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Finance & Economics**Economics focus****Calling across the divide**

Mar 10th 2005


From *The Economist* print edition**New research examines the link between mobile phones and economic growth in the developing world**

WEDGED between stalls of dried fish and mounds of plastic goods, a red shipping container is loaded with Coca-Cola bottles. The local distributor for Soweto market, located in a tatty corner of Zambia's capital city, Lusaka, sells all its stock every few days. A full load costs 10m kwacha (about \$2,000). In cash, this amount can be hard to get hold of, takes ages to count and—being ten times the average annual wage—is tempting to thieves. So Coca-Cola now tells its 300 Zambian distributors to pay for deliveries not in cash,

but by sending text messages from their mobile phones. The process takes about 30 seconds, and the driver issues a receipt. Faraway computers record the movement of money and stock. Coca-Cola is not alone. Around the corner from the market, a small dry-cleaning firm lets customers pay for laundry using their phones. So do Zambian petrol stations, and dozens of bigger shops and restaurants.

This is just one example of the many innovative ways in which mobile phones are being used in the poorest parts of the world. Anecdotal evidence for mobile phones' ability to boost economic activity is abundant: they enable fishermen or farmers to check prices at different markets before selling produce, make it easier for people to look for jobs, and prevent wasted journeys. Mobile phones reduce transaction costs, broaden trade networks and substitute for costly physical transport. They are of particular value when other means of communication (such as roads, post or fixed-line phones) are poor or non-existent.

This can be hard for people in the rich world to understand, because the ways in which mobile phones are used in the poor world are so different. In particular, phones are widely shared. One person in a village buys a mobile phone, perhaps using a micro-credit loan. Others then rent it out by the minute; the small profit margin enables its owner to pay back the loan and make a living. When the phone rings, its owner carries it to the home of the person being called, who then takes the call. Other entrepreneurs can set up as "text message interpreters",

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sending and receiving text messages (which are generally cheaper than voice calls) on behalf of their customers, who may be illiterate. So although the number of phones per 100 people is low by rich-world standards, they still make a big difference.

The strong demand for mobile telephony in poor countries is illustrated by booming subscriber growth. Subscriber growth in several sub-Saharan African countries exceeded 150% last year, and there are now eight mobile phones for every 100 people in Africa, up from three in 2001. World

Bank figures show that people in developing countries spend a larger proportion of their income on telecommunications than those in the rich world. Yet this is all merely indirect evidence for the impact of mobile telecoms on economic growth. After all, as people become richer, they have more money to spend on things like phone calls. A new study by Leonard Waverman, of the London Business School, and Meloria Meschi and Melvyn Fuss, of LECG, an economics consultancy, provides the most detailed analysis yet of the relationship between mobile phones and economic growth. (It was one of several papers presented this week at a meeting organised by Vodafone, the world's largest mobile operator.)

In a previous paper, published in 2001, Mr Waverman used a "production-function" model to examine the impact of fixed-line telecoms in the developed world in the 1970s and 1980s, the pre-mobile era. He found that investment in telecoms significantly enhanced output, allowing (using nifty statistical tests) for the fact that demand for telecoms services increases as GDP rises. Since then, other researchers have tried to apply the same approach to mobile telecoms in the developing world. But this requires detailed annual data, says Mr Waverman, which are not always available; and even when they are, the results are not robust. So he and his colleagues tried another way, called the endogenous-growth model, which is widely used to investigate differences in growth rates between countries. They used this to examine the impact of telecoms on economic growth in 92 countries, both rich and poor, between 1980 and 2003.

A digital dividend

Reassuringly, the results confirmed Mr Waverman's previous results about the impact of fixed-line telecoms in the rich world in the 1970s and 1980s. The model also suggested that the subsequent roll-out of mobile phones in the rich world had a smaller, but still significant, benefit. In developing countries, however, the growth dividend was twice as big—similar to that of fixed-line phones in the rich world in the 1970s. This makes sense, since in most poor countries mobiles are the first phone networks to be widely deployed; there are relatively few fixed-line phones. Overall, Mr Waverman's model suggests that in a typical developing country, an increase of ten mobile phones per 100 people boosts GDP growth by 0.6 percentage points.

To illustrate these findings, Mr Waverman considers Indonesia (nine mobile phones per 100 people) and the Philippines (27 phones per 100 people). Long-run growth in

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the Philippines, he suggests, could be a percentage point higher than in Indonesia if this gap is maintained. But if Indonesia closed the gap, its growth rate would match that of the Philippines. Mr Waverman also notes, however, that there is a large education gap between the two countries. His model predicts that bridging this divide would boost Indonesia's growth rate even more than closing the mobile gap. "Mobile phones are important, but so is education and health care," he says. "A lot of things are required for growth." He concludes by calling for regulatory policies that favour competition and encourage the speediest possible spread of mobile telephony. For policymakers interested in closing the "digital divide" to boost growth, the message is clear: mobile phones are the most effective means of doing so.

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