

Access to Finance: Ideas and Evidence

Risk Management and Insurance

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June 2009

Contributions to this research made by a member of The Financial Access Initiative and Innovations for Poverty Action.

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This note excerpts Section 7 of “Access to Finance,” chapter 2 in *Handbook of Development Economics*, volume 5, edited by Dani Rodrik and Mark Rosenzweig. Please cite as:

Karlan, Dean, and Jonathan Morduch. 2010. “Access to Finance.” Chapter 2 in Dani Rodrik and Mark Rosenzweig, eds., *Handbook of Development Economics*, vol. 5. Amsterdam: North-Holland.

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Risk management and insurance

To be poor in most of the developing world is also to be disproportionately vulnerable to risk (Dercon, 2004a; Morduch, 1994). Among sources of vulnerability are the high correlation of poverty and ill health (e.g., Case et al., 2002; Dercon and Hoddinott, 2004), the riskiness of agricultural occupations (Dercon, 2004b), employment instability within the informal sector (Lund and Nicholson, 2004), and the broad insecurities that arise from weak legal protections (e.g., Field, 2007).

One accounting of links between poverty and vulnerability is offered by Dercon (2004b, Table 1.1), who reports on a survey of rural households in Ethiopia who were asked to look backward on the two decade span 1974-1994. Most households reported having suffered seriously due to harvest failure brought on by drought, flooding, frost, or pests (78 percent). Others seriously suffered due to illnesses and death, both of family members and of livestock (about 40 percent). Like the harvest failures, the health losses are potentially insurable. Other serious losses suffered, however, arose from forces that would be near impossible to insure with traditional insurance products, notably policy shocks resulting in forced labor, new taxes, and migration bans.

Collins et al (2009, Table 3.1) similarly report on major losses suffered by small samples of poor and “near-poor” households during a single year in rural and urban Bangladesh, India, and South Africa. Half of the Bangladesh sample suffered due to serious injury and illness during the study year, as did 42 percent of the India sample. These health crises were accompanied by losses to income and property. For example, in Bangladesh, the urban individuals suffered from slum clearing by police and construction workers, and in rural India individuals suffered from a particularly bad harvest. When researchers in Bangladesh returned to their three urban sites in 2005, five years after the original year-long survey, all three sites had been wholly or partly destroyed.

Fully addressing such vulnerability requires policymakers to use their powers to reduce insecurities rather than exacerbate them, and, with an active stance, to expand social security programs, improve health infrastructure and disaster management, and create stronger property rights. Collins et al (2009), for example, find that in South Africa health losses are substantially mitigated by the presence of free public clinics and the generosity of the pension system, based around a system of monthly government grants that gives households flexibility to cope with health losses (Case and Deaton, 1998). Implementing South African-style safety nets universally, however, would surely run up against budget and administrative constraints in most poor countries. While public sector solutions may be part of the picture, households’ main forms of risk coping will no doubt continue to be private.

It is not surprising then that providing low-income households with access to reliable and reasonably priced insurance mechanisms is increasingly taken to constitute a key part of “inclusive” financial sectors. The field of “micro-insurance” (a term that encompasses insurance products targeted to poor and low-income consumers) holds promise, but the field is young and no approaches have emerged so far that offer breakthroughs akin to the original group-lending innovations that ignited the global explosion of microcredit (Morduch, 2006). Basic financial

products like loans and savings accounts will remain critical devices for risk management in poor communities, just as they are in richer communities.

The persistence of shocks

The project of expanding insurance cover and coping mechanisms is made more urgent to the extent that temporary shocks translate into long-term losses. Collins, et al (2009) provide a string of stories of households hit by serious illness. Over time most of the households end up depleting their financial assets in their attempts to pay for medicines and doctors, and the households' asset depletion translates into reduced earning potential over the long term. The most severe losses occur when the shocks themselves play out over time, as with a worsening case of tuberculosis that requires repeated visits to doctors and extended courses of medicine.²

One sense of these dynamics emerges from papers that relate risk to health outcomes. Dercon (2004b) reports on a broad group of studies that link income shocks to health outcomes. Rose (1999), for example, correlates the incidence of bad rainfall realizations in rural India and increased infant mortality rates. She finds that the inability to cope with the temporary loss of income leads to choices that directly harm children, a finding that emerges in a sample of landless households (i.e., those with the most limited ability to self-insure) but not in the sample of households with substantial assets. The link between vulnerability to temporary income shocks and increased rates of child mortality is the most extreme example. Other examples, drawing on evidence mainly from poor populations in South Asia and sub-Saharan Africa, describe links between vulnerability to income swings and outcomes that fall short of death but which nevertheless generate lasting deprivations; they include low school attendance (Jacoby and Skoufias, 1997); increased child labor (Beegle et al., 2003); reduced physical stature of children (Alderman et al., 2002; Foster, 1995); and diminished school performance of young children (Alderman et al., 2002; Foster, 1995). As with Rose's (1999) study, these are not generic findings but hold chiefly for households with few assets, either of land or livestock, and limited means to self-insure.

The link between vulnerability and the profitability of enterprises is a staple of the theory of risk aversion (i.e., the notion that investors and entrepreneurs trade off average financial returns for a lower variance of expected returns), but it is not yet well-established in practice. The most promising avenue will likely involve studies that relate access to insurance to measures of productivity (e.g., the profitability of household business).

Dercon and Hoddinott (2004) sum up their evidence from Zimbabwe and Ethiopia by stressing the way that temporary set-backs turn into permanent deprivations: they find that the inability to cope with transitory shocks from droughts and other serious crises has long-term consequences,

² A sense of the magnitude of the problem is given by Angus Deaton's (1992) simulations of optimal asset accumulation under borrowing constraints. Deaton begins with a dynamic stochastic choice problem in which a household builds up and draws down assets in order to dampen the variability of consumption in the face of income swings. Since by assumption the household cannot borrow, assets are used as buffers, and a relatively low level of assets can be used to smooth independent, identically distributed shocks. When the pattern of shocks has even a moderate auto-regressive component, a much higher average level of assets is required to smooth consumption.

especially for children, for whom reductions in stature and schooling outcomes tend to diminish future employment prospects and productivity. Drawing on the empirical regularity that “taller (and better educated) women have, on average, taller (and healthier) children,” they conclude that “the impact of these transitory shocks may well be felt for several generations.” (Dercon and Hoddinott, 2004; p. 134).

Jalan and Ravallion (2004) tackle this question of transience and permanence of effects in structural estimation of income processes using a six-year panel (1985-90) of Chinese households in Guangdong, Guangxi, Guizhou, and Yunnan provinces. They investigate whether the error structure in income equations is consistent with poverty traps arising from temporary income shocks. They model the lagged dependent variable as a cubic function in a dynamic panel-data income model, looking for evidence of non-convexities in patterns of auto-correlated income. While income is found to be auto-correlated, such that a bad shock this year makes another bad shock more likely next year, Jalan and Ravallion do not find generalizable evidence that temporary shocks create poverty traps. They do, though, find large differences in the speed of recovery from shocks, with poor households taking far longer to bounce back than their better-off neighbors. The picture, as with the evidence above, is one in which risk is widespread and consequences are long-lasting for those who lack the means to cope.

1 Why insurance markets fail

The findings above help to show why risk management is important for poor households, yet the studies also points to a fundamental challenge: both the supply and demand of private insurance tend to be low in low-income communities, especially relative to the take-up of new credit and saving products.

The supply-side difficulties are stubborn, starting with the well-known problems of adverse selection and moral hazard (e.g., Besley, 1995). As the classic papers of Arrow (1963) and Pauly (1968) detail, information asymmetries can drive failures in the commercial provision of insurance. Systems of deductibles (households pay the cost of initial losses before insurers begin paying for the bill) and co-insurance (households cover a fraction of total expenses) can help, but practical difficulties remain when insuring outcomes that are heavily effort-dependent, such as crop failure and livestock health. When insurers cannot observe effort, nor observe the inherent riskiness of customers, contracts generally yield sub-optimal outcomes. In light of the theory, it is little surprise that there is so little profitable, large-scale commercial insurance coverage in low-income communities. Crop insurance accounts for a particularly notable gap given how important agriculture is in much of the developing world. Information problems make crop insurance a relatively less enticing product line for most commercial insurers (Morduch, 2006), but political imperatives make supporting farmers a priority policy initiative (Carter et al., 2007). The combination leads to a landscape presently dominated by subsidy-dependent efforts.

In a theoretical treatment of the general insurance problem, Banerjee and Newman (1993) examine the market for risk from the viewpoint of the poor. While the Banerjee-Newman model focuses on broad relationships between risk-bearing and the income distribution, an important insight emerges on the working of insurance markets. The logic of using deductibles and co-insurance to improve insurance markets hinges on exposing customers to enough risk such that

they have incentives to work hard to limit bad outcomes. Providing complete coverage undermines such incentives. Banerjee and Newman (1993) show that in this set-up, it is the poor, rather than the rich, who – all else the same – will receive closer-to-complete insurance coverage. This is because poor households, who by definition live close to subsistence levels, are assumed to be relatively sensitive to variations in consumption levels when compared to richer households—an observation captured by the common assumption of declining absolute risk aversion (i.e., that as people get richer, they tolerate more risk). A given-sized deductible or co-insurance rate will thus deliver a greater dose of beneficial incentives for poor households than richer households. Equivalently, incentives can be delivered through the use of smaller deductibles and lower co-insurance levels when transacting with poor households than with rich households. Optimal contracts for poor households thus, in principle, deliver a greater extent of insurance cover relative to contracts for richer households.

Banerjee (2004) cites the literature on informal village insurance to argue that the poor may in fact be quite well insured. (For an overview, see Deaton, 1997; Morduch, 2006. Empirical studies include Townsend, 1994 and 1995; Udry, 1994; Grimard, 1997; Fafchamps and Lund, 2003; Dubois, 2000; Jalan and Ravallion, 1999; Ligon et al., 2002; and Morduch, 2004). But our review of the literature at this juncture suggests that the view is too optimistic, and that poor households remain substantially exposed to risk. Still, the polar extreme—in which household's simply consume what they earn without smoothing ups and downs—is also a poor characterization. The literature so far shows that households do manage to self-insure and arrange collectively to share risk.

As Townsend (1994) suggests, there are several potential ways in which villagers might deal with risk on an informal basis, including:

(1) diversification of a given farmer's landholdings into various spatially separated plots and into various crops, (2) storage of grain from one year to the next, (3) purchases and sales of assets such as bullocks and land, (4) borrowing from village lenders or itinerant merchants and borrowing/lending more generally, and (5) gifts and transfers in family networks (Townsend (1994), pp.539-540).

In any given year villagers might well use more than one or even all of the mechanisms on this list. As Townsend notes, each of the mechanisms is by itself nontrivial to evaluate. Using survey data from high-risk villages in semi-arid India, Townsend (1994) looks holistically at the extent to which consumption among individual households co-varies with average consumption in their villages. That is, through some combination of these or other mechanisms, do villages share risk? If markets for risk are complete, consumption should move together. Townsend finds that risk sharing, while not perfect, is quite good. In particular, credit and gifts are important in smoothing consumption; in some cases, the volume of loans and gifts exceeds average consumption (although Morduch 1994 finds weaker evidence of extensive gift giving). Townsend goes on to look for evidence of regional risk-sharing but finds the data inconclusive.

Udry (1994) focuses in on credit as source of consumption smoothing in the absence of insurance markets. By collecting a dataset of credit transactions in four villages in northern Nigeria, Udry provides insight into the specific nature of the mechanism behind the observed

outcomes. The data are interesting even in their basic description: while over 75 percent of households lent money and nearly as many borrowed, the area was served neither by a formal financial institution nor specialized moneylender. Nearly all loans (97 percent) were between neighbors and relatives. Loans were made without witnesses or even written records, and though the repayment amount was negotiated, explicit interest rates were never discussed. Only 3 percent of the loans were backed by collateral. Whether borrower or lender, 82 percent of those surveyed were able to enumerate the farm activities of the party on the other side of the transaction. It is this flow of information, Udry argues, that provides the basis for risk sharing. Most tellingly, payments are shown to respond to the financial circumstances of the *lending* household (through shorter payment periods and/or higher interest payments), a situation for which there is no provision in formal finance. (The reverse is seen as well: adverse shocks among borrowing households are met with lower payments over longer terms.) Nonetheless, Udry finds that the mutual insurance system provided by this arrangement is not sufficiently complete to insure all idiosyncratic risk faced by households.

Fafchamps and Lund (2003) build on Udry's work by also considering gifts and transfers made outside of the context of loans, as well as savings and labor market participation. These steps have the benefit of increasing the scope for capturing transfers and responses to shocks, and they generalize findings to the village population, rather than just borrowers and lenders (though Udry finds they comprise the majority of the population in his sample). The authors' panel data collected from the Philippines shows the majority (71 percent in value) of credit transactions are conducted between relatives and neighbors. More than 80 percent of loans are made within the same village, with virtually the rest occurring between neighboring villages. As in Udry's data, lenders and borrowers are very familiar with each other's activities: more than 85 percent of respondents were able to provide a complete accounting of the wealth holdings and demographic characteristics of their loan partners.

Gift giving is universal in the sample households: all households gave or received at least one gift, and 94 percent did so in each of the three survey rounds. 92 percent of households borrowed and 61 percent lent money, and 80 percent of informal loans carry no interest. For both gifts and informal loans the most common use of the funds is immediate consumption (a finding that squares with recent evidence collected by Johnston and Morduch, 2008 showing that on average half of microfinance loans issued to a sample of Bank Rakyat Indonesia customers were used for nonbusiness purposes). Loans respond to shocks (as in Udry, 1994), and gifts appear to as well, but with only borderline significance ($p=0.13$).

Fafchamps and Lund (2003) reject a village-level full insurance model in favor of one that works through networks of friends and relatives. Not all shocks are insured, and households respond to shocks in part by drawing upon financial savings (not livestock or crops), but not by increasing labor. As with Ligon, Thomas, and Worrall (2002, who revisit the data from Townsend 1994), Fafchamps and Lund find that the fit of their model is improved by taking account of limited commitment—i.e., through a model of insurance predicated on the notion that contracts in the informal sector are not enforceable and any party can withdraw from the scheme at any time.

Focusing specifically on illness, a major source of shocks for poor households, Gertler and Gruber (2002) find considerable exposure to risk in Indonesia. A key distinction drawn by

Gertler and Gruber is the size of the shock: even if they take Townsend's (1994) results as given and assume that minor health-related fluctuations in consumption can be smoothed over time, they argue that there may be less frequent, more serious health shocks that households will be unable to insure against through informal mechanisms. They test for this by looking at consumption patterns in a dataset incorporating a measure of the severity of illnesses. They find that while households are able to fully insure minor illnesses (those that do not limit physical functioning), they are only able to insure 71 percent of the economic costs (the cost of health care plus lost income) of moderate illnesses, and 38 percent of the cost of illnesses that severely limit physical functioning. The authors suggest the introduction of informal disability insurance as a potential remedy.³

Much of the literature above focuses on the village as a "natural" insurance unit, and the question posed by researchers centers on the degree to which villagers set up arrangements by which idiosyncratic risk is insured collectively. The structure of estimating equations captures the focus on idiosyncratic risk defined as income variability around the mean village income in a given year—i.e., doing better or worse than your neighbors. It is a helpful starting place, but the tests remain mute on the ability to cope with the kinds of major regional risks described in Dercon (2004): the broad devastation brought by wide-scale shocks like droughts, floods, and economic crises.

In addition, villages are in many ways *not* natural insurance groups, especially relative to families and kinship groups that often extend geographically (Morduch, 2004; Munshi and Rosenzweig, 2007; Rosenzweig, 1988). Debate about the role of villages as risk-sharing collectivities goes back to Scott's (1976) depiction of collectivist communities, contrasted with Popkin's (1979) characterization of generally individualistic and inefficient relationships. The debate remains unresolved decades later, as evidence has accumulated on both sides. Goldstein et al (2004), for example, depict patterns of inclusion and exclusion in community-level risk-sharing arrangements in Southern Ghana, drawing on insights into incomplete informal insurance (for more on fragmented collective relationships, see Fafchamps and Lund, 2004; Genicot and Ray, 2003; and Platteau, 2000). This strand of literature shows how and why households may remain vulnerable even to idiosyncratic risks, in addition to broad aggregate risks. Grimard (Grimard, 1997) looks for evidence of risk sharing across regions in Côte d'Ivoire. He, too, rejects complete insurance but finds evidence of partial insurance between members of the same ethnic groups, especially in regions with the lowest availability of formal financial products. As Grimard suggests, the lack of full regional insurance might not come as a surprise given the difficulty in monitoring and enforcement over long distances. Munshi and Rosenzweig (2007) provide complementary data on intra-caste and intra-family insurance in India.

³ One of the limits to this literature is given by difficulties in interpreting results. Consider the finding of Jalan and Ravallion (1999) on risk-sharing in China. They find that on average 40 percent of idiosyncratic income shocks translate into consumption shocks for the poorest households. Readers are left unclear as to whether the finding means that all poor households are vulnerable to 40% of shocks—or might, say, half fully insure while the other half suffers 80 percent of the loss? Moreover, are positive shocks handled differently from negative shocks? These kinds of questions are less important if the focus is on testing the basic fit of a benchmark model of full consumption insurance as in Townsend (1994), but they are critical in evaluating and developing policy responses.

Taking this literature as a whole, it becomes clear that insurance provided by the formal sector should be seen in the context of a broader array of risk-coping mechanisms employed by households, some deployed preventatively and some used after shocks have occurred. Formal sector insurance includes a “loading factor” that includes taxes and administrative costs, and, as a starting point, insurance will be demanded only if compared to other options it is both relatively effective and relatively cheap.

2 Partnership models and index-based insurance

Taken as a whole, the empirical literature on informal collective insurance shows that poor households remain substantially without insurance (especially when aggregate risk is considered) while richer households tend to be better insured. The literature on information asymmetries suggests that the gaps in coverage are not just inequitable but apt to be inefficient as well.

The literature on informal credit and saving has offered guidance for developing commercially implementable credit and saving products, but parallels are harder to find with regard to insurance. One hurdle for commercial insurers is posed by the logistical challenge of collecting small-sized premia from customers and needing to assess claims for losses that may loom large for small households but which are relatively small for major insurers (Morduch, 2006). The pursuit of profitability makes serving the poor with current technologies a low commercial priority.

Two new approaches are starting to change the equation. The first is partnership models, whereby commercial insurers partner with microfinance institutions to deliver commercially viable products. The insurers bear the major risks and maintain responsibility for actuarial calculations and pricing strategies, while the microfinance institutions use their existing relationships with customers to sell products and handle claims. The model has been especially successful in delivering “credit-life” insurance, in which microfinance customers receive term life insurance coverage during the life of their loans. The product is relatively simple to administer, and premia are typically collected as extra fees on top of the interest rates paid for loans. A disadvantage is that this pricing may be opaque to borrowers and many products appear to be costly relative to the value of coverage provided. Also coverage extends to borrowers only--coverage lapses if customers choose to stop borrowing. Still, the principle is robust, and the promise remains for developing an improved array of insurance products.

The second new approach is index-based insurance (Carter et al., 2007; Skees et al., 2004). As high transaction costs, moral hazard, and adverse selection have thwarted attempts to provide crop insurance on a commercial basis and wide scale, new approaches have sought to side-step those problems by shifting from insuring crop losses to insuring bad weather realizations instead. The insight is that if the correlation between crop losses and bad weather is high enough, substantial insurance can be provided through index-based weather insurance. Farmers are powerless to change the weather; thus moral hazard and adverse selection disappear. Transactions costs also fall since claims do not need to be verified and products can be standardized around a given weather station.

An example is given by a rainfall insurance product offered in Andhra Pradesh, South India studied by Giné, Townsend, and Vickrey (2007b). To get a sense of the product, it is worth reviewing contract details. The insurance contract divides the cropping season into three parts, roughly corresponding to sowing, podding/flowering, and harvest phases, and farmers can purchase separate contracts for each part. The risk in the early phases is that rainfall will be insufficient, so, in this example, the contract pays nothing if rainfall exceeds 70 mm. If accumulated rainfall is less than 70 mm, the policy pays 10 rupees for each millimeter of rainfall below the cutoff, paying out a fixed amount (1000 rupees) when the season is extremely dry. In the third (harvest) phase, problems emerge when rainfall is excessive, so the policy reverses itself; it now pays out when rainfall exceeds 70 mm and pays nothing below the threshold. A policy covering all three phases is inexpensive enough to be accessible to low-income farmers (coverage costs 200-300 rupees or US\$5-6; Giné et al., 2007a).

In principle, even villagers who are not farmers can purchase contracts. While crop insurance is marketed only to farmers, there is nothing stopping the sale of weather insurance to anyone in the region who wants protection from the ups and downs of weather-related demand and supply fluctuations. Since the risks are correlated locally, prudence requires that rainfall insurance be offered in partnership with a re-insurer who can help local retailers spread risks across regions. The large global re-insurers like Munich Re and Swiss Re are playing a role in spreading risks across countries and broad regions.

Low demand

The idea of rainfall insurance makes sense. As a reality, though, the product in Andhra Pradesh described above has not been embraced enthusiastically by farmers, despite its relatively low cost and the major costs of drought in the region (Giné et al., 2007a). The reasons why most people refused to buy it are hard to pin down, but basis risk between insurance payouts and the risk insured is a major determinant.

The value of rainfall insurance depends on a high correlation between incomes and rainfall as measured at the local rain gauge or weather station; the divergence is so-called basis risk. Two forces combine to create basis risk. First, there may be an insufficient number of rainfall gauges to adequately capture weather variations in a region. Second, the impact of weather on a given plot may be affected by the characteristics of the plot, including its slope, soil quality, and the availability of alternative water sources; the contract's pricing structure thus may not make sense for all farmers equally, even when they face the same weather patterns. Not surprisingly, Giné et al. (2007a) find that take-up of the Andhra Pradesh rainfall insurance product decreases with basis risk.

They also find that demand increases with household wealth and decreases with the extent to which credit constraints bind; again neither is surprising although since it is the poorest households that are generally least able to bear risk, the opposite finding (that take-up decreases with wealth) would also be plausible. One clearly surprising result from Giné et al. (2007a) is that take-up falls with risk aversion. Since those who exhibit the greatest degree of risk aversion should be most eager to obtain insurance, the result falls outside the benchmark model. The

most likely explanation is that it is uncertainty about the product itself (Is it reliable? How fast are pay-outs? How great is basis risk?) that drives down demand.

The evidence on low demand is repeated with a similar product in a very different setting. Giné and Yang (2008) investigate the demand for a hybrid credit-rainfall insurance product in Malawi. Their hypothesis is that risk-averse farmers will be unwilling to adopt new agricultural technologies—in this case, high-yielding varieties of maize and improved groundnut seeds. Coupling insurance with a credit product should then, in principle, increase adoption. The study employs a randomized field experiment involving about 800 maize and groundnut farmers; half the farmers were offered credit to buy the new seeds, while the other half were offered a similar credit product coupled with a weather insurance policy. The insurance policy was priced at actuarially fair rates, providing some protection against low rainfall outcomes. (Though, we note that given that there is basis risk, a rate that is actuarially fair in terms of weather realizations at the rainfall gauge may not be actuarially fair on a given farmer's plot.) A third of the farmers who were offered just the credit contract accepted it. Surprisingly, take-up was 13 percentage points lower for the half of the sample offered the combined credit-insurance product. One possible explanation discussed in the working paper version is cognitive: insurance is not a simple concept and the terms of the policy can be hard to weigh, a contention supported by the finding that more educated farmers were more likely to take up the combined product in the Malawi experiment. Increased exposure to the product, financial literacy training, or a new marketing strategy may all play a role in raising demand levels. Another explanation is that farmers already received insurance implicitly through loan contracts: in case of a serious drought, farmers do not have to repay loans (by virtue of limited liability); this, in itself can limit demand for the insurance product. As with the case of the Indian product, it is also critical that the product itself be desirable in more basic ways (with reasonable administrative costs, reliably speedy pay-outs, and a sufficient spread of rainfall gauges to ensure limited basis risk--factors that are not always in place). In the scale-up of this product, the firms in Malawi no longer sell directly to farmers, and are instead insuring the lenders and large firms directly.

Carter et al. (2007) argue that a variation on index-based agricultural insurance can sometimes do better. This is area-based yield insurance, in which payouts are based on measured average yields in a region (rather than on yields on the policymakers own plot). Basing pay-outs on average yields in, say, a valley, effectively eliminates moral hazard and adverse selection in the same way that weather-based insurance does (Miranda, 1991). The advantage is that coverage can extend beyond risks due to weather only--a finding stressed in the Carter et al. (2007) application in northern Peru. A disadvantage is that, as with traditional crop insurance, yields need to be measured, a sometimes expensive and time-consuming process. And, as with rainfall insurance, basis risk remains a problem for customers.

These studies provide a start at unpacking the reasons that the demand for insurance tends to be low. Additional reasons include the fact that the effectiveness of informal insurance mechanisms may, in some cases, be sufficient to limit the net impacts of formal insurance contracts (Morduch, 1999), and the expectation that in severe disasters the public sector will step in with aid, again limiting the net impact of private insurance. The importance of marketing in determining demand for credit (Bertrand et al., 2010) also highlights the urgency for insurers to identify new modes of marketing to enhance take-up of insurance. Given that the prevalence of

risk is widely taken to be a fundamental element in the lives of poor households, it is notable that such fundamental questions about the demand for insurance remain; the topic is a priority on the research agenda.

3 Health insurance

Health risks loom large among the risks faced by poor households, and out-of-pocket health spending is high. In the United States, the percentage of health spending that is out-of-pocket (i.e., not paid by insurance) is about 12 percent (Pauly et al., 2008). In Bangladesh, the comparable figure is 64 percent; in Ghana, 59 percent; in India, 78 percent; in Paraguay, 55 percent; in the Philippines, 47 percent; and in Vietnam, 62 percent. The figures are from the 2002 World Health Survey, a World Health Organization household survey covering about 4,000 to 6,000 households per country (cited in Pauly et al, Table 1).⁴

As with crop insurance, few commercially successful health insurance programs exist that serve poor communities (Morduch, 2006). And, as with the other types of insurance discussed above, moral hazard and adverse selection pose substantial barriers for insurers. In line with theory, co-payments can help. Grameen Kalyan, a Bangladesh-based health insurance scheme that is part of Grameen Bank offers coverage for preventative and curative health services, and requires co-payments for the curative services. Co-payments turned out to help Grameen Kalyan not only reduce over-use of medical services, but they helped to effectively signal the quality of care as well (given that customers judged quality by price; Radermacher et al., 2006, p. 78). Elsewhere, though, co-payments have been viewed skeptically in poor populations. In Mali, for example, co-payments were feared to be too onerous for poor customers, and a system of cooperatives was founded to help members pay co-payments for health services (Radermacher et al., 2006, p. 78). It is unclear whether the problem here is with requiring co-payments *per se* or with the levels at which they are set—a problem ripe for research.

One of the themes of the chapter is that design matters, and the sentiment is echoed here with regard to health insurance. Above all else, insurers sell their reputations: the promise companies will reliably and promptly deliver pay-outs when crises hit (in the exact amounts and with the exact timing specified in contracts). Such basic reliability cannot be taken for granted in either the public or private sectors (Das et al., 2008). If doctors, nurses, and pharmacists are unavailable or of uncertain quality, a reliable health insurance system is hard to envision. Yet experiences with hospitalization insurance in South India suggest that this conclusion may put things backward. In the health insurance program of BASIX, for example, the organization of villagers into insurance groups, facilitated by their membership in BASIX's microfinance program, created a large enough block of customers that it was possible for the insurer to certify and contract with high-quality doctors directly. This "preferred provider" system benefited doctors and medical personnel who gained from the steady demand. It was thus the existence of the health insurance program, and the financial resources it aggregated, that helped fix quality deficiencies in healthcare quality faced by customers. In other programs, like that of BRAC and

⁴ Most of the spending is attributable to spending on prescription drugs. Turning to the same countries, the percentages are: Bangladesh, 84 percent; Ghana, 48 percent; India, 55 percent; Paraguay, 73 percent; the Philippines, 61 percent; and in Vietnam, 44 percent (World Health Survey, cited in Pauly et al, Table 3).

Grameen Kalyan in Bangladesh, nearly all health care is provided within the programs' own clinics (Radermacher et al., 2006, pp. 86, 91).

Another concern rests with cost. Without reliable data, insurers face a series of risks in pricing insurance, most importantly, mis-estimating the probabilities of loss and fluctuations in health care costs (Radermacher et al., 2006, p. 90). But even if it is possible to set rates precisely, it is unclear that customers are willing to shoulder the full costs. Product design features appear to help. Some institutions lend money to customers to help them pay premiums: FINCA Uganda, for example, and Karuna Trust in Karnataka India. Others break the premiums into small-sized installments that can be easier for poor households to handle (though when given a choice, BRAC customers sought monthly rather than weekly installments). But most of the health insurance programs assessed by Radermacher et al. (2006) nevertheless lost money. The unanswered question is whether, if offered a truly effective high quality health insurance policy, households would willingly pay the required price. As it is, many customers fail to renew their contracts at the end of a given year—Radermacher et al. (2006, Table 10) show BRAC's renewal rate at 51 percent, Grameen Kalyan's at 54 percent, and VimoSEWA's (part of a long-established community institution in Ahmedabad, India) at 51 percent. Better marketing and rising comfort levels will likely help raise renewal rates, but the evidence on renewal rates suggests a *prima facie* case that success will also require improving service quality for the price. This is an area that will surely benefit from the kinds of experimental economic research that has energized the literatures on credit and saving.

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