

RECLAIMING PROGRESS IN THE DIGITAL AGE: UNLOCKING THE POTENTIAL OF NEW TECHNOLOGIES FOR POVERTY AND INEQUALITY REDUCTION

10/22/24

Seminar on Digital Transformation and Artificial Intelligence: Implications for Inequality and Global Economic Convergence

& Brookings

Luis F. López-Calva

Global Director, Poverty & Equity

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GLOBAL STATE OF POVERTY AND INEQUALITY

Global poverty reduction has slowed to a near standstill, with 2020–30 set to be a lost decade

Poverty between 1990 and 2030 at \$2.15, \$3.65, and \$6.85 per person per day:



Source: Pathways out of the Polycrisis, World Bank Poverty, Prosperity, and Planet Report 2024

At the current rates of economic growth, the 3 percent goal will remain out of reach for decades



Projections of poverty until 2050 under different scenarios:

Source: Pathways out of the Polycrisis, World Bank Poverty, Prosperity, and Planet Report 2024

The number of countries with high inequality has fallen, but inequality remains high in Latin America and Sub-Saharan Africa

The 49 economies with high inequality are concentrated in Sub-Saharan Africa and Latin America and the Caribbean



Source: Pathways out of the Polycrisis, World Bank Poverty, Prosperity, and Planet Report 2024

High inequality is more prevalent in low- and middle-income countries as well as countries in fragile and conflict-affected situations (FCS)



Source: Pathways out of the Polycrisis, World Bank Poverty, Prosperity, and Planet Report 2024

Average within-country inequality has been falling in the past 20 years, although the pandemic has had heterogenous impacts

Average within-country inequality using different approaches



Source: Word Bank, Poverty and Inequality Platform (version September 2024), https://pip.worldbank.org.

Note: The sample comprises 121 economies in 2000–04, 131 in 2005–09, 137 in 2010–14, 133 in 2015–19, and 93 economies in 2020–22. The balanced sample comprises 63 economies, 43 of which are income-based surveys. In cases where economies conducted several survey rounds within a half-decade period, the figure uses the median Gini value for the economy across surveys within that interval. Simple averages are used, unweighted by population.

To sustain this progress, it is imperative to protect people from extreme weather shocks. Globally, nearly 1 in 5 people (18%) are at high risk from these hazards

Total population by region compared to exposed and vulnerable populations:



Source: Pathways out of the Polycrisis, World Bank Poverty, Prosperity, and Planet Report 2024

WHAT ROLE CAN DIGITAL TECHNOLOGY PLAY IN ACCELERATING PROGRESS?

IF WE GET IT RIGHT, DIGITAL TECHNOLOGY CAN BE AN INSTRUMENT FOR INCLUSION

Over the past two decades, internet has spread rapidly across the developing world

Individuals using the Internet (% of population)



Source: ITU. Note: It excludes high-income countries

Newer technologies such as Generative AI are also now expanding globally, reshaping the future of work and productivity

Geographic distribution of ChatGPT monthly traffic, March 2024

Top 10 economies

	No.	Economy	Monthly traffic, million visits	Share in global traffic, %
	1	United States	482.9	20.6
	2	India	260.0	11.1
	3	Brazil	159.3	6.80
	4	Philippines	94.38	4.03
TRAFFIC GPT:	5	Indonesia	88.37	3.77
482.9	6	Canada	70.04	2.99
	7	Germany	67.99	2.90
0.8	8	United Kingdom	62.16	2.65
0.16	9	Mexico	58.53	2.50
	10	France	54.95	2.35

Source: Liu, Yan; He Wang (2024). Who on Earth Is Using Generative AI?. Policy Research working paper. Washington, D.C. : World Bank Group.

Digital technologies have vast potential to drive progress in economic growth and improvements in household welfare



Analytical Framework: from Digital Foundations to Household Welfare:

Source: World Bank (2021). How Do Digital Technologies Affect Household Welfare in Developing Countries? Evidence from Senegal

Household welfare: Mobile internet coverage is associated with higher consumption and lower poverty



Source: Masaki, Granguillhome Ochoa, and Rodríguez-Castelán 2020. Note: See figure 2.3.

Source: World Bank (2021). Digital Senegal for Inclusive Growth Technological Transformation for Better and More Jobs

Economic growth: The adoption of digital technologies by firms is correlated with higher productivity outputs





Firm-level tech adoption index and value added per worker

Source: Cirera et al. 2021.

Note: These results are based on linear estimations of the relationship between log of the value added per worker and the GBF technology index, controlling for size, sector, region, and informal status.

Source: World Bank (2021). Digital Senegal for Inclusive Growth Technological Transformation for Better and More Jobs

Spotlight on jobs: Digital technologies in the labor market

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Source: World Bank (2021). How Do Digital Technologies Affect Household Welfare in Developing Countries? Evidence from Senegal

Spotlight on jobs: Digital technologies in the labor market





In Senegal, firms that use more sophistical digital technologies have faster job growth



Source: Cirera et al. 2021. Note: See figure 3.14. EXT= extensive margin; GBF = general business function; INT = intensive margin; SSBF = sector-specific business function.

Source: World Bank (2021). Digital Senegal for Inclusive Growth Technological Transformation for Better and More Jobs



In Brazil, firms' broadband adoption increased wages by 2.2 percent

Wage Effects of Broadband

	(1)	(2)	(3)	(4)	(5)
Broadband	0.032^{***} (0.009)	$\begin{array}{c} 0.024^{***} \\ (0.009) \end{array}$	0.025^{***} (0.009)	0.022^{***} (0.008)	0.022^{***} (0.008)
Log Employees			$0.000 \\ (0.004)$		-0.010^{**} (0.004)
Worker Controls		•	•	•	•
Fixed Effects					
Establishment	•	•	•	•	•
Year	•	•	•		
Industry-Year				•	•
$Adj-R^2$	0.45	0.69	0.69	0.69	0.69
Establishments	3,349	3,349	3,334	3,348	3,333
Ν	$6,\!516,\!495$	$6,\!515,\!675$	$6,\!464,\!730$	6,515,673	$6,\!464,\!728$

 Table 5: Wage Effects of Broadband

NOTE: Standard errors in parentheses are clustered by establishment.

*
$$p < .10, ** p < .05, *** p < .01$$

Source: The Wage and Inequality Impacts of Broadband Internet Christopher W. Poliquin University of California, Harvard Business School, Los Angeles December 31, 2021



In Peru, school-based internet access helped increased math test scores of second grade students by 0.110 standard deviations

Impact of Internet Access on test scores



Source: Lakdawala et al (2023). Dynamic Impacts of School-Based Internet Access on Student Learning: Evidence from Peruvian Public Primary Schools. American Economic Journal: Economic Policy 2023, 15(4): 222–254

WHAT ROLE CAN DIGITAL TECHNOLOGY PLAY IN ACCELERATING PROGRESS?

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IF WE DON'T, DIGITAL TECHNOLOGY RISKS BECOMING ANOTHER SOURCE OF EXCLUSION Automation poses risks to inequality: In the US, most groups of workers that suffered automation of tasks since 1980 also experienced a decline in hourly wages



Reduced-form relationship between task displacement and changes in real hourly wages

Source: Figure 6 from Acemoglu, D., & Restrepo, P. (2022). Tasks, automation, and the rise in US wage inequality. *Econometrica*, 90(5), 1973-2016.

Evidence from LAC shows that depending on the enabling environment, GenAI could transform or undermine progress on productivity growth and its interaction with inequality

WORLD: HIC* -	5%	14 %	14 % 24		24 %	43 % (260.49	M jobs)
Costa Rica -	5 %	14	%	19 %		38 % (0.84 M jobs)	
Uruguay -	5 %	11 %		21 % 37		37 % (0.6 M jobs)	
Brazil -	2 %	13 %		22 %		37 % (37.02 M jobs)	
Chile -	3 %	13 %		20 % 37		7 % (3.29 M jobs)	
Dominican Republic -	4 %	14 %		18 %		% (1.8 M jobs)	
Montserrat -	4 %	12 %		19 %		(0 M jobs)	
Mexico -	2 %	14 %		18 %		(20.48 M jobs)	
Colombia -	3 %	14 %		18 %	35 %	(8.24 M jobs)	
Suriname -	6 %	1	4 %	13 %	33 % (0	08 M jobs)	
Guatemala -	3 %	7 %	21 %		31 % (2.27	M jobs)	
Belize -	4 %	12 %		15 %	31 % (0.05 M	1 jobs)	
El Salvador -	4 %	13 %		15 %	31 % (0.87 N	1 jobs)	
Peru -	3 %	13 %		14 %	31 % (5.54 N	l jobs)	
Panama -	4 %	12 %	1	5 %	31 % (0.6 M j	obs)	
Grenada -	5 %	12 %		14 %	31 % (0.01 M	jobs)	
Honduras -	2 %	8 %	19 %	29	9 % (1.28 M job	os)	
Guyana -	3 %	12 %	14 %	6 29	% (0.08 M job	s)	
Nicaragua -	1 %	10 %	17 %	28 %	(0.87 M jobs)		
Bolivia -	2 %	12 %	13 %	27 % (1.59 M jobs)		
Ecuador -	2 %	11 %	14 %	27 % (2	2.28 M jobs)		
Barbados -	4 %	8 %	14 %	26 % (0.0	03 M jobs)		
	0		20 Share	e of total em	ployment (%	40	60
		A	utomation Potential	Augmenta	ation Potential	The Big Unknown	Source: "Buffer or Bottlenec Generative AI and the Digital Di Gmyrek, Hernan Winł

Total exposure to GenAI by LAC country

ck? Employment Exposure to ivide in Latin America" Paweł kler, Santiago Garganta, 2024 The workers who would benefit from using Generative AI are mostly concentrated in the upper middle class

Share of workers exposed to GenAI augmentation and who use a computer at work, by quintiles of household income per capita



Source: "Buffer or Bottleneck? Employment Exposure to Generative AI and the Digital Divide in Latin America", 2024. World bank Policy Research Working Paper 10863.

The digital divide is widespread—even in upper-middle-income countries (such as Mexico and Colombia) fewer than 40% of the poor do not have internet access



People with internet access inside or outside the home (%)

Source: World Bank estimates based on GMD and SEDLAC. Note: People with internet access inside or outside the home, as a share of the total population. It includes the latest survey since 2019 for each country. US\$6.85 2017 PPP poverty line. Reasons for limited access to the internet vary, but affordability remains a critical constraint

Reasons for not subscribing to fixed broadband in Indonesia



Source: World Bank (2021). Beyond Unicorns: Harnessing digital Technologies for Inclusion in Indonesia

Beyond income, different types of horizontal inequalities also often interact with digital inequalities, heightening the risk of exclusion for certain groups



Note: Based on RIA 2017-18. Income is the total flow of earnings of the individual in a month, including wages and salaries, business income, property income, and so on. Wealth is a categorical index, with a range of 0-3, measuring if a person owns a refrigerator, a TV, and a car.

Source: World Bank (2021). Digital Senegal for Inclusive Growth Technological Transformation for Better and More Jobs

Reasons for lack of digital device ownership in MENA Men vs. Women



Source: WB Staff's calculations using survey data from Digital Gender Gap and Economic Opportunities Survey, World Bank, April-June 2023



POLICIES: HOW TO MAXIMIZE THE POSITIVE IMPACTS OF DIGITAL TECHNOLOGIES WHILE MINIMIZING ITS RISKS?

From digital technology to household welfare

Analytical Framework: from Digital Foundations to Household Welfare:



Source: How Do Digital Technologies Affect Household Welfare in Developing Countries? Evidence from Senegal (2021)

Digitalization as an instrument for inclusion

Three conditions



Example: Improving competition in the telecommunications sector helps increase affordability, internet adoption and reduce poverty



Source: Calculations are based on data from TeleGeography, Regulatory Status Dataset (http://www .telegeography.com) and World Development Indicators 2016, International Telecommunication Union, World Telecommunication/ICT Development Report and database, and World Bank estimates. Note: Internet penetration is the number of Internet users per 100 people. The reform is the liberalization of the international segment of the telecommunications sector.

Source: Kelly, T., Liaplina, A., Tan, S. W., & Winkler, H. (2017). *Reaping digital dividends: Leveraging the internet for development in Europe and Central Asia*. World Bank Publications.

Effects of increasing competition in telecommunication markets on poverty headcount rates, WELCOM results (Change of headcount poverty rate in percentage points)



Source: Malasquez et al. (2022).

Note: Point estimates for elasticity baseline scenarios. Estimates derived using the WFLCOM tool



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THANK YOU!

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@LFLopezCalva