EMEs and COVID-19: Shutting Down in a World of Informal and Tiny Firms

Laura Alfaro\textsuperscript{1} Oscar Becerra\textsuperscript{2} Marcela Eslava\textsuperscript{2}

\textsuperscript{1}Harvard Business School \& NBER \textsuperscript{2}Universidad de los Andes

June 2022
2020 Employment losses larger in LATAM (and other EMEs) than any other region.

Figure 3. Working hours lost around the world in 2020 relative to the fourth quarter of 2019 (percentage).

Source: ILO nowcasting model (see Technical Annex 1).

Alfaro, Becerra, and Eslava (2022)
Firms and jobs in EMEs are Different

- We show that the prevalence of informality, micro-entrepreneurship and jobs-not-fit for remote work in non-essential-sectors accounts for this performance in simulations and ex-post outcomes.
  - Low employment protection, lower organizational capital and weaker cash flows than formal firms and jobs: more vulnerable but also faster to recover
- On top of these vulnerabilities, many implemented some of the longest-lasting and most strict blanket lockdown measures.
  - Latam as urban as Europe and US, high enforcement of lockdowns

Alfaro, Becerra, and Eslava (2022)
EMEs are different

Note: Formality status is defined by the payment of mandatory pension contributions (Colombia, Argentina) and an official indicator for informal employment (Peru). For the United States, self-employment encompasses those employed in their own business (incorporated and not incorporated), professional practice, and farming.

Source: Authors' calculations, based on Household Surveys from Argentina, Colombia and Peru (EPH, 2019; GEIH, 2019; ENAHO, 2019), the US Census's Business Dynamics Statistics (BDS, 2014), and the American Community Survey (ACS, 2017).

Alfaro, Becerra, and Eslava (2022)
Government response index

Source: Oxford Coronavirus Government Response Tracker.

Alfaro, Becerra, and Eslava (2022)
Government response index against Europe

Source: Oxford Coronavirus Government Response Tracker.

Alfaro, Becerra, and Eslava (2022)
Mobility: Americas

Note: The figure shows patterns in mobility as reported by Google Mobility. The baseline is the median value for the same day of the week between 3 January–6 February, 2020. Source: Google’s COVID-19 Community Mobility Report.
Note: The figure shows patterns in mobility as reported by Google Mobility. The baseline is the median value for the same day of the week between 3 January–6 February, 2020. Source: Google’s COVID-19 Community Mobility Report.
In this paper

- We assess excess vulnerability of employment and income to the COVID-19 crisis in EMEs, LATAM in particular.
  - A diagnostic tool.
  - Role of differential worker-job characteristics, lockdown vs. demand.
- Probabilistic framework. Applied to Argentina, Colombia, and Peru. Similar employment distribution to other EMEs/Latam.
- Supply/demand shocks + propagation through linkages network
- Informality, firm size, ability to work from home.
- Ex post analysis of actual outcomes as function of ex ante exposure measures.

Alfaro, Becerra, and Eslava (2022)
Within COVID Literature

- Macroeconomic models with demand and supply shocks + SIR: infection feeds into demand, lockdown may dampen negative economic effect. *Acemoglu et al, Alvarez et al, Farboodi et al, Eichenbaum et al, Cakmakli et al*
  - We add developing economy perspective and perspective based on accounting with actual data
- Empirical measurement of exposure given job or worker characteristics and evolution of employment *Cajner et al, Coibion et al, Dingel and Neiman, Koren and Petot, Leibovici et al, Bartik.*
  - No comprehensive framework with demand, supply, IO
- Lockdown vs. demand *Cakmakli et al, Goolsbee and Syverson*
  - Identification of demand vs supply, developed contexts, and lockdowns that are not blanket and displayed short duration
- COVID and developing economies *Alon et al.*
  - Focus on demographics and informality in extremely poor countries with very imperfectly enforced lockdowns.
Risk of job losses under blanket lockdown and demand contraction five times as large in our Latam economies than in a counterfactual US: 50% vs. 9.8% jobs at risk

- 74%-80% of effect due to lockdown alone, around 20% to IO linkages, at most 10% to demand effects.

Over 70% of cross-sector variance of lost work hours in second quarter explained by ex ante exposure, with lockdowns and informality explaining most.

Many of those risks indeed realized in second quarter of 2020: losses of 36% of (active) jobs, 39% of personal income.
Framework

\[ \pi_{ist} = \pi_s \times (1 - \pi_{it}) \times (1 - T_i), \]  
(1)

\( \pi_{ist} \) = prob. that worker with job \( i \) in sector \( s \) hit by shocks and vulnerable to them in scenario \( t \)

\( \pi_s \) = prob(s hit by shock)

\( T_i \) = prob. of fit to work from home

\( \pi_{it} \) = prob. employer cannot layoff or has resources to avoid laying-off.

\[ Job\_loss_t = \left( AD \times \sum_i \frac{\pi_{ist}}{N} \right) \times \varepsilon_t \]  
(2)

\[ = Jobs\_at\_risk_t \times \varepsilon_t. \]  
(3)

\( AD \) = Keynesian multiplier \( \varepsilon_t \) policy response and other unmeasured factors

Alfaro, Becerra, and Eslava (2022)
Framework: prob. s hit by shock

\[ \pi_s = \text{Prob} \left( \text{Lock}_s = 1 \cup \text{Dloss}_s = 1 \cup \text{IO}_s = 1 \right). \]  

(4)

\[ \text{Prob} \left( \text{IO}_s = 1 \right) = \sum_{j \neq s} \text{Prob} \left( \text{Lock}_j = 1 \cup \text{Dloss}_j = 1 \right) \times \frac{\text{purch}_{j: \text{from}:s}}{\text{grossout}_s} \]

\[ + \sum_{j \neq s} \text{Prob} \left( \text{Lock}_j = 1 \cup \text{Dloss}_j = 1 \right) \times \frac{\text{purch}_{s: \text{from}:j}}{\text{grossout}_s}, \]  

(5)

Alfaro, Becerra, and Eslava (2022)
Framework: value added

\[ \text{Value\_at\_risk}_t = \left( AD \times \sum_s \frac{VA_s}{W_s} \left( \sum_i (\pi_{ist} \times w_{ist}) \right) \right) \] (6)

Alfaro, Becerra, and Eslava (2022)
Data and context

- **Argentina, Colombia, Peru:**
  - Lockdown March-September 2020
  - Imposed when only hundreds of cases
  - First peak several months later (June, July)

- **Household Surveys (GEIH)**
  - Self-employed, informality status, size of employer firm, occupation
    - Informal = does not contribute to pension (or unprotected job if pension contribution not mandatory)
  - Monthly 2019 to September 2020
Measurement

- \( Lock_s = 1 \) if non-essential \( s \)
- \( Dloss_s = \% \) implied by \( s' \) output loss in Sweeden (2020Q2)
- \( IO_s = 1 \): using IO matrix
- \( T_i \) Prob fit to work from home following DIngel and Neiman (2020)
- \( \pi_{it} \) dummy informal/small depends on scenario
  - \( t=1 \) informal and \( L<11 \)
  - \( t=2 \) informal and \( L<51 \)
  - \( t=1 \) formal and \( L<51 \)
- AD Kmultiplier implied by income levels.

Alfaro, Becerra, and Eslava (2022)
Jobs at risk

Alfaro, Becerra, and Eslava (2022)
Value added at risk

B. Value added at risk

Alfaro, Becerra, and Eslava (2022)
Note: This figure estimates jobs at risk by source of the shock. It refers to the simulation in which informal jobs and those in micro firms are affected (the left-hand set of bars in Figure 2). The impact of each source (lockdown, demand, IO linkages) is calculated as the difference in the jobs-at-risk measure that results from shutting down each source.

Alfaro, Becerra, and Eslava (2022)
Actual employment losses 2020

A. Change in employment

- Argentina
- Colombia
- Peru

- All Jobs
- Formal jobs
- Informal jobs
- Self employed
- Jobs at firm 2-10 employees
- Jobs at firm > 10 employees
- Jobs in essential sectors
- Jobs in non essential sectors

Change in employment (%)
- Second quarter
- Third quarter

Alfaro, Becerra, and Eslava (2022)
Variance decomposition of actual losses

Reduced form regression:

\[ \Delta E_s = \beta_0 + \beta_1 L_s + \beta_2 D_s + \beta_3 IO_s^L + \beta_4 IO_s^D + \beta_5 (1 - \bar{T})_s + \beta_6 S_s + \]
\[ \beta_7 L_s \cdot (1 - \bar{T})_s + \beta_8 D_s \cdot (1 - \bar{T})_s + \beta_9 IO_s^L \cdot (1 - \bar{T})_s + \beta_{10} IO_s^D \cdot \]
\[ \beta_{11} L_s \cdot S_s + \beta_{12} D_s \cdot S_s + \beta_{13} IO_s^L \cdot S_s + \beta_{14} IO_s^L \cdot S_s + u_s \]

where \( \Delta E_s \) is the number of work hours lost. We report Rsquared and evaluate each single dimension by fall in Rsquared when that dimension excluded.
Variance decomposition actual losses

A. Total hours

<table>
<thead>
<tr>
<th>Exposure Measure</th>
<th>Argentina</th>
<th>Colombia</th>
<th>Peru</th>
</tr>
</thead>
<tbody>
<tr>
<td>All exposure measures</td>
<td>88</td>
<td>74</td>
<td>67</td>
</tr>
<tr>
<td>Non-essential (Locked down)</td>
<td>58</td>
<td>50</td>
<td>32</td>
</tr>
<tr>
<td>Idiosyncratic demand</td>
<td>34</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>IO linkages</td>
<td>27</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>% not teleworkable</td>
<td>13</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>% informal jobs or in micro firm</td>
<td>20</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>15</td>
<td>37</td>
</tr>
</tbody>
</table>

Note: This figure reports the R-squared from regression (9) (the first set of bars), and the contribution of each regressor to that R-squared (the remaining bars). The contribution of a given regressor is given by the difference between the R-squared of regression (9) the R-squared excluding that regressor. Source: Authors' calculations, based on employment losses reported in each country's household survey for the second and third quarters of 2019 and 2020.

Alfaro, Becerra, and Eslava (2022)
Final remarks

- High informality and prevalence of microenterprises render emerging market economies more vulnerable to the COVID-19 crisis and likely other crises.

- Blanket long duration lockdowns costly, in a context with low capacity to mitigate via subsidies to jobs and jobless people.

- With widespread labor market rigidities and barriers to formal firm entry, formal-sector jobs are already taking long to recover.
  - Policies should also aim to reduce the barriers to formality as a way to speed up a “better” recovery.

Alfaro, Becerra, and Eslava (2022)