

# Social & cultural implications of ICTs in rural development



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The 2<sup>nd</sup> International Conference on ICT for Rural Development, Indonesia, 27-28 October  
2021

# Agenda

- Best available evidence on how ICTs impact rural dwellers: Stork, C.; Kapugama, N.; Samarajiva, R. (2018). Economic impacts of mobile telecom in rural areas in low and lower-middle-income countries: Findings of a systematic review, *Information Technology and International Development*, Special Section, 14: 191-208.  
<http://itidjournal.org/index.php/itid/article/view/1485/596>
- How does economic impact translate into social and cultural impact?  
Samarajiva, R & Shields, P. (1990). Integration, telecommunication, and development: Power in the paradigms, *Journal of Communication*, 40(3): 84-105.
- What actions should government consider?

# A Systematic Review

- Uses **explicit methods** to **identify, select**, and **critically appraise** relevant research and **summarize** data from those studies that are included in the review
  - Biased towards quantitative to begin with, but now moving towards mixed methods and qualitative
- Originally from the field of medicine, now includes social sciences
- Uses only primary studies
- Protocols are registered
- Peer review is mandatory and has teeth

# About the systematic review

- What did we study?
  - Mobile-phone interventions for improving **economic and productive outcomes** in **rural areas** in low and middle-income countries (LMICs)
- Economic and productive outcomes = changes in:
  - Individual income/savings/wages/expenditure
  - Household income/savings/expenditure
  - Business profit/productivity
  - Wastage
  - Market price dispersion or volatility

# What did we do?

The image shows the top navigation bar of The World Bank website. On the left is the World Bank logo with the text 'THE WORLD BANK IBRD • IDA' and the slogan 'Working for a World Free of Poverty'. To the right, there is a language selector set to 'English'. Below this is a horizontal menu with links: 'Home', 'About', 'Data', 'Research' (highlighted), 'Learning', 'News', and 'Projects & Operations'. A large red banner below the menu contains the text 'Research & Outlook'. To the right of the banner is a blue header for the 'American Economic Association' with a grid pattern background. Below this are more navigation links: 'Annual Meeting', 'EconLit', 'Jobs', 'Resources', and 'Members'. A search box is visible on the right side of the page, with a dropdown menu set to 'Journal Articles' and a 'GO' button.



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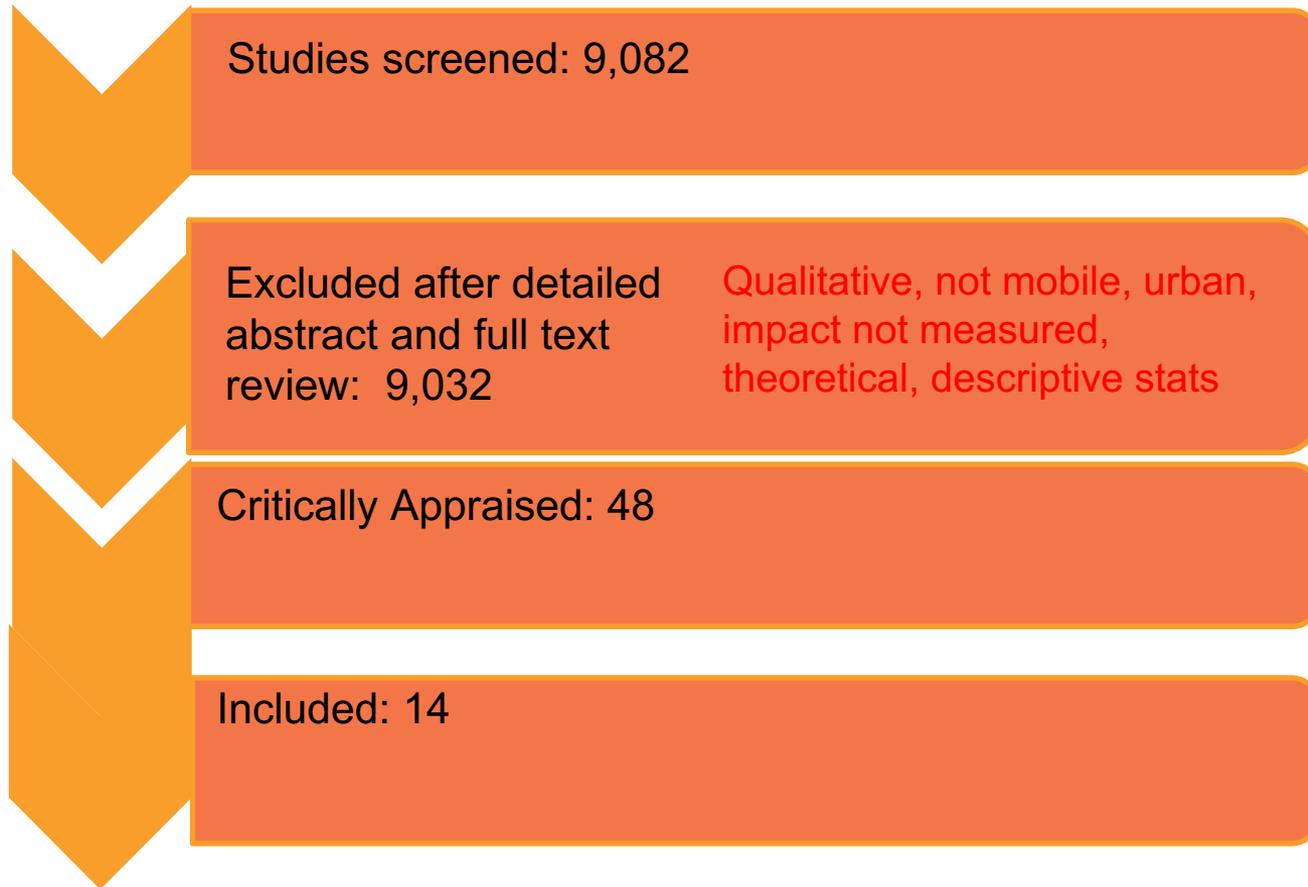


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# What did we do?



# What did we find?

## THE QUARTERLY JOURNAL OF ECONOMIC

Vol. CXXII August 2007

Stefan Klonner, Cornell University and J. W. C

### Does ICT Benefit the Evidence from South

American Economic Journal: Applied Economics 2 (July 2010): 46-59  
<http://www.aeaweb.org/articles.php?doi=10.1257/app.2.3.46>

Information from Markets Near and Far:  
Mobile Phones and Agricultural Markets in Niger

By JENNY C. AVERB

### Is IT Enough? Evidence from a Natural Experiment in India's Agriculture Markets

Chris Parker, Kamalini Ramdas, Nicos Savva  
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Access to information and communication technologies (ICTs) such as mobile phone networks is widely known to improve market efficiency. In this paper, we examine whether access to timely and accurate information provided through ICT applications has any additional impact. Using a detailed dataset from Reuters Market Light (RML), a text message service in India that provides daily price information to farmers, we find that this information reduces geographic price dispersion of crops in rural communities by as much as 5.2% (std. error 2.6%, p-value 4.5%), over and above access to mobile phone technology and other means of communication. To identify the effect of information on price dispersion we exploit a natural experiment where bulk text messages were banned unexpectedly across India for twelve days in 2010. We find that access to RML information has the highest impact in areas where RML has the largest number of subscribers. Also, the effect is largest for perishable crops. RML thus reduces the higher risk associated with high value perishable crops. We discuss implications for development organizations and for information providers.

*Key words:* price dispersion, information and communication technology, natural experiment, supply chains

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POLICY RESEARCH WORKING PAPER 4996

IMPACT EVALUATION SERIES No. 33

### The Power of Information

### The Impact of Mobile Phones on Farmers' Welfare in the Philippines

Julien Labonne  
Robert S. Chase

THE DIGITAL  
MARKET

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allocated effort  
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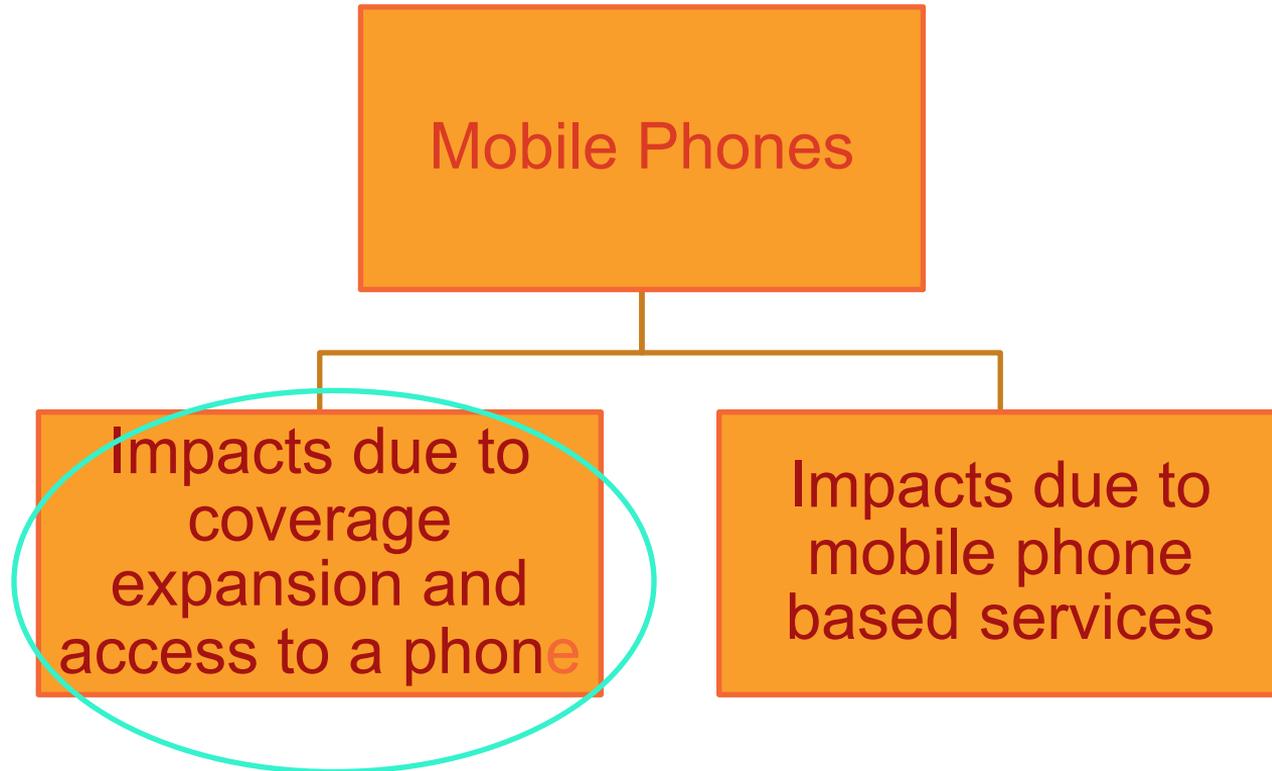
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#### 1. Introduction

The rapid and widespread growth of information and communication infrastructure such as mobile phone networks in Africa and Asia has created a number of opportunities for economic growth



# About the studies

Author	Observations	Occupations	Duration	Location
Jensen (2007)	74,700	Fishers, traders	1997-2001	Kerala, India
Aker (2010)	53,820	Traders	1999-2006	Niger
Aker and Fafchamps (2011)	39,120	Traders, farmers	1999-2008	Niger
	2,503			
Labonne and Chase (2009)	2,092	Farmers	2003-2006	Philippines
Beuermann et al. (2012)	40,000	Cross-sectoral	2001-2007	Peru
Klonner and Nolen (2008)	57,486	Cross-sectoral	1996-2001	South Africa

# Findings

Author	Findings
Jensen (2007)	INR 5 reduction in Max-Min spread of prices between market
	fishermen's profits increased on average by 8% consumer price reduced by 4%
	5-8% waste reduced to almost 0
Aker (2010)	10%-16% reduction in grain price dispersion. The effect is stronger for market pairs with higher transport costs
Aker and Fafchamps (2011)	50% reduction in the Max-Min price spread of farm-gate prices within a region
	reduces producer price dispersion for cowpeas by 6%. No higher producer prices but lower intra-annual price risk for farmers.
Labonne and Chase (2009)	increase in growth rate of per capita consumption: 15% (excluding communication)

# Findings

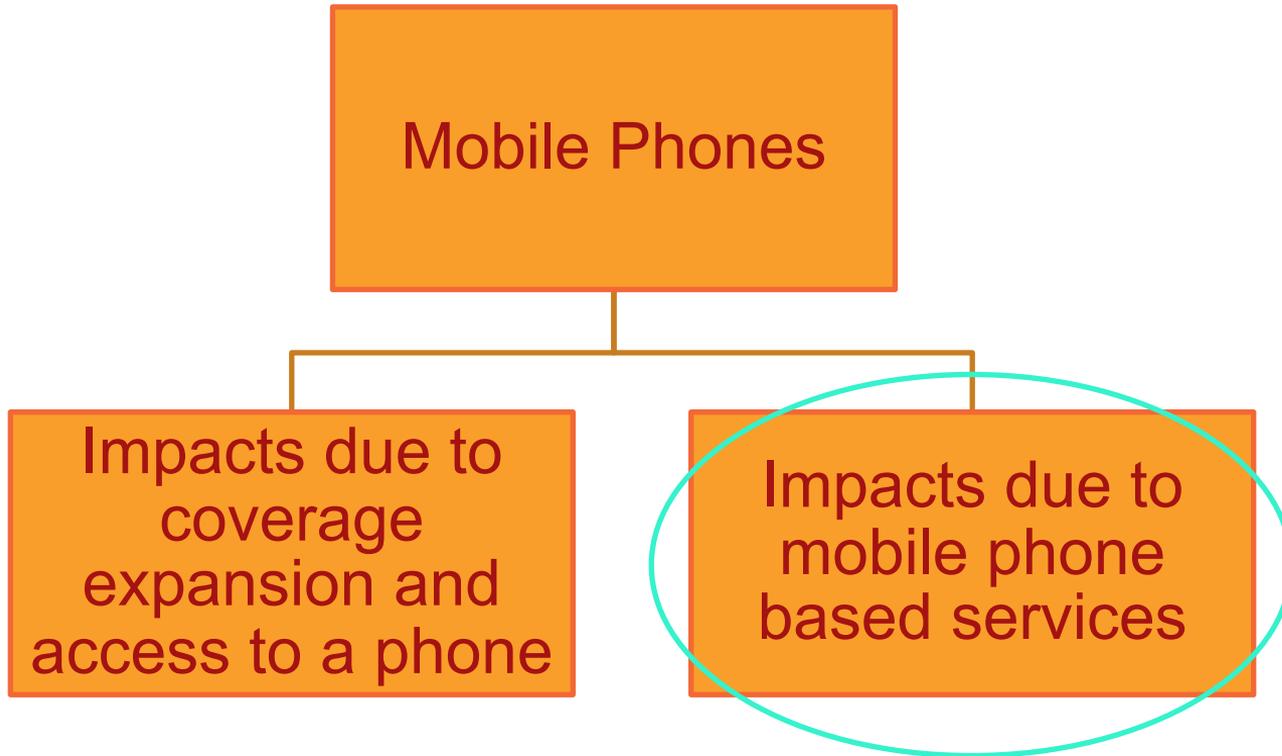
Author	Findings
Klonner and Nolen (2008)	Employment increases by 15 % when a locality receives complete network coverage (increased employment by women).
Beuermann et al. (2012)	Wage income increases by 15% after 2 years coverage, 34% after 6 years of coverage. Value of household assets increases by 23% 2 years after coverage, and increases to 54% after 6 years of coverage.

# Mobile network expansion has impact

- Causal mechanism
  - **Improves coordination between buyers and sellers in hitherto separate agricultural markets, in effect merging them into a bigger market**
    - Reduces price dispersion (Law of One Price) and aligns supply and demand (Say's Law)
  - **Has similar effect on labor markets**
    - Indirect effects too
    - In South Africa mobile coverage increased likelihood of someone being employed by 33.7%
  - Economic improvements were reflected in rising disposable income, household assets and thus expenditure (easier to measure)
    - Expenditure increased by 44.6%, six years after coverage arrived in Peru
    - Resulted in increased growth of consumption (about 15%) among farmers in Philippines, excluding communication-related consumption

# Mobile network expansion has impact

- However, **enabling conditions (which vary even within countries) must exist**, e.g.,
  - Even if price/demand information available from new location through mobile communication, it must be possible for the supplier/trader to take commodity to that place: physical transport
  - The institutional conditions must permit the action. If the fisher/trader is not empowered to sell in new location by owner of boat/grain, information by itself will not improve outcomes



# About the studies

Author	Service Offered	Sample/obs	Duration	Location
Fafchamps and Minten (2011)	Price, weather and crop advisory information via SMS	1,000	12 months	Maharashtra, India
Parker et al. (2012)	Price information via SMS	14,349	12 months (12 days)	India
Camacho and Conover (2011)	Price and weather information via SMS	1,107	26 weeks	Colombia

# Findings

Author	Findings	
Fafchamps & Minten (2011)	price dispersion	Not generalizable
	price received by farmers	Not generalizable
	crop loss	Not generalizable
	likelihood of changing crop varieties and cultivation practices	Not generalizable
Parker et al. (2012)	Price dispersion for crops for each state	5.2% higher spatial price dispersion during a bulk SMS ban
Camacho & Conover (2011)	sale price	Not generalizable
	farmers' revenues	Not generalizable
	household expenditures	Not generalizable
	crop loss	Not generalizable

# Reasons for impact (or inability to find impact)

- Too short a time to find effects
- Problems with targeting
  - Did the intended beneficiaries get the relevant information at the relevant time?
- Language issues
- Literacy issues – especially with SMS
- Push versus pull service
- Experience in using the service

# Causal mechanism & enabling conditions

- Causal mechanism same as with network extension (difference being proactive supply of information)
  - Hitherto separate markets consolidated through ICTs
- Information services reduced price dispersion but the desired impacts were not seen
- Same qualifications re enabling conditions

# Effects of extension of telecom networks into rural areas

- Integrates markets in goods, services, and labor, if the related physical connectivity exists
  - In some exceptional cases, such as the India-Pakistan border, ICT connectivity can exist, but lacking physical connectivity integration does not occur
- Economic benefits come from integration of markets in goods, services, and labor
  - But they are not one-way; suppliers in rural areas will find new markets and better prices; but inefficient suppliers will be displaced because products with better price-quality will come in

# Economic integration → cultural integration → resistance

- Economic integration results in the movement of people and ideas into rural areas and the movement of rural people into urban areas
  - Because their cultures and purchasing abilities will be different, there will be friction
    - Rural migrants seen as uncouth; urban migrants seen as driving up prices
- In the early phases of integration, resistance can even take violent forms
- If the communities and their leaders navigate this period without violence, in later phases, all will be more prosperous; but not all culture will survive

# What can governments do? Networks & Services

- Difficult to argue with the need for economic growth and related benefits shown by the systematic review
  - Put resources into policy & regulatory reforms to remove barriers to network expansion into rural areas
    - E.g., Levies on antenna towers
  - Keep universal service levies as low as possible and ensure rapid disbursement: [Samarajiva, R. & Hurulle, G. \(2018\). Metrics to improve universal-service fund disbursements, \*Digital Policy, Regulation and Governance\*, 21\(2\): 102-114. <https://doi.org/10.1108/DPRG-07-2018-0035>](#)
- No evidential basis for spending public funds on services that ride on the network; but political incentives may require some spending here too

# What can governments do? Cultural and social implications

- Democratic institutions that do not overly privilege residents over immigrants can help evolve solutions to mitigate frictions
- Channel resources into building up the capacity of the weaker rural dwellers
- Enforce non-discrimination laws to protect migrants into urban centers
- Address sources of income inequality

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