



Research Newsletter

RESEARCH NEWSLETTER

Accelerating Digital Development | April 2024

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Welcome to the April edition of the research newsletter, which focuses on accelerating digital development.

In a recent [blog post](#), the World Bank's Senior Managing Director argued that digital technologies offer the possibility of "a new era in development." A growing body of research points in this direction—the [World Development Report 2020: Trading for Development in the Age of Global Value Chains](#) suggested that low- and middle-income countries (LMICs) could gain the most from emerging digital technologies, including artificial intelligence (AI), because these countries face the highest trade costs and biggest distortions to their economies.

To achieve these gains, investments in digital infrastructure will be critical. For example, as [Robert Cull](#) and his co-authors find in a [recent working paper](#), countries with better connectivity to electricity, the internet, and mobile telephony were able to benefit from greater growth in digital payments in the wake of the COVID-19 pandemic. Another example comes from [Kibrom Tafere](#) and co-authors, who find that mobile network expansion reduced infant mortality in Africa ([Mensah, Tafere, and Abay, 2022](#)).

As digital infrastructure expands, building digital skills will also be essential. In a recent working paper, Emily Breza, [Martin Kanz](#), and [Leora Klapper](#) report on the results of a field experiment where they introduced digital payroll accounts among factory workers in Bangladesh. The accounts helped workers to increase account use, avoid illicit fees, and achieve increased savings through a process of "learning-by-doing." ([Breza, Kanz, and Klapper, 2020](#)). Other teams of researchers are examining how Zoom can be used to train microentrepreneurs ([Davies et al, 2024](#)); how to address the digital skills gap among women and youth in India ([Anukriti](#), in progress); the use of a digital tool to support school-to-work transition of female vocational trainees ([Anukriti](#), in progress); support to firms in Egypt in adopting digital marketing technologies ([McKenzie, Osman, and Rahman](#), in progress); and

many other projects highlighted in this month's newsletter.

Investments in digital infrastructure and skills are making a vast array of new high-impact digital services possible. In the public sector, for example, electronic tax filing is helping fight corruption and reduce the cost of tax compliance ([Okunogbe and Pouliquen, 2022](#)). In Jamaica, a virtually delivered intervention is reducing violence against children and improving caregiver mental health ([Dinarte-Diaz et al., 2023](#)). Many new research projects are incorporating machine learning and AI for even greater impact—for example, [Anja Sautmann](#) and team are testing the use of AI for the smart assignment of mediators to court cases in Kenya; [Berk Özler](#) is exploring the use of tablet-based contraceptive counseling in Cameroon; and [Carolina Lopez](#) is using a digital platform that incorporates AI and machine learning to provide students math remediation with adaptive instructions tailored to their individual learning levels.

Research is also revealing the role of digital services in the private sector. For example, firms in the Balkans that received training to improve their digital presence increased their exports and customer base ([Cusolito, Darova, and McKenzie, 2022](#)). Ongoing research projects are examining a range of applications, including how e-commerce helped firms be more resilient in the wake of the COVID-19 outbreak ([Fernandes et al.](#), in progress); how the launch of a fast payment system in Brazil is benefiting micro and small enterprises ([Gine et al.](#), in progress); and how disruptive digital technologies spread among firms around the globe ([Bastos et al.](#), in progress).

At the same time, the digital development agenda brings many challenges. First, well-intended programs can fail to deliver on their promises, often due to low take-up. For example, a digital health service targeted to pharmaceutical vendors in Nigeria failed to improve business practices, pointing to low engagement as a key barrier to platform success ([Friedman et al.](#), forthcoming). Second, programs may produce unintended results. A digital stress management and positive parenting intervention in El Salvador actually increased stress and anxiety and lowered caregiver-child interactions among male caregivers ([Amaral et al., 2024](#)). Third, digital services can enable bad actors. [Do, Gomez-Parra, and Rijkers \(2023\)](#) find that greater internet access facilitated Daesh's recruitment of foreign fighters from Tunisia.

Research will have a critical role to play in supporting this agenda—by documenting successes, spreading knowledge about what works, and highlighting problems and challenges as they arise to inform policy makers on how to course correct over time.

RESEARCH HIGHLIGHTS

DIGITAL SKILLS, JOBS & PRIVATE SECTOR DEVELOPMENT

✓ [Training Microenterprise Owners over Zoom: Experimental Evidence from Mexico](#)

*Elwyn Davies, Peter Deffebach, Leonardo Iacovone, and [David McKenzie](#), *Journal of Development Economics*, vol. 167, March 2024 | [Blog Post](#)*

Standard in-person business training programs are costly and difficult to scale to the millions of microenterprises in the developing world. Asynchronous massive open online courses (MOOCs) might present a feasible alternative, but they have shown incredibly

large drop-out rates. In this paper, researchers conduct an experiment to test the feasibility, cost-savings, and impact of delivering live training sessions over Zoom to microentrepreneurs in Mexico and Guatemala. The results demonstrate that it is now feasible to both recruit and train self-employed women online covering a wide geographic area with few technology issues. However, the cost-savings over in-person classes are less than expected. Training improved business practices and performance over two months, but impacts had dissipated within six months.

✓ [Technological Change](#)

[Erhan Artuc](#), [Paulo Bastos](#), and [Bob Rijkers](#), Chapter 6 of the *World Development Report 2020: Trading for Development in the Age of Global Value Chains*

Chapter 6 of [World Development Report 2020: Trading for Development in the Age of Global Value Chains](#) examines the role that new digital technologies have played in the growth of global value chains (GVCs) and the surge of international trade after 1990. Supply chains are rapidly changing under the pressure of digital innovation. Robotics, 3D printing, big data, blockchain technologies, cloud computing, the Internet of Things, and the rise of platform firms are transforming production and distribution in many industries. Digital technologies raise productivity but are also disruptive, especially when they lead to a reduction in demand for workers. The chapter argues that developing countries may stand to gain the most from emerging digital technologies because these countries face the highest trade costs and biggest distortions. Platform firms like Alibaba, Amazon, and eBay enhance the opportunity for GVC participation. At the same time, they can also foster concentration and generate uneven benefits across firms and households. Platform firms also present new regulatory challenges both because they wield market power and because they may create potential conflicts of interest and enhance the scope for anticompetitive conduct.

ADDITIONAL RESEARCH OF INTEREST

- [The Quality and Price of Africa's Imports of Digital Goods](#) (*Policy Research Working Paper*, March 2024)
- [Job Training and Job Search Assistance Policies in Developing Countries](#) (*Policy Research Working Paper*, September 2023)
- [The Impact of the COVID-19 Pandemic on Women-Led Businesses](#) (*World Bank Research Observer*, February 2023)
- [Capacity Building as a Route to Export Market Expansion: A Six-Country Experiment in the Western Balkans](#) (*Policy Research Working Paper*, December 2022)
- [Shortening Supply Chains: Experimental Evidence from Fruit and Vegetable Vendors in Bogota](#) (*Economic Development and Cultural Change*, October 2022)
- [Massive Modularity: Understanding Industry Organization in the Digital Age — The Case of Mobile Phone Handsets](#) (*Policy Research Working Paper*, September 2022)
- [Globally Engaged Firms in the COVID-19 Crisis](#) (*Policy Research Working Paper*, April 2022)
- [Improving Business Practices and the Boundary of the Entrepreneur: A Randomized Experiment Comparing Training, Consulting, Insourcing and Outsourcing](#) (*Journal of Political Economy*, January 2022)
- [Small Business Training to Improve Management Practices in Developing Countries: Reassessing the Evidence for 'Training Doesn't Work'](#) (*Oxford Review of Economic Policy*, Summer 2021)
- [What Prevents More Small Firms from Using Professional Business Services? An Information and Quality-Rating](#)

[Experiment in Nigeria](#) (*Policy Research Working Paper, April 2021*)

- [Who on Earth Can Work from Home?](#) (*World Bank Research Observer, February 2021*)
- [Winners and Losers from COVID-19: Global Evidence from Google Search](#) (*Policy Research Working Paper, June 2020*)
- [Going Viral: COVID-19 and the Accelerated Transformation of Jobs in Latin America and the Caribbean](#) (*Book, 2020*)
- [The Internet and Chinese Exports in the Pre-ali Baba Era](#) (*Journal of Development Economics, May 2019*)
- [The Future of Work: Race with-not against-the Machine](#) (*Brief, August 2018*)
- [World Development Report 2016: Digital Dividends](#)

CURRENT RESEARCH PROJECTS

Training and Subsidies vs Pay-for-Results in Spurring Digital Marketing Take-up and Small Firm Growth

[David McKenzie](#), Adam Osman, and Aminur Rahman

An ongoing experiment with small firms in Egypt tests two different approaches to spurring adoptions of digital marketing technologies: a traditional training and subsidies approach, and a pay-for-results approach in which firm owners are guaranteed payments if they succeed in adoption.

Addressing the Digital Skills Gap among Women and Youth in Sikkim and Tamil Nadu, India

[S Anukriti](#)

In India's states of Sikkim and Tamil Nadu, lack of digital skills is a key obstacle to the inclusion of women and youth in non-agricultural sectors of the economy. In Sikkim, this is further exacerbated by poor digital connectivity. As part of two US\$100 million World Bank operations, the research team is working with the governments of these states to design and evaluate a series of interventions to boost digitization and digital skills.

STRIVE: Facilitating Women's Entry into the Indian Job Market through Digital Tools

[S Anukriti](#)

STRIVE is a US\$125 million World Bank operation to improve access to high-quality, market-driven vocational training. An impact evaluation is examining whether the school-to-work transition of female vocational trainees can be improved by providing them information about the job market through a phone-based app called MEET, which specifically caters to the needs of vocational training students and employers from smaller towns and cities.

Evaluating a Digital Jobs Platform for Domestic Workers in Bangladesh

[S Anukriti](#), in collaboration with the South Asia Chief Economist's Office

This study is evaluating the impact on worker compensation and work conditions of a digital jobs platform that allows households looking to hire a domestic worker to match with a female domestic worker searching for a job via a phone-based app.

Global Firms and the Diffusion of Disruptive Digital Technologies

[Paulo Bastos](#), [Hannah Wei](#), [Katherine Stapleton](#), and [Daria Taglioni](#)

This study combines online job postings with multi-country firm-level data to show that firm-to-firm linkages play a key role in the diffusion of disruptive digital technologies, with pioneer firms spreading technologies to other firms.

E-commerce and Trade during Crisis Times: Firm-level Evidence from India, Indonesia, and Mexico

[Ana Fernandes](#), [Devaki Ghose](#), [Simon Caicedo](#), [Aaditya Mattoo](#), [Laurent Smeets](#), and [Jonathan Timmis](#)

Firms that had E-commerce technology in place before the outbreak of COVID experienced more resilient trade as the stringency of COVID-lockdown measures increased. There are no clear effects for firms that adopted E-commerce technology during COVID, despite many firms doing so, indicating that the effects of technology adoption on trade take time to materialize.

AI-Powered Development: Artificial Intelligence & Digitalization for Better Service Delivery

✓ [Factors associated with the adoption of a digital health service by patent proprietary medicine vendors \(PPMVs\) in Lagos, Nigeria](#)

[Sohail Agha](#), [Laura Alejandra Ruiz-Gaona](#), [Jed Friedman](#), [Nejma Cheikh](#), and [Marelize Gorgens](#), *Digital Health*, November 2022

Many low-income households in Nigeria rely on informal providers such as patent proprietary medicine vendors (PPMVs) for acute care because of absenteeism, drug shortages, and a poor ability to diagnose disease at public sector facilities. This study explores factors associated with the adoption of a digital service, NaijaCare, created to enable PPMVs to increase the range and quality of products and services they offer. NaijaCare allows PPMVs to take modular, 5-minute long online courses through their mobile phones, and also order quality-assured medicine online, helping address poor quality products and high product prices. Key factors associated with adopting the service include having obtained on-the-job training; having sought business advice online; and female gender and older age of the PPMV. Overall, the study findings support the conclusion that efforts to integrate PPMVs into a digital care pathway for low-income households should appeal to the business and professional development interests of PPMVs.

A forthcoming companion article by Friedman et al. adds further context to these findings. NaijaCare's full range of features did not significantly improve business practices, medicine provided, client perception of quality, client base, or the role of informal vendors during the COVID-19 pandemic, pointing to low engagement as a key barrier to platform success.

✓ [Technology, Taxation and Corruption: Experimental Evidence from Electronic Tax Filing](#)

[Oyebola Okunogbe](#) and [Victor Pouliquen](#), *American Economic Journal: Economic Policy*, vol. 14, February 2022 | Winner of the *AEJ Best Paper Award for Economic Policy*

Tax administration is an important application of e-government in developing countries. Traditional tax systems in these countries are often characterized by high compliance costs and frequent interactions between tax officials and taxpayers that present opportunities for corruption. Using experimental variation, this paper examines the impact of electronic tax filing (to replace in-person submission to tax officials) using data from Tajikistan firms. E-filing reduces the time firms spend on taxes by 40 percent. Further, among firms previously more likely to evade, e-filing doubles taxes paid. Conversely, evidence suggests that e-filing reduces tax payments among firms previously less likely to evade. These firms also pay fewer bribes, as e-filing reduces extortion

opportunities. These patterns are consistent with differential treatment of firms by tax officials prior to e-filing.

ADDITIONAL RESEARCH OF INTEREST

- [How Can Lower-Income Countries Collect More Taxes? The Role of Technology, Tax Agents, and Politics](#) (*Journal of Economic Perspectives*, Winter 2024)
- [Using registry data to assess gender-differentiated land and credit market effects of urban land policy reform: Evidence from Lesotho](#) (*World Development*, March 2024)
- [Helping families help themselves: The \(Un\)intended impacts of a digital parenting program](#) (*Journal of Development Economics*, January 2024)
- [Impacts of a mandatory shift to decentralized online auctions on revenue from public land leases in Ukraine](#) (*Journal of Economic Behavior & Organization*, September 2023)
- [The Promise and Limitations of Information Technology for Tax Mobilization](#) (*The World Bank Research Observer*, August 2023)
- [System-, teacher-, and student-level interventions for improving participation in online learning at scale in high schools](#) (*PNAS*, July 2023)
- [Violent Discipline and Parental Behavior Short- and Medium-term Effects of Virtual Parenting Support to Caregivers](#) (*Policy Research Working Paper*, June 2023)
- [A Framework for the Economic Evaluation of Digital Health Interventions](#) (*Policy Research Working Paper*, April 2023)
- [Increasing Tax Collection in African Countries: The Role of Information Technology](#) (*Journal of African Economies*, March 2023)
- [Saving Lives through Technology: Mobile Phones and Infant Mortality](#) (*Policy Research Working Paper*, March 2022)
- [Becoming Legible to the State: The Role of Detection and Enforcement Capacity on Tax Compliance](#) (*Policy Research Working Paper*, November 2021)
- [The Fast Track to New Skills: Short-Cycle Higher Education Programs in Latin America and the Caribbean](#) (*Report*, January 2021)
- [Remote-learning, Time-Use, and Mental Health of Ecuadorian High-School Students during the COVID-19 Quarantine](#) (*World Development*, February 2021)
- [Political Dividends of Digital Participatory Governance: Evidence from Moscow Pothole Management](#) (*Policy Research Working Paper*, October 2020)

CURRENT RESEARCH PROJECTS

Generative AI for Clinical Decision Support

[Anja Sautmann](#), Jason Abaluck, Zayyad Farouq, Nirmal Ravi, Robert Pless, and Aaron Schwartz

This project is testing scalable and cost-effective ways to use large language models (LLMs) such as GPT-4 to provide “second opinions” for frontline health workers, with the aim to improve patient outcomes, free high-skill providers for other tasks, and mitigate the serious shortage of qualified health personnel in many low- and middle-income countries (LMICs). A “two-provider”

research design ensures patient safety and full expert review of the LLM's feedback for every patient.

Tablet-Based Contraceptive Counseling in Cameroon

[Berk Özler](#)

This project is testing the use of a tablet-based contraceptive counseling app as a job-support tool for health care providers in Cameroon. State-of-the-art machine learning techniques are supporting the design and analysis of the experiment. The app is also suitable for integration with AI technology, such as a Chat-GPT-like interface, in which clients could ask questions without a provider present.

Smart Assignment of Mediators to Court Cases

Antoine Deeb, Wei Lu, Manuel Ramos, and [Anja Sautmann](#)

Working in collaboration with the Judiciary of Kenya, this project is using a digital platform built by a World Bank team to test whether the use of an algorithmic “smart assignment” mechanism can assign mediators to cases in a way that increases agreement rates and speeds up case resolution.

Soft Skills and Scientific Skills Delivered Online at Scale

Igor Asanov, Thomas Astebro, Guido Buenstorf, Bruno Crepon, Francisco Pablo Flores T, [David McKenzie](#), Mona Mensmann and Mathis Schulte

An experiment with over 50,000 high school students in Ecuador tests the impacts of providing training in personal initiative, negotiations, and statistics through self-paced online modules. An ongoing analysis measures impacts on knowledge, behaviors, and schooling outcomes.

Online Role Models for STEM and Entrepreneurship at Scale

Igor Asanov, Thomas Astebro, Guido Buenstorf, Bruno Crepon, Francisco Pablo Flores T, [David McKenzie](#), Mona Mensmann, and Mathis Schulte

A large-scale randomized experiment in Ecuador tests the impacts of online delivery of science and business role models to final year high school students. Ongoing analysis tracks impacts on interest in these career paths, enrolment in university, and choice of major.

Leveraging AI to Accelerate Learning Recovery

[Carolina Lopez](#)

This project focuses on leveraging AI to accelerate learning recovery in the aftermath of the COVID-19 pandemic. Digital platforms that incorporate AI and machine learning offer a promising solution for math remediation by providing students with adaptive instruction tailored to their individual learning levels, building on the “Teaching at the Right Level” approach.

AI and Citizen Mapping Tools for Local Municipal Governance in Nepal

[Vijayendra Rao](#), Nethra Palaniswamy, and Sarita Sapotka, in collaboration with the Nepal Country Management Unit

A prototype citizen-feedback and municipal budget system is being developed that can digitally map all local public goods and

common resources via citizen mappers. Citizens can score the quality of the public service and identify problems (potholes, landslides, etc). The scores are made visible on the maps, which are then used in community planning meetings to inform municipal budget allocations. Budget allocations are also visible, which further facilitates municipal planning and citizen monitoring.

Improving Property Tax Collection with Computer Vision: Experiments in Pakistan

Sher Afghan Asad, Adnan Khan, Ben Olken, and [Mahvish Shaukat](#)

Many developing country tax administration systems rely on out-of-date property tax valuations, and tax officials often employ significant discretion when assessing properties. These factors can result in tax leakages and lower citizen trust. This study addresses this challenge in two steps: first, by developing a computer vision algorithm that uses property images to predict property assessments and second, by testing how well the algorithm performs in reassessment in a “human vs. machine” RCT.

FINANCE & DIGITAL PAYMENTS

✓ [Global Findex \(Financial and Digital Inclusion\) Database](#)

Asli Demirgüç-Kunt, [Leora Klapper](#), Dorothe Singer, Saniya Ansar, et al.

Financial inclusion is a cornerstone of development, and since 2011, the [Global Findex Database](#) has been the definitive source of data on global access to financial services from payments to savings and borrowing. Data is updated at least every three years. In 2024, updated nationally representative data will be collected on access to and usage of digital financial services, ID, and mobile phones and Internet in 140+ countries. This data can be used to identify gaps by gender, rural/urban residence, and more; target policies and products; and track progress over time.

A new 'Connectivity' module will collect the first internationally comparable demand-side data on digital connectivity— internet and mobile phone access, usage, skills, security, autonomy, and cost; digital skills; and barriers to ownership and use. This data will provide a unique asset to the development space and allow for analysis of the intersections of access to finance and digitalization.

In addition, the Findex questionnaire has been expanded to measure key indicators of digital financial inclusion more effectively, such as frequency of use of accounts, including savings and borrowing habits; digital payments vs. cash for merchant payments and barriers to digital payment adoption; financial planning and capability; and vulnerability to digital fraud or additional fees; and digital and financial vulnerability due to extreme weather events. A new module in Sub-Saharan Africa covers security and vulnerability to fraud among mobile money users.

✓ [Digital Payments and the COVID-19 Shock: The Role of Preexisting Conditions in Banking, Infrastructure, Human Capabilities, and Digital Regulation](#)

[Robert J. Cull](#), Vivien Foster, Dean Mitchell Jolliffe, Daniel Lederman, Davide Salvatore Mare, and Malarvizhi Veerappan, Policy Research Working Paper 10603, November 2023

During the COVID-19 pandemic, many governments turned to digital financial services (DFS) as a quick, effective way to disburse funds to those in need. Drawing on the [2021 Global Findex data](#) on DFS usage as well as data on the country-specific severity of the COVID-19 shock, this paper examines the factors driving the wide variation across countries in the increase in digital

payments and use of DFS during the pandemic. The paper provides the first global evidence that the capabilities of users, as reflected in years of schooling and internet usage rates, explains substantial variation in usage of digital payments and likely of other DFS. Connectivity to electricity, the internet, and mobile telephony was also responsible for increased usage. While strongly correlated with the level of digital payments usage prior to the pandemic, banking development and regulations that enable digital economic activity were not robustly associated with gains in digital payment usage. The patterns suggest that policies that improved digital and financial literacy, broadband coverage, and the coverage and reliability of electricity networks were helpful for extending digital payments to more people during the pandemic, thus achieving deeper financial inclusion.

✓ [Learning to Navigate a New Financial Technology: Evidence from Payroll Accounts](#)

Emily Breza, [Martin Kanz](#), and [Leora Klapper](#), *Policy Research Working Paper 9495, December 2020*

Over the past few decades, there has been an unprecedented expansion in access to basic consumer financial products, but a proliferation of new financial products has also led to debate about how best to protect inexperienced consumers. One important question is to what extent risks to consumers can be mitigated by “learning-by-doing” that occurs naturally as new financial technologies are introduced at scale. A field experiment in a population of largely unbanked factory workers in Bangladesh finds that the introduction of payroll accounts leads to increased account use and consumer learning. Those receiving accounts with automatic wage payments learn to use the account without assistance, begin to use a wider set of account features, learn to avoid illicit fees, and achieve increased savings and improvements in the ability to cope with unanticipated economic shocks. Consumer learning at the market level also seems to generate benefits for others—an audit study finds suggestive evidence that mobile money agents are less likely to overcharge customers in areas with higher levels of payroll account adoption.

ADDITIONAL RESEARCH OF INTEREST

- [The Importance of Financial Education for the Effective Use of Formal Financial Services](#) (*Policy Research Working Paper, March 2023*)
- [Digital Financial Inclusion & Development](#) (*Book Chapter, February 2023*)
- [The Potential Gains of Digitizing Garment Sector Wages in Cambodia: Findings and Recommendations](#) (*Report, May 2022*)
- [How Migrant Workers Optimize the Use of Fintech to Send International Remittances](#) (*Working Paper, September 2021*)
- [Behavioral Science for Inclusive and Impactful Digital Payments](#) (*Brief, July 2021*)
- [Leveraging Digital Financial Solutions to Promote Formal Business Participation](#) (*Report, January 2019*)

CURRENT RESEARCH PROJECTS

How Digital Payments Help Firms Weather the Storm

Summit Agarwal, Mingxuan Fan, [Leora Klapper](#), and Joel Aledo

We measure the impact of over 400 hurricanes on consumer spending and business performance combining data from Mastercard on sales activity and weather service GPS coordinates of affected areas and storm intensity. The study is evaluating point-of-sale payments in-store and online in affected areas (relative to comparable unaffected cities) and estimating both overall and industry-specific losses in sales.

[Measuring the True Cost of Digital Financial Services](#)

Francis Annan, William Blackmon, Seth Garth, [Xavier Gine](#), Brian Mwesigwa

This project explores the costs consumers face when making mobile money transactions, drawing on fieldwork in Tanzania, Bangladesh, and Uganda. The goal is to develop a cost-effective method for monitoring these costs on an ongoing basis. We compare different data collection methods, including provider surveys, customer intercept surveys, and mystery shoppers.

[Engaging Women in Mobile Money Markets in Bangladesh](#)

[Xavier Gine](#), Jessica Goldberg, and Lore Vandewalle, in collaboration with IPA

This project measures the effects of employing women as mobile money agents on several key areas: the economic outcomes of small businesses that offer mobile money services; business owners' and customers' attitudes towards women's labor force participation; the effects of working on the incomes, skill accumulation, and autonomy of women compared to men; and whether the availability of female mobile money agents increases the use of mobile money by female customers.

Competition in Mobile Money Markets

[Xavier Gine](#), Jessica Goldberg, and Lore Vandewalle, in coordination with the Gates Foundation and the Bangladesh Bank

How did the introduction of electronic Know Your Customer (e-KYC) protocols in Bangladesh, which lowered the costs of opening mobile money accounts, affect competition among mobile money agents? For early adopters, the number of accounts opened and transactions increased, regardless of the number of adopting agents nearby. In contrast, late adopters initially saw a reduction in the number of accounts opened, but as more agents adopt e-KYC late adopters also experience increasing numbers of accounts and volume of transactions.

Demand and Impacts of Digital Payments on Micro and Small Enterprises (MSMEs)

Giorgia Barboni, Bernardo de Oliveira, [Xavier Gine](#), Lucas Mariani, and Jose Renato

This project focuses on how Pix, a fast payment system launched in November 2020 by the Brazilian Central Bank, has contributed to financial inclusion and impacted labor market outcomes in Brazil. In particular, how has Pix affected micro and small enterprises (MSMEs), which face various obstacles that constrain their growth and make them particularly vulnerable to economic shocks, including lack of access to financial services and technologies (payments, credit, and insurance)?

Competition and Transparency in the Market for Digital Financial Services

[Martin Kanz](#), Erika Deseranno, Gianmarco Leon-Ciliotta, and Firman Witolear

This study investigates the impact of competition on price transparency in Indonesia's emerging market for branchless digital banking. Banking agents are randomly informed about the expected increase in agent competition and presented with a choice of marketing plans that either allow them to price discriminate or force them to disclose the official prices for all transactions. The findings will inform policies designed to enhance transparency in markets where consumer protection risks are widespread.

FinTech Lending and Access to Finance in Indonesia

[Martin Kanz](#), Salman Alibhai, Emily Breza, Francesco Strobbe, and I Gede Putra Arsana

Micro-data from the Indonesian credit registry is being used to examine how individuals and small businesses use FinTech lending. The study is exploring which factors can deepen financial inclusion by enabling firms and individuals to graduate from small ticket FinTech loans to lower interest bank loans.

Tax Incentives for Digital Payments: Learning from South Korea's Experience

[Pierre Bachas](#), [Sangheum Cho](#), [HyunSoo Choi](#), and [Leora Klapper](#)

In the early 1990s, Korea introduced a scheme that offers tax credits to encourage sellers to accept digital payments and consumers to make digital payments. This study uses digitized tax returns of firms and individuals to evaluate changes to the policy design of the scheme over time to quantify the sensitivity of sellers' and consumers' digital payments to tax rebates and the cost-benefit for the government regarding tax evasion and revenue.

INNOVATIONS IN RESEARCH AND DATA USE

✓ [Using Large Language Models for Qualitative Analysis Can Introduce Serious Bias](#)

[Julian Ashwin](#), [Aditya Chhabra](#), and [Vijayendra Rao](#), *Policy Research Working Paper 10597, November 2023*

Large Language Models (LLMs) are quickly becoming ubiquitous, but the implications for social science research are not yet well understood. Data generated from open-ended, in-depth interviews is potentially very different from the benchmark datasets often used in LLMs that are validated using English-language tweets and news or product reviews. This paper examines the performance of three different LLMs (ChatGPT and two versions of Meta's Llama 2) in analyzing the transcripts of open-ended interviews with displaced Rohingya people in Cox's Bazaar, Bangladesh. A great deal of caution is needed in using LLMs to annotate text, according to the paper, as there is a risk of introducing biases that can lead to misleading inferences. The errors that LLMs make in annotating interview transcripts are not random with respect to the characteristics of the individuals being interviewed (e.g. refugee status, gender, education). It is therefore crucial to have some high-quality expert annotations, even if it is just to assess whether the LLM is introducing bias or not. Given that some high-quality annotations are needed to assess whether the LLM introduces bias, the paper argues that it is preferable to train a bespoke model on these annotations over using an LLM.

Also see: [A Method to Scale-Up Interpretative Qualitative Analysis, with an Application to Aspirations in Cox's Bazaar, Bangladesh](#) (*Policy Research Working Paper, May 2022*)

✓ [Transnational Terrorism and the Internet](#)

[Quy-Toan Do](#), [Nicolas Gomez-Parra](#), and [Bob Rijkers](#), *Journal of Development Economics, September 2023*

Does the internet enable the recruitment of transnational terrorists? Using geo-referenced population census data and personnel records from the Islamic State in Iraq and the Levant—a highly tech-savvy terrorist organization—this paper shows that internet access has facilitated the organization's recruitment of foreign fighters from Tunisia. The positive association between internet access and Daesh recruitment is concentrated among younger cohorts.

ADDITIONAL RESEARCH OF INTEREST

- [The Fine Line between Nudging and Nagging: Increasing Take-up Rates through Social Media Platforms](#) (*Policy Research*)

Working Paper, October 2023)

- [A Metadata Schema for Data from Experiments in the Social Sciences](#) (*Policy Research Working Paper, February 2023*)
- [How Accurate Is a Poverty Map Based on Remote Sensing Data? An Application to Malawi](#) (*Policy Research Working Paper, September 2022*)
- [Inferring COVID-19 Vaccine Attitudes from Twitter Data: An Application to the Arabic Speaking World](#) (*Policy Research Working Paper 10165, September 2022*)
- [Measuring What Matters: Principles for a Balanced Data Suite That Prioritizes Problem-Solving and Learning](#) (*Policy Research Working Paper, May 2022*)
- [Talk or Text? Evaluating Response Rates by Remote Survey Method during COVID-19](#) (*Policy Research Working Paper, April 2022*)
- [Preparation, Practice, and Beliefs: A Machine Learning Approach to Understanding Teacher Effectiveness](#) (*Policy Research Working Paper, November 2021*)
- [In Someone Else's Shoes: Promoting Prosocial Behavior Through Perspective Taking](#) (*Policy Research Working Paper, November 2021*)
- [Deliberative Democracy in an Unequal World: A Text-As-Data Study of South India's Village Assemblies](#) (*American Political Science Review, May 2019*)

CURRENT RESEARCH PROJECTS

Using Machine Learning Algorithms to Predict Emissions Violations and Increase the Cost-Effectiveness of Inspections

[Ruozhi Song](#) and [Rajat Kochhar](#)

In cases where resources for facility inspections are constrained and there is a lack of local enforcement due to unclear guidelines on when to inspect, this project investigates the effectiveness of machine learning in predicting emissions violations and providing clear guidelines for inspectors toward prioritizing high-polluting sources in the context of China's water and air pollution.

[Impact Data and Evidence Aggregation Library \(IDEAL\)](#)

[Alaka Holla](#) and [Anja Sautmann](#)

A key challenge in development policymaking is the lack of standardization and comparability of the growing body of impact evaluations conducted in recent decades. To remedy this, the World Bank is working in collaboration with leading organizations in the “evidence for policy” space such as CEGA, IPA, 3ie, AidGrade, and many others, to build an impact evaluation library that gathers in a single place estimates of the effect sizes of policy-relevant impact evaluations.

RECENT & UPCOMING EVENTS FROM THE DEVELOPMENT RESEARCH GROUP

- **March 26, 2024:** Policy Research Talk: [Self-Arming or Self-Harming? Assessing Trade Policies in Low- and Middle-Income Countries](#)
- **April 29–30, 2024:** [Globalization: What's Next?](#)

- **May 13–17, 2024:** [Research Track](#) of the World Bank Land Conference 2024: Securing Land Tenure and Access for Climate Action
- **September 12–13, 2024:** [Trade and Uneven Development](#) | Call for Papers: Due April 15, 2024

See more [events](#) | Sign up for event [email notifications](#).

UPDATES FROM ACROSS THE DEPARTMENT

Event Recap: [8th Urbanization and Poverty Reduction Research Conference](#)



Questions surrounding urbanization are of increasing importance to academics and policy makers alike as the supply of ideas and demand for solutions to address the challenges of urban expansion are growing. Cities in some developing countries are growing at faster rates and at lower income levels than those in developed countries.

The 8th Urbanization and Poverty Reduction Research Conference, which took place on March 7 and 8, 2024, brought together academics and development practitioners to present and discuss questions relating to urban expansion and the future of cities. Recordings from the event are now available on the event website and at the links below.

[Event Website](#) | [Welcoming Remarks and Opening Session](#) | [Policy Session: "Planning in African Cities"](#) | [Keynote Address and Debate: "The Promises, Problems, and Policy Pitfalls of Urban Development"](#)

Award-winning Research in the Economics of Climate Change

To foster research into the nature and implications of climate change, IZA gives an award for “Innovative Research in the Economics of Climate Change” (IRECC) for the two best topical IZA Discussion Papers of the previous year. One of two papers selected for the 2024 IRECC Award is the “[The Effects of Climate Change in the Poorest Countries: Evidence from the Permanent Shrinking of Lake Chad](#)” by Remi Jedwab, Federico Haslop, [Roman David Zarate](#), and Carlos Rodriguez Castelan. The IRECC Award recognizes important new insights into the broader, often underestimated consequences of climate change and the effects of environmental policies on society and the labor market.

[Read the Announcement](#) | [Working Paper Version](#) | [More research from Roman David Zarate](#)

PBS Series Energy Switch Highlights Research on Sea Level Rise



Sea level has been rising since the end of the last Ice Age, when continental ice sheets began to melt. In island nations and low-lying coastal areas sea level rise is contributing, among other things, to high tide flooding, and saltwater encroaching into farmland and freshwater aquifers. In this episode of the PBS series *Energy Switch*, Lead Environmental Economist [Susmita Dasgupta](#) discusses what the future could bring, and ideas of how communities could adapt to sea level rise.

[PBS Interview](#) | [Presentation: Sea-Level Rise in the Ganges-Brahmaputra Delta](#) | [More research by Susmita Dasgupta](#)

SOCIAL MEDIA

Weekly links March 15: when vs what in policy research, what's new in the last decade of development research, life skills for girls, and more...

[David McKenzie](#) | *Development Impact* | March 14, 2024

"A nice post on the CGD blog by Ranil Dissanayake, Janeen Madan Keller and Erin Collinson discusses [some key issues and questions about translating research into policy](#). "it's at least as important to ask when—and under what circumstances—

policymakers are receptive to evidence? Our experience is that from a policymaker's perspective, when is often a more fundamental question than what; and, to more fully understand the policymaking process, it needs to be answered first.

Policymaking is non-linear: it isn't an act of constantly making things happen, nor is it continuously revisiting and reconsidering all previously made decisions to iterate and refine. It ebbs and flows but there are typically critical inflection points or windows when evidence can be brought to bear on decision-making..."

[Read the blog](#)

Macro-industrial policy: Is the public procurement system an effective policy tool?

[Manuel García-Santana](#) | *Let's Talk Development* | March 12, 2024

"Governments play central roles in modern economies: they set taxes, provide subsidies, and produce services with a high social value, such as education, health, and safety. Along that production process, governments use intermediate goods and services produced by private sector firms that they buy through public procurement. These purchases are sizable, ranging between 10 and 20 percent of GDP. Because of its size and high level of discretion, governments often perceive their procurement system as an effective industrial policy tool to allocate resources to specific firms."

[Read the blog](#)

This blog post is part of a series on the potential role industrial policy can, should, or shouldn't play in government economic policy in low- and middle-income countries. Also see:

[Productivity as a guide for industrial policies](#) | [Micro-industrial policy: The empirical evidence on whether governments can successfully directly support firms](#)

The long slog of publishing in economics

[Berk Özler](#) | *Development Impact* | March 11, 2024

"Have you ever waited more than one year for a first decision from a journal, which ended up being a one-paragraph letter from the editor that had little value and a review from one referee that read more like a summer book report than a referee report at a serious academic journal in economics? Me, too..."

As disappointing as such experiences might be, one might wonder how common they are, whether they are more common in economics, whether the variance is high, why they happen, and whether they affect important outcomes, such as how influential the paper eventually is (assessed by citations in the future). A new [paper by Hadavand, Hamermesh, and Wilson in the Journal of Economic Literature](#) tries to answer some of these questions. Here is a quick summary of their findings and some additional thoughts."

[Read the blog](#)

Breaking barriers: Transforming tax and customs administrations for women and men

Hitomi Komatsu, Ashima Neb, Ceren Ozer, [Mahvish Shaukat](#) | Let's Talk Development | March 7, 2024

“Tax and customs administration reform may seem like a second (or third, or fourth) order concern when thinking about how to facilitate women's economic activities in low- and middle-income countries. [In settings with significant gender disparities in income, property or asset ownership, and firm ownership \(particularly in the formal sector\), how much impact can a revenue administration have by considering gender equality objectives in its work?](#) The answer is potentially a lot.

The implementation of tax policies by a country's tax and customs administration affects who is taxed, audited, fined, and how. In low- and middle-income countries, revenue officials frequently represent the sole government contact for taxpayers and traders, exercising significant discretion in tax and customs policy application. This relationship is foundational to good tax systems' principles: efficiency, certainty, simplicity, and fairness.”

[Read the blog](#)

Navigating trade turbulence: Understanding (de)globalization through three key graphs

[Yahe Li](#) | Data Blog | March 5, 2024

“Headlines have been filled with news of trade wars and armed conflicts. Meanwhile, voices have been arguing for various forms of deglobalization. So, is the global order really under threat? And what do the data on trade and international commerce tell us about the state of globalization?”

I recently watched [Daria Taglioni's Policy Research Talk on the topic of global trade](#) and was struck by the findings shared. In this blog post, I'm highlighting three graphs that show the global picture is both more complex and the links of trade are stronger than many headlines suggest. Faced with shocks and uncertainty, can global trade continue to be resilient?”

[Read the blog](#)

Women on teams and in leadership matters for other women, men, and organizations

[Kathleen Beegle](#), [Emanuela Galasso](#), [Mahvish Shaukat](#) | Let's Talk Development | February 26, 2024

“Policies to increase women's representation within organizations are increasingly common these days. Gender quotas in the corporate sector, for example, have been proposed as a response to the underrepresentation of women in top positions of the corporate sector. In her Coase lecture, [Bertrand 2018](#) discusses affirmative action — quotas and gender diversity in leadership -- among other policy responses to the underrepresentation of women in the upper part of the earnings distribution. There is some evidence on the mixed effects of Board quotas ([Bertrand, Black, Jensen, and Lleras-Muney 2019](#)). But what of other efforts, less at the very top, to increase women's representation within organizations? The empirical evidence on the impact of these policies -- on organizations, and on the men and women who work in them -- is still thin. Two recent papers help fill in the evidence gap, looking at two novel angles to these questions: the role of gender composition of teams and impact of female leadership.”

[Read the blog](#)

What is a firm again? The fluidity of firm boundaries in developing country firms

[David McKenzie](#) | *Development Impact* | February 20, 2024

“In an early post on Development Impact, Markus Goldstein noted that one of the notable things about testing surveys was the existential questions that arose, such as “when is a chair a chair?”. This came to mind when thinking about several of the most interesting recent pieces of research I’ve seen on small firms in developing countries, which all get at the question “what makes a firm a firm?”. More generally, at the fluidity of firm boundaries. Of course questions of when activities should take place inside a firm versus in the market go back to at least Coase’s 1937 work (summarized nicely in [this Economist piece](#)). But what is new about this recent work is the emphasis on examining empirically how market frictions, risk and volatility, and other features of developing markets affect how firms use capital, labor, and managerial inputs, and may make it hard to say what the size of a firm is. I’ll highlight a few papers as examples...”

[Read the blog](#)

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