

## MARCH/APRIL 2011

### Small Changes, Big Results

Behavioral Economics at Work in Poor Countries *Rachel Glennerster and Michael Kremer*

*This article is part of [Small Changes, Big Results](#), a forum on applying behavioral economics to global development.*

According to a standard economic model, a fourteen-year-old girl in Kenya will go to school if doing so will enable her to earn more than she spent on her education. A family will buy dilute-chlorine solution, measure out capfuls to treat their water, and wait for the chlorine to disinfect their water if the health benefits exceed the cost of the chlorine. Since a school uniform that lasts a year or two costs only six dollars, and a month's supply of chlorine runs about \$0.30, these costs should be fairly minor factors. Influenced in part by these arguments, many governments in the developing world and nongovernmental organizations (NGOs) concerned with development have maintained small charges for education and preventative health care.

However, in recent decades economists have increasingly come to recognize what most of us have long known: human beings don't always make the best decisions.

A new type of economics, dubbed "behavioral economics," seeks to understand deviations from the simple "rational agent" model that has dominated economics for most of its history—why people procrastinate, say, or why Americans don't exercise or save enough.

In the developed world, these ideas are beginning to affect policy. For instance, the Pension Protection Act of 2006 encourages U.S. employers to establish automatic enrollment for retirement plans. Could such approaches help alleviate poverty in developing countries? If policies based on behavioral economics can help Americans save more, could they also help Indian children get vaccinated or Kenyan children get cleaner water?

Evidence from randomized evaluations in the developing world suggests they might. Randomized evaluations, which have been common in medicine for decades, seek to distinguish causes from the myriad other factors that can create correlations among variables. In the development case, researchers implement a program in a few areas and compare the outcomes for participants and non-participants.

Randomized trials have been used to study social and economic conditions in the developed world for some time. In the 1970s the U.S. government conducted large-scale evaluations of a negative income tax and of health insurance. But, while these evaluations were useful, they tended to be expensive one-offs, designed to measure the impact of a single policy with many components, making it difficult to learn in a cumulative way over time.

In 1995 International Child Support, an NGO I (Kremer) was working with, began what became a new wave of smaller-scale evaluations that allowed many different approaches to be compared in one context. NGOs, in contrast to governments, proved to be highly flexible and open to experimenting with new ideas. The new breed of randomized evaluations shed light not just on whether a program worked, but how and why people behave the way they do. Academics and NGOs are now using the lessons of previous evaluations to develop and rigorously test new approaches to development challenges, creating an iterative process of continuous improvement.

In a field that has promoted a great many "big-think" fads, the experimental approach is something different and

potentially transformative: it not only produces relatively clear-cut evidence that is hard to ignore, but also forces economists to engage development problems where they play out. On-the-ground experience shows us the realities that might otherwise have been left out of our models.

Randomized evaluation is not without its critics, who say that there is little benefit in learning rigorously about one context because the lessons will not translate into other contexts. In effect, the critics ask, can we generalize about human behavior across countries?

That is an empirical question, and the growing body of evidence is helping us answer it scientifically. Hundreds of randomized evaluations of anti-poverty programs are now being conducted all over the world. While each evaluation is carefully crafted to describe one part of the development puzzle, many pieces are starting to come together.

Like students in the United States writing papers, farmers in Kenya choose to have fewer options.

And we are finding certain patterns that seem consistent across contexts and cultures. For example, even small fees for education or preventative health care appear to reduce adoption. Some of these patterns pose a challenge for conventional economic models and an opportunity for policy innovation. For example, in the rational model, having more time and more options can't make you worse off: more choice does not reduce your welfare. But it turns out that if you are a procrastinator, you may be better off with a deadline and may prefer to impose a deadline on yourself. In one study, students in the United States and farmers in Kenya both chose to restrict their options. With greater understanding, we might harness these behaviors to improve people's lives.

### **Incentivizing Education**

A quiet revolution has been going on in education across the developing world. In the 40 years between 1960 and 2000, the portion of secondary school-aged children enrolled in school rose from 14 to 54 percent. Some of the poorest countries have seen the most dramatic changes. According to surveys by the Institutional Reform & Capacity Building Project, only 23 percent of household heads in Sierra Leone in 1990 had any schooling; another study found that, by 2004, 66 percent of the primary school-aged population were in school.

Despite this important progress, there are still 100 million children of primary-school age not enrolled in school and many millions more do not attend regularly. Fortunately this is an area where we have learned a lot about how to design successful and cost-effective programs.

The challenge of getting more children, and particularly more girls, into school can appear a daunting battle against complex local cultural barriers. But it turns out that, in much of the world, simple economics has a powerful and consistent effect. Incentives can make a huge difference.

In 1997 the Mexican government instituted a "conditional cash transfer" program, which provided substantial amounts of money to poor families if they kept their children in school and got them regular health check ups. Pilot communities were picked at random from a list of those in need. The evaluation compared school attendance in participating and non-participating communities and found the program was effective in increasing school enrollment. With a cash transfer of \$20 per month to the families of adolescent girls, enrollment of girls in secondary school increased by 14.8 percentage points. Similar programs have been rigorously evaluated in many countries around the world, and school enrollment has risen in every case.

Just understanding the economic benefits of schooling can increase attendance. Informing families about the returns of education increased student enrolment in the Dominican Republic and Madagascar. Providing information is cheap, so this is a highly cost-effective way of increasing school participation in contexts where most families underestimate the benefits of going to school. A study in India suggests that long-held patterns of under-investing in the human capital of girls can change rapidly when the potential economic returns of education for girls change. After recruiters for call centers and similar jobs went to randomly selected villages outside Delhi, families started sending girls to school more, and nutrition of young girls improved, suggesting that development of a white-collar sector may be a powerful driver for greater education and health equality for women in developing countries, just as economic historians have argued it was in the United States.

That people respond to the relative costs and returns of schooling might imply that the poor are optimizing the amount of school they invest in, as predicted in a simple economic model. But evidence suggests that reality is more complex.

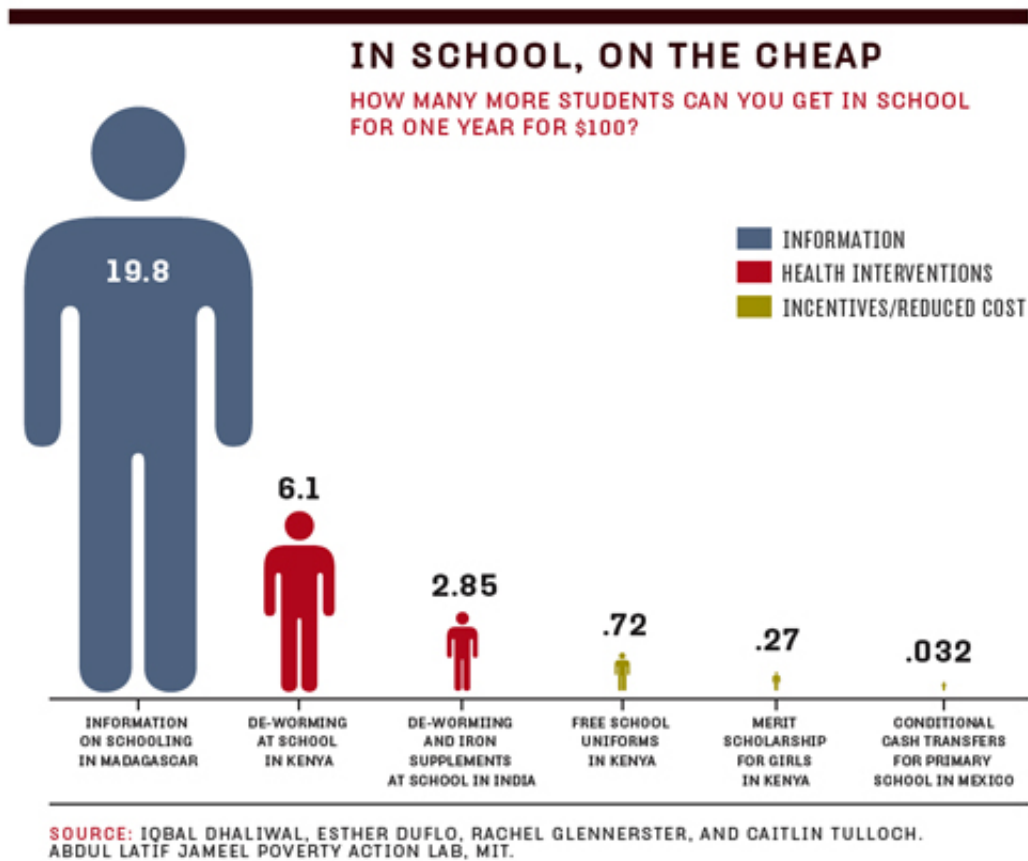
Even small incentives and costs have a surprisingly large impact on behavior. In Malawi, where different magnitudes of conditional cash transfers were tried, the smallest incentive was sufficient to achieve the average effect. An evaluation in Kenya found that providing a free school uniform could increase attendance of young children by 6.4 percentage points. There is evidence that covering the cost of school uniforms for adolescent girls not only reduces dropout rates, but also reduces rates of teen pregnancy. Conditional cash transfers can be used to get larger sums of money into the hands of the poor, but if the goal is simply to get children in school, providing smaller transfers to more people in the poorest countries may be the most effective use of resources.

Many economists believe those who most need a product are more likely to pay for it. They're wrong.

In addition, the timing of costs matters more than would be expected in a simple model. This has been found in education, health, and agriculture in Latin America and Africa. Cash-transfer programs that set aside resources and pay them out when school fees are due induce much higher rates of attendance than do programs that pay out earlier. This also leads to better attendance than scenarios in which the poor cannot borrow and take cash whenever they can get it.

Children are also highly influenced by their peers. Evidence from Mexico and Colombia shows that when conditional cash transfers induce the poor to go to school more, the slightly better off, who are not eligible for the program, also go more, presumably because it's not much fun being out of school if all your playmates are there. Similarly, in Kenya, when the best-performing girls were offered scholarships, they worked harder and attended school more, as one might expect. But so did boys, teachers, and girls who had no hope of winning the scholarship.

While there is much yet to learn about the relative effects of different pressures and incentives, the broader lesson—that adjustments to timing and small adjustments to costs can have surprisingly large impacts on the effectiveness of a program—appears sound. But does it apply outside the education context?



[Click on chart to enlarge.]

## Healthy Choices

As with education, poor countries have made significant gains in health. Life expectancy in virtually every country is higher now than it was in the United States in 1900, even though per capita income in many is a fraction of U.S. per capita income in that year. The invention of health technologies such as vaccines is likely part of the reason. Indeed, randomized trials in medicine have found many health interventions that can improve health at extremely low cost.

But while millions are benefiting from these technologies, their adoption is far from universal. Diarrhea kills 1.8 million children each year. Point-of-use chlorination of drinking water results in a 29 percent reduction in reported cases of diarrhea, yet less than 10 percent of households in sub-Saharan Africa use home chlorination. At least 27 million children and 40 million pregnant women worldwide do not receive basic immunizations. Mosquito nets reduce child mortality by up to 38 percent, but only 19 percent of children in areas where malaria is endemic in Africa sleep under a net. Treatment for parasitic worms, which infect 400 million school-aged children worldwide, cut school absenteeism in Kenya by a quarter, and, in the longer term, generate 20–29 percent higher earnings among those who leave subsistence agriculture for paid employment. But only 10 percent of those at risk of infection are treated.

Strikingly similar patterns of behavior seem to govern the hesitancy to adopt useful health interventions. Many consumers are influenced by small costs—both in cash and in convenience—in their decisions to invest in non-acute care.

Whether soap in India or chlorine for sanitizing drinking water in Kenya, demand for a range of non-acute treatments drops precipitously when a small price is charged. Given how cheap these products are to manufacture and how large the public health benefits of breaking the cycle of disease transmission are, why would anyone consider charging for them? One concern is that free mosquito nets will not be hung up, and free chlorine will never be added to drinking water. Some psychologists and social entrepreneurs have suggested, “If you don’t pay for it, you won’t value it.”

But there is little evidence to support this theory. Studies of demand for non-acute care as a function of price show nothing to suggest that the act of paying for something makes a person more likely to use it. Nor is it the case that those who most need a product are more likely to pay for it: those who purchase mosquito nets are no more likely to be sick at the time of purchase; families with small children, who are most likely to die from diarrhea, are no more likely to buy chlorine. But are those more likely to hang mosquito nets or remember to add chlorine to their water also the ones more likely to pay for it, thus helping avoid waste? There is some evidence in the case of chlorine but none in the case of mosquito nets.

Why are people so sensitive to the prices of non-acute health products? One possibility is that much of the health benefit flows to neighbors as transmission of communicable disease is reduced. As a result, individuals invest less than is desirable for the community as a whole. But the private benefits of chlorination or de-worming pills, for example, seem to exceed the modest costs.

One factor surely at work is lack of ready cash. In a study in Kenya, demand for mosquito nets fell less steeply with price when households were given more time to raise the funds to purchase them.

But lack of funds does not explain why adoption also drops off sharply with small changes in convenience. Researchers, again in Kenya, found that people were, on average, only willing to walk 3.5 minutes longer (round trip) to collect water from a protected spring. Similar observations have been made with regard to iron-fortified flour and HIV test results.

In some cases potential users may lack experience with a product. When offered mosquito nets at a subsidized price, Kenyans who had previously been offered free nets—and their neighbors—were more likely to pay than were those who had previously been offered them at a less-subsidized rate. Most likely, those who took free mosquito nets had a positive experience with them and were therefore more willing to pay for an additional net. This is contrary to the conventional wisdom among development workers that free distribution undermines people’s willingness to pay later.

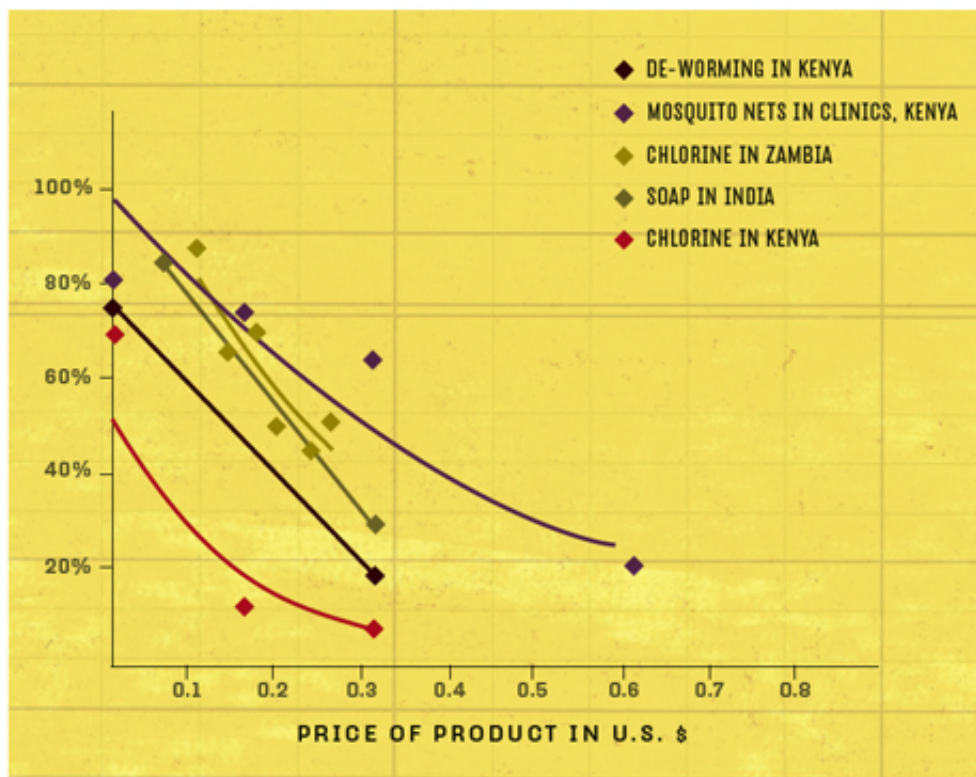
Giving rural Rajasthani mothers lentils and a set of plates raised full immunization rates from 5% to 38%.

There are many questions remaining about user fees. In particular, we don’t know the impact of fees on the supply side. There are potential downsides to abolishing fees. Small payments can be a source of flexible funding to clinics when governments fail to provide it, and they may motivate workers—who often pocket them—to show up. A key challenge is to test the impact of fees on education and health workers, and to devise approaches to motivating them in a way that prevents consumers engaging in counterproductive behavior. (A number of studies are now focused on this problem.)

We also don’t know enough about how to abolish user fees: many countries have abolished them on paper only to see informal fees creep back. But the significant effect of user fees on rates of adoption is clear.

## “THEY WON’T USE IT IF IT’S FREE”

SOME ECONOMISTS THINK FREELY DISTRIBUTED PRODUCTS DON'T SEEM VALUABLE AND THUS WON'T BE USED. IN FACT, EVEN MINIMAL FEES FOR HEALTH CARE PRODUCTS CAUSE SIGNIFICANT DECLINES IN USE.



SOURCE: ABDUL LATIF JAMEEL POVERTY ACTION LAB, MIT.

[Click on chart to enlarge.]

### Putting Research To Use

These results, from both education and health studies, fit with an emerging consensus from behavioral economics: people are not good at making even small upfront investments in order to obtain a steady stream of modest future benefits. Perhaps the tough decision, however, is not whether to take action, but when. If people place particular weight on costs and benefits today, investing tomorrow always looks preferable—the benefits will still be there in the long run, but the costs will be delayed. The catch is that when tomorrow comes it is again tempting to delay, and yet people fail to anticipate this.

Fortunately, these behavioral theories also suggest a possible solution: small upfront incentives should be effective at changing behavior. Experience bears this out. A program that provided rural Rajasthani mothers a kilogram of lentils each time their children received one stage of an immunization course and a set of plates when the full course was completed raised full immunization rates from 5 percent to 38 percent. Similarly, small payments were enough to increase the percentage of people collecting their HIV test results.

And, as with education, there are examples where information about the costs and benefits of health behaviors can have a big impact. In Kenya, teenagers were given information about the relative likelihood of HIV infection

by age—in particular that older men were much more likely to be infected with HIV than younger men. The result was a 65 percent reduction in teen pregnancies by older men (and no increase by younger men). In other cases, providing information is not effective. Teaching children how to prevent worm infections did not change their behavior.

A number of programs have been developed based on our improved understanding of consumer demand for health and education and have themselves undergone rigorous evaluation. The immunization incentive program is one example. This program also included incentives for providers, responding to what we have learned about the supply side of education and health.

Another program inspired by our increasing knowledge of consumer behavior sought to provide clean drinking water to households that collect water from contaminated sources. Despite widespread social marketing, few households buy chlorine for home treatment. This is due in large part to the price, which reflects not just the minimal cost of the chlorine itself, but also the larger costs of packaging and distribution.

A new approach places chlorine dispensers at communal water sources. Using larger, community-level containers substantially reduces packaging costs, making it easier for governments or donors to provide the chlorine for free. The dispensers deliver the right quantity for the standard water-collection container, so the dispenser is convenient to use. The dispenser itself provides a visual reminder of the need to treat water, and combining the steps of water collection and treatment builds good habits. The public placement of the dispenser is designed to facilitate peer pressure and social-norm formation around chlorine use.

Whereas less than 10 percent of people treated their water under the social-marketing approach, most people did so in communities with a chlorine dispenser. Moreover, in contrast to cases in which prevention campaigns generate an initial burst of enthusiasm that wanes over time, most people continued to treat their water two and a half years after the evaluation, perhaps because of the peer-pressure mechanism that was built into the design.

We estimate that it costs less than two dollars to avert a case of diarrhea using this approach. In rural areas where many families share communal water sources, it is the most cost-effective way to reduce diarrhea and among the most cost-effective health interventions of any kind.

### **More Alike Than Different**

All over the world, the poor weigh economic factors and make decisions about whether and how to invest in education and health. But their decisions are not always optimal for them or for society. Sometimes the poor do not invest because they are cash constrained, lack information, or there is insufficient incentive because much of the benefit of a product accrues to others. Often, like Americans who put off retirement savings, the poor procrastinate or don't save enough for important lump-sum investments, such as school fees or uniforms. And just as nurses in one Swiss improved their hygiene practices when sanitizer was made more readily available, so convenience matters to the poor. Across a range of programs, small incentives can help alleviate procrastination.

The large body of behavioral study shows similar results across different sectors, products, and continents. Does this mean that the development mantra “context is everything” is wrong? Clearly programs do need to be adapted to local context—lentils are a great incentive to encourage immunization in India, but you probably would not use them to promote preventative medicine in Boston. It would be foolish to say that every result generalizes to every part of the world. In particular, randomized evaluations of supply-side health and education

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reforms suggest that while some results generalize, the details of institutional circumstance can matter a lot. Even in the case of consumer behavior, we have not done enough rigorous studies in enough countries to assert that observed patterns are truly universal, and much of our evidence comes from only two (albeit very different) countries, Kenya and India.

Yet several conclusions of behavioral economics—that small inconveniences and charges can prevent important health and education investments and that small incentives can yield large changes in behavior—appear to hold widely. Current research indicates that, despite our striking surface differences, there are strong similarities in how people make decisions about investments in health and education across contexts. We would be wise, then, to consider the words of Janell Cannons’ classic children’s story, *Stellaluna*: “How can we feel so different and be so much alike?”

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