Economics focus

To do with the price of fish

How do mobile phones promote economic growth? A new paper provides a vivid example

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YOU are a fisherman off the coast of northern Kerala, a region in the south of India. Visiting your usual fishing ground, you bring in an unusually good catch of sardines. That means other fishermen in the area will probably have done well too, so there will be plenty of supply at the local beach market: prices will be low, and you may not even be able to sell your catch. Should you head for the usual market anyway, or should you go down the coast in the hope that fishermen in that area will not have done so well and your fish will fetch a better price? If you make the wrong choice you cannot visit another market because fuel is costly and each market is open for only a couple of hours before dawn—and it takes that long for your boat to putter from one to the next. Since fish are perishable, any that cannot be sold will have to be dumped into the sea.

This, in a nutshell, was the situation facing Kerala's fishermen until 1997. The result was far from ideal for both fishermen and their customers. In practice, fishermen chose to stick with their home markets all the time. This was wasteful because when a particular market is oversupplied, fish are thrown away, even though there may be buyers for them a little farther along the coast. On average, 5-8% of the total catch was wasted, says Robert Jensen, a development economist at Harvard University who has surveyed the price of sardines at 15 beach markets along Kerala's coast. On January 14th 1997, for example, 11 fishermen at Badagara beach ended up throwing away their catches, yet on that day there were 27 buyers at markets within 15km (about nine miles) who would have bought their fish. There were also wide variations in the price of sardines along the coast.

But starting in 1997 mobile phones were introduced in Kerala. Since coverage spread gradually, this provided an ideal way to gauge the effect of mobile phones on the fishermen's behaviour, the price of fish, and the amount of waste. For many years,

anecdotes have abounded about the ways in which mobile phones promote more efficient markets and encourage economic activity. One particularly popular tale is that of the fisherman who is able to call several nearby markets from his boat to establish where his catch will fetch the highest price. Mr Jensen's paper* adds some numbers to the familiar stories and shows precisely how mobile phones support economic growth.

As phone coverage spread between 1997 and 2000, fishermen started to buy phones and use them to call coastal markets while still at sea. (The area of coverage reaches 20-25km off the coast.) Instead of selling their fish at beach auctions, the fishermen would call around to find the best price. Dividing the coast into three regions, Mr Jensen found that the proportion of fishermen who ventured beyond their home markets to sell their catches jumped from zero to around 35% as soon as coverage became available in each region. At that point, no fish were wasted and the variation in prices fell dramatically. By the end of the study coverage was available in all three regions. Waste had been eliminated and the "law of one price"—the idea that in an efficient market identical goods should cost the same—had come into effect, in the form of a single rate for sardines along the coast.

This more efficient market benefited everyone. Fishermen's profits rose by 8% on average and consumer prices fell by 4% on average. Higher profits meant the phones typically paid for themselves within two months. And the benefits are enduring, rather than one-off. All of this, says Mr Jensen, shows the importance of the free flow of information to ensure that markets work efficiently. "Information makes markets work, and markets improve welfare," he concludes.

Mr Jensen's work is valuable because studies of the economic effect of mobile phones tend to be macroeconomic. A well known example is the finding in 2005 by Leonard Waverman, of the London Business School, that an extra 10 mobile phones per 100 people in a typical developing country leads to an additional 0.59 percentage points of growth in GDP per person. (He recently repeated this earlier study using a more elaborate model and found that an extra 10 percentage points in mobile-phone penetration led to an extra 0.44 percentage points of growth, a difference he says is not statistically significant.)

Calls and effect

One criticism levelled at such studies, says Mr Waverman, is that it is difficult to tell if mobile phones are promoting growth, or growth is promoting the adoption of mobile phones, as people become able to afford them. It is easy to imagine ways in which mobile phones could stimulate economic activity—they make up for poor infrastructure by substituting for travel, allow price data to be distributed and enable traders to engage with wider markets, and so on. Mr Waverman uses a variety of statistical tests to try to tease apart cause and effect. But detailed analyses of micro-market data like Mr Jensen's, he says, show how phones really do make people better off.

Furthermore, says Mr Jensen, phones do this without the need for government intervention. Mobile-phone networks are built by private companies, not governments or charities, and are economically self-sustaining. Mobile operators build and run them because they make a profit doing so, and fishermen, carpenters and porters are willing to pay for the service because it increases their profits. The resulting welfare gains are indicated by the profitability of both the operators and their customers, he suggests. All governments have to do is issue licences to operators, establish a clear and transparent regulatory framework and then wait for the phones to work their economic magic.

*"The Digital Provide: Information (technology), market performance and welfare in the South Indian fisheries sector", by Robert Jensen. To be published in the *Quarterly Journal of Economics*, August 2007.

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