



# More Than 1 Billion People Are Hungry in the World

But what if the experts are wrong?

BY ABHIJIT BANERJEE, ESTHER DUFLO | MAY/JUNE 2011



For many in the West, poverty is almost synonymous with hunger. Indeed, the announcement by the United Nations Food and Agriculture Organization in 2009 that more **than 1 billion people** are suffering from hunger grabbed headlines in a way that any number of World Bank estimates of how many poor people live on less than a dollar a day never did.

But is it really true? Are there really more than a billion people going to bed hungry each night? Our research on this question has taken us to rural villages and teeming urban slums around the world, collecting data and speaking with poor people about what they eat and what else they buy, from Morocco to Kenya, Indonesia to India. We've also tapped into a wealth of insights from our academic colleagues. What we've found is that the story of hunger, and of poverty more broadly, is far more complex than any one statistic or grand theory; it is a world where those without enough to eat may save up to buy a TV instead, where more money doesn't necessarily translate into more food, and where making rice cheaper can sometimes even lead people to buy less rice.

But unfortunately, this is not always the world as the experts view it. All too many of them still promote sweeping, ideological solutions to problems that defy one-size-fits-all answers, arguing over foreign aid, for example, while the facts on the ground bear little resemblance to the fierce policy battles they wage.

Jeffrey Sachs, an advisor to the United Nations and director of Columbia University's Earth Institute, is one such expert. In books and countless speeches and television appearances, he has argued that poor countries are poor because they are hot, infertile, malaria-infested, and often landlocked; these factors, however, make it hard for them to be productive without an initial large investment to help them deal with such endemic problems. But they cannot pay for the investments precisely because they are poor -- they are in what economists call a "poverty trap." Until something is done about these problems, neither free markets nor democracy will do very much for them.

But then there are others, equally vocal, who believe that all of Sachs's answers are wrong. William Easterly, who battles Sachs from New York University at the other end of Manhattan, has become one of the most influential aid critics in his books, *The Elusive Quest for Growth* and *The White Man's Burden*. Dambisa Moyo, an economist who worked at Goldman Sachs and the World Bank, has joined her voice to Easterly's with her recent book, *Dead Aid*. Both argue that aid does more bad than good. It prevents people from searching for their own solutions, while corrupting and undermining local institutions and creating a self-perpetuating lobby of aid agencies. The best bet for poor countries, they argue, is to rely on one simple idea: When markets are free and the incentives are right, people can find ways to solve their problems. They do not need handouts from foreigners or their own governments. In this sense, the aid pessimists are actually quite optimistic about the way the world works. According to Easterly, there is no such thing as a poverty trap.

This debate cannot be solved in the abstract. To find out whether there are in fact poverty traps, and, if so, where they are and how to help the poor get out of them, we need to better understand the concrete problems they face. Some aid programs help more than others, but which ones? Finding out required us to step out of the office and look more carefully at the world. In 2003, we founded what became the Abdul Latif Jameel Poverty Action Lab, or J-PAL. A key part of our mission is to research by using randomized control trials -- similar to experiments used in medicine to test the effectiveness of a drug -- to understand what works and what doesn't in the real-world fight against poverty. In practical terms, that meant we'd have to start understanding how the poor really live their lives.

Take, for example, Pak Solhin, who lives in a small village in West Java, Indonesia. He once explained to us exactly how a poverty trap worked. His parents used to have a bit of land, but they also had 13 children and had to build so many houses for each of them and their families that there was no land left for cultivation. Pak Solhin had been working as a casual agricultural worker, which paid up to 10,000 rupiah per day (about \$2) for work in the fields. A recent hike in fertilizer and fuel prices, however, had forced farmers to economize. The local farmers decided not to cut wages, Pak Solhin told us, but to stop hiring workers instead. As a result, in the two months before we met him in 2008, he had not found a single day of agricultural labor. He was too weak for the most physical work, too inexperienced for more skilled labor, and, at 40, too old to be an apprentice. No one would hire him.

Pak Solhin, his wife, and their three children took drastic steps to survive. His wife left for Jakarta, some 80 miles away, where she found a job as a maid. But she did not earn enough to feed the children. The oldest son, a good student, dropped out of school at 12 and started as an apprentice on a construction site. The two younger children were sent to live with their grandparents. Pak Solhin himself survived on the roughly 9 pounds of subsidized rice he got every week from the government and on fish he caught at a nearby lake. His brother fed him once in a while. In the week before we last spoke with him, he had eaten two meals a day for four days, and just one for the other three.

Pak Solhin appeared to be out of options, and he clearly attributed his problem to a lack of food. As he saw it, farmers weren't interested in hiring him because they feared they couldn't pay him enough to avoid starvation; and if he was starving, he would be useless in the field. What he described was the classic nutrition-based poverty trap, as it is known in the academic world. The idea is simple: The human body needs a certain number of calories just to survive. So when someone is very poor, all the food he or

she can afford is barely enough to allow for going through the motions of living and earning the meager income used to buy that food. But as people get richer, they can buy more food and that extra food goes into building strength, allowing people to produce much more than they need to eat merely to stay alive. This creates a link between income today and income tomorrow: The very poor earn less than they need to be able to do significant work, but those who have enough to eat can work even more. There's the poverty trap: The poor get poorer, and the rich get richer and eat even better, and get stronger and even richer, and the gap keeps increasing.

But though Pak Solhin's explanation of how someone might get trapped in starvation was perfectly logical, there was something vaguely troubling about his narrative. We met him not in war-infested Sudan or in a flooded area of Bangladesh, but in a village in prosperous Java, where, even after the increase in food prices in 2007 and 2008, there was clearly plenty of food available and a basic meal did not cost much. He was still eating enough to survive; why wouldn't someone be willing to offer him the extra bit of nutrition that would make him productive in return for a full day's work? More generally, although a hunger-based poverty trap is certainly a logical possibility, is it really relevant for most poor people today? What's the best way, if any, for the world to help?

**THE INTERNATIONAL COMMUNITY** has certainly bought into the idea that poverty traps exist -- and that they are the reason that millions are starving. The first U.N. Millennium Development Goal, for instance, is to "eradicate extreme poverty and hunger." In many countries, the definition of poverty itself has been connected to food; the thresholds for determining that someone was poor were originally calculated as the budget necessary to buy a certain number of calories, plus some other indispensable purchases, such as housing. A "poor" person has essentially been classified as someone without enough to eat.

So it is no surprise that government efforts to help the poor are largely based on the idea that the poor desperately need food and that quantity is what matters. Food subsidies are ubiquitous in the Middle East: Egypt spent \$3.8 billion on food subsidies in the 2008 fiscal year, some 2 percent of its GDP. Indonesia distributes subsidized rice. Many states in India have a similar program. In the state of Orissa, for example, the poor are entitled to 55 pounds of rice a month at about 1 rupee per pound, less than 20 percent of the market price. Currently, the Indian Parliament is debating a Right to Food Act, which would allow people to sue the government if they are starving. Delivering such food aid is a logistical nightmare. In India it is estimated that more than half of the wheat and one-third of the rice gets "lost" along the way. To support direct food aid in this circumstance, one would have to be quite convinced that what the poor need more than anything is more grain.

But what if the poor are not, in general, eating too little food? What if, instead, they are eating the wrong kinds of food, depriving them of nutrients needed to be successful, healthy adults? What if the poor aren't starving, but choosing to spend their money on other priorities? Development experts and policymakers would have to completely reimagine the way they think about hunger. And governments and aid agencies would need to stop pouring money into failed programs and focus instead on finding new ways to truly improve the lives of the world's poorest.

Consider India, one of the great puzzles in this age of food crises. The standard media story about the country, at least when it comes to food, is about the rapid rise of obesity and diabetes as the urban upper-middle class gets richer. Yet the real story of nutrition in India over the last quarter-century, as Princeton professor Angus Deaton and Jean Drèze, a professor at Allahabad University and a special advisor to the Indian government, have shown, is not that Indians are becoming fatter: It is that they are in fact eating less and less. Despite the country's rapid economic growth, per capita calorie consumption in India has declined; moreover, the consumption of all other nutrients except fat also appears to have gone down among all groups, even the poorest. Today, more than three-quarters of the population live in households whose per capita calorie consumption is less than 2,100 calories in urban areas and 2,400 in rural areas -- numbers that are often cited as "minimum requirements" in India for those engaged in manual labor. Richer people still eat more than poorer people. But at all levels of income, the share of the budget

devoted to food has declined and people consume fewer calories.

What is going on? The change is not driven by declining incomes; by all accounts, Indians are making more money than ever before. Nor is it because of rising food prices -- between the early 1980s and 2005, food prices declined relative to the prices of other things, both in rural and urban India. Although food prices have increased again since 2005, Indians began eating less precisely when the price of food was going down.

So the poor, even those whom the FAO would classify as hungry on the basis of what they eat, do not seem to want to eat much more even when they can. Indeed, they seem to be eating less. What could explain this? Well, to start, let's assume that the poor know what they are doing. After all, they are the ones who eat and work. If they could be tremendously more productive and earn much more by eating more, then they probably would. So could it be that eating more doesn't actually make us particularly more productive, and as a result, there is no nutrition-based poverty trap?

One reason the poverty trap might not exist is that most people have enough to eat. We live in a world today that is theoretically capable of feeding every person on the planet. In 1996, the FAO estimated that world food production was enough to provide at least 2,700 calories per person per day. Starvation still exists, but only as a result of the way food gets shared among us. There is no absolute scarcity. Using price data from the Philippines, we calculated the cost of the cheapest diet sufficient to give 2,400 calories. It would cost only about 21 cents a day, very affordable even for the very poor (the worldwide poverty line is set at roughly a dollar per day). The catch is, it would involve eating only bananas and eggs, something no one would like to do day in, day out. But so long as people are prepared to eat bananas and eggs when they need to, we should find very few people stuck in poverty because they do not get enough to eat. Indian surveys bear this out: The percentage of people who say they do not have enough food has dropped dramatically over time, from 17 percent in 1983 to 2 percent in 2004. So, perhaps people eat less because they are less hungry.

And perhaps they are really less hungry, despite eating fewer calories. It could be that because of improvements in water and sanitation, they are leaking fewer calories in bouts of diarrhea and other ailments. Or maybe they are less hungry because of the decline of heavy physical work. With the availability of drinking water in villages, women do not need to carry heavy loads for long distances; improvements in transportation have reduced the need to travel on foot; in even the poorest villages, flour is now milled using a motorized mill, instead of women grinding it by hand. Using the average calorie requirements calculated by the Indian Council of Medical Research, Deaton and Drèze note that the decline in calorie consumption over the last quarter-century could be entirely explained by a modest decrease in the number of people engaged in heavy physical work.

Beyond India, one hidden assumption in our description of the poverty trap is that the poor eat as much as they can. If there is any chance that by eating a bit more the poor could start doing meaningful work and get out of the poverty trap zone, then they should eat as much as possible. Yet most people living on less than a dollar a day do not seem to act as if they are starving. If they were, surely they would put every available penny into buying more calories. But they do not. In an 18-country data set we assembled on the lives of the poor, food represents 36 to 79 percent of consumption among the rural extremely poor, and 53 to 74 percent among their urban counterparts.

It is not because they spend all the rest on other necessities. In Udaipur, India, for example, we find that the typical poor household could spend up to 30 percent more on food, if it completely cut expenditures on alcohol, tobacco, and festivals. The poor seem to have many choices, and they don't choose to spend as much as they can on food. Equally remarkable is that even the money that people do spend on food is not spent to maximize the intake of calories or micronutrients. Studies have shown that when very poor people get a chance to spend a little bit more on food, they don't put everything into getting more calories. Instead, they buy better-tasting, more expensive calories.

In one study conducted in two regions of China, researchers offered randomly selected poor households a large subsidy on the price of the basic staple (wheat noodles in one region, rice in the other). We usually expect that when the price of something goes down, people buy more of it. The opposite happened. Households that received subsidies for rice or wheat consumed less of those two foods and ate more shrimp and meat, even though their staples now cost less. Overall, the caloric intake of those who received the subsidy did not increase (and may even have decreased), despite the fact that their purchasing power had increased. Nor did the nutritional content improve in any other sense. The likely reason is that because the rice and wheat noodles were cheap but not particularly tasty, feeling richer might actually have made them consume less of those staples. This reasoning suggests that at least among these very poor urban households, getting more calories was not a priority: Getting better-tasting ones was.

All told, many poor people might eat fewer calories than we -- or the FAO -- think is appropriate. But this does not seem to be because they have no other choice; rather, they are not hungry enough to seize every opportunity to eat more. So perhaps there aren't a billion "hungry" people in the world after all.

**NONE OF THIS IS TO SAY** that the logic of the hunger-based poverty trap is flawed. The idea that better nutrition would propel someone on the path to prosperity was almost surely very important at some point in history, and it may still be today. Nobel Prize-winning economic historian Robert Fogel calculated that in Europe during the Middle Ages and the Renaissance, food production did not provide enough calories to sustain a full working population. This could explain why there were large numbers of beggars -- they were literally incapable of any work. The pressure of just getting enough food to survive seems to have driven some people to take rather extreme steps. There was an epidemic of witch killing in Europe during the Little Ice Age (from the mid-1500s to 1800), when crop failures were common and fish was less abundant. Even today, Tanzania experiences a rash of such killings whenever there is a drought -- a convenient way to get rid of an unproductive mouth to feed at times when resources are very tight. Families, it seems, suddenly discover that an older woman living with them (usually a grandmother) is a witch, after which she gets chased away or killed by others in the village.

But the world we live in today is for the most part too rich for the occasional lack of food to be a big part of the story of the persistence of poverty on a large scale. This is of course different during natural or man-made disasters, or in famines that kill and weaken millions. As Nobel laureate Amartya Sen has shown, most recent famines have been caused not because food wasn't available but because of bad governance -- institutional failures that led to poor distribution of the available food, or even hoarding and storage in the face of starvation elsewhere. As Sen put it, "No substantial famine has ever occurred in any independent and democratic country with a relatively free press."

Should we let it rest there, then? Can we assume that the poor, though they may be eating little, do eat as much as they need to?

That also does not seem plausible. While Indians may prefer to buy things other than food as they get richer, they and their children are certainly not well nourished by any objective standard. Anemia is rampant; body-mass indices are some of the lowest in the world; almost half of children under 5 are much too short for their age, and one-fifth are so skinny that they are considered to be "wasted."

And this is not without consequences. There is a lot of evidence that children suffering from malnutrition generally grow into less successful adults. In Kenya, children who were given deworming pills in school for two years went to school longer and earned, as young adults, 20 percent more than children in comparable schools who received deworming for just one year. Worms contribute to anemia and general malnutrition, essentially because they compete with the child for nutrients. And the negative impact of undernutrition starts before birth. In Tanzania, to cite just one example, children born to mothers who received sufficient amounts of iodine during pregnancy completed between one-third and one-half of a year more schooling than their siblings who

were in utero when their mothers weren't being treated. It is a substantial increase, given that most of these children will complete only four or five years of schooling in total. In fact, the study concludes that if every mother took iodine capsules, there would be a 7.5 percent increase in the total educational attainment of children in Central and Southern Africa. This, in turn, could measurably affect lifetime productivity.

Better nutrition matters for adults, too. In another study, in Indonesia, researchers tested the effects of boosting people's intake of iron, a key nutrient that prevents anemia. They found that iron supplements made men able to work harder and significantly boosted income. A year's supply of iron-fortified fish sauce cost the equivalent of \$6, and for a self-employed male, the yearly gain in earnings was nearly \$40 -- an excellent investment.

If the gains are so obvious, why don't the poor eat better? Eating well doesn't have to be prohibitively expensive. Most mothers could surely afford iodized salt, which is now standard in many parts of the world, or one dose of iodine every two years (at 51 cents per dose). Poor households could easily get a lot more calories and other nutrients by spending less on expensive grains (like rice and wheat), sugar, and processed foods, and more on leafy vegetables and coarse grains. But in Kenya, when the NGO that was running the deworming program asked parents in some schools to pay a few cents for deworming their children, almost all refused, thus depriving their children of hundreds of dollars of extra earnings over their lifetime.

Why? And why did anemic Indonesian workers not buy iron-fortified fish sauce on their own? One answer is that they don't believe it will matter -- their employers may not realize that they are more productive now. (In fact, in Indonesia, earnings improved only for the self-employed workers.) But this does not explain why all pregnant women in India aren't using only iodine-fortified salt, which is now available in every village. Another possibility is that people may not realize the value of feeding themselves and their children better -- not everyone has the right information, even in the United States. Moreover, people tend to be suspicious of outsiders who tell them that they should change their diet. When rice prices went up sharply in 1966 and 1967, the chief minister of West Bengal suggested that eating less rice and more vegetables would be both good for people's health and easier on their budgets. This set off a flurry of outrage, and the chief minister was greeted by protesters bearing garlands of vegetables wherever he went.

It is simply not very easy to learn about the value of many of these nutrients based on personal experience. Iodine might make your children smarter, but the difference is not huge, and in most cases you will not find out either way for many years. Iron, even if it makes people stronger, does not suddenly turn you into a superhero. The \$40 extra a year the self-employed man earned may not even have been apparent to him, given the many ups and downs of his weekly income.

So it shouldn't surprise us that the poor choose their foods not mainly for their cheap prices and nutritional value, but for how good they taste. George Orwell, in his **masterful description** of the life of poor British workers in *The Road to Wigan Pier*, observes:

The basis of their diet, therefore, is white bread and margarine, corned beef, sugared tea and potatoes -- an appalling diet. Would it not be better if they spent more money on wholesome things like oranges and wholemeal bread or if they even, like the writer of the letter to the *New Statesman*, saved on fuel and ate their carrots raw? Yes, it would, but the point is that no ordinary human being is ever going to do such a thing. The ordinary human being would sooner starve than live on brown bread and raw carrots. And the peculiar evil is this, that the less money you have, the less inclined you feel to spend it on wholesome food. A millionaire may enjoy breakfasting off orange juice and Ryvita biscuits; an unemployed man doesn't.... When you are unemployed ... you don't *want* to eat dull wholesome food. You want something a little bit "tasty." There is always some cheaply pleasant thing to tempt you.

The poor often resist the wonderful plans we think up for them because they do not share our faith that those plans work, or work

as well as we claim. We shouldn't forget, too, that other things may be more important in their lives than food. Poor people in the developing world spend large amounts on weddings, dowries, and christenings. Part of the reason is probably that they don't want to lose face, when the social custom is to spend a lot on those occasions. In South Africa, poor families often spend so lavishly on funerals that they skimp on food for months afterward.

And don't underestimate the power of factors like boredom. Life can be quite dull in a village. There is no movie theater, no concert hall. And not a lot of work, either. In rural Morocco, Oucha Mbarbk and his two neighbors told us they had worked about 70 days in agriculture and about 30 days in construction that year. Otherwise, they took care of their cattle and waited for jobs to materialize. All three men lived in small houses without water or sanitation. They struggled to find enough money to give their children a good education. But they each had a television, a parabolic antenna, a DVD player, and a cell phone.

This is something that Orwell captured as well, when he **described** how poor families survived the Depression:

Instead of raging against their destiny they have made things tolerable by reducing their standards.

But they don't necessarily lower their standards by cutting out luxuries and concentrating on necessities; more often it is the other way around -- the more natural way, if you come to think of it. Hence the fact that in a decade of unparalleled depression, the consumption of all cheap luxuries has increased.

These "indulgences" are not the impulsive purchases of people who are not thinking hard about what they are doing. Oucha Mbarbk did not buy his TV on credit -- he saved up over many months to scrape enough money together, just as the mother in India starts saving for her young daughter's wedding by buying a small piece of jewelry here and a stainless-steel bucket there.

We often see the world of the poor as a land of missed opportunities and wonder why they don't invest in what would really make their lives better. But the poor may well be more skeptical about supposed opportunities and the possibility of any radical change in their lives. They often behave as if they think that any change that is significant enough to be worth sacrificing for will simply take too long. This could explain why they focus on the here and now, on living their lives as pleasantly as possible and celebrating when occasion demands it.

We asked Oucha Mbarbk what he would do if he had more money. He said he would buy more food. Then we asked him what he would do if he had even more money. He said he would buy better-tasting food. We were starting to feel very bad for him and his family, when we noticed the TV and other high-tech gadgets. Why had he bought all these things if he felt the family did not have enough to eat? He laughed, and said, "Oh, but television is more important than food!"



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