CHAPTER 4 Poverty

At least once a year, hundreds of millions of parents face a decision about school enrollment. Higher-income parents are probably choosing which school their children will attend or which after-school activities to sign them up for. For many parents in low-income settings, the choice is starker: whether or not to send their child to school at all. Imagine a poor father who chooses not to enroll his son in secondary school. The assumptions policy makers think underlie this decision will likely affect the remedies they design to address low investment in education and other behaviors associated with poverty.

Poverty is not simply a shortfall of money. The constant, day-to-day hard choices associated with poverty in effect "tax" an individual's psychological and social resources. This type of "tax" can lead to economic decisions that perpetuate poverty.

If policy makers assume that poverty results from poor people's deviant values or character failings—as did many antipoverty strategies of the United Kingdom or the United States until well into the 19th century (Narayan, Pritchett, and Kapoor 2009; Ravallion, forthcoming)—or that poor people simply do not understand the benefits of important investments like education, they might pursue a strategy of persuasion to assist someone like this father. Or if they assume that the decision to keep a child out of school results solely from a political and economic system that is inherently stacked against poor people, they might advocate quotas or a large-scale redistribution of resources.

Both these narratives of poverty offer an incomplete picture of decision making and choice. The first places little emphasis on constraints beyond the control of the decision maker—such as the fees associated with attending school or the absence of enforceable compulsory education laws, which could coerce parents to send their child to school. The second narrative does not address the cognitive resources required to make a decision, especially when material resources are in short supply and when people's willingness to act upon their desires may be constrained (Mullainathan and Shafir 2013; Perova and Vakis 2013).

If this father lives in rural India, for example, he is most likely making his decision in May, nearly five months after the harvest—five months after he has earned most of his income for the year. While the returns to secondary education might be high and he might have been able to save funds for tuition, a number of other, more immediate concerns might be competing for his attention and his resources. He might have run out of kerosene the day before, or he might need to find materials to patch a hole in his roof. It is one month before the monsoon, so finding clean water requires extra effort. His neighbor might be expecting help with some medical bills, which should not be ignored since this neighbor helped him pay for medicine the year before. Even if a more affluent father feels stress about a school enrollment decision, the choice is

unlikely to trigger concerns about these kinds of basic, day-to-day trade-offs.

This chapter offers an alternative set of assumptions for thinking about decision making in contexts of poverty and for analyzing why poor people may engage in behaviors that ostensibly perpetuate poverty, such as borrowing too much and saving too little, underinvesting in health and education, and ignoring programs and policies designed to assist them. Recent empirical evidence suggests that these decisions do not arise from deviant values or a culture of poverty particular to poor people. To the contrary: both poor people and people who are not poor are affected in the same fundamental way by certain cognitive, psychological, and social constraints on decision making. However, it is the *context of poverty* that modifies decision making in important ways.

In particular, poverty is not simply a shortfall of money. The constant, day-to-day hard choices associated with poverty in effect tax an individual's *bandwidth*, or mental resources. This *cognitive tax*, in turn, can lead to economic decisions that perpetuate poverty. First, poverty generates an intense focus on the present to the detriment of the future. When poor people must direct their mental resources toward dealing with the concerns of poverty—for example, paying off debts or keeping their children safe—they have less attention to devote to other important tasks that may be cognitively demanding, such as expending greater and more productive effort at work or making timely investments in education and health (Mullainathan and Shafir 2013).

Second, poverty can also create poor frames through which people see opportunities. Poverty can blunt the capacity to aspire (Appadurai 2004) and to take advantage of the opportunities that do present themselves.

Third, the environments of people living in poverty make additional cognitive demands. The absence of certain physical and social infrastructure that eases cognitive burdens in high-income contexts—like piped water, organized child care, and direct deposit and debit of earnings—encumbers those living in low-income settings with a number of day-to-day decisions that deplete mental resources even further (Banerjee and Mullainathan 2008). In settings like the United States, for instance, parents rarely need to actively weigh the costs and benefits of school attendance for their children. Birth registration systems and the enforcement of truancy laws would counterbalance any internal challenges that might steer parents away from sending their children to school. Moreover, formal credit and insurance markets enable people to rely less on social networks to weather shocks to their health or income.

While these considerations may paint an even bleaker picture of poverty than is familiar to most people, recent evidence suggests promising interventions for reducing the cognitive, psychological, and social taxes of poverty. Some of these interventions need not entail complex interventions for influencing the psychology or social environments of poor people. Instead, modifications to the process of delivering products and services that take the cognitive taxes of poverty into account could make existing interventions more effective. Recognizing the cognitive and social dimensions of poverty could also alter estimates of cost-benefit ratios of policy instruments, such as cash transfers and the development of the infrastructure, institutions, and markets that could serve to lessen the distractions and cognitive burdens of poverty.

Poverty consumes cognitive resources

> "So if you want to understand the poor, imagine yourself with your mind elsewhere. You did not sleep much the night before. You find it hard to think clearly. Self-control feels like a challenge. You are distracted and easily perturbed. And this happens every day. On top of the other material challenges poverty brings, it also brings a mental one. . . . Under these conditions, we all would have (and have!) failed."
>
> —Mullainathan and Shafir, *Scarcity: Why Having Too Little Means So Much* (2013, 161)

> "She is worried about the future of her children and the struggles they have to face once they grow up. Her immediate concern is to which house she should go for a loan of some food grains for their food that day."
>
> —Narayan and others, description of a woman in Pedda Kothapalli, India, in *Voices of the Poor: Crying Out for Change* (2000, 37)

The material deprivation that accompanies poverty has been well documented. The poor are more likely to find themselves in situations in which they must forgo meals or live in substandard housing. They may have many debts to pay off. Their dwellings can be demolished by rain or expropriated by someone more powerful. They might have to collect potable water many times a day. Recent evidence suggests that these

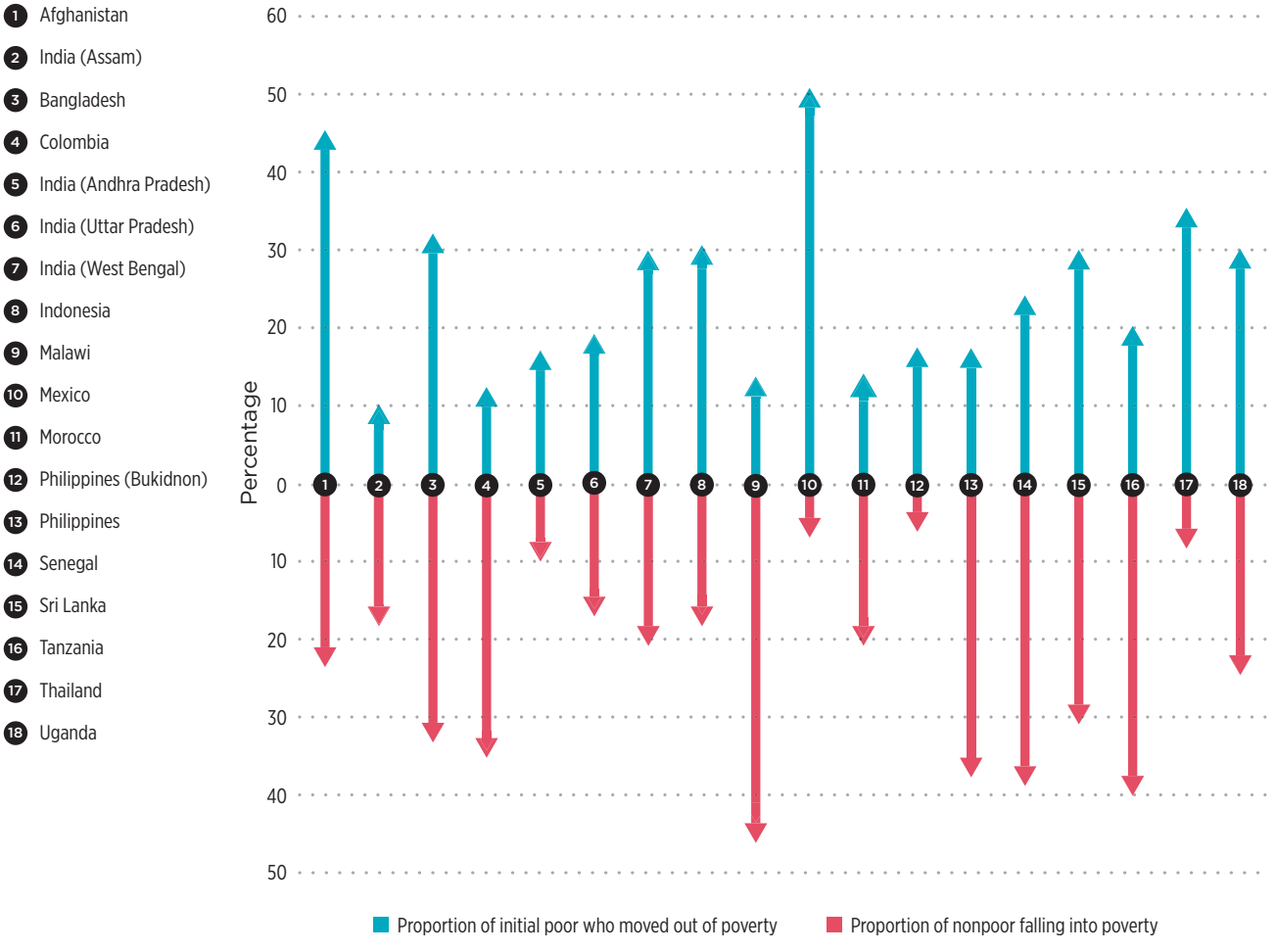
situations of *scarcity*—or a gap between the needs and the resources required to fulfill them—create additional cognitive burdens that interfere with decision making in important ways beyond a person's monetary constraints. In particular, the pressing financial concerns associated with poverty modify how people allocate their attention and create an intense focus on problems of the present to the neglect of others in the future (Mullainathan and Shafir 2013). To return to the opening example of a father's decision about investing in his son's education, the many current claims on the father's attention and resources make the short-term costs of investment much more pressing than the potentially high long-term returns of a secondary education that are far off in the future.

This situation of scarcity need not apply solely to those currently living below thresholds of $1.25 or $2.00 per day. It is one that many people in low-income settings may find themselves in at one point or another, as shown in figure 4.1. Indeed, much of the "middle class" in low-income countries lives on $2 to $6 a day and thus is still likely to face a number of trade-offs that can trigger a feeling of scarcity.

A real-world example of how situations of scarcity can deplete mental resources comes from sugar cane farmers in India (figure 4.2). These farmers typically receive their income once a year, at the time of harvest. Thus just before the harvest (panel a), they may feel poor, and just afterward (panel b), they may feel much more comfortable, having received most of the

Figure 4.1 Poverty is a fluid state, not a stable condition

In qualitative interviews around the world, community members were asked to rank everyone in the community on an economic ladder at the moment and 10 years earlier. They were also asked to indicate which rungs of the ladder should be equated with poverty. According to these community rankings, poverty is a fluid state rather than a stable characteristic. This finding is consistent with consumption-based estimates of chronic poverty from longitudinal data (Jalan and Ravallion 2000; Pritchett, Suryahadi, and Sumarto 2000; Dercon and Krishnan 2000).



Source: Narayan, Pritchett, and Kapoor 2009, table 3.2.

earnings for the season. Indeed right before the harvest, they are much more likely to be holding loans (99 versus 13 percent) and to have pawned some of their belongings (78 versus 4 percent) (Mani and others 2013).

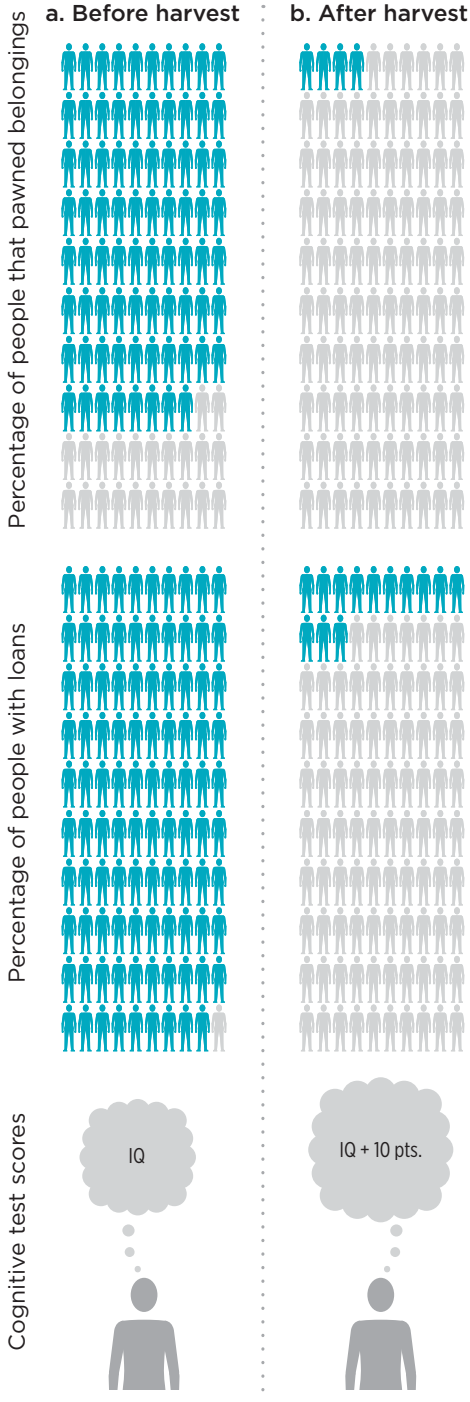
That these farmers are poorer before the harvest than after perhaps should shock no one. What is less obvious, however, is the toll this kind of financial distress takes on their available cognitive resources right before the harvest. Before receiving their harvest income, farmers perform worse on a series of cognitive tests of executive function and fluid intelligence than when they take the same tests after receiving their earnings (for some examples of tasks that test executive function and fluid intelligence, see figure 4.3). This gap cannot be explained by differences in nutrition before or after harvest, physical exhaustion, biological stress, or familiarity with the testing instrument after the harvest. The difference in scores translates to roughly 10 IQ points, which is approximately equal to three-quarters of a standard deviation and three-quarters of the cognitive deficit associated with losing an entire night of sleep (Mani and others 2013).

This cognitive depletion induced by scarcity is not limited to poor farmers in India or to people living under some absolute poverty line. The poverty line of the United States, for example, is nearly seven times the poverty line of low-income countries ($13 versus $2 a day), but financial anxiety among low-income individuals in the United States triggers a very similar effect. In an experiment in which people had to answer questions about how they would react to some hypothetical scenarios, such as financing an unforeseen expense or an auto repair, some respondents received financially stressful scenarios (for example, a $2,000 expense), while others received less stressful variants (a $200 expense) (Mani and others 2013). As with the farmers, low-income respondents who had to think about a financially stressful situation performed worse on later cognitive tests by an equivalent of 13 IQ points, suggesting that simply thinking about the gap between needs and resources captures the mind.

This diminishment of executive function might account for an intense focus on the present that is beneficial in some ways but detrimental in others. In a laboratory experiment in the United States, researchers induced "poverty" and "affluence" among relatively well-off subjects by endowing them with fewer or more items and paid them to perform certain tasks using those items. The experimentally poor tended to use their items more productively, earning more points for each task they attempted (Shah, Mullainathan, and Shafir 2012). Scarcity focused the mind.

Figure 4.2 Financial scarcity can consume cognitive resources

Sugar cane farmers in Tamil Nadu, India, receive most of their income once a year during the harvest. Immediately before receiving their income (panel a), the same farmers exhibit higher financial stress and lower cognitive scores, relative to the postharvest period (panel b). This cannot be explained by a change in nutrition, physical exhaustion, biological stress, or a practice effect on the cognitive test.



Source: Mani and others 2013.

Figure 4.3 Measuring executive function and fluid intelligence

a. Executive function

State the color of each word.

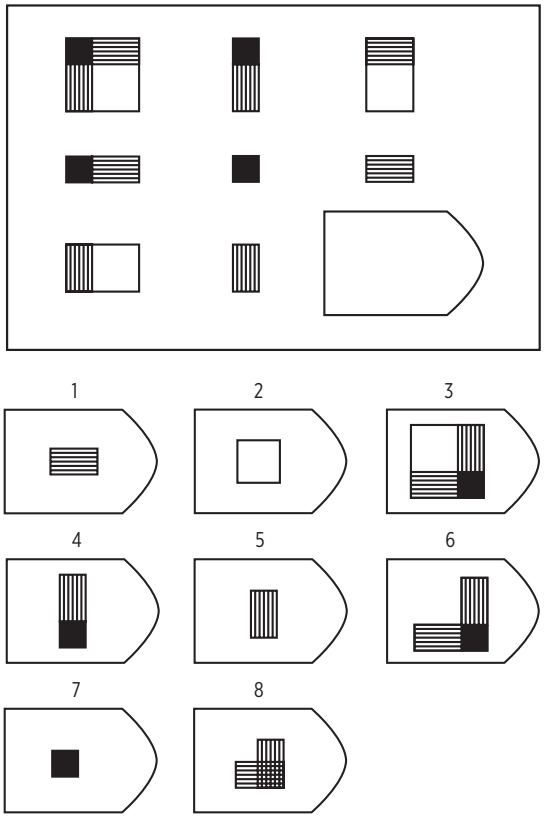
Red Blue Green Purple Blue Red Purple Green

Red Blue Green Purple Blue Red Purple Green

This task is easier to do for the first set of words. More *executive function* is required to maintain accuracy in the second set of words. This is called the *Stroop effect.*

b. Fluid intelligence

Selecting from numbered options 1–8, find the symbol that completes the bottom right section in the box below.



This is an example of a *Raven's matrix,* a set of puzzles commonly used to measure *fluid intelligence.* (The correct answer is option 2.)

Source: Sample item similar to those found in the Raven's Progressive Matrices, Standard Progressive Matrices (Standard, Sets A–E). Copyright © 1998, 1976, 1958, 1938 NCS Pearson, Inc. Reproduced with permission. All rights reserved.

Note: "Raven's Progressive Matrices" is a trademark, in the United States and/or other countries, of Pearson Education, Inc., or its affiliate(s).

Then subjects were offered an option to borrow from future rounds, which forced them to make trade-offs between the present and the future. This is the point at which the experimentally poor began to suffer. They started to neglect future rounds and overborrow. Their overall performance fell, compared to a situation in which they could not borrow. In contrast, the option to borrow had no impact on the participants assigned to the "affluent" group. Thus, when placed in a context of scarcity, however brief, otherwise well-off subjects exhibited decision-making patterns typically associated with poverty. Together, these natural and laboratory experiments suggest that financial concerns can absorb considerable cognitive bandwidth and that situations of scarcity can alter decision making in important ways for both low- and high-income populations.

Poverty creates poor frames

> "When they assist you, they treat you like a beggar."
>
> —Narayan and others, citing a participant in a discussion group of men and women in Vila Junqueira, Brazil, in *Voices of the Poor: Crying Out for Change* (2000, 2)

Poverty may also generate an internal frame, or a way of interpreting the world and poor people's role in it. Poor people may feel incompetent and disrespected, without hope that their lives can improve. If these kinds of frames prevent them from taking advantage of economic opportunities, then the poor could also miss chances to escape poverty because of a deficit of aspirations (Appadurai 2004; Ray 2006; Duflo 2012). Indeed, avoiding the shame that arises from failing to meet social conventions has been described as a core capability (Sen 1983).

Recent empirical evidence suggests an association between poverty and low aspirations. Data from the World Values Surveys, for example, show that lower income—both within and across countries—is associated with a higher tendency to report that life is meaningless, to agree that it is better to live day-to-day because of the uncertainty of the future, and to reject adventure and risk (Haushofer and Fehr 2014). Data from low-income populations in France suggest that poor students have lower academic and employment aspirations than wealthier students who display the same degree of academic achievement (Guyon and Huillery 2014).

This kind of empirical pattern, however, could suffer from problems of reverse causation. Perhaps these character traits are the root cause rather than a function of poverty. This sort of explanation would be inconsistent with the movements in and out of poverty illustrated in figure 4.1. It is also the case that other studies making use of external economic shocks (which cannot be driven by an individual's aspiration)

find a similar association between low income and attitudes toward opportunities. A recent study finds that both within the United States and across 37 different countries, experiencing a recession between the ages of 18 and 25—the impressionable years of early adulthood—reduces the likelihood that a person believes that "people get ahead by their own hard work" as opposed to by "lucky breaks or help from other people" (Guiliano and Spilimbergo 2014).

A similar change in attitudes arose in Argentina, only in this instance in the direction of greater self-confidence. A land reform in the 1980s transferred titles to squatter families in the outskirts of Buenos Aires. The original owners of the land parcels legally contested the government's expropriations, and many of these suits were not resolved as of 2007, when a study of attitudes was conducted among the squatters (Di Tella, Galiani, and Schargrodsky 2007). This situation created a natural experiment in which some squatters acquired formal titles to their land, while others—sometimes right next door—did not. People with titles were 31 percent more likely to believe that it is possible to be successful alone, without a large group in which everyone supports one another, and they were 34 percent more likely to believe that money is indispensable for happiness. They were also 17 percent more likely to report that other people in their country could be trusted.

The effects of poor frames are not confined simply to attitudes. Recent experimental evidence suggests that changing the frame through which poor people see themselves can alter school achievement among poor children and improve interest in antipoverty programs among poor people. An intervention in the United States, for example, directed seventh graders (12- to 13-year-olds) to use techniques of self-affirmation, which serve as reminders of sources of self-worth and pride. Throughout the school year, students completed three to five structured writing assignments that lasted 15 minutes each, writing about values important to them, such as relationships with their family or their competence in art. This intervention helped narrow the achievement gap between at-risk minority students and other students. At the end of eighth grade, more than a year after their last self-affirming writing assignment, African-American students sustained improvements in their grades and decreases in grade repetition, particularly those who were initially performing less well in school (Cohen and others 2006, 2009).

These results mirror the impact of a self-affirmation experiment among people who received lunch services in an inner-city soup kitchen in the United States. Some participants were asked to take three to five minutes to describe a personal experience that made them feel successful and proud. Compared to other groups that described only their daily meal routines or watched a funny video, the affirmed group performed significantly better on cognitive tests of their executive control and fluid intelligence (Hall, Zhao, and Shafir 2013). In contrast, self-affirmation did not increase the cognitive function of more affluent users of a public library. These results suggest that the intervention helped alleviate the distracting stigma of poverty (after all, the poor were being tested in a soup kitchen), rather than simply improving general feelings of confidence.

Poverty can blunt the capacity to aspire and to take advantage of the opportunities that do present themselves.

The impact of this simple five-minute intervention extended beyond an increase in abstract cognitive ability. The researchers had also set up information booths near the door of the soup kitchen that would have appeared unrelated to the experiment. The affirmed group was 31 percentage points, or 300 percent, more likely to pick up flyers about antipoverty programs for which they were eligible.

Social contexts of poverty can generate their own taxes

In low-income settings, which often lack formal institutions, informal institutions or social norms may fill the gap. For example, poor households often benefit from a form of social insurance, tapping resources from friends, neighbors, family, and social groups, such as burial societies or rotating pools of credit, when their access to formal credit is limited and coverage by formal insurance is negligible. When they encounter adverse shocks to their income, they can turn to such social insurance to cushion their consumption, which tends not to plummet to the same extent as the shock to income (Townsend 1995; Jalan and Ravallion 1999). This means, however, that someone else in their social network is giving up resources to help.

While this situation may very well be welfare enhancing (especially if the development of formal insurance and credit markets is a long way in the future), investments in social capital carry their own set of costs, amounting to another kind of "tax." According to recent evidence, people in such situations want to insulate some of their income from these types of social obligations. Nearly 20 percent of members in a micro-

finance network in Cameroon, for example, appear to take loans simply to signal that they have no cash to give to relatives and friends (Baland, Guirkinger, and Mali 2011). These results were mirrored in a laboratory experiment in Kenya, in which women were willing to pay a price to keep their earnings from a game hidden. This tendency was more pronounced among women whose relatives were also participating in the experiment (Jakiela and Ozier 2012).

People in this situation may benefit from financial products that allow them to insulate their income from social demands. A field experiment in Kenya demonstrates that using a simple metal box with a padlock and designating savings for a particular purpose can help increase savings for people who must assist others in their social network. People were offered four types of savings products meant to increase spending on preventive health care and savings for health emergencies: a metal box with a padlock and a key; a locked box without a key whose contents could be spent only on a preventive health care product; a health savings account meant only for health emergencies; and membership in a rotating savings and credit association, in which a group of individuals together make regular contributions and take turns receiving the funds. Sign-up for all these kinds of commitment devices was high: 66 percent 12 months after the program began, and 39–53 percent three years later. Most notably, the people in the community who gave out assistance to others but received nothing in return benefited the most from these products (Dupas and Robinson 2013). Their savings for preventive health care increased more than did the savings of those who did not have to provide as much to their network.

There are three promising ways to ensure that poor people have adequate cognitive space to make the best decisions: simplify procedures; target assistance on the basis of bandwidth; and continue existing antipoverty strategies that aim to reduce income volatility and improve infrastructure.

Sometimes, however, escaping these social obligations comes with a cost. In rural Paraguay, for example, farmers who do not provide gifts to some people in their community risk theft of their crops (Schechter 2007). The diversion of assets to cover social obligations like these may come at the expense of investment in private opportunities.

Implications for the design of antipoverty policies and programs

A number of constraints associated with poverty may be difficult to observe and could extend beyond material deprivation: a preoccupation with daily hassles and their associated depletion of cognitive resources required for important decisions; low self-image and its blunting of aspirations; and norms that may require investments in social capital to the detriment of private opportunities. Do these new insights into the decision-making contexts of poverty have any implications for the design of policies and programs that target poor people? Much of the evidence is still new, and some of the most intriguing results come from laboratory experiments that only simulate decision making in the real world. Nevertheless, some general lessons are emerging, along with some promising areas for improvement.

Minimizing cognitive taxes for poor people

Previous chapters have demonstrated that everyone has limited "cognitive budgets," which can make decision making rather costly. This chapter makes clear that poverty often makes these budgets even tighter. While programs and policies rarely intend to make people poorer in a monetary sense, they sometimes impose *cognitive* taxes on poor people (Shah, Mullainathan, and Shafir 2012). There are three potentially promising ways to ensure that people living in poverty have adequate cognitive space to make the best decisions for themselves. The first is to simplify procedures for accessing services and benefits. The second is to expand the criteria used for targeting assistance—in particular, to target on the basis of bandwidth rather than wealth and expenditures alone. Finally, existing antipoverty policy instruments, such as cash transfers or the provision of infrastructure, may also generate positive impacts in the cognitive and psychological domains.

Simplifying procedures

For many programs around the world, in both low-income and high-income settings, the procedures for accessing benefits—from filling out application

forms to deciphering the rules of a program—can be daunting. While these might seem like minor transaction costs compared to the potentially large and often long-term benefits of some programs, application forms have affected the take-up of many programs targeting low-income populations. In Morocco in 2007, for example, a program was introduced that allowed low-income households without piped water to buy on credit a connection to the water and sanitation network in Tangier. To apply, these households had to obtain authorization from their local authorities, provide photocopies of identification documents, and make a down payment at a local office. These procedures were sufficient to suppress participation; six months after the program was introduced, only 10 percent of households had signed up (Devoto and others 2012). In an experiment, some households received information about the program and assistance with the application procedures delivered right to their door, including a visit by the local branch officer to collect the down payment. Participation for this group reached 69 percent.

In California, providing assistance to complete applications for health insurance for poor people (Medicaid) improved enrollment among the Hispanic population by 7 percent and among the Asian population by 27 percent. These impacts exceeded the results from advertising campaigns offered in Spanish and Asian languages to reach those populations (Aizer 2007). Similarly, in the U.S. states of Ohio and North Carolina, the application rates of low-income students for financial aid or their eventual attendance in college was not affected by efforts to provide information alone about eligibility and nearby colleges. In contrast, when low-income parents who sought assistance in filing their federal taxes were asked if they wanted to spend an additional 10 minutes to use the tax information they had just finished providing to complete the federal form for financial aid for college, the college attendance of their children increased by nearly 24 percent (Bettinger and others 2012). The extra 10 minutes of personal assistance in filling out the financial aid form made a big difference. It spurred beneficiaries to fill out the main application forms of colleges and universities on their own and gain admission to these institutions.

This is not to suggest that information is unimportant or that poor people should be automatically signed up for antipoverty programs. Indeed, the problem might just be that the information intended for them is too complex and too cognitively taxing to act upon. In North Carolina, for example, parents could choose a new school for their children when their current school performed poorly on standardized tests and was declared an underperforming school. Before 2004, to find information about options, parents had to sift through a booklet that was more than 100 pages long and search a website for schools' test scores to make school-by-school comparisons. After 2004, national regulations required that information about the test scores of every school in the district be distributed in a three-page spreadsheet. After the reform, parents in these situations chose higher-performing schools (Hastings and Weinstein 2008).

In many contexts, however, governments and other agencies may want to limit participation in programs, especially if there is substantial leakage of benefits to ineligible populations. A large cash transfer program in Indonesia (in which each household receives $130 per year for six years) experimented with setting up small hurdles to see if the number of ineligible households benefiting from the program would decrease. Requiring the poor to come to a centralized location in the village to be assessed for eligibility did improve the efficiency of targeting, compared to a scheme in which government workers used the recommendations of village leaders and assessed the eligibility of families in their homes (Alatas and others 2013). These barriers, however, also prevented eligible households from benefiting from the program. Among these households, average program take-up still reached only 15 percent, and close to 40 percent of the poorest households did not even attempt to sign up.

How can development professionals be sure that program designs do indeed minimize, or at least avoid maximizing, cognitive taxes on poor people? It should be fairly easy and quick to experiment with different access procedures. What would be even easier, and perhaps more illuminating, would be for the designers of programs to undergo the sign-up process themselves before the program is launched (see the discussion in chapter 10 on "dogfooding," the process by which product designers must try things out for themselves before releasing their products to the market).

Targeting on the basis of bandwidth

While the poorest households—those falling below the threshold of $1.25 a day—are highly likely to incur the cognitive and social taxes described earlier, there may be other easily identifiable populations that could benefit from assistance that helps them avoid errors in decision making when their bandwidth is low or when the bandwidth required to make a decision is fairly high (figure 4.4).

One such group includes people who work in occupations where they receive earnings only once or twice a year, such as cultivators or agricultural laborers.

Programs to assist those living in poverty would ideally pay more attention to the timing of decisions and prevent them from coinciding with times when beneficiaries' cognitive resources may be heavily taxed. The Indian sugar cane farmers described earlier, for example, should best avoid making time-sensitive decisions about enrolling their children in school right before harvest.

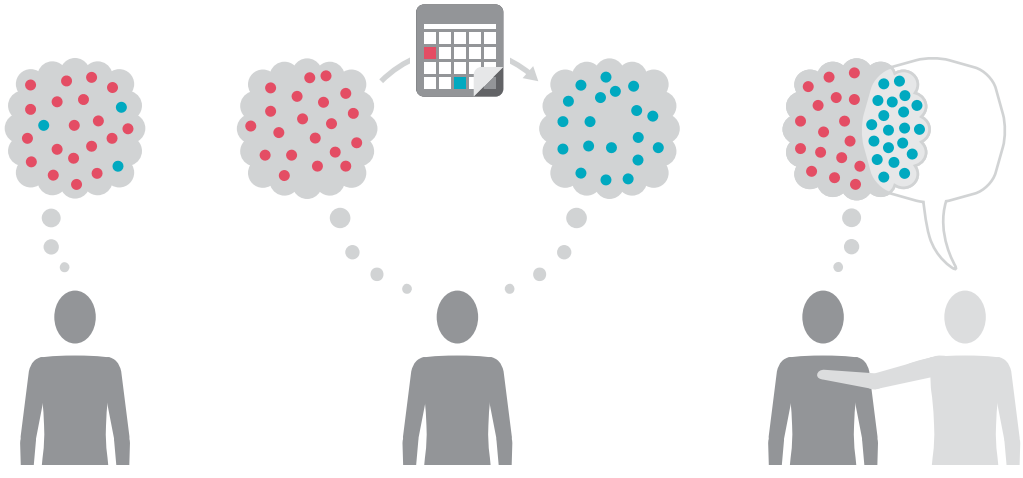
Similarly, these kinds of investment decisions may be compromised if they happen to fall during months when people may be particularly cash strapped because of social obligations, as in the months coinciding with a festival or holiday, or because of a shock related to health or income. Indeed, farmers in Kenya whose crops are dependent on rainfall exhibit higher stress (as measured by the hormone cortisol) when it does not rain and their crops are therefore more likely to fail (Chemin, De Laat, and Haushofer 2013). This kind of stress has been associated with a bias toward the present in laboratory environments. For example, when subjects were asked to perform tasks that involved deciding between smaller rewards sooner and larger rewards later, those who had been first administered hydrocortisone (which artificially elevated their cortisol levels) showed a stronger tendency to opt for the earlier rewards (Cornelisse and others 2013).

To see the benefits of altering the timing of an intervention, consider some experiments in the city of Bogotá that varied the structure of payments in a conditional cash transfer program that targeted families with children in secondary school. Some households received transfers every two months after meeting conditions related to the health and schooling of their children. Others received only two-thirds of the benefit every two months, while the remaining third was saved in a bank account. These households were then given the savings in one lump sum in December, when students are supposed to enroll for the next school year. While both types of transfers were equally effective in improving school attendance during the year, the savings variant was more successful in increasing rates of reenrollment for the next year (Barrera-Osorio and others 2011). Similarly, as discussed in chapter 7, farmers in Kenya increased their rates of adopting fertilizer if they were given the opportunity to prepurchase it at the time of harvest, when they would have more funds, rather than months later when they would be applying the fertilizer.

There are also important decisions that occur relatively infrequently and that inherently require considerable bandwidth. These might include applying to a university or choosing a health insurance plan. In the United States, for example, high school students taking a popular college entrance exam can choose to have their scores sent directly to the universities to which they plan to apply. Before the fall of 1997,

Figure 4.4 Targeting on the basis of bandwidth may help people make better decisions

Bandwidth may be especially low at certain times, such as periods of higher expenditures during festivals, or when a mother is about to give birth. Key decisions, such as whether to enroll a child in school or whether to go to the hospital for a baby's birth, would ideally be moved out of these periods. Some decisions, such as choosing a health insurance plan or applying to a university, may require high levels of bandwidth no matter when they fall. Policies that make these decisions easier could be targeted at the time of decision making.



During a moment of bandwidth need, policies should try to

move decisions to another time or

target assistance to the time of the decision.

Source: WDR 2015 team.

students could send three reports for free, and each additional score report would have cost $6 to send. When the number of reports they could send for free increased to four later that year, the number of test takers sending exactly four reports jumped from 3 percent to 74 percent (Pallais, forthcoming). More important, this increase in score reports induced low-income students to apply to and eventually attend more selective universities. Because attending a more selective university is associated with higher expected future earnings, an effective subsidy of $6 improved the expected earnings for low-income students by an estimated $10,000.

In Tanzania, promoters of community health insurance took advantage of the disbursements of a conditional cash transfer program to enroll more households in the community health fund. They deliberately went to the distribution points of the cash transfer program to sign people up for the health insurance when they had greater liquidity. This perhaps contributed to the nearly 20 percentage point (700 percent) increase in the use of health insurance to finance medical treatment among beneficiaries of the cash transfer program (Evans and others 2014).

Policy makers, however, cannot blindly target all situations in which income fluctuates, believing that they have pinpointed contexts in which cognitive bandwidth is likely to be low. It is important that these fluctuations trigger financial stress. In the United States, for example, cash-at-hand is typically higher immediately after payday for low-income households (it can be more than 20 percent lower immediately before payday). This predictable variation before and after payday each month, however, is not associated with differences in cognitive function or risk taking (Carvalho, Meier, and Wang 2014). While this finding may seem to conflict with the results from the sugar cane farmers discussed earlier, people reported similar levels of financial stress before and after payday, suggesting that temporary shortfalls, in this context, may not further tax mental resources.

Reducing economic volatility and improving infrastructure

The natural and laboratory experiments discussed earlier suggest that monetary concerns absorb considerable cognitive capacity and blunt aspirations. Does this mean that interventions that try to reduce economic volatility or directly decrease the cognitive demands of environments could also free up cognitive resources or generate the confidence required to take advantage of economic opportunities?

While few programs currently monitor these kinds of impacts, some evidence from field experiments suggests that these types of interventions at least improve self-reported mental well-being. The program in Morocco, discussed earlier, made it easier for households to obtain a connection for piped water; this improvement reduced the time residents spent fetching water by more than 80 percent (Devoto and others 2012). Beneficiaries were more likely to perceive that their life had improved in the previous year and reported higher life satisfaction—despite a 500 percent increase in their water expenditures and an absence of any improvements to their health. Similarly, a large, one-time cash transfer to rural Kenyan households reduced symptoms of depression and stress approximately four months later (Haushofer and Shapiro 2013). And a program in India that targeted the poorest of the poor suggests that antipoverty assistance can have positive spillover effects beyond narrow program objectives (Banerjee and others 2011). The program provided a livestock asset and a time-limited stipend for beneficiaries. Food consumption and nonlivestock income increased beyond the monetary value of anything provided. Program participants worked more and reported improvements along many measures of mental well-being.

Avoiding poor frames

Poverty can contribute to a mindset that can make it difficult for people to realize their own potential to take advantage of existing opportunities. It is important to consider how the process of delivering services or targeting poor people could be creating poor frames that further demotivate potential beneficiaries. A good place to start would be the names of programs and identification cards associated with them. "Needy families," for example, could be replaced with "families in action," or "poor cards" with "opportunity cards."

The distribution of productive assets and cash transfers may help shift frames from despair to opportunity, as discussed. It may also be worth tackling aspirations more directly by paying attention to how poor people regard themselves when deciding whether or not to apply for benefits. People working in social welfare offices or unemployment agencies, for example, can be trained to avoid language and attitudes that could be considered demeaning. In Peru, for example, focus group discussions revealed that beneficiaries often felt stigmatized when they went to health centers to fulfill the requirements for a cash transfer program (Perova and Vakis 2013). Service providers would make them wait longer than other patients and stigmatize them by overtly referring to the fact that they were receiving money from the government.

Given all the design features of programs that can be tweaked in this way, it might be difficult to predict how

poor people will react and how transitory the effects of such manipulations might be. Experimentation can be helpful, though, even on a small scale. Members of the Behavioural Insights Team of the U.K. government, for example (see chapter 11), first worked in a single job center to test whether interventions such as expressive writing or self-affirmation of strengths could move job seekers off unemployment benefits and into a job more quickly. Based on their initial success, they have set up a larger experiment in an entire region.

Incorporating social contexts into the design of programs

Designing programs that incorporate social contexts, however, poses a challenge. One extreme intervention is to remove poor people from their current neighborhoods—although this is very expensive and not easily scalable. For example, a large-scale experiment in the United States, the Moving to Opportunity program, offered poor families a housing rental voucher that could be redeemed only in neighborhoods with low poverty. While adults reported better physical and mental health and higher subjective well-being 10–15 years later, earnings, employment, and reliance on welfare payments did not change (Ludwig and others 2012). Moreover, the effects of the program on children were mixed. The physical and mental health of female youth improved and their engagement in risky behavior declined, but the mental health of male youth declined, while their risky behaviors increased (Kling, Liebman, and Katz 2007; Kessler and others 2014).

An alternative approach to moving people out of their social environments would be to provide safeguards that help mitigate the effects of demands from others—for example, offering options that could help make savings harder to share. Savings accounts explicitly earmarked for certain purposes, for example, could help stave off requests from friends and relatives, as they did in Kenya (Dupas and Robinson 2013). Chapter 7 discusses a case in which illiquid transfers—such as an in-kind grant of equipment—can also insulate precious funds from others. Whether or not these options can ultimately improve welfare, however, is an empirical question—especially in cases in which social networks often substitute for more formal markets, such as the markets for credit and insurance, whose development may be far off in the future.

On the more positive side, as seen in chapters 6 and 7, social networks can also speed up the adoption of certain financial products, such as crop insurance or microcredit, and foster social interactions and social learning that can improve earnings. Similarly, recent evidence from Nicaragua suggests that antipoverty programs can be more effective when the community leaders of beneficiaries also participate in the program. When several leaders in a community also received conditional cash transfers, beneficiaries' educational investment and nutrition improved, as did the heights and weights of their children (Macours and Vakis, forthcoming). Social interactions between community leaders and the main beneficiaries amplified the effects of the transfer program alone. Predicting exactly when these social relationships can help or hinder progress is still an open question and thus requires careful testing of program design (see chapter 11).

Looking ahead

More generally, this chapter has provided a new set of diagnoses to explain decision making in contexts of poverty and thus a new set of hypotheses to be tested before designing a program or policy to assist poor people. To return to the opening example of a father's decision about whether to enroll his son in secondary school, it might be worth considering the cognitive, psychological, and social barriers that might also interfere with this particular investment decision, in addition to testing the effectiveness of a scholarship, information campaign, or cash transfer program. For example, if the decision falls during a period of particularly low income or high expenditure, a policy maker could experiment with moving the decision to a less financially stressful period or with offering prepurchase opportunities when income is expected to be high. Enrollment could also be made the default option so that parents would have to actively unenroll their child, as is now the case in Mexico's main conditional cash transfer program, which signs up beneficiaries for automatic school enrollment.

If the father's reluctance to enroll his son stemmed from a deficit of aspirations, then programs that directly tackle this lack of hope might also help. In Peru, for example, a financial literacy program first conducted a series of "self-esteem talks" among beneficiaries so that they understood that financial products like savings accounts were real options for them (Perova and Vakis 2013).

If social demands left very few resources for the father to use for education, then financial products that credibly earmarked savings for educational purposes might also help, just as they helped promote health savings in Kenya in the experiment described earlier (Dupas and Robinson 2013).

Which one of these factors is the binding constraint in a particular context is very much an empirical question that requires both good diagnosis and active experimentation. While a great deal of empirical data

exists describing the material deprivations that poor people experience, identifying metrics of the cognitive, psychological, and social dimensions of poverty is still a new area of research (see spotlight 3). Similarly, the evidence base is still thin as to which program designs can directly open up the cognitive space required to make complex decisions and increase the motivation and aspiration required to take advantage of the opportunities that do arise. The potential for complementarities between programs that target income poverty and those that address cognitive bandwidth—such as access to finance or the development of infrastructure that helps reduce the stresses of daily life—may be high but as yet has been largely undocumented. Ideally, more evidence will emerge as researchers and policy makers experiment with programs that try to better align antipoverty interventions with the decision-making needs of those who find themselves in contexts of poverty.

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Spotlight 3

How well do we understand the contexts of poverty?

Behavioral economics has uncovered a number of surprising instances in which choices are influenced by factors that should seemingly be irrelevant, as chapters 1–3 have discussed (see also Kahneman and Tversky 1984; Kahneman 2010; Ariely 2008, 2010).

These small inconsistencies have often been revealed through people's responses to vignettes or hypothetical situations. These vignettes have been implemented mostly among samples of university students attending elite universities. Do these patterns reveal something universal about human decision making, or could these choices perhaps be a function of wealth, just as susceptibility to some visual illusions and preferences for fairness appear to be unique to certain societies (Henrich, Heine, and Norenzayan 2010)?

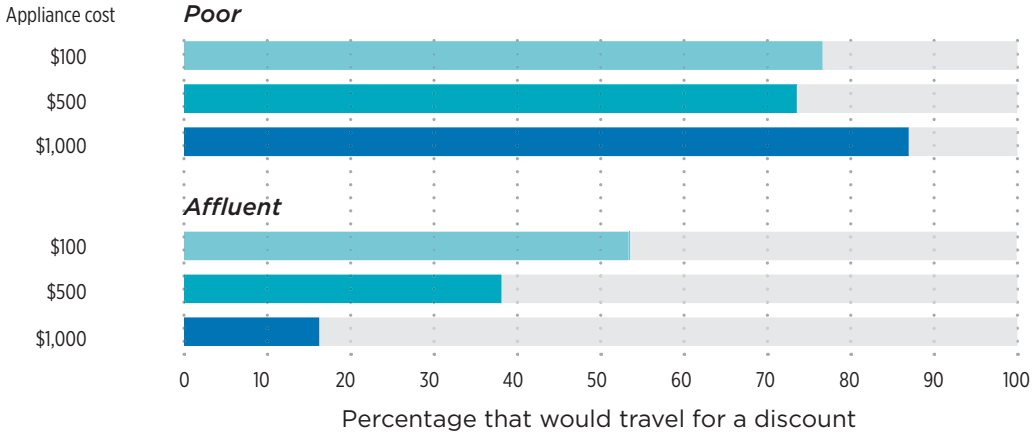
To find out, the *World Development Report 2015* team implemented a classic vignette from behavioral economics among representative samples in three capital cities around the world (Jakarta, Indonesia; Nairobi, Kenya; and Lima, Peru) and among a sample of staff working at the World Bank.

The results suggest that the choices made by World Bank staff tend to replicate the choices made by university and affluent samples. The choices of people living in poor countries do not; their choices tend to mirror the choices of a sample of poor people in the United States.

Responses of poor and affluent people in New Jersey (United States)

In the United States, there is evidence that poor and affluent respondents do not use the same mental shortcuts (heuristics) when evaluating the benefit of a discount and that poorer respondents can

Figure S3.1 How poor and affluent people in New Jersey view traveling for a discount on an appliance



Source: Hall 2008.

Note: The discount was $50.

make more consistent choices about the trade-off between money (or the discount) and time. In a study in New Jersey, for example, three groups of respondents were randomly assigned to read one of three variants of the following vignette, which differed solely in the total cost of an appliance that could be purchased:

> Imagine that a friend goes to buy an appliance priced at $100 ($500, $1,000). Although the store's prices are good, the clerk informs your friend that a store 45 minutes away offers the same item on sale for $50 less. Would you advise your friend to travel to the other store to save $50 on the $100 ($500, $1,000) item?

The total cost of the appliance was irrelevant for poor respondents in a New Jersey soup kitchen when deciding whether they would advise traveling for a discount (Hall 2008). Each group made the same choice as other groups that had randomly received a different price. A sample of more affluent commuters at a train station, however, was significantly less likely to favor travel as the price of the appliance rose, consistent with findings from university students in the United States and Canada (Tversky and Kahneman 1981). This suggests that they focused on relative savings, instead of absolute savings. In every scenario, all respondents were contemplating the same trade-off: spending 45 minutes to save $50. For the affluent sample, saving $50 seemed like a better deal when the appliance was less expensive (see figure S3.1).

Responses of World Bank staff

For World Bank staff, the vignette was posed in terms of deciding whether to travel for a $50 discount on a watch. Staff exhibited a pattern similar to the affluent samples of commuters and university students. Groups randomly receiving the more expensive variant were significantly less likely to say they would travel for a discount (see figure S3.2).

Responses of residents in Jakarta, Nairobi, and Lima

In Jakarta, Nairobi, and Lima, residents from various wealth groups answered a similar question about a cell phone. The choices of respondents in these cities much more closely resembled respondents' choices in the New Jersey soup kitchen.

In each city, respondents were stratified across three wealth groups—lower, middle, and upper—which corresponded to terciles defined by community averages for the poverty rate (Jakarta), assets (Nairobi), or consumption (Lima). Since these wealth groups were defined within each country, it is possible that even respondents from the upper groups correspond more closely to poorer populations in more affluent countries.

Across all these wealth categories in Jakarta, Nairobi, and Lima, the total price of the cell phone rarely had a statistically significant bearing on whether a respondent would travel for a discount. This finding contrasted with the more affluent respondents in the United States and the World Bank, where each increase in the total price of the product significantly diminished the attractiveness of traveling for a discount.[1] (See figures S3.3, S3.4, and S3.5.)

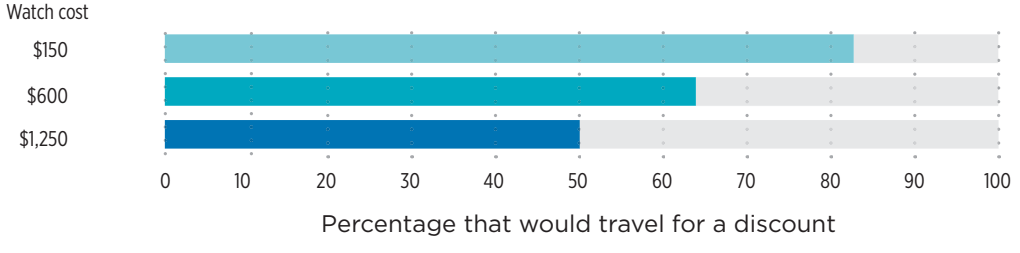
Implications

Some have argued that differences like these between poor and wealthy respondents relate to differences in the degree to which monetary concerns are salient (Hall 2008; Mullainathan and Shafir 2013). Because even modest sums matter a great deal for poor people, they might focus on absolute savings. For more affluent people, these amounts do not trigger much concern; they may not immediately think of alternative uses for the savings and thus must focus on relative savings to gauge whether or not the discount would be a good deal.

Regardless of the reasons, these results suggest a divergence in preferences between people living in poor contexts and World Bank staff working to

Spotlight 3

Figure S3.2 How World Bank staff view traveling for a discount on a watch

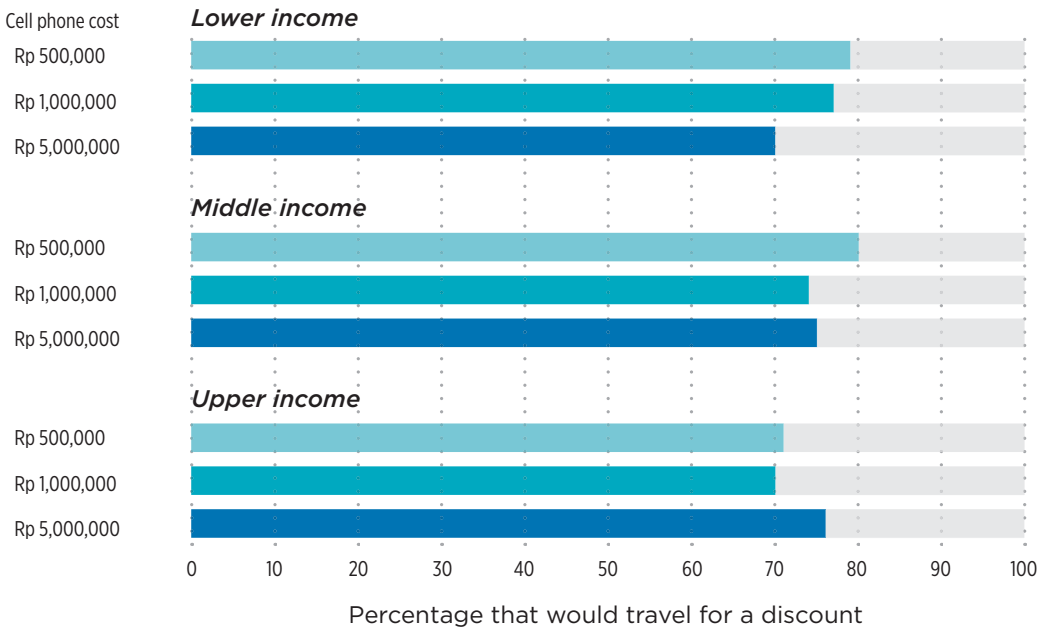


Source: WDR 2015 team.

Note: The discount was $50.

Spotlight 3

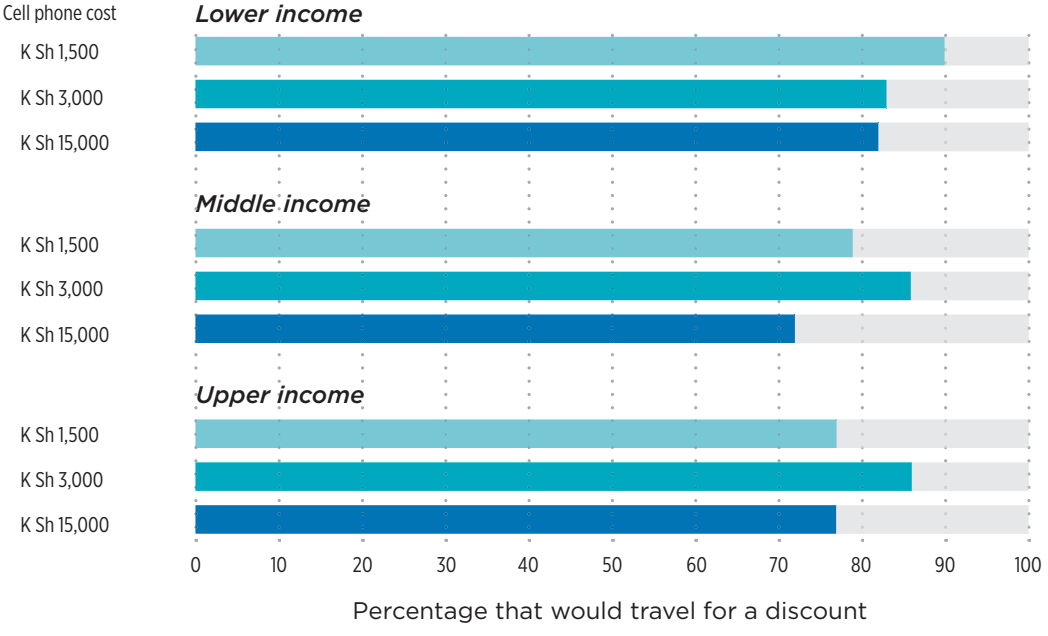
Figure S3.3 How people in Jakarta, Indonesia, view traveling for a discount on a cell phone



Source: WDR 2015 team.

Note: Rp = Indonesian rupiah. The discount was Rp 250,000.

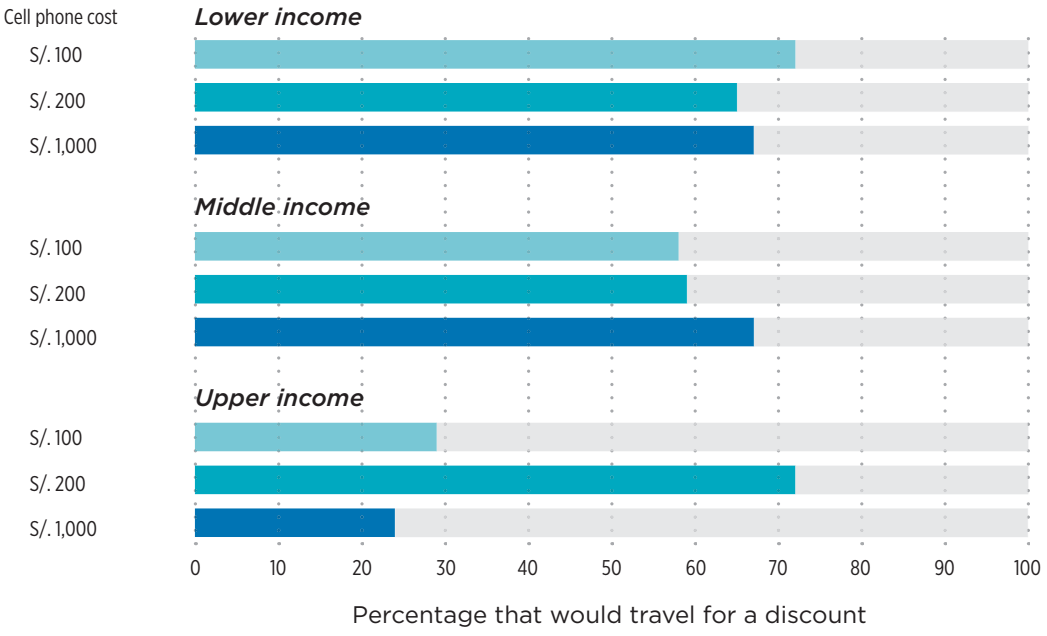
Figure S3.4 How people in Nairobi, Kenya, view traveling for a discount on a cell phone



Source: WDR 2015 team.

Note: K Sh = Kenyan shilling. The discount was K Sh 750.

Figure S3.5 How people in Lima, Peru, view traveling for a discount on a cell phone



Source: WDR 2015 team.

Note: S/. = Peruvian nuevo sol. The discount was S/. 50.

design strategies to assist poor people. While there is no evidence that indicates these differences translate into ineffective antipoverty strategies, they should at least suggest caution when making assumptions about what motivates decision making in contexts of poverty.

Note

1. One exception is the case of respondents from the upper-wealth group in Lima, where limited willingness to participate in the survey severely restricted the sample size of this population to 109 respondents across all question variants and possibly introduced considerable noise in the data.

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