

RESEARCH INSIGHTS



How Did Mobility Restrictions Affect Labor Automation in the Developing World?



This study investigates the effects of COVID-19 induced mobility restrictions and the rise of automation on Peru's labor market.



The research uncovers a differential decline in employment rates and wages for high-risk workers in paralyzed industries, persisting for 18 months post-pandemic.



Occupational mobility emerges as a key factor in the recovery of these workers, underscoring the importance of adaptability in the face of automation.

CONTEXT

To contain the spread of the COVID-19 pandemic, governments were forced to impose unprecedented mobility restrictions. Certain essential industries were allowed to continue operating, but others were heavily restricted. Such restrictions might have incentivized the adoption of automation technologies by businesses striving to adhere to social distancing protocols while preserving production and ensuring their survival. In fact, according to a World Economic Forum (2020) survey, around 50% of business leaders were set to accelerate the automation of jobs in their companies after the pandemic broke out, and 43% of businesses indicated that they were set to reduce their workforce because of technology integration.

PROJECT

This paper investigates whether exogenous shocks that restrict labor mobility can incentivize automation in the developing world. We focus on Peru, a highly informal developing economy, leveraging a rich longitudinal household survey that allowed us to follow workers from 2018 to 2021. We divided workers into two categories based on their industries before the pandemic: those in paralyzed industries, affected by lockdowns and other mobility restrictions; and those in essential industries, exempt from such constraints. Furthermore, jobs were categorized based on their tasks: occupations predominantly involving routine tasks were classified as highly automatable, whereas those with fewer routine tasks were classified as less automatable. Using a triple-difference empirical design, we exploited the unexpected timing of the pandemic and the pre-existing industry and occupation of workers to estimate the impact of mobility restrictions on automation. This approach enabled us to isolate the effect of automation from the broader economic impact of the pandemic since labor outcomes were compared between individuals within the same industry, yet with different levels of exposure to automation risk.

RESULTS

Our findings reveal that workers in paralyzed activities who were previously employed in highly automatable jobs experienced a significant and sustained drop in employment and wages because of pandemic-related restrictions (see Figure 1).

However, these workers demonstrated remarkable resilience, as their employment rates and wages eventually recovered to levels similar to those of the control group. The study attributes this recovery largely to occupational mobility, suggesting that the ability to transition to different occupations has helped workers adapt to the challenges posed by mobility restrictions and automation.

The research also uncovers that these effects were particularly strong for women, small and medium-sized firms, less-skilled workers, informal workers, and those in certain sectors were differentially affected due to their heightened exposure to paralyzed industries and/or high-risk jobs. These findings highlight the complex and multifaceted impact of mobility restrictions on automation.

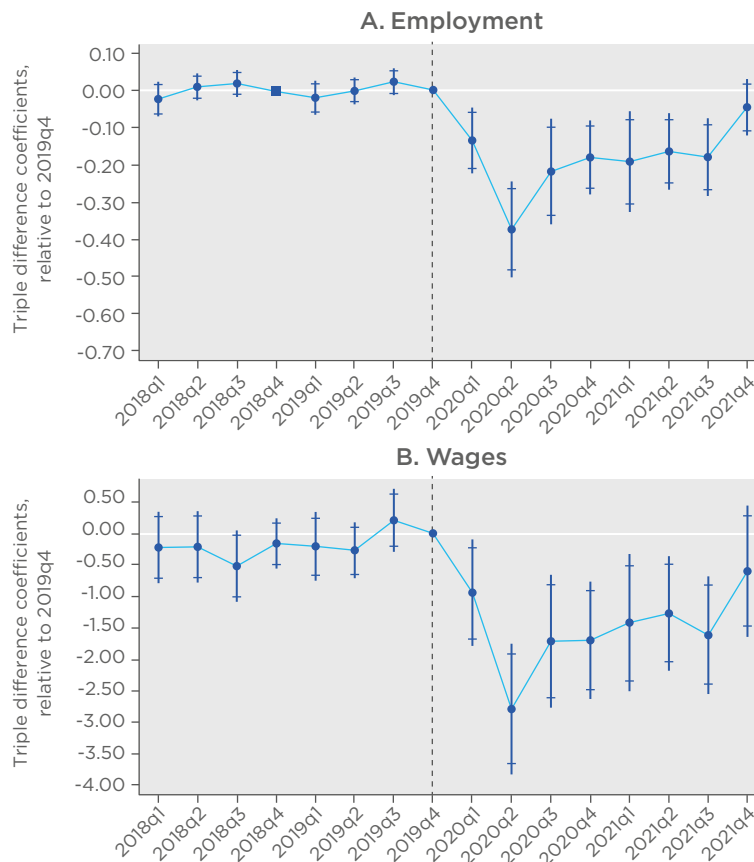


Key Concept

HIGH RISK OF AUTOMATION

Jobs more likely to be automated due to the nature of their tasks.

Figure 1. Effect of Mobility Restrictions and Automation Risk on the Labor Market: Dynamic Triple-Difference Model, 2018–21



Note: The figure shows quarterly point estimates, along with the 90% and 95% confidence intervals of the dynamic triple-difference equation described in Equation 4 for the employment-status dummy (Panel A) and the logarithm of wages (Panel B) using data from 2018 and 2021 and not including workers that moved from high- to low-risk jobs after 2020. High automation risk is defined as workers in the routinization-task-content index's fourth quartile. Standard errors are clustered at both the individual and industry level.

POLICY IMPLICATIONS

The findings of the study have significant policy implications. They underscore the need for policies that equip workers with the skills needed to facilitate transitions towards jobs less exposed to automation, occupational mobility and equip workers with the skills needed to adapt to automation. This is particularly important for workers in high-risk occupations and paralyzed industries, who have been most affected by the changes brought about by the pandemic.

The study also highlights the need for targeted interventions to support different sectors and demographics, which have been differentially affected by mobility restrictions and automation. Policymakers should consider tailored strategies to support these groups, such as sector-specific training programs, incentives for firms to adopt flexible work arrangements, and initiatives to promote formal employment.



FULL STUDY

[Benitez-Rueda, Miguel, Nicolás Domínguez, and Eric Parrado. 2023. "Mobility Restrictions and Automation in the Developing World: Evidence from Peru's Labor Market." IDB Working Paper No. 1457. Washington, DC: Inter-American Development Bank.](#)

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