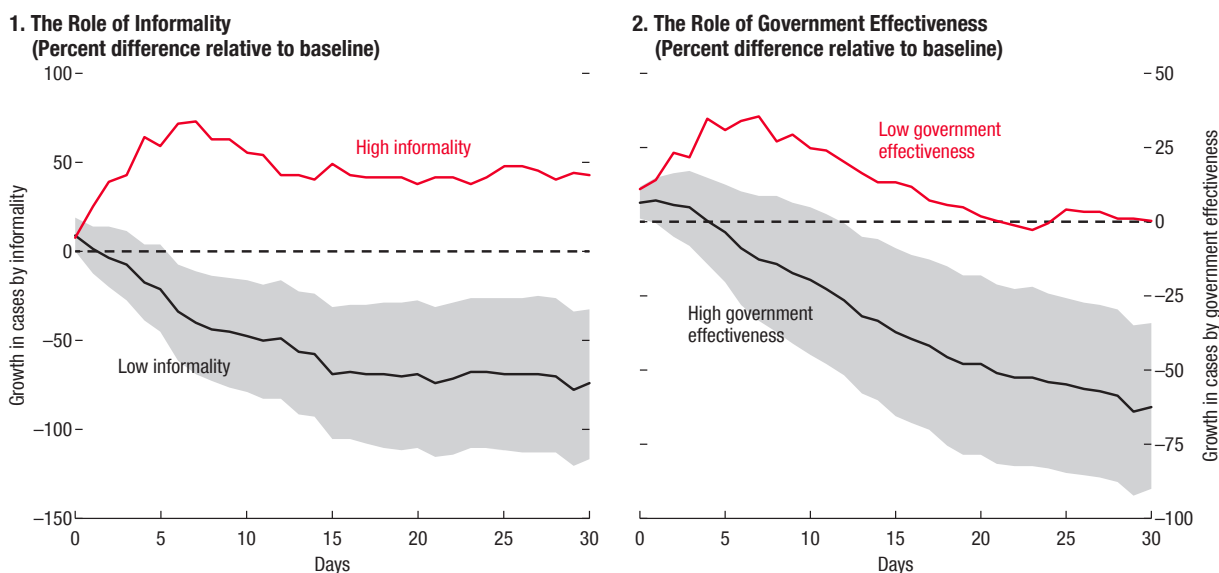# Annex 1. COVID-19 in Latin America and the Caribbean[1]

Latin America locked down early, when total cases were still low. Lockdowns were stringent, and mobility plummeted for a while. However, the lockdowns in Latin America were not fully effective, and mobility started rising even before the relaxation of the mobility restrictions and when new cases and deaths were still on the rise. With that, the number of deaths gradually increased, resulting in a slow-burn pattern, in contrast to a rapid explosion of infections that occurred in Europe. Structural factors, including a high degree of poverty and informality, urban agglomeration, weak state capacity and lack of fiscal resources, weak health systems, and lack of tests and tracing, have contributed to the region's difficulties in containing the pandemic and continue to represent challenges for reopening. For example, local projection estimates show that in countries with low informality/high government effectiveness, the increase in total cases 30 days after the introduction of containment measures was about 75/65 percent lower compared with similar countries that did not introduce such measures (Annex Figure 1.1). By contrast, countries with high informality/low government effectiveness that imposed containment measures experienced an increase/no change in total cases relative to comparators.

IMF staff analysis also suggests that the high total death toll in Latin America can be linked to weak hospital capacity, high population density, and in some cases, large populations more generally and the geographic location, while relatively favorable demographics and BCG vaccination (against tuberculosis) have helped reduce total death toll in the region (Annex Table 1.1, IMF 2020a).

The prolonged period of depressed mobility led to an important adverse impact on economic activity. The drop in mobility and the associated decline in economic activity were not just the result of

Annex Figure 1.1. Determinants of the Effectiveness of Containment Measures

1. The Role of Informality
(Percent difference relative to baseline)

2. The Role of Government Effectiveness
(Percent difference relative to baseline)

Source: IMF staff calculations.
Note: Shaded area refers to the 90 percent confidence interval. Dashed line refers to the baseline. COVID-19 = coronavirus disease.

[1]This annex is based on IMF (2020a), prepared by Bas Bakker (co-lead), Carlos Gonçalves (co-lead), Carlo Pizzinelli, Pedro Rodríguez, Mauricio Vargas, and Dmitry Vasilyev.

policy-mandated lockdowns, but also of the change in behavior in reaction to the pandemic. However, quantitative analysis suggests that the impact of both the lockdowns and self-imposed quarantines induced by a rapid spread of the disease has diminished over time (IMF 2020a).

Annex Table 1.1. Correlates of Total Deaths
(Dependent variable: total deaths per million)

	May 30	Aug. 30
Population over 70 Years Old	14.8***	15.7***
	(2.93)	(4.73)
BCG Dummy	−117***	−107***
	(30.9)	(47.6)
Hospital Beds per 10,000 People	−12.5	−14.3
	(5.14)	(7.10)
Log (total population)	10.20*	20.05**
	(2.68)	(8.90)
LAC Dummy	n.s.	**153.2***
Constant	Y	Y
R^2	0.35	0.27
Number of Countries	152	124
Number of Countries in LAC	22	17

Source: IMF staff calculations.
Note: Population density is not significant at the country level but is significant at the municipal level. Geographic latitude, which is difficult to control for at the country level, is significant at the municipal level (IMF 2020a). Standard errors are in parentheses. BCG = Bacillus Calmette–Guérin; LAC = Latin America and the Caribbean; Y = yes.
*$p = 0.1$; **$p = 0.05$; ***$p = 0.01$.

Annex 2. Latin American Labor Markets during COVID-19[1]

The coronavirus pandemic has severely affected labor markets, and employment losses have been distributed unevenly across the population of LAC (IMF 2020b). Employment fell more steeply for women, especially in Brazil, Colombia, and Peru (Annex Figure 2.1, panel 1). Young and older workers were affected more than those between 25 and 60 years of age (Annex Figure 2.1, panel 2). Similarly, workers with tertiary education suffered smaller reductions in employment, and in Brazil and Chile, employment levels for this group were back to pre-pandemic levels by June (Annex Figure 2.1, panel 3). The large decline in informal employment is related to this pattern—except in Colombia, informal employment fell at a higher rate than formal employment (Annex Figure 2.1, panel 4).

The shock's uneven impact relates to differences in exposure across types of workers and highlights the pandemic's distributional consequences. Contact-intensive occupations are more common among women and informal workers, and the ability to work remotely is more prevalent among formal workers and high-skilled workers. The link between job losses and educational attainment and informality highlights the shock's regressive nature, because low educational attainment and informality are more pervasive among poor and vulnerable households.

Annex Figure 2.1. Employment Changes by Workers' Characteristics
(Percent; February to June 2020)
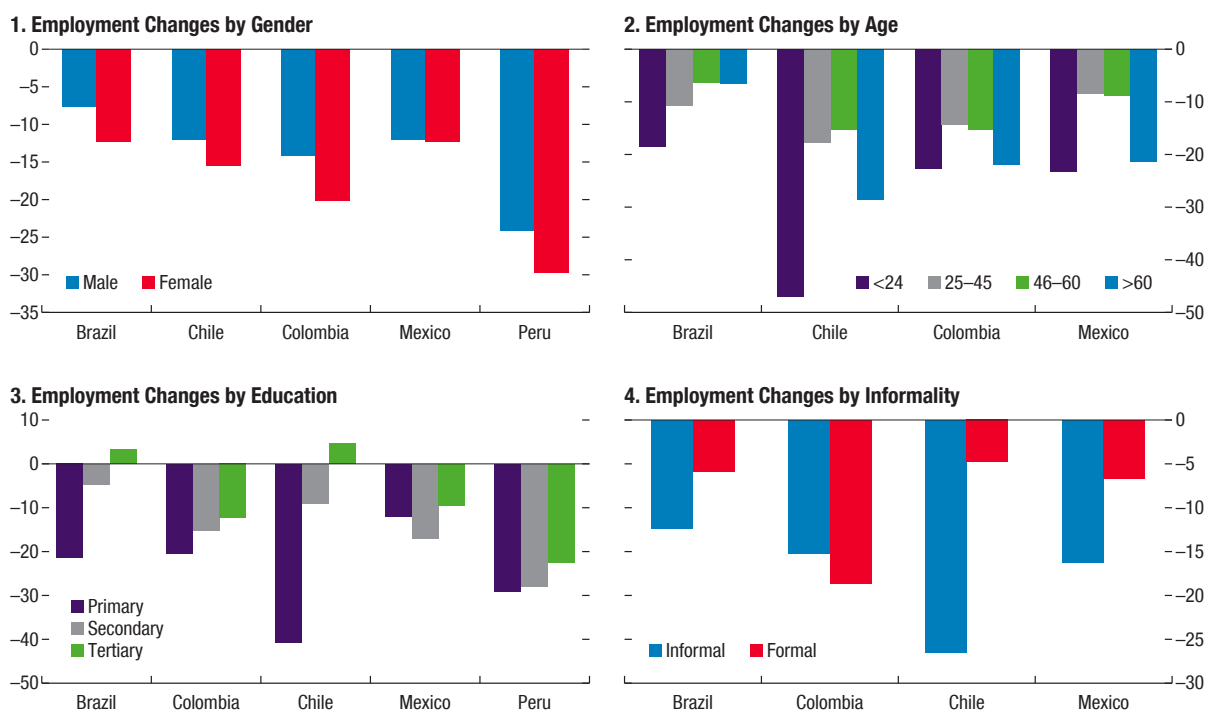
Sources: National statistics agencies; and IMF staff calculations.
Note: For Mexico, changes are for June relative to the first quarter of 2020. For Brazil, age groups are as follows: younger than age 24, 25–40, 41–60, and older than age 60. Data for Peru are for Lima; no data are available for informality.

[1]This annex is based on IMF (2020b), prepared by Takuji Komatsuzaki, Carlo Pizzinelli, Samuel Pienknagura (co-lead), Jorge Roldós (co-lead), and Frederik Toscani.
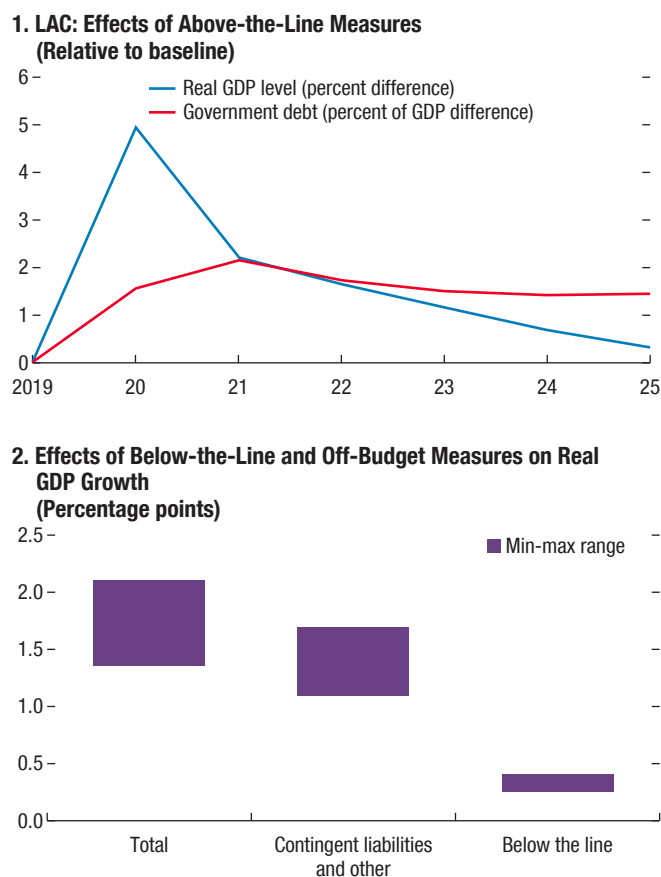
Annex 3. Fiscal Policy at the Time of a Pandemic: How Has Latin America and the Caribbean Fared?[1]

Governments in the Latin America and the Caribbean (LAC) region have announced packages of fiscal support in the wake of the pandemic, amounting to 8 percent of GDP on average. This includes above-the-line and below-the-line and off budget measures. Simulations based on a structural model (IMF 2020c) show that these exceptional measures are playing a key role in mitigating the effects of the pandemic (Annex Figure 3.1). The simulations distinguish between various components of the fiscal packages and their multipliers. Although evidence suggests that multipliers tend to be higher during crises relative to "normal" times, the coronavirus pandemic is a unique shock. There are indications of large output gaps, which would point to more potent fiscal policy effects. However, the pandemic also entailed disruptions on the supply side, which would suggest a more muted impact for fiscal policy. This is because sectoral shutdowns dampen some of the traditional effects of fiscal policy as a result of a lower average propensity to consume and a lack of second-round effects.

Considering these caveats, the simulations show that the effects of the above-the-line fiscal measures on real GDP are sizable, amounting to an increase of about 5 percent relative to the baseline without fiscal support. The debt-to-GDP ratio increases by about 2 percentage points relative to baseline within a year. Effects dissipate in the medium term because economies are expected to unwind stimulus and embark on partial consolidations. The initial boost to activity materializes through a jump in consumption as a result of the increase in transfers and income support measures, while the fiscal packages—supported by monetary accommodation—provide

[1]This annex is based on IMF (2020c), prepared by Ali Alichi (lead), Antonio David, Metodij Hadzi-Vaskov, Keiko Honjo, Roberto Perrelli, and Mehdi Raissi, under the guidance of Hamid Faruqee.

Annex Figure 3.1. Effects of COVID-19 Measures

1. LAC: Effects of Above-the-Line Measures
   (Relative to baseline)

2. Effects of Below-the-Line and Off-Budget Measures on Real GDP Growth
   (Percentage points)

Sources: IMF (2020c); national authorities; and IMF staff calculations.
Note: Based on model simulations and IMF staff estimates. LAC = Latin America and the Caribbean.

a considerable stimulus through investment over the outer years.

Estimates also suggest that below-the-line and off-budget measures could add between 1 and 2 percentage points to real GDP levels. The combined effect of above- and below-the-line measures, if implemented fully, would be sizable, raising Latin America and the Caribbean's real GDP by about 6 to 7 percent within a year relative to the counterfactual.

IMF (2020c) discusses in detail fiscal policy recommendations to address challenges across the different stages of the pandemic. As lockdowns are gradually lifted, under uncertainty about the pandemic's course, fiscal actions could focus on gradually scaling down lifelines. At this stage,

broad-based fiscal stimulus could support the recovery when there is fiscal space, but any additional support should be done under a clear commitment to adjustment over the medium term to restore sustainability. In that context, fiscal rules will play an important role. Moreover, the passing of legislation to ensure fiscal consolidation over the medium term (such as preapproval of tax reforms) would also help as a commitment device. Enhancements to automatic stabilizers and safety nets would strengthen a more inclusive recovery.

Annex 4. Assessing the Impact of the COVID-19 Pandemic on the Corporate and Banking Sectors in Latin America[1]

The COVID-19 pandemic is having large negative effects in the nonfinancial corporate sector in Latin America and the Caribbean (LAC). Corporate performance had already weakened in the period before the pandemic, with falling profitability and increasing leverage (Annex Figure 4.1, panel 1). Performance worsened further in the second quarter of 2020 and is expected to remain weak in the rest of 2020 and in 2021 (IMF 2020d). The share of corporate debt at risk, defined as debt of firms with earnings before taxes and interest lower than interest expense, has doubled from 14 percent in December 2019 to 29 percent in June 2020, and could rise further to near 50 percent in 2021 in an adverse scenario, in which corporate earnings do not grow and interest expenses increase in line with the rise in corporate debt (IMF 2020d).

The pandemic's adverse impact on nonfinancial corporations, together with the deep economic recession and large employment losses, is expected to exert pressure on banking systems. LAC banks entered the pandemic on a relatively strong footing, with ample capital and liquidity buffers and low nonperforming loans (Annex Figure 4.1, panel 2). Although financial soundness indicators worsened somewhat in the first half of 2020, the impact has been moderate so far, also reflecting the impact of financial sector policies that mitigate bank balance sheet stress. To assess the potential impact of the pandemic on the banking system, IMF (2020d) performs a simple forward-looking top-down solvency stress tests, for both the *World Economic Outlook* (WEO)

[1]This annex is based on IMF (2020d), prepared by two teams: one comprising Pablo Bejar, Pelin Berkmen (co-lead), Farid Boumediene, Kotaro Ishi, Salma Khalid, Takuji Komatsuzaki, Cheng Hoon Lim (co-lead), and Dmitry Vasilyev, the other comprising Serhan Cevik (co-lead), Jaime Guajardo (co-lead), and Fedor Miryugin.

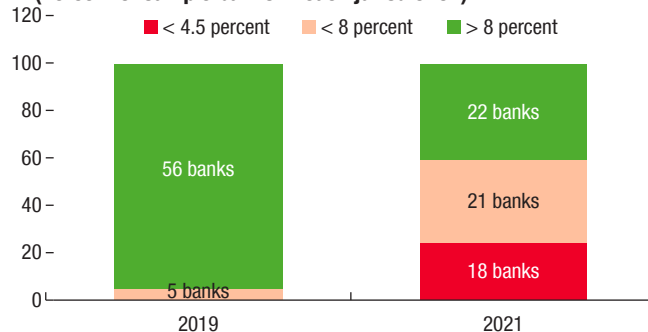## Annex Figure 4.1. Corporate and Financial Vulnerabilities

1. Corporate Leverage in Latin America[1]
(Debt to assets; percent)
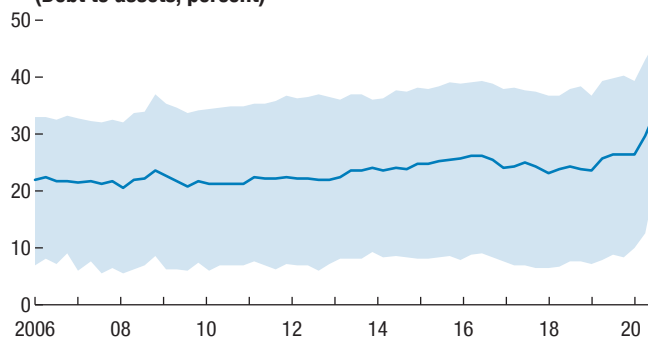
2. Capital Adequacy Ratio
(Percent)
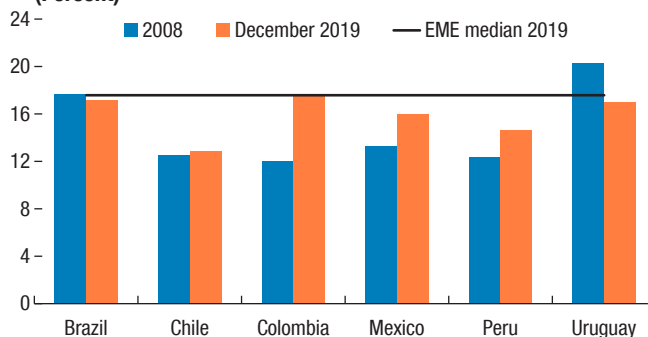
3. Distribution of Bank Assets by CET1 Ratio under Adverse Scenario
(Percent of sample banks in each jurisdiction)

Sources: Bloomberg Finance L.P.; IMF, Financial Soundness Indicators database; national authorities; and IMF staff calculations.
Note: CET1 = common equity Tier 1; EME = emerging market economies.
[1]Median of the nonfinancial corporations of Argentina, Brazil, Chile, Colombia, Mexico, and Peru. Shaded area refers to the 25th to 75th percentile range.

baseline and adverse scenarios, using publicly available data for a sample of 61 major banks in the six largest economies in LAC, covering over 75 percent of bank assets in each jurisdiction.

The results from the stress test exercise indicate that under the WEO baseline scenario, most LAC banks would be able to maintain their capital ratios well above regulatory minimums, even under higher responsiveness of nonperforming loans and profitability than their historical standards. However, in the WEO adverse scenario weaker banks with high nonperforming loans and low profitability at the onset of the pandemic crisis would face a significant deterioration in their capital positions, and some of them could experience capital shortfalls without a policy response (Annex Figure 4.1, panel 3).