Latin American Labor Markets during COVID-19[1]

Latin American labor markets have been severely disrupted by the economic fallout from the coronavirus disease (COVID-19) pandemic. Employment fell sharply across the region, more so than in other emerging markets (EMs) and advanced economies, and, in contrast to previous recessions, the contraction in employment was larger than that of GDP. These patterns are linked to key structural features in the region's labor markets. A relatively large share of workers in Latin America were employed in occupations that are not amenable to remote work and the share of workers employed in contact-intensive occupations was larger than in other regions. These attributes were more common in sectors subject to lockdowns and social distancing. As a result, a large share of the region's labor force was vulnerable to the COVID-19 shock ex-ante. Moreover, women, informal workers, and workers with low educational attainment were more likely to be employed in contact-intensive occupations and, except for women, less likely to be employed in occupations where remote work is feasible. This partly explains the disproportionate impact of the COVID-19 crisis among these groups.

Introduction

The COVID-19 pandemic has triggered major economic disruptions and has severely affected labor markets in Latin America and the Caribbean (LAC). Necessary policies to slow the spread of the disease and allow health systems to cope translated into an unprecedented economic shock. Containment measures abruptly reduced activity in many sectors and brought others to a complete halt. As noted in the October 2020 *Regional Economic Outlook (REO): Western Hemisphere*, the COVID-19 recession is quite different from previous ones, with a much larger decline in consumption in labor-intensive service sectors. As a result, millions of LAC workers lost their jobs and suffered income losses. Economic activity has recovered recently, but in a partial and uneven way, and there is significant uncertainty about the path ahead.

This chapter provides a detailed assessment of the impact of the pandemic on Latin American labor markets and their prospects for the ensuing recovery. It begins by using information from labor surveys to study how labor markets have responded to the pandemic shock. It then shows how, given the nature of the economic shock, key features of LAC labor markets made them highly vulnerable *ex-ante*, putting a large fraction of employment at risk. In fact, these features appear to explain the patterns observed so far in employment outcomes. Finally, it discusses the outlook for employment, income and activity during the recovery, reflecting on potential challenges for labor markets in the post-pandemic world.

Labor Market Adjustments during the COVID-19 Pandemic

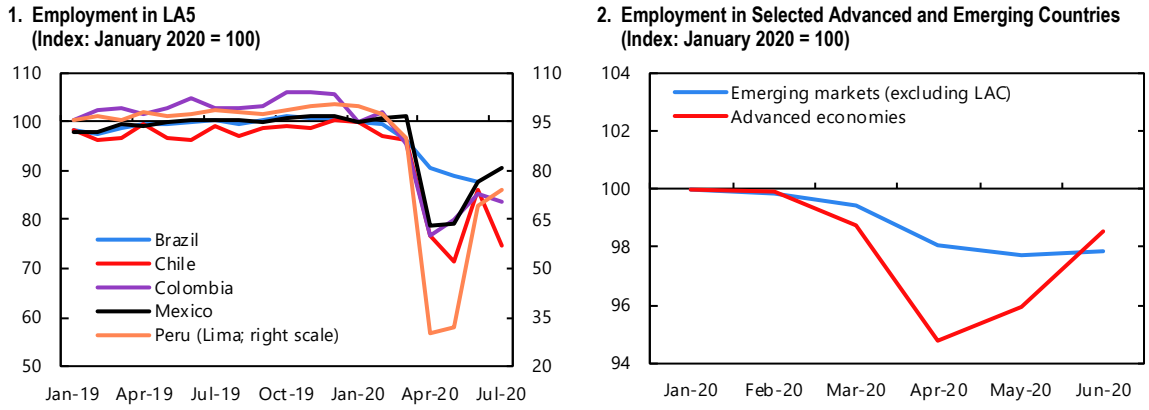
Labor markets in LAC were quickly rattled as outbreaks sparked across the region and containment measures were imposed. Total employment in LA5 fell by 30 percent on average between January and May 2020, the largest four-month contraction on record (Figure 1).[2] Brazil experienced the lowest decline in employment over this period, partly due to the government's emergency employment protection program (Box 1). Employment in Chile, Colombia, and Mexico declined by 20 percent to 30 percent over the same period. Although there is no monthly national estimate available for Peru, data for Lima shows a pronounced decline in employment (70 percent).[3] Similarly, large declines were observed in other LAC

[1]This chapter was prepared by Takuji Komatsuzaki, Samuel Pienknagura (co-lead), Carlo Pizzinelli, Jorge Roldós (co-lead), and Frederik Toscani. It benefitted from excellent research support by Genevieve Lindow, Adam Siddiq, and Diala Al Masri.
[2]LA5 includes Brazil, Chile, Colombia, Mexico and Peru. For Brazil, Chile and Lima, the chapter uses a transformation of the original employment data to capture month-on-month changes. Official labor market statistics are presented in a rolling-quarter format, which means that they will differ from those presented in the chapter.
[3]Lima accounts for roughly 33 percent of total employment in Peru.

countries[4]—employment fell by 15 percent in Bolivia from February to May and an equivalent contraction was seen in Ecuador from December to May/June. Uruguay experienced a more modest reduction in employment from February to May (6 percent), likely due to the successful control of outbreaks, which has allowed the country to maintain relatively lax containment measures (see IMF 2020a).

Employment bottomed-out in May in all countries except for Brazil. Lower compliance with lockdowns and the gradual reopening of some economies helped employment increase from May to June, but in some countries, employment gains partly reversed in July. Peru (Lima), the hardest hit labor market up to May, experienced the largest month-over-month percentage increase (118 percent). Employment in Chile, Colombia and Mexico grew between 6 percent and 20 percent over the same period. By contrast, employment experienced a further decline in Brazil (one percent). Chile experienced a reversal in employment gains in July. Part of the gains in employment may reflect larger sampling errors by national surveys due to methodological changes since COVID-19 (Annex 1). However, taken together with other high-frequency indicators, it does seem that some labor markets have started to recover—albeit at a slower pace than overall activity (see October 2020 *REO: Western Hemisphere*).

Figure 1. Employment Dynamics in LA5 and Comparators



Sources: Haver Analytics; national authorities; and IMF staff calculations.
Note: Data for Brazil, Chile, and Peru (Lima) have been transformed to reflect monthly employment. Comparator countries include Australia, Austria, Canada, Finland, Germany, Iceland, Italy, Israel, Japan, the Republic of Korea, Kyrgyz Republic, Luxembourg, Malaysia, Montenegro, Romania, Russia, Sweden, Taiwan, and the United States. LAC = Latin America and the Caribbean.

Despite recent gains, employment is still depressed in LA5 and the gap relative to January levels is larger than in other regions. Employment in June was 13 percent to 17 percent lower than its January level in Brazil, Chile, Colombia and Mexico, and 30 percent in Peru. This stands in contrast to other emerging market and advanced economies, where employment was, on average, 1.5 percent below its January level (Figure 1, panel 2). Moreover, unlike previous recessions, employment in the second quarter of 2020 fell more steeply than GDP (Figure 2).

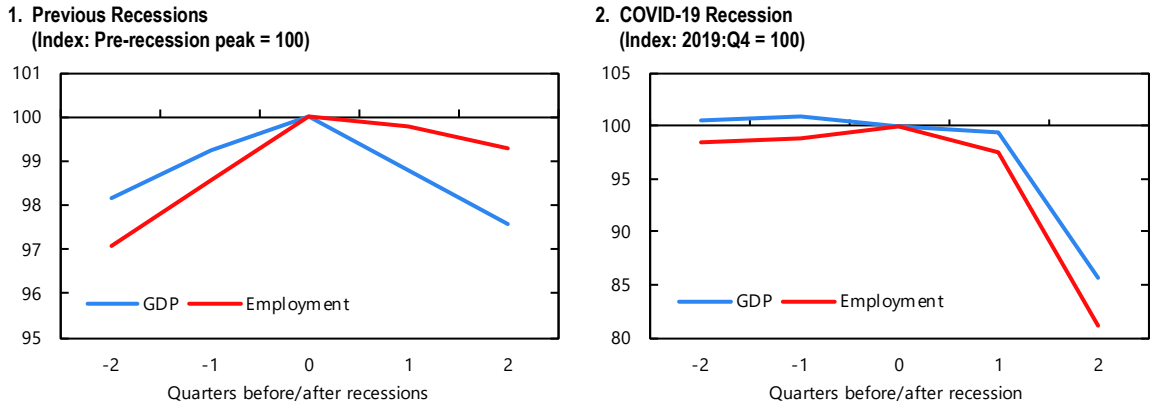
In contrast to advanced economies, where unemployment played a more prominent role, job losses in LA5 resulted mostly in large declines in the labor force. On average, for every 100 workers that lost their jobs between January and June in LA5, 15 reported to be unemployed and 85 reported to be out of the labor force (Figure 3, panel 1). Colombia stands out as the only country where unemployment played a more prominent role. This is in contrast to most advanced countries, where reductions in employment mostly resulted in more unemployed individuals (Figure 3, panel 2).[5] This contrast may reflect the fact

[4]Most of the chapter focuses on LA5 countries because of the availability of detailed monthly data.

[5]In France, the strict lockdown prevented people from looking for work, showing up as large decrease in labor force.

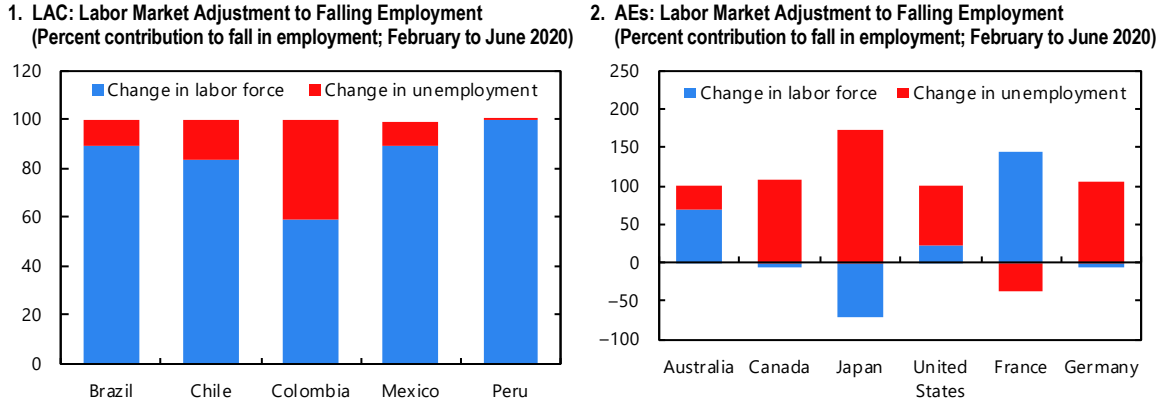
that most LA5 countries have less generous unemployment insurance schemes and other employment support programs compared to advanced economies (Box 2), where furloughed workers generally stayed in the labor force to benefit from worker support schemes.

Figure 2. Economic Activity and Employment in LA-4



Sources: Haver Analytics; national authorities; and IMF staff calculations.
Note: LA4 = Brazil, Chile, Colombia, and Mexico.

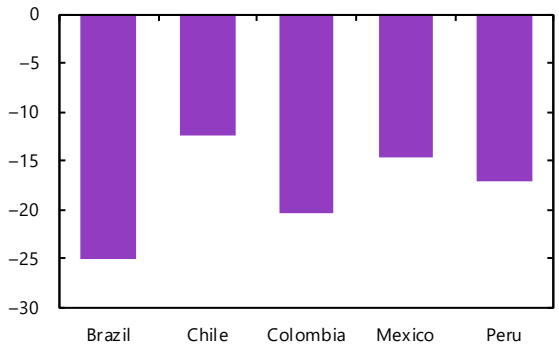
Figure 3. How Were Job Losses Absorbed in LA5 and Comparators?



Sources: Haver Analytics; national authorities; and IMF staff calculations.
Note: AEs = advanced economies; LAC = Latin America and the Caribbean.

In addition to the numerous job losses, the average employed worker in LA5 countries experienced a significant reduction in weekly hours worked, another large and unusual margin of adjustment. The reduction in average weekly hours worked from February to June among people employed was largest in Brazil, while Chile had the smallest decline (Figure 4). An implication of the decrease in hours is that the total supply of worker-hours fell more than employment. ILO (2020) estimates that LAC lost the equivalent of 55 million full-time employees in the second quarter when jointly considering job losses and cuts in hours. For comparison,

Figure 4. Reduction in Hours Worked
(Percent change; February to June 2020)



Sources: National statistics agencies; and IMF staff calculations.

Europe and Central Asia and Africa also saw a reduction of 55 million full-time employees in the second quarter, but pre-pandemic employment levels in each region were roughly 30 percent larger than in LAC.

LAC's worse labor market performance compared to other countries is not fortuitous. It is closely related to structural factors that shaped labor markets prior to the pandemic. The next section elaborates on how the unusual nature of the COVID-19 shock, together with these pre-existing factors, made employment in the region particularly vulnerable.

Key Factors Affecting Employment Dynamics during COVID-19

The COVID-19 pandemic triggered an economic shock like no other. Lockdowns and the evolution of the pandemic have weighed on economic activity in LAC by thwarting domestic supply and demand simultaneously through several channels:

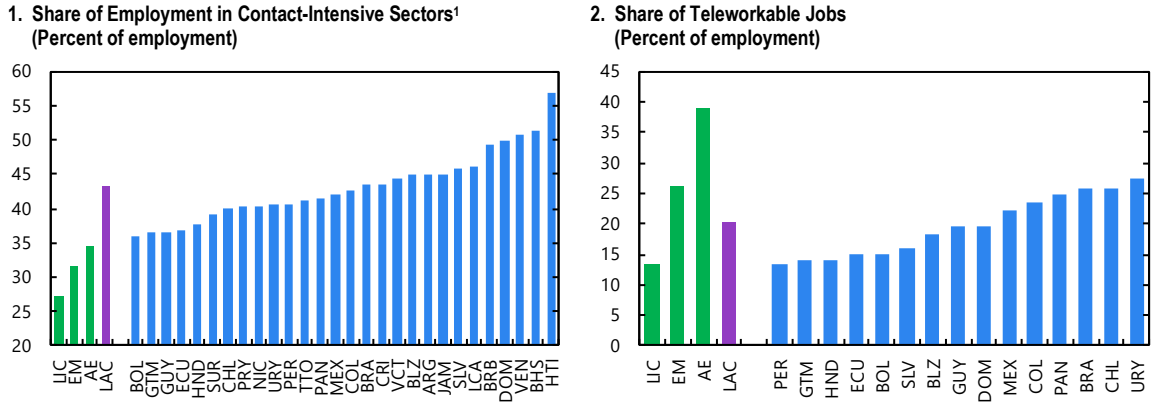
i) Containment policies and social distancing mandates prevented workers in some sectors from participating in productive activities, thus reducing hours worked in the economy.
ii) Reduced mobility and fear of contagion also hindered demand for contact-intensive sectors, such as hospitality, entertainment, and tourism (October 2020 *World Economic Outlook (WEO)*).
iii) The direct impacts of the initial supply and demand shocks were amplified by intersectoral linkages.
iv) The initial supply shock could have led to a larger shock to aggregate demand (Guerrieri et al., 2020).

The intensity with which each channel affects a country's activity and employment is related to key features of the labor market and the economic structure. The impact of the economic shock triggered by lockdowns is less pronounced in countries where workers are employed in occupations that are amenable to remote work. The shock causes more disruption in countries where contact-intensive occupations—those that rely on face-to-face interactions either for production or between customers and sellers—accounted for a large share of employment and production prior to the pandemic. Finally, in countries with low savings and weak safety nets, the COVID-19 shock can quickly affect aggregate demand as households experience an erosion of their purchasing power.

Due to its economic and labor market structure, LAC appeared more vulnerable to the COVID-19 shock *ex-ante* compared to other regions. First, contact-intensive sectors represent a larger share of GDP than in other countries, and this is magnified by strong intersectoral links—especially in Brazil (see October 2020 *REO: Western Hemisphere*). Contact-intensive sectors also account for a large share of employment in LAC (Figure 5, panel 1). Second, fewer people in LAC work in occupations that can be performed remotely (Figure 5, panel 2). Brazil, Chile, Panama, and Uruguay, are the countries with the highest share of jobs that are teleworkable (approximately 25 percent), while in other countries less than 20 percent of jobs can be performed remotely.[6] By contrast, in emerging markets in Asia and Europe, the share of teleworkable jobs ranges from slightly below 30 percent to more than 50 percent. Even if telework is possible in some occupations, LAC has lower access to broadband internet, which hampers teleworkability (Garrote Sanchez et al., 2020).

[6]The share of teleworkable jobs is calculated in Dingel and Neiman (2020). The authors use the O*NET survey from the United States and compute a score of how easy it is to perform a job remotely. They then match this score to the ILO's occupation categories and estimate the share of jobs in each country that are teleworkable.

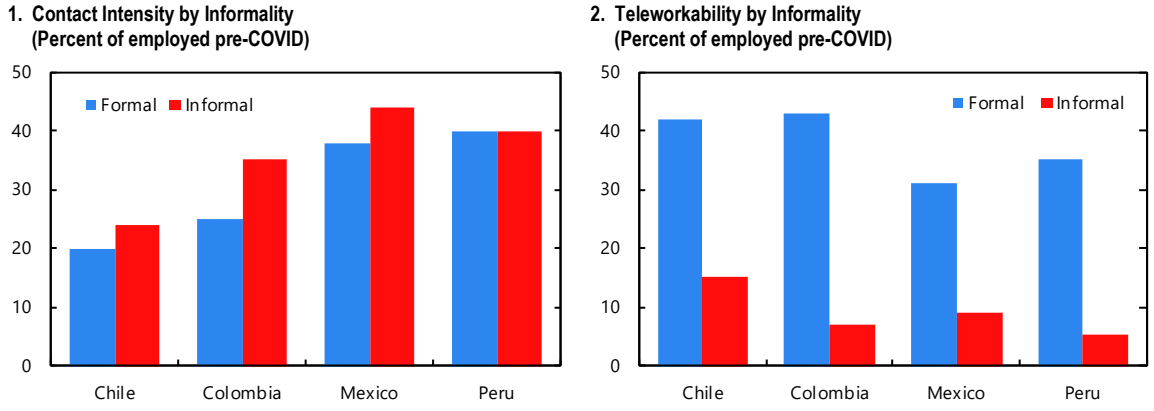
Figure 5. Employment in Contact-Intensive Sectors and Teleworkable Jobs



Sources: Dingel and Neimann (2020) except for Peru and Colombia; International Labour Organization (ILOSTAT) database; National Labor Surveys and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes. AE = advanced economies; EM = emerging markets; LAC = Latin America and the Caribbean; LIC = low income countries.
[1]Regional aggregates are simple averages.

General work arrangements also draw a deep dividing line across workers with respect to their vulnerability to the shock. Informal workers, who comprise a large share of LAC's employment, are more likely to be employed in high contact intensity and low teleworkability jobs. Except for Peru, the share of informal workers employed in contact intensive occupations is between 5 and 10 percentage points higher than for formal workers (Figure 6). These differences are more striking when it comes to teleworkability. The share of informal workers with high teleworkability jobs is between 20 and 40 percentage points lower than for formal workers.

Figure 6. Differences in Contact-Intensity and Teleworkability between Formal and Informal Workers

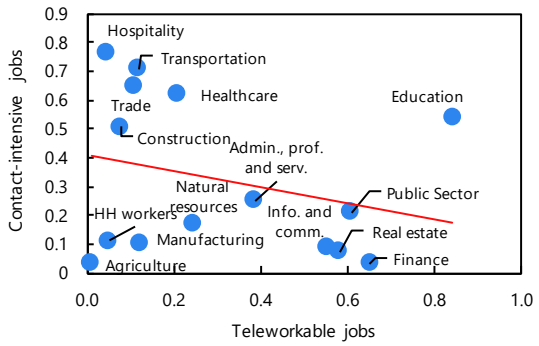


Sources: Dingel and Neimann (2020); International Labour Organization (ILOSTAT) database; and IMF staff calculations.
Note: Teleworkability is based on Dingel and Neiman (2020); high contact intensity occupations are defined as in Leibovici, Santacreu, and Famiglietti (2020).

Importantly, there is a negative correlation between contact intensity and teleworkability across sectors. Sectors like trade, hotels and restaurants, and transport and storage comprise a large share of contact-intensive and low-teleworkability occupations, which means that they are more vulnerable to the shock (Figure 7). In contrast, sectors like finance and insurance, real estate, and information and communications have a large share of low-contact intensity and high-teleworkability occupations.

This does not imply that sectors with a relatively small share of contact-intensive, low-teleworkability jobs are unaffected by COVID-19. All sectors are exposed to the shock, to varying degrees, through input-output linkages with industries that are directly affected. For example, demand for information and technology (IT) services could be affected by low activity in the retail sector.

Figure 7. Contact Intensity and Teleworkability in Selected Latin American Countries
(Percent share of employment)



Sources: National statistics agencies; and IMF staff calculations.
Note: Contact-intensive and teleworkable jobs are averages for Colombia, Mexico and Peru.

Putting the Pieces Together: Quantifying the Impact of LAC's Vulnerabilities and the Pandemic on Employment and Value-Added

To quantify the aggregate impact of the features of LAC's labor markets discussed above on employment and value added during the COVID-19 crisis, this section follows and adapts the framework proposed by Alfaro et al. (2020). It uses information from labor surveys to calculate the probability that an individual currently employed loses her job at different phases of the pandemic/lockdowns. This probability depends on the following factors: (i) a sector-specific demand shock (due to fear of contagion) and an aggregate demand shock (a Keynesian multiplier), (ii) a sector specific supply shock associated with the state of lockdowns, (iii) the characteristics of a worker's occupation (contact intensity, mitigated by teleworkability), (iv) the impact of lockdowns and demand shocks on upstream sectors (suppliers) and downstream sectors (buyers), and (v) the uneven impact of the lockdown on firms of different sizes.

Using individual job loss probabilities, the framework provides an estimate of the total number of jobs and value added at risk, absent policy support. Employment at risk is simply the sum of all individuals employed prior to the pandemic, weighted by their respective job loss probabilities. Value added at risk is derived from the employment at risk results using sectoral labor intensity.

This framework is used to simulate employment and value added at risk during three distinct phases of the pandemic:

- In the **lockdown phase**, all workers employed in non-essential sectors, including mining, construction, accommodation, most of manufacturing, wholesale and retail trade, transportation, and services, arts and entertainment, are subject to lockdowns. This shock is amplified by inter-industry linkages and mitigated by the degree of teleworkability. Risk to employment also comes from the demand side, as certain sectors face the negative demand shock, most notably in transportation and storage, and accommodation, and food services, but also in wholesale and retail trade, manufacturing, agriculture, and certain services such as arts and entertainment.

- In the **selective reopening phase,** some sectors, most notably manufacturing and construction reopen. In sectors where lockdowns are sufficiently relaxed (50 percent open or more), workers in small firms, with informal jobs or self-employed go back to work with no restrictions. Employment at risk in medium-sized firms is reduced in these sectors, but less so than in small and micro-firms, because they face higher costs of hiring due to their larger share of formal jobs, and/or because some firms have to exit due to cash and credit constraints, as well as due to difficulties operating amid social distancing protocols. For sectors that continue to experience lockdowns in this phase, employment at risk increases since a larger proportion of firms exhaust

their resources as the lockdown is prolonged and therefore need to close. Risk stemming from the demand side is lower than in the lockdown phase by 25 percent, as fear of contagion starts to wane.

- In the **advanced reopening phase**, all employment risk from the supply side disappears for those sectors that had reopened in the partial opening phrase. In other sectors, the supply shock dissipates for self-employed individuals and for workers in small firms and in informal jobs. For medium-sized firms in sectors that just reopened, the reduction in employment at risk is slower because of the prospects of financial stress due to the long lockdown and a large extent of scarring. The demand shock is assumed to subside further in this phase (50 percent lower than in the lockdown phase), as social distancing protocols are internalized by firms and consumers' fear of contagion is dimmed.

The three phases broadly correspond to the second quarter of 2020, the second half of 2020, and near future under the baseline, respectively. However, there are some country-specific differences, depending on the timing of sectoral openings. If COVID-19 cases surge again and the downside risk materializes, it is possible that the countries find themselves back to an earlier phase. For more details on the methodology and calibration of the three phases see Annex 2.

There are some drivers of employment and value added that this framework does not capture. For example, it does not consider the wide range of employment support measures seen in the region, such as Brazil's emergency employment support program, described in Boxes 1 and 4. Therefore, the results in this section may overstate losses, especially in the lockdown phase. In turn, the framework may also overstate the speed of recovery in the supply capacity in the advanced reopening phase. While this framework assumes that workers whose employment is at risk in the lockdown phase can go back to a job in the same sector once the lockdown is over and employers resume operations, in reality there is likely to be permanent damage to certain sectors, forcing costly sectoral reallocation of resources and slowing down the recovery in supply capacity.[7]

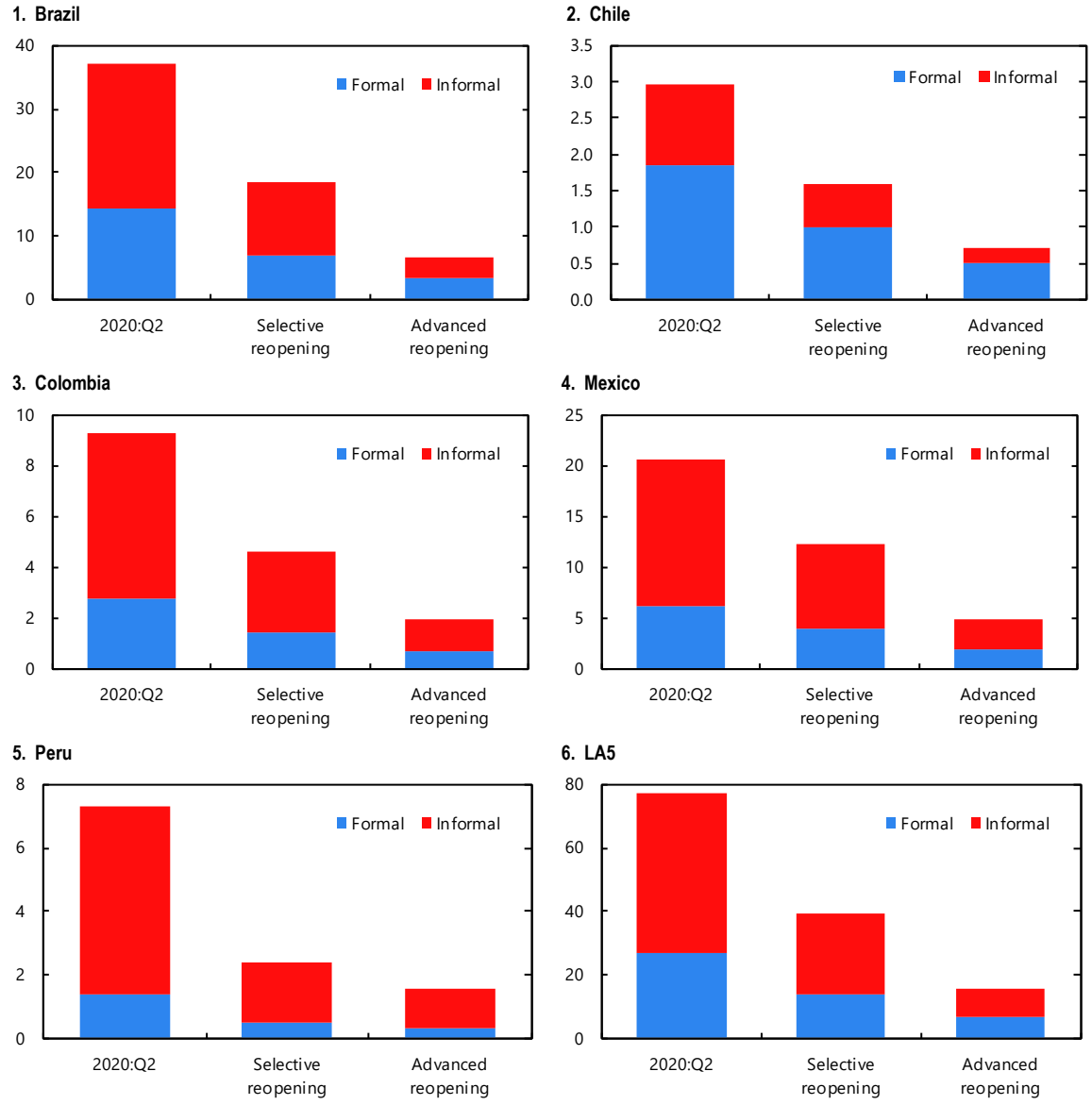
Simulation Results

The results from the simulations show that, once all vulnerability factors and amplification channels are considered, a large share of LA5 employment was *ex-ante* at risk during the lockdown and remains at risk throughout the reopening process. Roughly 75 million workers were at risk during the lockdown phase in LA5 countries, or 43 percent of employment at the beginning of 2020 (Figure 8)[8]. Employment at risk then falls by half in the partial reopening phase (40 million workers) and stays at about 15 million as the lockdowns are fully lifted. Informal workers face larger employment risk during lockdowns, both because of the type of occupations they hold and because of their lack of linkages to large firms with more abundant cash balances and access to credit. However, informal workers are also the largest contributor to the reduction in employment at risk during the reopening phases.

The persistence of employment at risk in the advanced reopening phase is related to two factors: (i) the demand shock, which even if weaker at later phases, is expected to continue affecting sectors directly and indirectly until the pandemic is fully under control, and (ii) because some medium-sized firms face constraints in rebuilding formal jobs even as sectors reopen (i.e., scarring, see October 2020 *WEO*).

[7] Operations of certain segments (medium-sized firms who operate in the sector that was still shut down in the selective reopening phase) are still constrained in the advanced opening phase, but they are quantitatively small.
[8]The labor force and employment in LA5 in January 2020 was 203 and 184 million, respectively; see Figure 12 for shares of employment

Figure 8. Employment at Risk in LA5 Countries during the Lockdown and Recovery Phases: By Formal and Informal Working Arrangements
(Jobs at risk; millions)



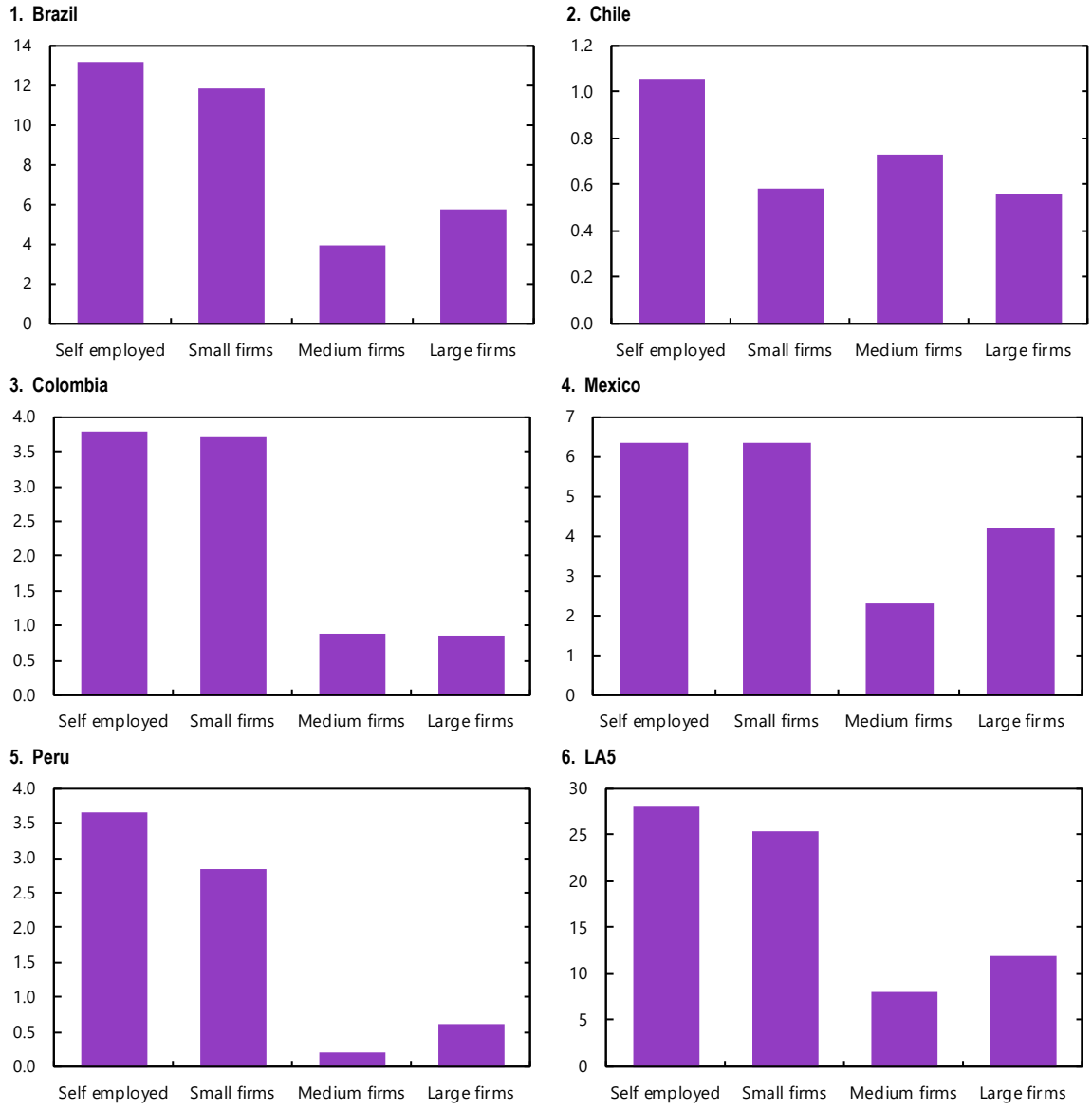
Source: IMF staff calculations.
Note: LA5 = Brazil, Chile, Colombia, Mexico, Peru.

The results also highlight the higher vulnerability to the lockdown of employees working in SMEs (Figure 9). In Brazil, Colombia, and Mexico, employment at risk among self-employed individuals and workers in small firms is 3-4 times larger than employment at risk among workers from medium and large firms, while in Chile it is 1.4 times larger (mainly self-employed individuals who have greater vulnerability to lockdowns). In the case of Peru, the differences are significantly larger than in other countries, at around 6.5 times, due to the high incidence of informality among the self-employed and micro-firms. While some of this heterogeneity originates from the assumptions of the exercise,[9] it also

[9]SMEs were more affected in previous pandemics; see IMF 2020b, and evidence for Mexico points in the same direction during the COVID-19 crisis (Box 3).

responds to differences in the distribution of firm size across sectors. Autonomous workers and small firms (many of which are informal) are assumed to be less capable to withstand a fall in activity without incurring job losses or a full shutdown. But they also work in occupations that are more contact-intensive and less teleworkable.

Figure 9. Employment at Risk in LA5 Countries during the Lockdown Phase: By Firm Size
(Jobs at risk; millions)

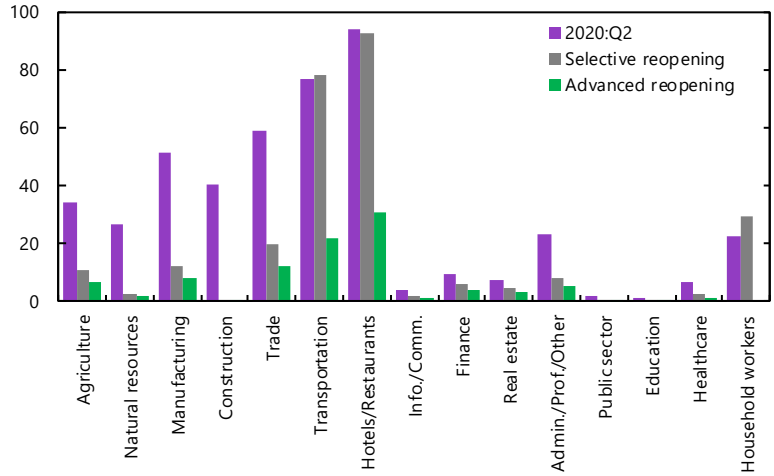


Source: IMF staff calculations.
Note: Small firms range between 2 and 10 employees, large firms include those with 100 or more employees for Colombia and Mexico, 200 or more for Chile, and 50 or more for Peru and Brazil. Medium firms are those in the intermediate range. LA5 = Brazil, Chile, Colombia, Mexico, Peru.

As expected, employment at risk is concentrated in sectors directly affected by the pandemic due to depressed demand or because of their inability to operate during the lockdown phase. Figure 10 breaks down employment at risk for Colombia by sector (for conciseness; results for other countries are

presented in Annex 3).[10] Sectors with low ability to telework and high contact intensity—such as transportation, hospitality (hotels and restaurants), and wholesale and retail trade—face employment at risk of more than 50 percent during the lockdown phase. Meanwhile, sectors that are not directly affected by lockdowns and/or with higher ability to telework –such as finance, real estate, and education—face more limited risk. Even without a direct impact of the lockdown, the demand and supply shocks in other industries spill over to these sectors via downstream and upstream linkages. In the selective reopening phase, the reactivation of some sectors (in the case of Colombia, manufacturing, construction, and part of trade) leads to a reduction of employment risk in most industries. However, employment at risk rises further or stays high in a few sectors (such as transport and hospitality), as the direct impact of the lockdown continues—with more firm closures and associated permanent job losses. Finally, in the advanced reopening phase employment at risk falls across all sectors.

Figure 10. Colombia: Employment at Risk by Sector
(Jobs at risk; percent share of total employment)

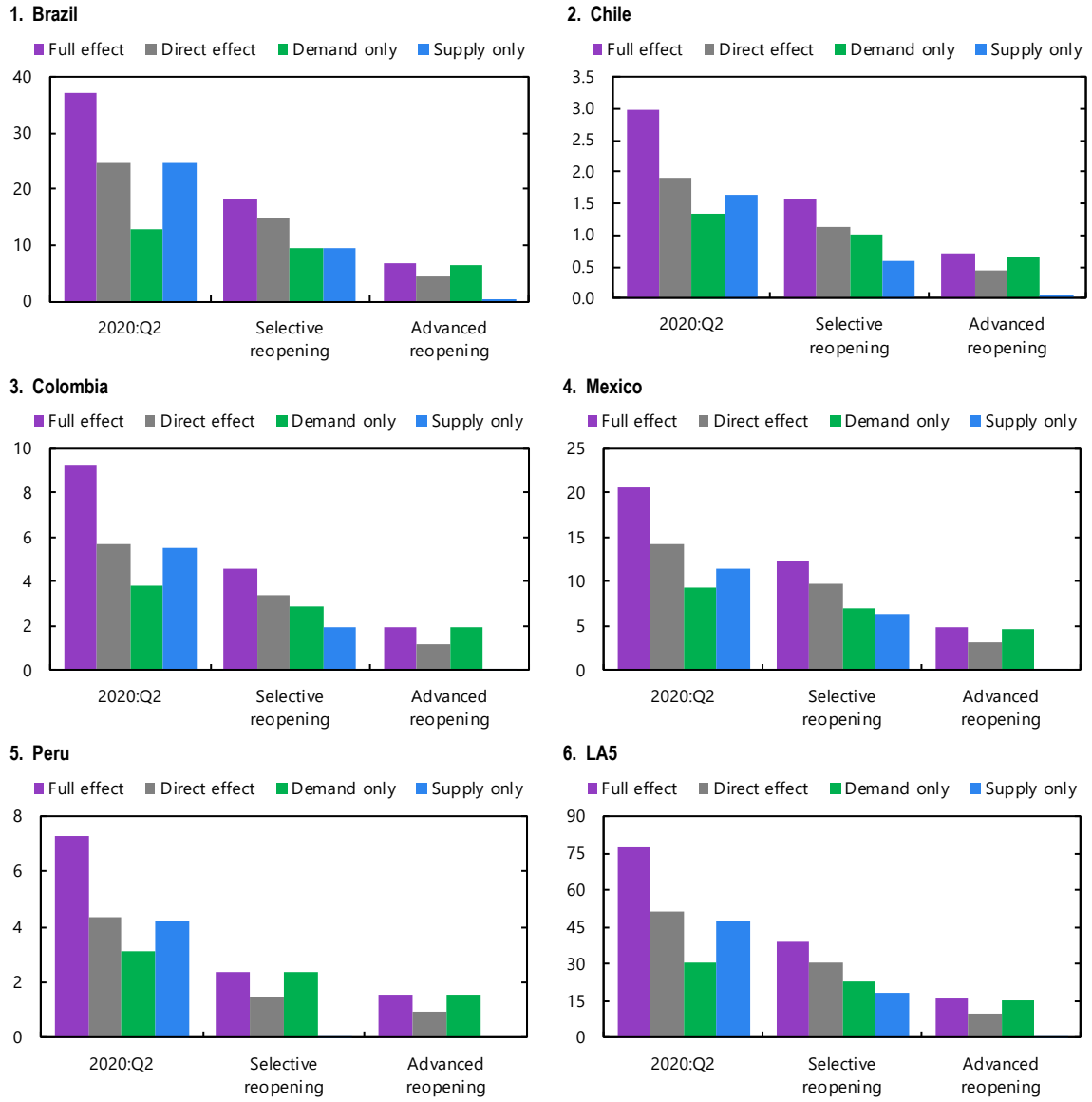


Sources: National authorities; and IMF staff calculations.

The simulation framework also provides insights on the relative contribution of supply and demand shocks and amplification mechanisms. The impact of the supply shock outweighs that of the demand shock in the lockdown phase across LA5 (Figure 11).[11] Roughly two thirds of employment at risk in LA5 is attributable to lockdowns and their propagation through input-output linkages. The preponderance of the supply shock fades as soon as economies enter the selective reopening phase. Figure 11 also shows that the indirect impact of supply and demand shocks through input-output linkages can increase employment at risk by 30 to 40 percent (the difference between the purple and grey bars).

[10]For all countries, the sectoral definition follows the ISIC Rev. 4 classification, where we grouped together certain sectors for expositional clarity. Mining, water, and energy are grouped under "natural resources", while administrative, professional, scientific, and other services are grouped with arts and entertainment.
[11]The assumed functional form for the job loss probability is such that the sum of the supply and demand shock can exceed 1. See Annex 2.

Figure 11. Contribution of Supply and Demand Shocks and Input-Output Linkages to Employment at Risk
(Jobs at risk; millions)



Source: IMF staff calculations.
Note: LA5 = Brazil, Chile, Colombia, Mexico, Peru.

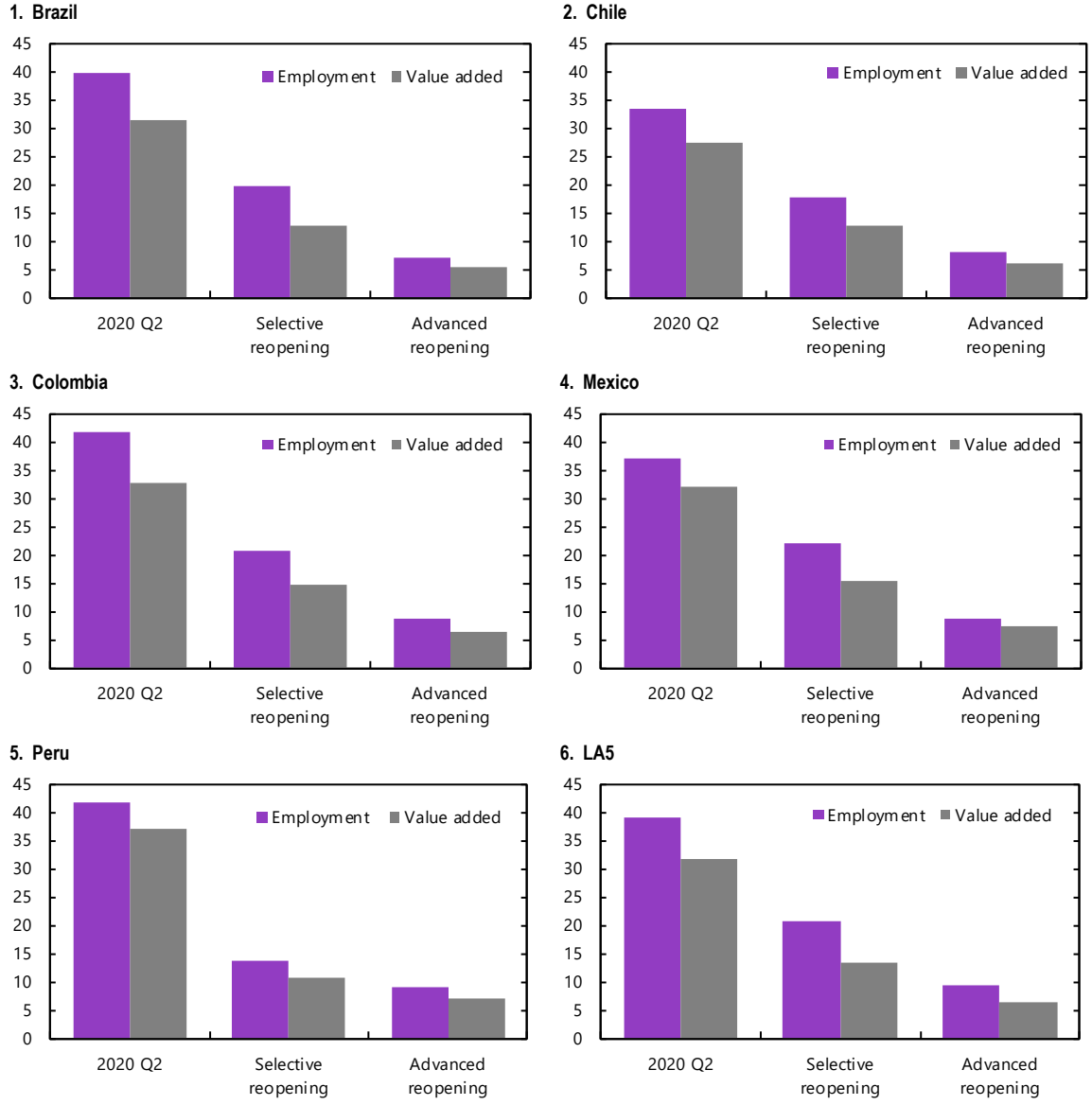
Finally, the results show that a relatively large fraction of value added in LA5 is vulnerable to lockdowns, and GDP could remain relatively depressed even in the advanced reopening phase. Using National Accounts data by sector, the simulation exercise can be extended to calculate value added at risk.[12] Figure 12 shows that between 25 and 35 percent of value added is vulnerable to lockdowns. Value added at risk falls as economies reopen but even in the advanced reopening phase stands above 5 percent.

For all lockdown/reopening phases, employment at risk is significantly larger that value added at risk. This reflects the fact that sectors that are more vulnerable to lockdowns and to depressed demand are more labor intensive compared to those that are less vulnerable. The fact that employment appears to be

[12]The details of this exercise are described in Annex 2.

more vulnerable than GDP is consistent with the evidence presented in Figure 2. However, employment at risk also falls more sharply than value added at risk after the lockdown due to the early reopening of sectors with higher labor productivity. In the LA5 overall, value added at risk in the early recovery phase is 53 percent of the value added at risk in the lockdown phase, while employment at risk in the same phase is 43 percent compared to the lockdown. In the advanced reopening, value added and employment at risk fall to 24 and 20 percent of the levels from lockdown period, respectively.

Figure 12. Share of Employment and Value Added at Risk for LA5 Countries During the Lockdown Phase and the Reopening Phases
(Percent share)



Source: IMF staff calculations.
Note: LA5 = Brazil, Chile, Colombia, Mexico, Peru.

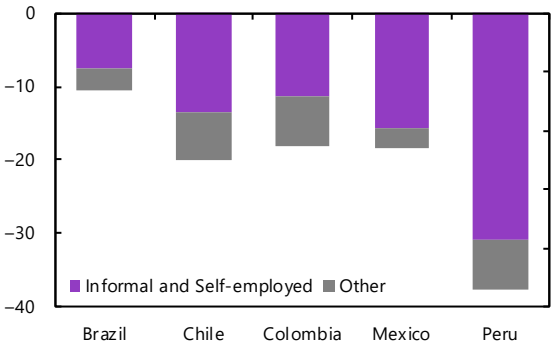
Contrasting the Model's Predictions with Second Quarter Employment Data

The simulation results show larger employment at risk during the lockdown phase compared to employment losses registered in LA5 when lockdowns were most stringent, a difference that may be attributable to policies and other adjustment margins beyond layoffs. As documented above, employment shrank by approximately 20-30 percent in LA5, roughly half to two thirds of the decline suggested by the employment at risk simulations. This reflects the fact that the simulations do not account for policy responses that likely mitigated the decline in employment in the lockdown phase, making the employment at risk simulation results an upper bound of actual employment losses. Moreover, employment at risk may also capture workers that experienced reductions in hours. For example, the number of employed individuals in Mexico working 35 hours per week or more fell by approximately 45 percent between May 2019 and May 2020, a decline that is comparable to the share of employment at risk in the second quarter.

However, key predictions of the simulations regarding the exposure to the COVID-19 shock of different groups of workers appear to hold in the data. Informal and self-employed workers were the main drivers of employment losses in LA5 in the second quarter. Employment losses among informal and self-employed workers accounted for close to two thirds of all employment losses between the first and second quarters in Brazil, Chile and Peru (Figure 13). In Mexico they accounted for close to 85 percent.[13] Evidence from Mexico's labor survey also supports the prediction that teleworkability, contact intensity, and firm size play an important role in determining the likelihood that a worker keeps her job and preserves her income during the COVID-19 crisis (Box 3).

Figure 13. Employment Contraction Between 2020:Q1 and 2020:Q2

(Contribution by type of worker; percent)



Sources: National authorities; and IMF staff calculations.

The predictions of the simulations also appear to hold in the recovery phase, albeit evidence of this is still scant. In countries that have experienced sustained employment improvements since April (Colombia and Mexico), informal and self-employed workers experienced larger employment gains. This suggests that the recovery in LAC's labor market may see patterns similar to those suggested by the simulations. While the stronger rebound in informal and self-employment jobs could mitigate income losses suffered by households during the pandemic, it may have consequences from both a growth and social standpoint. The recovery may entail lower-paying jobs compared to pre-COVID-19 wages, and thus lower productivity. Additionally, firm closures and layoffs may cause scarring and misallocation, which could affect the pace of the recovery. Both these topics are discussed in more detail in the next two sections.

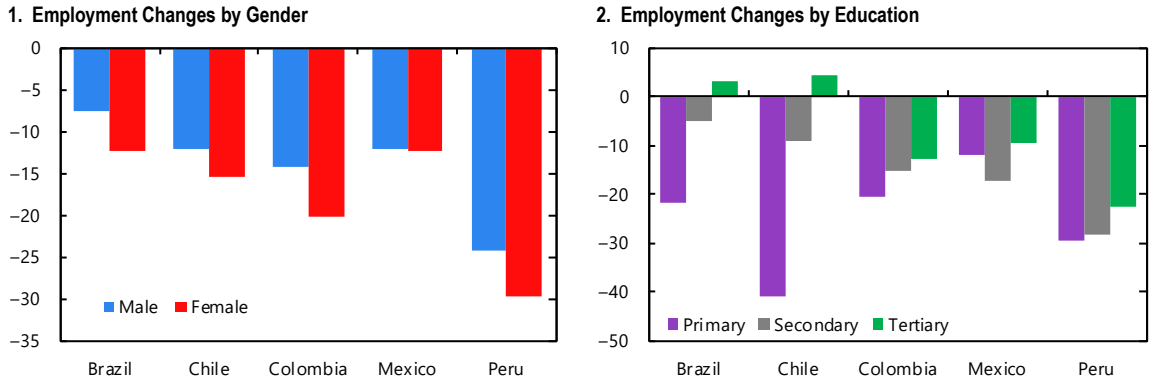
The Unequal Burden of COVID-19

The costs in terms of employment losses caused by the COVID-19 pandemic have been unevenly distributed across LAC's population. Employment has fallen more steeply for women than for men, a pattern that appears to be associated with women's higher exposure to contact-intensive occupations. This difference is most notable in Brazil, Colombia and Peru, where the decline in female employment

[13]Second quarter employment in Colombia and Mexico is the average employment in April, May and June. In Chile and Brazil, it is the June 3-month rolling average.

from February to June is approximately 5 percentage points larger than male employment (Figure 14, panel 1). Similarly, workers with only primary education, which have a higher propensity to be informal, have experienced a steeper decline in employment compared to those with secondary education in most countries, except for Mexico (Figure 14, panel 2).

Figure 14. Employment Changes by Education and Gender
(February to June 2020; percent)

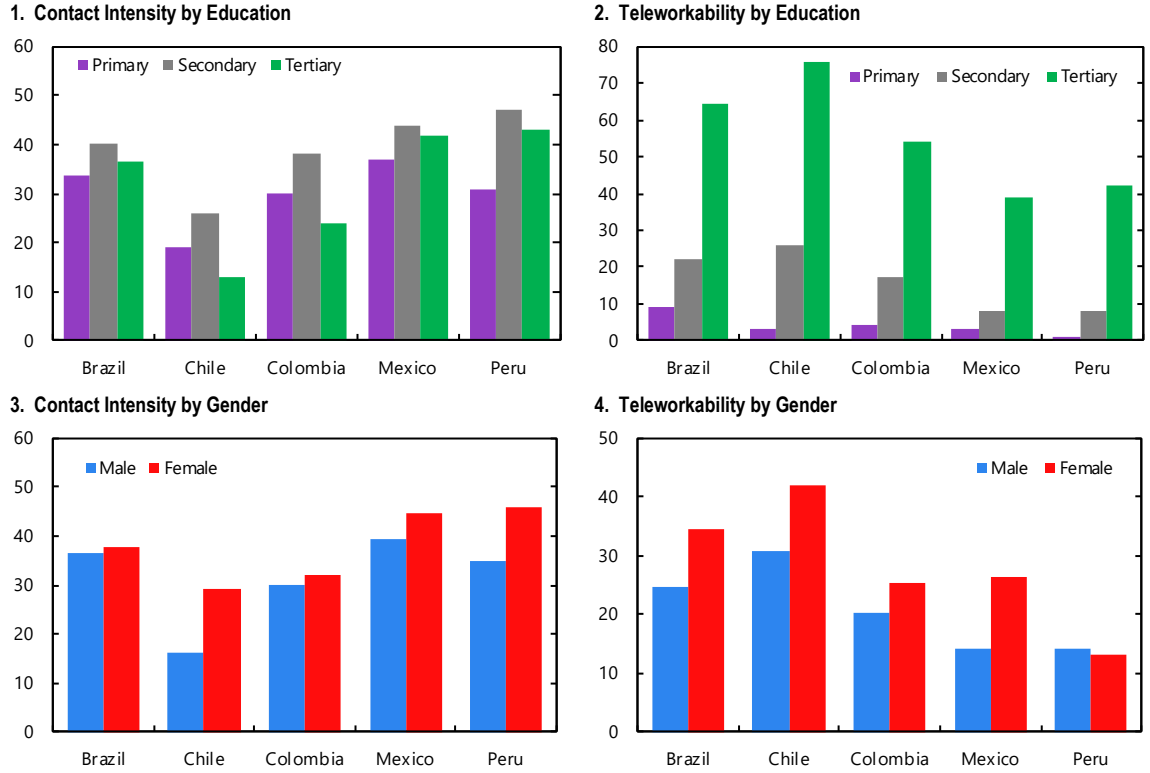


Sources: National statistics agencies; and IMF staff calculations.
Note: For Mexico, changes are June relative to 2020:Q1.

The uneven distribution of employment losses in LAC is also related to differences in the type of occupations of different groups of workers. The share of female workers employed in occupations with high contact intensity is larger than the share of male workers (Figure 15). This is partly compensated by female workers having more teleworkable occupations. The ability to work remotely is clearly an advantage favoring workers with tertiary education, while contact-intensive jobs are more likely among workers with secondary education.

The link between job losses, educational attainment, and informality highlights the regressive nature of the shock, since low educational attainment and informality are more pervasive among poor and vulnerable households (Busso et al., 2020). In fact, Bottan et al. (2020) ran an online survey in a large number of LAC countries and found that job and income losses were more likely among respondents who had lower income pre-COVID-19. Evidence from Mexico's labor survey shows that workers with higher educational attainment had a lower probability of losing their job and of experiencing wage cuts (Box 3). Labor income growth and secular trends in labor force participation, especially among low-skilled workers, were key contributors to the decline in poverty and inequality observed in LAC until 2014 (Messina and Silva, 2018; Balakrishnan et al 2020). Conversely, in absence of policies, the disproportionate impact of the COVID-19 shock on the employment and income of low-income households is expected to exacerbate inequality and increase poverty. In fact, early estimates show that the pure labor market impact of COVID-19 could lead to a total 23 to 30 million "new poor" in Argentina, Brazil, Colombia, and Mexico combined (Lustig et al., 2020; and Table 1).

Figure 15. Contact Intensity and Teleworkability by Education and Gender
(Percent of employed pre-COVID)



Sources: National statistical agencies; and IMF staff calculations.
Note: Teleworkability is based on Dingel and Neiman (2020); high contact intensity occupations are defined as in Leibovici, Santacreu, and Famiglietti (2020).

Large employment protection and social assistance programs in some countries partly offset, and in some cases erased, the distributive impact of the shock, at least in the short run. Lustig et al. (2020) simulate the combined effect on poverty and inequality of the COVID-19 shock and the assistance programs. The authors find that policy support programs in Argentina and Brazil erased most of the increase in poverty due to COVID-19, while in Colombia it mitigated it. Box 4 further documents the buffering effect of Brazil's emergency cash transfer program. However, social indicators may further deteriorate as this costly assistance programs are unwound and if the effects of the shock persist longer than expected. The latter point is further explored in the next section.

Table 1. Estimated Impact of COVID-19 on Poverty
(Millions)

	Change in Extreme Poverty Headcount (below US$1.90 per capita per day)	Change in Poverty Headcount (below US$5.50 per capita per day)								
			Argentina		Brazil		Colombia		Mexico	
Source	LAC	LAC	COVID-19	COVID-19 + Assistance	COVID-19	COVID-19 + Assistance	COVID-19	COVID-19 + Assistance	COVID-19	COVID-19 + Assistance
October 2020 *Fiscal Monitor*	14.7									
World Bank (June 2020)		18–35	1.48		6.86		2.66		9.21	
ECLAC (July 2020)		44								
Lustig and others (2020)			1.4–2.0	0.5–1.7	9.3–13.9	(0.4)–5.3	2.5–2.9	2.2–2.7	10.1–11.2	n.a.

Sources: Economic Commission for Latin America and the Caribbean 2020; Lustig et al. 2020; and World Bank 2020.

Note: Each estimate reflects different assumptions about baseline growth rates and the incidence of the crisis along the income distribution. Moreover, estimates are subject to a large degree of uncertainty, depending on pandemic developments, designated poverty thresholds, the growth outlook, and fiscal policy responses. World Bank LAC estimates are relative to the counterfactual poverty headcount without pandemic. World Bank country-specific differences are relative to the 2019 poverty headcount. COVID-19 = coronavirus disease; LAC = Latin America and the Caribbean.

Implications for the Post-Pandemic LA5 Labor Markets

While the worst of the contraction in employment may be behind us, large uncertainty remains over the path of the recovery in the coming months. Will employment return to its pre-COVID-19 level? If so, how fast? Or has the shock left permanent scarring in the labor market? Given the unprecedented economic conjuncture presented by the pandemic, it is difficult to reach a definite answer to this question. However, several points concerning both the short- and long-term outlooks are worthy of discussion.

With respect to the short-term outlook, three key factors are:

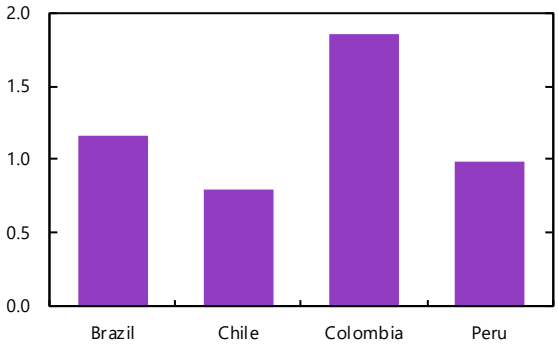
- How long will the economic constraints associated with the pandemic last? As long as lockdown measures are in place, some industries will not be able to operate at full capacity, thus limiting countries' labor demand. Furthermore, to the extent that some risk of contagion is present, demand will remain depressed in contact-intensive sectors. Therefore, countries' ability to control the virus and fully reopen the economy is a first-order determinant of the speed of recovery in employment and output.
- International spillovers via value chains of production and infection cases in other countries may delay a full recovery even after the outbreak is fully controlled in a country. This is particularly important for countries that heavily depend on exports of goods and services like tourism (October 2020 *REO: Western Hemisphere*).
- Frictions in the search and matching process may slow down job creation even once labor demand has rebounded (Buckman et al., 2020; Kandoussi and Longot, 2020). As discussed above, labor informality in LAC countries may imply a quick recovery in employment at first, followed by slower growth as formal jobs are created with longer lags.[14] Limiting losses in formal employment during the contraction is thus crucial to prevent a slow-paced recovery.

Over the long run, the COVID-19 shock threatens to permanently scar the labor market. A large body of evidence discusses the long-lasting effects of "conventional" recessions, focusing on hysteresis in business cycle dynamics, structural reallocation, falling investment, and loss of firm-worker matches that imply destruction of valuable on-the-job experience, as reflected in positive tenure premia (Figure 16), and the detriment of long unemployment spells (Cerra et al., 2020; Portes, 2020). All these channels, which are typical of conventional labor market shocks, are also applicable to the COVID-19 shock. Moreover, several other considerations are warranted with regards to the COVID-19 shock:

[14]The October 2019 *REO: Western Hemisphere*, shows that, while informal jobs can be recovered fast, a high degree of informality may actually lower the overall speed of adjustment to macroeconomic and sectoral shocks—perhaps due to lack of skills needed for the new jobs created in fast-recovering sectors.

- The longer the duration of the lockdown/pandemic, the more likely the losses will become permanent. Evidence from advanced economies shows that the prompt recovery in employment is due to the recall of workers (Jones et al., 2020). However, workers who are temporarily unemployed while maintaining a relation with their employer, or who are employed at zero hours, still face the risk of permanent layoff as firms unable to operate could eventually terminate their contracts. The longer the lockdown, the higher the chances of this risk becoming reality.

Figure 16. Tenure Premium
(Coefficient)



Sources: Inter-American Development Bank Harmonized Surveys database; and IMF staff calculations.
Note: Bars are the coefficients for log years of tenure from a "Mincer" regression of log hourly wages. Additional controls include education, gender, age, and sector fixed effects.

- Historically, recoveries spur permanent replacement of jobs by automation (Cores et al., 2020; Jaimovic and Siu, 2020). Technological advancements constantly increase the number of jobs that are replaceable by machines at progressively lower costs. Additionally, protracted lockdowns or possible new outbreaks might limit the ability of certain jobs that are automatable to be performed in person. In LAC countries, where a high share of jobs is routine-intensive, the potential loss of jobs is large, and particularly so for women (Beylis et al., 2020; Brussevich et al., 2019). However, the process of job automation in emerging markets has been slower than in advanced economies so far, as low wages, informality, and scarcity of advanced technical skills limit the returns from investing in labor-saving skill-complementary technology. Furthermore, some of the hardest-hit industries are not easily automatable, such as hospitality, trade, and construction. Finally, the high macroeconomic uncertainty brought about by the pandemic increases the risks of investing in expensive machinery compared to the ability to easily adjust employment.

- Labor force participation may fall persistently as more housework is needed. Many studies show that women have borne the bulk of the burden of the additional house- and family-related activities during the pandemic, such as taking care of children and the elderly (Andrew et al., 2020; Del Boca et al., 2020; Kalenkoski et al., 2020). Especially the possible closure of in-person schooling will require an increase in childcare duties for many women. The potential fall in female labor force participation is a particularly relevant risk for LAC countries, where entrance of females into the labor force has been a key driver of employment growth in recent decades (Busso and Romero Fonseca, 2015).

The analysis in this chapter has several implications for labor markets and sectoral policies in the wake of the pandemic. While governments in Latin America should aim to foster a speedy recovery in the short term, they must also target their efforts to supporting inclusive and sustainable growth over longer horizons. Four important structural aspects to consider in the context of stimulus policies in the recovery are: favoring the creation of formal jobs, strengthening workers' safety nets, leveling the playing field for female workers, and promoting a "green recovery."

Although the quick rebound in informal jobs in LA5 countries is supporting employment growth, it may also pose risks to the region's much needed progress towards formality. Many workers who were displaced from formal jobs during the lockdown, unable to find better employment, may be joining the

files of informal employment for a prolonged period. Policies such as those discussed in the *October 2019 REO: Western Hemisphere* can be fine-tuned to each country's current reopening phases to simultaneously promote formality and foster short-term growth.

As discussed in this chapter, women and workers with low educational attainment have been most exposed to the disruption caused by COVID-19. The potential reallocation of resources across sectors during the recovery phase also threatens to leave these vulnerable groups behind. Strengthening the safety nets remains crucial to protect informal workers and vulnerable households (IMF 2020c). Throughout this transition, policymakers must find ways to extend the effective coverage of their unemployment insurance (UI) schemes, which is low in many countries in the region, to provide workers with greater buffers if their jobs are eliminated as the structure of the economy shifts. As noted by Beylis et al. (2020), COVID-19 is likely to accelerate the rise of service provision via digital platforms, which poses both challenges and opportunities for employment safety nets in LAC. On the one hand, the flexible work arrangements involved in these services -often referred to as the "gig economy"- do not fit into the parameters of formal wage employment required by traditional UI systems. On the other hand, digital platforms make more economic activity and labor earnings visible to authorities. Hence, an adapted and modernized regulatory framework may help extend the coverage of social protection systems to workers involved in these activities.

While women on average have suffered the largest adverse impact from the COVID-19 shock in Latin America, their increasing participation in the labor force has been a key driver of growth in the past decades. An inclusive and strong recovery also hinges on further removing barriers to entry in the labor market for women. Furthermore, several studies point to women's comparative advantage in high-skill abstract task-intensive sectors and in service-oriented industries (Petrongolo and Ngai, 2017; Bhalotra and Fernández, 2018). Policies to remove distortions in these sectors would therefore increase incentives for women to acquire human capital and enter the labor force.

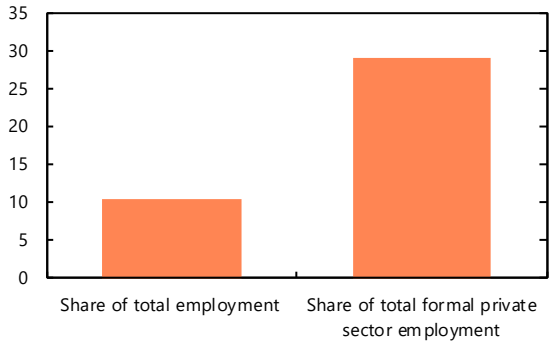
Finally, the COVID-19 recession creates an opportunity to introduce policies to facilitate resource reallocation towards low-carbon activities and incentivize energy efficiency, including through carbon taxes (October 2020 *WEO, Chapter 3*). The costs of these policies are also likely to be smaller in the presence of a large informal sector, as the carbon tax lowers the relative distortion between the formal and informal sectors, leading to a welfare-enhancing expansion of the formal sector (Bento et al., 2018). Nevertheless, the resource reallocation will involve unequal impacts among the population. Policies to support job transitions and targeted cash transfers to protect poorer households should also be considered, financed perhaps by the carbon tax revenues.

Box 1. Employment Protection Programs against COVID-19 in Latin America

Many Latin American countries introduced employment protection programs in the face of the unprecedented COVID-19 crisis. Wage subsidies and loans to support employment retention were common (Argentina, Brazil, Chile, Colombia, Mexico, Peru) under certain criteria, such as firm size, loss of sales, and wage level. Unemployment insurance was also expanded in some countries (Argentina, Chile, Colombia) to help workers stay in the labor force and preserve their livelihood.

Brazil's wage subsidy program stands out for its prominence in protecting employment. It was targeted at saving formal private sector jobs during the peak of the crisis. The program, which has a budget allocation of 0.7 percent of GDP, allows for a subsidized reduction in working hours or suspension of work contracts for up to 6 months (suspension is fully subsidized for small firms). According to official figures, as of early July, over 9.1 million workers have benefited from the scheme, roughly half through a reduction in hours and half from a complete suspension. Overall, around 10 percent of all jobs in Brazil and more than 25 percent of all formal private sector jobs have benefited from the program.

Box Figure 1.1. Workers Covered by the Emergency Employment Protection Scheme
(Percent)



Sources: Instituto Brasileiro de Geografia e Estatística; and IMF staff calculations.

This box was prepared by Diala Al Masri and Frederik Toscani.

Box 2. A Comparative View at Unemployment Insurance Schemes in LA5 Countries before and during COVID-19

Amongst the LA5 countries, only Brazil, Chile, and Colombia had traditional unemployment insurance (UI) programs prior to the pandemic. The structure and terms of these programs (Box Table 2.3) are similar to those of advanced economies such as the US and Canada but slightly less generous than those of some European countries like France and Germany. In most cases only private sector employees are eligible for coverage, which requires a minimum contribution period of about one year and is only triggered by involuntary job losses. Although the sums disbursed may depend on the worker's contribution history and socioeconomic situation, average replacement rates in Brazil and Chile are comparable to those of the US and Canada (around 50 percent) and France and Germany (around 60 percent). While Brazil has a maximum duration of payments of only 5 months, Chile and Colombia's durations of 1 year and 6 months, respectively, are comparable to those of Canada and the US. Meanwhile, in France benefits can last up to 2 years for most workers, and even longer for older workers.

Despite the general comparability of the UI schemes with those of advanced economies, in Brazil and Colombia the effective coverage of the programs is very low. The fraction of unemployed workers who receive UI are 4 and 5 percent, respectively, which is much lower than the 26 percent of the US and the 40 percent of Canada and France. Only Chile, with a 46 percent coverage ratio, is comparable. Informality in work arrangements is likely behind the low coverage of UI schemes in Latin America, as informal employees and self-employed workers most often do not contribute to the scheme.

UI benefits are in many cases conditional on being enrolled in training programs or demonstrating active efforts to look for a new job, as in the case of Colombia and the US. Low eligibility for UI therefore implies limited incentives for active job search, especially in a period of extremely constrained labor demand like the COVID-19 pandemic. Consequently, since active job search is a requirement to fulfill the definition of unemployment for most national statistical offices, in Latin American a high portion of newly displaced workers may be classified as out of the labor force during the pandemic. Beyond the purely semantic difference, this tendency reflects the fact that, lacking access to UI, there is little effective difference between being unemployed or out of the labor force from a worker's viewpoint.

Both the US and Canada expanded their UI schemes during the pandemic. Through the Coronavirus Aid, Relief, and Economic Security Act, the US government provided states with federal funding to extend the total amount of weeks workers can receive UI, introduced a further Pandemic Unemployment Insurance (PUA) for those who exhausted their UI period and a USD 600 per week Pandemic Unemployment Compensation Payment (PUCP) to top up benefits until end-July. The Canadian government temporarily replaced the usual Employment Insurance (EI) program with the Canada Emergency Response Benefit (CERB), which provides EI-eligible workers with weekly payments of CAD 500 for 28 weeks. Meanwhile, it expanded the safety net by introducing the Canada Recovery Benefit (CRB) for jobless self-employed individuals and those ineligible for the CERB, consisting of CAD 400 weekly payments for 6 months.

In Europe, pre-existing job retention schemes such as *Kurzarbeit* in Germany and the *Activité Partielle* in France were scaled up and extended in coverage (OECD, 2020). Under these schemes, furloughed employees preserve their contract (and matches) with the employer but take a wage cut, and the government pays a fraction or the entirety of the cost to the employers. Meanwhile, workers whose hours are reduced receive partial compensation for the lost wage by the government. These arrangements that channel the support through firms make it easier to reach out to workers in distress and avoid costly destructions of worker-firm matches.

This box was prepared by Carlo Pizzinelli.

Box 2 *(continued)*

Latin American countries also responded to the pandemic through new labor income support measures. The programs introduced in Brazil are featured in greater detail in Boxes 1 and 4. Through the *Ley de Protección del Empleo*, the Chilean government allowed formal workers to draw on their personal UI accounts with very low eligibility requirements if their work was suspended or reduced in hours due to COVID-19. Colombia, through the *Mecanismo de Protección del Cesante*, allowed jobless workers to access extra emergency income besides their UI equal to two months of minimum salary (approximately USD 475 in total).

Box Table 2.1. Comparison of Unemployment Insurance Schemes in Brazil, Chile, and Colombia before the COVID-19 Pandemic

Country	Eligibility	Minimum Contribution	Other Conditions	Duration	Replacement Rate	Effective Coverage: % Unemployed Receiving
Brazil	Private sector employees	12 months in last 19 months for 1st time unemployed.	Layoff is involuntary; excludes misconduct and resignation	3 to 5 months (based on prior work history)	80% to 50%	4%
Chile	UISA: Private sector employees.	12 months for permanent contracts, 6 for temporary	Involuntary unemployment	1 year	70% - 30%	46%
Colombia	Mandatory for employed persons. Voluntary for self-employed and employees with low income	Enrollment in a family allowance fund for at least 1 year (2 years for self-employed) in last 3 years.	UI: Registration with an employment service, participate in training.	6 months	Lump-sum of 1 month of salary for each year of employment	5%

Sources: Morgandi et al. (forthcoming) for Brazil, Chile, and Colombia.
Note: For Chile, the table covers the post-2002 UI individual savings account scheme. UI = unemployment insurance.

Box 3. The Role of Teleworkability, Contact-Intensity and Firm Size in Determining Workers' Employment Risk: Evidence from Mexico's Labor Survey

The COVID-19 shock affected Latin American workers though several margins. Some workers experienced reductions in their hourly wage. Others experienced reductions in hours worked and, as a result, in their labor income. Some lost their jobs altogether.

To study the factors affecting these margins this Box presents the results from panel regressions using Mexico's ETOE labor monthly survey. This survey ran from April through June and follows workers who were originally interviewed in the regular March survey. The structure of the survey allows to study the likelihood of workers transitioning through different states. In particular, the analysis focuses on the determinants of three outcomes: i) experiencing a full employment spell (that is, being employed in March, April, May, and June), ii) experiencing a reduction in hours relative to March, iii) experiencing a reduction in hourly labor income relative to March. The econometric analysis controls for several individual characteristics observed in the March survey—age, gender, educational attainment, type of occupation (teleworkable or contact-intensive), sector of employment, and firm size.

The results show that a larger firm size increases the chance of a worker experiencing a full employment spell and reduces the chance of experiencing reductions in hours (Box Table 3.1, Columns (1)-(2) and (5)-(6)). The results for hourly wages are not statistically significant. A worker's occupation is also an important determinant of employment spells and changes in hours and wages. All else equal, workers in contact-intensive occupations are less likely to experience a full employment spell and more likely to suffer hours and wage cuts. Conversely, workers in teleworkable occupations are more likely to experience a full employment spell and less likely to experience reductions in hours and wages.

Finally, the results highlight the unequal burden of the crisis along gender and skill lines. All else equal, women are less likely to experience employment losses and more likely to suffer reductions in hours and income. The same result holds for workers with primary and secondary educational attainment.

Box Table 3.1. Determinants of Employment, Hours Worked and Wages during COVID-19

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Employed March through June	Employed March through June	Reduction in income since March	Reduction in income since March	Reduced Hours in June compared to March	Reduced Hours in June compared to March
Male	0.111***	0.124***	-0.0442***	-0.0509***	-0.0505***	-0.0534***
	(0.0101)	(0.0101)	(0.0104)	(0.0105)	(0.00996)	(0.0101)
Tertiary education	0.140***	0.0972***	-0.0770***	-0.0545***	-0.0461***	-0.0357***
	(0.0104)	(0.0112)	(0.0108)	(0.0117)	(0.0103)	(0.0111)
Employed by a mid-sized firm in March	0.174***	0.171***	0.000560	0.000888	-0.0556***	-0.0563***
	(0.0161)	(0.0160)	(0.0167)	(0.0167)	(0.0159)	(0.0159)
Employed by a large firm in March	0.213***	0.215***	-0.0114	-0.0165	-0.0950***	-0.101***
	(0.0173)	(0.0171)	(0.0179)	(0.0178)	(0.0171)	(0.0170)
25–40 years	0.173***	0.163***	-0.0552***	-0.0501***	-0.0261*	-0.0239
	(0.0157)	(0.0156)	(0.0162)	(0.0163)	(0.0155)	(0.0155)
40–55 years	0.179***	0.167***	-0.0599***	-0.0538***	-0.0215	-0.0190
	(0.0160)	(0.0160)	(0.0166)	(0.0166)	(0.0158)	(0.0159)
Over 55 years	-0.00753	-0.0221	-0.0334*	-0.0262	0.0979***	0.101***
	(0.0181)	(0.0180)	(0.0187)	(0.0188)	(0.0179)	(0.0179)
Contact-intensive job in March	-0.0187*		0.0322***		0.0322***	
	(0.0101)		(0.0105)		(0.0100)	
Teleworkable job in March		0.126***		-0.0671***		-0.0322**
		(0.0127)		(0.0132)		(0.0126)
Constant	0.263***	0.247***	0.683***	0.702***	0.714***	0.731***
	(0.0165)	(0.0157)	(0.0171)	(0.0163)	(0.0163)	(0.0156)
Observations	8,946	8,946	8,946	8,946	8,946	8,946
R-squared	0.101	0.110	0.011	0.013	0.024	0.024

Sources: IMF staff calculations.
Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

This box was prepared by Samuel Pienknagura.

Box 4. Distributional Impact of the Crisis and Role of Emergency Cash Transfers in Brazil

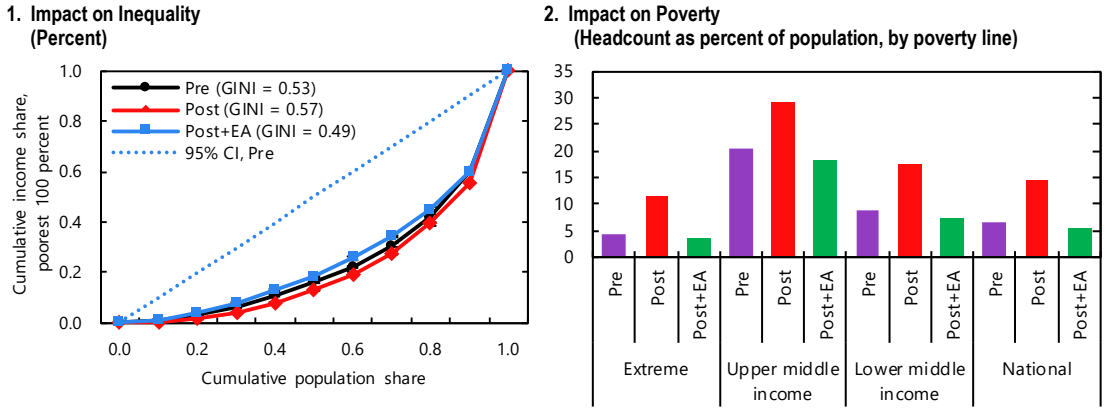
Labor income fell across the income distribution with low-income households the most affected. Labor income losses were large, amounting to more than 15 percent of pre-crisis income for each income decile. The average income of the lowest decile was hardest hit, with average income in the lowest decile dropping by around 30 percent due to the pandemic. Households in the lowest decile lost about 1.2 percentage points (p.p.) of their percentile share while the percentile share of the top decile increased by approximately 2.5 p.p.

To support vulnerable households, the authorities offered generous cash transfers. The Emergency Aid (EA) is a temporary, means-tested and broad-based cash transfer covering around 33 percent of the population. It was originally set to last one quarter, during which beneficiaries received BRL600 per month (about 40 percent of pre-COVID-19 median labor income, 60 percent of the minimum wage, and over 3 times the median stipend under Bolsa Familia). The program was then extended twice: first until August (keeping 100 percent of the original benefits) and then until December (with benefits at half the original amount). In terms of targeting, 70 percent of households in the poorest decile received the aid, earning 20 percent of total EA disbursements (but initially close to 10 percent of households in the top income decile also received the transfer). The annual cost of the EA is around 5 percent of GDP in 2020.

The transfers had a large impact on household income in the bottom deciles. Larger transfers were received by households whose head is a female between the ages of 15 to 28, and by households whose head is either a male or a female and who have no to incomplete secondary schooling. Households that had members removed from work due to social distancing measures have seen their income redeemed through the additional aid up to 77 percent of their pre-COVID-19 income. In fact, on average income for the bottom 40 percent of the income distribution increased by around 20 percent with respect to pre-COVID-19 reported income with an increase of around 50 percent in the bottom decile.

Consequently, the transfers substantially mitigated the negative (immediate) impact of the pandemic on poverty and inequality. Staff calculations based on the PNAD-COVID survey suggest that without the EA, inequality as measured by the Gini index would have increased from 0.53 pre-COVID-19 to 0.58 post-COVID-19 (Box Figure 4.1, panel 1), accompanied by a drastic increase in the poverty headcount ratio, from about 6.7 percent to 14.6 percent (as per the national poverty line of 178 BRL of per-capita household income, Box Figure 4.1, panel 2). Once the EA is considered, the poverty headcount ratio fell (at least in the snapshot for May and June) to 5.4 percent and the Gini coefficient to 0.5—both lower than their pre-COVID-19 levels.

Box Figure 4.1. Impact of Emergency Aid on Poverty and Inequality



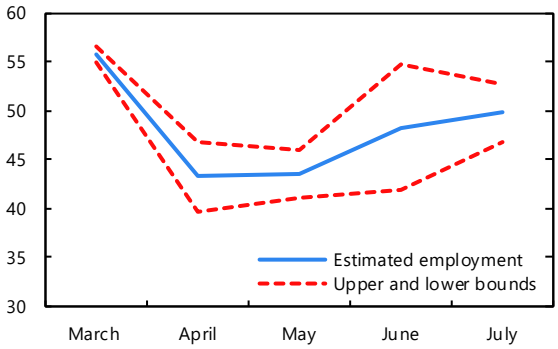
Sources: Instituto Brasileiro de Geografia e Estatística; and IMF staff calculations.
Note: Pre = pre-COVID; Post = post-COVID; Post+EA = post-COVID with emergency aid (EA). Poverty lines are as follows: Extreme poverty: US$1.9 PPP per capita per day; Lower middle income: US$3.2 PPP per capita per day; Upper middle income: US$5.5 PPP per capita per day.

This box was prepared by Diala Al Masri and Frederik Toscani.

Annex 1. The Challenges of Data Collection during the Pandemic

The COVID-19 pandemic not only disrupted economic activity and labor markets in Latin America; it also hampered the ability of national statistical agencies to collect data required to monitor LAC's economies. In the specific case of labor market statistics, national statistical agencies rely on labor surveys, which are typically in-person interviews that seek to fill a comprehensive pre-determined questionnaire. The health emergency and the ensuing social distancing forced statistical agencies to adapt to the new reality and modify the data collection process.

Annex Figure 1.1. Mexico: Employment and Confidence Intervals
(Millions of workers)



Sources: Instituto Nacional de Estadística y Geografía; and IMF staff calculations.

Two changes were typically seen amid the health emergency, in line with ILO's recommendations. Statistical agencies across LA5 switched from in-person interviews to telephone interviews to ensure social distancing. Telephone numbers were typically obtained from existing databases. In some countries the transition to telephone interviews was accompanied by a shorter questionnaire.

While the transition ensured continuity in monitoring labor market developments in LAC, it also meant in some cases having a less precise assessment. For example, data from Mexico's National Statistical Agency (INEGI) shows that the confidence interval for the estimate for employment widened substantially since switching to a telephone-based interview process in April (Annex Figure 1.1), as the sample from telephone-based interviews was smaller and less representative of the population as a whole. Thus, part of the large swings in employment between March and June could reflect a noisier estimate of employment. Precision improved in July as INEGI started its transition to in-person interviews.

Annex 2. Description of the Accounting Framework and Calibration

Framework

The accounting framework follows the methodology proposed by Alfaro et al. (2020). The methodology calculates employment and value added at risk as described below.

In each period *t,* the probability that worker *i* loses her job, $\pi_{it} \in [0,1]$, is a function of a supply shock, a sector-specific demand shock and an aggregate demand shock , as summarized below:

$$\pi_{it} = \min\left\{1, \left(SShock_{it} + DShock_{s}\right) * AD\right\}$$

The supply shock (*SShock*), is a combination of a probability of loss of employment (S_{it}) associated with the size of the firm in which the worker is employed, an indicator function of teleworkability ($T_i = 1$ implies being teleworkable) and an indicator function of contact intensity ($Highcontact_i$), both of which are a function of the worker's occupation, a variable capturing whether the worker's sector is on lockdown ($Lock_s$) and two variables reflecting whether sectors which supply inputs to sector *s* or demand inputs from *s* are under lockdown(Lup_s and $Ldown_s$, respectively). In sum. *SShock* takes the following form:

$$SShock_{it} = S_{it} * \min\left\{1, \left(1 - T_i\right) * Highcontact_i\right\} * \min\left\{1, Lock_s + Lup_s + Ldown_s\right\}$$

To operationalize this, the framework defines Lup_s and $Ldown_s$ as:

$$Lup_s = \sum_{j \neq s} Lock_j * \frac{purchases_{j:from:s}}{grossout_s}$$

$$Ldown_s = \sum_{j \neq s} Lock_j * \frac{purchases_{s:from:j}}{grossout_s}$$

S_{it} is defined as follows:

- Smaller firms, self-employed, and informal sector are assumed to lose employment faster when facing a lockdown. This is because they are not bound by firing restrictions or other employment protection regulations and have less cash reserves and access to credit. In contrast, larger firms would only lay off employees in case of a very protracted lockdown. Deviating from Alfaro et al. (2020) , where S_{it} is either 0 or 1, the exercise presented here allows S_{it} to take intermediate values. The exact values approximate ITC (2020), which presents probability of closure for firms of different sizes. Probability of closure within 3-months and within 6-months were used for the lockdown phase and reopening phases, respectively, reflecting the envisaged durations of lockdowns.

- Employment for small, self-employed, and informal workers is assumed to recover more quickly when the economy reopens. This is because they face minimal organization capital and entry, hiring and firing costs. In contrast, due to fixed costs associated with, *inter-alia*, regulatory compliance, medium firms are assumed to have a harder time resuming operations when lockdowns are eased.

The sector-specific demand shock is as a combination of a direct demand shock ($Dloss_s$), weighted by the importance of final sales to the sector s output ($\frac{finalsales_s}{grossout_s}$), and an indirect effect reflecting weaker demand in other sectors that buy from s **(**$Dloss_j * \frac{purchases_{j:from:s}}{grossout_s}$**).**

In sum, the total effect is:

$$Dshock_s = Dloss_s * \frac{finalsales_s}{grossout_s} + \sum_{j \neq s} Dloss_j * \frac{purchases_{j:from:s}}{grossout_s}$$

The size of $Dloss_s$ is assumed to decrease by 25 percent in the partial opening phase and 50 percent in the advanced opening phase.

The aggregate demand shock follows the standard Keynesian multiplier $AD = \frac{1}{1 - MPC}$.

Calibration Parameters

Information on the size of different parameters necessary to implement the accounting framework can be found below:

Lock_j reflects the impact of different phases of lockdowns in each sector. They approximate each country's lockdown and reopening plans. In the case of Colombia, the following values are assumed:

Sector Code	Sector Name	Lock_s	Lock_s_selective
A	Agriculture	0	0
B, D, E	Mining, electricity and water	1	1
C	Manufacturing	0.681	0
F	Construction	1	0
G	Wholesale and Retail	0.561	0.280
H	Transportation and Storage	0.647	0.647
I	Accommodation and Food Services	1	1
J	Information and Communication	0	0
K	Finance and Insurance	0	0
L	Real Estate	0	0
M, N, R, S	Professional services, administrative services, arts and entertainment, etc.	0.114	0.114
O	Public administration	0	0
P	Education	0	0
Q	Human Health and Social Services	0	0
T	Household as employer etc.	1	1

I-O linkages (Colombia example)

Sector Code	Sector Name	Upstream $(\sum_{j \neq s} \frac{purchases_{j:from:s}}{grossout_s})$	Downstream $(\sum_{j \neq s} \frac{purchases_{s:from:j}}{grossout_s})$
A	Agriculture	0.48	0.27
B, D, E	Mining, electricity and water	0.22	0.22
C	Manufacturing	0.36	0.32
F	Construction	0.05	0.48
G	Wholesale and Retail	0.51	0.33
H	Transportation and Storage	0.40	0.32
I	Accommodation and Food Services	0.24	0.38
J	Information and Communication	0.17	0.40
K	Finance and Insurance	0.48	0.17
L	Real Estate	0.32	0.09
M, N, R, S	Professional services, administrative services, arts and entertainment, etc.	0.60	0.16
O	Public administration	0.03	0.41
P	Education	0.02	0.25
Q	Human Health and Social Services	0.16	0.32
T	Household as employer etc.	0.00	0.00

S_{it} takes the following values:

	Shutdown Phase	Partial Opening Phase		Advanced Opening Phase	
		Sectoral Opening < 50 percent	Sectoral Opening > 50 percent	Sectoral Opening < 50 percent	Sectoral Opening > 50 percent
Small, self-employed, informal	0.31	0.58	0	0	0
Medium	0.24	0.45	0.225	0.225	0
Large	0.13	0.29	0	0	0

Dloss (direct demand shock): Adopting consumption shock to Sweden to our sectoral classification

Sector Code	Sector Name	
A	Agriculture	0.055
B, D, E	Mining, electricity and water	0
C	Manufacturing	0.111
F	Construction	0
G	Wholesale and Retail	0.188
H	Transportation and Storage	0.526
I	Accommodation and Food Services	0.540
J	Information and Communication	0
K	Finance and Insurance	0
L	Real Estate	0
M, N, R, S	Professional services, administrative services, arts and entertainment, etc.	0.081
O	Public administration	0
P	Education	0
Q	Human Health and Social Services	0
T	Household as employer etc.	0

AD=1.692, following Alfaro et al. (2020).

Data Sources

Input-Output table: sourced from WIOD for Brazil and Mexico, OECD for Chile, Colombia and Peru, aggregated into 15 sectors to ensure a common sector classification

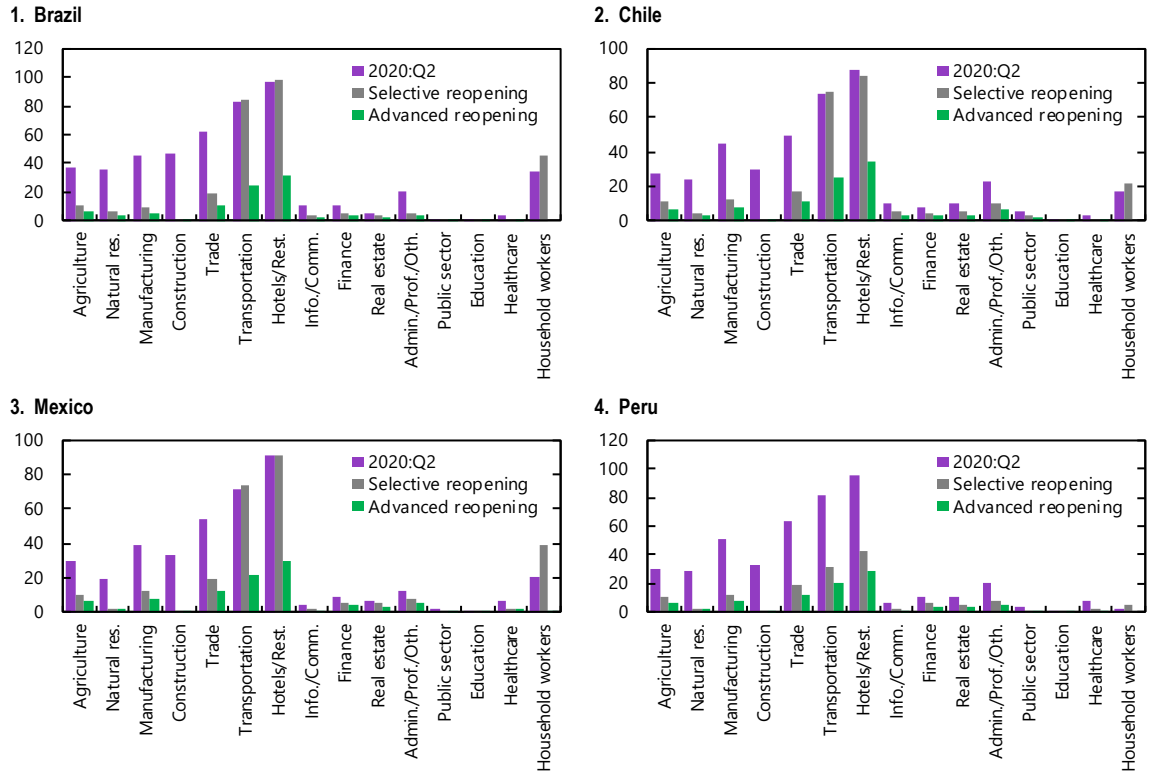
Labor surveys: sourced from national statistical authorities, second quarter of 2019 data.

Shares of high teleworkability and high contact intensity in each occupation: sourced from Dingel and Nieman (2020) and Leibovici et al. (2020), computed on the US occupations with the SOC 2010 classification using the 2017 American Community Survey. The variables are then applied to the national labor surveys through a set of crosswalks from the SOC 2010 to various editions of the ISCO (68 for Colombia, and 08 for the others).

Annex 3. Additional Results from Accounting Framework for LA5

Annex Figure 3.1. Share of Employment in the Lockdown Phase: By Sector

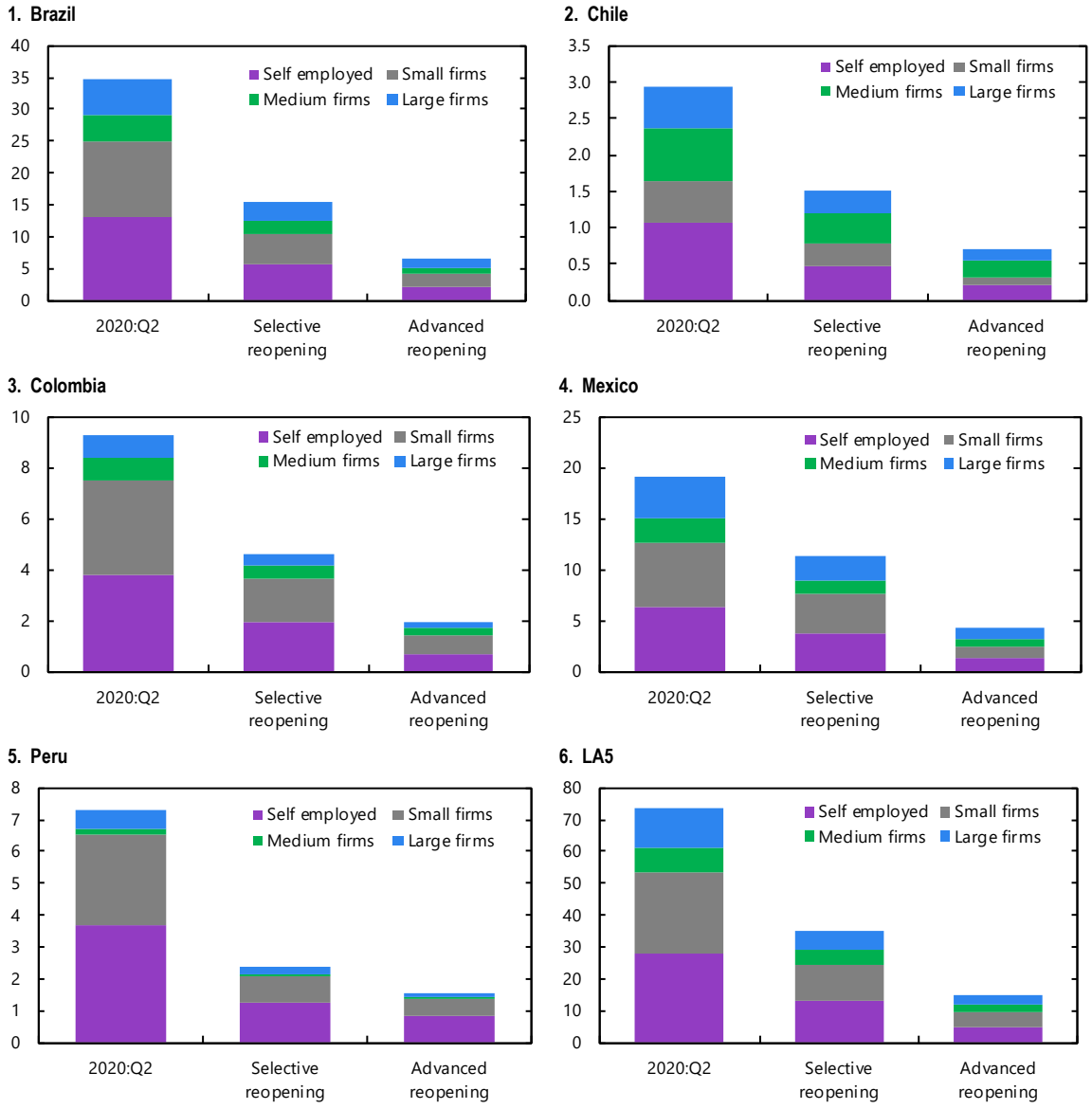
(Jobs at risk; percent share)



Source: IMF staff calculations.

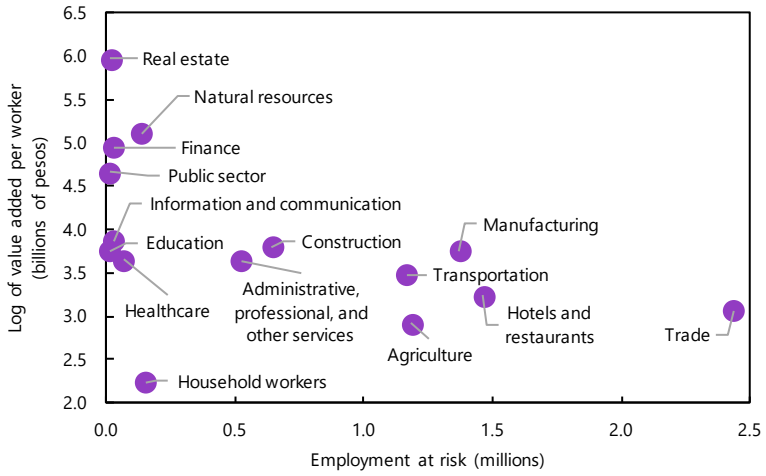
Annex Figure 3.2. Employment at Risk for LA5 Countries During the Lockdown Phase and the Recovery Phases: By Firm Size

(Jobs at risk; millions)



Source: IMF staff calculations.
Note: LA5 = Brazil, Chile, Colombia, Mexico, Peru.

Annex Figure 3.3. Colombia: Labor Productivity and Employment at Risk During the Lockdown Phase by Sector



Sources: National authorities; and IMF staff calculations.

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