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This week's readings focus on the impact of mobile phones on the market inefficiencies of different sectors in different geographies. Jensen provides an economic analysis of a natural experiment involving fishing along a contiguous coastline in India. Aker provides a similar analysis, but focused on grain markets in Niger. Jensen and Aker both relied on market survey data, with Aker supplementing that data with government price, production, and weather datasets. The central premise is that incomplete or costly information can lead to price dispersion. Better market information can enhance the welfare of both buyers and sellers.

Jensen believes his work is generalizable to the broad area of ICT4D, including policymaking. For example, Jensen believes that, unlike generally unsuccessful telecenters and other publicly-funded and publicly-driven access initiatives, "the private sector may be better suited to identifying such opportunities" for market enhancements as the fishing sector example (p. 920). In addition, enabling the private sector to make these types of self-sustaining market enhancements do not draw funds away from public sector initiatives.

Jensen found that the introduction of cell phones did reduce price dispersion "within a few weeks of mobile phones being introduced" (p. 898), increased fishermen's profits, and completely eliminated waste in the system. Waste often occurred when fish were available in markets for which there were no buyers, resulting in the catch being dumped at sea. For consumers, both price decreases and more stable and predictable prices led to increased and more regular fish consumption (p. 890). Consumers didn't have to go to the market to find out if they could afford fish that day, they went to the market to buy fish at an expected price. Aker's analysis showed similar effects for consumers, where the lower prices "could have allowed individuals to consume millet for an additional 8-12 days" (p. 5).

Aker found that with the information gained from mobile phones, grain sellers did not need to travel long distances, often over very poor roads, to discover market prices. In fact, "cell phones have a greater impact on price dispersion where travel costs are higher" (p. 4). Grain traders, as a result, began to sell in more markets. (Jensen's fishermen did not expand beyond their local markets, perhaps because the perishable nature of fish requires the catch be sold the same day as it was caught.)

Jensen tracked the penetration of cell phones during the study period and found that, within the fishing sector, it hit a plateau of about 60-75% while among the general population penetration was less than 5%. In Niger, the penetration of mobile phones among the general population was also less than 5%, while 29% of grain traders owned a mobile phone.

Jensen asserts that the observed results are not one-off effects of the introduction of mobile phones but persistent due to the ongoing availability of mobile phones (p. 919). The models used by both authors did control for possible confounding factors, such as market collusion by sellers (enabled by mobile phone communications) that would stabilize prices. Both Jensen and Aker found that identifying the allocations of welfare benefit among the players (farmers, fishermen, traders, consumers) was ambiguous.

Frempong's analysis in Ghana drew from surveys across a variety of micro and small enterprises (MSE). The surveys gathered demographic information and assessed satisfaction with mobile phone services. Self-reported improvements in market activities included increased communication among buyers and sellers, lower transportation costs, and higher profits. At 60%,

Ghana has a much higher general penetration of mobile phones than Niger and India. Within the MSEs in Ghana, that number reached 84%.

Frempong listed financial services as a growth opportunity---only 13% of SMEs were aware of e-financial bank offerings. Later he notes that awareness is not the only issue, as “what is absent and urgently needed in Ghana is a comprehensive regulatory regime to govern electronic transactions” (p. 92). Problems with current services include “cost of subscription, quality of service, and cost of service” (p. 89). Also noted were “problems around enforcing deals made during mobile calls” (p. 90). This is contrasted with Jensen’s finding that “both fishermen and buyers report that it is extremely rare for a negotiated deal at sea to be broken later, largely due to the need to establish a credible reputation” (p. 892).

Burrell and Dunn take very different approaches in their analysis of mobile phone use. Rather than focus on market impact, they focus on personal issues. Burrell is very much influenced by Sen, for example, and looks closely at equity within shared access to mobile phone for women in Uganda. Burrell notes, “Users relate newly available technologies to an existing social order and may manipulate access to technologies accordingly to preserve, enhance or challenge that order” (p. 245). From her observations and interviews she gives many examples of men controlling women’s access to phones---from husbands dialing the numbers for their wives to men using access to phones to coerce women into relationships. The lack of privacy and autonomous use of mobile phones leads Burrell to argue that public phone services are still needed for women.

Dunn examines access to mobile phones by the poor in Jamaica, exploring whether mobile phones can be a means to reduce unequal access to services and jobs. He begins his analysis by looking at what distinguishes mobile phones from prior communications devices, including mobile phones being dedicated personal devices that are always on and have built-in payment mechanisms.

Dunn claims, “among the great majority of users the mobile phone is functioning as an intermediary or bridging technology to higher levels of interactive broadband usage and e-commerce applications among the poor” (p. 96). However, I found his data on access unconvincing. Dunn characterizes a “very high level of usage” as using “a mobile phone to make or receive calls in the preceding three months” (p. 98). I do not see how that low frequency of use justifies Dunn’s claim that mobile phones are a “well-established and constant feature in the lives of a large majority of Jamaicans” (p. 99).

Dunn’s reports from the qualitative studies are more interesting. The concept of “residential anonymity” is a compelling benefit of mobile phones. Where physical addresses can stigmatize people, mobile phones do not tie someone to “bad neighborhoods.” Job seekers, for example, achieve a more level playing field if they’re contacted by mobile phone than being identified as living at the “wrong address.”

Challenges for better leveraging the benefits of mobile phones by the poor in Jamaica include increasing literacy, which enables use of SMS and e-financial/e-government services. Policy implications include facilitating the bridging to broadband services by formatting available e-services to work on the small displays of mobile phones.

## **Week 10: SECTORAL APPLICATIONS: AGRICULTURE AND RURAL DEVELOPMENT (Mar 29<sup>th</sup>)**

Robert Jensen, “The Digital Provide: Information (Technology), Market Performance, and Welfare in the South Indian Fisheries Sector,” *Quarterly Journal of Economics* 122(3).

Jenny Aker, "Does Digital Divide or Provide? The Impact of Mobile Phones on Grain Markets in Niger." BREAD Working Paper #177 (2008).

Godfred Kwasi Frempong, "Mobile Telephone Opportunities: The Case of Micro- and Small Enterprises in Ghana," *Info* 11:2 (2009), pp 79-94.

Jenna Burrell, "Evaluating Shared Access: Social Equality and the Circulation of Mobile Phones in Rural Uganda," *Journal of Computer-Mediated Communication* 15 (2010), pp 230-250.

Hopeton Dunn, "From Voice Ubiquity to Mobile Broadband: Challenges of Technology Transition Among Low-Income Jamaicans," *Info* 11:2 (2009), pp 95-111.