty into chronic ones.

Figure 5   Changes in the number of poor people in the pessimistic scenario, by region and poverty line, 2020

Source: Author's computation based on PovcalNet (April 2020) and IMF (2019, 2020).

Conclusions

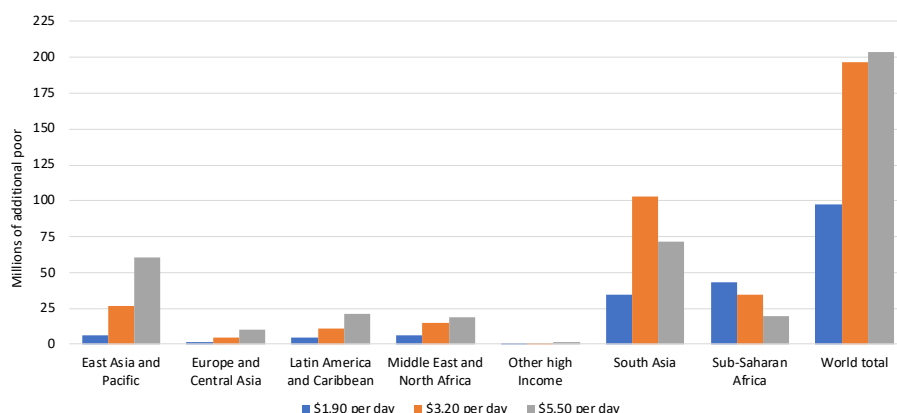The analysis presented here provides a preliminary assessment of COVID-19's immediate impact on global poverty. The estimates suggest that the fallout of the COVID-19 crisis will have dramatic consequences, eroding much of the gains recorded over the last decade in terms of poverty reduction. Our baseline case suggests that the number of people living in extreme poverty (below $1.90/day) could increase by 68 million in 2020 alone. However, this number could easily rise to nearly 100 million should the recession turn out to be deeper than expected.

This represents a significant setback posing immediate challenges to the achievement of the UN 2030 Agenda for Sustainable Development. There is also evidence that the pandemic will exacerbate the geographic concentration of poverty in Africa and South Asia.

Mitigating the adverse effects of this dire situation hinges on several policy priorities. First, the international community must support developing countries in mobilising adequate resources to allow their health systems to cope with the emergency, while effectively assisting vulnerable segments of the population.

Second, containing the social costs of the pandemic requires doing "whatever it takes" to avert further damage, be it as a result of food price hikes in net-importing countries, of balance of payment crises, or of debt vulnerabilities. This calls for a concerted action to provide adequate international liquidity, adopt a comprehensive debts standstill arrangement and, where appropriate, extend renewed debt relief.

Third, it is crucial to avoid major disruptions to domestic and regional food and agricultural value chains, which would further strain vulnerable households. With the immediate socioeconomic impact of the pandemic mainly affecting the urban population, the viability of agriculture is fundamental to preserve livelihoods in rural areas, contain price spikes for staple foods and limit food import bills at a time when foreign exchange is scarce.

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13 Pandemics and inequality: Assessing the impact of COVID-19[1]

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This chapter provides evidence on the impact of major epidemics from the past two decades on inequality and job prospects. Our results justify the concern that the COVID-19 pandemic could significantly raise inequality; past events of this kind, even though much smaller in scale, have led to increases in the Gini coefficient, lowered the employment-to-population ratio for those with basic education compared to those with higher education, and pushed people into precarious work in the form of self-employment or in the informal sector.

The COVID-19 pandemic has claimed 350,000 lives according to official statistics as of end-May 2020 and upended the livelihoods of millions. While most, if not all, economic classes are adversely affected by the pandemic, anecdotal evidence suggests that the poor are being disproportionately hurt for a number of reasons. First, they are more prone to getting infected. In New York City, for instance, poor people were found to be less likely to test negative for COVID-19 – in the richest zip code in the city, 65% of people tested negative, while in the poorest zip code fewer than 40% tested negative (Schmitt-Grohe et al. 2020). Second, the poor are more likely to die if they get infected. In the US, mortality rates are higher among low-income people and among minorities, which unfortunately are two groups with quite a bit of overlap. African Americans made up 25% of deaths from COVID-19 in the US though they make up a little under 13% of the US population.[2]

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2   Source: https://covidtracking.com/race

The poor are also more likely to suffer job loss or have to go in to work rather than being able to work from home – this in turn makes them more prone to getting infected. Poorer people are in jobs where working from home is less likely to be an option; by some estimates, the poorest 20% of the population are in jobs that can be done from home in less than 20% of cases (Avdiu and Nair 2020). Survey data from Japan on COVID-19's effects finds that low-skilled and contingent workers suffered more than highly skilled and regular workers (Kikuchi et al. 2020). Likewise, a study for the UK found that those who could work from home earned on average almost twice as much as those in sectors that had been shut down. This was linked to educational background, as almost half of those with degrees are able to work from home, while just 6% of those in work with no qualifications are able to do so.

In addition to these immediate effects, there are indirect and longer-lasting effects from job loss and other shocks to income. The ILO estimates that 1.25 billion workers, representing nearly 40% of the global workforce, are employed in sectors that face high risk of worker displacement. These sectors also have a high proportion of workers in informal employment, with limited access to health services and social protection (ILO 2020). Despite attempts by governments to limit the damage, such workers run a high risk of facing challenges in regaining their livelihoods even after economies start to recover. In many countries, low-income households can also suffer an impact on non-labour income due to decline in remittances as the pandemic affects the livelihoods of migrants. The World Bank estimates that global remittance flows, which fell 5% during the 2009 financial crisis, will fall 20% this year, which would mark the sharpest decline since 1980.

To shed light on such potential impacts of COVID-19, this chapter provides evidence on the impact of pandemics and major epidemics[3] from the past two decades on income inequality, on the employment prospects of people with low education levels (using educational attainment as a proxy for skills) and on informality. Our results justify the concern that COVID-19 could end up exerting a significant impact on inequality. Past pandemics, even though much smaller in scale, have led to increases in the Gini coefficient, lowered the employment-to-population ratio for those with basic education compared to those with higher education, and pushed workers into the informal sector.

This chapter relates to two main strands of literature. The first is the literature on the economic effects of pandemics (for recent contributions, see Atkeson 2020, Barro et al. 2020, Eichenbaum et al. 2020, Jorda et al. 2020, Ma et al. 2020). This literature provides evidence of large and persistent effects on economic activity. In particular, Ma

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3   For convenience, we refer to all these events as pandemics.

et al. (2020) examined the same set of episodes considered in our chapter and found that real GDP is 2.6% lower on average across 210 countries in the year the outbreak is officially declared, and remains 3% below pre-shock level five years later. The second strand of the literature is on the role of crises and recessions in exacerbating inequality by depressing employment for those most vulnerable, such as less skilled and youth (see de Haan and Sturm 2017 and references therein).

The remainder of the chapter is structured as follows. Section II describes our data and econometric method and presents our results. The last section concludes and outlines avenues for future work on this topic.

The distributional effects of pandemics

We use data on various measures of distribution come from three sources. Table A1 in the Appendix provides summary statistics on the variables used in the analysis.

- Gini coefficients are from the Standardized World Income Inequality Database (SWIID), which combines information from the United Nations World Income Database (UNWIDER) and the Luxembourg Income Study (LIS). SWIID provides comparable estimates of market income inequality for 175 countries from 1961 to the present.[4]
- Data on employment by skill levels are difficult to obtain for a large group of countries. The ILO notes that "statistics on levels of educational attainment remain the best available indicators of labour force skill levels". Hence, we use ILO data on employment-to-population ratios for different education levels: advanced, tertiary and basic.[5] Data on self-employment are from the World Bank's World Development Indicators and data on the size of the informal sector are from Elgin et al (2019).

Following Ma et al. (2020), we focus on five major events: SARS in 2003, H1N1 in 2009, MERS in 2012, Ebola in 2014, and Zika in 2016. The list of countries in our sample that are affected by each event is given in Table A2 in the Appendix. Among the five events, the most widespread one is H1N1 (Swine Flu Influenza). We construct a dummy variable, the pandemic event, which takes the value 1 when WHO declares a pandemic for the country and 0 otherwise.

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4   See Solt (2009) for details on the construction of this data set.
5   See https://ilostat.ilo.org/resources/methods/description-employment-by-education/ for details.

To estimate the distributional impact of pandemics, we follow the method proposed by Jordà (2005). This approach allows us to trace out the dynamic effects of pandemics on several measures of income distribution.[6]

Impacts on Gini coefficients

Figure 1 shows the estimated dynamic response of the Gini coefficient to a pandemic event over the five-year period following the event, together with the 90% confidence interval around the point estimate.

Figure 1   Impact of pandemics on market Gini and net Gini coefficients (%)

Notes: Impulse response functions are estimated using a sample of 175 countries over the period 1961-2017. The graph shows the response and 90 percent confidence bands. The x-axis shows years (k) after pandemic events; $t = 0$ is the year of the pandemic event. Estimates based on $y_{i,t+k} - y_{i,t-1} = \alpha_i^k + \gamma_t^k + \beta^k D_{i,t} + \theta^k X_{i,t} + \varepsilon_{i,t+k}$. $y_{i,t}$ is the log of the Gini coefficient for country i in year t; α_i are country fixed effects; γ_t are time fixed effects; $D_{i,t}$ is a dummy variable indicating a pandemic event that affects country i in year t. $X_{i,t}$ is a vector that includes two lags of the dependent variable and the pandemic dummy. See Table A2 for the full list of pandemic events. Standard errors in parentheses are clustered at the country level.

Pandemics lead to a persistent increase in inequality, with the impact being stronger in the case of the net Gini. Five years after the pandemic, both the market and net Gini are above the pre-shock trends by about 0.75% and 1.25%, respectively. Given that the Gini coefficient is a very slow-moving variable, these are quantitatively important effects – the effect corresponds to approximately 0.5 standard deviation of the average change of the Gini in the sample.

The fact that the impact on the net Gini is larger than that on the market Gini is somewhat surprising and suggests that policies undertaken to address previous pandemics may actually have been regressive, especially in the medium term, though further analysis would be needed to confirm such a conclusion. There is already some evidence from the current experience that suggests that some government programmes set up to target those who need help the most are nevertheless set up in ways that the rich can find a way to benefit from them. For instance, some provisions of the CARES programme in the US have been assessed by the bipartisan Joint Committee on Taxation to be likely to largely benefit the rich (JCT 2020).[7]

We have carried out several robustness checks of these findings. Here, we report the main three. First, we used as an alternative regression strategy the autoregressive distributed lag (ADL) model, as in Romer and Romer (2010) and Furceri et al. (2019). The results in Figure 2 for the net Gini are very similar to those obtained in the baseline using the local projection method.

The second robustness check is to include several control variables in the regression, such as proxies for the level of economic development, demographics, and measures of trade and financial globalisation. The results are reported in Figure 3 and are very similar to, and not statistically different from, the baseline.

Finally, since the episodes we considered have occurred in the post 2000 period, we replicated the analysis for this restricted sample. The results presented in Figure 4 are fairly similar to that for the full sample period, except that there is some attenuation in the impact.

Figure 2   Impact of pandemics on net Gini coefficients: ADL (%)
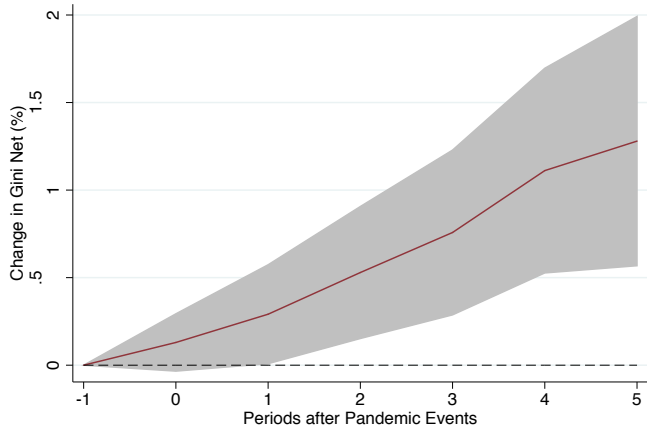
Notes: Impulse response functions are estimated using a sample of 175 countries over the period 1961-2017. The graph shows the response and 90 percent confidence bands. The x-axis shows years (k) after pandemic events; $t = 0$ is the year of the pandemic event. Estimates based on $\Delta y_{i,t} = \alpha_i + \gamma_t + \beta_k(l)D_{i,t} + \varepsilon_{i,t}$. $y_{i,t}$ is the log of the Gini coefficient for country i in year t; α_i are country fixed effects; γ_t are time fixed effects; $D_{i,t}$ is a dummy variable indicating a pandemic event that affects country i in year t. See Table A2 for the full list of pandemic events. Standard errors in parentheses are clustered at the country level.

Figure 3   Impact of pandemics on net Gini coefficients: Additional controls (%)

Notes: Impulse response functions are estimated using a sample of 175 countries over the period 1961-2017. The graph shows the response and 90 percent confidence bands. The x-axis shows years (k) after pandemic events; $t = 0$ is the year of the pandemic event. Estimates based on $y_{i,t+k} - y_{i,t-1} = \alpha_i^k + \gamma_t^k + \beta^k D_{i,t} + \theta^k X_{i,t} + \varepsilon_{i,t+k}$. $y_{i,t}$ is the log of the Gini coefficient for country i in year t; α_i are country fixed effects; γ_t are time fixed effects; $D_{i,t}$ is a dummy variable indicating a pandemic event that affects country i in year t. $X_{i,t}$ is a vector that includes two lags of the dependent variable, the pandemic dummy, the (log) level of GDP per capita, the (log) level of GDP per capita squared, population density, the share of population in urban area, the KOF index of trade globalization and the KOF index of financial globalization. See Table A2 for the full list of pandemic events. Standard errors in parentheses are clustered at the country level.

Figure 4   Impact of pandemics on net Gini coefficients: Restricted sample, 2000-17 (%)
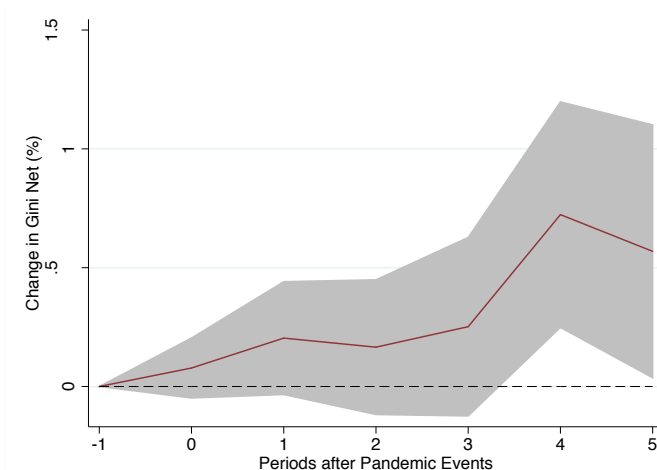
Notes: Impulse response functions are estimated using a sample of 175 countries over the period 2001-2017. The graph shows the response and 90 percent confidence bands. The x-axis shows years (*k*) after pandemic events; *t* = 0 is the year of the pandemic event. Estimates based on $y_{i,t+k} - y_{i,t-1} = \alpha_i^k + \gamma_t^k + \beta^k D_{i,t} + \theta^k X_{i,t} + \varepsilon_{i,t+k}$. $y_{i,t}$ is the log of the Gini coefficient for country *i* in year *t*; α_i are country fixed effects; γ_t are time fixed effects; $D_{i,t}$ is a dummy variable indicating a pandemic event that affects country *i* in year *t*. $X_{i,t}$ is a vector that includes two lags of the dependent variable and the pandemic dummy. See Table A2 for the full list of pandemic events. Standard errors in parentheses are clustered at the country level.

Channels of transmission

As shown by Ma et al. (2020), the impact of the five pandemic events on aggregate economic activity varies across episodes and countries. Since changes in economic activity are an important driver of changes in inequality, we examine whether the distributional effect of pandemic events to vary with their impact on economic activity. The results in Figure 5 suggest that this is the case. In particular, for episodes associated with significant economic contractions, the effect is statistically significant and larger than the average effect (the medium-term effect on Gini increases from 1.25% to about 2%), while it is not statistically significantly different from zero for episodes associated with high growth.

In addition to output loss, a related channel through which pandemics can affect inequality is adverse impacts on employment prospects. The tragic death toll of the current pandemic has been accompanied by the upending of millions of other lives as governments take necessary steps to limit the spread of the virus. In the US, for instance, more jobs were lost in a few months in 2020 than in entire Great Recession of 2008-09 (Coibion et al. 2020) and globally the decline in working hours is estimated

to be equivalent to a decline of 200 million full-time jobs (ILO 2020). Recent analysis from the Kansas City Fed suggests that workers with non-college education have taken the largest hit in the first wave of job losses due to COVID-19 in the US.[8]

Figure 5   Impact of pandemics on net Gini coefficients: The role of economic conditions associated with pandemic events (%)
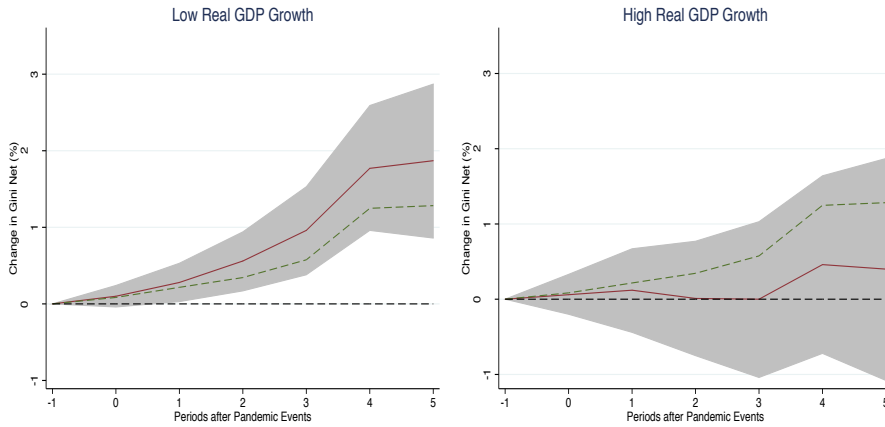
Notes: Impulse response functions are estimated using a sample of 175 countries over the period 1961-2017. The graph shows the response and 90 percent confidence bands. The x-axis shows years (k) after pandemic events; $t = 0$ is the year of the pandemic event. The dotted green line denotes the average (unconditional) effect reported in Figure 1. The redlines denote the estimates for pandemic events associated with very low and high growth. Estimates based on $y_{i,t+k} - y_{i,t-1} = \alpha_i^k + \gamma_t^k + F(z_{it})\left[\beta_L^k D_{i,t} + \theta_L^k X_{i,t}\right] + \left(1 - F(z_{it})\right)\left[\beta_H^k D_{i,t} + \theta_H^k X_{i,t}\right] + \varepsilon_{i,t+k}$. $y_{i,t}$ is the log of the Gini coefficient for country i in year t; α_i are country fixed effects; γ_t are time fixed effects; $D_{i,t}$ is a dummy variable indicating a pandemic event that affects country i in year t. $X_{i,t}$ is a vector that includes two lags of the dependent variable and the pandemic dummy. $F(Z_{i,t})$ is an indicator function of the state of the economy. The coefficients β_L^k and β_H^k capture the distributional impact of a pandemic event at each horizon k in cases of pandemics associated with extreme recessions ($F(Z_{i,t})$ ≈ 1) when z goes to minus infinity) and booms (1 − ($F(Z_{i,t})$ ≈ 1) when z goes to plus infinity), respectively. See Table A2 for the full list of pandemic events. Standard errors in parentheses are clustered at the country level.

We investigate whether past pandemics have been followed by job loss and whether the extent of diminished job prospects are higher for some groups of workers, particularly low-skilled workers. Since data on employment by skill levels are difficult to obtain for a large group of countries, we use data on employment-to-population ratios for different education levels; ILO (2020) notes that "statistics on levels of educational attainment remain the best available indicators of labour force skill levels." Figure 6 shows the vastly disparate impact that pandemics have on the employment of people with different levels of educational attainment. Those with advanced or intermediate levels of education are scarcely affected, whereas the employment to population ratio of those with basic levels of education falls significantly, by more than 5% in the medium term.

Figure 6   Impact of pandemics on employment-to-population ratio, by education

level

Our evidence thus far pertains largely to those in wage-paying jobs in the formal sector of the economy. However, various forms of self-employment and informality are pervasive in many developing economies. It is estimated that informal employment accounts for about 70% of employment and 35% of GDP in a typical developing economy, compared with about 15% of GDP in advanced economies (World Bank 2019). As Elgin et al (2019) note, "while offering the advantage of flexible employment under some circumstances", these more precarious forms on employment are "associated with a wide range of adverse economic outcomes" including low productivity and limited fiscal resources. It is likely that by adversely affecting the prospects for market work, pandemics drive more activity into precarious work. To test this conjecture, we use data on self-employment from the World Bank and on the size of the informal sector from Elgin et al. (2019) to see how these sectors change following a pandemic. As shown in Figure 7, there is a statistically significant increase in the share of self-employment for about three years following an epidemic. The increase in the size of the informal economy is even more longer-lasting and also statistically significant (Figure 8).

Figure 7   The effect of pandemics on self-employment
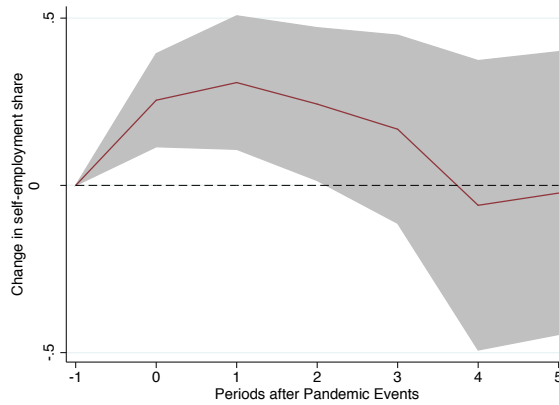
Note: Impulse response functions are estimated using a sample of 177 countries over the period 1991-2017. The graph shows the response and 90 percent confidence bands. The x-axis shows years (k) after pandemic events; $t = 0$ is the year of the pandemic event. Estimates based on $y_{i,t+k} - y_{i,t-1} = \alpha_i^k + \gamma_t^k + \beta^k D_{i,t} + \theta^k X_{i,t} + \varepsilon_{i,t+k}$. $y_{i,t}$ is the share of self-employed to total employment for country i in year t; α_i are country fixed effects; γ_t are time fixed effects; $D_{i,t}$ is a dummy variable indicating a pandemic event that affects country i in year t. $X_{i,t}$ is a vector that includes two lags of the dependent variable and the pandemic dummy. See Table A2 for the full list of pandemic events. Standard errors in parentheses are clustered at the country level.

Figure 8   The effect of pandemics on informal economy
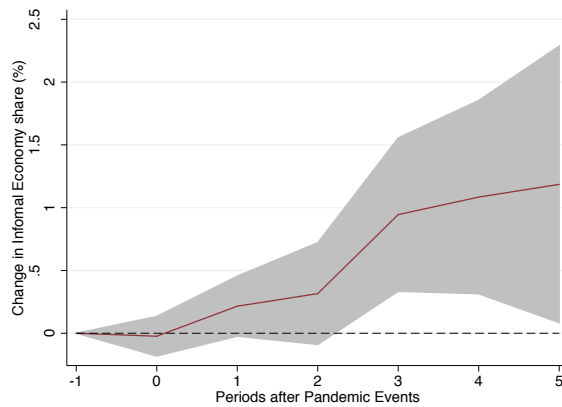
Note: Impulse response functions are estimated using a sample of 158 countries over the period 1950-2016. The graph shows the response and 90 percent confidence bands. The x-axis shows years (k) after pandemic events; $t = 0$ is the year of the pandemic event. Estimates based on $y_{i,t+k} - y_{i,t-1} = \alpha_i^k + \gamma_t^k + \beta^k D_{i,t} + \theta^k X_{i,t} + \varepsilon_{i,t+k}$. $y_{i,t}$ is the log of the size of the informal sector according to Elgin et al. (2019) for country i in year t; α_i are country fixed effects; γ_t are time fixed effects; $D_{i,t}$ is a dummy variable indicating a pandemic event that affects country i in year t. $X_{i,t}$ is a vector that includes two lags of the dependent variable and the pandemic dummy. See Table A2 for the full list of pandemic events. Standard errors in parentheses are clustered at the country level.

Conclusions

A recent poll of top economists found that the vast majority felt the COVID-19 pandemic will worsen inequality, in part through its disproportionate impact on low-skilled workers (IGM 2020). Our evidence supports concerns about the adverse distributional impacts of pandemics. We find that major epidemics in this century have raised income inequality, hurt employment prospects of those with only a basic education while scarcely affecting employment of people with advanced degrees, and pushed people into precarious work.

While the pandemic is having an adverse effect on almost everyone in society, policies need to pay specific attention to preventing scarring effects on the livelihoods of the least advantaged in society. Absent strenuous and targeted attempts, we are again likely to see an increase in inequality, which was already "one of the most complex and vexing challenges in the global economy" (Georgieva 2020). In concrete terms, what can be done? Unemployment benefits and access to health benefits and sick leave are useful for all in dealing with the effects of the pandemic but particularly so for poorer segments of society who lack a stock of savings and are thus living hand-to-mouth. Where informality is pervasive, cash transfers may be the best response. Expanding social assistance systems, introducing new transfers, boosting public work programmes to offer job opportunities, giving financing opportunities to sustain employment – all are likely to be part of the policy mix to take the edge off the devastating distributional consequences from the pandemic.

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Appendix

Table A1   Data sources and descriptive statistics

Variable	Source	Obs.	Mean	Std. dev.	No. of Countries
Gini Market	SWIID 8.2	5,305	45.28	6.59	175
Gini Net	SWIID 8.2	5,305	38.33	8.76	175
Employment/Population (E/P) ratios					
E/P ratio – Basic Education	ILO	1,340	42.51	16.22	76
E/P ratio – Intermediate Education	ILO	1,333	61.03	9.23	76
E/P ratio – Advanced Education	ILO	1,338	75.14	7.60	76
Size of the informal sector (DGE estimates on informal output in percent of official GDP)	Elgin et al. (2019)	8,021	34.84	14.40	158
Self-employed (% of total employment)	WDI	4,778	43.66	27.93	177

Source: Based on Ma and others (2020).

Table A2   List of pandemic and epidemic episodes

Starting year	Event name	Affected Countries	Number of countries
2003	SARS	AUS, CAN, CHE, CHN, DEU, ESP, FRA, GBR, HKG, IDN, IND, IRL, ITA, KOR, MNG, MYS, NZL, PHL, ROU, RUS, SGP, SWE, THA, TWN, USA, VNM, ZAF	27
2009	H1N1	AFG, AGO, ALB, ARG, ARM, AUS, AUT, BDI, BEL, BGD, BGR, BHS, BIH, BLR, BLZ, BOL, BRA, BRB, BTN, BWA, CAN, CHE, CHL, CHN,CIV, CMR, COD, COG, COL, CPV, CRI, CYP, CZE, DEU, DJI, DMA, DNK, DOM, DZA, ECU, EGY, ESP, EST, ETH, FIN, FJI, FRA, FSM, GAB, GBR, GEO, GHA, GRC, GTM, HND, HRV, HTI, HUN, IDN, IND, IRL, IRN, IRQ, ISL, ISR, ITA, JAM, JOR, JPN, KAZ, KEN, KHM, KNA, KOR, LAO, LBN, LCA, LKA, LSO, LTU, LUX, LVA, MAR, MDA,MDG, MDV, MEX, MKD, MLI, MLT, MNE, MNG, MOZ, MUS, MWI, MYS, NAM, NGA, NIC, NLD, NOR, NPL, NZL, PAK,PAN, PER, PHL, PLW, PNG, POL, PRI, PRT, PRY, QAT, ROU, RUS, RWA, SAU, SDN, SGP, SLB, SLV, STP, SVK, SVN, SWE, SWZ, SYC, TCD, THA, TJK, TON, TUN, TUR, TUV, TZA, UGA, UKR, URY, USA, VEN, VNM, VUT, WSM, YEM, ZAF, ZMB, ZWE	148
2012	MERS	AUT, CHN, DEU, EGY, FRA, GBR, GRC, IRN, ITA, JOR, KOR, LBN, MYS, NLD, PHL, QAT, SAU, THA, TUN, TUR, USA, YEM	22
2014	Ebola	ESP, GBR, ITA, LBR, USA	5
2016	Zika	ARG, BOL, BRA, CAN, CHL, COL, CRI, DOM, ECU, HND, LCA, PAN, PER, PRI, PRY, SLV, URY, USA	18
		Total Pandemic and Epidemic Events	**220**

Source: Based on Ma and others (2020).

14 Policy for limiting the poverty impact of COVID-19 in Africa

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As a result of COVID-19 pandemic, the number of poor people in Africa could increase by between 59 and 200 million due to contractions in consumption. West Africa and East Africa will be the most affected by collapsing living standards. Well-financed cash transfer programmes, expanded social assistance systems, larger public work programmes to offer job opportunities, and more diverse financing opportunities to sustain employment are key policies in supporting informal workers in Africa.

Poverty can fuel contagion, but contagion can also create or deepen impoverishment. The COVID-19 pandemic will be another source of impoverishment and will reinforce existing factors, in turn limiting the ability of vulnerable households to escape from and stay out of poverty. For vulnerable households, loss of income due to the COVID-19 pandemic may translate into spikes in poverty, missed meals for children, and reduced access to healthcare.

In a recent study (Nonvide 2020), I examine the poverty impact of COVID-19 in Africa employing three scenarios including low, medium and high consumption contractions of 10%, 20% and 30%, respectively. The impact is estimated based on the US$1.90 per day poverty line. The results indicate that in the absence of interventions, the number of poor people in Africa will increase by between 59 and 200 million due to contractions in consumption as a result of the COVID-19 pandemic.

In all three scenario, West Africa and East Africa are the most affected regions by contractions in consumption due to the pandemic, while North Africa is the least affected. The findings suggest that the COVID-19 pandemic is a serious threat to achieving the Sustainable Development Goals (SDGs). This calls for governments and international organisations to increase efforts to support economic activity in all countries.

Various measures have been introduced in most African countries with the aim of limiting the spread of COVID-19. These measures include barring the entry of people (but not essential goods) into countries; cancellation of public and private events; social distancing; and the closure of schools, universities, restaurants, urban market and shops, among others. In addition, economic policy responses include fiscal policies,

monetary policies, employment policies, communication policies and social measures (Table 1). A critical review of the measures reveals that with the exception of those aimed at strengthening the health system, all policy responses are tailored toward formal sector. If these mitigating measures are intended for the majority of the African population, they need to target the economic units in the informal economy as informal employment is the main source of employment in Africa, accounting for 85.8% of all employment (Kiaga and Lapeyre, 2020).

Table 1   Summary of the various economic measures in Africa

Type of policies	Instruments	Countries
Fiscal policies	Tax relief for businesses and households through lower property taxes Report of tax payment date	Algeria Egypt
Monetary policies	Facilitation of access to credit by reducing reserve ratios and interest rates Postponement of credit repayment periods	Ethiopia Ghana Algeria Mauritius Morocco Senegal
Employment policies	Payment of salaries of employees who have lost their jobs	Mauritius Morocco South Africa
Communication policies	Improving the quality of internet connections Abolition of certain communication costs	Egypt Kenya Ethiopia
Social measures	Increase in pensions for retirees Compensation for losses recorded by companies due to the pandemic	South Africa Algeria Egypt Morocco Mauritius

Sources: Bilal et al. (2020), Economic Commission for Africa (2020a, 2020b), Kiaga and Lapeyre (2020).

Policy implications

The first priority is to stop the spread of the virus by strengthening preventive measures. The provision of protective equipment and hygienic procedures, including social distancing, and introducing alternative forms of work organisation are various avenues to explore.

Second, the policy interventions must also ensure the protection of employment and the income of companies and workers who suffer the indirect effects (closure of factories, disruption of supply chains, travel bans, cancellation of public events, etc.) of the pandemic. These include social protection measures through existing mechanisms or one-off payments for workers – including self-employed, informal, precarious, seasonal and migrant workers – and job maintenance policies, such as wage subsidies, temporary reductions in payroll taxes, and exemptions from social security contributions.

Third, the policy interventions should stimulate the economy and demand for labour through economic policies aimed at deep structural transformation and stabilising economic activity. These include investing in health systems to building resilience to COVID-19; an active fiscal policy including targeted transfers (such as unemployment benefits) associated with public investments and tax exemptions for micro-companies; an accommodative monetary policy based on the reduction of interest rates, the relaxation of reserve rates and the targeted supply of liquidity; and loans and financial assistance targeted at specific sectors in order to protect businesses (in particular, small, medium and micro-businesses).

Finally, and most importantly, the above policy measures should reach those in the informal economy. They are key partners in development in Africa, but they generally have inadequate safety nets, lack disposable cash and cannot stockpile food. The main question here is how to improve their wellbeing during this pandemic. Informality is high in developing countries, especially in Africa. In countries like Benin, Liberia, Mali, Senegal and Togo, the share of informal employment in the total non-agricultural employment exceeds 90% (Figure 1).

It is difficult for public policy to reach workers in the informal sector as enterprises in the informal economy, as well as informal workers, are not registered. Moreover, the informal economy presents a high level of heterogeneity. Various forms of informality are pervasive in many developing economies. A recent study by ILO (2020) suggests considering this heterogeneity in policy interventions and providing support based on the needs of the workers and economic unit concerned. These workers should have the possibility to express their needs, probably through their membership-based organisations.

Figure 1   Informal employment (% of total non-agricultural employment)
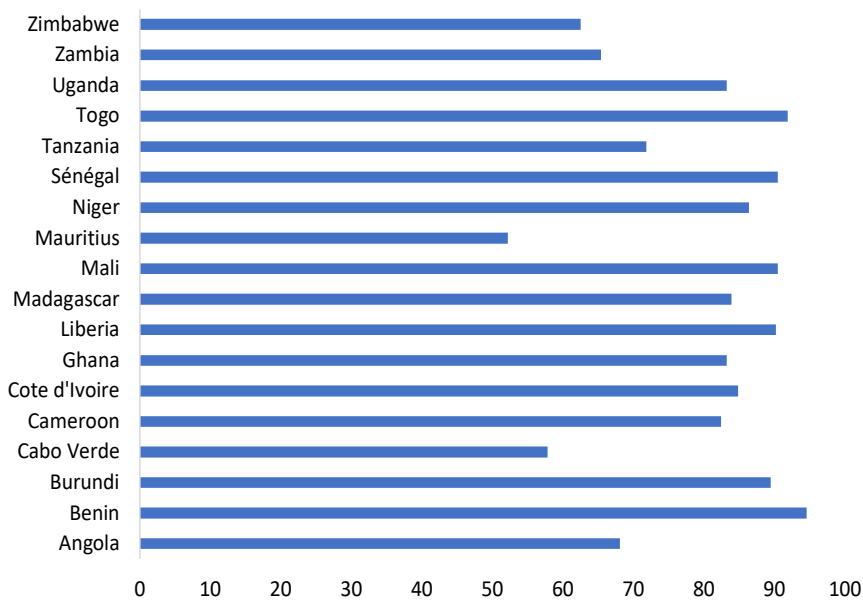
Note. World Bank JOIN database based on the latest available year for each country.

To support workers during the COVID-19 pandemic, cash transfer programmes have been proposed as opposed to job retention schemes, unemployment benefits and business loans. According to Bosio and Djankov (2020), when informality is huge, job retention schemes, unemployment benefits and business loans may not be appropriate, and cash transfer programmes may be the best response. Several countries, including India, Cote d'Ivoire and Egypt, are using this approach to support the informal economy (Dhingra 2020, Bosio et al. 2020). In addition to cash transfer programmes, expanding social assistance systems, introducing new transfers, boosting public work programmes to offer job opportunities and giving financing opportunities to sustain employment are key policies in supporting informal workers (Furceri et al. 2020).

Conclusions

In sum, the COVID-19 pandemic is a serious threat to achieving the Sustainable Development Goals. The poverty impact of COVID-19 could be extreme, although the real impact will depend on how long the pandemic will last and the effectiveness of responses by governments and international organisations. The situation is particularly risky for African countries which are the most vulnerable to the pandemic. If nothing is done, it could lead to a new Great Recession which has never been experienced in the continent.

Various policy interventions have been proposed. Each of these actions is, in itself, sensible and effective; but they also feed on each other through positive spillovers, strengthening the policy response. Efforts are needed to include informal economy workers, as they contribute greatly to economic development in Africa.

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15 Old ideas have value in new times[1]

Swati Dhingra
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Self-targeting features of a universal job guarantee make it an appealing long-term policy option to protect informal workers. This chapter argues that while technology can provide better welfare delivery systems, ultimately policy has to step in to address the waste and inequity of long-term unemployment in the developing world.

Informal work, including causal, temporary and contract work, is a 'defining' feature of labour markets in many developing countries and more recently in developed countries (World Bank 2016, Boeri et al. 2020). The ILO has pointed to the risks faced by informal workers, many of whom have been directly affected and others whose jobs are at greater risk due to the lockdown[2]. While medical and economic packages have been put forward to provide immediate relief, measures that are needed to prevent the public health crisis from becoming an imminent and permanent deterioration in living standards are still under debate (Baldwin and Weder di Mauro 2020: 23,199).

In anticipation of a potential economic crisis, ideas to cope with the imminent economic crisis have emerged. Immediate measures include the UK's Job Retention Scheme[3], which pays 80% of wages (up to £2,500 a month) for furloughed workers who are kept on by their employers, and Germany's decision to pay 77% of wages of workers whose working hours have been reduced by at least 50%. Longer-term measures are also being discussed to avert an economic crisis.

Many of these ideas have emerged from developed countries that have substantial state capacity and well-developed tax and benefits infrastructure in place to carry out plans quickly and over a sustained period of time. Targeting cash transfers based on incomes requires governments to have deep knowledge of who is poor and vulnerable and an infrastructure to reach them on time. In developing economies, state capacity to make such transfers is limited and the cost of missing work are immense.

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1   The figures cited in this chapter are based on data from the Periodic Labour Force Survey 2017-18 and a new CEP survey of informal workers in India which was conducted in 2018 (Dhingra and Machin 2020).
2   https://news.un.org/en/story/2020/04/1061322
3   https://www.gov.uk/guidance/claim-for-wage-costs-through-the-coronavirus-job-retention-scheme

The scale of the problem is huge because of the large shares of informal workers in the workforce of developing economies. Overall, two-thirds of the workforce in developing economies is estimated to be in informal work. In Peru and sub-Saharan Africa, for example, the share is about 75% and has remained stable for several years. In South Asia, the share of informal workers has increased from 50% to 60% within the last decade. Addressing informality and the absence of social protection for workers continues to be the most pressing concern for emerging economies (World Bank 2019)

The Indian labour market is characterised by these informal features. The estimated share of informal workers ranges from 75% to 90% and many of these workers have meagre recourse to social protection. Recent media reports from India have revealed the plight of workers who have lost their daily wages due to the need for a lockdown to contain the spread of COVID-19. The humanitarian crisis facing the poor and migrants has been somewhat reduced, but a massive economic crisis looms large, especially for those reliant on precarious work lacking regular salaried pay and job security.

A universal job guarantee has appealing features to address the imminent joblessness crisis that is facing informal workers everywhere in the country. Primarily, it provides universal coverage, plugging many of the social safety net holes that appear in targeted policies. It is self-targeting and keeps fiscal costs under control. Importantly, it provides a lifeline to millions who have lost their jobs and face the threat of the 'horrid' scarring effects of long-term unemployment (Machin and Manning 1999).

Reaching informal workers

As in many developing countries, the vast majority of people working in India are employed informally. They have no written job contracts, no regular salaried work and are often employed casually through job contractors, subcontractors and temporary staffing agencies. Several attempts to formalise informal work have been made and are underway. But the ground reality is that the majority of urban workers in India have no access to benefits (62% to 85% depending on type of benefit), which make up the government's flagship schemes for COVID-19 relief to workers in urban areas.

Among urban workers who are in private casual work, over 80% are employed in establishments that are typically not even enrolled in social security programmes, which are being used to provide relief during the lockdown. The organised sector in India is required to provide benefits to many of the workers that they employ informally. But most low-income urban workers fall through the cracks of these provisions and almost none of them have access to benefits at all.

India typifies the concerns over informal workers suffering substantial economic losses from the COVID-19 pandemic. The lockdown in India due to the pandemic is estimated to have tripled the urban unemployment rate within a couple of weeks, and the estimated unemployment rate is about 24% compared to about 6% to 8% in the year before. Latest survey figures up to April already suggest that 90% of urban households in the bottom quintile of the income distribution have experienced an income loss compared to just 54% of those in the top quintile (Bertrand et al. 2020)[4]. A full bounce back of the economy is unlikely and business sentiment has shifted from negative to one of stark pessimism, according to the Reserve Bank of India.

While immediate relief and food entitlements have been put in place to varying degrees, longer-term policies to get people back to work are just as important to avoid a full-blown jobs crisis which could do permanent damage to many vulnerable groups who lack income security. Ray et al. (2020) put this succinctly as a choice between lives and lives, because income risk is a first-order concern in many developing economies.

Income risk could, in principle, be overcome by direct bank transfers to individuals. A common feature of the majority of economic proposals being put forward is targeted bank transfers to individuals, often administered through biometric identification-based bank accounts (the Aadhar system). India's premier business association, The Confederation of Indian Industries (CII), has urged the national government to provide a fiscal stimulus of Rs 2 trillion[5] to support 200 million low-income people with a bank transfer of Rs 10,000 ($130) each. The CII specifically mentions an "Aadhar-based Direct Benefit Transfer". Restricting the discussion on longer-term measures to targeted bank transfers is unwarranted when targeting is inadequate and income risk is driven primarily by labour market risk.

India is relatively better placed [6] than many lower-income developing countries in terms of a targeting infrastructure. For example, India, together with Kenya and Peru, ranks highly on paperless infrastructure capacity, unlike other developing economies such as Madagascar and Senegal, which lag behind (Gelb and Mukherjee 2020). There is a long tradition of targeted poverty programmes in India and it has more than ten years of experience with a biometric banking infrastructure to make digital payments to citizens. Yet, even in India, massive holes in the targeting infrastructure persist and these have often led to systematic exclusion of some of the most vulnerable segments of society. These are difficult to plug immediately, and new reports suggest that digital payments for COVID-19 relief are fraught with such holes.

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4   See also Afridi et al. (2020) and Lee et al. (2020) for COVID-19 studies in Delhi.
5   https://www.ciicovid19update.in/uploads/1/3/1/3/131362769/covid-19_pmo_note_21_mar_2020.pdf
6   https://www.cgdev.org/blog/covid-19-how-countries-can-use-digital-payments-better-quicker-cash-transfers

Cashing cheques or targeting based on incomes may be relatively easy in developed economies like the US and the UK. But for vulnerable groups in India, access to banks (especially since the lockdown and in the near future) and correct targeting of benefits are a perennial problem. Detailed data are lacking. For example, just 7% of adults file taxes[7], over a third of women lack the accounts through which key cash transfers are being made[8] and available labour force statistics make it difficult to accurately identify unemployed individuals.

Similar circumstances exist in other developing economies to different degrees. For example, according to the Inter-American Development Bank (IDB), Brazil's infrastructure has the potential to reach almost everyone in the bottom third of the income distribution[9] while Ecuador's could cover just about 60%. Further, much of the existing infrastructure across the developing world is not necessarily geared towards informal workers as they neither fall in the ultra-poor category (who are often already on government databases) and nor are they necessarily rich enough to be using services like online banking, which provide alternative sources of information for targeting (Shaikh 2020).

In terms of paperless infrastructure, there is a temptation in arguing that direct bank transfers are ideal in developing economies where the majority of people have a bank account linked to an identity card. Even in a country like India, where the digital payment infrastructure is relatively broad, the ones left out from this system often tend to be the most vulnerable and precisely the group that is likely to need assistance most during crises. There is now growing evidence of exclusions and omissions, and payment failures and misdirection that have resulted from the existing bank transfer system in India. These failings have created severe hardship for vulnerable groups, even in normal times and in places where the system has been in place for a while (Dreze et al. 2017, Khera 2020). Eleven years since the launch of India's national biometric identity card, it is still proving inadequate in correctly transferring funds for COVID-19 (Dreze and Khera 2020).

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7   https://www.ideasforindia.in/topics/macroeconomics/we-need-a-marshall-plan-to-fight-covid-19.html

8   https://indianexpress.com/article/opinion/columns/coronavirus-india-lockdown-food-relief-poor-migrant-workers-mass-exodus-essential-commodities-supply-6403528/

9   https://blogs.iadb.org/ideas-matter/en/covid-19-the-challenge-of-ensuring-assistance-to-informal-and-vulnerable-workers/

Many of these reasons motivated India to pioneer the world's largest job security programme, the National Rural Employment Guarantee Act (NREGA), which guarantees at least one hundred days of wage employment annually to every rural household willing to work. It is time to refresh this old idea to provide social protection to those in precarious work anywhere in the country who are now faced with the risk of long-term unemployment.

Job guarantees

A universal job guarantee programme is an appealing long-term policy option to address the economic crisis facing those in precarious work. As early as 1989, inspired by job schemes in California, India and England, Besley and Coate (1992) favoured work over welfare payments for two reasons which are particularly relevant for developing economies with limited information and state capacity constraints.

Work schemes, like job guarantees, are self-targeting. A needy rural household and a rural landlord both have access to work under NREGA, but the landlord is rarely going to take up digging wells for Rs 202 ($2.60) a day. A job guarantee minimises the targeting problem of who applies for income support. It gives needy households livelihood security during bad times.

Unfortunately, the track record of recent economic events in India – including demonetisation, implementation of the Goods and Services Tax and now the COVID-19 pandemic – has shown that vulnerable groups still remain very hard to reach. Information and infrastructure have not changed radically enough to warrant the complacency that bank transfers to specific households will take care of their economic insecurity. Old arguments for the value of a job guarantee are still relevant.

A second reason is that jobs programmes help people develop work skills and public goods, which sustain further growth. Work skills are particularly important for young urban workers, 93% of whom have no formal vocational or on-the job training. Urban youth in India have already been at the centre of a controversy over soaring unemployment rates in recent years, and this could be a further massive setback. The scarring effects of youth unemployment on incomes, wages, future employment, wellbeing and crime are well-known and now threaten a whole generation in a very young country (Arulampalam et al. 2001). A job guarantee might lift some of their despondency when they get back to the labour market, as documented for young UK workers during the New Deals of the late 1990s (Layard 2001, 2020).

These reasons motivated NREGA to cover all rural households, which is now providing national and state governments with a way to create rural jobs as social distancing rules are relaxed. The current crisis calls for a bolder step than this. A universal job guarantee needs to be on the table for discussion to cover all individuals who might need it.

Several proposals exist on how to achieve this and these need to be carefully debated (e.g. State of Working India 2019, Dey and Roy 2020). Leaving informal workers to survive on a hastily targeted bank transfer or loading informal workers on to NREGA outlays is unlikely to deliver the benefits of an organic system of work development, monitoring, budgeting and public good delivery which is embodied in successful jobs programmes in India and elsewhere. Old ideas of a job guarantee need to be refreshed properly so that they have value for workers who need them.

The value of a job guarantee

To understand whether job guarantees are valued by workers, the Centre for Economic Performance (CEP) at the London School of Economics conducted a large-scale survey of over 16,000 individuals in India during 2018 (Dhingra and Machin 2020). National statistics, even in more advanced countries, have proven inadequate in recording informal workers, especially the new breed of self-employed and temporary workers who have arisen in cities outside of the organised sector. Many of these informal workers have a portfolio of short-lived, temporary and seasonal jobs that go unrecorded in national surveys. A key finding of the CEP survey is that, on average, an urban worker is willing to give up 15% of their wages to get a guaranteed number of days of work in the year. (NREGA takes the form of a 100 days of guaranteed work for rural households).

Another finding from the survey is sobering in the light of the plight of migrants since the lockdown. Migrants in our survey – those living in a state other than their state of birth or commuting in from villages and towns into cities – were much less likely than non-migrants to be able to pay for emergency expenses. They also placed a greater value on having a job guarantee. Most migrants in India are not eligible for targeted programmes outside of their home regions. Although a universal programme would not have overcome the immediate plight of these uncovered migrants, it is certainly fair to say that the shortcomings of targeted programmes and the safety net holes they create have not been adequately weighed in the policy discussion.

The self-targeting feature of job guarantees makes them equitable and cost effective. A 100-day job guarantee at a daily wage of Rs 200 (similar to what has been announced for NREGA) would cost Rs 20,000 per person. Let's suppose all casual workers (13% of the urban workforce of 300 million persons), irrespective of income, take up the job

guarantee. To calculate how many other individuals take it up, add the 15% value that workers place on having a job guarantee and we end up with a daily value of Rs 230. In urban India, 16% of the workforce, including those who are unemployed, earn less than Rs 230 from other work, so suppose all of them take up a job guarantee. From a back-of-the-envelope calculation, an urban job guarantee would cost Rs.1.74 trillion, or 0.8% of India's annual GDP. In contrast, a bank transfer of Rs 20,000 each would be 160% more costly.

Of course, many including the government's expert panel on minimum wages, would think Rs 200 is obscenely low. At Rs 400 a day, the estimated cost of providing a 100-day job guarantee would be Rs 6.6 trillion. The take-up rates assumed here are very high – any urban worker who is unemployed or casually employed and urban workers who are employed but earn less than Rs 460 a day from just their salaried and self-employed earnings. In reality, expenditure is likely to be much lower, because the latter group includes government workers and business owners who, in fact, have the least desire to take up additional jobs. Importantly, these costs do not net out potential benefits from incomes, skills and public goods for urban workers. A very grim view of the ingenuity of workers would need to be taken to assume that these benefits do not substantially offset the costs to the exchequer.

As a pioneer of the world's largest jobs programme, India has chosen to undermine its appeal even though evidence is already suggesting increases in labour attendance since opening up of NREGA works. At a time of severe economic insecurity, a pledge, not even an actual outlay, of 1% to 3% of GDP is a miniscule sum for a nation (aspiring to a $5 trillion economy) to restore a life of dignity to those who have often fallen through the cracks of the nation's safety nets.

Conclusion

How policies to protect informal workers unfold in India would be important for many developing countries who share the pressures of limited infrastructure, who have not yet tried many large-scale labour market policies and who are facing a severe employment fallout from the pandemic. While cash transfers can be used where possible to provide relief, ultimately getting people back to work is going to be crucial for their long-term wellbeing. Even middle-income countries like Argentina have previously tried job guarantee schemes to alleviate economic distress of unemployed individuals during downturns. Many developing economies, like India, may find once again that old ideas of job guarantees can have value in today's difficult economic times.

Self-targeting features of job guarantees make them relatively economical. Their universal coverage can fill holes in existing safety nets. Their potential to alleviate the despondency of unemployment is valuable for those in precarious work.

While technology can provide better welfare delivery systems, utlimately policy has to step in to address the waste and inequity of long-term unemployment in the developing world. Job guarantees have many appealing features to be a key policy tool to overcome the enormous challenge facing the developing world. These old ideas need to be put back on the table for careful debate.

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Section IV

Policy responses to increase resilience

16 Jobs at risk: Early policy responses to COVID-19 in emerging markets

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This chapter provides estimates of jobs at risk in the light of economic disruptions caused by COVID-19 and surveys early policy responses in 38 economies in Central, Eastern and South-Eastern Europe, Central Asia and the Southern and Eastern Mediterranean. Small businesses, especially in retail and services sectors, account for the vast majority of employment in this region. Around 30% of jobs are likely to be at risk in many countries. Early policy responses in middle-income economies have focused on income support to individuals and firms. Yet limited administrative capacity to disburse funding and, to a lesser extent, fiscal constraints have been hampering these efforts. As a result, second-best measures such as price controls have been widely implemented. There is a strong case for tailoring policy response to the available administrative capacity and fiscal space. In the longer term, systems could be put in place that enable governments to quickly provide targeted assistance to firms and individuals during a crisis.

The COVID-19 shock has laid bare some of the most vulnerable parts of emerging markets and developing economies. Across Europe, the services sector, which has severely impacted by social distancing, typically accounts for more than 60% of the workforce (Figure 1). Small businesses in this sector employ more than 50% of the workforce in, among others, Cyprus, Greece, Latvia and North Macedonia.

How much unemployment are we facing?

Many businesses across Europe have already laid off or furloughed their workers. A quick way to estimate the size of job losses in the near term is to combine official data on employment structures with surveys of business. A survey of small businesses in the US by the Small Business Investor Alliance revealed that around 20% of the workforce in the wholesale and retail sector had lost their jobs by mid-March, and two out of three firms anticipated further layoffs (SBIA 2020). These early data match closely the observed rise in unemployment insurance claims, which topped 32 million by early May.

Figure 1   Share of services in total employment by firm size groups, 2017 (%)
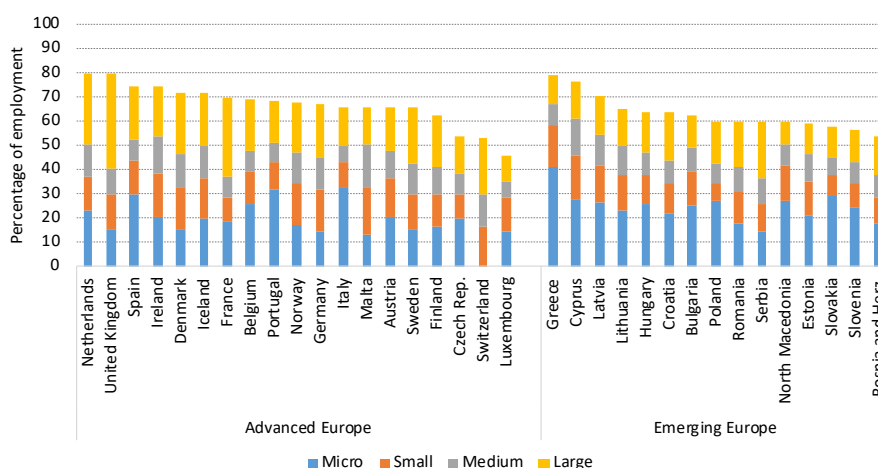
Source: Eurostat

Notes: Firm size definition follows Eurostat. Small enterprises employ between 10 and 49 persons; medium enterprises employ between 50 and 249 persons.

Combining survey responses with sector-level employment figures for the end of 2019 from Eurostat suggests that the share of workers who will lose their jobs while social distancing is in place is likely to reach 30%, with little variation across Europe (Figure 2).

Figure 2   Expected layoffs as a share of employment (%)
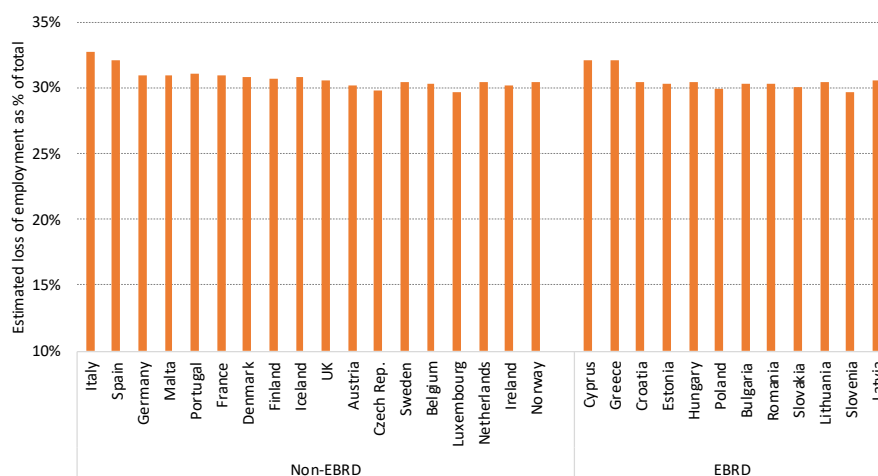
Source: Authors' calculations based on survey data from SBIA (2020) and Eurostat.

Notes: Total employment refers to all paid employees and excludes self-employed people.

Middle-income economies also have large shares of self-employed and workers on temporary contracts

Many self-employed people also face a loss of income. At end-2019, more than 1 in 10 people active in the European labour force were self-employed; in Greece, this ratio exceeds 30% (Figure 3).

Figure 3   Self-employment as a share of total employment, 2019 Q4 (%)
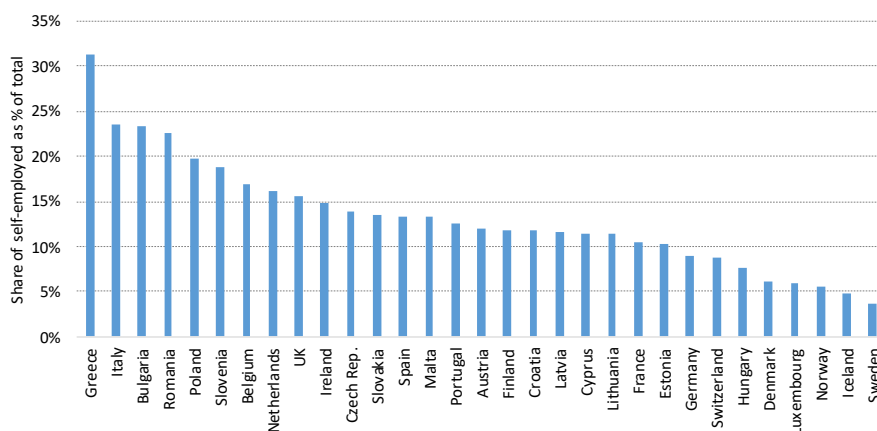
Job losses and income reductions are also likely to be more severe, at least in the short term, where fewer employees have permanent contracts, as in the Caucasus, Central Asia and South-eastern Europe (Figure 4). In the longer term, the ability of economies with flexible labour markets to swiftly recreate jobs may extent depend to a significant on favourable external conditions such as the return of tourism.

Workers in the informal economy – often poor with very limited, if any, savings and no access to social security – may be unable to follow social distancing guidelines. Crisis-related short-term financial assistance programmes for businesses typically do not cover informal enterprises. As a result, workers in the informal sector may be particularly vulnerable to the pandemic (e.g. ILO 2020, OECD 2020). Informal employment accounts for over half of employment in countries such as Albania, Egypt and the Kyrgyz Republic (Figure 5).

Figure 4   Share of those employed on permanent contracts, 2016 (%)
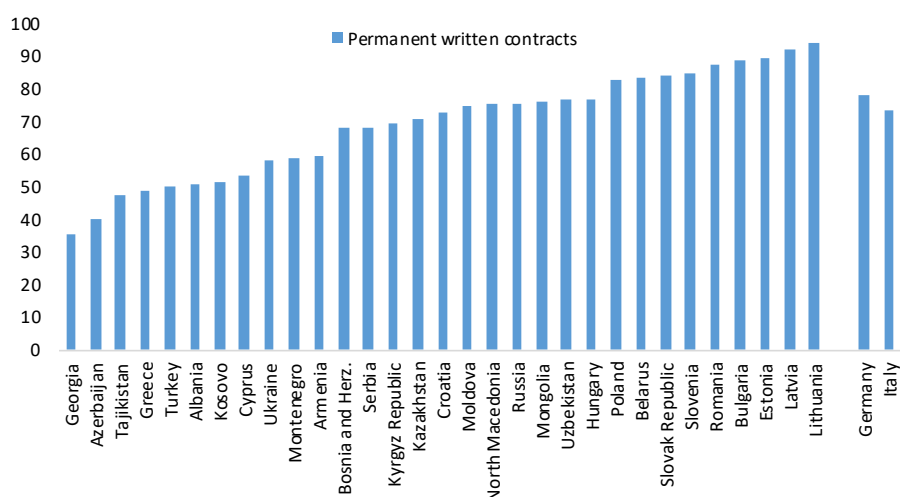
Sources: Life in Transition Survey 2016 and authors' calculations.

Figure 5   Share of informal employment (%)
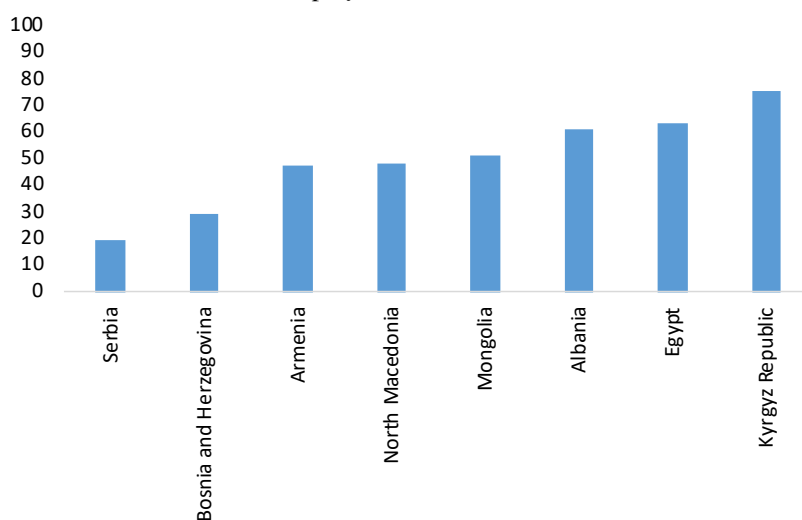
Sources: ILO and authors' calculations.

Notes: Latest year available (2013-2018). Employment in the informal economy as a percentage of total non-agricultural employment. It includes all jobs in unregistered and/or small-scale private unincorporated enterprises. Includes self-employed street vendors, taxi drivers and home-base workers. Agricultural and related activities, households producing goods exclusively for their own use (for instance, subsistence farming, domestic housework, care work, and employment of paid domestic workers), and volunteer services rendered to the community are excluded.

Fiscal and administrative capacity shapes policy options

Countries have responded to the realities of lockdowns with a broad array of monetary, fiscal and administrative measures. The responses aimed at providing those affected with the means to stay liquid and solvent (e.g. Dell'Ariccia et al. 2020), while details varied significantly across economies. With this in mind, we survey early measures introduced in 38 mostly middle-income economies in Central and Eastern Europe, Central Asia and the Southern and Eastern Mediterranean.

Countries' ability to implement fiscal measures to support vulnerable individuals and companies depends on the fiscal space available. In contrast with many previous crisis episodes, the cost of financing has remained low for many middle-income economies. If anything, in late March yields on debt of many middle-income economies were below the average cost of servicing debt in those economies in 2014-17 (obtained by dividing government interest expenditure by the stock of debt; see Figure 6).

Figure 6   Cost of debt in middle-income economies, then and now
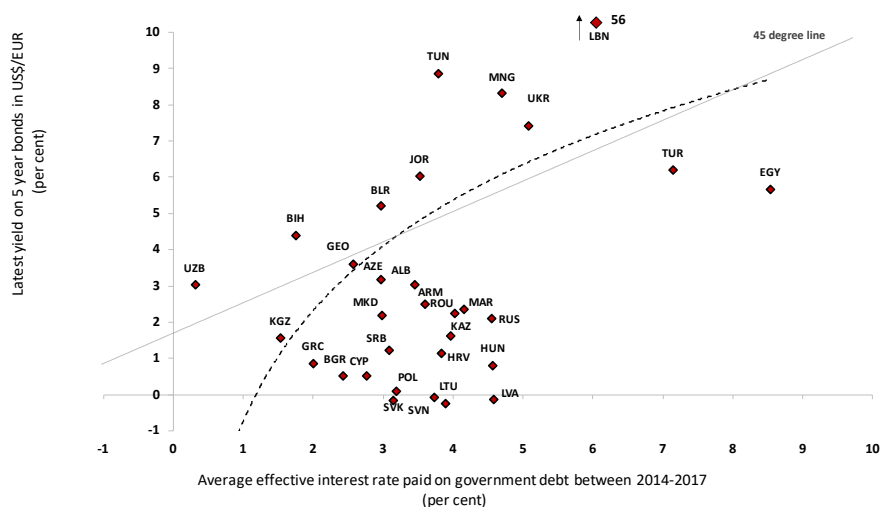
Sources: Bloomberg, IMF, and authors' calculations.

For many countries, administrative constraints may thus be more binding than fiscal constraints, at least in the short term (Figure 7; see also IMF 2020). To provide an approximate mapping for both concepts, we construct indices of fiscal space and administrative capacity for each economy. The fiscal space index shown in Figure 6 reflects pre-existing levels of government debt and government net lending/borrowing as a share of GDP, cost of borrowing in international markets and the ability to raise

revenue. Administrative capacity is measured as a combination of the E-Government Development Index (which looks at the scope and quality of online services, the status of the development of telecommunication infrastructure and inherent human capital), the Doing Business index (which measures the ease of dealing with government regulations and procedures for a representative firm) and indicators of regulatory quality and government effectiveness from the Worldwide Governance Indicators.

Figure 7   Fiscal space and administrative capacity to deliver policy options
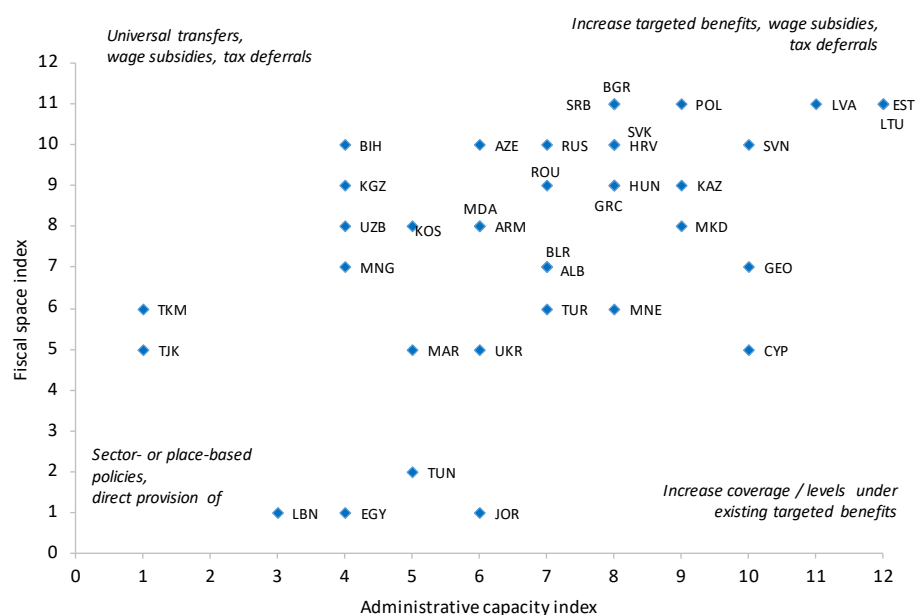
Sources: Bloomberg, International Monetary Fund, United Nations DESA, World Bank and authors' calculations.

Note: Policy response adopted from IMF Fiscal Monitor April 2020. Administrative capacity index is constructed based on UN DESA E-government development index, World Bank Doing Business and Worldwide Governance Indicators of regulatory quality and government effectiveness, each rescaled 0-3 and added up. Fiscal space index is constructed based on general government debt as a share of GDP, general government balance, revenues and cost of borrowing, each rescaled 0-3 and added up.

In the context of social distancing, economies with ample fiscal space and relatively strong administrative capacity – for instance, the Baltic States, Poland and Slovenia – enjoy a broader range of policy options, including scaling up and broadening existing targeted social security and unemployment schemes, relaxing eligibility criteria, as well as introducing wage subsidies and deferring tax payments.

Countries with ample fiscal space but more limited administrative capacity – for instance, those in parts of Western Balkans or Central Asia – can rely to a greater extent on one-off universal transfers and to a lesser extent on narrowly targeted support.

Countries with more limited fiscal space but relatively strong administrative capacity – such as Cyprus – could expand coverage and increase benefit levels under existing targeted support programmes.

Countries with more limited fiscal space and relatively weak administrative capacity – for instance, Lebanon or Tajikistan – may need to rely on policies targeting specific sectors or locations and ensure direct provision of good and services to satisfy basic needs of populations.

Policy responses in middle-income economies

We surveyed the early policy responses in 38 mostly middle-income economies in Central and Eastern Europe, Central Asia and the Southern and Eastern Mediterranean. These policies have been coded manually in EBRD (2020) based on news reports and cross-checked with the databases updated by the IMF and the World Bank. Figure 8 presents a summary.

Figure 8   Share of countries that implemented various measures, early April 2020 (per cent)

Sources: Authors' calculations based on news coverage, IMF, World Bank, EBRD (2020).

Note: Based on a sample of 38 mostly middle-income economies in Europe, Central Asia and Southern and Eastern Mediterranean.

Fiscal support to avoid mass layoffs

Fiscal responses have broadly focused on supporting firms and individuals facing a temporary loss of income and on preventing mass layoffs, with a view to speeding up the economic recovery once containment measures are lifted. Most countries have provided liquidity support to vulnerable employers, in particular in hard-hit sectors such as tourism (for instance, in Russia and Turkey), or for small and medium-sized enterprises across the board (for instance, in Egypt, Georgia and Ukraine). Most countries have allowed for the deferred payment of some taxes or social security contributions, and many have provided payment holidays and/or guarantees and subsidised (often interest-free) loans. To support the banking system at a time when loan repayments may be put on hold, many economies also lowered policy rates and extended various programmes channelling liquidity to banks. Most countries have also loosened various prudential requirements.

While these measures can help support vulnerable firms, they may not be sufficient to avoid mass layoffs. Over half of the economies in our sample have pledged to subsidise wages of firms affected by lockdowns, typically as a percentage of salaries (as in Bulgaria or Latvia) and conditional on keeping workers employed. Indirectly, wage subsidies could reach many workers in the formal sector who otherwise could not be paid. As of early April 2020, only around a quarter of countries pledged income support schemes targeting the self-employed.

These measures are most beneficial if implemented quickly so that workers with limited savings can be paid without delay. For this, well-functioning ways of verifying recipients' eligibility and administering any pledged support directly into accounts of firms and individuals are key. Some advanced economies have established channels, such as KurzArbeit in Germany and channel support through KfW, a state-owned development bank. In the UK, the self-employed are expected to get government support in June 2020, three months into the lockdown; backlogs of unemployment insurance payments in the US stretched to weeks. Likewise, for many middle-income economies, administering targeted fiscal support quickly presents a major administrative challenge.

Second-best measures where administrative capacity may be lacking

Where administrative capacity to provide well-targeted fiscal support may be lacking, designing comprehensive policy response presents a far greater challenge. Policies that can be implemented quickly may be less effective, more distortionary and may even exacerbate the polarising impact of the crisis (see Adams-Prassl et al. 2020a, 2020b on the crisis and polarisation).

For instance, the population group targeted most by early policy measures across the sample are pensioners (around one in three economies). Traditionally, support to pensioners has been a much used and effective fiscal stimulus measure, given relatively low propensity of retirees to save and the ease of administering pension increases through existing monthly payments. This time, consumption is restricted by social distancing measures – both legally mandated and self-imposed – which arguably affect pensioners' incomes to a much lesser extent than the incomes of salaried and self-employed workers in the services sector (indirectly, pensioners may use additional income to provide support to their children and grandchildren).

More generally, those who derive their income from the state are easier for governments to reach and have thus been better shielded from the effects of the crisis. This group – including those directly employed by the state in the public sector (health, education, public administration), those working for state-owned enterprises, as well as the retired – is already fairly large in middle-income economies in Europe, Central Asia, and the Southern and Eastern Mediterranean. They accounted for around half of respondents in a representative household survey run by the EBRD and the World Bank in 2016.

Google search query data show that in economies where the state accounts for a larger share of employment, searches for unemployment and welfare increased significantly less than in economies with private sector-dominated employment (Figure 9). The economic fallout from COVID-19 may thus increase people's preferences for public-sector jobs (and the associated financial security), tilting middle-income economies further towards state employment.

Figure 9 Google searches related to unemployment and benefits saw smaller increases where state-owned enterprises (SOEs) account for a larger share of employment
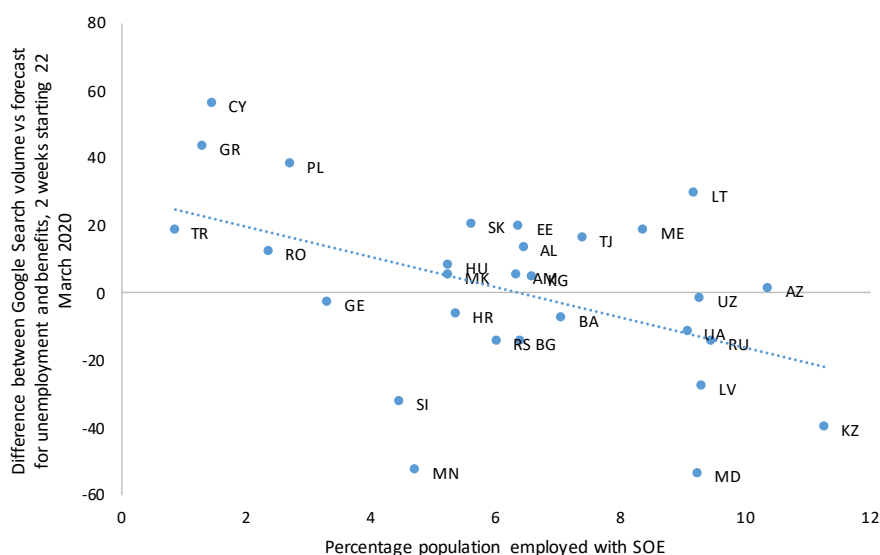
Sources: Life in Transition Survey 2016, Google trends and authors' calculations.

Notes: Google trends change is for 2 weeks starting 22 March 2020 relative to forecast based on prior trends.

Faced with administrative or fiscal constraints, policymakers have also turned to measures such as temporary price controls on basic goods (immediately implemented in almost 40% of countries). Countries have also quickly restricted exports of food staples and other products (22%) and, in over half of cases, have reduced utility prices or allowed 'payment holidays' for utility bills or rent. Price controls are distortionary, can lead to shortages, and tend to reduce incentives to scale up the production of essential staples. But they are easy to implement and, to an extent, protect the purchasing power of low-income households and those who are made redundant. Exemptions from paying bills serve a similar purpose. Yet, if they have to be maintained for a prolonged period of time, they will not only weigh on the operation of utility companies but may undermine the culture of paying bills on time, a fundamental institution underpinning the smooth running of markets.

Conclusions

Our findings make a strong case for setting up systems enabling targeted support, such as wage subsidies and transfers to individuals, to broaden the range of effective policy tools available in a crisis. To establish such support systems, economies where access to banking services remains far from universal could decide to grant every company or individual a direct account at a state development bank or a central bank.

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17 Working from home: Implications for developing countries

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In this chapter, we examine the feasibility and implications of working from home in developing countries. As a large number of countries have implemented social distancing policies, the share of employment which can be done at home will play a critical role in determining economic outcomes during the pandemic. We first show that the share of employment that can be done from home varies significantly with countries' incomes: in urban areas, this share is only about 20% in poor countries, compared to close to 40% in rich ones. This result is largely driven by the prevalence of self-employed workers in low-income countries. We further show that educational attainment, formal employment status and household wealth are positively associated with the possibility of working from home, reflecting the vulnerability of various groups of workers. We remark on the importance of rapidly identifying vulnerable workers across countries to design adequate policies to combat the negative employment impacts of Covid-19.

In the fight to contain the spread of Covid-19, 70 countries across the world have implemented social distancing policies.[1] These policies have severe economic effects because they limit the ability to work for a large number of workers. However, some workers may be able to continue working if they can do so from home. Measuring the ability of a country's employment to work from home is therefore crucial to understanding the effects of social distancing policies on incomes and welfare. Conversely, an assessment of how much work can be done from home is a key input for the design of social distancing rules and social protection responses.

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1   Retrieved from https://en.wikipedia.org/wiki/Template:COVID-19_pandemic_lockdowns on May 27, 2020.

The ability to work from home (WFH) foremost depends on the nature of a job. Essentially, if a job requires the use of machinery (or other infrastructure) or physical interaction with colleagues or customers, it cannot be done from home. The prevalence of such jobs differs across countries. In particular, it varies systematically with development, given the well-known changes in the sectoral and occupational structure of economies with development (Kuznets 1973, Gollin 2008, Herrendorf et al. 2014, Duernecker and Herrendorf 2016).

In this chapter, we lay out evidence on the various factors which determine the feasibility of working from home, and analyse their implications for the aggregate ability to WFH as well as for distributional aspects.[2] We first focus on differences across countries, with a particular focus on differences across levels of development.[3] For this analysis, we use the occupation-level data on WFH ability measured by Dingel and Neiman (2020). Large differences in the ability to WFH across occupations imply that the aggregate ability to WFH in a country is closely determined by the share of employment in certain occupations, in particular in agriculture, and by the share of self-employment. Using a dataset containing information on millions of workers in 57 countries across the entire spectrum of the distribution of country income per capita, we calculate the aggregate WFH ability for these countries, as well as figures for selected subgroups.

This analysis yields two main findings.

First, the ability to WFH in urban areas – where social distancing is particularly important – is significantly lower in developing countries. This is mainly due to the concentration of employment in elementary, services, and sales occupations in particular among the large group of the self-employed. For the wage employed, differences with income per capita are less pronounced. This indicates that policies need to pay particular attention to the self-employed.

Second, the effect of social distancing policies on aggregate employment (including rural areas) depends crucially on how their design affects self-employed farmers. If social distancing policies still allow them to work, their overall effect on the ability to work is not systematically larger in developing countries.

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2   The evidence presented here closely draws on Saltiel (2020) and Gottlieb et al. (2020).

3   Recent months have seen work documenting potential and actual WFH in a variety of individual countries (e.g. Barrot et al. 2020, Boeri et al. 2020, del Rio-Chanona et al. 2020, Fadinger et al. 2020, Hensvik et al. 2020, Koren and Peto 2020, Mongey and Weinberg 2020). Dingel and Neiman (2020) compute WFH potential for a broad cross-section of countries using occupation-level data and Hatayama et al. (2020) develop a comparable WFH measure across 53 countries. Adams-Prassl et al. (2020) study differences in the ability to work from home within occupations.

We then proceed to an in-depth analysis of the ability to WFH at the individual level, using data from ten countries at very different levels of development. This dataset allows us to single out worker types that are less able to work from home and more vulnerable to social distancing policies. We find particularly low ability to WFH among workers in services and sales occupations, in occupations that are most prevalent in manufacturing, and the self-employed. Also, we find that workers with low levels of education or assets are less likely to be able to WFH. Women, in contrast, are more likely to be able to WFH. These patterns are surprisingly stable across countries. Most groups with a lower ability to WFH are also poor. Hence, it is the urban poor who are most likely to experience large income losses from social distancing policies.

Our findings provide guidance as to the likely effects of strict social distancing policies on aggregate outcomes and the livelihoods of specific groups. They can help to anticipate how deep a recession generated by social distancing policies will be, and identify groups most in need of support due to income loss.

Cross-country evidence

We begin by providing country-level evidence on the ability to work from home for a comprehensive cross-section of countries at different levels of economic development. The income gradient of the ability to WFH helps us understand how countries at various stages of development may be affected by social distancing policies. To do so, we use individual-level information on workers across many countries and information on the ability to work from home across occupations.

Several recent papers have developed measures of the ability to work from home across occupations using data from a wide range of countries (see footnote 3). We focus on the measure by Dingel and Neiman (2020), who were the first to develop such a measure of how much work could potentially be done from home. They use a task-exclusion approach and data on occupation characteristics from the US Occupational Information Network (O*NET). In particular, they define whether an occupation can be carried out at home based on information on 38 task attributes of an occupation. Their approach consists in excluding work from home when certain conditions are true. For example, an occupation is classified as not permitting work from home if workers lift heavy loads, use or repair particular types of machinery, or do not use email at work.[4]

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4   This approach contrasts with simply measuring how much work is already done from home, which likely is lower than the potential to WFH. Other researchers have developed similar measures for other data sources and countries, adjusting the exact criteria used based on data availability. Our analysis of within-country differences follows a similar approach.

Dingel and Neiman (2020) apply this method to O*NET data on occupation characteristics and provide measures of the share of employment that can be done from home for many occupations. We use this information to compute for a broad occupation category (ISCO-08 1-digit) the fraction of detailed occupations within a broad occupation group, which we report in Table 1 and compare with the evidence presented in Saltiel (2020).

Table 1   Percentage of jobs that can be done from home by ISCO-1 occupation group

	Occupation, ISCO 1 digit	WFH (in %)	
		Dingel and Neiman (2020)	Saltiel (2020)
1	Managers	76.8	34
2	Professionals	70.6	34.4
3	Technicians and Associate Professionals	39.6	27.4
4	Clerical Support Workers	49.6	41.8
5	Services and Sales Workers	20.7	6.4
6	Skilled Agricultural, Forestry and Fishery Workers	8.3	0.1
7	Craft and Related Trades Workers	3.9	3.3
8	Plant and Machine Operators and Assemblers	7.4	0.5
9	Elementary Occupations	9.6	2.3

It is very clear from Table 1 that the ability to work from home varies very strongly across broad occupation groups. While most jobs in managerial and professional occupations can be done at home, this is the case for only a small fraction of jobs in elementary or manufacturing occupations (such as plant and machine operation). The ability for services and sales workers to work from home is also low. This broad difference in WFH ability between professional, services, and manufacturing-related occupations is crucial, since the share of employment in these occupations differs a lot across countries. Saltiel's (2020) definition yields similar patterns in WFH feasibility across occupations. As discussed below, his analysis relies on information task content in developing countries, thus yielding lower WFH shares within occupations.

We combine the measure from Table 1 with data on employment by occupation across countries. We take this data from our micro-dataset we built merging household surveys and labour force surveys from 57 countries, covering 612 country-years.[5] It contains individual-level data on 18 million individuals that work and covers many countries at different stages of development ranging from Ethiopia to Luxembourg. While alternative data sources such as the ILO also offer a wide cross-country coverage, our micro-dataset allows us to compute population and employment shares for many subgroups of the working population.

We first examine the ability to WFH for workers in urban areas, where social distancing policies are particularly important. Our data reveal that the distribution of employment over broad occupations varies very strongly with country income, even in urban areas. High-income countries have more than half of their urban employment in the first four broad occupations (managerial and professional occupations). In contrast, these occupations account for barely a fifth of urban employment in the poorest countries. Low-income countries instead have large shares of urban employment in elementary occupations as well as services and sales (each around 30%). In high-income countries, these occupations account for only 10% and 15% of urban employment, respectively.

Using information on the share of employment in each occupation, we compute the total WFH ability for each country. Figure 1 shows WFH ability by country for urban areas. It is clear that, as a consequence of the large differences in employment composition, the ability to WFH for urban workers varies strongly with income per capita. For high-income countries, we find that just under 40% of work can be done from home – in line with the numbers reported by DN. For low-income countries, this share is cut almost by half. These numbers are fairly homogeneous across countries in a country income group, with just a very few exceptions.

Table 2 shows WFH ability by country income group, both for all urban workers and for some subgroups of workers. This table reveals another striking feature: the ability to WFH does not vary strongly with country income per capita for wage employees, but it varies very strongly for the self-employed. This occurs because the self-employed, in particular in poor countries, are concentrated in elementary occupations (almost 40%) and services and sales occupations (almost 45%), where WFH is particularly difficult. In contrast, in high-income countries, the occupation distribution does not vary much between wage employees and the self-employed. Hence, it is the occupational

5   A full overview of the data sources is provided in Table 3.

employment distribution of the self-employed, combined with the very high rates of self-employment in poor countries (Gollin 2008), that explains the lower ability to WFH in poor countries.

Figure 1 Percentage of urban workers who can work from home by income per capita
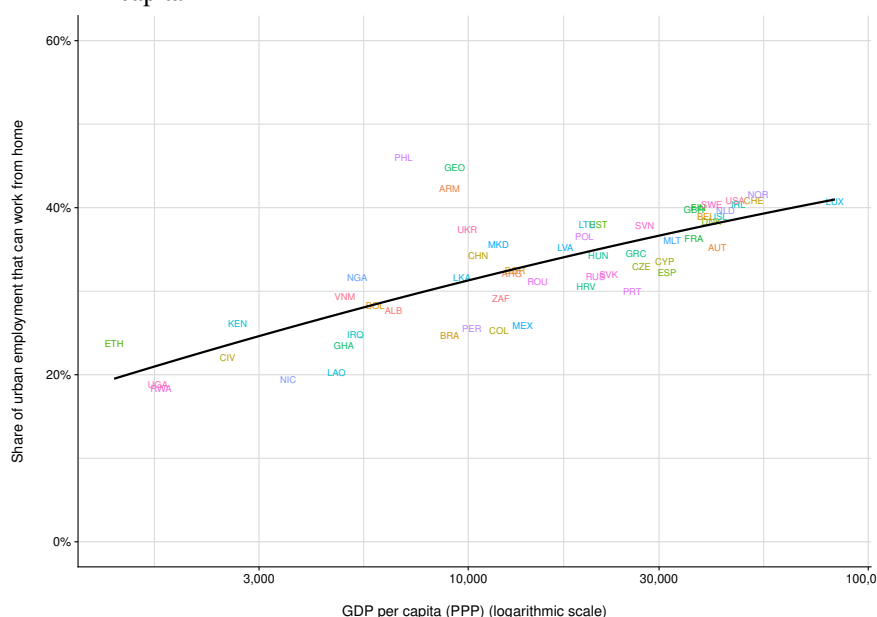
Note: Figure shows the share of the urban employed population with an occupation that can be executed remotely by country year.

Table 2 Percentage of workers who can work from home by country income level

	Low	Lower-middle	Upper-middle	High
Urban	22.1	29.6	31.2	37.1
Urban, wage employed	28	32.9	31.7	36.7
Urban, self-employed	15.5	23.8	28.8	40.4
Urban and rural	14.7	24.8	28.8	34.7
Urban and rural, WFH for farmers =1	64.3	42.9	34.2	37.5

Finally, we assess the ability to WFH at the level of the entire country. Since high-income countries are highly urbanized, it will not differ significantly from that in urban areas. However, developing countries have large shares of employment in rural areas, and particularly in agriculture, with agricultural employment shares of over 50% in some countries. Hence, their ability to WFH can differ significantly between rural and urban areas.

The large agricultural employment shares in developing countries imply that the ability to WFH in agriculture is the primary determinant of their aggregate ability to WFH. Based on O*NET data, only 8.3% of jobs in agriculture can be done from home. This assessment is based on the way agricultural work is done in the US, in terms of both tasks on the job and the size of farms. Clearly, employees on large farms are unable to work from home. However, in most low-income countries, agricultural employment is dominated by small-scale subsistence agriculture, and wage employment plays a small role. A significant portion of farm output is consumed within the farming household and not sold to the market (Eastwood et al. 2010, Adamopoulos and Restuccia 2014, Gollin and Rogerson 2014, Alvarez-Cuadrado et al. 2020). In such a situation, it may be feasible for a large fraction of agricultural work to be done from home by self-employed farmers without employees on their plots in the vicinity of their homes. Middle-income countries fall in between since their agricultural employment features a combination of subsistence farms and larger farms with employees.

Figure 2 shows the aggregate WFH ability across countries for the two extreme scenarios: one where WFH ability in agriculture is only 8.3% (left-hand panel), and one where all the self-employed in agriculture can work from home (right-hand panel). The true WFH ability in agriculture will lie in between and depends on the marketisation of agriculture and, in particular, the extent to which small-scale farmers purchase inputs and sell output in markets.

Results are striking and show that farmers' ability to WFH is crucial. If this is low, the aggregate ability to WFH in low-income countries hovers around 20%, similar to that in urban areas (and half that in high-income countries). But if farmers can work from home, it rises to 30% to 70%, and exceeds that in high-income countries.

Figure 2 Percentage of a country's workers who can work from home by income per capita

a) Baseline WFH scores
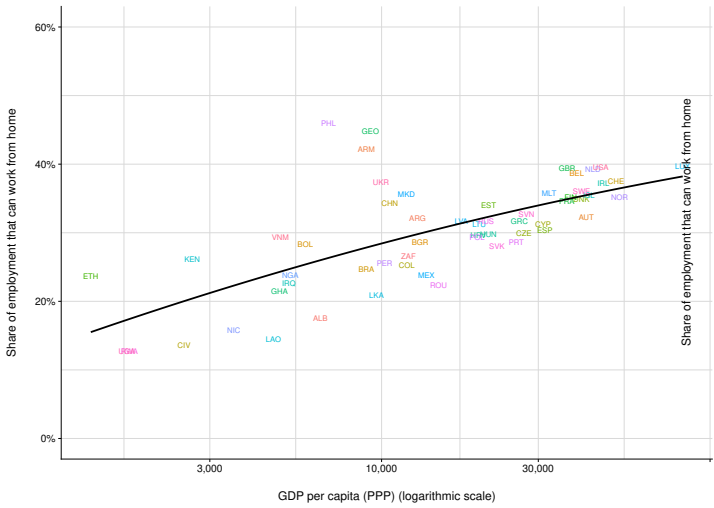
b) WFH score of 1 for agricultural workers
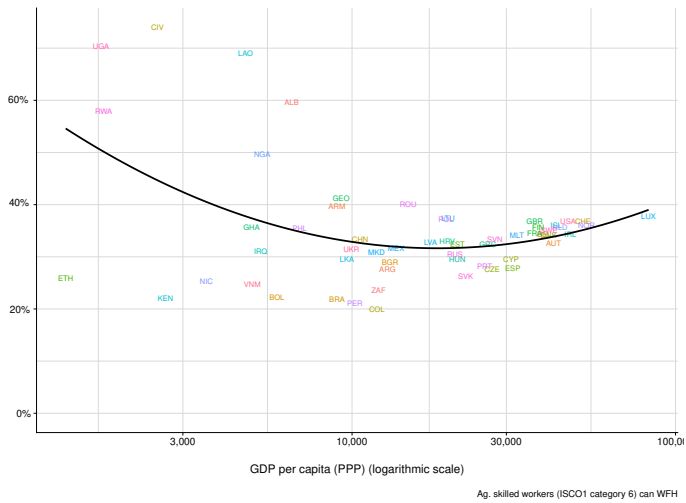
These findings illustrate that the rigidity of social distancing rules applied to farmers will be essential in determining the potential to WFH in developing countries. It seems plausible that self-employed farm work is possible while preserving adequate social distancing. Permitting it will then have a large effect in preserving labour input in developing countries, limiting the adverse effects of social distancing on labour supply and incomes.

Within-country differences

The evidence discussed so far considers the feasibility of WFH at the occupation-level, yet sizable heterogeneity may exist in workers' abilities to work from home within occupations. To this end, we take advantage of worker-level data on task content from the Skills Toward Employability and Productivity (STEP) survey, which covers workers in urban areas in ten countries, including Armenia, Bolivia, China (Yunnan Province), Colombia, Georgia, Ghana, Kenya, Laos, Macedonia and Vietnam. STEP includes extensive information on workers' employment outcomes, covering their occupation and self-employment status, as well as on observed characteristics, including educational attainment, gender and a household-level asset index. As a result, we can identify the types of workers who are more likely to be able to work from home during lockdowns.

To measure workers' ability to work from home, we leverage information on the tasks they perform at work. In particular, we follow Dingel and Neiman (2020) and rule out working from home if workers report performing any of the following tasks at work: not using a computer, lifting anything heavier than 50 pounds, repairing/maintaining electronic equipment, operating heavy machinery or industrial equipment; or if they report that contact with customers is very important. Across the STEP sample, 40% of workers lift heavy items at work and 27% report having frequent interactions with their customers.[6] Combining the various task exclusions outlined above reveals that just 13% of workers in STEP countries can work from home according to this definition. In line with the results presented in the previous section, the prevalence of WFH is positively correlated with countries' levels of economic development.

Figure 3   Characteristics of workers who can work from home by STEP country

a) WFH by high-school dropout status
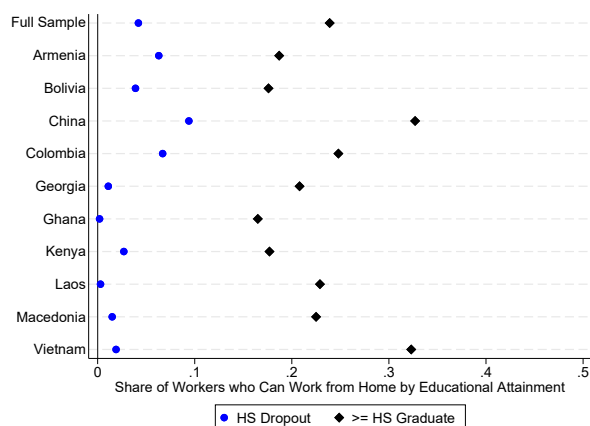
b) WFH by asset index quintile
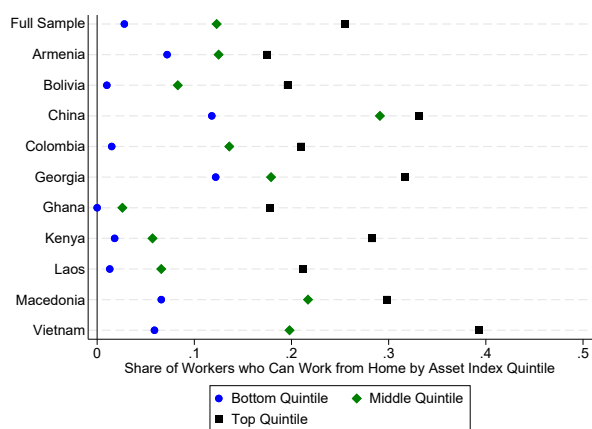
Moreover, analysing the characteristics of workers who may carry out their work from home can help inform the likely impacts of lockdowns on livelihoods and inequality. To this end, we present evidence on the WFH measure by workers' educational attainment in the first panel of Figure 3. We find that while 24% of workers who have at least completed a high school degree can work from home, this is the case for just 4.2% of their counterparts who did not finish high school. These differences are present across all countries in the STEP sample and are largest in Vietnam, reaching close to 30 percentage points. In the second panel, we further show sizable disparities in the ability to WFH across households' ranking in the within-country asset distribution: on average, just 2.8% of workers in the bottom asset quintile can work from home, far lower than their peers in the top quintile (25.5%). This result highlights the extent to which COVID-19 may exacerbate existing inequalities, as almost no workers who are unable to work from home may successfully self-insure against the negative shock.

We have so far shown that high-paying occupations and more educated workers have a higher likelihood of working from home. To discern the relative importance of occupations and workers' observed characteristics, we estimate the following regression using STEP data:

$$NFWH_{ijc} = \beta_0 + \beta_1 X_i + \gamma_j + \theta_c + v_{ijc} \tag{1}$$

where $NFWH_{ijc}$ is a binary variable which equals 1 if worker i in occupation j in country c cannot work from home, X_i includes workers' observed characteristics, γ_j is a three-digit occupation fixed effect and θ_c denotes country fixed-effects. We present the results in Figure 4. We find that high school dropouts, those in less wealthy households, males, older workers and self-employed workers are less likely to be able to work from home even within narrowly defined occupational groups. For instance, high school graduates are 6.5 percentage points more likely to be able to work from home than their counterparts who did not complete high school within three-digit occupations. Altogether, these results indicate that more vulnerable workers are far less likely to continue working from home. As such, government interventions will play a critical role in relieving workers who cannot pursue their income-generating activities and these policies should account for workers' vulnerabilities even within-narrowly defined occupations (Gentillini and Almenfi 2020).

Figure 4 Within-occupation worker characteristics associated with not working from home
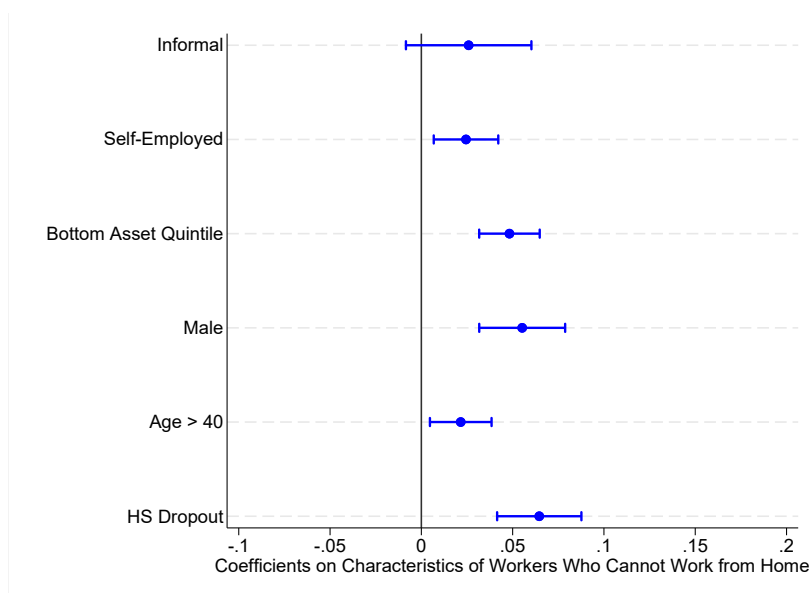
Conclusion

The impact of social distancing and lockdown policies on livelihoods largely depends on the ability of workers to pursue their income-generating activities from home. In the developing world, in particular in urban areas, workers are much less likely to be able to work from home than in high-income countries because a large share of workers are self-employed and pursue jobs that require infrastructure and proximity with customers. At the national level, this finding hinges on the ability of farmers to work from home. If they can work while respecting social distancing guidelines, the overall ability to work from home in low-income countries is similar to that in high-income countries.

At the individual level, we show that low-skilled, old and self-employed workers are less likely to be able to work from home. At the same time, they are more likely to be asset poor, and therefore unable to self-insure. To avoid increases in poverty rates in the developing world, government interventions that target these groups should be set high on the policy agenda.

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Appendix

Our individual level dataset consolidates labour force surveys and the labour force section of household surveys for many countries. This dataset harmonizes information on individual characteristics and labour supply. It contains information on employment status, job type, occupation and sector of activity. Table A1 lists all data sources used to construct the dataset.

Table A1   Individual-level dataset. Information on data sources, sample size and country years covered.

Name	Years	Sample size (in thds)	GDP per capita (PPP)	Source
Albania	2002–2012	23	4'845–9'918	LSMS
Argentina	2004–2006	127	12'074–13'770	LFS
Armenia	2013–2013	1	8'979–8'979	STEP
Austria	1999–2017	1'034	34'938–51'524	LFS
Belgium	1999–2017	474	32'357–46'522	LFS
Bolivia	2012–2012	2	5'860–5'860	STEP
Brazil	2002–2006	723	8'358–9'515	LFS
Bulgaria	1995–2017	177	6'390–20'027	LSMS, LFS
China	2012–2012	1	10'596–10'596	STEP
Colombia	2012–2012	2	11'934–11'934	STEP
Cote d'Ivoire	1985–1988	13	2'429–2'734	LSMS
Croatia	2002–2017	155	13'750–24'368	LFS
Cyprus	1999–2017	207	25'255–36'137	LFS
Czech Republic	2002–2017	663	21'374–36'061	LFS
Denmark	1999–2017	511	33'525–49'607	LFS
Estonia	1999–2017	118	10'772–31'013	LFS
Ethiopia	2013–2014	46	1'248–1'357	LFS, UES
Finland	1999–2017	207	31'433–42'902	LFS
France	2003–2017	812	31'567–40'975	LFS
Georgia	2013–2013	1	9'254–9'254	STEP
Ghana	2013–2015	6	4'875–4'910	STEP, LFS
Greece	1999–2017	1'143	22'683–31'340	LFS
Hungary	2001–2017	1'179	16'448–27'531	LFS
Iceland	1999–2017	54	37'732–51'316	LFS
Iraq	2006–2006	27	5'223–5'223	LSMS
Ireland	1999–2017	1'071	33'680–73'297	LFS
Kenya	2013–2013	2	2'652–2'652	STEP
Laos	2012–2012	2	4'693–4'693	STEP
Latvia	2001–2017	154	10'921–26'643	LFS
Lithuania	1999–2017	277	10'373–30'936	LFS
Luxembourg	1999–2017	168	64'436–99'477	LFS
Macedonia	2013–2013	2	11'910–11'910	STEP
Malta	2009–2017	76	26'792–41'847	LFS
Mexico	2005–2005	163	13'691–13'691	LFS
Netherlands	1999–2017	834	37'786–50'024	LFS
Nicaragua	2005–2005	12	3'548–3'548	LSMS
Nigeria	2010–2018	18	4'971–5'641	LSMS
Norway	2005–2017	111	49'908–63'768	LFS
Peru	2009–2014	115	8'515–11'086	LFS
Philippines	2015–2015	1	6'896–6'896	STEP
Poland	2006–2017	1'155	16'416–28'420	LFS
Portugal	1999–2017	771	22'413–28'567	LFS
Romania	2009–2017	694	16'752–25'262	LFS
Russian Federation	2004–2015	77	12'554–25'777	RLMS-HSE
Rwanda	2013–2016	49	1'551–1'872	LFS
Slovakia	2007–2017	354	22'724–30'433	LFS
Slovenia	2005–2017	297	26'506–33'947	LFS
South Africa	2012–2019	243	11'965–12'201	QLFS
Spain	1999–2017	920	25'102–37'233	LFS
Sri Lanka	2012–2012	1	9'653–9'653	STEP
Sweden	1999–2017	1'441	34'468–47'892	LFS
Switzerland	2010–2017	232	54'028–62'927	LFS
Uganda	2009–2013	21	1'571–1'759	LSMS
Ukraine	2012–2012	1	9'956–9'956	STEP
United Kingdom	1999–2017	702	31'110–42'138	LFS
United States	1998–2004	220	43'625–49'138	CEPR
Viet Nam	2012–2012	2	4'917–4'917	STEP
		17'892	1'248–99'477	

18 The importance of protecting export-oriented firms

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The COVID-19 crisis has hit everywhere at once. Lower-income countries should not expect large inflows of aid; they will be left largely to their own resources. Those resources are limited, so lower-income countries need to find leverage wherever they can. Export-oriented firms are one important source of leverage. The large, formal firms typically have relationships with banks and a solvency buffer. They also provide a conduit for reaching a part of the labour force. Using an example from the garment sector in Bangladesh, in this chapter I show how concessionary loans have been used to leverage limited government resources. The export sector also provides foreign currency earnings particularly important for countries that import a significant part of their basic food budget. The viability of exports will depend on international demand, but also on keeping the domestic part of the supply chain open.

The 2004 Boxing Day tsunami devastated Ache province in Indonesia and large sections of coastal Thailand, Sri Lanka and India. The international response was immediate, with huge inflows of aid from both governmental and nongovernmental sources. The aid inflows often exceeded the estimated damage. The process was long and the disaster devastating, but the donations allowed countries to rebuild in ways that in many places resulted in improved infrastructure. A similar story plays out in most large-scale disasters affecting lower-income countries.[1]

The COVID-19 crisis is unlike any other in this regard. Because the crisis has hit all countries essentially at the same time, and has hit the high-income donor countries as well, substantial aid flows will not be forthcoming. The lower-income countries will be left largely to their own resources to deal with the health effects and economic fallout from COVID-19.

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1   See Stromberg (2007) for an analysis of disaster aid flows and Eisensee and Stromberg (2007) for an interesting analysis of how high-income country news cycles affect aid flows following disasters.

The scale of the problem

Estimates based on very credible post-COVID survey data from Bangladesh illustrate the sobering scale of the need. Using a nearly representative sample of urban and rural poor during the second week of April 2020, Rahman et al. (2020) find income losses of around 75% in urban slums and 67% in rural Bangladesh. Based on these data, the researchers estimate that roughly half the Bangladeshi population will be need support of around $0.70 per day to maintain nutritional health. A universal basic income pilot in Kenya fixes the transfer rate at $0.75 per adult per day. These amounts imply expenditures of roughly $1.3 billion per month in Bangladesh.

Scaling these estimates up to the low-income and lower-middle-income countries in South Asia and sub-Saharan Africa, the need is $1.1 billion per day, around $0.5 billion of which is for India – levels that will represent half or more of the tax collection in most lower-income countries. Gentelini et al. (2020) report that, as of late May 2020, social assistance cash transfer programmes are operating in 124 countries, with an impressive total of $0.5 trillion committed globally. However, while the per capita commitment is $99 in high-income countries, it is $1 in low-income countries – an order of magnitude smaller than the Bangladesh data indicate would be required during each month of the crisis.

The lack of commitment to cash transfer programmes in lower-income countries is not surprising when we consider the resources available in those countries. Bangladesh collected taxes of 8.8% of GDP in 2018 (World Bank data), implying that the required transfer alone would account for over half of government tax collections. Table 1 shows tax revenue data for lower-income countries in sub-Saharan Africa (SSA) and South Asia (SA). The data indicate that the population-weighted average across lower-income countries in the two regions is around 11% of GDP. Population-weighted, the lower-income countries in SSA and SA collect 11% of GDP in taxes, and tax collections are lower than 10% of GDP in many of the lower-income countries. This compares with 30% or more in higher-income countries. These data ignore the fact that tax collection itself is falling dramatically.[2] Although external debt levels vary from quite low (e.g. 14% of GDP in the DRC and 29% in Nigeria) to quite substantial (e.g. 86% of GDP in Zambia and 109% in Mozambique). However, aside from funding from the IMF and World Bank, most of the lower-income countries have little access to international financial markets, even in this period of excess savings.

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2   The Daily Star reports that tax collection fell by 57% in April 2020 ("Shutdown Gobbles up NBR Collections Last Month", Daily Star, 22 May 2020).

Table 1   Population, GDP/capita and tax revenue

Country	GNI per capita (current US$)[1]	Tax revenue (% of GDP)[2]	Government debt (% of GDP)[3]
Central Africa			
Angola	3,370	9.2	109.8
Cameroon	1,440	12.2	40.9
Central African Republic	490	7.1	47.8
Chad	670	-	44.2
Congo, Dem. Rep	490	-	14.7
Congo, Rep.	1,640	14.3	95.3
São Tomé and Principe	1,890	-	73.1
East Africa			
Burundi	280	13.6	59.4
Djibouti	3,190	-	-
Eritrea	720	-	189.2
Ethiopia	790	7.6	57.6
Kenya	1,620	15.7	60.8
Madagascar	510	10.0	38.4
Malawi	360	17.3	63.4
Mozambique	460	22.2	109.0
Rwanda	780	13.6	38.6
Somalia	130	0.0	-
South Sudan	1,130	-	41.8
Tanzania	1,020	11.8	38.1
Uganda	620	13.7	40.0
Zambia	1,430	15.2	85.7
Zimbabwe	1,790	15.3	11.0
North Africa			
Sudan	1,560	8.0	-
Southern Africa			
Lesotho	1,390	29.5	48.5
West Africa			
Benin	1,200	-	39.4
Burkina Faso	670	17.4	40.0
Côte d'Ivoire	1,600	16.2	37.8

Country	GNI per capita (current US$)[1]	Tax revenue (% of GDP)[2]	Government debt (% of GDP)[3]
Gambia, The	710	9.4	82.5
Ghana	2,130	11.9	63.2
Guinea	850	10.8	34.5
Guinea-Bissau	750	10.3	69.8
Liberia	610	12.9	55.4
Mali	840	15.9	40.5
Mauritania	1,160	-	-
Niger	390	-	42.0
Nigeria	1,960	-	29.4
Senegal	1,410	15.8	64.2
Sierra Leone	490	-	67.2
Togo	660	17.3	70.9
South Asia			
Afghanistan	550	9.3	-
Bangladesh	1,750	8.8	35.7
India	2,020	11.2	71.9
Nepal	970	20.7	30.1
Pakistan	1,590	-	83.5
South-East Asia & the Pacific			
Cambodia	1,390	15.8	28.5
Lao PDR	2,450	-	60.6
Myanmar	1,310	6.0	38.2
Papua New Guinea	2,570	12.6	38.4

Notes: 1) GNI per capita data (constructed by Atlas method) extracted from the World Bank Open Data website. 2) Tax revenue data extracted from the World Bank Open Data website. 3) Government debt data taken primarily from the IMF's Fiscal Monitor Database, 2020 and complemented by its Regional Economic Outlook: Sub-Saharan Africa, 2020

Leverage

The scale of the need is sobering. With limited indigenous resources, governments and aid agencies will need to look for leverage where they can find it. One important source of leverage is export supply chains. I illustrate both the promise and the challenge of this with another example from Bangladesh, this time from a government programme supporting wage payments to workers in the ready-made garment sector. In addition to their being a source of leverage for income support, a focus on export supply chains is also important for addressing a second concern: foreign currency earnings. Export earnings have fallen sharply in many countries as tourism has dried up and remittances have fallen. Yet, many lower-income countries import a substantial share of the food included in basic diets, including grains, which require access to foreign currency.

On 25 March, the Bangladeshi government announced a programme of support for export industries, which in Bangladesh means primarily the ready-made garment sector. The programme supports wage payments to workers, and nicely illustrates the use of leverage. It was announced as a 60 billion Bangladesh taka (roughly $600 million) support programme for workers who make up around 6% of the labour force (2017 Bangladesh Labour Force Survey data). It was designed so that there was no immediate budgetary impact to the government. Under the programme, banks make direct wage payments through electronic transfers to garment sector workers employed by participating factories. The payments are grounded in salary data from the pre-COVID period, provided by the (large and formal) factories. Payments to workers accrue as loans to the factories, with liquidity provided to the banking system by the central bank.

The loans-for-wages scheme provided liquidity to solvent factories, who take on additional debt in exchange. Factories needed the liquidity in large part because foreign buyers cancelled existing orders. Some buyers agreed to pay for production in process, others agreed to accept production in process while demanding substantial discounts, and still other buyers refused to accept or pay anything even for work in progress.[3] Because factories pay for fabric in advance, and fabric accounts for around three-quarters of the cost of production, the cancellation of orders left many factories in a precarious position.

With these liquidity issues in mind, the program gave factories a six-month grace period, with full repayment over the 18 months thereafter. The hope is that both the ability to operate factories and the demand for goods will have returned to normal by late 2020 though, of course, that is uncertain. Thus, the cost of the programme to the government is unclear in the long run, as that depends on how widespread defaults on the loans are.

Even as the retail sectors in Europe and the US begin to re-open, it is unclear what the new normal will be. Aside from short-term issues of excess inventories, several large buyers – Debenhams in the UK; JCrew, Neiman Marcus and JC Penny in the US, for example – have declared bankruptcy, and will close at least some of their outlets. For Bangladeshi manufacturers, payments of existing orders and flow of future orders are both in doubt. Meanwhile, other brands look even more enviously at the Zara model of producing nearer to market and maintaining lower levels of inventories. COVID-19 is likely to accelerate the movement to all-Zara, but that transition is likely to be slow in any case. Moreover, even with its focus on local production, Zara parent Inditex is among the ten largest buyers in Bangladesh. So, a movement in the Zara direction does not imply an end to production of less rapidly changing styles in locations further from market.

The manufacturers' view of the future is important, because an alternative to paying wages during the production hiatus is laying off workers. Bangladeshi labour law requires employers to pay around half of wages for a period of 45 days after laying off a worker. Factories with buying partners who have proven less reliable are likely to rely more heavily on layoffs.

The importance of export supply chains

Bangladesh's case is extreme amongst the lower-income countries. More than 80% of the country's exports are garments, and garment demand has plummeted. But the leverage that exports provide in addressing the economic crisis is common across lower-income countries. Export industries are a natural lever for several reasons. First, there is evidence that firms that export are more skill- and capital-intensive, and pay higher wages, even conditioning on skills (Bernard et al. 2007). Thus, in terms of income flowing into communities, each job is more valuable. Second, exports are a source of foreign currency that will be particularly important for countries that import food that is part of the basic diet.

Figure 1 shows the distribution of exports and imports in selected countries in SA and SSA.

Figure 1a Imports and exports by category: Selected sub-Saharan African countries

Exports/Imports (million USD)
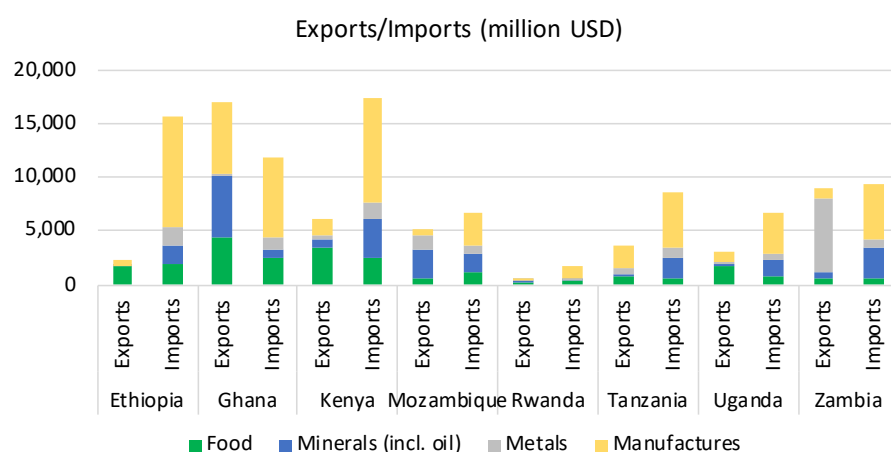
Figure 1b Imports and exports by category: Selected South Asian countries

Exports/Imports (million USD)
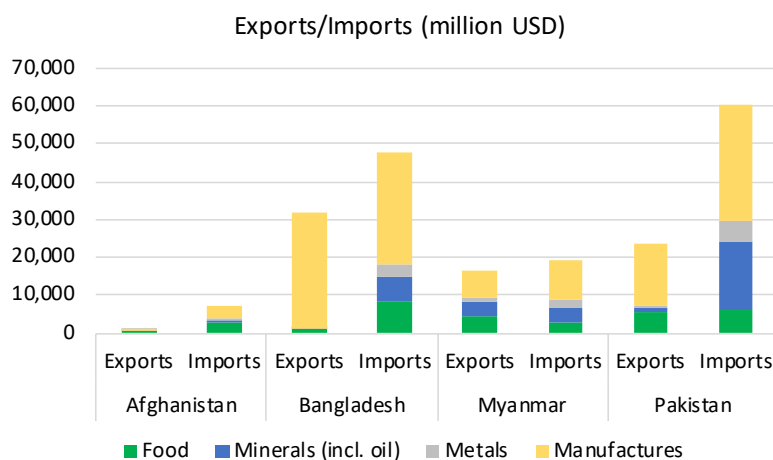
In Africa the majority of exports are in minerals (including oil) and food, with manufactured goods accounting for a modest share of exports. In Asia, a larger share of exports come from manufacturing goods. In all of the countries – except Bangladesh, which imports fabric to export garments - food and oil make up the largest share of

imports. Most of the countries shown in Figure 1 are net exporters of food. However, exports and imports do not substitute for one another. Exports are concentrated in a few products that are not part of the basic diet – coffee and cacao, for example – while imports are concentrated in grains and other basic staples. The countries and the international community must make sure that this adherence to comparative advantage does not become a disadvantage during the crisis.

Commodity prices have softened but have not collapsed, and demand for food remains robust. So international markets should not have a large effect on the ability of countries to export. However, there are several other potential sources of disruption to exports that warrant some diligence. First is the logistics of ports and international transport. Of more direct control by governments is disruptions in the domestic part of supply chains. Restrictions on internal migration may be important for health reasons, but may also disrupt mobility of workers required for seasonal agricultural work. Restrictions on travel may disrupt local transport.

Conclusions

Export industries are crucial in the crisis because workers in the sector are often formally employed and hence reachable through policy. The firms also typically have formal employment records, relationships with banks and other financial institutions, and a solvency buffer. Moreover, the large export-oriented firms are likely valuable to save. They often embody substantial relationship capital, embedded in relationships with customers, relationships with suppliers, or relationships among employees.

In contrast, a large majority of the urban labour force in the lower-income countries are either self-employed or informal wage workers. Direct replacement of the wages and earnings of these workers is not feasible, because enterprises have no verifiable records of wages or profits. There is little reason to invest scarce resources in saving the vast majority of these small-scale enterprises, as little relationship capital would be lost if the enterprises were dissolved and re-formed after the crisis.[4]

Keeping exports moving and leveraging solvency in large formal firms is not enough to meet the needs of the new poor generated by the COVID-19 lockdowns. That may imply the need to allocate PPE and testing capacity at important points on the chain where social distancing is impractical. However, given limited fiscal resources, export-oriented firms represent a crucial lever that governments will need in the crisis.

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4   An exception may be enterprises that operate in the domestic food supply chain, which also needs to be kept robust during the crisis.

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19 A restart procedure to deal with COVID-19[1]

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Governments around the world are assisting firms to deal with the adverse effects of COVID-19. Most forms of government assistance provided so far reduce firms' operating costs. Their debts keep accumulating, however, and the resulting debt overhang will be a drag on economic recovery. In this chapter, we argue that policies are needed to restructure the debt of a large number of firms throughout the economy. We propose one such policy, which includes an extended bankruptcy stay, followed by a write-down of government claims on a firm conditional on a comparable write-down agreed by the firm's private creditors. Our procedure makes efficient use of fiscal resources, discourages healthy firms from claiming to be distressed, and can be combined with debt-equity swaps for large firms.

Financial distress caused by COVID-19

COVID-19 has generated paralysis in some sectors of the economy. Firms in these sectors face collapsed revenues, while still having to pay for costs such as salaries, rents, and debt service. Not surprisingly, they are running out of cash. In the US, firms have cash reserves to last anywhere between three weeks and six months. Restaurants, for example, have less than a month of cash on hand (Didier et al., 2020). Analysis of 12 high- and middle-income economies across Africa, Central Asia, Europe, Latin America, and the Middle East shows that firms could rapidly run out of cash during a continued lockdown. In a hypothetical scenario where firms have no revenues but the government fully subsidises wages, the median firm in Colombia, Greece, Italy, Jordan, Kazakhstan, Kenya, Morocco, Peru, Portugal, Russia, Turkey, and Ukraine has retained

earnings and other sources of financing to last from 8 weeks (in retail) to 19 weeks (in other manufacturing). Once reduced export demand is taken into account (Baldwin 2020), the median survival time falls to within 8 to 14 weeks (Bosio et al. 2020a).

Governments around the world are searching for ways to abate the sudden economic shock. The IMF projects an annual decline in GDP in developing economies for the first time in three decades. Relief policies for firms are being implemented to minimise permanent job losses, expand the social safety net for workers whose jobs are in peril, and keep essential sectors in operation (Baldwin and Tomiura 2020). As the crisis persists, the costs and complexity of this challenge both rise.

Government assistance allows firms to cover some of their operating costs, and hence slows down the increase in their debt obligations. Debt keeps accumulating, however, and will be a drag on economic recovery. In this chapter we argue that policies are needed to restructure debt across a large number of firms throughout the economy. We propose one such policy, which includes an automatic write-down on government claims in a firm in exchange for write-downs by the firm's private creditors. We also discuss the challenges in implementing such a policy in developing economies.

The current measures

Government assistance to firms has taken four main forms so far: tax deferrals or cuts, job retention schemes and expanded unemployment protection, speeding payments on government procurement, and loan guarantees. We discuss each in turn.

Tax deferrals or cuts

Over 80 governments have deferred or waived taxes to provide liquidity for struggling businesses. Norway, for example, has implemented automatic deferral of value-added tax (VAT) and corporate income tax for six months. Benin has extended the submission of corporate income tax until the autumn. A group of countries have instituted measures that allow for quicker tax refunds, especially for VAT input credits. Niger is reimbursing excess input VAT refund claims within 30 days and allowing excess input VAT credits that have been carried forward from previous periods.

Some countries have implemented cuts to the employer's share of social security contributions. Malaysia has exempted employers in all sectors from the Human Resources Development Fund levy for a period of six months effective from April 2020 (Djankov and Nasr 2020).

Job retention schemes and expanded unemployment protection.

The US is providing loans to small firms via banks, which they will not have to repay if they do not fire their workers during the shutdown. The objective is to cover firms' costs during the shutdown. Broadly similar approaches are being followed in many developing economies, albeit at smaller scale. For example, Senegal is covering in part the wages of workers in danger of being laid off and vulnerable workers such as the self-employed (Djankov and Georgieva 2020).

A few developing economies have enhanced unemployment protection. Nepal introduced a contribution-based social security programme in the wake of the COVID-19 crisis which includes medical, health, accidental and other benefits, and is made available to workers in the formal sector. In sub-Saharan Africa, three other economies – Cabo Verde, Mauritius, and South Africa – are offering expanded unemployment protection. A number of developing economies – including Benin and some states in India – are contemplating various forms of unemployment-related cash transfers for workers in informal businesses. In places where cash transfer programmes are already in place, they can be topped-up to ensure additional resources reach idled informal workers.

Speeding payments on government procurement

Some governments wondering how to expediently put money in the hands of firms struggling in the COVID-19 crisis have found another solution by paying their bills on time. New Zealand's prime minister ordered all government agencies to pay their bills to the private sector within ten days of the completion of works or services. The positive effect on liquidity can be instantaneous. Barrot and Nanda (2019) show that the Quickpay reform of 2011 in the US, which accelerated $70 billion in annual contract value by cutting from 30 to 15 days the time taken between invoice approval and payment, causally increased employment growth in small business contractors.

The impact of similar reforms in developing countries could be staggering. If developing countries' governments paid all receipts due to their contractors, several hundred billion in fresh liquidity would enter the private sector. Data from the World Bank show that procuring entities take on average 14 weeks (about 100 days) to process the final payment for public works contracts (Bosio et al. 2020b). Delays vary widely across countries, from 48 days in Azerbaijan to 760 days in São Tomé and Príncipe. Only about 28% of countries pay contractors within 45 days from the completion of works. Many companies, their contractors, and employees are struggling without work during the lockdown while waiting for the government to release payments for the work they have already done.

Loan guarantees

Much of the government assistance for firms during COVID-19 is coming in the form of loan guarantees that increase firms' access to credit as a way to loosen liquidity constraints. For example, the Mexican government unveiled a scheme for loan guarantees – equivalent to 3% of GDP – to provide businesses with cash to pay wages and other expenses. Mongolia introduced credit guarantees to small businesses and subsidised loans to cashmere producers amounting to 1% of GDP.

Using loan guarantees makes sense because they can impose much lower fiscal costs than cash transfers (Gonzalez-Uribe and Wang 2020). However, the concern is that the streamlined guarantees implemented by governments during COVID-19 can increase risk-taking by banks and borrowers, especially since the pandemic arrived against the backdrop of high corporate indebtedness (IMF 2019). For example, the one-year coverage of lenders' charges by the UK government for guaranteed loans during the COVID-19 crisis will likely increase opportunistic behaviour by borrowers. Likewise, the 100% guarantee for most of the UK's guaranteed loans during COVID-19 will likely lead banks to distribute cash without worrying about the creditworthiness of borrowers. Another concern is that guarantees can also create new creditors (Mullins and Toro 2018), which in good times can be good news for firms, but in bad times can make potential restructuring more complicated.

Measures come at a high fiscal cost

Government assistance has its limits. Debt burdens are high in many advanced economies, largely due to the fiscal cost of policies in response to the Great Recession, and further debt issuance may be hard to finance, especially when the economy is contracting. Even in countries that have more flexibility to issue debt (such as the US), the costs of government assistance will ramp up quickly if the shutdown and stringent social distancing measures last for more than 3-4 months. In the US, the first $350 billion rescue fund for small businesses ran out of cash in just 12 days.

Fiscal considerations are even more important in developing economies. While governments in some advanced economies can finance their debt at near-zero interest rates, governments in many developing economies face high interest rates. A number of developing countries, such as Somalia, Sudan, and Zimbabwe, were already in arrears to international institutions before the crisis started. Others, such as Ecuador and Lebanon, have defaulted on international debt since the start of the crisis. Sovereign spreads in emerging economies have already widened, indicating that there is likely more trouble ahead for the credibility and solvency of these countries.

Government assistance, in the forms described above, allows firms to cover some of their operating costs, and hence slows down the accumulation of their debt obligations. It does not prevent the accumulation of debt, however, and nor does it address the resulting debt overhang. Since, in addition, government assistance cannot continue forever, it is urgent to design policies that can address debt overhang and financial distress throughout the economy.

Dealing with financial distress

Financial distress is usually addressed through liquidation or through reorganisation. Firms that cannot operate profitably, and whose assets can be put to better use elsewhere, are liquidated, and the liquidation proceeds go to creditors according to a pre-specified priority. Firms that can instead operate profitably, and whose assets have greater value inside the firm, seek to reorganise their obligations. A reorganisation plan must be agreed with the creditors and involves a reduction in firms' obligations to them. In the US, liquidation takes place via procedures specified in Chapter 7 of the bankruptcy code, and reorganisation takes place via Chapter 11.

For some firms, the financial distress caused by the COVID-19 crisis must be addressed through liquidation. For example, some airlines will not be able to operate profitably even after the lockdown is lifted because of the reduced demand for travel. The same is true for many restaurants and bars because of social distancing. For the majority of firms in the economy, however, the financial distress caused by COVID-19 should be addressed through reorganisation. Indeed, since most economic activity will resume after the pandemic subsides, the crisis for the majority of firms is primarily a negative shock to their current revenue. Firms' future revenue may be affected, but less so.

The challenge in addressing the COVID-19 financial distress is two-fold. First, distress is occurring throughout the economy at a massive scale, which can lead to bottlenecks in court-supervised bankruptcy procedures. Second, Chapter 11-type procedures are complex and typically accessible in practice only by the largest firms. Increased uncertainty about firms' prospects further complicates reorganization during COVID-19, as it is hard to value a firm with highly uncertain cash flows.

Chapter 11-type procedures are complex because they involve the preparation and the assessment of a reorganisation plan. Firm managers must prepare a plan to return the firm to profitability. They must then negotiate the plan with multiple creditors in a short period of time and have it approved by a judge. Formulating such a reorganisation plan is challenging and time-consuming. Firm managers often turn to specialised professionals who have expertise in drafting such plans. However, this approach is expensive, making

reorganisation procedures accessible to only a small number of debtors – typically the largest firms. In 2016, for example, Kenya introduced reorganisation procedures for companies as an alternative to the previously available involuntary winding-up. Four years on, companies and legal professionals are still learning how to use the new procedure.

Because of the complexities of reorganisation, liquidation is the main method used to deal with financial distress. Many developing economies do not have reorganization procedures in their bankruptcy laws. In other developing economies, bankruptcy laws trigger foreclosure or receivership procedures after just weeks of illiquidity. These include a diverse range of countries, from Albania to Zambia (Djankov et al. 2008).

The cost of reorganization procedures can substantially be lowered if alternative dispute resolution (ADR) could be used. This option may be tempting for businesses with few creditors. Still, the normal ADR process requires intensive face-to-face negotiation. Presumably the process can be adjusted to benefit from online technology. However, as thousands of businesses will be undergoing the process simultaneously, countries will quickly run short of mediators. Some measure of automaticity is required.

Our proposed restart procedure is a Chapter 11-type one as it involves a write-down of firms' obligations. It strips away some of the complexity of Chapter 11 by making the write-down of government claims automatic and conditional on the write-down of creditors' claims, thus incentivising creditors' write-downs to start with. Automaticity is important given the massive scale of debt restructuring that is needed throughout the economy. Conditionality is important to avoid opportunistic behaviour.

A restart procedure

Our proposed restart procedure consists of two steps: (a) an extended bankruptcy stay for firms; and (b) a negotiated write-down of firms' obligations to their private creditors, incentivised by a write-down on government claims. We describe and motivate each of these steps in turn.

Bankruptcy stay

Firms that are unable to cover their obligations can elect to enter into an extended bankruptcy stay. A bankruptcy stay allows the firms to operate and protects them against asset seizures or judicial actions by their creditors.

Bankruptcy stays are a feature of bankruptcy systems in many countries, as part of their Chapter 11-type procedures. They typically last for a few weeks or months. In some countries, firms are required to make tax and social security payments corresponding to a small fraction of their obligations during a stay.

Our restart procedure is a Chapter 11-type one, and as such includes a bankruptcy stay. We propose that the bankruptcy stay is for a period of about a year, so longer than the typical one. This is because of the large uncertainty that is involved. In fact, some countries that allow for bankruptcy stays – for example, France, Germany and Spain among advanced economies; Russia and Turkey among emerging markets – have extended theirs to a year. [2] Some countries do not have bankruptcy stay. We propose that they introduce one as an emergency measure, for a comparably long period of time.

Write-down

The bankruptcy stay must be followed by a write-down of the firms' obligations, to their creditors, landlords, suppliers, and so on. Such a write-down should have some automatic features that use the claims that the government holds in firms to facilitate concessions by firms' other claimholders.

The claims that the government holds in firms include unpaid taxes and social security contributions, as well as loans made by government entities. In many countries – for example, Canada, Indonesia and the 17 African economies in the OHADA initiative – these claims are senior to those of other claimholders, i.e., the government must be paid first, before everyone else. We propose that the seniority structure is made more symmetric, and in particular that reductions to private claims are accompanied by reductions to claims by the government. Private claimholders will be more willing to write down their claims if they know that such write-downs will be accompanied automatically by a write-down of government claims.

The write-down of government claims to firms obviously has a fiscal cost. That cost is countered by two benefits. First, because the claims are smaller, firms' financial viability improves. This benefit is comparable to the benefits that current government assistance confers, and imposes a lower upfront cost for governments than cash transfers. Second, there is a multiplier effect because private claims to firms also become smaller. The multiplier effect is the key advantage of the restart procedure.

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2 Other countries have suspended particular sections of the insolvency law. In Colombia, for example, three provisions that trigger insolvency are suspended for 24 months: (i) imminent inability to pay for insolvency proceedings; (ii) new judicial liquidation processes by adjudication; and (iii) the cause of dissolution by losses. Furthermore, the obligation to report the cessation of payments is suspended until 31 December 2020 or whenever such cessation is triggered by the COVID-19 crisis.

Other issues

To further counter the fiscal cost, debt-to-equity swaps for larger firms could also be considered, whereby the government turns its debt-like claims into equity-like claims and allows the taxpayers to share in the upside following the recovery. For smaller firms, debt-to-equity swaps are less relevant.[3]

If the government does end up owning equity in many companies, issues arise with respect to governance and eventual sale of such equity positions. The government should have limited corporate governance rights as shareholder. The assets could be centrally managed through an asset management company (AMC) that is independent of the public agencies in charge of loan guarantees, to avoid incentive conflicts that can arise from these agencies' exposed balance sheets. Historical cases of management and governance structures that facilitate this exist (e.g. Dyck 1997, Calomiris et al. 2012).

The restart procedure should be designed to counter adverse incentive effects. The conditional government write-down mitigates the opportunistic use of the procedure by healthy firms to reduce debts that they can service. Borrowers will anticipate that private creditors would not agree to write down their claims if they know that the firms can service them, even if such a write-down is accompanied by a write-down of government claims. Hence, our proposed procedure has built-in disincentives against abuse.[4]

A generalised write-down of claims could have knock-on effects throughout the economy, and especially in the financial sector, which holds many of the debt claims. To somewhat counter these effects, the restart procedure could be used in conjunction with some form of government assistance towards banks, especially if the assistance is tied to banks' collaboration in the debt write-downs.[5]

Finally, there may be some desire to prioritise specific sectors; however, this should be done with caution. There are risks to having the government select industries for support, including the risk for corruption and misallocation. It may be difficult to prioritise industries according to specific criteria that reflect the impact of the crisis and shifting consumption patterns on their revenues, the specificity of their labour and

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3   Government loans to distressed firms sometimes have features that allow debt to be converted to equity. For example, in providing assistance to large firms, Canada requires warrants with the option to purchase common shares totaling 15% of the principal amount being lent to the firm, in addition to interest payments. Hanson et al. (2020) also propose equity-like instruments be provided to US firms.

4   Conditionality may not eliminate ex-ante incentive effects on borrowers and creditors (e.g. Agrawal et al. 2020). For example, banks may offer solvent firms less credit and at a higher cost, if they worry that the possibility of write-downs will exacerbate opportunistic behavior by borrowers before they file for the restart procedure. Likewise, the restart procedure can affect creditor coordination, and through this channel impact the cost of debt for solvent firms (Rodano et al. 2016).

5   This could potentially take the form of either central bank refinancing or providing flexibility on accounting for the impact of COVID-related loan losses on regulatory capital.

capital, and their centrality in production networks. There are advantages to having simpler procedures that require less detailed information, if they are to be applied broadly to a large number of firms.

Even though the restart procedure has some automaticity built in, it is still a Chapter 11-type procedure and as such it involves a reorganisation plan. User support should be considered especially in places where the expertise in drafting renegotiation plans is lacking, either because reorganisation procedures are unavailable or are not commonly used. This support can be especially important for small businesses, which can be less savvy than large firms in navigating the bailout bureaucracy (Granja et al. 2020). In the US, the Small Business Reorganization Act (SBRA) was recently introduced to afford small firms a less administratively burdensome alternative to the traditional Chapter 11 procedure.

Importantly, government assistance to firms in developing economies is more difficult because of the large share of informality. Informality is sizable in emerging markets and developing economies, accounting for between 13% of employment in Mongolia and 98% in Honduras and Mali.[6] Governments cannot use the tax system or the banking sector to finance informal firms. In countries with a preponderance of informal businesses, the restart scheme we describe in this section will work only for the formal sector.

Conclusions

Developing economies are experiencing significant disruptions to their economies due to the COVID-19 pandemic. The projected economic decline is highest in Eastern Europe and Latin America, though the latest figures from Africa paint an even more difficult picture due to limited fiscal space and inability to reach large parts of the population with crisis response measures.

The health crisis is still the primary focus, yet governments are turning to international institutions for assistance on restarting the economy. A major part of this restart will be ensuring that the business sector can stand on its feet. This process will take time, will be different across sectors, and will likely necessitate an innovative procedure over and above standard insolvency procedures. The proposal here is a step in this direction.

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6   The data are from the World Bank's JOIN survey, which provides analysis on social protection for workers.

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20 Regulatory reforms after COVID-19[1]

Simeon Djankov, Dorina Georgieva and Hibret Maemir

London School of Economics; World Bank; World Bank

Fiscal crises, particularly following a pandemic of the magnitude of COVID-19, spur regulatory reform, for example in registering property, trading across borders, protecting investors and resolving bankruptcy. Such reforms display systematic patterns: countries reform when their neighbours have reformed too. Regulatory reforms span political regimes: political change and democratic accountability have little effect on the incidence of regulatory reform.

Governments resort to regulatory reform in difficult times, when their fiscal balances deteriorate (Agnello et al. 2015). Ranciere and Tornell (2015), for example, show that trade reforms tend to follow periods of severe economic crises. Other studies show reform trending, with a clear neighbourhood effect of regulatory reform. Buera et al. (2011), for example, develop a learning model to argue that the experiences of neighbours influence domestic policy actions though their effect on policymakers' beliefs. Finally, reforms are hypothesised to occur when a new government comes to power (Alesina and Drazen, 1991). In addition, previous research suggests that reforms are driven by political factors, for example, when governments with a reformist ideology take power (Alesina and Cukierman 1990).

The COVID-19 crisis has already resulted in large fiscal deficits for 2020, in advanced economies and developing countries alike. These deficits are likely to worsen by the end of the year as social distancing rules stay in effect for a further period. Few firms can survive a protracted lockdown or collapsed revenues due to the uncertainty in demand that COVID-19 has brought (Bosio et al. 2020). Governments have been called to the rescue of small, as well as large, businesses (Balloch et al 2020). Social transfers

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have also ballooned in an attempt to save the livelihoods of large parts of the population (Djankov and Georgieva 2020). All these actions mean one thing: large and persistent deficits in the years to come.

There is a silver lining: while this fiscal trend is troubling for governments now, it may bring about regulatory reform. We test this hypothesis with global data, while also testing two adjacent hypotheses. We find that the post-COVID-19 period is indeed a propitious time to improve the regulatory environment for doing business.

The data

We use a dataset of business regulatory reforms based on the World Bank's Doing Business project. The data span 16 years, from 2004 to 2019, and cover 190 economies.

Despite the importance of regulation for the functioning of business, only a single dataset exists to analyse its effects. The OECD regulatory dataset is based on a survey of economy-wide and industry-specific regulation (Egert 2016). The regulatory indicators have been updated every five years (in 1998, 2003, 2008, 2013 and 2018). However, as the methodology evolved in 2018, past vintages are not fully comparable to the 2018 data. The latest benchmark covers 45 economies: OECD members plus Argentina, Brazil, Bulgaria, Colombia, Croatia, Cyprus, Kazakhstan, Malta, Romania and South Africa.

The data are based on a consistent methodology over time. A reform is defined as a regulatory change that reduces the cost of doing business by making it faster, easier or cheaper. The overall reform variable is a composite of ten regulatory indicators: starting a business, dealing with licenses, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, resolving insolvency, and employing workers. The methodology for each of the ten regulatory topics in Doing Business employs several assumptions, described in Djankov (2016). Three topics – employing workers, resolving insolvency and registering property – have a balanced panel of 190 countries. For the remaining seven topics, countries were added progressively to the original sample of 133 countries until 2006, to come to the final sample of 190.

Nearly 60% of countries in our sample register one or more reforms a year; about 30% of countries implemented two or more reforms in a given year. Figure 1 maps out reform activity over time. Regulatory reforms intensified over the sample period, with Rwanda and Georgia leading the reform effort with a total of 62 and 51 reforms recorded since the inception of the study in 2004. India and Kazakhstan share third place with 48

reforms each. Only four economies globally (Kiribati, Libya, Somalia, South Sudan) have not implemented any reforms. The incidence of reform peaks in 2009, when the global financial crisis had gathered speed. A total number of 298 reforms were recorded that year, or about 1.5 reforms per country.

Figure 1   Reforms by year, 2004–2019
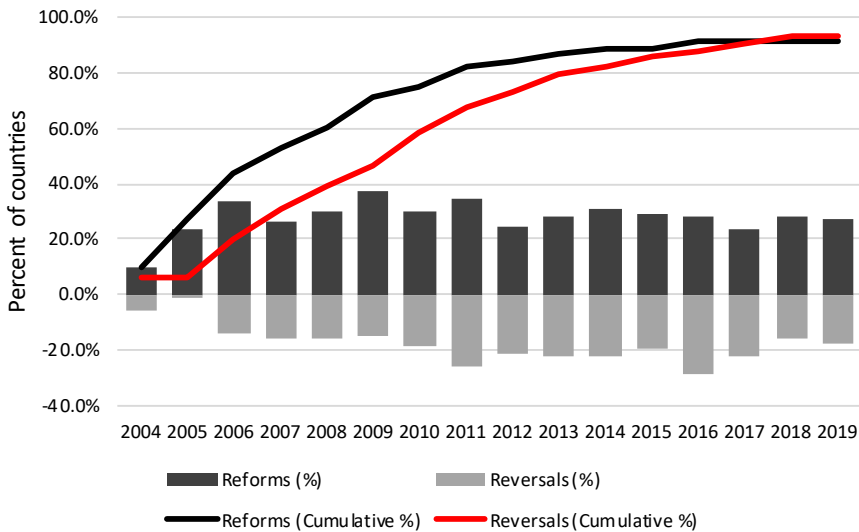
Source: World Bank's Doing Business.

Note: The figure shows the shares of countries in the sample that have implemented at least two regulatory positive reforms and reversals (displayed as negative) together with their cumulative percentage between 2004 and 2019. Reforms are defined as negative (reversal) if a country implements reforms that make more difficult for businesses to operate.

There have also been changes in regulation that make it more difficult for businesses to operate (Figure 1). For example, in 2008 Bolivia suspended voluntary restructuring of firms in financial distress, leaving as the only option an unwieldly bankruptcy procedure that typically takes six years. In the area of minority investor protection, in 2015 Qatar reduced the rights of shareholders in major corporate decisions. Reform reversals constitute 18% of the observations in our panel data.

A group of countries have reformed consistently since 2004, for a minimum of 10 out of the total 16 years. Rwanda provides an example, implementing reforms in 14 of the 16 years.[2] At the opposite end, we identify a set of countries which have barely reformed. Most Latin American economies fall into this group. To give an example, Bolivia implemented only four regulatory reforms in the past 16 years.

Fiscal crises spur regulatory reform

To test this hypothesis, we regress the incidence of regulatory reform on a lagged fiscal crisis variable controlling for country fixed effects, which capture any time-invariant unobserved heterogeneity across countries. The regressions also control for year fixed effects which control for global reform trends, and region-specific time trends to account for the possible trends in reform across regions.

Figure 2   Budget deficit to GDP ratio, 2004–2019

Share of countries with a fiscal crisis (shaded, left axis)

Average fiscal balance (right axis, %)
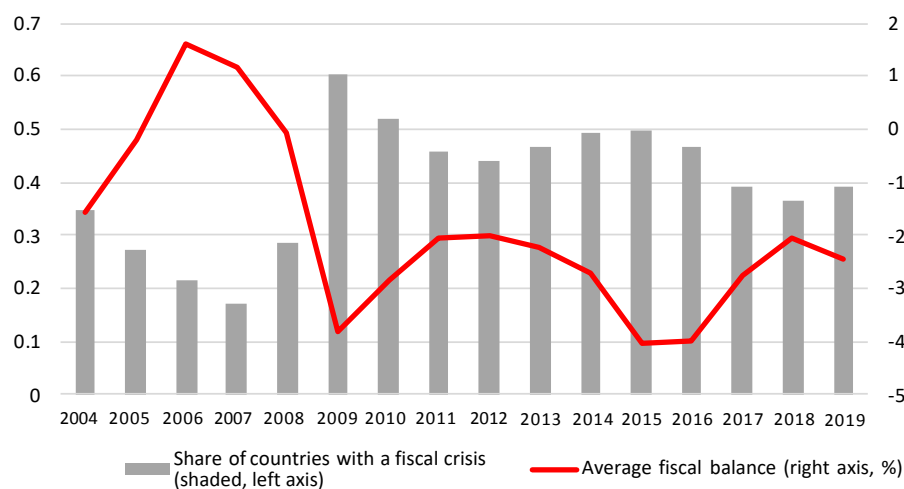
Source: World Bank's World Development Indicators.

We construct a fiscal crisis indicator that equals one if a country experiences fiscal imbalance more than 3% in year t-1, and 0 otherwise. The distribution of fiscal imbalances is highly skewed, ranging from a deficit of 18% of GDP in Greece in 2009 and 32% in Ireland in 2010, to a surplus of 125% of GDP in São Tomé and Príncipe in 2007. The global economy is running a deficit during most of the sample period, reaching 3.6% of GDP in 2009 (the trough year of the 2008-2013 financial crisis). The year 2020 promises to yield an even larger global deficit, given the aforementioned extensive measures to ameliorate the effects of the health crisis on households and

businesses.

The coefficient on the lagged fiscal crisis variable is positive and often statistically significant. When we further distinguish by type of reform, fiscal crises beget statistically significant reforms in protecting investors, resolving bankruptcy, registering property and trading across borders. The result suggests that fiscal crisis appear to spur certain types of reforms, which is weakly supportive of the 'crisis begets reform' hypothesis.

Neighbours incite neighbours to reform

Anecdotal examples of this abound. The president of Tajikistan took interest in regulatory reform after observing the economic transformation in neighbouring Uzbekistan; the president of Togo sent his reform team to Rwanda for knowhow on legislative and administrative improvements (World Bank 2020).

To test this hypothesis, we regress the incidence of domestic reforms on reforms implemented in other countries in the previous year, controlling for country and year fixed effects and region-specific time trends.

We construct several proximity measures based on the geographical, social and economic distance of neighbouring countries. We construct two alternative measures of geographical proximity. The first uses average reforms implemented by all countries sharing a common border. For example, Tajikistan's immediate are Afghanistan (0 reforms in 2017), China (2 reforms), Kyrgyzstan (1 reform), and Uzbekistan (3 reforms). Since two out of the four neighbours implemented at least two reforms in 2017, we record an average of 0.5. This measure assigns equal weights to all contiguous neighbours – i.e. reforms in Afghanistan and Uzbekistan are equally likely to influence the demand for reform in Tajikistan. All non-contiguous countries are assigned a zero weight (so reforms in Pakistan and Chile, for example, have no influence on the decisions of the Tajik government).

We construct a second measure of geographical proximity using reforms in other countries weighted by the inverse geographic distance. This measure assigns different weights to each country based on the geographical distance between capital cities of the two respective countries. To continue with our example, the demand for reform in Tajikistan is more affected by reforms in Pakistan (which is 673 kilometres away) than reforms in Chile (which is 16,377 kilometres away). The weights are normalised so that the sum equals 1 for each country in the sample.

Countries can also learn from reformers in the same trade or currency bloc. We compute the average regulatory reforms of all countries in the same regional trade agreement (RTA partner) or currency union (common currency), excluding the country in question. To give one example, Vietnam's RTA partners are Brunei Darussalam (2 reforms in 2015), Cambodia (1 reform), Indonesia (3 reforms), Lao PDR (2 reforms), Malaysia (1 reform), Myanmar (0 reforms), Philippines (1 reform), Singapore (0 reforms), and Thailand (0 reforms). One-third of its RTA partners implemented two or more reforms in 2015, which means we record an average of 0.33 In the Robustness section, we also calculated these measures based on the total number of reforms, which is 1.22 in the example. RTA and currency unions are defined based on the agreements in the initial sample year (2004).

It is also possible that countries learn about the benefits of regulatory reform from trading partners. To capture this effect, we compute trade-share-weighted reforms in other countries. We assign a time-invariant weight by taking bilateral trade flows in 2004. The weight of each trading partners is equal to its share of the total bilateral trade. For example, Uganda accounted for 8% of Kenya's bilateral trade in 2004, whereas Ethiopia's share was less than 1%. Hence, the weights are assigned based on the trade share of the respective countries. All non-trading partners are assigned a zero weight.

Genetic proximity is an effective facilitator of technology diffusion across countries. To assess whether genetic proximity also facilitates the transmission of reforms across countries, we construct a measure by taking the inverse genetic-distance-weighted average of other countries' reforms, using the measure of genetic distance between countries constructed by Spolaore and Wacziarg (2018). For example, Afghanistan tends to learn more from its genetically close country, Pakistan, than the most genetically distant country, Solomon Islands.

We successively test each proximity hypothesis. We begin with a simple measure of proximity defined as the share of contiguous neighbours that had reforms in the previous year. The estimated coefficient is positive and significant, suggesting that domestic reforms are affected by reforms by contiguous neighbours. In economic terms, reforms by all contiguous neighbours in the previous year increases the likelihood of domestic reform by roughly 10 percentage points.

We next provide the estimates using inverse distance-weighted average of reforms in other countries (Distance). The coefficient is positive and significant, which offers further evidence that geographical proximity facilitates the transmission of reforms across countries. We further show estimates for Genetic Distance when reforms in other countries are weighted using the inverse genetic distance. The coefficient on genetic distance is positive but insignificant, implying that reforms are not transmitted across

genetically close countries. Finally, we report the results using the share of countries in the same RTA or currency union. We find that a country is more likely to implement reforms when other countries in the same RTA implemented reforms in the previous year. We find strong evidence that reforms in major trading partners increase the likelihood of domestic reforms.

Reform takes place in countries irrespective of political regime

To test this claim, we regress the incidence of regulatory reforms on a political change variable and alternatively on a democratic accountability variable controlling for country and year fixed effects as well as region-specific time trends. As a proxy for change in domestic political power, we construct a variable equal to 1 when there is a change in control of parliament from one party or coalition of parties to another 12 months prior to the start of the regulatory reforms, and 0 otherwise, based on information from the Inter-Parliamentary Union (IPU) PARLINE database. A total of 261 changes of power took place during the 2004-2019 period.

As a measure of democratic accountability, we employ a dichotomous measure of democracy using the Polity IV database. In particular, we use the variable polity2 (measured from -10 to +10) to create a dummy variable which is equal to 1 if polity2 takes a positive value in a given country-year, and 0 otherwise. In 2004, 64% of the countries in our sample were democracies. By the end of our sample in 2019, this share had increased to 73%. A handful of countries have transitioned to and away from democracy during the sample period: a total of 34 democratic transitions and 20 reversals. Most of these transitions happened in Africa. For example, in the Gambia, the polity score jumped from -5 to 4 in 2017 when the long-time President Yahya Jammeh was defeated at the polls.

We find no evidence to suggest that changes in political power are followed by regulatory reforms; nor do we find evidence that democratic accountability is associated with reform. However, there is evidence of a positive and statistically significant association between democratic accountability and reforms in starting a business and dealing with licenses.

Robustness

We next test the robustness of our findings to a continuous measure of regulatory reform. The results for the neighbourhood effect remain robust. The association with fiscal crisis now becomes statistically significant, while political change remains insignificantly associated with reform.

Our emphasis so far has been on positive reforms – reforms that improve the environment for doing business. To investigate whether the results presented above hold for negative reforms, we regress reform reversals on the same set of measures. All the estimated proximity coefficients are small in magnitude and statistically insignificant. The same result obtains for the fiscal crisis measure. The evidence suggests that reform reversals by neighbouring countries or fiscal crises do not increase the likelihood of reversals at home.

Political change, however, does increase the likelihood for reversals. In terms of economic significance, political change increases the likelihood of negative reform by 8 percentage points. This is sizable given that reform reversals constitute only 18% of the observations in our sample.

Conclusions

It is hard to look beyond the large negative effects of COVID-19 in terms of health outcomes, deterioration of livelihoods, and the struggle for survival of many businesses left without revenue. Once the recovery period starts, other issues highlighted in the chapters in this volume will come to the fore: the likely rise in inequality, a reversal in the trend of poverty reduction globally, over-indebtedness of sovereigns and corporates, among others.

Crises create reform opportunities as well. A small silver lining in the aftermath of COVID-19 is the possibility for governments to implement regulatory reform that eases the burden on businesses. We find some evidence to that effect from previous crisis periods, especially in countries whose neighbours also reform. The post-COVID-19 period will challenge politicians to choose among difficult options on how to revive the economy. Regulatory reform is among these options. **References**

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21 Accumulation interrupted: COVID-19 and human capital among the young

Paul Corral and Roberta Gatti[1]

World Bank

With limited fiscal space, protecting core spending for human capital will be a challenge in many developing countries. Yet, by making these investments, countries can emerge from the COVID-19 crisis prepared to do more than restore the human capital that has been lost. Countries can reach beyond their previous achievements, raising human capital accumulation, socio-economic inclusion, and productivity to new levels in the years to come.

Since December 2019, the COVID-19 pandemic has exacted a heavy toll in illness and lost lives. Lacking a vaccine or effective pharmaceutical treatment against SARS-CoV-2, the novel coronavirus responsible for COVID-19, many countries resorted to large-scale non-pharmaceutical interventions (NPI) to slow the virus's spread. Lockdown measures amplified the disruptions to supply chains and global trade, adding a dramatic economic dimension to the health crisis. Both the health and economic effects of the disease and its control measures have significant consequences for people's human capital – the knowledge, skills, and health that people accumulate over their lives that enable them to realise their potential as productive members of society.

COVID-19 appeared at a moment when human capital had reached unprecedented heights, but with major shortfalls still to be addressed (World Bank 2019).[2] One in four children worldwide were stunted, more than half of ten-year-olds in low- and middle-income countries could not read and comprehend a simple text, and two-thirds

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2 There is a large literature and also significant debate on human capital; for a review see Flabbi and Gatti (2018).

of all global jobs were informal. As measured by the World Bank Human Capital Index (HCI), shortly before the pandemic struck, an average child could expect to attain only about half of her potential productivity as a future worker (World Bank 2018).

This note discusses the channels through which COVID-19 is impacting human capital of the young; highlights some potential effects of the disease and its response measures at different stages of childhood and adolescence; and outlines policy options that may help mitigate these impacts going forward.

Transmission channels from COVID-19 to human capital

A lesson from past pandemics and crises is that their effects are not only felt by those directly impacted, but often ripple across populations and in many cases across generations. COVID-19 is no exception. In many health systems, the fight against the pandemic has crowded out other essential health services, while in most countries lockdowns have meant school closures and the introduction of distance learning in some form. Among welfare effects, these have translated into a considerable reduction of household income due to lost jobs, reduced remittances, and other constraints. [3] While much is still to be learned and there is tremendous uncertainty on what the impact of the pandemic will be, it is clear that both direct and indirect pathways will matter.

Health systems disruption

As governments and international organisations scramble to respond to the immediate health shock, resources during a pandemic are likely to be diverted from other health efforts that nonetheless remain critical. In past health emergencies, substantial indirect effects have resulted from this crowding out of non-pandemic-related health services. For example, in the 2014-15 Ebola outbreak in West Africa, closure of health facilities, health worker deaths, and excess demand placed on the health system may have led to further loss of lives. In Ebola-affected areas, it was reported that maternal and delivery care dropped by more than 80%, malaria admissions for children under the age of five fell by 40%, and vaccination coverage was also considerably reduced (Elston et al. 2017).

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3   Simulations suggest that, in Ireland, 400,000 households may see a drop in their disposable income of 20% or more (Beirne et al. 2020). In Italy, simulations show that disposable income losses will be considerable and more pronounced for the poorest. Households in the poorest quintile are projected to lose 40% of their income (Figari and Fiorio 2020).

Some of these consequences are already apparent for COVID-19. Vaccination programs in roughly 68 economies have been interrupted due to the pandemic, and some 80 million children under the age of one will go unvaccinated in low- and middle-income countries as a result (WHO 2020). Supply chain breakdowns combine with forced mobility restrictions under NPI to complicate overall access to vaccines (WHO 2020).

Likely disruptions of maternal and child health services and access to food are expected to undo decades of gains in health outcomes in many low- and middle-income countries. Even small reductions in access may substantially increase child and maternal mortality (Roberton et al. 2020). The magnitude of these consequences will depend on the length of the pandemic and how governments respond.

Children and pregnant mothers are not the only ones who will suffer from weakened service delivery capacities and curtailed access to services. During a pandemic, most people are more reluctant to seek medical care for any reason. For example, during the SARS epidemic in Taiwan, people's fear of infection likely led to sharp drops in demand for access to medical care across the board (Chang et al. 2004). Many patients suffering from other illnesses will be unable to go for routine checkups due to restricted movement and to avoid COVID infection. Such service interruption will also likely lead to numerous deaths. For example, in high-burden countries it is estimated that over the coming five years, deaths due to tuberculosis, HIV, and malaria will increase by 20%, 10% and 36%, respectively (Hogan et al. 2020). The specific reasons vary by disease, but all reflect disruptions caused by COVID-19.[4] A lesson is that, when determining how to re-allocate resources for pandemic response, special attention must be given to maintaining coverage of key non-COVID interventions.[5]

School closures

The US Centers for Disease Control and Prevention (CDC) recommends school closures as a key component of effective social distancing to contain COVID-19 (Qualls et al. 2017). By the end of April 2020, schools were closed or partly closed in roughly 180 countries.[6] While the length and impact of school closures will depend on

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4   Hogan et al. (2020) find that for HIV the largest impact is from interruption of antiretroviral therapy, for TB the impact is due to reduction of timely diagnosis and treatment, and for malaria it is due to interruption of prevention programs.

5   Roberton et al. (2020: 7) suggest that maintaining key childbirth interventions like parenteral administration of uterotonics, antibiotics, anticonvulsants, and clean birth environments could lead to 60% fewer maternal deaths. Maintaining coverage of antibiotics for neonatal sepsis and pneumonia and oral rehydration solution for diarrhea would result in 41% fewer child deaths. These results are likely contingent on their modelling assumptions.

6   https://en.unesco.org/covid19/educationresponse, accessed on June 6, 2020.

the effectiveness of mitigation policies such as remote instruction, closures will likely result in both a slowdown in learning and in an increased likelihood of school dropout, particularly for the most disadvantaged and for girls.

As schools across the globe close their doors, children are forced to learn from home. With almost 1.5 billion children and youth affected, school closures can lead to lost learning in the short run and major human capital losses in the long run.[7] These human capital losses are not necessarily uniformly distributed across the population. As children learn from home, social inequalities become more salient. The closure of schools could widen already existing gaps in education between children from better off homes and those who come from less well-off homes.

Along with education, many children receive other services through their schools. These include meal programmes, which tend to benefit poorer children. The suspension of school-feeding programmes could worsen food insecurity and malnutrition (Lancker and Parolin 2020). The burden of making up the nutritional shortfall now falls on parents, many of whom are likely to be struggling economically due to the pandemic.

Income effects

Lockdowns have major economic consequences, which add to the costs of COVID-19's disruption of supply chains. The emerging literature on containment strategies highlights the large benefits – in terms of lives saved and GDP losses averted – of testing and contact tracing (Acemoglu et al. 2020). While countries such as South Korea and Iceland successfully implemented these strategies early on, most countries resorted to lockdowns and movement restriction (Correia et al. 2020). Voluntary mobility restrictions combine with government-driven lockdowns to generate a significant drop in activity and aggregate demand.

Projections show the resulting economic fallout will be massive and potentially worse than that of the 2008–09 financial crisis (Correia et al. 2020). The lockdowns force many non-essential businesses to close and will further disrupt supply chains. Coupled with the inherent uncertainty due to the pandemic, this may prompt many people to cut back on expenses, which in turn may trigger more businesses to close and more people

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7 https://www.worldbank.org/en/data/interactive/2020/03/24/world-bank-education-and-covid-19, accessed on June 6, 2020.

to lose their jobs (IMF 2020). The resulting massive economic decline is likely to undo years of gains in the fight to eradicate extreme poverty. Accordingly, the World Bank has projected an increase in international extreme poverty for the first time since 1998.[8]

Closure and decreased activity result in higher unemployment and income losses for many households, which in many cases will likely translate into worse nutrition. For example, in Senegal, 86% of respondents to a telephone survey reported a drop in their incomes, and more than one-third indicated that they restrict their meals 4-7 days a week.[9] The impact on nutrition might be exacerbated by higher food prices and limited access to food, wherever supply chains or access to food have been disrupted. In a vicious cycle, economic hardship may in turn further reduce access to health services and school enrolments, especially for those families for whom transport and fees are a barrier.

Overall, the human capital shock from COVID-19 will likely be a compounded effect of the economic shock and interruptions to service delivery. Despite the pandemic's severe health impacts, the magnitude of NPIs deployed means that the largest effect on human capital will probably come through indirect channels. Indirect does not mean insignificant. On the contrary, the pandemic's indirect consequences may permanently alter the course of millions of lives and weaken countries' human capital for generations.

The COVID-19 human capital shock: A life-cycle perspective

The accumulation of human capital is the result of a dynamic process, where different dimensions complement each other over time. Depending on an individual's stage in life, the impact of the pandemic may come through different channels. Also, setbacks during certain stages – chiefly early childhood – can have especially damaging effects on human capital. For example, economic hardship can force families to prioritise immediate consumption needs, foregoing spending on health or education. Because demand for investing in human capital rise with incomes (Bardhan and Udry 1995), a fall in incomes could worsen human capital accumulation for many people, especially

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8   https://blogs.worldbank.org/opendata/impact-covid-19-coronavirus-global-poverty-why-sub-saharan-africa-might-be-region-hardest

9   https://www.cgdev.org/blog/five-findings-new-phone-survey-senegal

for the most disadvantaged. [10]Figure 1 shows how some of these shocks can affect the process of human capital accumulation over the life cycle in childhood and adolescence. The key stages of the cycle are discussed in the section below.

Figure 1   Human capital accumulation across the life cycle: Key stages and metrics
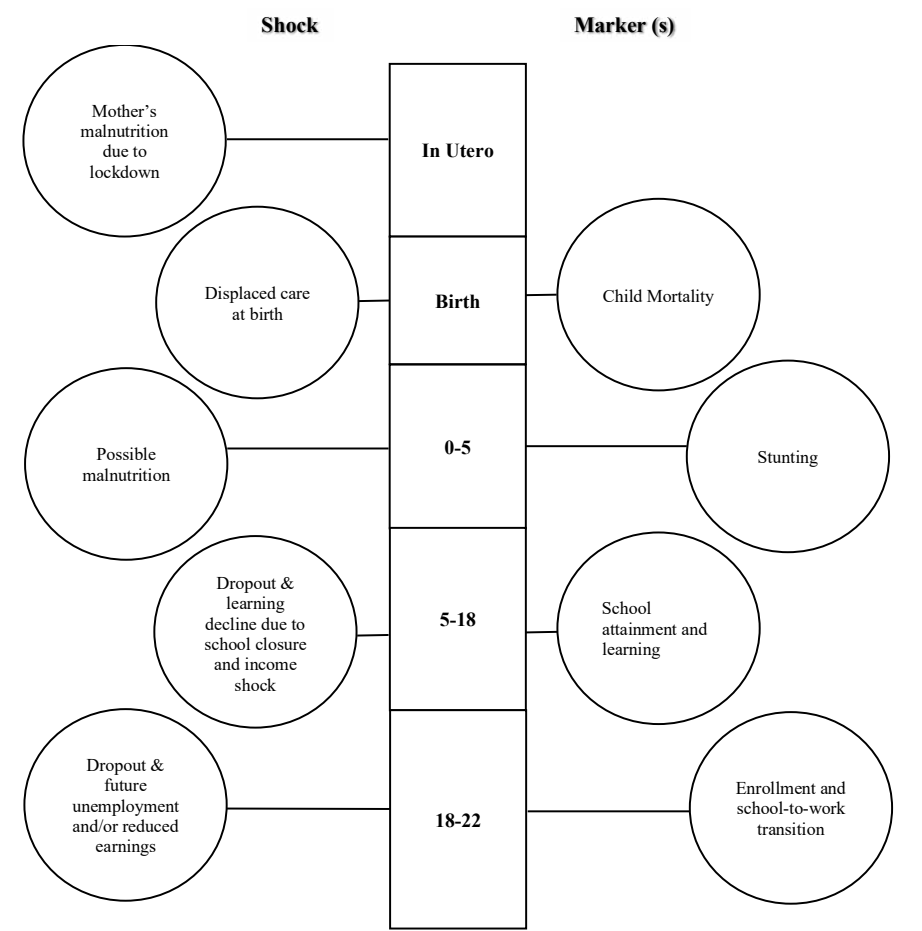
From conception to age five

During childhood, the link between parental income and child health is particularly strong (Almond 2006). For example, reduced nutrition in pregnant mothers could have a substantial impact on children in utero, including long-lasting impacts on chronic health conditions and cognitive attainment in adulthood (Almond and Currie 2011). This is the case for children born during a pandemic but also for children born during conflict[11] and economic hardship (Rosales-Rueda 2018).

Children who were in utero during the 1918 influenza pandemic, for example, had lower educational attainment and income during adulthood (Almond 2006). The effect was even more salient among children of infected mothers. As more information on COVID-19 becomes available, the risks pregnant mothers face will be clearer. According to the CDC,[12] pregnant mothers are just as likely to get the disease as non-pregnant adults. The main transmission channel affecting the foetus's human capital is expected to be through the disruption of health care and lower household income.

Birthweight is often interpreted as a key observable component of a child's lifetime initial endowment (Datar et al. 2010). Children who were in utero during the 2008 recession were born with relatively lower birthweight, particularly in families at the bottom of the income distribution (Finch et al. 2019). This was the case, for example, for children born in those California regions that suffered unusually elevated unemployment rates during the post-2008 recession (Finch et al. 2019). Similarly, in Ecuador during the 1998 El Niño floods, children who were in utero and especially in the third gestational trimester were much more likely to be born with low birthweight, and these children showed substantially reduced stature five and seven years afterwards (Rosales-Rueda 2018). These health effects were attributed to drops in household income following the devastation of El Niño. Similar outcomes can unfortunately be expected from the COVID-19 shock. As low birthweight is associated with increased likelihood of malnutrition and developmental delay, COVID-19 may substantially affect human capital attainment for generations to come (Black et al. 2007, Lahti et al. 2018).

Child mortality is unfortunately also likely to increase, for two reasons. The first is the disruption of maternal and child health services due to COVID-19. Early simulated values project an increase of child mortality of up to 45% due to health-service shortfalls and reductions in access to food (Roberton et al. 2020). Second, there is evidence that economic downturns have been associated with significant deteriorations

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11 For example, Bundervoet and Fransen (2018) find that children exposed to the Rwandan genocide while in utero suffered lower educational outcomes. The longer the exposure in utero, the poorer the educational outcomes.

12 https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/pregnancy-breastfeeding.html

in child mortality, and the relationship is more marked in lower-income countries. A meta-analysis of studies for developing countries suggests that a 10% increase in GDP per capita in PPP terms is related to a decrease in infant mortality from 50 deaths per 1,000 live births to 45 deaths per 1,000 live births.[13] Regarding child mortality, the estimated long-run elasticity is roughly -0.4, implying that a 10% real increase in GDP per capita is related to a decrease in child mortality from 100 to 96 deaths per 1,000 children under five.[14] If this income effect were to operate with the same strength for income drops, the COVID-19 crisis, if prolonged, might risk reversing some of the hard-won progress in child survival.

Stunting rates are also likely to increase due to the COVID shock. Childhood stunting – a measure of height-for-age – is considered a marker of healthy child development. Stunting has been associated with lower cognitive capacity and reduced height in adulthood (Galasso and Wagstaff 2019).[15] Common factors related to stunting are in utero and maternal nutrition and nutrition during infancy, all of which will likely worsen if families have less to spend on health and nutrition. A fall in GDP could also lead to a worsened health infrastructure and less funding for improved nutritional interventions and services.[16] Elasticities obtained in the literature suggest that a 10% increase in GDP leads to a decrease in stunting that may range from 2.7% to 7.3%.[17]

School years

With almost all countries having imposed some type of school closure due to the pandemic, students in many settings are likely to suffer learning shocks. Evidence suggests that any interruption in children's schooling typically worsens learning outcomes. This includes disruptions caused by epidemics, conflict, natural disasters, and even scheduled school vacations. US students' achievement scores appear to decline by about a month's worth, on average, during the regular three-month summer break (Cooper et al. 1996).[18]

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13 O'hare et al. (2013) obtain this estimate through meta-analysis from a systematic literature search of studies and find a pooled elasticity of income on infant mortality of -0.95.

14 Estimates obtained by Pritchett and Summers (1996) make use of instrumental variables in an attempt to identify the income effect on health.

15 Nutritional stunting is defined as a child's height for her age being 2 standard deviations below the median of the healthy reference population (WHO). https://apps.who.int/nutrition/landscape/help.aspx?menu=0&helpid=391&lang=EN – accesses June 5th, 2020.

16 See Mary (2018) for a more nuanced discussion.

17 Mary (2018) suggests it may be 2.7%, while Mary et al. (2018) estimate this to be 7.3%, and Ruel et al. (2013) suggest it may be 6%.

18 More recent research has called this result into question. See Von Hippel and Hamrock (2019) for more nuanced discussion. However, a summer break is not the same as a break during the school year.

Historical experiences illustrate the impacts of large-scale school closures during a public health emergency. Meyers and Thomasson (2017) studied the effects of the 1916 polio pandemic on educational attainment in the US. Young people aged 14-17 during the pandemic later showed reduced overall educational attainment compared to slightly older peers (Meyers and Thomasson 2017). Even short-term school closures appeared to have lasting impacts on children's educational attainment, though the study found such effects only among children who were of legal working age during the school closures.

Increased drop-out rates are one relay linking emergency school closures to future losses in average lifetime educational attainment. In general, as children age, the opportunity cost of staying in school increases. This may make it harder for households to justify sending older children back to school after a forced interruption, especially if households are under financial stress. Again, such effects are not restricted to public health emergencies. In Indonesia, during an economic crisis that reduced average household incomes by 15% in the late 1990s, households responded by cutting school expenditures, substantially reducing enrolment rates among younger children (Thomas et al. 2004).

Evidence from natural disasters confirms that interruptions and trauma in the neurodevelopmental process can adversely impact academic performance (Gibbs et al. 2019). Four years after bushfires in Australia, for example, children from areas that were heavily impacted by the fires performed worse in reading and numeracy than peers from less-impacted schools (Gibbs et al. 2019). The case of the bushfires underscores the importance of continued support to affected populations, since a longer-term learning divergence was found even though students did not display any differences in learning outcomes immediately after the disaster.

Further indication of the damage caused by school interruptions can be gleaned from the outcomes after a massive earthquake in Pakistan in 2005. Areas near the fault line were devastated, 80% of homes were destroyed, and schools suffered considerable damage. Households that resided near the fault line were well compensated via cash aid after a year or more (Andrabi et al. 2020). The effect of the cash aid was positive. Four years after the earthquake, households near the fault line were indiscernible, in welfare terms, from those farther away from the fault line. Additionally, it appears that enrolment rates for children residing near the fault line were not affected. Despite the apparent return to 'normalcy', however, test scores for children living 10km away from the fault line were 0.24 standard deviations below those of children residing 40km away (Andrabi et al. 2020).

A drastic change in the day-to-day lives of children and adolescents is likely to impact their mental health. The pandemic may worsen already existing mental health issues by provoking or exacerbating social isolation, economic uncertainty, and fear (Golberstein et al. 2020). A recent study among Ecuadorian teenagers (ages 14 -18) found that one in six reported suffering from depression, while many cited household finances and social isolation as concerns (Asanov et al. 2020). The use of digital technology, particularly with voice and video, can ameliorate the loneliness faced by many teens and children, but these technologies are not available to all (Galea et al. 2020).

Many countries have adopted distance learning as a means to mitigate learning losses during protracted school closures. Remote teaching strategies include not only online learning, but also radio and TV programmes and text nudges in those countries where digital connectivity is limited. These strategies make it less likely that negative effects of similar magnitude to other interruptions are replicated, however the effectiveness of these measures has yet to be determined.

The most recent global projections on the impact of school closures linked to COVID-19 suggest that almost 0.6 years of schooling adjusted for quality will be lost due to the closures. These numbers reflect the loss of schooling that comes from potential drop-outs due to the loss of income, as well as the adjustment in quality due to worsened learning because of inefficient remote teaching methods (Azevedo et al. 2020). The lost schooling translates to a yearly loss of over $800 USD (2011 purchasing power parity) (Azevedo et al. 2020).

School-to-work transition and tertiary education

The pandemic may also disrupt human capital accumulation for students currently in tertiary education. Almost 99% of students enrolled in tertiary education are experiencing a new learning modality.[19] With students in low- and middle-income countries less likely to have internet access, between-country inequalities in learning will worsen. Within countries, those at the bottom of the income or consumption distribution will also be more affected, due to lack of access to the necessary materials for remote learning. This will again exacerbate existing inequalities in human capital accumulation.

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19 https://blogs.worldbank.org/education/covid-19s-immense-impact-equity-tertiary-education, accessed on June 6, 2020

Many who had been in tertiary education may not be able to resume their studies following the pandemic. Two opposing forces may influence tertiary enrolment rates: 1) high unemployment rates are likely to reduce the opportunity cost of attending college, while 2) the likely recession will affect many households economically, and funds for attending college may not be available. After the financial crisis, enrolment rates for tertiary education in the US went up. However, because of a substantial decrease in family incomes there was a shift away from four-year private colleges towards two-year public institutions (Dunbar et al. 2011).

Those who graduate from college into the pandemic are also likely to suffer short- to medium-term wage losses. Evidence from Canada suggests that those who graduate during a recession will suffer a significant earning loss due to less desirable job placements, but that this penalty eventually fades over some eight to ten years (Oreopulos et al. 2012). Nevertheless, the average effect hides the heterogeneity of the result. Recent graduates with the lowest predicted earnings are likely to suffer the largest losses and often do not recover the lost ground after ten years. The underlying mechanism for such an outcome may be a lag in skill accumulation (Gibbons and Waldman 2006, as cited in Altonji et al. 2016). Individuals accumulate skills for a particular job. However, if they are promoted, not all the skills learned in the previous job are useful. As this process continues, one accumulates skills, some of which are useful in new jobs, while others are not. Starting at a lower-paying job or at a less-desirable firm which does not make full use of an individual's accumulated human capital will likely lead to a lag in the process of skill accumulation and in a persistent disadvantage.

Overall, graduating during a period of high unemployment can lead to a significantly higher likelihood of criminal behaviour (Bell et al. 2017). Because of the depressed wages and fewer legal employment options available during a recession, crime becomes more attractive. The longer the recession is the more likely that acquired human capital depreciates and crime becomes a worthwhile option. This effect is heightened for those who have lower human capital levels and are less attached to the labour market.

Women who graduate from high school during the pandemic may choose to forego college in the short term. They are also less likely to join the workforce due to the depressed wages. Women, but not men, graduating from high school are likely to skip college during the pandemic because of the lower observed returns to education and because the cost of more schooling increases (Hershbein 2012). For some, the alternative of child rearing may be more attractive in the short term. This result was observed during the 2008-09 global recession. However, women's prospects may be different in the combined economic and health shock provoked by COVID-19.

Conclusion: Policies to protect human capital

The range of interventions needed to mitigate the impacts of COVID-19 on human capital is broad – both in the short and longer terms (World Bank 2020a). Immediate strategies to remediate schooling losses will require designing and implementing school re-opening protocols sensitive to the particularities of COVID-19. At a minimum, these will involve protective facilities and supplies, health screening, and social distancing. The rollout of tailored resources that teach material to the level, especially for disadvantaged children, is urgently needed in many settings to make up for lost learning (World Bank 2020b). These interventions will need to be followed up by deeper reforms that sustain access to schooling. These can promote children's learning at all stages: starting from cognitive stimulation in the early years, then continuing to nurture relevant skills throughout childhood and adolescence. Building blocks for success will include better prepared teachers, better managed schools, and incentives that are aligned across the many stakeholders in education reform.

Support to households will be essential not only to buffer income losses but also to sustain the demand side of schooling and health care. Such support can come through cash transfers, but also interventions aimed at productive inclusion and active labour market policies to match workers to new jobs and provide them with needed skills. In parallel, strengthening social services, including counselling, will help mitigate impacts on mental health and disruptions in social networks.

The investments that almost all countries need in strengthening disease surveillance can complement a renewed commitment to universal health coverage (UHC). This will strengthen primary health care, advance preventive health action, and extend quality and affordable care. Public financial management and processes will ensure that resources are allocated to priority programmes and that expenditure for social sectors is protected, efficient, and outcome oriented.

Policy responses in the immediate will need to be accompanied by a commitment to build resilient health, education and social-protection systems and to invest in infrastructure such as access to water, sanitation, and digitalisation that are important complements to the process of human capital accumulation. The likely deepening of inequality in human capital outcomes makes targeting interventions to children from most disadvantaged families an imperative to prevent those setbacks that can have the most severe consequences in terms of lifetime trajectories. Measuring households' welfare and tracking how key dimensions of human capital evolve will be an important ingredient of how to design and target policies.

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22 The supply chain shock from COVID-19: Risks and opportunities[1]

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Can some developing countries benefit from the disruption of global value chains brought by COVID-19? To understand how shocks influence global value chains , we examine the impact of the 2011 earthquake in Japan. We find that imports shifted away from the affected input source, especially if it had a high share in imports, and towards developing countries that had a revealed comparative advantage in the input. But the shock did not lead to reshoring, nearshoring, or diversification. While these results cannot be mechanically applied to COVID-19, the observed pattern of switching may be relevant. Import dependence on China pre-COVID was high, as was China's export similarity with other developing countries. Increasing real wages in China were already creating incentives for firms to find new suppliers, and COIVD-19 is accelerating this shift. Deeper reform can equip developing countries to take advantage of these opportunities.

COVID-19 has exposed the risks associated with the interconnected nature of global trade. The high reliance on foreign producers, and China in particular, as a source of input supply is causing some businesses to rethink global value chains (GVCs). Some governments, concerned that businesses will put short-term profits ahead of longer-term resilience, are using incentives to encourage firms to reduce their import dependence.

As businesses reset their supply chains, will they re-shore or find alternative foreign suppliers? What will they look for in new suppliers? Will they diversify sources as a strategy to reduce risk? What role should trade policy play?

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1   The views expressed in this chapter are those of the authors and they do not necessarily represent the views of the World Bank Group.

To understand how producers behave when faced with new risks, we examine the 2011 earthquake in Japan, which severely disrupted auto supply chains. A shortage of over 100 parts left Toyota's North American operations operating at 30% capacity for several weeks (CRS 2011). Boehm et al. (2019) show that Japanese multinationals in the United States lost access to intermediate inputs and experienced severe reductions in production as a result. In the short run, the effects were highly disruptive because there were few substitutes for Japanese suppliers. They estimate that for Japanese firms operating in the US the elasticity of substitution across material inputs was only 0.2 in the short run.

Most of the existing literature focuses on how GVCs transmit shocks, either domestically (Carvalho et al. 2016) or internationally (Boehm et al. 2019). In this chapter, we focus instead on the long-run impact on trade patterns from perceptions of increased risk. In this respect, we build on Zhu et al. (2016), which uses Japanese firm-level data from 2010-2013, to show that the earthquake increased manufacturing offshoring from Japan among firms in the prefectures most affected by the disaster.

Using detailed international trade data for automobile components, we find that the earthquake in Japan led importers of components to move away from Japan, and towards lower cost suppliers in developing countries. There is no evidence that producers re-shore, nearshore, or diversify to mitigate risk. In other work (Freund et al. 2020), we find that the results are robust to other natural disasters.

While COVID-19 is a global shock unlike any other in recent times, this evidence may be informative of the type of reshuffling in trade patterns to come. Anxieties about excessive dependence on China for trade were accentuated by the COVID-19 shock, and firms are rethinking supply chains. Some governments, concerned that firms are not fully internalising the consequences of reliance on China, are actively supporting this shift. These developments make it possible for other developing countries to increase supply chain participation because of their export similarity with China. COVID-19 may therefore accelerate the arrival of opportunities that increasing real wages in China were more gradually creating.

The countries most likely to gain are those that are open to trade and foreign direct investment, are well connected to global markets, and have a predictable environment for doing business.

While there may be a rationale for government policies to encourage risk mitigation, these policies may go too far. The risk is China may be targeted unduly and home production may be favoured over genuine diversification. Inducing relocation of chains through subsidies and other incentives risks distorting the pattern of production away

from that dictated by comparative advantage. Policies aiming at re-shoring production would undo efficiency gains without enhancing the resilience of production systems. Perhaps an even greater risk is that these measures contribute to the demise of a rules-based trade system and hence of the predictability and openness that have been especially valuable for developing countries. International rules to restrain both protection and incentives are necessary to ensure that the world continues to reap the efficiency benefits of GVCs and developing countries are not deprived of the opportunity to participate.

COVID-19 has exposed supply chain risks

Countries most affected by COVID-19 are major nodes in global supply chains. Figure 1 provides a graphical intuition using data from 2018 for international trade in intermediates. The most connected countries – the central nodes – are the main trade partners for several countries, distinguished from the peripheral countries. The size of the node represents a country's centrality to the network, and countries strongly connected with each other appear clustered together. The dots in red indicate countries with higher numbers of recorded COVID-19 cases. As the figure shows, and further discussed in Baldwin and Freeman (2020a), China now plays a key role in the global network of trade in intermediate inputs with a share that has continued to increase after the global financial crisis.

The rise of global supply chains has been associated with increased economic efficiency (Amiti and Konings 2007, Constantinescu et al. 2019, World Bank 2020). But supply chain linkages are hard to change in the short term as they are built on long-term relationships between parties and require relation-specific investments. This 'stickiness' exposes parties to larger risks in the presence of shocks, which has led some economists to argue that COVID-related production disruption could lead to a reconfiguration of supply chains. Javorcik (2020), for example, argues that COVID-19 compounds China-US trade tensions, leading firms to "diversify their supplier base to protect against disruptions affecting a particular producer or a particular geographic location".

Figure 1   Global network of intermediate trade, 2018
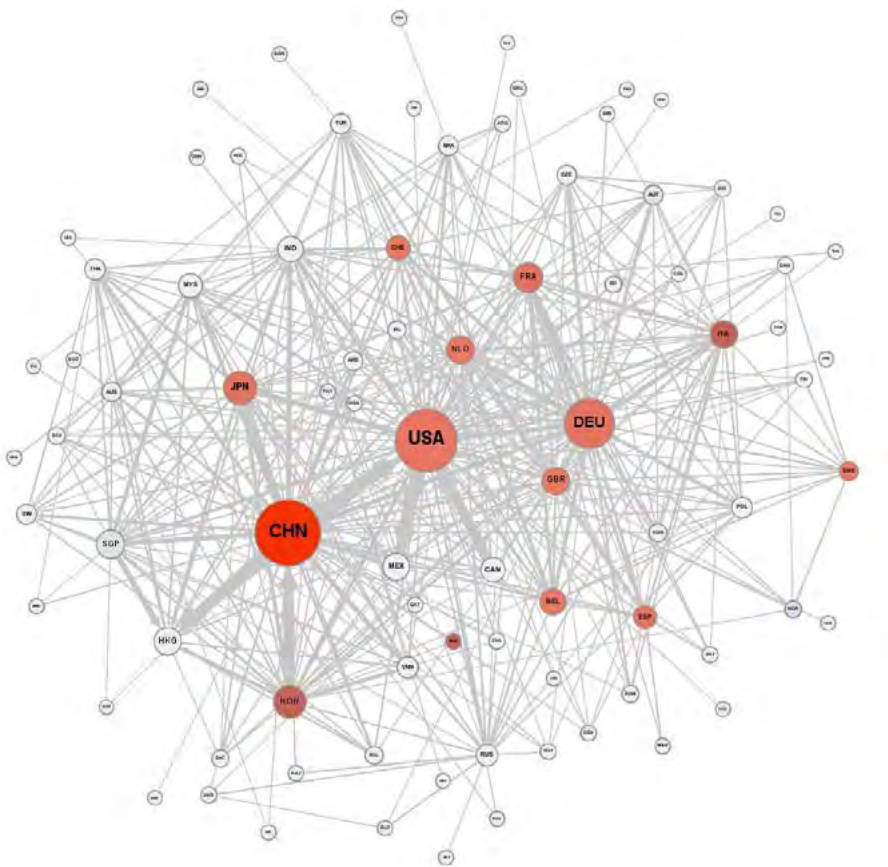
Note: Trade data are for 2018.

Natural disasters lead to supply chain reconfiguration

The 2011 earthquake off the Pacific coast of Tohoku was the most powerful ever recorded in Japan. The earthquake triggered a tsunami that swept the Japanese mainland, causing devastation of physical infrastructure and approximately 16,000 deaths. While a very different shock from COVID-19, an analysis of the long-term consequences of this natural disaster helps us understand how firms may reset their supply chains after a large shock to deal with future disruptions.

The shock is most visible in monthly data of Japanese auto part imports to the US. Imports plummeted in April (as recorded by US customs, 2-4 weeks after departing Japan), not recovering again until August (Figure 2).

Figure 2   US imports of auto parts from Japan
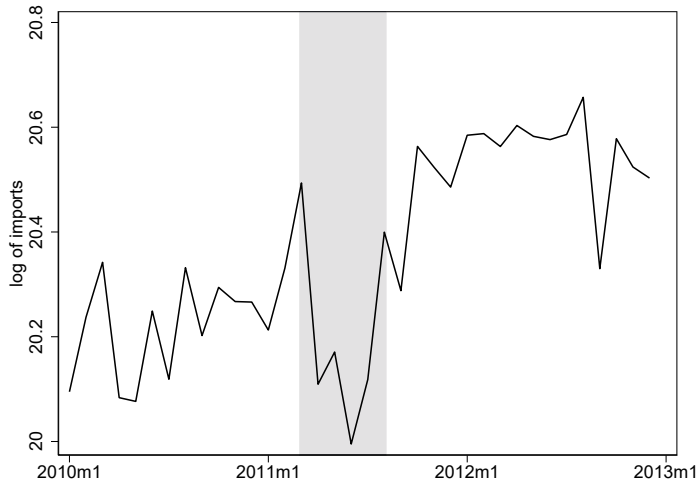
We examine imports of auto parts in the 15 largest auto producing countries as of 2010, to gauge the long-run effect on suppliers.[2] There are 19 products at the 6-digit level, which include specific products such as seat belts or bumpers. The left panel of Figure 3 shows the average and median shares of products imported from Japan, by importers, where Japan is not a prominent supplier (less than 15% of total imports in the country for that product), and the right panel focuses on importers especially dependent on Japanese suppliers (more than 15% of total imports in a product line).

The first finding is that reliance on Japan dropped sharply – by more than 10 percentage points – following the 2011 earthquake for the producers most dependent on Japan. Contrary to earlier discussions (e.g. Miroudot 2020), this is evidence that large shocks do lead to a reconfiguration of supply chains. While less-exposed importers return to near pre-crisis operations after the shock, it is the more dependent producers that tend to revisit production structures.

Figure 3   Country share of imports from Japan in auto parts (average and median)
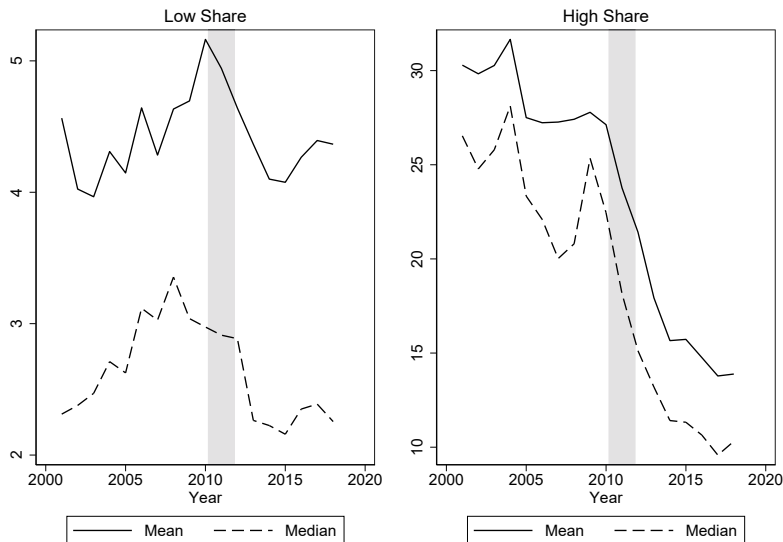
Source: Import data from United Nations Comtrade.

Notes: The figures plot Japan's mean and median market share across all auto components (left panel) and in country-products in which Japan had an average market share greater than 15 percent (right panel "High Share") calculated over the 2004-2010 period. The sample is restricted to the 15 largest auto producers, Japan excluded.

Previous shocks did not lead to diversification or reshoring

Theory suggests that importers exposed to risk may seek to diversify their supplier base. However, the literature on supply chains stresses the importance of firm-to-firm relationships and customised products, suggesting it may be costly to do so (Antras 2019). Figure 4 shows the Herfindahl–Hirschman index of the country-product supplier base, a measure of concentration. It was declining sharply before the earthquake due to the rising importance of China as an input supplier, which reduced the concentration of advanced countries as the main parts suppliers for both low and high Japan dependence products. It begins to flatten out after the global financial crisis as trade slowed down. There is no sign that importers increased diversification after the shock.

The finding that the shock leads to switching rather than widening sources may be because the required relationship-specific investments discourage firms from diversifying. Many auto parts are customized and required to meet safety standards, making it more cost effective to limit the number of key suppliers. It could also be that the conditions for producing auto components – skills, scale, connectivity, agglomeration benefits – are available in few countries.

Figure 4   Herfindahl–Hirschman Index (HHI) of input suppliers
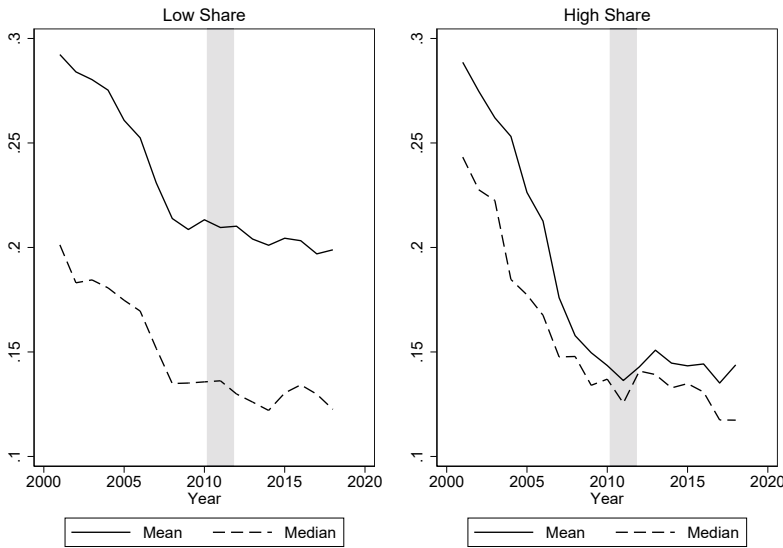
Source: Import data from United Nations Comtrade.

Notes: The figures plot the mean and median Herfindahl–Hirschman Index (HHI) of imports across all auto components (left panel) and in country-products in which Japan had an average market share greater than 15% (right panel "High Share") calculated over the 2004-2010 period. The sample is restricted to the 15 largest auto producers, Japan excluded.

Another possibility is that producers moved production home – i.e. they reshored it. If this were the case, we would expect to see producers dependent on supplies from Japan experience a decline in total imports of the product. This was not the case, however, as imports continued strong growth among all products and the high dependence products (Figure 5), suggesting reshoring did not happen. The growth in total imports was actually higher in the more Japan-dependent country-product pairs. Average total imports of products where countries were highly dependent on Japan grew 12% on average from 2010 to 2018, compared with 7% for low-share products.

Figure 5   Total imports of auto parts (average and median, US$ millions)
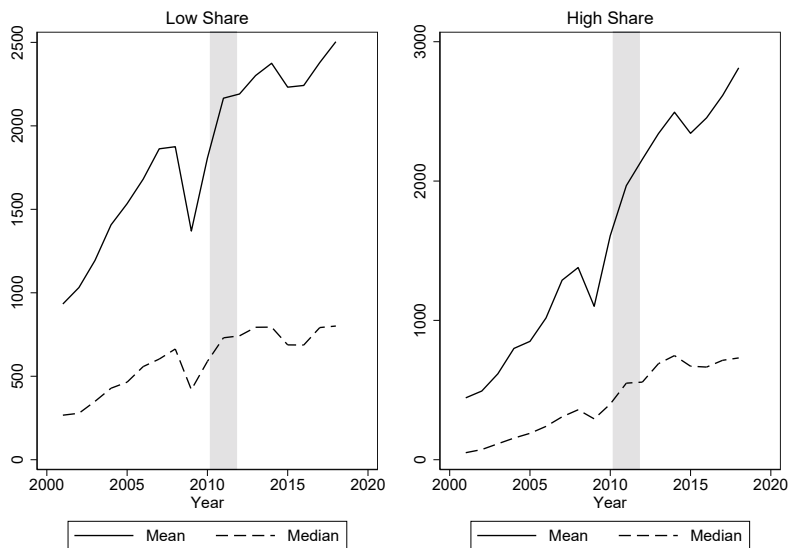
Source: Import data from United Nations Comtrade.

Notes: The figures plot the mean and median of total imports of auto components across all auto components (left panel) and for country-products in which Japan had an average market share greater than 15% (right panel "High Share") calculated over the 2004-2010 period. The sample is restricted to the 15 largest auto producers, Japan excluded.

Supply chain reconfiguration as an opportunity

To examine the potential for developing countries, we perform a difference-in-differences analysis, comparing shifts in trade patterns of high Japan-dependent products with other products. This method in effect asks what would trade patterns have looked like had the shock not happened, using unaffected products (countries with limited imports in the product from Japan) as a control group.[3]

Figure 6 shows the results from this analysis. Developing countries experienced the main gains. The coefficient of 0.3 implies that the shock led to about a 35% increase in imports of that product from developing countries in the seven years following the earthquake. Even excluding China, the effect remains positive and significant, albeit smaller in magnitude.

There is a wide variation across developing countries. Countries such as Mexico saw substantial increases in trade shares of auto components following the 2011 earthquake; for others, such as India, the shock in Japan had no effect whatsoever. These differences point to the fact that a reconfiguration of supply chains would likely have highly diverse effects depending on fundamentals and policies. The results show that countries with a reveal comparative advantage in auto parts prior to the earthquake saw on average a 50% increase in the volume of exports (Figure 7).

There is, however, no evidence that supply chain diversification was increasingly regionalised (Figure 7). Countries in the same region experienced similar increases in high dependence goods and other products. Alternative measures of proximity such as distance or border also reject the hypothesis that importers sought nearby suppliers.

Figure 7   Imports of auto parts from other countries
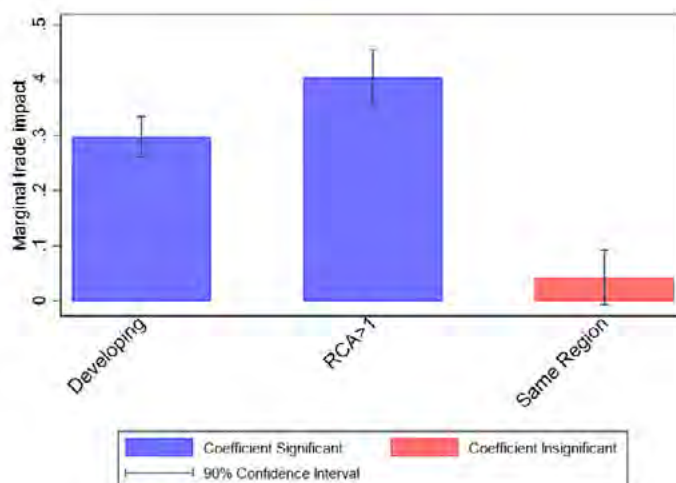
Source: Import data from United Nations Comtrade.

Notes: The figures plot the sum of the coefficients of an indicator variable for importer-products with average Japan's share greater than 15% for the 2004-2010 periods for 2011 onwards and the interaction term between that variable and source country characteristics obtained from a regression which include importer-exporter-product, importer-year, exporter-year, and product-year fixed effects. The sample is restricted to the 15 largest auto producers, Japan excluded. Developing is an indicator variable that takes value of one for source countries that are not classified as high-income according to the World Bank. RCA>1 is an indicator variable that takes value of one is average RCA over the 2004-2010 period is greater than 1. Same Region is an indicator variable equal to one for country pairs located in the same region.

Fostering supply chain participation

As shown in the World Bank's *World Development Report 2020* on global value chains, the extent to which developing countries are able to attract supply chains depends on factor endowments, market size, geography, and institutions. Countries with large endowments of low-skilled labour can participate in the stages of production that are intensive in labour, such as producing wiring harnesses for automobiles or sewing apparel. Countries with endowments of natural resources and land tend to specialize in raw materials for further processing. Large countries are attractive because they have a large pool of workers, local input suppliers and more consumers. Countries close to large markets can benefit from their proximity to foreign suppliers and consumers. Countries with strong institutions have better and less risky business environments, supporting investment and trade.

While fundamentals are important, policies can also play a critical role in influencing trade patterns in the post-COVID world. Policies to attract foreign direct investment can remedy the scarcity of capital, technology, and management skills. Liberalising trade at home while negotiating trade liberalization abroad helps countries overcome the constraints of a small domestic market and increases access to intermediate goods. Improving transportation and communications infrastructure and introducing competition in these services can address the disadvantage of a remote location. And participating in deep integration agreements spurs institutional and policy reform.[4]

The role for policy cooperation

A reconfiguration of supply chains is driven by firms reassessing their risk management strategies in light of COVID-19. Government policies to encourage risk mitigation are justified whenever firms do not fully internalise the negative effect that excessive dependence on inputs from one location causes on other producers or society at large. But these interventions may go too far or be misdirected. China may be targeted not because firms that invested there did not properly price risks, but for non-economic reasons. Governments may be tempted to provide incentives to re-shore production for short-term political economy gains. Measures that are not guided by economic

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4 Technology will matter too. Some have argued that COVID-19 may spur new investment in labor-saving technologies such as automation and 3D printing thus increasing the attractiveness of industrialized countries for products whose production processes can be more easily reconverted (Kilic and Marin 2020). These technologies however may not lead to less trade and shorter value chains. In fact, the available evidence shows that automation and 3D printing have contributed to higher productivity and larger scale of production, thus increasing the demand for imports of inputs from developing countries and leading to more, not less, international trade (Artuc et al. 2018; Freund et al. 2019).

rationality do little to address the risks to supply chains that COVID-19 has exposed, while reducing the efficiency gains associated with the international fragmentation of production.

Controversies on trade policy preceded COVID-19. The post-COVID response by governments has focused on policies aimed at improving domestic availability of key products, most notably in the medical sector, through export controls and import reforms. But governments are also increasingly implementing policies that aim directly at affecting production and trade costs to influence supply chains' location choices. This trend is most evident in the recovery packages of Japan, the EU and the US that include incentives for firms to re-shore production. Such measures are likely to hurt prospects for developing countries, which are less able to grant such incentives. In the future, we could also see a larger use of tariffs in the form of countervailing (i.e. anti-subsidy) duties, more scrutiny and restrictions to FDI, and more regulation ('precautionism').

The proliferation of such policies would further damage the rules-based trade system. Developing countries have benefitted from non-discrimination in market access, and many of the poorest countries receive preferences to support development. Predictability in market access allows investors to undertake large investments that will pay off later. If COVID results in a retreat to nationalism or increased uncertainty in trade policies, all countries lose, especially the poorest.

Conclusion

The same symbol in the Chinese language means both crisis and opportunity (机). Risk management strategies and government incentives to reduce excessive dependence of global supply chains on China induce firms to seek alternative locations for investment or arms-length suppliers. These developments facilitate increased GVC participation by other developing countries.

However, these gains are not guaranteed and will like accrue to only a handful of countries. Policies to reshore production in advanced countries or to unduly target China may lead to inefficiencies and higher prices. The main risk is a departure from the last 75 years of increasingly open and predictable trade policies. In the long run, developing countries have far more to gain from predictability than from trade disruptions.

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Section V

Financing the crisis response and the recovery

23 A debt standstill for developing and emerging market countries

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The Covid-19 crisis has led to a sudden collapse in capital flows to emerging and developing countries, who now face problems servicing their external debts while addressing the growing economic strain of the pandemic. In this chapter, we explain why low- and middle-income countries are particularly vulnerable, discuss what is at stake for the world economy, and present a mechanism to implement a debt standstill which would free significant resources to cover some of the more immediate costs of the COVID-19 crisis.

The COVID-19 crisis has led to a sudden collapse in capital flows to emerging and developing countries. According to estimates by the Institute of International Finance, non-resident portfolio outflows from emerging market countries amounted to nearly $100 billion over a period of 45 days starting in late February 2020. For comparison, in the three months that followed the explosion of the 2008 global financial crisis, outflows were less than $20 billion.[1]

Advanced economies can borrow large amounts at little extra cost. Moreover, they benefit from flight-to-safety funding from national investors liquidating their foreign holdings. In other words, the financing that advanced economies rely on comes in part from emerging market economies where, ironically, the financial needs are more pressing. What's more, in contrast to the 2008 global financial crisis, every emerging

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1 https://www.iif.com/Publications/ID/3829/IIF-Capital-Flows-Tracker-The-COVID-19-Cliff

and developing economy now confronts greater borrowing needs at exactly the same time. Therefore, it is not surprising that about 100 countries have already approached the IMF for financial assistance.

An 30 April 2020 op-ed by the Ethiopian prime minister, Abiy Ahmed, describes well the dilemma faced by many developing and emerging market countries:

> *"In 2019, 64 countries, nearly half of them in sub-Saharan Africa, spent more on servicing external debt than on health. The dilemma Ethiopia faces is stark: Do we continue to pay toward debt or redirect resources to save lives and livelihoods?"*[2]

In response to this crisis, the Group of 20 leading economies agreed to a temporary debt service standstill on bilateral official loan repayments from a group of 76 of the poorest countries (the so-called IDA countries).[3] This is a positive first step, but the agreement needs to be extended along two dimensions. First, the exclusive focus on the poorest countries leaves out many low- and middle-income countries that already face severe economic strains. Second, a key constituency missing from the G20 plan is private creditors, whose participation is sought only on a voluntary basis. Although they are not the most important creditors of IDA countries, they are crucial for middle-income countries, where they hold the majority of the sovereign debt.

In the absence of private sector participation, official debt relief in middle-income countries may partly be used to service private creditor claims. Given the expected size of the fiscal needs of these countries, any financial relief dissipated on debt servicing of private creditors' claims will be very costly. Moreover, participation by private creditors cannot be wholly 'voluntary'. If participation is voluntary, relief provided by those private creditors that participate will simply subsidise the non-participants. And history teaches us that a significant number of private creditors will not volunteer to participate.

In sum, for emerging and developing countries to be able to withstand the economic shock, it is imperative to include all private creditors as part of a future debt standstill. This chapter quantifies the problems and describes the main elements of a proposal for a debt standstill which will allow participating countries to finance COVID-19 amelioration policies while providing safeguards for public and private creditors (for further details, see Bolton et al. 2020).

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2   https://www.nytimes.com/2020/04/30/opinion/coronavirus-debt-africa.html

3   The International Development Association (IDA) is the part of the World Bank that helps the world's poorest countries. The group of countries targeted by the G20 also includes Angola, which is not an IDA country but it is classified as a Least Developed Country by the United Nations.

The standstill described in this chapter has the following advantages:

1. All participating creditors would be treated equally.
2. All issues related to the identification of eligible crisis amelioration expenditures, conditions precedent to drawdowns and post-disbursement monitoring would be centralised and administered by a multilateral institution.
3. It can be implemented immediately, a critical feature as this crisis rages.

It is worth noting that it is likely that many countries will exit the COVID-19 crisis with unsustainable public debts. The proposal described here is not aimed at solving the problems of countries with unsustainable debts; it only recognises that at this stage there is too much uncertainty to assess debt sustainability in emerging and developing countries. The idea of the proposal is to postpone the decision to a moment in which a proper debt sustainability analyses can be conducted.

A standstill on interest payments for the balance of 2020 or slightly longer does not preclude or prejudge a more durable debt restructuring for one of these countries at the appropriate time. The facility envisioned described in this chapter can be considered a de facto senior instrument in such a debt restructuring, the equivalent of debtor-in-possession financing in a corporate insolvency.

Countries that need to apply for a debt standstill may be worried about their reputation in the international credit market. However, it is worth noting that domestic contract law regimes incorporate doctrines that allow the performance of a contract to be suspended (or occasionally avoided entirely) upon the occurrence of events that are wholly unforeseen, unpredictable and unavoidable. For its part, public international law recognises, in a doctrine called 'necessity', that states may sometimes need to respond to such exceptional circumstances even at the cost of suspending normal performance of their contractual or treaty undertakings. COVID-19 meets all of the criteria for such an exceptional phenomenon. Countries badly afflicted by this pandemic will need to deploy their available financial resources in immediate crisis amelioration measures. Those funds must be obtained from several sources, including money that had been intended for scheduled debt service. In making these adjustments, the states concerned will not be acting in a discretionary or optional manner; in the truest sense of the word they will be acting out of necessity.

Quantifying the problem

In 2018 developing and emerging market countries (excluding China) had a stock of external debt of approximately $5.9 trillion. About 82% of this debt ($4.8 trillion) was classified as long-term (with original maturity greater than one year), with $2.1 trillion owed by the private sector and $2.7 trillion either owed to or guaranteed by the public sector. Of the public sector external debt, about 40% was owed to the official sector ($600 billion to multilateral creditors and $400 billion to bilateral) and the remaining 60% to private creditors (bonds amounted to $1.3 trillion and bank loans to $380 billion).[4]

One way of estimating the effect of the COVID-19 crisis on the ability of emerging and developing countries to roll-over their external public debt is to assume that these countries will lose market access at least until the end of 2020.[5] If official financing remains constant, net flows tied to long-term debt with official creditors are expected to be $25 billion ($120 billion in disbursements minus $71 billion principal repayment and $24 billion in interest) and net flows with private creditors amount to -$252 billion, as there will be principal and interest payments due ($170 billion and $82 billion, respectively) but no disbursements (which in 2018 amounted to $237 billion). Hence, the estimated shortfall on long term debt flows will be $227 billion.

To this figure, we need to add short-term debt. There are no detailed data on the share of short-term external debt owed by public sector borrowers but it could be as high as $500 billion, bringing the total shortfall to $735 billion. This total shortfall provides an estimate of the potential public sector sudden stop, while the total sudden stop would also include equity flows and lending to private debtors.

The recent G20 decision to grant debt relief to the poorest countries focuses on the bilateral debt of the group of countries which are eligible to borrow from the World Bank concessional window (the IDA) plus Angola. The total shortfall for this group of countries is estimated at $36 billion. The principal and interest due by these countries to bilateral creditors (the focus of the G20 action) is $14 billion, less than 2% of our estimates for the public sector sudden stop associated with COVID-19 across all low- and middle-income countries.

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4   Table A1 in the Bolton et al. (2020) provides a detailed breakdown.
5   As data on roll-over needs for 2020 are not available, in Bolton et al. (2019) we use 2018 as a proxy.

Figure 1 shows how this shortfall varies across geographical regions and income groups. The most affected region will be Latin America and the Caribbean, followed by Emerging Europe. For Emerging Europe, about 50% of the sudden stop will be associated with the need to service and rollover long-term external debt and the remaining half related to short-term debt flows.[6] For Latin America and the Caribbean, about two-thirds of the sudden stop will be associated with short-term debt rollover needs.[7] The figure also shows that for middle-income countries, 'business as usual' net-official inflows (which tend to be positive and hence have a negative value in our measure of shortfall) cannot be expected to compensate the expected sudden stop in bond and bank financing. The figure also shows that the G20 debt relief of April 16, $14 billion, is very small compared to the total expected shortfall.

Figure 1   Potential public sector sudden stop
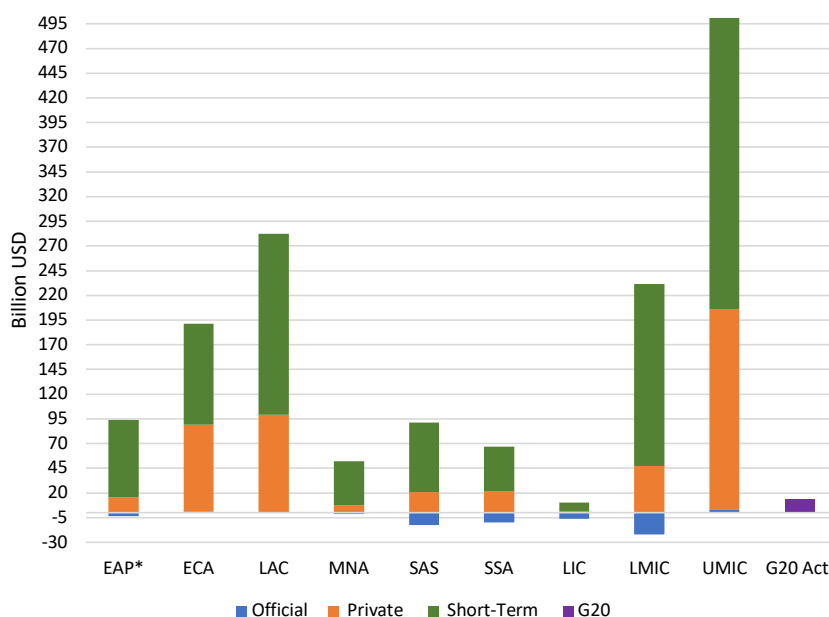
Notes: This figure plots the potential public sector sudden stop across geographical regions and borrowing groups. It assumes business as usual net flows from official creditors. The G20 Act. Bar plots the debt relief measure implemented by the Group of 20 on April 16, 2020.

Source: Bolton et al (2020)

For purposes of our analysis in Bolton et al. (2020), we put aside short-term claims that are typically governed by the domestic laws of the issuer and, therefore, more pliable (Buchheit and Gulati 2019). The focus instead is on external debt issued under foreign laws. Here, a coordinated effort by the G20 to apply a generalised standstill to all debt payments due by an emerging or developing country that requests such a pause in payments would go a long way in addressing this issue.

Principal and interest on long-term debt due to private creditors amount to $252 billion and principal and interest due to bilateral official creditors amount to $43 billion.[8] Figure 2 provides a detailed breakdown concentrating on the long-term component of this potential public sector sudden stop. In Emerging Europe, most of the potential public sector sudden stop on long-term debt (80%) is related to the need to rollover maturing bonds and loans, while in Latin America interest payments amount for more than 40% of financing needs (about the same as for the group of upper-middle-income countries).

Figure 2   Public sector external debt service (only long-term debt)
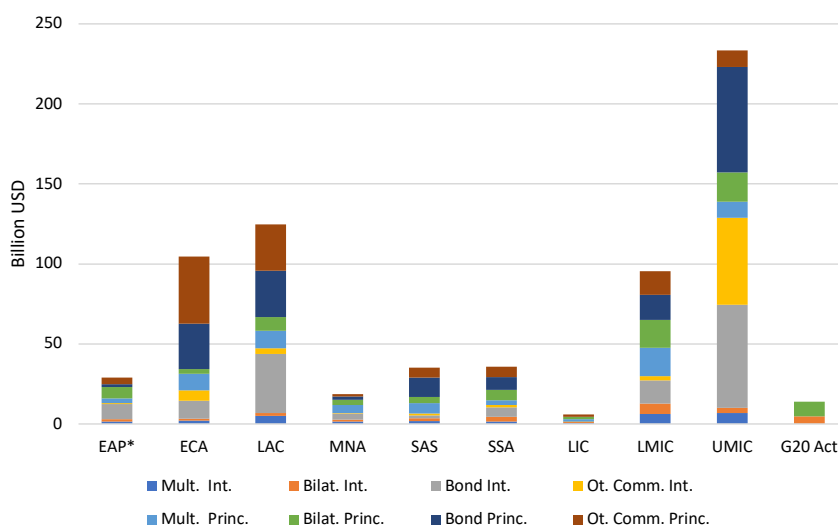
Notes: This figure plots the potential public sector debt service needs across geographical regions, borrowing groups, and creditor groups (Multilaterals, Bilaterals, Bond, Other Commercial Creditors). The dotted bars measure interest payments (Int.) and the solid bars repayment of principal (Princ.). The G20 Act. Bar plots the debt relief measure implemented by the Group of 20 on April 16, 2020.

Source: Bolton et al (2020)

These figures should be interpreted with caution. On the one hand, they may overstate the problem since they assume a complete sudden stop in private sector financing. For instance, at the end of March, Panama managed to issue a $2.5 billion sovereign bond in the international debt market. On the other hand, these figures are likely to greatly understate the problem as they do not take into account funding gaps associated with:

1. the collapse of international lending to the private sector (which accounts for 40% of total long-term external debt developing countries);
2. the sudden stop in equity flows (both portfolio and FDI); and
3. the currency depreciation which will increase the cost of serving foreign currency loans.

An increase in official disbursement equal to all payments due to the official sector could close about 30% of this shortfall in long-term debt ($71 billion in principal repayment and $24 billion in interests), but developing and emerging market countries will still need an additional $200 billion, even if we only focus on long-term debt (more than $600 billion is short-term debt is included).

And these figures assume a constant public sector expenditure and deficit. Hence, they fail to recognise that the sudden stop comes while GDP in emerging and developing economies is expected to contract by 1% in 2020 (with contractions as large as 5% in Emerging Europe and Latin America) according to the April 2020 IMF World Economic Outlook projections, down from 3.7% output growth in 2019. Lower economic activity will reduce tax revenues while government expenditures must increase to protect citizens and the economy. Overall, the IMF estimates that emerging economies' funding needs will total $2.5 trillion, a figure that is likely to be conservative.[9]

Even a dramatic increase in multilateral development bank (MDB) lending will not be sufficient and the private sector will have to be involved in offering relief. The G20 could enable a generalised private sector debt suspension by coordinating a standstill that would apply to all sovereign-debt payments due by emerging and developing economies that requested such a freeze, and that would remain in place until the health crisis passes (Gourinchas and Hsieh 2020).

The standstill may well bring private lending to the countries that request it to a full stop, but for all intents and purposes most of these capital flows have already stopped or even been reversed.

9 https://www.imf.org/en/News/Articles/2020/03/27/tr032720-transcript-press-briefing-kristalina-georgieva-following-imfc-conference-call

The proposal

Implementation of an emergency standstill, particularly for commercial creditors of middle-income countries, presents a challenge. Some countries will have dozens of external debt instruments with hundreds or even thousands of individual creditors. Attempting a bespoke standstill negotiation for each of those instruments is impractical. It would take months at the very time when the debt relief is needed most critically. No individual commercial creditor or group of creditors will be in a position to prescribe eligible uses for the money that would otherwise have gone toward debt service, much less be in a position to monitor and verify how those funds are actually spent. Individually negotiated amendments to existing debt instruments will inevitably produce a welter of incongruent conditions, financial terms, covenants and so forth, probably at ruinous legal expense. Therefore, all creditors will be asked for the same relief – a standstill on interest payments for a prescribed period. Since a bespoke implementation of that request will result in choppy, inconsistent outcomes among affected creditors, in Bolton et al. (2020) we suggest a streamlined approach as follows:

1. The World Bank or the multilateral development bank for the region concerned would open a central credit facility (CCF) for each country requesting this assistance. The CCF would specify the eligible crisis amelioration uses for drawings under the facility, as well as the arrangements for monitoring the use of proceeds.

2. In view of the nature of this emergency, each CCF should have terms (interest rate and amortisation) that will not aggravate the post-COVID-19 financial position of the beneficiary country.

3. Once a CCF is in place for a country seeking this assistance, the debtor country would notify each of its bilateral and commercial creditors that interest payments on existing debt instruments falling due during the prescribed standstill period will be directed to (and reinvested in) the CCF. Each lender would also receive a formal request from the debtor country seeking the lender's acknowledgment that the reinvestment of the interest payment into the CCF (and the crediting to the lender's account of a corresponding interest in the CCF) will constitute a full discharge and release of the borrower's obligation in respect of the relevant interest payment.[10]

4. The threshold decision about whether to seek a standstill on interest payments for a limited period will rest in the discretion of each sovereign debtor.

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10 Communications addressed to creditors with an implicit "No RSVP Necessary" message have a long tradition in sovereign debt workouts (Buchheit 1991).

Participating countries with principal amortisations falling due during the standstill period will need to defer those amounts. Such deferral could be handled in one of several ways discussed in detail in Bolton et al. (2020).

Protecting reputation

Countries may be worried that requesting a standstill would hurt their reputation. There is one measure that the official sector could take and that may jointly protect the reputation of debtor countries which will use the facility described in this chapter and assist them if legal challenges are raised by minority creditors to these arrangements.

In any public statement about these measures and the global emergency that gave rise to the measures, the G20 could recognise that both official sector institutions and the debtor countries are acting out of necessity, referencing Article 25(1) of the Articles on State Responsibility promulgated by the International Law Commission in 2001.[11]

By publicly stating the purpose of the debt relief – namely, the necessary relief from debt obligations to help debtor countries face the global emergency engendered by the COVID-19 pandemic – the G20 would play an important certification role of the extreme and exigent circumstances they are facing. Depending on the law of the jurisdiction where a holdout creditor may elect to pursue its legal remedies, such a public statement by the G20 may assist the sovereign debtor in defending its action as the minimal necessary to respond to the exigent circumstances of the pandemic.

Past economic crises, whether in the US or elsewhere, have sometimes led to political interventions to suspend debt payments or to make other modifications to the terms of debt contracts. Such interventions may be necessary and do not automatically undermine credit markets. In some instances, they have actually had the opposite effect, resurrecting debt markets following the intervention. The reason why debt markets recovered was that creditors had anticipated widespread default in the absence of any modification of the repayment terms, and they were pleasantly surprised by the

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11 Article 25(1) *Necessity*:
    Necessity may not be invoked by a State as a ground for precluding the wrongfulness of an act not in conformity with an international obligation of that State unless the act:
    (a) is the only way for the State to safeguard an essential interest against a grave and imminent peril; and
    (b) does not seriously impair an essential interest of the State or States towards which the obligation exists, or of the international community as a whole.
    International Law Commission (2001).

intervention that had the effect of reducing the risk of default.[12] Creditors on average preferred the certainty of receiving a reduced repayment to the very uncertain prospect of being made whole.

To be sure, creditors generally do not expect that the promised repayment of their debt contracts will always be honoured. They understand that there could be circumstances when it would be essentially impossible for the debtor to meet its obligations. Had they been able to clearly and precisely anticipate these circumstances, they would have modified the terms of the contract to reflect these necessities and thereby avoided a wasteful and unnecessary default.

For many reasons, most debt contracts are highly incomplete and do not contain provisions prescribing how the parties will react to such contingencies. To name just one, it is very difficult to specify precisely in advance the exact form of a contingency such as a global pandemic that would merit lowering debt obligations in this event. Ex post it is easier, of course, to identify the contingency. The political intervention in debt contracts in these events serves the role of completing incomplete debt contracts. By certifying the event and by modifying the terms of the debt contract in ways that the contracting parties themselves would have wanted had they been able to, the intervention, far from undermining credit markets, helps support these markets.[13]

Not all interventions are beneficial in this way. It is important that they take place only in highly unusual and urgent circumstances that are outside the debtor's control ('acts of God'). Unusual circumstances are precisely the ones that are hard to describe and include in a debt contract. By certifying that such an event has occurred and by acting accordingly, the G20 would ensure that contract terms will be modified only when absolutely necessary and when the modifications are likely to support credit markets.

To summarise, debt suspension in a crisis provides ex-post economic benefits by avoiding a costly default and by relaxing the liquidity constraint of debtors. These ex-post economic benefits do not negatively affect credit markets ex ante even when suspension in rare circumstances is anticipated. The reason is that the contracting parties themselves would have included lower debt obligations in these circumstances.

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12 See Kroszner (2003) and Edwards et al. (2015) on the positive effect on debt markets of the repudiation of the gold indexation clause in debt contracts during the Great Depression.
13 See Bolton and Rosenthal (2002) for an analysis of how ex-post political intervention in debt contracts can be seen as a way of completing incomplete debt contracts.

It is the inability of the contracting parties to describe these circumsta[14]nces ahead of time that explains the incompleteness of the debt contract. But the contracts can be completed through political intervention in times of exigency.

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14 Moral hazard and the concern that the doctrine of necessity will be liberally applied to future events should be allayed by the fact that COVID-19 is a truly exogenous once-in a generation event. The latter point is supported by the following facts: (i) official forecasts point to the deepest global recession since the Great Depression; (ii) global lockdown policies which are more stringent than those adopted during World War II; (iii) unprecedented monetary and fiscal policies adopted by all advanced economies and several emerging market countries.

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24 COVID-19: A double whammy of financial and economic sudden stops for emerging economies[1]

Gianluca Benigno, Andrew T. Foerster, Christopher Otrok and Alessandro Rebucci

Federal Reserve Bank of New York, LSE and CEPR; Federal Reserve Bank of San Francisco; University of Missouri and Federal Reserve Bank of St Louis; Johns Hopkins Carey Business School and CEPR

Experience with previous financial crises suggests that the disruptions caused by the COVID-19 pandemic could lead to prolonged stagnation. Emerging markets responded to the pandemic by allowing their currencies to depreciate and easing monetary policy, as they did during the Global Financial Crisis. Some central banks went further, starting new long-term government bond purchase programmes. Going forward, responding to COVID will require a very large and sustained fiscal expansion. Emerging markets with well-anchored inflation expectations and solid domestic investor base should continue to expand their policy toolkit by embracing the use of the unconventional monetary policies enacted in advanced economies since the Global Financial Crisis.

The COVID-19 pandemic is a global shock, posing formidable policy challenges to all countries of the world with its singular mix of negative effects on aggregate supply and demand, as well as risk of disruptions to domestic and international financial intermediation. In sharp contrast to early expectations about V-shaped recoveries from COVID, with some delays, in emerging markets (EMs) it is reasonable to expect the same wave of bankruptcies, corporate defaults, and massive unemployment that are currently afflicting advanced economies to different degrees. Debt overhang and hysteresis are the very likely outcomes (Cerra et al. 2020), with deflation risk being a much bigger than inflation risk in both sets of countries.

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1   The views expressed are solely those of the authors and do not necessarily reflect the views of the Federal Reserve Banks of New York, San Francisco, or St. Louis, or the Federal Reserve System.

However, the pandemic did not hit all countries at the same time (Figure 1). With the exception of South Korea and Hong Kong, which account for the bulk of the recorded cases in Emerging Asia in March, EMs were neither the epicentre nor the first in the line of fire of the pandemic. In spite of the delayed contagion, Emerging Asia and Latin America have seen a sharp acceleration in the number of infections since the beginning of April.[2]

As the virus spread from China to Europe, financial conditions in the US and globally tightened dramatically in early March, with volatility reaching levels comparable to those observed during the Global Financial Crisis (GFC) and world equity markets in a synchronised steep decline (Figure 2). In particular, between 11 and 23 March, EMs were hit by a large sudden stop in capital flows even before being visibly contaminated by COVID-19. Corporate credit spreads rose almost 300 basis points, while a broad index of emerging market currencies depreciated by almost 10% in real terms (Figure 3).

Figure 1   COVID-19 pandemic staggered contagion
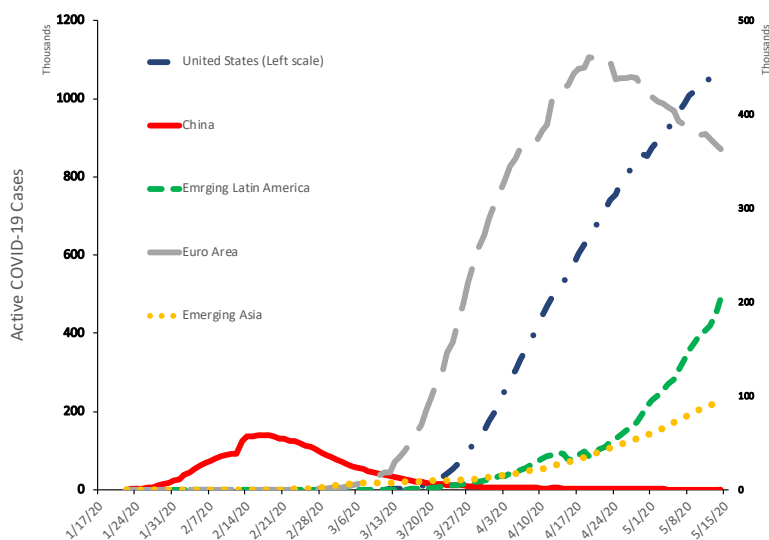
Notes: The figure plots daily active COVID-19 cases, calculated as confirmed cases, minus recoveries and deaths in China, the United States, the Euro Area, and selected Emerging Economies in Asia and Latin America. Emerging Asia comprises Hong Kong, India, Indonesia, South Korea, Malaysia, the Philippines, Singapore, and Thailand. Emerging Latin America incudes Brazil, Chile, Colombia, Mexico, Paraguay, Peru, and Uruguay.

Source: Johns Hopkins University Coronavirus Resource Center. Sample: January 22-May 15, 2020.

Figure 2   Equity markets indexes for selected countries
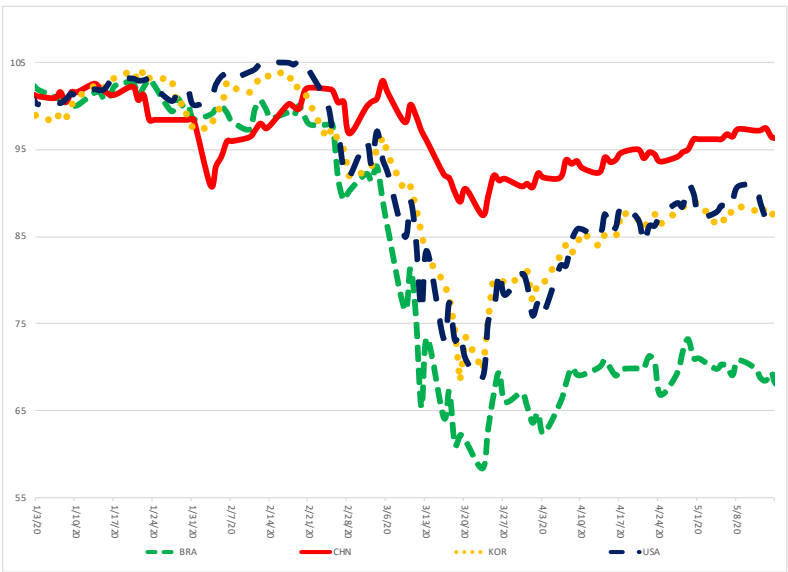
Notes: January 1, 2020=100. Sample: January 22-May 15, 2020. Countries are Brazil (BRA), China (CHN), South Korea (KOR) and the United States (USA).

Source: MSCI Index in local currency, daily observations.

Figure 3   Emerging market corporate spreads and real exchange rates
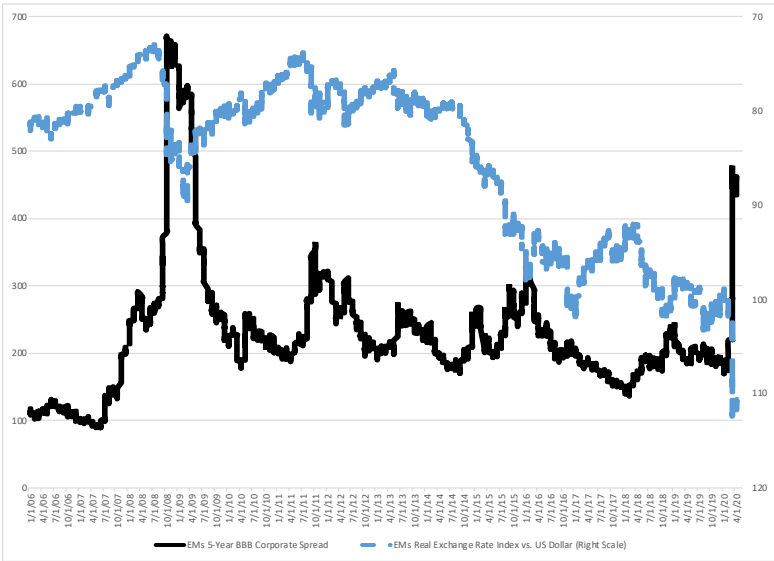
Notes: The figure plots an average EMs 5-Year BBB corporate bond spread and a real exchange rate index vs. the US dollar. The country sample is the same as in Figure 1, from January 2006 to April 9, 2020.

The contraction in economic activity started in mid-March for most EMs, at the same time as the US, although activity fell more in EMs, and continued to deepen after the US stabilised (Figure 4). In contrast, mobility in South Korea and Hong Kong fell earlier with their lockdowns in mid-February but rebounded more quickly than elsewhere in the emerging world. This dynamic is consistent with the notion that financial frictions triggered by the sudden stop in capital flows initially disrupted EMs and amplified direct economic disruption related to COIVD-19.[3]

Figure 4   Mobility indicators in the US, South Korea, Hong Kong and emerging markets
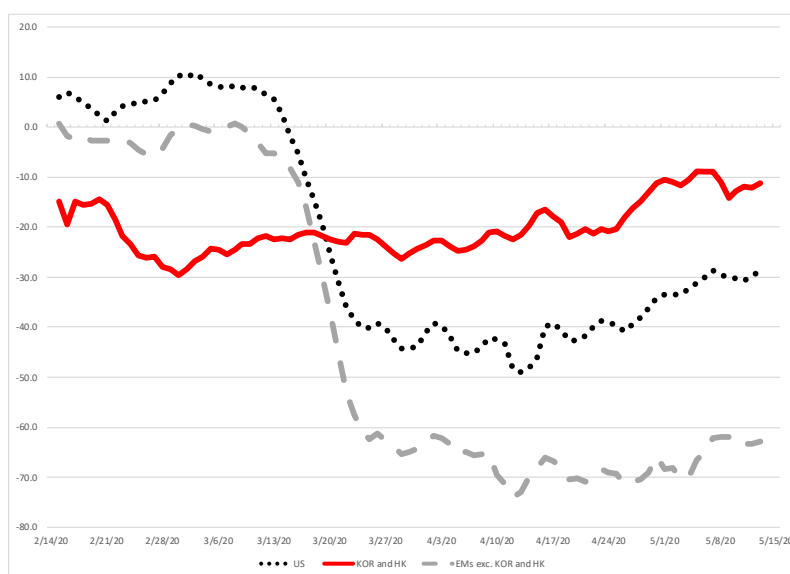
Notes: The figure plots Google Mobility Data for the retail and recreation sectors. The data measure percent change in visits to establishments in these sectors relative to the first five weeks of 2020. US is the United States; KOR and HK is the average percent change for South Korea and Hong Kong; EMs is the average percent change across the following countries: Singapore, India, Malaysia, Brazil, Chile, Colombia, Mexico, Peru, and Uruguay. Sample period 2/15/2020-5/15/2020.

Source https://www.google.com/covid19/mobility/.

As Figure 3 illustrates, a similar shock in financial markets buffeted EMs during the GFC. Focusing first on the sudden stop component of the COVID-19 double whammy for EMs thus provides a useful reference point to assess the likely impact of the ongoing crisis and any prospect for a speedy recovery, and to discuss policy options to fight the pandemic and its economic consequences. So, we now turn to our previous research on estimating models of financial crises of varying durations.

A new framework to evaluate sudden stops in capital flows

In Benigno et al. (2020), we estimate a new model of business cycles and financial crises driven by occasionally binding financial frictions. In the paper, we focus on one particular type of crisis – the so-called sudden stop in international capital flows captured by a binding constraint on the private sector's ability to borrow from abroad – and estimate it using data for Mexico since 1981. The framework has general applicability, however, and is a useful laboratory to evaluate crisis dynamics. Occasionally binding borrowing constraints, in particular, are mechanisms that amplify regular business cycle shocks. For example, as we documented above for EMs (but also in the US), in the case of the COVID-19, which did not originate in the financial sector, suddenly binding financial frictions in capital markets powerfully amplified the initial impulse.[4]

Most importantly, our model identifies crisis episodes of varying duration and intensity. This finding, which has previously proven difficult to capture in models with occasionally binding constraints, is consistent with empirical evidence of large economic dislocation during financial crises and the long-lasting build-up and sluggish recovery phases surrounding them (Cerra and Saxena 2008, Reinhart and Rogoff 2009). The model estimation yields a time-varying probability of facing the binding borrowing constraint. In this framework, therefore, crises episodes are identified as consecutive periods in which the probability that households and firms are borrowing constrained remains above a certain threshold (in our application to Mexico, 90%).

Figure 5 plots this probability for Mexico (solid black line), together with the peaks of the crisis episodes previously identified in the literature (red bars), corresponding with the troughs in output and capital flows in the data for Mexico. To illustrate the model's ability to characterise other type of crises, we also report a purely empirical notion of crisis (grey bars). This indicator is the crisis tally index of Reinhart and Rogoff (2009).[5]

Figure 5   Mexico's model-identified crisis episodes
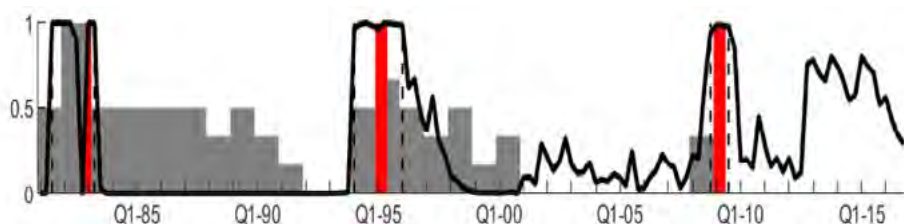
Notes: The black solid line is the estimated model implied probability of being in a crisis. The grey bars correspond to the tally index. The red bars indicate model-identified crisis peaks. The vertical dashed lines mark the beginning and the end of the estimated crisis episodes.

Source: Benigno et al. (2020).

This estimated probability of sudden stop in capital flows identifies three episodes in the recent economic history of Mexico. The first is the debt crisis, lasting eight quarters, during 1981:Q3-1983:Q2, with the peak in 1983:Q1 (start and end-quarters marked by vertical dashed lines). The second is the so-called Tequila Crisis, lasting nine quarters from 1994:Q1 to 1996:Q1, with its peak in 1995:Q1-Q2. The last episode is the Global Financial Crisis which, according to the model, produced a crisis in Mexico from 2008:Q4 to 2009:Q3, for four quarters, with a peak in 2009:Q1-Q2. The model does particularly well at tracking the consequences of the GFC for Mexico. Interestingly, the crisis episodes that our model identifies are as persistent as the Reinhart-Rogoff tally index in the case of the Tequila crisis and the GFC, consistent with the idea that our framework can characterize well the economic dislocations brought about by financial crises. Importantly, in Benigno et al. (2020), we also show that the estimated model does not mistake ordinary recessions for crisis episodes.

From this framework we can also simulate sudden stop episodes of varying duration. Figure 6 reports the frequency of episodes lasting longer than four quarters (the duration of the shortest of the three estimated crises in Mexican data, namely, the GFC). The model generates substantial heterogeneity in crisis duration. The average conditional crisis duration is five consecutive quarters, but some episodes can last more than 20 quarters, comparable to the Reinhart-Rogoff tally index during the debt crisis, even though they are rare events making up less than a half-percent of all cases.

Figure 6   Model-simulated crisis episode durations
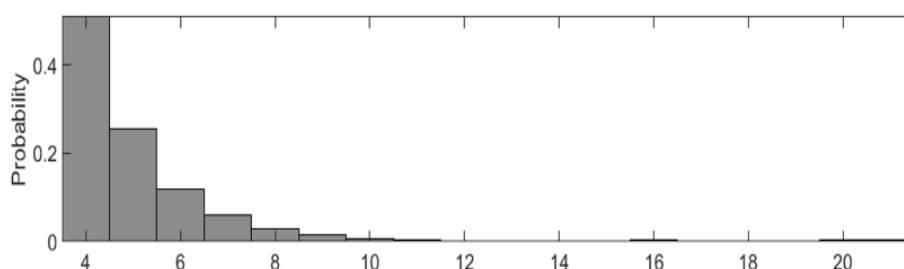
Note: The figure reports a histogram of the model-implied conditional crisis duration.
Source: Benigno et al. (2020). (2020).

Lessons from Mexico's crisis history

To draw lessons from Mexico's crisis history, we now look at model-simulated crisis episodes of specific duration. It is difficult to anticipate how the COVID-19 shock will propagate domestically in EMs. However, as in Europe and the US, EM governments have imposed lockdowns of varying stringency and duration. So we evaluate a scenario in which the COVID-19 crisis will result in at least eight quarters of constrained financing, as represented by the binding borrowing constraint in our model, consistent with the estimated duration of the 1980s debt crisis, which saw internal and external debt defaults, or the 1995 Tequila Crisis, which saw a major banking crisis.

Our framework does not include explicit epidemiological dynamics. However, it is a medium-scale DSGE model with several structural shocks on both the demand and the supply side of the economy, as well as interest rate shocks. The contractionary supply-side effects of COVID-19 appear in the model as negative productivity shocks. The model captures the sentiment and uncertainty impact of COVID-19 on the demand side of the economy through changes in agents' patience. Expenditure and terms of trade shocks capture developments in the oil market and the evolution of fiscal policy.

We also know that COVID-19 will destroy matches in the labour market and will bring about defaults and bankruptcies. While these features are not in our structural model, they are in the Mexican macroeconomic data on which the model was estimated. So, we will interpret our analysis as a lower bound on the likely negative effects that could materialise once EMs face the full effect of the COVID-19 disruption.

Figure 7 plots the simulated dynamics for selected shocks and endogenous variables, five years before and ten years after the event. The figure illustrates the distinctive combinations of shocks that drive the economy before, during and after this typical crisis episode. In general, crisis episodes of such persistence are preceded by a long-lasting 'boom' phase, driven by improving technology and a favourable international environment, with a notable fall in borrowing costs and compressed country spreads. These forces drive the expansion gradually, with increasing output, consumption and investment, in a manner consistent with the empirical characterisationof the boom phases in Boissay et al. (2016).

Figure 7   Simulated sudden stop dynamics
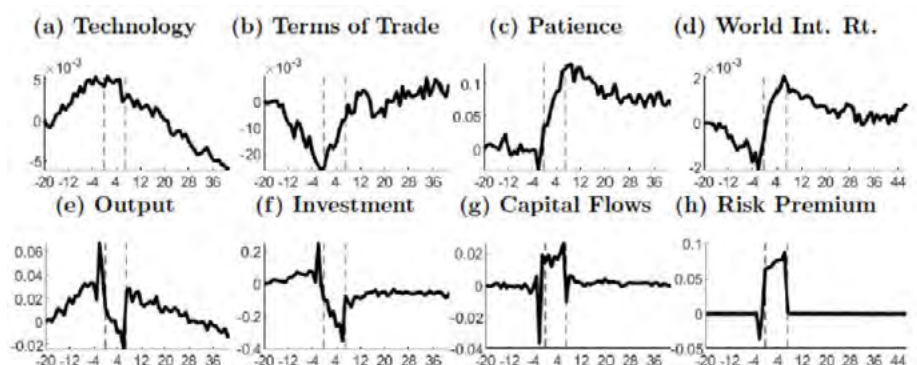
Notes: The figure plots model-simulated dynamics during crisis episodes of eight quarters, five years (20 quarters) before the crisis, and 10 years after the crisis (40 quarters). The economy is in the constrained regime from period t=0 to period t=7 (vertical dashed lines). The plotted dynamics are medians across all crisis episodes identified, in log-levels, setting t-20=0.

Source: Benigno et al. (2020).

The economy enters the crisis episode at t=0, after a final acceleration. The large crash is precipitated by a combination of adverse supply and demand shocks: a sudden drop in technology (e.g. a sudden shift to work at home in the case of COVID), an increase in patience (that can capture a drop in business and consumer confidence) and a sharp reversal in the cost of borrowing as we saw in global debt markets. During the crisis episode, borrowing costs and patience continue to increase, technology stagnates, and the country's sovereign spread remains large. The constraint on borrowing limits consumption smoothing and curtails the output supply further through limiting working capital. This causes output, consumption (not reported) and investment to drop sharply.

The output drop from peak to trough is eight percentage points, in line with what observed during the Tequila Crisis in Mexico. As we noted earlier, however, this quantitative statement should be interpreted with caution and only as lower bound on the potential COVID-19 damage in EMs as our model does not account for the second

lag of the double whammy, the economic sudden stop imposed by the lockdowns. Credit flows (measured by net capital flows as a share output in Figure 7) suddenly dry up, remaining at this contracted level throughout the crisis phase.

Importantly, the economy rebounds quickly from these episodes, but only partially, making up only half of the ground lost during the crisis episode, or about four percentage points in these simulations. After the initial bounce, a combination of persistently adverse circumstances produces a protracted output decline, as we can see in the Mexican data after the debt crisis (not reported), and also in line with empirical evidence on the long-term consequences of financial crises in other emerging and advanced economies (Cerra and Saxena 2008, Reinhart and Rogoff 2009, Cerra et al. 2020). The international cost of borrowing remains elevated for an extended period of time, even though spreads reverts after the crisis. The productivity decline is sizable and very long lasting, with technology reaching a level that is below the one at the beginning of the boom.

During the post-crisis period, investment and to a lesser extent consumption also stagnate below their pre-crisis levels (Benigno and Fornaro 2018). As a result, credit flows remain below pre-crisis levels long after the crisis has ended, although the economy is no longer financially constrained.

Emerging markets' policy options to fight COVID-19

Emerging markets responded to the shock with a combination of currency depreciation and intervention, consistent with the asymmetric nature of the sudden stop in capital flows. To stabilise domestic financial conditions and accompany shutdowns many countries lowered monetary policy rates and loosened fiscal policy. For the first time, several emerging central banks also engaged in unconventional monetary policies in the form of large-scale government asset purchases, commonly referred to as quantitative easing (Arslan et al. 2020, Hartley and Rebucci 2020).

The EM QE announcements, on average, had a -0.28% 1-day impact on the respective 10-year government bond yield that grew stronger in the following two dayswith no adverse bond market reaction in most countries considered (Table 1). Even excluding QE announcements accompanied by cuts to benchmark rates, the average 1-day impact falls only to -0.20% from -0.28%, with the cumulative 3-day impact dropping only to -0.37% from -0.43% (not reported). Moreover, Arslan et al. (2020) find that, quite surprisingly, exchange rates appreciated or slowed their depreciation in response to

these interventions. This evidence suggests thatEM QE interventions have not been met with adverse reactions in government bond markets and have complemented interest rate cuts.

Table 1 Emerging market central bank announcements of government asset purchases in March and April 2020

Country	Central Bank	Date	1-Day (%)		2-Day (%)		3-Day (%)	
			Cumulative Change In 10-Year Govt Bond Yield					
Korea	Bank of Korea	3/25/20	-0.04		-0.20	***	-0.17	***
Colombia	Banco de la República	3/24/20	-0.50	***	-1.35	***	-2.15	***
South Africa	South Africa Reserve Bank	3/25/20	-0.66	***	-0.90	***	-0.73	***
Poland	Narodowy Bank Polski	3/17/20	-0.45	***	-0.28	***	-0.08	
Poland	Narodowy Bank Polski	4/8/20	-0.05		-0.14	**	-0.19	***
Romania	Banca Naţională a României	3/20/20	-1.50	***	-1.53	***	-1.80	***
Hungary	Magyar Nemzeti Bank	3/24/20	-0.51	***	-0.36	***	-0.50	***
Hungary	Magyar Nemzeti Bank	4/28/20	0.01		-0.41	***	-0.59	***
Croatia	Hrvatska narodna banka	3/13/20	0.17	***	0.19	***	0.24	***
Phillipines	Bangko Sentral ng Pilipinas	3/24/20	-0.23		-0.48	**	-0.55	**
Mexico	Banco de Mexico	4/21/20	-0.03		-0.25	**	-0.26	**
Turkey	Central Bank of the Republic of Turkey	3/31/20	-0.01		0.29		0.75	
India	Reserve Bank of India	3/20/20	-0.15	***	-0.03		-0.11	
Indonesia	Bank Indonesia	4/1/20	0.03		0.13		0.19	
Average			**-0.28**	***	**-0.38**	***	**-0.43**	***

Note: The table lists all sovereign bond long term asset purchase QE announcements during the COVID-19 pandemic. The table reports 1-day, 2-day, and 3-day cumulative change in a country's 10-year government bond yield following a QE announcement as well as average for all announcements. * indicates statistical significance at the 10% level, ** indicates statistical significance at the 5% level and *** indicates statistical significance at the 1% level.

Source: Hartley and Rebucci (2020).

Policy space to respond to the capital flow shock we documented was limited even before COVID-19 hit EMs. IMF resources are inadequate to support EMs meaningfully (García-Herrero and Ribakova 2020). Most EMs are not equipped to use controls on capital outflows as a staying device (Rebucci and Ma 2020). Capital controls can also disrupt relations with foreign investors, preventing them from taking full advantage of any recovery opportunity. Proposals for a debt moratorium, such as Bolton et al. (2020) or the G20 debt service deferral for developing countries, are premised on the assumption that the shock is very large but temporary. Critically, they still require internationally coordination and cooperation, which thus far has been all but absent in addressing the pandemic.

Going forward, policy space will be even tighter as COVID-19 continues to spread or starts to recur. The pandemic requires large and sustained fiscal expansions both to address the medical emergency and cushion the inevitable economic side effects of the lockdowns. Unfortunately, many EMs will not be able to afford it, not least because of the procyclicality of fiscal policy (Kaminsky et al. 2005). But even the most frugal EMs cannot enjoy the same fiscal space afforded to countries issuing safe haven currencies as the United States.

So, what are EMs to do? In light of the favourable market response to the first few QE interventions, EMs should push more aggressively toward the adoption of the unconventional monetary policies successfully adopted in advanced economies since the GFC. Experimenting cautiously with QE, and then progressively increasing the scale of interventions to remove binding financing constraints, can help to contain sovereign and country leverage, lowering vulnerability to a likely further tightening of financial conditions. Such interventions can also circuit break debt deflation spirals and asset fire sales as shown in Benigno et al. (2020).

While foreign exchange risk is an important contributor to local markets' bond returns, and in the past has driven capital outflows, inflation expectations are well anchored in EMs (Ribakova et al. 2019). As Ribakova et al. (2019) show, large depreciations lead only to moderate and temporary bursts of inflation in EMs also because exchange rate pass-through is much diminished in EMs. Moreover, sovereign balance sheets are hedged, in some cases with more reserves than sovereign external debt. Foreign exchange balance sheet exposure is concentrated in the corporate sector, but yet again the biggest threat to corporates' liquidity and solvency is the impact of shutdowns on cash flows rather than large depreciations witnessed.

More generally, further QE in government bond markets is desirable in a deflationary environment. Although QE is not a long-term solution to COVID, it might buy time while cooperation and coordination on debt restructuring and international aid packages are assembled, once the full extent of the pandemic damage become more visible.

Conclusions

Even prior to the arrival of COVID-19, EMs had been hit by a very large sudden stop in capital flows, similar to that experienced during the Global Financial Crisis. They are now stricken by an economic sudden stop in economic activity, driven by the attempt to contain the domestic spreading of the virus, which is larger than that experienced by advanced economies due to the amplifying effects of tighter financial frictions and the lower tele-workability of jobs.

Based on a new estimated model of sudden stop crises, we show that crises propagated by financial frictions can be followed by an initial quick but partial rebound. Thereafter, economies can stagnate for a protracted period of time. Mexico's experience with default and banking crises suggests that it may take up to ten years for the economy to recover. COVID-19 is different and is a major compounding factor, greatly increasing the chances that the recovery will be drawn out and anaemic. Policy needs to be designed taking the likely persistence of the shock into account.

Policy space in EMs, traditionally tighter than in advanced economies, is even tighter than during the GFC because of the absence of international policy coordination and cooperation. In this bleak picture, it is encouraging to observe that some EM central banks were able to loosen monetary policy aggressively without adverse reactions in domestic government bond markets, including adopting quantitative easing programs.

Quantitative easing can provide emerging markets with an opportunity to keep their economies from derailing without imposing capital controls or debt moratoria, persevering precious investor relations and containing leverage – so-called breathing space – while the international financial community comes to terms with the reality that COVID-19 requires international cooperation and solidarity, with substantive financial aid and relief for developing and emerging economies.

COVID-19 is different than past EM crises and poses a singular set of formidable challenges to the best prepared economies and policy makers. EMs have been left to fight the COVID battle alone. They should not fight it with the guns of the previous wars for fear of inflation or fear of floating.

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25 Emerging market currency risk around 'global disasters': Evidence from the Global Financial Crisis and the COVID-19 crisis[1]

Giancarlo Corsetti, Simon Lloyd and Emile Marin
University of Cambridge and a CEPR; Bank of England; University of Cambridge

After reviewing the depreciation of emerging market currencies since the onset of the COVID-19 crisis, we document the similarities and differences relative to the Global Financial Crisis. In this chapter, we study the excess returns from holding a portfolio long in emerging market currency and short in US dollars around global crises, and interpret their dynamics through the lens of a theory of yield curves and exchange rates. The COVID crisis reminds us that, although the co-movement between exchange rates and capital outflows is low on average, it becomes strong during global crises.

A striking regularity of global economic crises is that the dollar tends to appreciate sharply against emerging market (EM) currencies. In this respect, the currency movements observed since the onset of the COVID pandemic are no exception. In Figure 1 we plot a PPP-weighted average of seven EM exchange rates (EM7) – the currencies of Brazil, India, Indonesia, Mexico, Russia, South Africa and Turkey – together with the exchange rates of the euro, sterling and Japanese yen vis-à-vis the US dollar. These series are all indexed relative to 25 February 2020 – marked by a vertical line in the figure. On this date, the US yield curve, measured using the difference between 10-year and 1-year US zero-coupon government bond yields, inverted. From this date on, the exchange rates for EMs and advanced economies (AEs) diverged, with much larger daily exchange rate moves relative to early-February. We will return to the significance of yield curve inversions later in this chapter. For now, we emphasise the striking EM7 depreciation, of around 13% relative to the US dollar, between the end of February and to 19 March.

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1   The views expressed here are those of the authors, and not necessarily those of the Bank of England.

Figure 1   Exchange rate dynamics around the 25 February 2020 US yield curve inversion
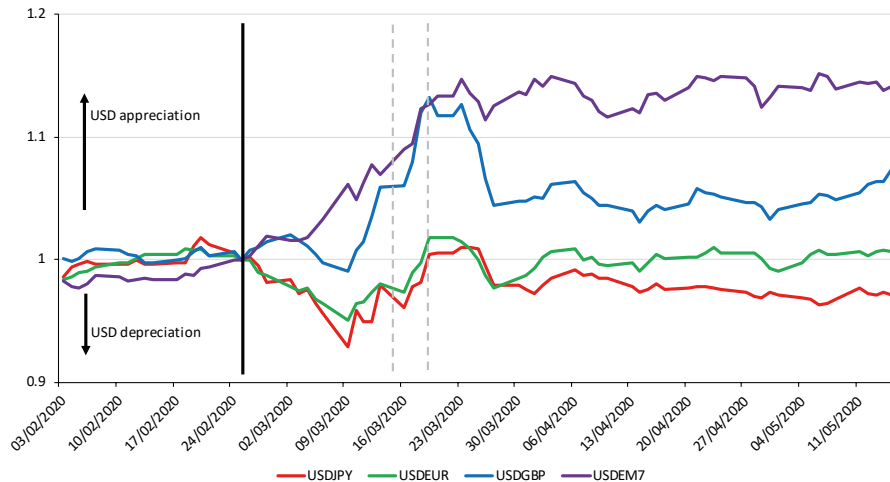
Note: Vertical solid black line denotes date of the US yield curve inversion (25th February 2020), where yield curve slope defined as the 10 minus 1-year zero-coupon yield. Exchange rates normalised relative to this date. Vertical dashed grey lines denote dates of Fed announcements to (a) extend maturity of existing swap line agreements with the Banks of Canada, England, and Japan, ECB and SNB (15th March 2020) and (b) establish temporary swap line arrangements with central banks in Australia, Brazil, Denmark, Korea, Mexico, Norway, New Zealand, Singapore and Sweden (19th March 2020). USDEM7 a PPP-weighted average of seven EM currencies: Brazil, India, Indonesia, Mexico, Russia, South Africa, Turkey. Dates: 3rd February 2020 to 15th May 2020.

Data Source: Datastream.

As shown in Figure 1, for a couple of weeks after the US yield curve inversion, the US dollar lost value against the euro and the yen, while sterling remained broadly stable. As of around the second week of March, when the scale of the potential economic downturn caused by the COVID crisis became apparent, the dollar started to strengthen against all three AE currencies. On 15 March, the Federal Reserve (Fed) extended pre-existing swap line arrangements with central banks and, on 19 March, announced temporary swap lines with a range of central banks, including some EMs (Bahaj and Reis 2020). By early-April, all three AE currencies had recovered (at least part of) the ground lost to the US dollar in the first half of March. They have remained comparatively stable thereafter, with sterling remaining somewhat weaker and the yen somewhat stronger relative to February. The EM7 index of currencies had also stabilised, but without any gain – the index still remains around 14% weaker relative to its end-February level.

There is a considerable degree of heterogeneity in the extent of depreciation across the EM currencies included in our EM7 index. As of 19 March, the currencies of Brazil, Mexico and Russia – major oil exporters – had depreciated the most, by around 16-26%, while the currencies of India and Indonesia the least, the former by around 4%.

The Fed swap lines announced on 19 March were made available to only two of the seven EMs in our index, Brazil and Mexico. However, one can argue that, by their effect on the global excess demand for dollars (Du et al. 2018), the swap lines have likely played a broader role in EM exchange rate markets, indirectly stabilising currencies not covered by the Fed initiative too.

For comparison, in Figure 2 we plot the evolution of the same exchange rates around the Global Financial Crisis (GFC), over the 2007-2008 period. The exchange rates in these figures are indexed relative to the end of the protracted US yield curve inversion, which began in June 2006 and concluded in June 2007. In the months following the end of the yield curve inversion, AE currencies (shown in Figure 2) followed a pattern that, qualitatively, is similar to Figure 1 – although stretched over a longer period.[2] After the (end of the) US yield curve inversion, the euro, the yen and, to a lesser extent, sterling at first strengthened relative to the dollar. Then, in the last quarter of 2008, following the collapse of Lehman Brothers in September, the euro and sterling lost ground to a strongly appreciating dollar.

Figure 2   Exchange rate dynamics around the end of the 2006-2007 US yield curve inversion

Note: Vertical solid black line denotes the end date of the 2006-2007 US yield curve inversion on the 5th June 2007, where yield curve slope defined as the 10 minus 1-year yield zero-coupon yield. Exchange rates normalised relative to this date. USDEM7 a PPP-weighted average of 7 EM currencies: Brazil, India, Indonesia, Mexico, Russia, South Africa, Turkey. Dates: 1st January 2007 to 30th November 2008.
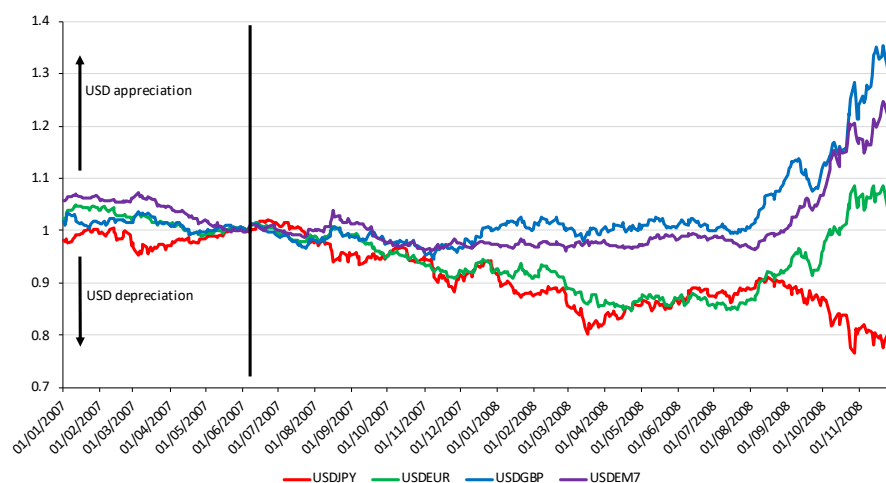
Data Source: Datastream.

Similarly, following a period of relative stability from June 2007 to late-summer 2008, EM currencies depreciated and, by November 2008, were all at a lower value relative to the US dollar – this is just before the Fed announced its Large-Scale Asset Purchase programme. By this date, the EM7 index had depreciated by around 20% since the end of the US yield curve inversion, much larger than, say, the 7% depreciation of the euro.

Comparing the current COVID crisis and the GFC, the recent 14% exchange rate depreciation of our EM7 index is smaller than the near-25% depreciation at the peak of the GFC from late-August to end-November 2008. However, there is a striking difference. The recent EM depreciation materialised over the three weeks following the US yield curve inversion in February, as opposed to over a time span exceeding a year in 2007-2008. The time scale for Figure 2 is in months, while it is days in Figure 1.

In the remainder of this chapter, we interpret these exchange rate dynamics through the lens of a no-arbitrage theory around rare global disasters. Furthermore, we study excess returns for a portfolio long in EM bonds around global and EM-specific crises and draw a link to movements in the US yield curve and capital flows.

Exchange rate dynamics after a US curve inversion: Insights from theory

Building on our research (Corsetti and Marin 2020, Corsetti et al. 2020), in this section we offer theoretical insight on the empirical patterns highlighted above, in Figures 1-4, through the lens of a model of exchange rate dynamics around rare (or economic) global disasters. Here, a 'global disaster' is defined, as in Farhi and Gabaix (2016), as a set of events that cause a large fall in consumption across a large number of countries and a sharp depreciation of their currencies – in practice vis-à-vis the US dollar (see also Barro 2006).

Our theoretical contribution consists of showing that global disasters are likely to be preceded by a yield curve inversion (or, at least, a yield curve flattening) in the US, consistent with evidence in Figures 1-4. The yield curve captures investors' expectations of future economic activity. Intuitively, when investors expect a downturn associated with a currency depreciation, they require higher yields at commensurate maturities to hold bonds denominated in that currency (Lloyd and Marin 2019). Higher yields at short maturities compensate investors for an elevated risk of a disaster in the short run. A yield curve inversion, due to the relatively higher short-term yields, can then reflect a higher probability of disaster in the short-run relative to the long-run. Importantly, it should be stressed that the US yield curve inversions around the GFC and COVID crisis preceded changes in monetary policy – i.e. they were not the result of changes

in the monetary stance, a point further explored using a century of data in Corsetti and Marin (2020). Furthermore, yield curve inversions can occur for reasons other than 'global disasters' (as defined above) and not all of them need precede a downturn or the exchange rate dynamics we describe here.

In addition to affecting domestic yields, expectations of an economic disaster give rise to exchange rate risk premia. In Lloyd and Marin (2019) and Corsetti et al. (2020), we characterise the exchange rate dynamics following a yield curve inversion linked to an economic disaster. Initially, bond yields and exchange rates reflect investors' expectation of the coming disaster. For investors to be willing to keep investing in the (relatively risky) high-yield currencies, they require positive excess returns to compensate for the possibility of a large depreciation, which would result in losses. Conversely, a portfolio long in (relatively safe) dollar bonds delivers negative returns outside of a disaster. When the disaster occurs, the portfolio long in bonds denominated in the risky currencies tends to suffer large ex post losses due to strong dollar appreciation.

The GFC lends empirical support to the exchange rate dynamics described above. As shown in Figure 2, with the possible exception of the Indonesian rupiah, EM currencies all experienced some appreciation in the period following the yield curve inversion and before depreciation in late-2008. This interim appreciation is quite strong in some cases (20% for the Brazilian real), and moderate in others (3% for the Indian rupee and 9% for the Mexican peso). Eventually, in the last quarter of 2008, all EM currencies in our sample depreciated strongly against the dollar, coinciding with a sell-off of EM bonds and capital outflows. In Figure 3, a qualitatively similar pattern of appreciation and subsequent depreciation characterises the euro and, to a lesser extent, sterling.

The COVID crisis is arguably different from previous crises, reflecting the nature and size of the shock and its global spread, creating considerable uncertainty around its effects on the global economic and financial system. Yet, during the current COVID crisis, we still observe a sequence of appreciation and subsequent depreciation for the euro and the yen, although over a shorter period of about a month. In contrast, however, EM currencies started to depreciate immediately with the US yield curve inversion, as they concurrently faced sizeable capital outflows.

Figure 3   Monthly ex post exchange rate risk premia for emerging markets
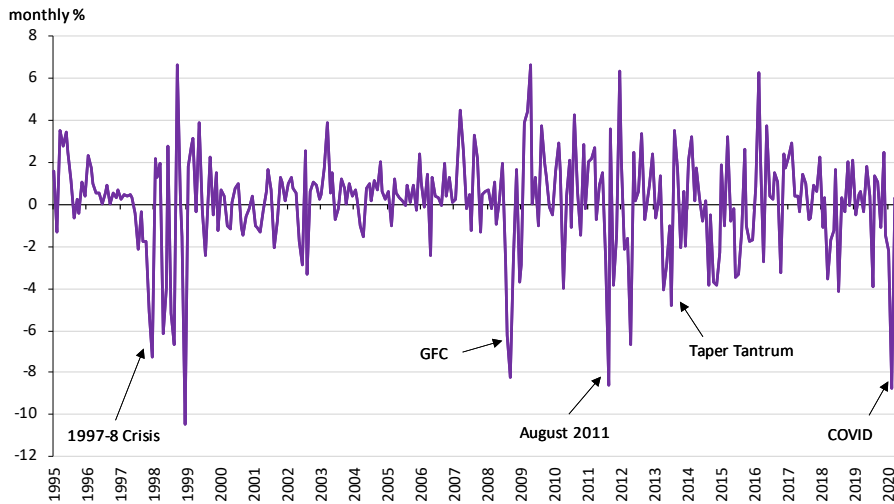
Note: PPP-weighted average of 1-month ex post exchange rate risk premia vis-à-vis US dollar for 6 EMs (Brazil, India, Indonesia, Mexico, Russia, South Africa). Dates: January 1995 to March 2020.

Data Sources: Datastream, IMF International Financial Statistics.

Our interpretative framework is based on the idea that, outside episodes of monetary surprises, global economic disasters can be preceded by a US yield curve inversion when investors price-in a higher disaster probability – marking the starting point for large exchange rate swings and capital flows. The specific role of the US yield curve and dollar has been the focus of a large literature on the 'global financial cycle' (Rey 2013, Miranda-Agrippino and Rey forthcoming). Our contribution to this literature is to point out that, in light of the evidence on large crises, a primary driver of this cycle could be associated with a time-varying probability of economic disasters. The same model can of course be applied to country- or region-specific disasters too – such as the 1997-8 East Asian crisis – although in these cases the exchange rate dynamics we describe need not be preceded by global indicators, such as the US yield curve inversion.

Exchange rate risk premia around economic disasters

According to theory, in anticipation of a disaster, investors obtain positive excess returns from taking positions in risky currencies. Our model, with a time-varying probability of disaster risk, characterises the dynamics of excess returns conditional on a US yield curve inversion. In related work (Corsetti et al. 2020) we provide empirical support for

the model, showing evidence that, following a US yield curve inversion, returns on a portfolio long in AE bonds and short in US bonds rise during the interim period, before the dollar appreciation, and turn negative when the disaster materialises.[3]

Hereafter, we limit ourselves to descriptive, but informative, evidence on the excess returns from a portfolio in which investors take a long position in EM bonds and a short position in US bonds. In Figure 3 we plot the PPP-weighted average of exchange rate risk premia for our EM currencies over the period 1995:01 to 2020:03. There are a handful of strikingly negative values for λt that correspond to well-documented historical downturns in the global economy or EMs specifically. We highlight four such events. Two correspond to the global economic disasters discussed above: the GFC and current COVID crisis, both preceded by a US yield curve inversion. Two are EM-specific disasters: the 1997-1998 East Asian crisis and the 2013 Taper Tantrum. In addition, there is a large negative excess return in August 2011, which coincided with a sharp drop in global stock prices related to fears of a developing sovereign debt crisis in Europe.

For our set of EM currencies, despite substantially negative excess returns around disasters, the excess returns are positive on average. Over the sample period, the average excess return is 0.1% per month, indicating positive returns from holding EM bonds relative to US bonds. In line with our theory, unconditionally, this is consistent with risk-neutral no-arbitrage when investors attribute a positive probability to economic disasters at global or regional level – the latter associated with currency depreciation in EMs, but not AEs.

Capital flows and currency movements

The currency dynamics around the COVID crisis have been accompanied by substantial international portfolio adjustment. In the week following the 25 February US yield curve inversion, when the depreciation of the EM7 currency index began to pick-up pace (Figure 1), capital outflows from EMs markedly accelerated. According to Institute of International Finance (IIF) estimates, non-resident portfolio outflows from EMs summed to nearly $100 billion over a period of 45 days starting in late-February 2020 (IIF, 2020). Like exchange rates, capital outflows from EMs have been comparatively stable since late-March, but have not reversed.

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3   We use 6-month maturity bonds for the sample 1980-2017 and find that this relationship is statistically significant and robust to the exclusion of the GFC.

Figure 4 plots EM capital flows and exchange rate risk premia – as 6-month moving averages. Remarkably, while the correlation of these two variables is close to zero when calculated over the whole period, it becomes strongly positive around economic disasters. Over a 2005:01 to 2020:03 sample, the correlation between non-resident portfolio flows to EMs and the EM PPP-weighted exchange rate risk premium, at monthly frequency, is just 0.08. This result is often highlighted by the literature on the 'exchange rate disconnect', stressing the apparent weak relationship between currency valuation and economic fundamentals, including capital flows. However, the result is quite different if we calculate a rolling correlation between these series over a 6-month window, to allow for the possibility of time-varying fluctuations. In Figure 6, shaded areas highlight periods in which the correlation rises to above 0.75. As shown in the figure, this occurs on three separate occasions, corresponding to the GFC, 2013 Taper Tantrum and the recent COVID crisis – all of which are characterised by large capital movements.

Figure 4   Capital flows and ex post exchange rate risk premia for emerging markets
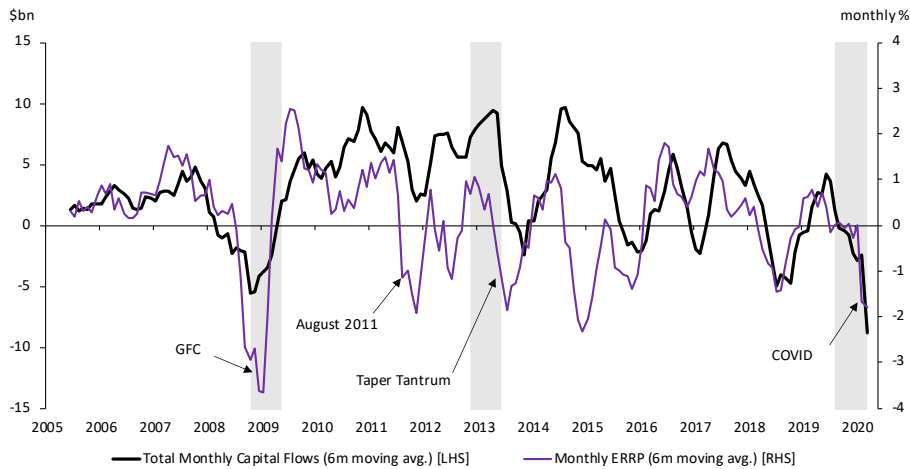
Note: 6-month moving average of: non-resident portfolio flows to EMs, and 1-month ex post EM exchange rate risk premia vis-à-vis US dollar (PPP-weighted). Capital flows cumulated over each calendar month, with negative value implying an outflow from EMs. Moving averages plotted at end-date of period. Shaded areas denote periods in which 6-month rolling correlation of raw capital flows and exchange rate risk premia exceed 0.75. Unconditional correlation of raw series equal to 0.08 over the sample. Dates: January 2005 to March 2020. Data Sources: Datastream, IIF, IMF International Financial Statistics.

A similar connection between capital flows and exchange rate dynamics is discussed by Lilley et al. (2019) in relation to the GFC specifically, using a security-level database recording US purchases of foreign bonds. As such, our results in Figure 6 contribute to growing evidence that, while the link between currencies and capital flows may be weak on average ('disconnect'), it can be strong during periods of global distress ('reconnect').

Discussion

The disruptive consequences of capital outflows from EMs have long raised questions about which policies and institutions can reduce vulnerabilities ex ante and the social and economic costs ex post. According to our model, the exchange rate appreciation – which delivers positive excess returns on risky portfolios when the probability of a global disaster is priced-in – and subsequent depreciation – when the disaster materialises – belong to an integrated cycle in international financial markets. While, unconditionally, the link between EM exchange rates and capital flows is weak on average, we highlight a strong comovement between the two at times of global distress, with specific implications for macroeconomic policy.

Focusing first on ex ante policies, a well-established literature suggests caution in allowing unrestricted capital inflows to EMs (see Ma and Rebucci 2018 for a survey). Capital flow management measures, international reserve policy or, most appropriately, targeted macroprudential policy, could help to internalise the possible economic costs of these flows. These policies are increasingly seen with favour when used to address excessive market volatility, although should not be used as a substitute for warranted macroeconomic adjustment (IMF 2020).

However, the current challenge is to design ex post policies for a large number of EMs who, in addition to capital outflows, are facing the health consequences of the pandemic, falling commodity prices, and a large contraction in remittances and international trade. Recognising the unprecedented and exogenous nature of the crisis, the G20 have agreed to work towards a 'debt service standstill' on bilateral loans for a group of 76 low-income countries. A recent piece by Bolton et al. (2020), discussed in the authors' chapter in this eBook, proposes an extension of the standstill, on a voluntary basis, to middle-income countries and, additionally, the coordination of private lenders. The authors estimate that a 12-month debt standstill from all creditors would free-up 4.7%

of annual income for EMs (ex-China). It is worth noting that the 'doctrine of necessity', on which the legal foundation for this scheme lies, is defined in relation to economic events where moral hazard considerations are muted, such as the COVID-19 crisis.[4]

In anticipation of a disaster, flexible exchange rates can help to complete local currency-denominated debt contracts ex ante, by supplementing portfolio returns and allowing EMs to maintain access to international investors. Indeed, Hofmann et al. (2020) attribute the rise in issuance of local currency-denominated bonds in EMs, following the GFC, to higher demand by (often, unhedged) international investors, driven by expectations that exchange rates can deliver positive excess returns to compensate for risk. Once the disaster materialises, the subsequent depreciation can be destabilising, but the prompt implementation of policy, including swap line agreements, has helped to mitigate this in the current COVID crisis. Additionally, the comparative exchange rate stability facilitated by international policy action can help to protect trade linkages, particularly on key goods (like food and medical supplies), and lay the groundwork for a prompt international economic recovery.

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4   The doctrine applies in the narrow set of circumstances where nations – through no fault of their own – need to compromise certain legal obligations in order to divert resources to meet the urgent needs of their population, requiring, however the international community to certify the event.

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26 Original sin redux and policy responses in emerging market economies during the COVID-19 pandemic

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During the Covid-19 pandemic, EME local currency bond markets experienced massive bond portfolio outflows, surges in bond yields and sharp exchange rate depreciation. These events reflected the financial channel of the exchange rate arising from 'original sin redux'. This chapter lays out the key mechanisms of this channel and how it played out in a particularly stark manner during the pandemic. It then reviews the policy response of EME central banks. In particular, through the launch of bond purchase programmes, EME central banks acted as buyers of last resort and calmed market dislocations.

The COVID-19 pandemic and its economic and financial impact has hit emerging market economies (EMEs) particularly hard. At the eye of the storm have been their local currency bond markets. Massive bond portfolio outflows, driven by the exit of foreign investors, have triggered sharp surges in bond yields and exchange rate depreciation.

The extent of stress eclipsed that seen in previous episodes of market turmoil (Hördahl and Shim 2020). This becomes evident when comparing the size of cumulative bond portfolio outflows, exchange rate depreciation and bond yield increases during the COVID-19 crisis with those observed during the height of the great financial crisis (GFC) in 2008 and during the 'taper tantrum' of 2013 (Figure 1). The outflows reported by the Institute of International Finance between mid-February and early April 2020 surpassed three times those observed during the GFC or the taper tantrum (Figure 1, left-hand panel). EME currencies weakened sharply, especially against the US dollar (centre panel). By late March 2020, EME currencies had depreciated by around 8% against the dollar on average compared with their levels two months earlier. This decline

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was almost as sharp as the 10% or more average depreciation seen in the aftermath of the Lehman collapse, and almost double that experienced at the time of the taper tantrum. EME local currency bond yields rose much more rapidly during the Covid-19 crisis than during the previous two episodes of turmoil (right-hand panel).

These comparisons demonstrate the important channels of interaction between EME portfolio flows, exchange rates and local currency bond yields during periods of large capital outflows. Recent events have exposed in a particularly stark way the financial channel of the exchange rate (BIS 2019) – i.e. the amplifying and mutually reinforcing interactions of currency fluctuations and financial market outcomes in EMEs arising from 'original sin redux' (Carstens and Shin 2019). In this chapter, we lay out the key mechanisms of this channel and how it has played out during the pandemic. We then review the policy response of EME central banks in particular through the launch of bond purchase programmes, acting as buyers of last resort to calm market dislocations.

Figure 1   EME bond portfolio flows, exchange rates and bond yields during market turmoil

Bond flows[1] (USD bn)   Exchange rate change[2]   Change in sovereign bond yield[3] (ppt)
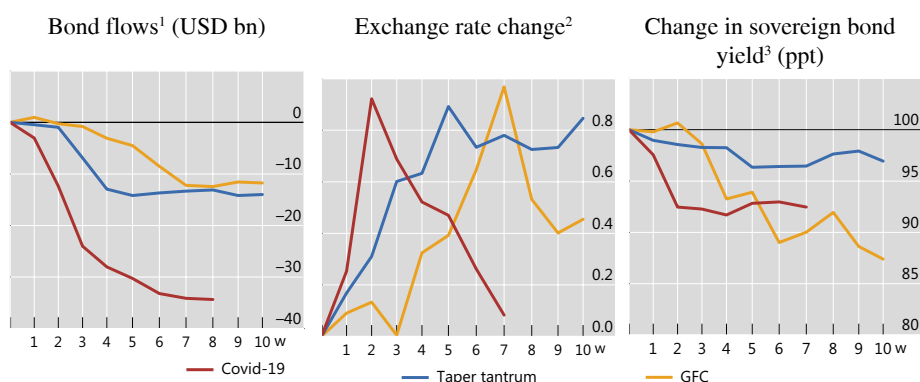
Covid-19: 4 March to 24 April 2020; taper tantrum: 27 May to 28 August 2013; Great Financial Crisis (GFC): 15 September to 19 December 2008. 1) Cumulative weekly portfolio debt flows to the following eight EMEs tracked by the Institute of International Finance (IIF): Hungary, India, Indonesia, Mexico, Poland, South Africa, Thailand and Ukraine. 2) Cumulative weekly change in bilateral dollar exchange rate. Simple average across 19 EMEs. 3) Cumulative weekly change in five-year local currency sovereign bond yield. Simple average across 19 EMEs. Simple average across 19 EMEs.

Sources: Bloomberg; IIF; authors' calculations.

Original sin redux during the COVID-19 pandemic

The overriding lesson from the EME financial crises of the 1990s was that currency mismatches combined with maturity mismatches gave rise to balance sheet vulnerabilities from sudden capital outflows and exchange rate depreciation. In response, many EMEs devoted major efforts to developing local currency bond markets, thereby overcoming 'original sin' – the inability of borrowing internationally in their domestic currency

(Eichengreen and Hausmann 1999, Eichengreen et al. 2003). While EME corporates still rely on foreign currency credit, EME sovereigns have increasingly turned to local currency issuance. Indeed, local currency bond markets in EMEs now represent the lion's share of outstanding bonds in EMEs (Figure 2, left-hand panel).

However, the experience especially after the GFC has shown that borrowing in domestic currency has not insulated EMEs from financial repercussions of currency movements, as sharp currency declines have set in motion amplifying dynamics between EME bond outflows and spikes in EME local currency bond spread. This is because EMEs, while borrowing on local currency, do so to large extent from foreign investors owing to their smaller domestic institutional investor base (Figure 2, right-hand panel). If these investors evaluate gains and losses in terms of dollars or other advanced economy (AE) currencies, unhedged holdings of EME local currency bonds increase the risk exposure for the investors, giving rise to a potentially greater sensitivity of holdings to shifts in measured risks. As a consequence, reliance on foreign portfolio capital leads to a greater vulnerability to global financial shocks, as such capital can be more flighty in times of stress.

Figure 2   EME local currency government bonds (%)

Composition of central government bonds[1]

Foreign ownership of local currency government bonds[2]

Domestic:
Floating rate
Inflation-indexed
Straight fixed rate
Foreign currency

International:
Foreign currency

2019   2009
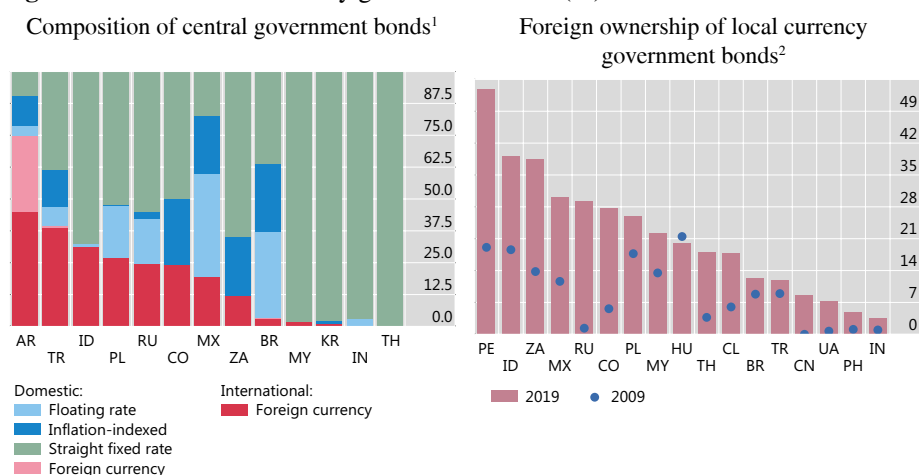
Notes: 1) Based on amounts outstanding at end-2018. Domestic bonds exclude money market instruments. International bonds are typically issued in foreign currency; some countries, such as Argentina, also issue foreign currency debt domestically. 2) Central government bonds.

Source: Sdapted from Graph A2 in Cantú et al. (2020).

The exchange rate plays an important amplifying role in the portfolio adjustment of global investors. Borrowing in local currency from foreign lenders mitigates currency mismatch for the borrower but shifts the currency mismatches to the lenders' balance sheets. Carstens and Shin (2019) dubbed this pheno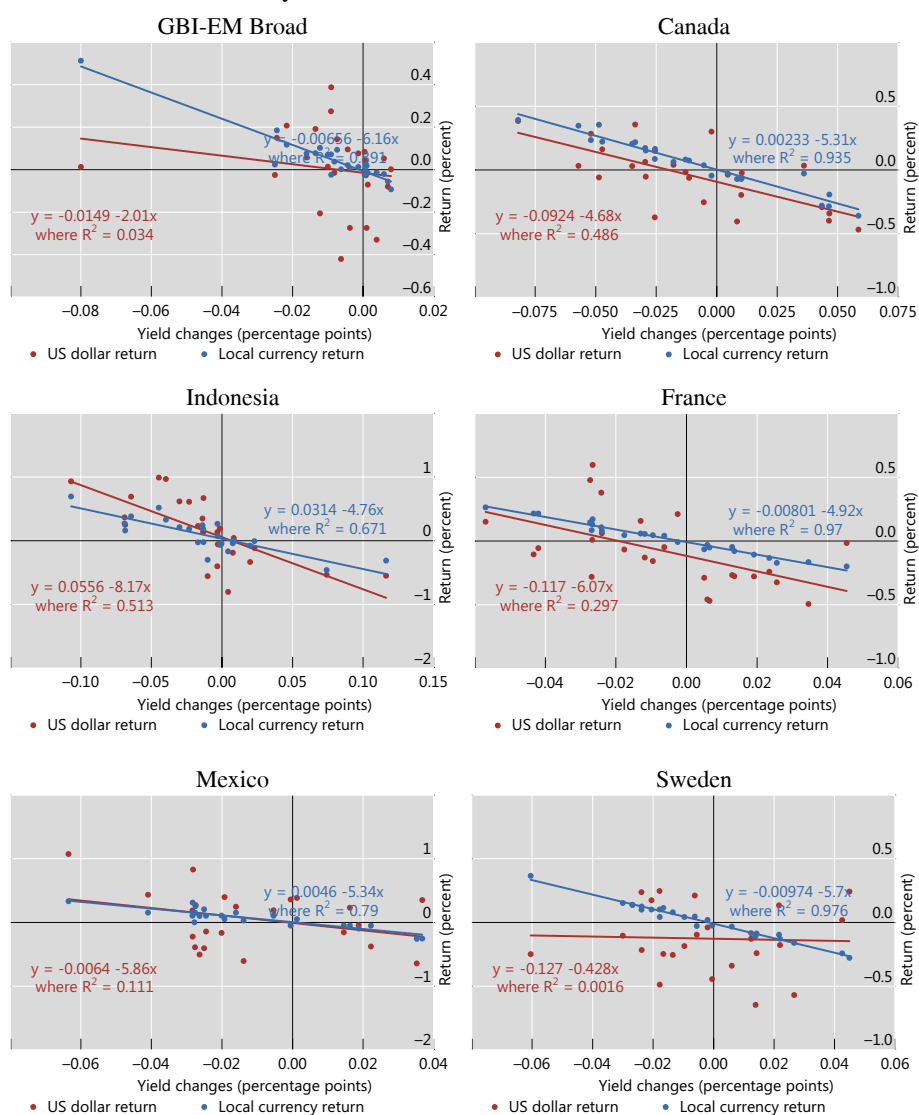menon 'original sin redux' to highlight that currency mismatches in EMEs have migrated from borrowers to lenders, but have not been eliminated. The foreign lenders now have assets in EME currencies but obligations to beneficiaries or policyholders in their own currency. When EME currencies depreciate in a broad-based downturn, the value of assets of the foreign investors decreases in their home currency terms. When the risk capacity of the foreign investors is limited, EME currency depreciation would trigger sales of EME bonds, which pushes up EME bond spreads. The same mechanism operates in reverse when EME exchange rates appreciate: the gains to foreign investors are amplified by EME currency appreciation, leading to inflows. These mechanisms have played out systematically and forcefully over the past decade or so (Hofmann et al. 2019).

The financial shock wrought by the Covid-19 pandemic provides a vivid illustration of original sin redux and its underlying mechanisms (Hofmann et al. 2020, Hördahl and Shim 2020). EMEs with higher shares of foreign ownership in local currency bond markets have experienced significantly larger increases in local currency bond spreads. Moreover, the negative relationship between bond flows and bond yield changes strengthened across all EMEs during the COVID-19 pandemic. At the same time, there was a close link between currency depreciation and increase in local currency yields across EMEs (Figure 1).

The tight link between EME exchange rates and local currency bond prices before and during the COVID-19 pandemic can be seen by comparing the returns of bond funds in local currency terms and in US dollar terms from the perspective of US dollar-based global investors (Figures 3 and 4). For EME bonds, US dollar returns are more sensitive to yield changes than local currency returns as shown in the left-hand panels in Figures 3 and 4 where the red lines are steeper than the blue lines. The relationship between exchange rates and yields during the COVID-19 pandemic (Figure 4, left-hand panels) has been in line with the general pattern observed before the pandemic (Figure 3, left-hand panels). In this sense, exchange rate changes reinforced the impact of yield changes.

Figure 3   EME and advanced economy local currency bond index returns, 2 January
to 10 February 2020

GBI-EM Broad

$y = -0.00656 -6.16x$
where $R^2 = 0.591$

$y = -0.0149 -2.01x$
where $R^2 = 0.034$

● US dollar return   ● Local currency return

Canada

$y = 0.00233 -5.31x$
where $R^2 = 0.935$

$y = -0.0924 -4.68x$
where $R^2 = 0.486$

● US dollar return   ● Local currency return

Indonesia

$y = 0.0314 -4.76x$
where $R^2 = 0.671$

$y = 0.0556 -8.17x$
where $R^2 = 0.513$

● US dollar return   ● Local currency return

France

$y = -0.00801 -4.92x$
where $R^2 = 0.97$

$y = -0.117 -6.07x$
where $R^2 = 0.297$

● US dollar return   ● Local currency return

Mexico

$y = 0.0046 -5.34x$
where $R^2 = 0.79$

$y = -0.0064 -5.86x$
where $R^2 = 0.111$

● US dollar return   ● Local currency return

Sweden

$y = -0.00974 -5.7x$
where $R^2 = 0.976$

$y = -0.127 -0.428x$
where $R^2 = 0.0016$

● US dollar return   ● Local currency return

Notes: GBI-EM Broad 5–7 years, principal daily return in the US dollar and in local currency against daily yield change. GBI Broad 5–7 years for Canada, France and Sweden, principal daily return in the US dollar and in local currency against daily yield change.

Sources: JPMorgan Chase; authors' calculations.

Figure 4   EME and advanced economy local currency bond index returns, 11 February to 23 March 2020

GBI-EM Broad

y = -0.0114 -4.98x
where R² = 0.955

y = -0.164 -10.1x
where R² = 0.817

Yield changes (percentage points)

● US dollar return   ● Local currency return

Canada

y = 0.0491 -4.37x
where R² = 0.769

y = -0.304 -7.85x
where R² = 0.464

Yield changes (percentage points)

● US dollar return   ● Local currency return

Indonesia

y = -0.0286 -4.68x
where R² = 0.833

y = -0.343 -10.4x
where R² = 0.795

Yield changes (percentage points)

● US dollar return   ● Local currency return

France

y = -0.0291 -5x
where R² = 0.941

y = -0.0467 -8.63x
where R² = 0.337

Yield changes (percentage points)

● US dollar return   ● Local currency return

Mexico

y = 0.0444 -5.48x
where R² = 0.971

y = -0.685 -10.1x
where R² = 0.733

Yield changes (percentage points)

● US dollar return   ● Local currency return

Sweden

y = -0.0138 -5.19x
where R² = 0.083

y = -0.227 -10x
where R² = 0.268

Yield changes (percentage points)

● US dollar return   ● Local currency return

Notes: GBI-EM Broad 5–7 years, principal daily return in the US dollar and in local currency against daily yield change. GBI Broad 5–7 years for Canada, France and Sweden, principal daily return in the US dollar and in local currency against daily yield change.

Sources: JPMorgan Chase; authors' calculations.

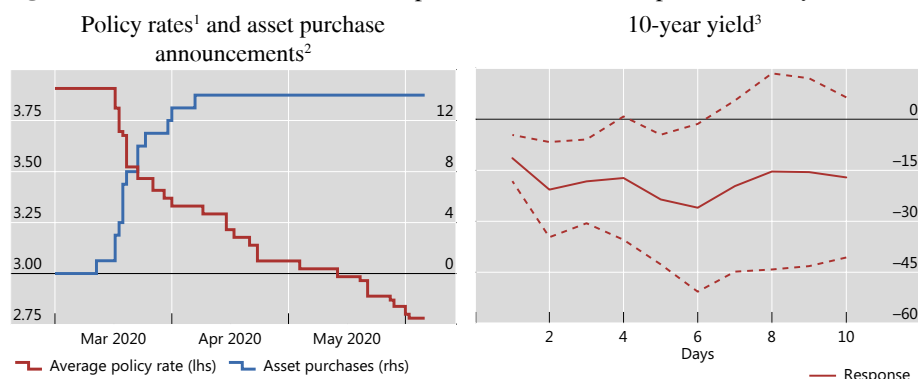For AEs, by contrast, US dollar returns were less sensitive to yield changes than local currency returns in the pre-COVID-19 period (Figure 3, right-hand panels), suggesting that the exchange rate dampened the impact on investor returns. However, ever since the COVID-19 outbreak started going global, bond returns in AEs have displayed a pattern more similar to that in EMEs (Figure 4, right-hand panels).

Policy responses

The policy response by EME central banks to the economic and financial fallout of the pandemic was multifaceted. They cut policy rates (Figure 5, left-hand panel), intervened in FX markets and provided extra liquidity by extending existing facilities or setting up new ones and by broadening eligible collateral for repo operations. Many launched local currency bond purchase programmes to counteract market dislocations (Figure 5, left-hand panel), acting as dealers or buyers of last resort. Many EMEs had already introduced various unconventional balance sheet policy measures to provide liquidity to domestic markets after the GFC and the taper tantrum, while local currency bond purchases were generally not used on these occasions. That a large number of EMEs have launched such programmes in recent weeks has therefore expanded the policy toolkit for use in meeting the challenges from capital flow and exchange rate swings (Arslan et al. 2020).[2]

Figure 5 EME central banks' asset purchases and their impact on bond yields

Policy rates[1] and asset purchase announcements[2]

10-year yield[3]

Average policy rate (lhs) Asset purchases (rhs)

Response

Notes: 1) Average policy rate across EMEs. 2) Cumulative count of EMEs that announced bond purchase programmes based on the day of the initial announcement. 3) Estimated impact of bond purchase announcement based on panel local linear projection regressions in the spirit of Jordà (2005). The regressions control for country and time fixed effects as well as for changes in domestic policy rates. Standard errors are clustered at the country level. Confidence intervals (dotted lines) are 90%. The sample includes 13 EMEs covered in Arslan et al. (2020). Daily data from 1 January to 29 April 2020 are used.

Sources: Bloomberg; national data; BIS; authors' calculations.

Local currency bond yields fell significantly following the programme announcements (Graph 5, right-hand panel). In particular, 10-year bond yields fell by about 10 basis points on the day of the announcement. The effect persisted and further built up in subsequent trading days, reaching a maximum of –25 basis points after six trading days. These positive initial market reactions suggest that the programmes were successful in restoring investor confidence and did not lead to higher inflation expectations, for example due to perceived risks of fiscal dominance. That said, market reactions varied between countries, depending on initial conditions in each jurisdiction as well as on the scope, scale and communication of the bond purchase programmes (Arslan et al. 2020).

Sound policy frameworks at the national level can be supported by credible and effective global and regional financial safety nets, reinforced by short-term liquidity support and bilateral lines from other central banks. The swap and repo facilities announced by the Federal Reserve have eased dollar funding conditions. Given the 'dual' nature of the problem – with spreads and exchange rates spiralling in tandem – dollar swap lines will also quell domestic financial stringency. From a longer-term perspective, the development of a deep domestic institutional investor base as well as liquid FX derivatives markets for ease of hedging will be key to further reducing EMEs' vulnerability to external financial shocks, such as the fallout from the COVID-19 pandemic that is now materialising (Carstens and Shin 2019, CGFS 2019, BIS 2019).

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27 Corona spreads to emerging markets

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After an initial lull, financial markets reacted with a vengeance to the COVID-19 pandemic, touching all asset categories—stocks, bonds, commodities and currencies. Comparisons with 2008 are inevitable, but the ultimate impact on markets is still unclear. In this chapter, we suggest that the spread of the pandemic has limited explanatory power over financial stress. Initially, as the pandemic only affected advanced countries, markets penalized more emerging economies. Subsequently, emerging nations benefited from the global rebound of the markets, even though death rates are now expanding in the emerging world. Despite initial concern, emerging economies have been less penalised than in 2008. Once more, this has exposed the vulnerabilities of emerging markets to global shocks but also the importance of the coordinated actions by core central banks to supply liquidity to the markets.

The widespread nature of the world health emergency has spurred an active debate on the economic implications of the COVID-19 pandemic and the required policy reaction to 'flatten the curve' – both the epidemiological curve and the curve of the inevitable recession that accompanies it (Gourinchas 2020).

The implications of this large coordinated shock for financial stability are also under scrutiny, with the focus of financial fragility located outside the banking sector, unlike 2008 (Danielsson et al. 2020, Acharya and Steffen 2020). Nevertheless, more than a decade of liquidity injections by central banks have resulted in a highly leveraged corporate sector, which makes it fragile to a credit crunch, even if coming from the shadow banking sector (Goodhart and Pradhan, Danielsson et al. 2020). In this setting, conventional monetary policy (hampered by the zero lower bound, anyway) or even the unconventional policies put in place after the Global Financial Crisis (GFC) may not be up to the task (Cochrane 2020).

As in the wake of the GFC, policymakers must also consider the externalities of their actions, both in terms of public health and economic policies. There is a call for international coordination to cushion the economic downturn and restart the world economy (Berglöf and Farrar. 2020, Group of Concerned Economists 2020). The nature of the global shock should determine the priorities in terms of cooperation, namely, coordinated fiscal stimuli or monetary easing, for example via central bank swap lines.

In this chapter, we take a cue from the reaction of financial markets to the unfolding medical emergency to identify the nature of the financial shock and the policy implications therefrom.

How markets priced COVID-19: OECD versus emerging markets

The COVID-19 virus appeared in Wuhan, China, in December 2019. Until February, when the virus erupted in Italy, the threat to the world economy was thought to be minor. As the virus spread in Europe and countries reacted with partial lockdowns, it became clear that the world economy is facing a major crisis. Global financial markets reacted strongly by the end of February (Figure 1). A formal break test points to 10 March, when the end of year rally that began on October 2019 fully reversed itself. However, by the end of March, the US stock market started to recover.

Figure 1   SP500 January 2019 to June 2020

The crisis was felt in all major financial assets and markets. The MSCI world stock price index mirrored Wall Street (Figure 2). The MSCI emerging markets followed suit. The view that emerges from world stock markets is a high degree of co-movement. We plot in Figure 2 the weighted (by population) average death rate in OECD and non-OECD countries. After initially overshooting, financial markets started recovering even as death rates were accelerating among OECD countries. In emerging markets, death rates are still rising, albeit from a lower level.

It is clear that, in the aggregate, markets are anticipating the recovery from the crisis and assuming that the worst is behind us. It is also apparent that COVID 19 is treated by stock markets as a global phenomenon without discriminating against emerging economies. On the positive side, continued co-movement and recovery suggest that stock markets are not anticipating an end to globalism.

Figure 2   World stock prices
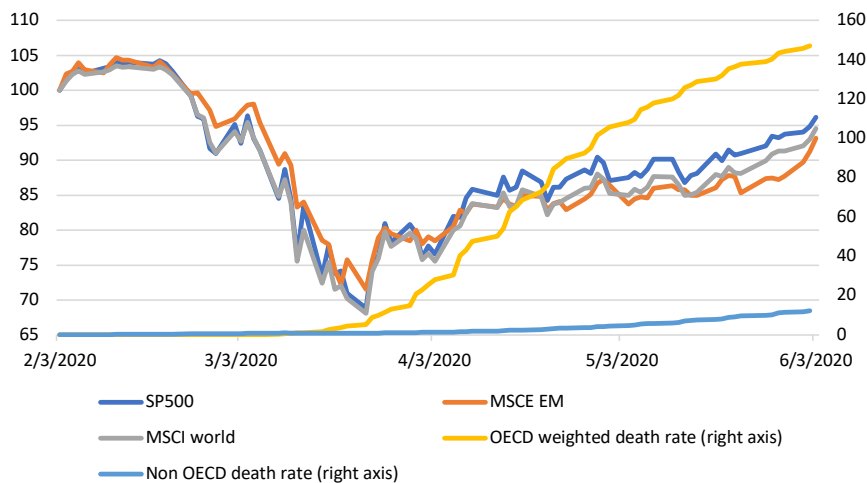
Foreign exchange markets also reacted strongly to the pandemic (Figure 3). Unlike stock markets, we can see that emerging markets, echoing previous global crises, initially suffered a larger depreciation than advanced economies. However, emerging economies' exchange rates stabilized relative to advanced economies' currencies by the end of March (Figure 4), at the same time that stock markets started to recover. In May, an increasingly rapid spread of COVID-19 to less developed economies, mainly in Latin America, was correlated with a 4% appreciation of a basket of emerging economies' currencies. Arguably, the immediate response of monetary authorities in the leading economies also improved the outlook for emerging economies.

Taken as a group, emerging countries have depreciated by 8% versus advanced economies' currencies. In comparison, from the beginning of the Lehman crisis in September 2008 to the end of March 2009 (when stock markets started to recover), the same basket of emerging countries' currencies depreciated by 20%. While foreign exchange markets 'punished' emerging markets more than they did advanced ones, they did so to a lesser extent than in the GFC.

Figure 3 Reaction of foreign exchange markets, February to June 2020

USD exchange rate index emerging economies basket
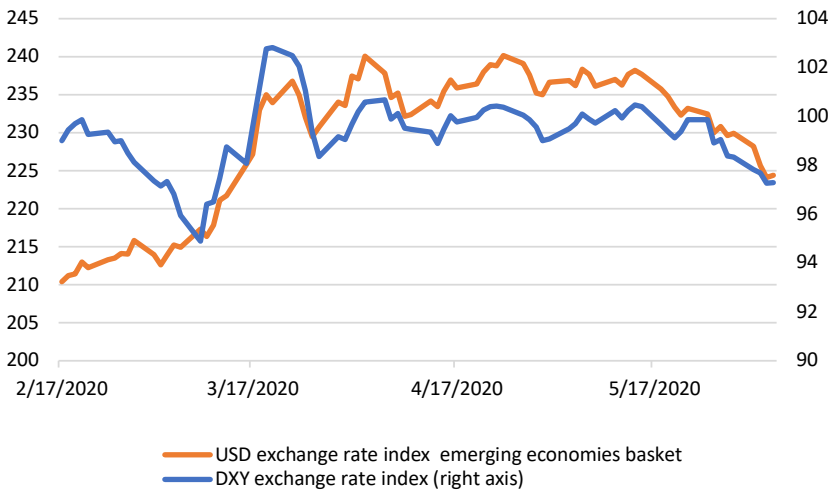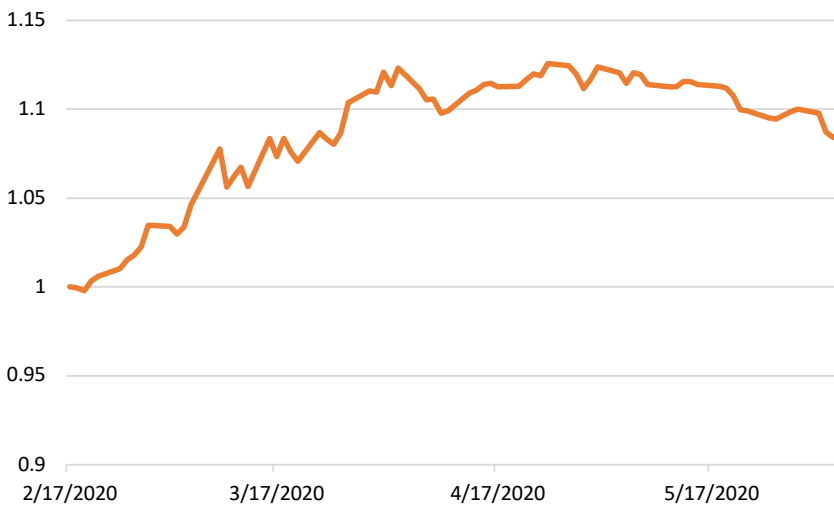DXY exchange rate index (right axis)

Figure 4 Relative depreciation of emerging market currencies, February-June 2020

The aggregate results analysed above are essentially uncontrolled correlations that could mask more adverse effects for emerging market economies. To address this concern, we assembled a panel data set of 167 countries and tested whether foreign exchange markets reacted differentially to COVID-19 deaths in emerging countries, controlling for pre-existing conditions. We regressed the daily change in the exchange rate as a function of COVID-19 death rate; a control for time elapsed since this variable captures the 'flattening of the curve.' For a smaller subset of (57) countries, we also controlled for start-of-period country 10-year bond spreads vis-à-vis the US to capture pre-existing risk premium and expected depreciation. All specifications included two lags of the dependent variable to capture exchange rate dynamics. We interacted the explanatory variables (except for FX depreciation lags) with a dummy that equals one if a country belongs to the OECD.

Our panel data analysis shows that daily currency depreciation is positively affected by death rates. Increases to a country's death rate from COVID-19 brings about a daily depreciation of the exchange rate vis-a-vis the US dollar. However, when we introduce a differential effect for OECD and non-OECD economies, the significance of the effect of death rates on exchange rate devaluations declines and, quite surprisingly, COVID-19 death rates affected only OECD countries. In the smaller sample, countries that had higher risk premiums initially (spreads) versus the US, which were mainly emerging countries, suffered greater depreciation irrespective of their exposure to COVID-19. When it comes to emerging markets, it seems that markets (so far) ignored their country-specific death rates. Recall from Figure 2 that death rates, as of the time of writing this paper, are an order of magnitude lower in emerging economies compared to advanced economies.

When we account for time elapsed since the first death, the regression results indicate that as time progresses, exchange rates are converging back to the original rates. Moreover, as time progresses, the effect of death rates on exchange rate depreciation is mitigated by the convergence trend. When we introduce a differential effect for OECD and non-OECD economies, we find that non-OECD economies enjoy an advantage over emerging economies in terms of returning to pre-crisis exchange rates. Again, this result echoes the aggregate picture of Figures 3 and 4. Despite rising death rates in emerging economies, their exchange rates are stable, all be it, at more depreciated levels than their OECD counterparts.

Another view on the financial repercussions of COVID-19 can be gleaned from the sovereign bond market. The initial impact of the crisis on emerging market bond yields was very strong. The EMBI+ spread increased from 300 to 650 basis points within a month (Figure 5). At the beginning of the GFC, in September 2008, emerging market spreads increased from 300 to 850 basis points. Similarly to exchange rates, the impact on emerging markets was smaller than in 2008. Moreover, the EMBI+ spread has recovered most of the losses by June 2020. As we saw in the case of foreign exchange depreciation, the EMBI+ spreads have recovered despite the spread of COVID-19 to emerging markets. This suggests that country risk in emerging markets is reacting to the global financial system's recovery rather than to the rising death toll.

Figure 5   Ten-year bond yields
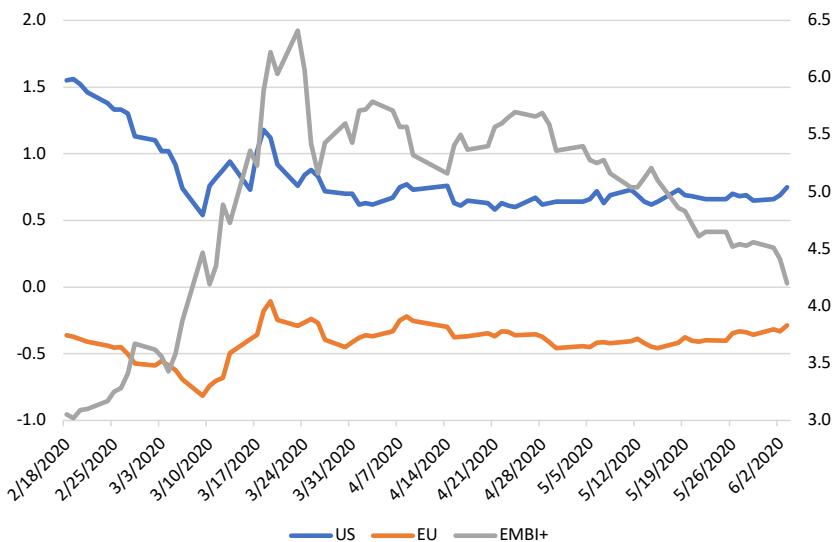
These aggregate trends hide a substantial amount of variation across and within groups of countries. Not all emerging markets have been affected by the pandemic in the same proportion, as, for example, the recent death tolls are much higher in Brazil and Mexico than in China or Argentina.

We used the same panel of 57 countries to test for a differential impact of the pandemic on the 10-year bond spreads against the US. We regressed a simple model of the change of spreads on each country's daily death rates, base yields, debt burden (gross public debt/GDP), number of days since the first recorded deaths, and foreign exchange depreciation. Because depreciation is likely to be endogenous, we instrumented it with lagged values of itself and the death rate. Finally, we controlled for common shocks,

namely, the US Treasury yields and world mortality rates. We interacted the death rates with the same OECD dummy. Our results, plotted in Figure 6, show that markets seem to incorporate the dynamics of the pandemic.

The first panel of Figure 6 contains the marginal effects of the main variables of the model estimated for the full sample (1 February to 4 June). Puzzlingly, we estimate that a one standard deviation shock to death rates results in a faster bond spread contraction by 0.1 standard deviations per day. This effect is fairly small, but it is consistent with the results for foreign exchange in that OECD nations did not benefit from this 'death prize,' unlike emerging ones. Other controls behave as expected; in particular, we find a negative relation between lagged base yields and change in spreads and a positive effect of FX depreciation on yields (not represented).

Figure 6   Average marginal effects on 10-year bonds
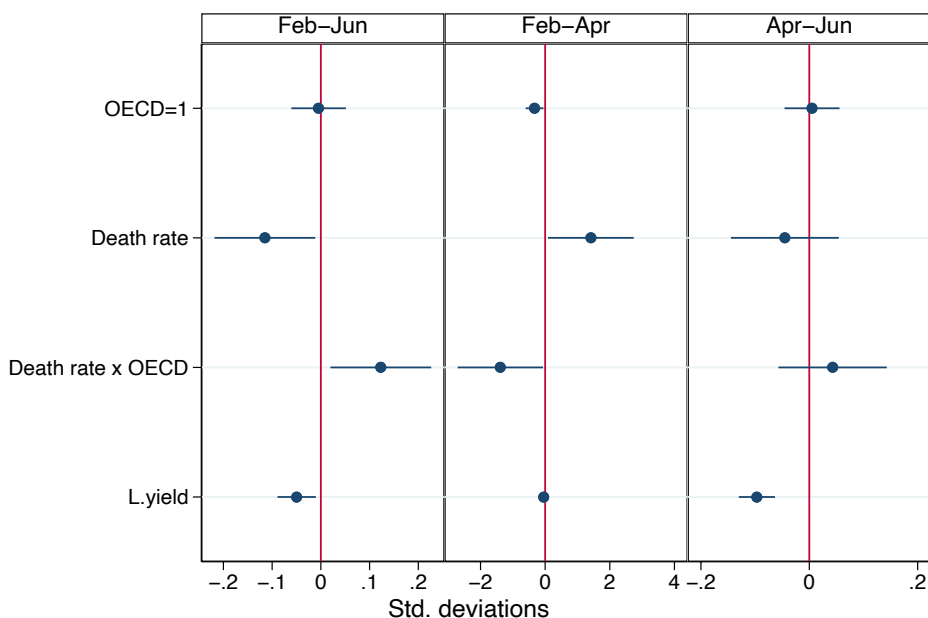
Dependent variable: change in 10yr bonds spreads (against the US); **Deaths rate**: deaths per million; **L.yield**: lagged bond yield; **FX deval**: lagged FX devaluation against USD. **Sample** includes 57 countries.

However, if we split the sample by the two phases of the markets' reaction to the pandemic (as implicit in Figures 2 and 4), the effects line up with expectations. In the 'acceleration phase' (February to April), the marginal effect of deaths is positive and much larger at 1.4 standard deviations. In our sample, this is equivalent to 20 basis points per day, definitely a non-trivial amount. Furthermore, this 'death penalty' only applies to emerging and developing nations. In the 'deceleration phase' (right panel), markets are no longer taking notice of death rates in both groups of nations.

This evidence underscores the fact that markets treated this crisis as another global financial shock, as opposed to an idiosyncratic health crisis. As the early phase of the pandemic disproportionately touched advanced nations, markets penalised more the financial assets of emerging nations, which at that point had barely been affected by COVID-19 (apart from China). In the second phase, the rebound of the currencies and bonds of emerging nations also lagged the recovery among advanced nations. On the positive side, despite the growing pace of contagion among EMEs (Figure 2), these economies are benefitting from the global financial markets' normalisation. While their death rates are still an order of magnitude lower than in OECD nations, they are enjoying a rapid decile in spreads (Figure 5). And yet, the mainly advanced nations with higher death tolls are the ones benefiting now from a faster reduction in spreads against the US.

In other words, the evidence from financial markets looks very similar to the beginning of previous global recessions. Indeed, most of the immediate response, mainly from central banks, echoed those of 2008, albeit with a much shorter time lag. Though the US is not immune to the COVID-19 pandemic, now, as then, US assets provide a safe haven in times of global crisis. Then as now, emerging markets' financial assets seem to exhibit a larger price decline. Therefore, the role of the FED in supplying global liquidity is paramount.

Policy implications

The effect of the deaths from the virus is significant, yet explain only a small fraction of the variance in asset prices over our period of investigation. Therefore, the treatment, especially by central banks, of the crisis as yet another global financial crisis is appropriate. The crisis exposes, again, the vulnerabilities of emerging markets to global shocks even though their death rates continue to be lower, emphasizing the need to build up liquidity reserves. However, contrary to initially very pessimistic outlook (Bolton et al. 2020), it seems that the moves by the major central banks to supply liquidity and stabilise financial markets have also benefited emerging economies. It also appears that, so far, emerging economies have been less penalised than in 2008. At least, as captured by stock markets, exchange rates, and bond spreads, the recent surge in deaths in emerging economies has not reignited the financial panic we observed earlier in the crisis.

Finally, before the crisis, the financial community and economists were deeply (overly?) interested in cryptocurrencies. This was the first market test under duress for these currencies. Despite massive injections of liquidity by the FED, there is no run against the USD in favour of cryptocurrencies.

What about allegedly stable currencies such as Libra? Our analysis of global financial data crisis highlights, again, the need for monetary authorities that can immediately inject liquidity and support fiscal efforts to provide for millions of quarantined households is an important first line of defence in the face of a global crisis. As the Great Depression famously showed, fixed exchange standards and links to gold compound the economic costs of global macro shocks (Eichengreen 1992). The case for credible but flexible sovereign currencies seems to have been strengthened by this pandemic. At best, Libra and similar products could be yet another financial asset. Still, they are not what money is about and why society invented it and entrusted its management to central banks.

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Data appendix

Dates: 16 February to 30 March 2020.

List of countries: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong- Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel,   Italy, Japan, Kenya, Latvia, Lithuania, Malaysia, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Philippines, Poland, Portugal, Qatar, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom, United States, Vietnam.

COVID-19 daily data: https://www.worldometers.info/coronavirus/

Exchange rates: https://www.xe.com/currencytables/

Bond yields: https://tradingeconomics.com/bonds

Market indices: https://finance.yahoo.com/

Openness (Imports to GDP ratio): World Bank: https://data.worldbank.org/indicator/ne.imp.gnfs.zs

Table A1 Change in spreads of 10 bonds, 17 February to 23 March 2020

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
devaluation	7.765* (2.67)		8.183** (2.72)		7.335* (2.47)					
F.X. variability						28.82** (3.23)		29.87** (3.30)		27.59** (2.94)
Deaths-per-capita t		−0.172 (−1.64)	−0.233* (−2.48)				−0.172 (−1.64)	−0.233** (−2.69)		
Deaths-per-capita t+1				0.007*** (3.74)	0.003* (2.08)				0.007*** (3.74)	0.003 (1.46)
OECD	0.475** (2.46)	−0.215 (−1.09)	0.259 (1.16)	0.030 (0.19)	0.513* (2.56)	0.758** (3.05)	−0.215 (−1.09)	0.515 (1.82)	0.0304 (0.19)	0.786** (3.04)
OECD*devaluation	−0.11*** (−3.70)		−0.02*** (−3.51)		−9.588** (−3.37)					
yield	0.089* (2.12)	0.111** (2.79)	0.070 (1.64)	0.111* (2.68)	0.086 (1.98)	0.094* (2.47)	0.111** (2.79)	0.076 (1.99)	0.111* (2.68)	0.090* (2.30)
OECD*deaths-per-capita		0.179 (1.70)	0.238* (2.52)				0.179 (1.70)	0.238** (2.75)		
OECD*deaths-per-capita				−0.010*** (−3.89)	−0.007** (−3.01)				−0.010*** (−3.89)	−0.006* (−2.45)
OECD* F.X. variability						−37.63*** (−4.05)		−36.63*** (−3.78)		−36.08*** (−3.63)
N	54	54	54	54	54	54	54	54	54	54

Notes: t statistics in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001

Table A2   Devaluation vis-à-vis the US dollar, 17 February to 23 March 2020

	(1)	(2)	(3)	(4)	(5)
Deaths-per-capita t		-0.003	0.015		
		(-0.25)	(1.28)		
Deaths-per-capita t+1				0.001***	0.0003*
				(6.84)	(2.35)
openness	-0.046**		-0.035		-0.032
	(-2.80)		(-1.85)		(-1.71)
euro	-0.051***		-0.057**		-0.063**
	(-3.83)		(-3.40)		(-3.49)
yield	0.004		0.007		0.005
	(1.15)		(1.65)		(1.39)
OECD		-0.0005	0.048	0.0002	0.037
		(-0.02)	(1.77)	(0.01)	(1.55)
OECD*deaths-per-capita		0.002	-0.015		
		(0.17)	(-1.32)		
OECD*deaths-per-capita				-0.0005*	-0.0003
				(-2.52)	(-1.34)
N	54	54	54	54	54

Notes: t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A3   Devaluation vis-à-vis the US dollar, 17 February to 23 March 2020

	(1)	(2)	(3)	(4)	(5)
Deaths-per-capita t		-0.0004	0.003		
		(-0.12)	(0.91)		
Deaths-per-capita t+1				0.0002***	0.0001**
				(8.16)	(3.30)
openness	-0.016***		-0.012*		-0.011*
	(-3.56)		(-2.30)		(-2.07)
euro	-0.005		-0.008*		-0.009*
	(-1.65)		(-2.02)		(-2.25)
yield	0.0004		0.001		0.001
	(0.50)		(1.16)		(0.87)
OECD		0.006	0.014	0.007	0.013
		(0.96)	(1.92)	(1.31)	(1.95)
OECD*deaths-per-capita		0.0003	-0.003		
		(0.07)	(-0.94)		
_ OECD*deaths-per-capita				-0.0002***	-0.0001*
				(-4.31)	(-2.02)
N	54	54	54	54	54

Notes: t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

28 The IMF and the World Bank can do more

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The Bretton Woods institutions – the IMF and the World Bank – have withstood the initial pressure of assisting emerging economies in dealing with the health and economic fallout of the COVID-19 crisis. Huge challenges remain. Crisis management in emerging markets is more difficult than in advanced economies. Existing health infrastructure is usually deficient, resources for COVID-19 testing and treatment are scarce, the large share of the informal economy means a higher cost of the lockdown on households, and fiscal space was scarce even before COVID-19 hit. The continued support of the IMF and the World Bank is sorely needed.

The World Bank and the IMF have performed well in confronting a global pandemic undreamed of when these two institutions were established at Bretton Woods 75 years ago. Their leaders now have an obligation to harness resources still further to deal with the health and economic fallout of the COVID-19 crisis.

The challenge is staggering. The IMF puts a conservative estimate on the financing needs of emerging market countries of $2.5 trillion. This amount is in addition to an estimated $5.6 trillion of emerging economies' syndicated loans and bonds coming due in 2020. Already over 120 countries have sought assistance from the IMF, a significantly higher number than in previous crises.

Crisis management in emerging markets is more difficult than in advanced economies. Existing health infrastructure is usually deficient, resources for COVID-19 testing and treatment are scarce, the large share of the informal economy means a higher cost of the lockdown on households, and food production and distribution are more easily disrupted because of border closures. The support of the IMF and the World Bank is sorely needed.

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1   This chapter builds on an earlier article "The G20 should do more to harness the IMF and World Bank," published by the Peterson Institute for International Economics, Washington DC.

There is another difficulty in emerging markets too. In advanced economies, fiscal expansion may not be an issue as near-zero interest rates imply that higher levels of debt are sustainable now and that the cost of higher debt for future generations is small (Blanchard 2019). If anything, interest rates are likely to be lower in the future than they were expected to be before the COVID-19 crisis. This is not the case for most emerging markets, where debt sustainability concerns were present before the crisis. Several countries – Somalia, Sudan, and Zimbabwe – were already in arrears to the IMF and the World Bank, and are now cut off from fresh financing. Argentina, Ecuador and Lebanon have defaulted too since the COVID-19 crisis started.

The two Bretton Woods institutions are providing liquidity at a brisk pace. The IMF has shown a "whatever it takes" resolve, and the World Bank has made available $14 billion in immediate support (IMF 2020a, 2020b). The two institutions should now:

- set priorities for financing liquidity constraints throughout all developing countries, ensuring that their resources do not get siphoned off to existing clients;
- create new ways to reach vulnerable populations, especially people working in the informal economy;
- establish an advisory programme for countries whose corporate sector faces genuine insolvency as opposed to liquidity constraints; and
- start debt sustainability discussions, expanding the official moratorium to all low- and middle-income countries and forcing the restructuring of payments to private creditors.

What the IMF and the World Bank have done

The IMF's Rapid-disbursing Emergency Financing Facilities address COVID-19 directly. The IMF has used this instrument to extend liquidity assistance (an estimated $50 billion) to member countries without needing to have a full-fledged programme in place for the Rapid Credit Facility ($10 billion) or Rapid Financing Instrument ($40 billion). Disbursements have begun, with the Kyrgyz Republic the first country to benefit.

The IMF can provide grants to countries with outstanding obligations to address disasters through the Catastrophe Containment and Relief Trust. This trust was created in the aftermath of Haiti's earthquake in 2010 and used to support Guinea, Liberia, and Sierra Leone during the 2014 Ebola outbreak. But with only $200 million ready for use, however, its funding is insufficient to address a pandemic such as COVID-19.

Recent analysis estimates that $787 billion of total IMF resources are currently available (Truman 2020a). In normal times, the IMF uses its quota-based resources to finance lending. A portion of those resources have already been committed, however, and some quota resources are not available because the financial conditions of several members are not strong enough to allow lending and for debt to be sustainable. If quota resources fall short, the IMF can activate the New Arrangements to Borrow, through which some member countries and institutions lend additional resources to the IMF up to $226 billion. As a third line of defence, the IMF has access to bilateral borrowing agreements up to $424 billion.

Researchers have also put forward proposals for a major issuance of the IMF's Special Drawing Rights (SDRs) as an additional financing instrument (Truman 2020b). In essence, IMF members can agree to a new allocation as part of the global response to the crisis generated by the COVID-19 pandemic. One drawback of this proposal is that the allocation would be made according to current IMF quotas, which means that only a fraction of the allocated SDRs would go to developing and emerging economies.

To address sector-specific challenges, the World Bank Group has prepared a package to strengthen the COVID-19 response in developing countries. The International Bank for Reconstruction and Development and the International Development Association are making an initial $6 billion available for the health response. Already in March 2020, the World Bank approved 25 projects worth $1.9 billion, and redeployed $1.7 billion from existing projects. For example, in countries ranging from Afghanistan and Haiti to India, Mongolia, and Tajikistan, the financing is used to recruit more medical staff and ensure that they are equipped to deliver emergency care (World Bank 2020). In Romania, a redeployed loan from a Catastrophe Deferred Drawdown Option facility finances crisis-related equipment purchases.

The World Bank's crisis response goes beyond health care. In Pakistan, the Bank finances remote learning for 50 million children whose schools had to close. As the crisis enters its third month, more operations focusing on education, social insurance, and support for the private sector are envisioned. On the latter, the International Finance Corporation, the World Bank's private sector arm, is extending $8 billion in trade finance and working capital to its clients.

By the end of May, World Bank support for emergency operations to fight COVID-19 has reached 100 developing countries – home to 70% of the world's population. Of these 100 countries, 39 are in sub-Saharan Africa.

The big issues are operational

Four issues require attention. First, there needs to be a priority algorithm for extending IMF and World Bank liquidity to developing economies, so that resources do not get rapidly appropriated by existing clients or on a 'first come, first served' basis. This tendency has been evident during previous crises, when redeployment of existing projects meant money was directed to larger countries with more fiscal space. Prioritisation is critical to target the most-needy emerging economies.

Second, one of the main challenges in developing countries is the prevalence of informality. This greatly exacerbates the impact of COVID-19 response, because workers in informal businesses are not able to take advantage of the various job retention schemes governments offer, often with IMF and World Bank financing. Furthermore, the business owner herself has no recourse to credit guarantees or small-business grants, also popular as crisis response in World Bank programmes. At present, the most vulnerable parts of the population are often outside the reach of emergency programmes.

Third, even after the health crisis abates, debt in the private sector will keep accumulating, presenting a drag on economic recovery. Policies are needed to restructure debt across a large number of firms throughout the economy. One such policy includes an automatic write-down on government claims in a firm in exchange for write-downs by the firm's private creditors. The challenges in implementing such a policy in developing economies are enormous, but can be resolved with the help of the Bretton Woods institutions.

Fourth, while official creditors have already agreed to a moratorium of debt payments for the poorest nations (the 76 IDA countries), the inclusion of other low- and middle-income countries and the restructuring of payments to private creditors remains unresolved. In the absence of private sector participation in the moratorium, official debt relief is taken up by a minority of countries.

Establishing an algorithm for assistance

First, IMF and World Bank operations should emphasise immediate prevention efforts, in particular travel restrictions (for example, banning international travel) and strict quarantines of those recently returned from abroad. Knowledge is still limited, but policymakers in emerging economies may have some reasons for optimism: low connectivity, especially in Africa, may slow the import and spread of the virus; warm weather may help (although this is highly speculative); and large young populations,

which appear to be less susceptible to the novel coronavirus, may help to reduce the overall health consequences. Unfortunately, once the virus is introduced, lockdowns and social distancing seem nearly impossible in many developing countries.

Second, the Bretton Woods institutions can provide resources for people hit by the crisis. Households that lose their income directly or indirectly because of containment measures or other impacts need government assistance. Cash transfers are needed for the self-employed and those without jobs or in the informal sector. The latter category accounts for the majority of people in emerging economies – and limits the applicability of containment measures (World Bank 2019). More emphasis should be given to creating or strengthening social safety nets, especially in low-income countries. The increase in poverty in sub-Saharan Africa and other parts of the developing world implied by a global recession may ultimately take more lives than the virus itself.

Crises increase income inequality. This will be even more acute with COVID-19, as workers in both the formal and informal sectors stay under lockdown at home. Recovery from the crisis will require progressive income policies, through tax reform and expanded access to social security. The potential costs of wider inclusion are substantial, outweighed by even larger benefits. Achieving a more equal income distribution is one of the twin goals of the World Bank, which has a wealth of experience of which programs work.

Third, projects can be developed to prevent excessive economic disruption. Policies should safeguard workers and employers, producers and consumers, lenders and borrowers, so that business can resume in earnest when the COVID-19 emergency abates. Company closures would cause loss of organisational know-how and the termination of productive long-term projects. Disruptions in the financial sector would amplify economic distress. Governments need to provide exceptional support to private firms, including wage subsidies. Large programmes of loans and guarantees have already been put in place in most countries, with the risks borne largely by taxpayers.

As with the World Bank redeploying resources from existing projects, the IMF can frontload its programmes and expand them to cover these new tasks. But frontloading will make it more difficult for the Fund to finance initially planned development projects to support growth. It also risks exhausting IMF resources by giving money to existing clients or first-come-first-served borrowers.

The virus crisis has exacerbated existing vulnerabilities in some industries, which will slow their recovery rates. As supply chains around the world are severely disrupted, trade in intermediate goods may take a different shape, which will depend largely on the trade restrictions that various countries have imposed during the crisis. Reconstituting global integration is of first-order importance. The World Bank and the IMF are flag bearers in this area.

Dealing with informality

One of the main challenges in developing countries is the prevalence of informality. Simply put, informal businesses operate in the shadow of the law, avoiding paying taxes but also not providing the security of income and benefits to their employees. Research by La Porta and Shleifer (2014) suggests that informal firms are small and have lower productivity than formal ones, their managers are usually less educated, and their employees are often not well-trained. It is difficult for them – workers and businesses alike – to break into the formal economy (Tokman 1992).

Informality is huge in low- and middle-income countries, accounting for between 13% of workers in Mongolia and 98% in Benin, Honduras, Mali and Uganda (Figure 1). The data are from the World Bank's JOIN survey, which provides analysis on social protection for the most vulnerable. The JOIN database contains informality data for 52 countries, often across several years. In 16 countries out of the sample, including Bangladesh and Ivory Coast, the share of informal workers aged 15 to 64 is above 90%. Data across years suggest that some countries have been successful in reducing the level of informality: 97% of workers were informal in Morocco in 1998, versus 79% in 2009. In others, the size of the informal sector has remained unchanged over the past quarter century. In Mali, for example, the share of informal workers decreased by only 2 percentage points between 1994 (98%) and 2010 (96%). In countries like Chad, the share of informal workers has actually increased to reach near total of the population.

Figure 1   Share of informal workers aged 15-64
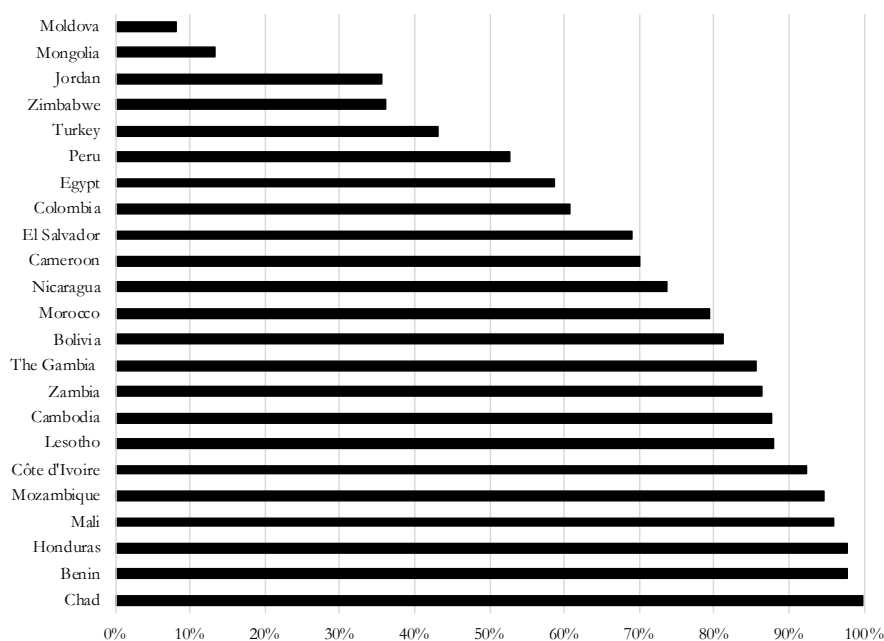
Source: Bosio et al. (in this volume).

Come the COVID-19 pandemic. Open markets and small shops close, vendors are not able to display their product. Informality, which is a hand-to-mouth business, becomes an even bigger trap. Some governments are considering programmes that provide access to crisis assistance in return for firms turning formal. This transformation is unlikely to happen, especially in the aftermath of the pandemic when social distancing rules and uncertainty around future economic prospects reduce business opportunity. Instead, given good economic opportunity, informal business owners are more likely to become wage earners in larger formal businesses. Improved economic prospects apparently help these informal business owners find a job. So, overall, a good post-pandemic recovery plan leads to a more efficient allocation of individuals into occupations.

Governments should view informal businesses as providing subsistence livelihoods to poorer households. To improve their wellbeing during the crisis, these are best reached through standard cash transfer programmes. Countries with existing cash-transfer programmes can immediately broaden eligibility and increase the size of the benefit. India is doing just that, according to Swati Dhingra earlier in this volume. Given the

scale of the economic shock, concerns that better-off households might receive benefits they do not deserve should take a backseat to ensuring that people in need are covered. Additional verification could be carried out later, once the recovery is under way.

Creating a restart procedure to avoid mass corporate insolvency

Financial distress is addressed through liquidation or through reorganisation. Firms that cannot operate profitably, and whose assets can be put to better use elsewhere, are liquidated, and the liquidation proceeds go to creditors according to a pre-specified priority. Firms that can instead operate profitably, and whose assets have greater value inside the firm, seek to reorganise their obligations. A reorganisation plan must be agreed with the creditors and involves a reduction in firms' obligations to them.

The challenge in addressing the COVID-19 financial distress is two-fold. First, distress is occurring throughout the economy on a massive scale, which can lead to bottlenecks in court-supervised bankruptcy procedures. Second, reorganisation-type procedures are complex and typically accessible in practice only by the largest firms. Increased uncertainty about firms' prospects further complicates reorganisation during COVID-19, as it is hard to value a firm with highly uncertain cash flows.

Elsewhere in this volume, Balloch et al. (2020) propose a restart procedure that involves a write-down of firms' obligations. It strips away some of the complexity of reorganisation by making the write-down of government claims automatic and conditional on the write-down of creditors' claims, thus incentivising creditors' write-downs to start with. Automaticity is important given the massive scale of debt restructuring that is needed throughout the economy. Conditionality is important to avoid opportunistic behaviour.

The Bretton Woods institutions have significant expertise in insolvency reform. Some steps require coordinated action between the World Bank and the IMF (Djankov and Koch-Saldarriaga 2020). Additional effort is required, akin to the financial sector assessment programmes that originated during the East Asia financial crisis in the late 1990s, while supporting these with additional resources. Such joint effort can increase the survival rate of firms during and after the pandemic (see the chapter by Bosio et al. in this volume).

Starting debt sustainability discussions

For many countries the IMF needs time to make a better-informed determination regarding the sustainability of their indebtedness. This determination will be informed by investigation into contingent liabilities (e.g. by state-owned entities or provinces), which are likely to materialise in a time of crisis and could represent substantial additional debt.

For others, the IMF has already made a judgement that, irrespective of the depth and duration of the crisis, their debt is unsustainable. For these countries, there is an opportunity to engage in discussions of meaningful restructuring to restore sustainability (Debrun et al. 2019). Rules and thresholds on sustainability are likely to require revision (or at a minimum, temporary relaxation for some). This exercise requires coordination among diverse private creditors as well as between official and private, bilateral and multilateral institutions, to give borrowing governments adequate relief in the aggregate. These creditors have different priorities and constraints (Gelpern et al. 2020).

Official creditors have already agreed to a moratorium of debt payments for the poorest nations (the 76 IDA countries) during the crisis months. The next steps involve the inclusion of other low- and middle-income countries that already face severe economic strains and the restructuring of payments to private creditors (see the chapter by Bolton et al. in this volume). In the absence of private-sector participation in the moratorium, official debt relief may partly be used to service private creditor claims. Given the expected size of the fiscal needs of these countries, any financial relief dissipated on debt servicing of private creditors' claims will be very costly. This cost can be political too, as there is fear that in Belt and Road Initiative countries official debt relief may go towards servicing bilateral debt given by Chinese state-owned banks.

The G20 proposal to suspend official debt payments to the end of the year 2020 for the world's poorest nations was agreed in April, during the World Bank/IMF Spring Meetings. But private lenders – who hold US$155 billion of the total long-term debt of sub-Saharan countries, for example – have rejected its across-the-board approach to debt relief. So have a number of developing economies. Half of IDA nations have requested it. Kenya, for example, has instead stated that it will negotiate bilaterally with China, France, Germany, Sweden and Japan. The Kenyan government fears that the G20 proposal may lead to a downgrade of the country's credit rating that could limit its access to international markets.

As finance ministers are already overwhelmed with other urgent matters linked to the crisis, a disorderly handling of debt restructuring is likely to result into a lose-lose situation for both borrowers and investors. Borrowers may be pushed into default, which will – even if capital markets have short memories – affect their future access to funding. Lenders may be tempted by litigation.

These outcomes are of particular concern as private bondholder identification (knowing who actually retains a country's debt) is not precise. Some, if not most, countries would not know today with whom to negotiate. Disorderly handling of debt negotiations is likely to increase inequalities between countries as, hampered by lack of information and resources, developing countries may be slower to prepare for such negotiations.

An orderly dealing of private debt discussions, in a similar spirit to what has been proposed by the public sector, should be favoured (Gulati and Panizza 2020). This process takes time, which is why debt sustainability discussions must start now.

Conclusion

The Bretton Woods institutions have withstood the initial pressure of assisting emerging economies in dealing with the health and economic fallout of the COVID-19 crisis. Huge challenges remain. To effectively use their resources to deal with these challenges the two institutions should:

- require a priority algorithm for financing liquidity constraints in developing countries, so that IMF/WB resources are not rapidly appropriated by existing clients or on a 'first come, first served' basis;
- find ways to reach people working in the informal economy;
- create a World Bank/IMF advisory programme on insolvency reform, akin to the financial sector assessment programs that the two institutions run jointly;
- start debt sustainability discussions now.

Important questions remain. Expanded World Bank and IMF resources have been stretched thin in the first months of the crisis. How will they be replenished? And what will happen if the virus returns before either an effective vaccine or cure is found? We have some months to answer these questions.

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At the beginning of the Covid-19 pandemic, it was hoped that warm weather and younger populations would shield many developing countries from the virus. This hope has not been realised. Cases of infections in Africa, South Asia and Latin America are still growing. At the time of writing, 17 of the 30 countries with the highest number of reported cases are in the developing world. This is not only due to the fact that many developing and emerging countries have large populations; if we focus on cases per inhabitants in countries with a population of at least 5 million, about half of the countries in the list are developing or emerging market economies.

Developing and emerging market countries differ from advanced economies in both the structure of their economies and the tools that can be used to implement macroeconomic policies aimed at reducing the severity and the economic costs of recession associated with the pandemic. The most important amplifying factors include:

- Pre-existing high levels of poverty and inequality
- A large share of informal workers or workers employed in micro-firms
- A small share of jobs that can be done from home
- A large tourism sector in some countries
- A high prevalence of within-country unrest, violent riots and civil wars
- Relatively small public sectors and tax revenue bases
- Limited fiscal space
- Precarious access to international financial markets.

Developing economies, because of their starting conditions characterised by high poverty, informality and limited fiscal space, may suffer long-lasting consequences from the pandemic. The international community should step up, by providing aid, technical assistance and debt relief so that countries will not need to decide between saving lives and servicing their debts.