DEVELOPMENT RESEARCH

World Bank Research E-Newsletter

A Monthly Summary of Our New Research

February 2017 —Agricultural Productivity in Sub-Saharan Africa

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- Latest Media and Blog Posts
- List of New Policy Research Working Papers
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New evidence overturns traditional approaches to agriculture investment

The majority of the world's poor live in rural areas, with 70 percent of the rural poor working in agriculture. Ramping up agricultural productivity will be critical to lifting these households out of poverty. While the Green Revolution has tripled or quadrupled cereal yields in most regions of the world over the last 50 years, agricultural productivity in Sub-Saharan Africa has been stagnant. According to Florence Kondylis, a Senior Economist at the World Bank, many "big push" agriculture projects that focus on multiple constraints — from technology to finance to irrigation — have benefited farmers. But these projects often fail to catalyze a rural transformation that could reduce extreme poverty and free up labor for growing industrial and services sectors. The evidence base on what works to promote agricultural productivity is growing. The World Bank is currently running over 30 impact evaluations on agriculture projects, with the majority based in Sub-Saharan Africa.

Story | Video | Presentation.

Absent an increase in productivity, agriculture cannot support a rural transformation in Sub-Saharan Africa

Per capita gross domestic product in Sub-Saharan Africa increased by almost 35 percent in real terms from 2000 to 2014, doubling in some countries. Meanwhile aggregate agricultural productivity growth remained low, despite some bright spots, and poverty reduction was steady but discouragingly slow. Development and poverty reduction have often proceeded fastest when agricultural and industrial revolutions go together. Although some SSA countries show signs of such coupled growth (e.g., Ethiopia, Rwanda), this has not (yet) happened at the scale or across the number of countries needed to make a major dent in Africa's poverty. This paper on structural transformation focuses on the role of agriculture, the current state of agricultural labor productivity growth in rural SSA, and the structural impediments slowing the rate of progress.

On the Structural Transformation of Rural Africa, Christopher B. Barrett, Luc Christiaensen, Megan Sheahan, and Abebe Shimeles, World Bank Policy Research Working Paper 7938, January 2017.

Direct training of farmers in Mozambique increased diffusion of new agricultural technology

Agricultural extension is designed to enable lab-to-farm technology diffusion. Decentralized models assume that information flows from researchers to extension workers, and from extension agents to contact farmers (CFs). The program is set up for CFs to train other farmers in their communities. Such a modality may fail to address informational inefficiencies and accountability issues. A field experiment measured the impact of direct CF training on the diffusion of a new technology. All villages have CFs and access the same extension network. In treatment villages, CFs received a three-day, central training on the new technology. They track information transmission through two nodes of the extension network: from extension agents to CFs, and from CFs to other farmers. Directly training CFs leads to a large, statistically significant increase in adoption among CFs. However, higher levels of CF adoption have limited impact on the behavior of other farmers.

Seeing Is Believing? Evidence from an Extension Network Experiment**,** Florence Kondylis, Valerie Mueller, Siyao Zhu, *Journal of Development Economics* 125:1-20, March 2017.

Placing women in extension roles helped other women adopt new agricultural techniques in Mozambique

One way to increase yields in Africa may be to enhance female farmer productivity. In many settings, married women cultivate plots separate from other family members. They face different challenges to productivity, such as deficiencies in inputs, weak property rights, and time constraints. Traditionally male-dominated extension services may also contribute to a gender bias in adoption of new agricultural techniques. If this is true, placing women in extension positions may help other women access agricultural extension services and accurate information. This randomized experiment conducted in 200 communities in Mozambique examined the impact of trained female messengers of sustainable land management (SLM) techniques on the awareness, knowledge, and adoption of these practices by other female farmers. Communities were randomly selected in 2010 for this intervention. In communities with female extension agents, women farmer's awareness of pit planting farming techniques increased by 9 percentage points in 2012 and adoption of the technology by 5 percentage points in 2013.

Do Female Instructors Reduce Gender Bias in Diffusion of Sustainable Land Management Techniques? Experimental Evidence from Mozambique, Florence Kondylis, Valerie Mueller, Glenn Sheriff, and Siyao Zhu, *World Development* 78: 436–449, February 2016.

Improved land tenure security increased investment on parcels in Benin

Early evidence from a land formalization program shows a link between land demarcation and long-term investments on plots in rural Benin. Mapping plots and marking them with visible cornerstones improved tenure security and shifted investment on treated parcels. This investment does not yet coincide with gains in agricultural productivity, however. The analysis also identified gender-specific effects. Female-managed landholdings in treated villages are more likely to be left fallow — an important soil fertility investment, and these female farmers were more likely to move production away from relatively secure, demarcated land toward less secure land outside the village to guard those parcels.

Formalizing Rural Land Rights in West Africa: Early Evidence from a Randomized Impact Evaluation in Benin, Markus Goldstein, Kenneth Houngbedji, Florence Kondylis, Michael O'Sullivan, Harris Selod**,** World Bank Policy Research Working Paper 7435, October 2015.

Why plots farmed by women in Uganda may be less productive

Women comprise 50 percent of the agricultural labor force in Sub-Saharan Africa, but manage plots that are reportedly 20–30 percent less productive. What drives this gender gap? Using national data from the Uganda National Panel Survey for 2009–10 and 2010–11 that include a full agricultural module and plot-level gender indicator, the estimated gap before controlling for endowments was 17.5 percent. Although men have greater access to inputs, input use is so low and inverse returns to plot size so strong in Uganda that smaller female-managed plots have a net endowment advantage of 12.9 percent, revealing a larger unexplained difference in return to endowments of 30.4 percent. One-half of this is attributed to differential returns to the child dependency ratio, implying that greater childcare responsibility is the largest driver of the gap. Smaller drivers include differential uptake of cash crops, differential uptake and return to improved seeds and pesticides, and differential returns to male-owned assets.

Ali, Daniel, Derick Bowen, Klaus Deininger, and Marguerite Duponchel. 2016. "Investigating the Gender Gap in Agricultural Productivity: Evidence from Uganda." *World Development* 87: 152–187, November.

The inverse farm-size productivity relationship in Rwanda driven by labor market imperfections

In Rwanda, Africa's most densely populated country, policy makers consider fragmentation and small farm sizes key bottlenecks for growth in the agricultural sector. In this context, understanding the farm size-productivity relationship will have key policy implications for the country's strategy to increase the productivity of the sector. Nationwide plot-level data from Rwanda point toward constant returns-to-scale crop production functions and a strong negative relationship between farm size and output per hectare as well as intensity of labor use. The inverse relationship holds *if* profits with family labor valued at shadow wages are used, but disappears if family labor is instead valued at village-level market wage rates. It seems labor market imperfections are the primary drivers of the inverse farm-size productivity relationship.

Ali, Daniel Ayalew, and Klaus Deininger. 2015. "Is There a Farm Size–Productivity Relationship in African Agriculture? Evidence from Rwanda." *Land Economics* 91(2): 317–343, 2015 | Working paper version.

MORE RESEARCH

Enabling the Business of Agriculture 2017
This 3rd annual report provides a tool for policymakers to identify and analyze legal barriers for the business of agriculture and to quantify transaction costs of dealing with government regulations. The latest edition provides analysis and results from 62 countries, covering all regions of the world.
Report

Research Digest (Winter Issue): Poverty and Inequality
The poverty and inequality issue includes articles on estimating international poverty lines, global inequality between 1988 and 2008, counting the world's hungry, incentive effects of antipoverty programs, importing high food prices by exporting, investing in child quality over quantity, and more.
Read

EVENTS

- **March 16, 2017:** Policy Research Talk: Salaries, Diversity, and Inclusion at the World Bank Group
- **March 20–24, 2017:** Annual Land and Poverty Conference
- **April 10, 2017:** Policy Research Talk: Why Global Poverty Measurement Matters

All upcoming events

MEDIA AND BLOGS

Agribusiness trade as a pillar of development: Measurement and patterns

Let's Talk Development blog, 23 February 2017

Agribusiness is *en vogue*, fostered by a new understanding of the agricultural sector as a major contributor to overall growth and poverty reduction and through its linkages with the manufacturing and services sector.

In order to efficiently link farmers and consumers across countries and regions, quantifying and analyzing agribusiness trade flows is key. But how can we measure international agribusiness trade flows in a systematic way to identify important patterns?

Read the blog by Fabian Mendez Ramos and Nina Paustian.

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International transfers of mitigation to achieve the goals of the Paris Agreement

Let's Talk Development blog, 16 February 2017

More than a year has passed since the signing of the Paris Agreement under the United Nations Framework Convention on Climate Change, in which developed, emerging and developing countries across the world have pledged to limit or reduce their greenhouse gas emissions (GHGs) as a start toward limiting dangerous climate change. Under the Agreement, countries can work together to reduce emissions. Mike Toman, a Lead Economist in the World Bank's Development Research Group, and Motu's Suzi Kerr have come up with three basic guidelines for financing of emissions reductions in less economically advanced countries:

- Do not conflate "international carbon markets" with "internationally transferred mitigation outcomes."
- Be cautious about the apparent gains from linking emissions trading markets.
- Create contracts between developed and developing country governments for internationally transferred mitigation obligations.

Read the blog by Michael Toman and Suzi Kerr.

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Skills and agricultural productivity

Development Impact blog, 9 February 2017

Do skills matter for agricultural productivity? Rachid Laajaj and Karen Macours have a fascinating new paper out which looks at this question. The paper is fundamentally about how to measure skills better, and they put a serious amount of work into that. But for those of you dying to know the answer — skills do matter, with cognitive, noncognitive, and technical skills explaining about 12.1 to 16.6 of the variation in yields. Before we delve into that, though, let's talk (a lot) about measurement (if you are just interested in more on yields, skip down).

Read the blog by Markus Goldstein.

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A hybrid model to evaluate energy efficiency for climate change mitigation

Let's Talk Development blog, 14 February 2017

In response to global calls for climate change mitigation, many countries, especially in the developing world, have considered pursuing policies that can help reduce greenhouse gas (GHG) emissions and also ensure additional economic benefits. Accelerating the adoption of energy efficient technologies is one of the main options as it may help reduce consumers' spending on energy besides reducing GHG emissions. Indeed, the International Energy Agency estimates that energy efficiency improvements could contribute half of the total abatement required to keep temperature increases below 2°C from the pre-industrialized level.

Read the blog by Govinda Timilsina.

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Unequal opportunities, unequal growth

VoxEU blog, 8 February 2017

Inequality can be both good and bad for growth. Unequal societies may be holding back one segment of the population while helping another. This column exploits US data to argue that inequality affects negatively the future income growth of the poor and positively that of the rich. This relationship is largely driven by inequality of opportunity, which limits the growth prospects at the bottom of the income distribution.

Read the blog by Gustavo A. Marrero, Juan Gabriel Rodríguez, Roy van der Weide.

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Targeting which informal firms might formalize and bringing them into the tax system

*Development Impact*blog, 6 February 2017

I have worked for a while with different attempts to get informal firms to register their businesses and become formal. We have tried giving them information and actually paying them to formalize, lowering the cost of registering to zero, offering them accountants and increasing enforcement. At the end of all of this, in strong contrast to the De Soto view that the informal sector is full of firms that would love to become formal if only burdensome regulations didn't stop them, these studies have found most informal firms stay informal unless you strongly enforce them or pay them to formalize.

This is true for the average, but perhaps better targeting might help. I teamed up with Najy Benhassine, Victor Pouliquen and Massi Santini to help evaluate a new program the government of Benin was doing to make it easier for firms to formalize. In a recent working paper and impact note we provide the results of this evaluation. I thought I'd briefly summarize the key findings, but focus on a point of more broader interest in impact evaluations — even when we expect average impacts might be low, can we ex ante target or pre-specify groups for whom the intervention may work a lot better than average?

Read the blog by David McKenzie.

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Where should Britain strike its first post-Brexit trade deals?

The Economist, 4 February 2017

A world of opportunity will open up — but seizing those chances may be harder than it looks

WANTED: chief trade-negotiator for middle-sized country soon to be cast adrift in the world economy.

This “exciting” new post has just been advertised by Britain’s Department for International Trade (DIT), which is offering the successful candidate a salary greater than that of the prime minister. The size of the pay packet suggests the magnitude of the task. The appointee will be expected to help to secure dozens of free-trade deals for Britain, with both its former partners in the European Union and others around the world, after the country leaves the EU in 2019. Having started last July with just 50-odd trade negotiators, the DIT is now up to about 200.

Read the article.

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Trade has been a global force for less poverty and higher incomes

Let’s Talk Development blog, 2 February 2017

In the ongoing debate about the benefits of trade, we must not lose sight of a vital fact. Trade and global integration have raised incomes across the world, while dramatically cutting poverty *and* global inequality.

Within some countries, trade has contributed to rising inequality, but that unfortunate result ultimately reflects the need for stronger safety nets and better social and labor programs, not trade protection.

Merchandise trade as a share of world GDP grew from around 30 percent in 1988 to around 50 percent in 2013. In this period of rapid globalization, average income grew by 24 percent globally, the global poverty headcount ratio declined from 35% to 10.7%, and the income of the bottom 40 percent of the world population increased by close to 50 percent.

Read the blog by Ana Revenga and Anabel Gonzalez.

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Global talent mobility and human capital agglomeration

VoxEU blog, 31 January 2017

The distribution of talent and human capital is highly skewed across the world. As high-income countries engage in a global race for talent, the resulting migration of high-skilled workers across countries tilts the deck even further. This column draws upon newly available data to outline the patterns and implications of global talent mobility. Key results include recent dramatic increases in high-skilled migration flows, particularly in certain occupations, in certain countries, among those with higher skill levels, and from a wider range of origins.

Read the blog by Sari Pekkala Kerr, William Kerr, Çaglar Özden, and Christopher Parsons.

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Using lotteries to incentivise safer sexual behaviour

VoxEU blog, 7 January 2017

Traditional HIV/AIDS education campaigns have not been completely effective in curtailing new infections. One potential reason behind this is that most of the infections occur among individuals who are willing to take risks when it comes to sexual behaviour, and campaigns have failed to specifically target these people. This column describes a new HIV intervention trialled in Lesotho that used a lottery to target such individuals and incentivise safer practices. HIV incidence was reduced by more than a fifth in treatment groups over the trial period. These results, combined with practical and cost advantages, suggest that such interventions could prove invaluable in the fight against HIV.

Read the blog by Martina Björkman Nyqvist, Lucia Corno, Damien de Walque, and Jakob Svensson.

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Do cash transfers have sustained effects on human capital accumulation?

Development Impact blog, 30 January 2017

Cash transfers are great – lots of people are telling you that on a continuous basis. However, it is an open question as to whether such programs can improve the wellbeing of their beneficiaries well after the cessation of support. As cash transfer programs continue to grow as major vehicles for social protection, it is increasingly important to understand if these programs break the cycle of intergenerational poverty, or whether the benefits simply evaporate when the money runs out…

The extant evidence on this question is growing, albeit still scant, and it is not particularly promising. For example, a recent paper by Araujo, Bosch, and Schady (2016), evaluating the 10-year effects of Nicaragua's Bono de Desarollo Humano cash transfer program, concludes that "…any effect of cash transfers on the inter-generational transmission of poverty in Ecuador is likely to be modest."

In a recent paper, co-authored with Sarah Baird and Craig McIntosh, we report the effects of a cash-transfer experiment in Malawi more than two years after it ended, tracking a broad range of outcomes for females aged 18–27.

Read the blog by Berk Ozler.

List of New Policy Research Working Papers

- 7959. Personality Traits, Technology Adoption, and Technical Efficiency: Evidence from Smallholder Rice Farms in Ghana by Daniel Ayalew Ali, Derick Bowen, and Klaus Deininger
- 7960. The Impact of Mining on Spatial Inequality: Recent Evidence from Africa by Tony Addison, Amadou Boly, and Anthony Mveyange
- 7961. Evaluation of an Adolescent Development Program for Girls in Tanzania by Niklas Buehren, Markus Goldstein, Selim Gulesci, Munshi Sulaiman, and Venus Yam
- 7962. The Global Role of the U. S. Economy: Linkages, Policies and Spillovers by M. Ayhan Kose, Csilla Lakatos, Franziska Ohnsorge, and Marc Stocker
- 7963. The Impact of Mass Bed Net Distribution Programs on Politics: Evidence from Tanzania by Kevin Croke
- 7964. Services in the Trans-Pacific Partnership: What Would Be Lost? by Batshur Gootiiz and Aaditya Mattoo
- 7965. Push and Pull: A Study of International Migration from Nepal by Maheshwor Shrestha

- 7966. Toward Labor Market Policy 2. 0: The Potential for Using Online Job-Portal Big Data to Inform Labor Market Policies in India by Shinsaku Nomura, Saori Imaizumi, Ana Carolina Areias, and Futoshi Yamauch
- 7967. Foreign Banks and Trade: Bridging the Information Gap? by Francesca de Nicola and Shawn W. Tan
- 7968. Distribution of Consumption Expenditure in East Asia by La-Bhus Fah Jirasavetakul and Christoph Lakner
- 7969. Estimating Poverty Using Cell Phone Data: Evidence from Guatemala by Marco Hernandez, Lingzi Hong, Vanessa Frias-Martinez, Andrew Whitby, and Enrique Frias-Martinez
- 7970. Recovery from Conflict: Lessons of Success by Hannes Mueller, Lavinia Piemontese, and Augustin Tapsoba
- 7971. Government Guarantees, Transparency, and Bank Risk-Taking by Tito Cordella, Giovanni Dell'Ariccia, and Robert Marquez
- 7972. Are Capital Flows Fickle? Increasingly? And Does the Answer Still Depend on Type? by Barry Eichengreen, Poonam Gupta, and Oliver Masetti
- 7973. Dynamics of Child Development: Analysis of a Longitudinal Cohort in a Very Low Income Country by Emanuela Galasso, Ann Weber, and Lia C. H. Fernald
- 7974. Assessing the Accuracy of Electricity Demand Forecasts in Developing Countries by Jevgenijs Steinbuks
- 7975. Growth (But Not Only) Is Good for the Poor: Some Cross-Country Evidence to Promote Growth and Shared Prosperity in Haiti by Kassia Antoine, Raju Jan Singh, and Konstantin M. Wacker
- 7976. How Is the Internet Changing Labor Market Arrangements? Evidence from Telecommunications Reforms in Europe by Emmanuel Vazquez and Hernan Winkler
- 7977. A Firm of One's Own: Experimental Evidence on Credit Constraints and Occupational Choice by Andrew Brudevold-Newman, Maddalena Honorati, Pamela Jakiela, and Owen Ozier
- 7978. Does Vertical Specialization Increase Productivity? by Cristina Constantinescu, Aaditya Mattoo, and Michele Ruta
- 7979. Agriculture in Africa – Telling Myths from Facts: A Synthesis by Luc Christiaensen
- 7980. Public Mosquito Abatement: A Cluster Randomized Experiment by Josselin Thuilliez and Yves Dumont
- 7981. Horizontal Depth: A New Database on the Content of Preferential Trade Agreements by Claudia Hofmann, Alberto Osnago, and Michele Ruta
- 7982. The Direct and Indirect Costs of Tax Treaty Policy: Evidence from Ukraine by Oleksii Balabushko, Sebastian Beer, Jan Loeprick, and Felipe Vallada
- 7983. Special Study on Benchmarking the Quality of Project Economic Analysis for the South Asia Region by Kene Ezemenari and Xiao Ye
- 7984. Agent Banking in a Highly Under-Developed Financial Sector: Evidence from the Democratic Republic of Congo by Robert Cull, Xavier Gine, Sven Harten, and Anca Bogdana Rusu
- 7985. Stocktaking of Global Forced Displacement Data by Zara Sarzin
- 7986. Seasonality of Rural Finance by Shahidur R. Khandker, Hussain A. Samad, and Syed Badruddoza
- 7987. Rising Incomes and Inequality of Access to Infrastructure among Latin American Households by Marianne Fay and Stéphane Straub