

# Community-based risk management arrangements<sup>†</sup>

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## Abstract

*Risk and its consequences pose a formidable threat to poverty reduction efforts. This article reviews a plethora of community-based risk management arrangements across the developing world. These types of arrangements are garnering greater interest in light of the growing recognition of the relative prominence of household- or individual-specific idiosyncratic risk as well as the increasing shift towards community-based development funding. The article discusses potential advantages (such as targeting, cost and informational) and disadvantages (such as exclusion and inability to manage correlated risk) of these arrangements, and their implications for the design of community-based social protection programs and policies.*

Vulnerability to risk is increasingly recognized as one of the defining characteristics of poverty (World Bank 2000). Over the past decade or so, this has generated a large amount of research on the various aspects of risk in developing countries, including the sources and types of risk, the impacts of risk and shocks on poor households,<sup>1</sup> and individual, household and community responses to risk.<sup>2</sup> Of particular concern, a growing body of empirical microeconomic research finds considerable persistence in the welfare effects of shocks, such as among the poor in China, Ethiopia, Honduras, India, Indonesia, Kenya, Peru, Uganda and Zimbabwe (Alderman et al. 2006; Carter et al. 2007; Dercon 2004, 2005; Dercon and Hoddinott 2005; Gertler and Gruber 2002; Hoddinott 2006; Hoddinott and Kinsey 2001; Jalan and Ravallion 2005; Krishna 2007). The mounting evidence on shocks and their long-term adverse effects thus raises important questions about how best to manage risk so as to avoid collapse into poverty traps (Bardhan et al. 2000; Barrett et al. 2008; Carter and Barrett 2006).

If risk is particularly salient to understanding poverty dynamics, then understanding patterns of risk exposure among the poor and the means they employ to cope with shocks becomes especially important for development policy and practice. Shocks are either idiosyncratic—meaning one household’s experience is typically unrelated to neighboring households’—or covariate—meaning that many households in the same locality suffer similar shocks. Idiosyncratic shocks commonly arise due to illness (especially chronic rather than infectious disease), crop yield shocks associated with microclimatic variation or localized wildlife damage or pest infestation, and one-off events such as property loss due to fire or theft (Dercon 2005; de Weerdt and Dercon 2006; Vanderpuyse-Orgle and Barrett forthcoming). Covariate shocks occur because of natural disasters, war, price instability, financial crises, etc., to which (virtually)

everyone in a community is vulnerable, although there is always some idiosyncratic component to shocks, even largely covariate ones, because of differences among households in their exposure and capacity to respond to shocks (Dercon and Krishnan 2000; Skoufias 2003; Lybbert et al. 2004). This distinction between covariate and idiosyncratic shocks is important as community-based risk-management arrangements can handle idiosyncratic risk but are likely to break down in the face of covariate risk unless they find ways to transfer risk either outside the community or to those within the community who are willing and able to take on the common component of risk. A growing body of empirical evidence suggests that idiosyncratic risk dominates covariate risk in rural Africa and Asia (Deaton 1997; Kazianga and Udry 2006; Lybbert et al. 2004; Morduch 2004; Townsend 1995; Udry 1993), implying the first-order importance of community-based risk management, at least in low-income rural areas.

Although many studies have examined community-based responses to risk in developing countries (most commonly, mutual insurance arrangements) and, in some cases, the extent to which they enable households to cope with shocks, none provide an up-to-date, comprehensive overview of the most commonly-observed arrangements. This article fills this gap by reviewing a broad range of disparate sources in order to provide as extensive a coverage of existing arrangements as possible, including arrangements that have not yet received scrutiny from researchers, yet are commonly instituted by states or NGOs. Given the increasing importance of community-based and community-driven development funding (Mansuri and Rao 2004), as well as the growing recognition of the critical role of social protection policy in risk management and poverty reduction (Barrett et al. 2008), such a review should be of immediate interest to policymakers, practitioners and researchers. Moreover, it can facilitate a better understanding of

the limitations and advantages of existing arrangements and help to devise ways in which to either bolster them or design new programs based on them.

The rest of the article is organized as follows. In section 1, we briefly summarize the evidence on risk management strategies of the poor, in particular, mutual insurance activities. This leads to the subsequent sections' focus on community-based risk management arrangements (CBRMAs). In section 2, we define the main features of these arrangements. In section 3, we catalog a range of CBRMAs commonly observed across the developing world. In section 4, we discuss the strengths and the shortcomings of these arrangements. Finally, in section 5, we provide some concluding remarks, including policy implications.

### **1. A brief overview of risk management by poor households**

Given the frequency of shocks, poor households have devised a number of ways to mitigate their impact and cope with risk. The risk management strategies employed by households can be broadly classified into self-insurance and mutual insurance activities. Self-insurance activities include ex ante risk reduction strategies whereby households smooth income (Bliss and Stern 1982; Feder et al. 1985; Rosenzweig and Binswanger 1993; Morduch 1995; Barrett et al. 2004). They also include ex post shock coping strategies whereby households smooth consumption, assets or both, or make labor supply adjustments (Paxson 1992; Kochar 1995; Rosenzweig and Wolpin 1993; Fafchamps et al. 1998; Rose 2001; Kazianga and Udry 2006).

Households can also manage risk by participating in mutual insurance groups of various sorts. These are probably the most extensively studied consumption-smoothing mechanism in

developing countries. This reflects the limitations of self-insurance mechanisms as well as the plethora of informal and semi-formal risk-sharing arrangements that exist across the developing world and researchers' longstanding fascination with such institutions. Evidence on participation in informal risk-sharing arrangements as a coping strategy has been documented in a number of studies across the social sciences (Evan-Pritchard 1940; Colson 1962; Scott 1976; Posner 1980; Platteau and Abraham 1987; Eswaran and Kotwal 1989; Ellsworth and Shapiro 1989; Udry 1990, 1993; Fafchamps 1992; Alderman and Paxson 1994; Besley 1995; Hoff 1996; Platteau 1997; Morduch 1999a; Platteau 2000; Rutherford 2000; Goldstein et al. 2005; Dercon et al. 2006, De Weerd and Dercon 2006).

What is the empirical evidence on the extent of risk-sharing in village economies? In one of the earliest microeconomic studies, Townsend (1994) finds evidence of close to full risk-sharing within the ICRISAT villages in south India. After controlling for community resources, he finds that the marginal propensity to consume out of a household's own income is 0.14, while the theory of perfect risk-sharing predicts that it should be zero. However, a number of subsequent studies using the same data but different methodologies have found weaker evidence of risk-sharing (Morduch 1991, 2004; Ravallion and Chaudhuri 1997). Other studies have also found weak or no evidence of complete risk-sharing through informal insurance. In a sample of households from rural Cote d'Ivoire, Deaton (1992) finds more co-movement between income and consumption *within* than across villages. After including village fixed-effects, however, he finds that fluctuations in household income do affect household consumption levels. Jalan and Ravallion (1999) find close to full risk-sharing amongst the highest income decile in rural China, but not so for the lowest income decile. Similarly, Morduch (1993) finds consumption

smoothing among wealthier households in the ICRISAT sample, but no such evidence among landless households and smallholders. Fafchamps and Lund (2003) find evidence of risk-sharing via informal insurance in rural Philippines, but show that it is effective only in the case of young adults who are acutely ill. Vanderpuye-Orgle and Barrett (forthcoming) find strong evidence of near-full risk pooling among socially well-connected individuals in rural Ghana, but easily reject the risk pooling hypothesis for the sizeable minority of the sample without extensive social networks.

The rejection of the full risk-sharing hypothesis across a range of studies should not, however, be interpreted as conclusive evidence against the existence or importance of risk-sharing. Rather, detecting such behavior may require examining risk-sharing at a more disaggregated level. Until recently, most empirical tests of risk-sharing were conducted at the village level. This practice was driven by both data and conceptual limitations.

First, given the sampling strategies and questionnaires used to collect household survey data, the most natural unit of analysis of informal insurance networks is the village (De Weerd and Dercon 2006). Household surveys typically do not collect data on the incomes of extended family members who do not reside with the household, making it difficult, for example, to test whether extended families provide informal insurance. A notable exception is Rosenzweig and Stark (1989) who are able to address this question using unique panel data from rural India. Examining the high frequency of migration of women to geographically-distant yet kinship-related households due to marriage, they find that migration due to marriage contributed significantly to the reduction of variability of household food consumption. They conclude that

marriage-related migration is aimed at mitigating income risk and enabling consumption smoothing.

Second, researchers disagree about whether geographic sampling enumeration areas—typically a village—provide a conceptually suitable unit of analysis for mutual insurance networks.

Although the number of households in a village and the scope of idiosyncratic risk are both generally sufficiently large to provide scope for mutual insurance, while the information and enforcement costs of such arrangements are likely to be relatively small within a village, most studies that have tested risk-sharing within a village have rejected it (e.g., Townsend 1994; Udry 1994; Jalan and Ravallion 1999; Gertler and Gruber 2002; Park 2006; Vanderpuye-Orgle and Barrett forthcoming). Other networks that have been examined as units of risk-sharing include ethnic groups (Grimard 1997), friends and relatives (Fafchamps and Lund 2003), extended family (Foster 1993 and Witoelar 2005) and social networks (De Weerdt and Dercon 2006; Santos and Barrett 2006; Vanderpuye-Orgle and Barrett forthcoming).

What do studies that look at these other types of networks find in terms of risk-sharing? Grimard (1997) rejects complete risk-pooling among households within an ethnic group in Cote d'Ivoire, while Foster (1993) and Witoelar (2005) do so between extended families in Bangladesh and Indonesia, respectively. Fafchamps and Lund (2003) find evidence of risk-sharing between friends and relatives in rural Philippines only in the case of young adults who have a serious illness (but not so for older adults). They also find risk-sharing in the case of funerals but not for crop failures or mild illnesses. This raises the related question of whether it is appropriate to test for risk-sharing on a composite consumption good, or rather for disaggregated consumption

goods. Using data from Bangladesh, Park (2006) finds that risks to food consumption are pooled between neighboring households and also between related households in different villages, but not among households residing in the same village. Similarly, De Weerd and Dercon (2006) find no evidence of risk-sharing for non-food consumption in the village but find evidence at the level of networks. These findings suggest that a better understanding of the unit of risk-sharing as well as the extent of risk-sharing for disaggregated types of consumption is needed. However, while the evidence on the extent of risk-sharing is inconclusive, it appears widely prevalent in rural communities across the developing world. Against this backdrop, we now embark on a discussion of commonly-observed community-based risk-management arrangements.

## **2. Community-based risk management: Stylized features**

We adopt a broad definition of community-based risk management arrangements (CBRMAs) to include all coordinated strategies used and managed by social groupings of individuals for the purpose of protection against the adverse effects of various types of risk. We use the word “community” loosely in order to include agents whose relations have an informal and non-market character. This can include persons linked by lineage, ethnicity, religion, occupation, historical ties, proximate residence, etc. The key criteria are that they share a common motivation for risk-pooling and that their strategies are explicitly, if often informally, coordinated.<sup>3</sup> In addition, we use the phrase “community-based arrangements” to mean systems adopted by social groupings of individuals, whether indigenously developed or otherwise, whose management is executed by members of the groups themselves.

Perhaps the defining feature of both informal and semi-formal community-based arrangements is

the interpersonal relations between members. These arrangements are often characterized by low information and transaction costs, since participants typically live in close geographical proximity and their economic circumstances (wealth, income, realizations of shocks) are, for the most part, easily observable by neighbors. Contracts, almost always unwritten, are found to be self-enforcing even in the absence of state policing and judicial courts arising from a combination of effective peer monitoring, fear of social sanctions, and repeated interactions over time between the same individuals. This is often reinforced by the longstanding association among members, often extending over several generations. Indeed, the indefinite, dynastic nature of village social relations has often motivated the modeling of informal mutual insurance systems as infinitely-repeated games (Coate and Ravallion 1993; Fafchamps 1992).

There are however at least three important differences between informal and semi-formal CBRMAs. First, as discussed by Platteau (1997), in informal arrangements, transfers to beneficiary households typically take place *ex post*, i.e., after the realization of a shock. In semi-formal arrangements, however, transfers often take place *ex ante* (akin to premiums paid under formal insurance contracts) as well as *ex post* (akin to claims in formal insurance). Second, unlike semi-formal arrangements, premiums and coverage are not well-defined in informal arrangements and are often state-contingent and implicit, embedded in the cost of establishing and maintaining social ties. Third, unlike semi-formal arrangements, informal arrangements are typically characterized by very simple transactions and rarely have any requirement for accounting and financial management skills. Thus, their scalability is inherently limited by the capacity of individuals to track transactions informally.

In spite of these differences, we choose not to distinguish community-based arrangements on the basis of their level of formality, since the importance of community relations in both formal and semi-formal arrangements is the key defining (and similar) feature. In addition, due to the evolving nature of these groups in response to increases in market penetration and monetization of the economy, many semi-formal institutions are actually based on traditional, informal arrangements. For example, African cereal banks and Indian grain banks (discussed below) are offshoots of traditional hunger-insurance arrangements found in many villages.

We instead categorize CBRMAs on the basis of the primary function that they are designed to serve. This taxonomy is by no means exhaustive. Rather, it is merely suggestive of the different types of informal and semi-formal risk sharing arrangements one finds in low-income communities. In fact, the diversity of community-based risk-management arrangements across the developing world is immense, and any attempt to categorize them in a systematic fashion necessarily involves a loss of descriptive richness. Nevertheless, the contribution of this exercise is to present an overview of the various types of arrangements that commonly exist, and how they help households to manage risk.

### **3. A catalog of community-based risk management arrangements**

In this section, we describe the main features of a number of commonly-observed CBRMAs, based on whether they provide public goods and services, facilities for savings and credit, credit as insurance, transfers, insurance for major life events or common property resource rights.

#### **3.1 Community-based provision of public goods and services**

There are a large number of community-based programs that deliver public goods and services, bolstering the ability of households to manage risk, whether through ex post risk transfer (i.e., insurance) mechanisms or, more commonly, through reduced ex ante risk exposure (i.e. prevention). Examples include disease, pest and pathogen control through community-based preventive medical and veterinary care and community-based sanitation programs, community management of irrigation, community-based information systems as well as community-run auctions that can help to reduce price variability in market transactions. These are typically provided through semi-formal arrangements established by NGOs or local governments to deliver goods and services that have a public good character (i.e., nonrivalness in consumption and non-excludable). Good examples include pest and disease control, for example through spraying insecticides in swampy areas, or emergency warning systems based on sirens or public callers. In other cases, they can be made excludable by charging a fee for the service (e.g., fee for animal health services). However, since the provision of public goods and services is often susceptible to free-riding and may have high start-up fixed costs (e.g., roads and informational systems infrastructure), they tend to be underprovided by the market in the first place.

Community-based animal health programs provide an important service in reducing the risk of livestock disease and death in remote rural areas in developing countries, where access to veterinarians may be limited. In these programs, local farmers are given training in both modern as well as indigenous knowledge to provide treatment for common livestock diseases (IIRR 1998). To ensure financial viability and sustained functioning of these programs, a critical mass of participation by local farmers is required. Typically, in these programs, technical support as well as the supply of drugs are provided externally through NGO-based veterinary professionals

or government veterinary services. Community-run animal health programs can reduce idiosyncratic risk for herders and farmers whose livestock may be affected by disease, by providing veterinary services in a timely manner. They can also reduce covariate risk by stemming the spread of infectious disease, thereby heading off epidemics.

Community-based disease, pest and pathogen control programs can reduce risk by preventing disease. Makemba et al. (1995) describe a community-based malaria control program in Tanzania, one of many such programs established in African countries. In this program, insecticide-treated mosquito nets are introduced in rural areas using a community-based model, which involves community participation for the distribution, sales and impregnation of nets as well as education on proper usage. Using a combination of focus-group discussions and household surveys in villages in Nigeria where malaria is hyperendemic, Onwujekwe et al. (2005) find that the community-based model for the distribution and sale of insecticide-treated mosquito nets is preferred by respondents to those by the commercial sector (e.g., medicine dealers), public health system and by health teams that visit villages occasionally. The major reasons cited for their preference are the ease of access and flexibility for payment provided by community-based distribution, relative to other models.<sup>4</sup>

Community-based immunization, deworming, and sanitation programs can also reduce the risk of disease and disease transmission. Miguel and Kremer (2004) provide evidence from a recent randomized evaluation of a school-based project in Kenya that mass treatment with deworming drugs increases school attendance for treated children. They also find that deworming treatment has positive externality effects, reducing disease transmission and thereby increasing attendance

among untreated children in treatment schools as well as in neighboring schools, where the treatment was not provided. Given the externalities present in mass immunization or deworming treatments, individual households may not adopt these interventions unless they are taken up by a critical proportion of the community.

Community-based sanitation programs can also play a critical role in reducing the risk of water-borne disease such as diarrhea, one of the leading causes of childhood mortality. In a recent review of interventions for reducing diarrhea in developing countries, Zwane and Kremer (2007) summarize evidence on the effectiveness of hand-washing and point-of-use water treatment campaigns which involved frequent (weekly or daily) reminders from fieldworkers. Given the high frequency of visits from fieldworkers needed for the success of such campaigns, community-based programs are likely to be more cost-effective and have greater sustainability. Low-cost community-based sanitation programs such as community sanitation centers (e.g., public toilets and public water points) can also reduce the risk of disease, given the absence of individualized on-site systems or centralized sewerage systems. Examples of well-functioning community-based toilets include publicly-financed community toilets in Pune and other Indian cities (Burra et al. 2003).<sup>5</sup> In the Pune model, a partnership between the local municipal government, NGOs and the beneficiaries have enabled the successful operation of more than 400 community-designed, managed and maintained toilet blocks.

Other examples of community-based arrangements for the provision of risk-reducing public goods include small-scale irrigation schemes and work teams for construction of physical infrastructure such as roads, health centers, and schools. Community-based irrigation-schemes

reduce risk of crop loss or lower yield by providing water in a timely and more regulated manner. They can also help with addressing covariate risk such as drought. They typically involve provision of labor by the community and provision of technical knowledge and financial resources externally, through NGOs or the government. Public works programs such as Food-for-Work (FFW) programs which use community labor to provide public goods can also reduce risk (Barrett et al. 2005), both in the short run and the long run. Von Braun et al. (1999) provide evidence on the impact of a FFW project in Ethiopia, which has the largest FFW program in Africa. They show how a FFW road increased market access, dampening price volatility and leading to multiplier effects which included the establishment of water mills and fruit plantations in the three years after the road was constructed. Another focus of Ethiopia's FFW programs, namely, the promotion of natural resource conservation, can also reduce risk. For example, terracing hillsides in FFW programs helps in soil and water conservation, which reduces yield risk (Holden et al. 2006). It can also reduce disaster risk due to, for example, landslides and mudslides.

Community-based information systems can also help to reduce both idiosyncratic and covariate risk. A recent example is the internet site created, managed and used by members of the Zimbabwean diaspora ([www.mukuru.com](http://www.mukuru.com)) which enables individuals living outside the country to transfer remittances to family members during times of need, thereby helping them to smooth consumption. An example of a community-based information system that reduces covariate risk is the cyclone warning system in Bangladesh, where seasonal flooding due the annual monsoon season is a recurring, and often severe, problem. It is based on a network of 33,000 village-based volunteers who receive alerts via radio stations linked to the national capital, Dhaka, which

they then relay via megaphones to at-risk villagers in coastal areas, thereby reducing the risk of losses due to flooding (Niskala 2005).

### **3.2 Savings and credit arrangements to insure against income risk**

Savings, credit and insurance arrangements help risk management in a variety of ways. First, households can use precautionary savings or consumption credit to smooth consumption in the face of either income shocks or anticipated variation in income (e.g., due to seasonality) or in expenditures (e.g., due to dowries or costs associated with weddings or other predictable ceremonies). Second, households can use production or investment credit to build up assets and thereby increase their future capacity to self-insure. As the vast literature on microfinance points out, there exist a wide range of community-based arrangements for managing risk through finance.<sup>6</sup>

#### *Rotating savings and credit associations (ROSCAs)*

A ROSCA is a traditional savings and credit arrangement<sup>7</sup> that typically comprises of a group of individuals who make regular contributions to a common pot (Besley et al. 1993). This pot is then allotted to each of the individuals in turn, either in a pre-determined order, or on the basis of a lottery or auction. The process continues, with past winners excluded, until each member of the group obtains the pot at least once. ROSCAs in which winners are decided on the basis of an auction, have an implicit risk-sharing character as they depend on the relative intensity of participant needs (Platteau 1997). In this case, a participant who is willing to take the largest deduction (thereby paying the highest, albeit implicit, premium) wins the pot (see, e.g., Ghate 1992 for illustrations). While the main function of the other types of ROSCAs is to enable

accumulation of indivisible capital goods, they can also serve as risk-pooling arrangements if individuals receive negative shocks during the rotation cycle (Calomiris and Rajaraman 1993 as cited in Besley 1995). While there is little data on the extent of participation in ROSCAs, Levenson and Besley (1995) find, for example, that about 80 percent of the adult population in Taiwan participates in ROSCAs, reflecting the wide popularity of these arrangements.

Variations in design emerge across time and space. For example, the *ubbu-tungngul* is a traditional savings and credit arrangement found in northern Philippines. It functions somewhat like a ROSCA, but contributions vary across members and across time (Rutherford 2000). In this arrangement, all participants contribute varying amounts which are put in a common pot, which is then obtained by one member of the pool. This member then returns the contributions in turn to each participant, at regular intervals, in the same amount received from them.

However, in the process, each member receives one large lump-sum amount (the sum of the different varying amounts contributed by the  $n$  participants) and repays them, in varying small amounts, over the next  $(n-1)$  meetings. Although this arrangement seems to involve a number of unique private exchanges, they are done in public at regular group meetings. The advantage of the *ubbu-tungngul* is that the flexibility in the contribution amount over every round can increase the amount of the total pot that is collected, as individuals are not limited to contributing what they are sure to be able to afford in each and every round.

### *Microfinance*

Microfinance offers a well-known category of a semi-formal, community-based credit, savings and insurance services.<sup>8</sup> Microfinance institutions of various sorts serve over 70 million low-

income individuals worldwide, most of them women (Daley-Harriss 2003). Typically, they offer loans in small amounts (“microcredit”), although some of these institutions have also started to offer facilities for making savings in small amounts (“microsavings”) and others have set up insurance facilities that involve contributions in small amounts and payouts under pre-specified conditions (“microinsurance”).

As summarized by Armendariz de Aghion and Morduch (2004), microcredit institutions are typically characterized by joint liability: although loans are made to individuals, they can obtain a loan only if they form a group with other individuals seeking loans. If any member of the group fails to repay their loan, then all members of the group become ineligible for future loans from the bank. This creates added incentive for group members to provide each other with insurance against shocks, as part of the cost of shock-induced illiquidity that disrupts loan servicing is shouldered by other group members. As a result, microcredit arrangements can lower informational costs for lenders by taking advantage of peer selection effects (which can lower problems of adverse selection) as well as peer monitoring (which can lower problems of moral hazard). The risk-sharing inducements of microcredit arrangements are further deepened by dynamic incentives, whereby loan sizes are increased over time. As a result, default rates are lowered, provided progressive lending takes place over (infinitely) many periods. In addition, default rates are also lowered by screening out “bad types”. Finally, microcredit institutions are less likely to require traditional collateral (e.g., housing, land) that have resale value, as they rely more heavily on reputational mechanisms to reduce default. By reducing the need to place borrowers’ assets at risk of seizure in the event of default, microlending arrangements can reduce borrowing risk and associated risk rationing of credit.<sup>9</sup> Perhaps more importantly, lower or no

collateral requirements tend to improve the access of the poor to credit to tide them over in the wake of serious shocks. Khandker (2007), for example, finds that microfinance institutions enhanced flood-affected households' access to finance and thereby played a central role in enhancing households' coping ability in Bangladesh after the devastating floods of 1998.

Microfinance institutions often also offer microsavings facilities to members. The various fees associated with savings in formal financial institutions are commonly too great to make bank accounts attractive investments, inducing poor households to hold their assets in less liquid form, such as livestock, grain or jewelry (McPeak 2005). Microsavings arrangements commonly reduce or completely do away with such expenses because they enjoy far lower overhead costs. This can induce increased financial savings, with improved liquidity facilitating better risk management by depositors (Rutherford 2000). Microsavings arrangements can be voluntary or compulsory and typically involve small, frequent deposits (Armendariz de Aghion and Morduch 2004). In the former case, savings can be withdrawn at the depositor's discretion and thereby help households meet anticipated but lumpy expenses or to cope with unanticipated shocks. In the latter case, they act as a form of collateral that can be accessed in the event a borrower runs into repayment problems. Under such arrangements, compulsory savings can typically be withdrawn only with the consent of the group. This provides a form of credit insurance otherwise unavailable to many poor borrowers.

This brings us to the third facet of microfinance: microinsurance. Microinsurance is typically group-based and involves payment of premiums in small amounts (often designed to accommodate clients' irregular cash flows), in return for predetermined payouts when a specific

condition occurs. Because of the pro-poor nature of microfinance interventions, their clients are low-income individuals or households that would typically be excluded from standard insurance schemes. Although the microinsurance movement is relatively recent, it is becoming an increasingly popular way of addressing health, mortality and weather shocks (Morduch 2004).<sup>10</sup> Due to its group-based, community character, it can exploit informational advantages that are not available to private or public insurers that deal with individuals, thereby overcoming moral hazard and adverse selection problems.<sup>11</sup> In addition, microinsurance can overcome the problem of limited scale economies that affect larger insurance companies, since it typically has much lower overhead costs. It can also resolve enforcement problems common in rural low-income economies using peer monitoring, a mechanism unavailable to non-community based private insurers. It can more easily address the problem of low awareness among clients regarding insurance products via outreach efforts, thereby increasing the risk pool. However, the small size of the risk pool in community-based microinsurance schemes is one of its major shortcomings, though many of these schemes overcome this through the use of reinsurance with a larger partner (Tabor 2005). This is particularly important for community-based disaster microinsurance schemes.<sup>12</sup> These can cover sudden-onset events, such as earthquakes, floods and cyclones, as well as slow-onset events, such as droughts. Recently, index-based schemes for the latter have been developed.<sup>13</sup> These often use microfinance institutions for promoting and distributing the product to target communities (typically, farmers in low-income economies) (Cohen and McCord 2003).

#### *Accumulating savings and credit associations (ASCAs)*

In this semi-formal arrangement, a group of individuals make regular (equal or unequal)

contributions to a common fund. However, unlike a ROSCA, an ASCA is more flexible in that the entire fund is not obtained by one person at any given time. One possibility, discussed by Rutherford (2000), is of an ASCA that provides fire insurance to slum dwellers in Dhaka, Bangladesh. In the case of a fire (a highly likely event in a crowded slum), each contributor gets the total of all the contributions that he or she made before the contingency arose. The ASCA fund can also be used in a variety of other ways, including lending (with or without interest) and can end at a pre-determined time (similar to a ROSCA) or not. In the latter case, they allow participants to accumulate savings over the long term on which they can draw loans. Relative to ROSCAs, ASCAs are less transparent as they require greater accounting and fund management skills.

### *Cereal banks*

The primary function of cereal banks, a semi-formal institution established in recent decades in different parts of Africa (especially in the Sahel), is to provide an in-kind savings facility. These cereal banks function as village cooperatives that buy, store and sell food grains. In the quintessential model, villagers receive a start-up grant or loan from an external agency (usually an NGO) to purchase grains after the harvest, when prices are low (CRS 1998). During the lean season when prices are high, the cereal bank sells its stock locally, at a price above the original purchase price and sometimes below the prevailing market price, using the revenues generated as a revolving fund to refinance its operation in the following year. Apart from providing the start-up grant or loan, the external agency typically also finances the construction of a storage facility. The cereal bank sometimes also assists producers to market their grains in urban markets where consumer prices are higher.

The main objective of cereal banks appears to be commodity price stabilization via storage and the provision of marketing services. Barrett (1997) finds some evidence that cereals banks in Madagascar did indeed reduce intra-annual price volatility, an uncommon form of community-based insurance against covariate risk, and one that benefits non-participants (e.g., food buyers who do not sell grain to the cereals bank) as well as participants. Cereals banks largely redress geographic variation in price risk that tends to disfavor infrastructure-poor rural areas (Barrett 1996). But when they are well-managed, cereals banks can also increase real incomes and reduce the risk of food insecurity by smoothing income seasonally, providing lower prices for net buyers in the hungry season and higher prices for net sellers in the post-harvest period, and by reducing post-harvest losses and creating local emergency buffer stocks.

### *Grain banks*

The main function of grain banks, a semi-formal arrangement established in recent years in various parts of tribal India, is to enable households to save grains in order to smooth consumption over the agricultural cycle. Interviews with grain bank participants in tribal Orissa reveal that members experience difficulty in saving grains by themselves (Bhattamishra 2008). This can perhaps be attributed to commitment problems (which have been shown to impact savings abilities, in empirical studies from both Africa and Asia).<sup>14</sup>

Grain banks are a descendent of the traditional system of grain *golas* in tribal villages, where surplus grains were collected post-harvest into a common pool which was controlled by the village head and from which disbursements were largely discretionary, similar to the

Zimbabwean institution of the *zunde ramambo* (described later). The current grain bank is initiated by a one-time grant from an external agency—an NGO or the government—with or without the requirement of contributions by participating (member) households. Once established, the grain bank is managed by member households themselves. The grain bank provides loans in the form of grain to member households at times of food scarcity, typically during the lean season. These loans are returned with interest (also in the form of grain) after the following harvest season. Thus, grain banks help member households to cope with anticipated seasonal food shortages and price fluctuations as well as with risk proper. To some extent, they also provide credit as insurance, as households that are not able to return loans after facing negative shocks find their repayment periods extended.

Using household survey data from tribal India, Bhattamishra (2008) finds that participation in grain banks considerably reduces the incidence of borrowing from local moneylenders, who typically lend at unfavorable terms. Thus, grain banks appear to be a welcome alternative for households that largely borrow for the purpose of consumption smoothing over the agricultural cycle. However, she also finds that these institutions have a high failure rate and that village characteristics appear to matter for grain bank survival, suggesting the importance of program placement (i.e., site characteristics).

### *Credit as insurance*

Informal credit arrangements commonly incorporate some insurance element, enhancing the risk management function of the (informal) contract. There are two broad types of credit-based quasi-insurance. The first adjusts the terms of existing loans according to shocks that happen to

either borrower or lender. The best known example of this has been studied by Udry (1990, 1993), who finds evidence of informal, state-contingent loans in rural northern Nigeria that provide insurance against a wide variety of idiosyncratic production and consumption shocks (such as flooding, wind damage, insect infestation as well as illness, rain damage to houses). In this arrangement, loans are state-contingent, that is, the borrower pays a lower interest rate if he faces a negative shock after the loan was agreed. Similarly, the lender receives a higher interest rate if he faces a negative shock after the loan was agreed. Repayment dates are also flexible and state-contingent. Due to the high incidence of idiosyncratic shocks faced by households in this setting, the quasi-insurance component of informal credit arrangements effectively pools risks over time as both parties are likely to find themselves affected by negative shocks (albeit from different sources) over successive periods.

A second way in which credit can build in insurance is through quasi-options. Informal arrangements can create de facto call options on lending, rather like a line of credit that one can tap when needed following some shock. Platteau and Abraham (1987) find evidence of a traditional arrangement of reciprocal subsistence credit as hunger insurance in small fishing communities in south Kerala, India. In this arrangement, on any given day, fishermen with income in excess of subsistence income provide short-term, interest-free, unsecured consumption loans to a fellow fisherman whose income is below subsistence. By accepting a loan, the debtor makes an implicit commitment that when the creditor falls into distress, the debtor will provide him with a subsistence loan (regardless of whether he has paid back the loan or not). The repayment date is flexible and state-contingent, i.e., it allows for shocks to both the debtor and creditor. Due to the frequent realization of risky events, risks are pooled over time.

### 3.3 Transfers

A well-developed anthropological literature documents the existence of reciprocal gift-giving, which can help in risk management if “gifts” are sensitive to shocks or to the observed income or expenditure level of individuals. These observations have been extensively empirically corroborated in the economics literature. For example, Rosenzweig (1988) finds that the net transfers received by a household increase when income falls relative to its average value, although this typically only helps households smooth consumption by a small amount. Lucas and Stark (1985) provide evidence from rural Botswana that the amount of remittances is responsive to the severity of droughts and ownership of drought-sensitive assets, such as cattle. Deininger et al. (2003) document the dramatic increase in receiving foster children by Ugandan households in the wake of deaths of biological parents due to the HIV/AIDS epidemic. In general, private transfers of cash, food and clothing are seen frequently across the developing world.<sup>15</sup> Empirical studies from different developing countries have shown that a large proportion of households give or receive transfers.<sup>16</sup> A recent analysis by Cox et al. (2006), using comparable data from 11 lower-middle and low-income developing countries in Eastern Europe, Asia and Latin and Central America, finds that in 8 of these countries, 30 to 50 percent of households are involved in private transfers, either as donors or recipients. They also find that transfers constitute a significant share of total household incomes.

Transfers as a mechanism specifically for hunger insurance include many examples of traditional institutions in the developing world. Two such examples, which have been adapted by the state to address current needs, include the *indlunkhulu* in Swaziland and the *zunde ramambo* in

Zimbabwe (Musi 2007; Ismail et al. 2003). In both these cases, output from common property resources produced using community labor is redistributed to vulnerable and needy individuals in the community. These two institutions have recently been adapted for the provision of state-assisted social protection in the context of the HIV/AIDS epidemic in Africa. The ongoing Indlunkhulu Programme builds on the traditional practice of the *indlunkhulu* in order to provide food to the large population of orphaned and vulnerable children in Swaziland. In this program, conducted under the aegis of the Ministry of Agriculture and the National Emergency Response Council on HIV and AIDS, chiefs and their communities are provided with seeds, fertilizers, pesticides, tractors and technical assistance in order to produce local crop varieties on the chief's lands. In some communities, storage facilities have also been provided. Labor is provided by the community in order to demonstrate their allegiance to the chief, as per the tradition of the *indlunkhulu*. The output is then distributed to orphaned and vulnerable children, identified as program beneficiaries by a committee of local stakeholders.

The *zunde ramambo* (literally, "the chief's granary") was a traditional arrangement whereby the leader designated common land for growing food crops to protect against food insecurity within the community (Kaseke 2006). Labor was provided on a voluntary basis by members of the community, and the output from the common land was distributed to dependent and needy individuals (as well as to the chief's soldiers who protected the community). Under a new program based on the tradition of the *zunde ramambo*, the government provides technical and financial assistance to communities. Traditional leaders are entrusted with identifying common land for the program, and the community provides voluntary labor assistance for cultivating the land. Produce from the land is then distributed to orphans and vulnerable children.

### **3.4 Insurance for major life-events**

Because events such as death/funeral expenses are commonly uncorrelated across participating households, community-based institutions that provide insurance for major life-events are commonly observed. These institutions insure against events that occur with certainty or near-certainty, but with uncertainty regarding the timing of the event. If timing were certain, straight savings products would suffice for managing the lumpy expenses associated with expensive ceremonies such as circumcisions, funerals and weddings. But because the timing of such events is difficult to foresee and because events may occur before adequate savings have been arranged (and credit constraints may bind), an insurance element commonly becomes necessary to help poor households manage the event.

#### *Funeral/burial societies*

Traditional funeral/burial societies are found in different parts of Africa and Asia (Platteau 1997) and provide mutual aid when there is a death in the community. They arose largely in response to the substantial expenditures associated with funerals in developing countries. For example, Roth (2001) finds that funerals in the poorest province of South Africa cost about fifteen times the monthly income of households. In western Kenya, the majority of households find funeral expenses to be the cause of falling into poverty or remaining poor (Kristjanson et al. 2004).

Semi-formal burial societies in Africa and Asia, described, for example, in Dercon et al. (2006) and Rutherford (2000), have evolved based on their traditional precursors. They are typically characterized by a well-defined membership base and membership rules. Membership is

restricted to individuals living in the same geographical area or belonging to the same religion. As a result, individuals observe fellow members closely and monitor their behavior, mitigating problems of asymmetric information (e.g., spending payouts on non-funeral expenses). Moral hazard and adverse selection are not as much of a problem in the case of funeral insurance as with other forms of insurance as individuals rarely induce death because they have funeral insurance. In semi-formal burial societies, monetary or in-kind contributions are typically made on a regular basis or when a death occurs. Payments are made for funeral-related expenses incurred when a member or a well-defined set of relatives of the member dies, typically in an amount conditional on the relationship of the deceased to the member.

#### *Health insurance associations*

A number of semi-formal community-based health financing schemes have been initiated in recent years in Africa, Asia and Latin America (Tabor 2005; Preker and Carrin 2004; Jutting 2003; Preker et al. 2002; Dror and Jacquier 1999). These are variously known as micro-insurance programs, community health funds, mutual health organizations, rural health insurance, revolving drugs funds, and community involvement in user-fee management. Typically, these community-based health insurance initiatives are established in conjunction with health care providers. They are usually characterized by voluntary membership (which may increase adverse selection problems) and have strong community involvement in pooling, revenue collection, resource allocation, and often, service provision, which can ameliorate moral hazard and adverse selection problems. Members make regular ex ante contributions and receive a payout in the event that illness occurs. Among other things, community-based health insurance associations vary on the basis of the extent of coverage (high frequency, low cost events; or low

frequency, high cost events), whether coverage is on a “first-dollar” basis or involves deductibles, and the degree of risk-pooling.

In a review of community-financed health initiatives, Preker et al. (2002) find micro-level evidence that community financing improves access by rural and informal sector workers to much-needed health care and provides them with some financial protection against the cost of illness. In addition they also find macro-level evidence that risk-sharing in health financing improves all five World Health Organization (WHO) indicators of the performance of a country’s health system (including the level and distribution of health, financial fairness and responsiveness indicators).<sup>17</sup> The authors find that community-financed health initiatives frequently suffer from low resource mobilization, small size of the risk pool, poor management capacity in rural and low-income areas. Perhaps most critically from the viewpoint of risk management by the poor, they also find evidence that the poorest are often excluded from these schemes in the absence of some kind of subsidy.

### **3.5 Common property resource rights**

As described by Platteau (1991), common property natural resources (such as lands, forests, wildlife, fisheries, water) may incorporate elements of quasi-insurance by allowing for state-contingent access. For example, in the arid and semi-arid regions of sub-Saharan Africa, pastoralists regard transhumance, involving common property access to large tracts of rangeland, as a valuable strategy for dealing with rainfall variability (van den Brink et al. 1995). Goodhue and McCarthy (1999) describe how flexible access to common grazing and watering resources provides pastoralists with an otherwise-unavailable insurance mechanism. Under a system of

“fuzzy” property rights, clans can access different pastures at different times, through alliances they make with other clans. These alliances provide mutual insurance whereby clans mutually adjust their use of the available rangelands on the basis of relative rainfall shocks to their own pastures and those of affiliated clans.<sup>18</sup>

Common property resources that involve access on a rotating basis also have a quasi-insurance character. In these cases, community members have equal likelihood (in expectation) of receiving fertile and infertile tracts of cultivable land, in the case of agricultural societies, or equal amounts in expected catches, in the case of fishing communities (Platteau 1991). For example, under the rules of a traditional land tenure system (called *mirasi*) in Tamil Nadu in south India, rights to different parts of cultivable land (differing in fertility levels) comprising the village commons were re-assigned periodically on the basis of a lottery (Haggis et al. 1986, cited in Platteau 1991). Similarly, in a fishing community in Sri Lanka, access to the biggest catches, which depends on both the time of the day and the location in which nets are cast, is allotted on a strict schedule, such that over time, the expected incomes of all fisherman is equalized (Alexander 1977). These traditional rules can help households to smooth income over time, thereby reducing risk.

#### **4. Community-based risk management: Strengths and limitations**

Relative to public or private risk-management schemes that do not involve communities in program identification and administration, CBRMAs have a number of advantages. First, there exists a substantial body of evidence that community participation often (albeit not always) results in improved targeting outcomes (Coady et al. 2004, Conning and Kevane 2002). Not

surprisingly, relative to project managers from outside the community, communities can better identify the most needy and vulnerable among them. Alderman (2002) finds that the social assistance system in Albania, which allows for community discretion in determining distribution, is better targeted to the poor relative to safety net programs in other countries which do not allow for community involvement. He also finds that the poverty targeting in the social system in Albania achieves better outcomes that could be expected based on proxy indicators of targeting using household survey data. He concludes that community-level discretion in determining distribution permits the use of local information that is unlikely to be obtained from survey instruments. In a cross-country survey of safety net programs across many developing countries, Subbarao et al. (1997) find that those that involve beneficiary communities, local groups and local NGOs achieve better targeting outcomes. Thus, there is growing evidence that communities enjoy major informational advantages in identifying who needs assistance and when, thus reducing the costs of verifying the need for indemnity payments and the risks of either false negatives or false positives in the decision as to whether to provide transfers/claims payments.

In addition to the targeting advantages of community-based programs, they also typically bear lower information and enforcement costs. Due to the frequent, repeated interactions among members linked through kinship, a village, ethnic group, profession, etc., and the general lack of privacy that characterizes peasant economies and densely-populated urban communities in developing countries, the effort and circumstances of a member of the community can typically be observed relatively easily, if perhaps imperfectly. This reduces problems of asymmetric information (i.e., moral hazard and adverse selection) which beset formal credit and insurance

markets.

Moreover, due to the close proximity of members within a community, the cost of monitoring a fellow member is likely to be low and social sanctions are commonly available as relatively low-cost enforcement mechanisms. In addition, given that members of a community typically interact with the same individuals on a repeated basis over long periods of time, unwritten or informal contracts can be self-enforcing as the short-term benefits from renegeing are often much smaller than the long-term costs (Posner 1980; Coate and Ravallion 1993).<sup>19</sup> Thus, even in the absence of formal legal courts, CBRMAs can ameliorate problems of moral hazard and contract enforcement that plague impersonal credit and insurance contracts (Platteau 2000).

CBRMAs are not a panacea for uninsured risk, however. Several distinct problems arise. First, the interpersonal relations at the heart of community-based interactions also make these arrangements vulnerable to manipulation by individuals in influential or powerful positions. For example, as discussed by Mansuri and Rao (2004) and Conning and Kevane (2002), these arrangements are often vulnerable to capture by local elites. Ensminger (2007) provides evidence that community-driven development projects may also be vulnerable to manipulation by non-traditional leaders. Especially in isolated rural communities where effective checks and balances are absent, needy individuals (often younger and somewhat educated) familiar with the workings of district-level administrative officials and operations may be able to manipulate the process by which projects are awarded, beneficiaries identified and benefits disbursed. Thus, only communities with reasonably egalitarian preferences and relatively transparent decision-making systems will generally be more effective than outside agencies in targeting resources so

as to benefit poor households within communities.

Secondly, there may be significant holes in the social safety net. Several empirical studies have indeed found that certain subpopulations—commonly including the poorest households or individuals—are often excluded from informal insurance networks and enjoy limited, if any, risk pooling with others in their community. For example, Santos and Barrett (2006) find that asset transfers within a community of poor pastoralists in southern Ethiopia respond to recipients' losses, but only for those whose herd size does not fall below a certain asset threshold. They show that the poorest herders are both most likely to be “socially invisible” to their neighbors, and thus excluded from insurance networks, and that they are least likely to receive transfers conditional on belonging to insurance networks. De Weerd (2005) also finds that the poor in rural Tanzania have less dense social networks used for risk-management purposes. Dercon and Krishnan (2000) likewise find that particular people—especially women and southerners—enjoy less informal insurance than do others in rural Ethiopia. Morduch (2005) provides empirical evidence from south India that a system of reciprocal transfers is more effective for higher-caste households. Jutting (2003) finds similar evidence from semi-formal institutions in Senegal; the poorest members of the community cannot participate in mutual aid health institutions because they are not able to afford to make contributory payments. Hogset (2005) likewise finds that poorer households in the rural Kenyan highlands are systematically less likely to receive transfers from other households than are better-off neighbors.

The key point from these various studies is that group formation—for risk management or any other purpose—is voluntary and endogenous, and therefore potentially excludes subpopulations

of particular interest to policymakers, such as women, religious minorities, the poorest, etc.

Access to groups is not necessarily equal and is not readily imposed exogenously. As discussed by Santos and Barrett (2006), exclusion of the poorest from insurance groups may be a rational response for non-poor agents in the presence of poverty traps, as those trapped in a low-level equilibrium are far less likely to be able to reciprocate in the future and thus become undesirable insurance partners.<sup>20</sup> In addition to exclusion of the poorest, endogenous group formation can also lead to exclusion along the lines of ethnicity, occupation, gender, geographical proximity or other characteristics. For example, Goldstein et al. (2005) find that gender, lineage and social interactions, as well as wealth, matter at the individual level for inclusion in informal social networks among rural households in eastern Ghana. Vanderpuye-Orgle and Barrett (forthcoming) similarly find patterns of social invisibility and exclusion in rural Ghana.

Additionally, on the one hand, decisions to exclude insurance partners on the basis of characteristics such as lineage, occupation and geographical proximity can be rationalized on the basis of keeping information and enforcement costs low. However, on the other hand, more homogenous groups are also less likely to be able to withstand large covariate shocks, as their incomes are relatively likely to co-vary. For example, Grimard (1997) discusses the tension in the selection of insurance partners made by households in Côte d'Ivoire. Households living in close proximity can be easily monitored but are vulnerable to correlated risk, while households living far away from each other are difficult to monitor but do not suffer from correlated risk. This is also discussed by Platteau (1991).

This brings us to the other major limitation of local, community-based arrangements: the general

inability of CBRMAs to manage covariate risk. For example, Reardon et al. (1988) find that after the 1984 drought in the Sahel, transfers accounted for only 3 percent of losses suffered by the poorest households. Pan (2007) finds that while local inter-household transfers offer some effective insurance against idiosyncratic shocks in rural Ethiopia, they offer no insurance against covariate shocks for the obvious reason that all community members find themselves in the same boat with respect to the covariate component of realized income. CBRMAs thus commonly fail in the wake of natural or manmade disasters, during which poor households have limited resources for self-insurance and often cannot avail themselves of local risk sharing arrangements; consequently they must reduce consumption drastically (Morduch 2004). For example, due to the widespread and severe financial crisis in Indonesia in the late 1990s, consumption poverty increased substantially and households reduced investments in health and education (Thomas et al. 2004). The severity of a shock also determines the efficacy of informal risk management arrangements, as risk sharing may break down in the face of more severe shocks. For example, Gertler and Gruber (1997) find that informal arrangements in Indonesia provide greater levels of insurance for common health shocks than for serious health shocks. At its most extreme, the failure of CBRMAs in the face of major covariate shocks is the most common etiology of famine (Ó Gráda 2007).

## **5. Summary and policy implications**

Poor populations face considerable uninsured risk. Especially where there exists reason to believe that poverty traps may exist and compound the threat posed by adverse shocks, there is substantial return to reducing risk exposure through improved risk reduction and transfer strategies. Communities worldwide commonly take these tasks upon themselves, banding

together to reduce risk exposure and provide informal mutual insurance within the group. Such behaviors merit reinforcement, especially given the apparent relative importance of household- or individual-specific, idiosyncratic risk, which makes local risk management feasible, even desirable.

Relative to market-based insurance or state-run programs, community-based risk management arrangements (CBRMAs) have important informational advantages. Since rural communities typically have intimate knowledge regarding the circumstances and needs of member households, they are often better able to identify the most needy and vulnerable among them, which can improve targeting outcomes. In addition, due to their close physical proximity and frequent, repeated interactions, communities can use relatively low-cost methods of contract enforcement, such as peer monitoring and the threat of social sanctions. These advantages enable the viable delivery of financial services, such as microinsurance, microcredit and microsavings, on terms accessible to poor households, which is often not the case for a typical commercial provider.

These cost and information advantages can, however, be easily offset by objectives, such as an ethos of equal transfers to all that militates against targeting,<sup>21</sup> and intra-community power relations that may cut against outsiders' objectives to reduce or transfer risk face by the poor. Further, population increase, greater economic and geographic mobility, and increased exposure to covariate shocks associated with natural disasters, war and macroeconomic crisis place growing strains on CBRMAs. In this context, social protection policy can bolster existing CBRMAs by investing in services that have a public good character, and are therefore less

susceptible to capture by local elites, and also help them to tap into (local and global) reinsurance markets, which would enable them to cope better with covariate shocks.

Moreover, the interpersonal relations underlying CBRMAs can also lead to the exclusion of marginalized subpopulations that are often of particular interest to policymakers, such as women, the poorest, etc., due to the endogenous nature of group formation. Particularly in the presence of poverty traps, the decision to exclude the poorest from insurance groups may be a rational response for non-poor agents. Where natural barriers to entry into CBRMAs exist, social protection policy can clearly be deployed to help households overcome them. For example, in the case of many semi-formal risk management institutions, such as a health insurance association to which a household needs to make an initial contribution in order to become a member, the poorest households often cannot afford the ex ante contributions required to become members. Social protection programs can subsidize the cost of participation for poorer households, therefore potentially enabling them to become members and establishing the viability of their membership until such time as they can reasonably be expected to participate independently. One must of course remain aware of the potential pitfalls of such a program as they may lead to moral hazard problems, as households may have an incentive to engage in risky behavior if they do not internalize the costs of insurance. In addition, poor targeting can also result in leakage of benefits to unintended recipients.

The existence of risk pooling in the absence of external intervention, however, should also serve as caution to donors and policymakers against disrupting existing social insurance arrangements. A literature on the possible crowding-out effects of new, exogenous transfers emphasizes these

prospective problems (Cox and Jimenez 1995, 1998; Cox et al. 2004). The extent to which these problems are prevalent, however, remains an open question. For example, Lentz and Barrett (2006) find no evidence of crowding out of private transfers by food aid, whether allocated by communities or external agencies, in northern Kenya and southern Ethiopia.

Moreover, as discussed by Dercon (2005), public assistance that improves a household's position outside group-based informal risk-sharing arrangements can change the nature of informal networks. External assistance can reduce households' reliance on and need for each other, thereby adversely affecting the ability of informal networks to act as a safety net. This can not only crowd out pre-existing community-based risk management, as discussed above, it can also have broader disruptive effects on information flow, cooperative decision-making in production, marketing and community resource management processes, etc. For example, in a randomized evaluation of external assistance to women's groups in western Kenya, Gugerty and Kremer (2006) find that assistance changed the characteristics of groups that had originally made them attractive to donors. Most troubling, group leadership was systematically taken over by younger, more educated and better-off women, while the most socially marginalized original members' exit rates increased by two-thirds and the rate of drop out from groups due to conflict doubled. Similarly, Munyao and Barrett (2007) document how efforts to devolve authority over land management to local communities in northern Kenya diminished the role of traditional tribal councils and led to the displacement of Gabra migratory herders who previously relied on lands for state-contingent grazing. Group and authority structures can change quickly in response to outside interventions, whether at household or community levels.

The key is whether cleavages can be identified and directly addressed through the design of social protection programs. For example, Chantarat and Barrett (2008) show how transfers to poor households that are otherwise endogenously excluded from social networks can induce new social relations that not only benefit those who benefit directly from transfers but also nonparticipants with whom participants then endogenously link. Where CBRMAs such as informal insurance networks systematically exclude the poor, for example, social protection programs that benefit the otherwise-excluded poor or that reduce the costs of social interaction may enable people to come together more easily; they may thus have crowding-in effects, rather than the crowding-out effects on which most attention has focused to date.

While CBRMAs can potentially offer a useful basis for social protection programs, there exist no careful evaluations of the efficacy of or the rate of return to these arrangements and the extent to which they address problems of informational asymmetries and lower enforcement costs, either in absolute terms or relative to non-community-based models. This should serve as caution to donors and policymakers planning to invest in community-based risk-management programs. Empirical studies that fill this gap in knowledge will play an important role in informing future policy decisions whether to bolster CBRMAs or allocate scarce resources elsewhere in efforts to address the pernicious effects of risk.

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<sup>1</sup> We use the term "risk" to denote an uncertain outcome and the term "shock" to mean an adverse realization of a stochastic variable. Risk is thus an ex ante concept and shock an ex post one.

<sup>2</sup> See Alderman and Paxson (1994), Besley (1995), Townsend (1995), Morduch (1995, 1999a), Bardhan and Udry (1999) and Dercon (2005) for excellent reviews.

<sup>3</sup> We do not use the word "community" to refer to a culturally and politically cohesive social system comprised of homogenous agents. For a discussion of the (often incorrect) use of the word "community" in the development literature, see Mansuri and Rao (2004). We emphasize coordination so as to rule out uncoordinated insurance mechanisms that exist within communities, e.g., the de facto income insurance local markets provide against yield shocks through uncoordinated price adjustment mechanisms.

<sup>4</sup> Wacira (2007) et al., however, find evidence from Kenya that community-based provision of insecticide-treated nets is not as effective in terms of coverage and beneficiary satisfaction relative to an employer-based approach, because the latter provided credit for purchase of nets and treatment kits as well as informational outreach.

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<sup>5</sup> Zwane and Kremer (2007) find, however, that community-based rural water infrastructure that are low-cost alternatives to piped water (such as wells) are not effective in reducing diarrheal disease.

<sup>6</sup> For excellent reviews of the microfinance movement as well as the stylized features of microfinance institutions, see Morduch (1999b) or Armendariz and Morduch (2005) on the economics of microfinance, Robinson (2001) for an overview of the microfinance movement in developing countries, and Zeller and Meyer (2002) for limitations of the microfinance movement and how to make it sustainable and more effective. For a general overview of formal and informal financial services used by the poor in developing countries, see Rutherford (2000).

<sup>7</sup> ROSCAs are found across the world under a wide variety of names, for example, *chit* funds in India, *hui* in Taiwan, *kye* in Korea, *tontine* or *pari* in West Africa. For a detailed discussion of the stylized features of ROSCAs including how the institution is sustained, see Besley et al. (1993).

<sup>8</sup> See Morduch (1999b) for an excellent overview of the microfinance movement.

<sup>9</sup> See Boucher et al. (2007) or Boucher and Guirking (2007) for theoretical discussion and empirical evidence, respectively, on risk rationing in credit contracts in rural Latin America.

<sup>10</sup> For examples of specific microinsurance programs, see Jutting (2003) on a healthcare scheme in Senegal, McCord et al (2002) for an integrated scheme in India, and McCord (2001) for healthcare schemes from Uganda, Tanzania, India and Cambodia.

<sup>11</sup> While life insurance is unlikely to be affected by major moral hazard or adverse selection problems, health insurance is likely to be affected by both, as those with insurance may engage in more risky health behavior and those with poorer health prospects will find insurance a more attractive investment, leading to only “bad types” joining. While moral hazard problems can be mitigated by peer monitoring, adverse selection problems are often addressed in a variety of ways, such as requiring a minimum pool size before insurance coverage comes into effect (Tabor 2005).

<sup>12</sup> In addition to being community-based, weather microinsurance schemes can also include public and private insurers (Cohen and McCord 2003).

<sup>13</sup> These have been found to be more viable than traditional crop insurance schemes, which are beset by problems of moral hazard, adverse selection and high transaction costs. In the case of index-based schemes, since payouts are not dependent on individual losses but rather on a physical trigger (such as rainfall below a threshold level), there are no informational asymmetries. See Alderman and Haque (2007) or Barnett et al. (forthcoming) for useful summaries.

<sup>14</sup> See, e.g., Rutherford (1999), Gugerty (2001) and Ashraf et al. (2006).

<sup>15</sup> Note that transfers may not necessarily be for risk-management purposes. There are models explaining interhousehold transfers as based on altruism (for a review, see Laitner 1997), ex ante precautionary savings (McPeak 2006) or side payments to manipulate recipients’ behavior (Huysentruyt et al. forthcoming). It is also possible that different motives posited in competing alternatives, such as altruism versus exchange, may co-exist, as theorized in Cox et al (2004), although it may be difficult to disentangle the motives empirically.

<sup>16</sup> See, for example, Cox and Jimenez (1995) and Cox et al. (2004) for evidence from the Philippines, Cox and Jimenez (1998) for evidence from Colombia, and Ravallion and Dearden (1988) for evidence from Java.

<sup>17</sup> The World Health Organization’s assessment system are based on five indicators: overall level of population health; health inequalities (or disparities) within the population; overall level of health system responsiveness (a combination of patient satisfaction and how well the system acts); distribution of responsiveness within the population (how well people of varying economic status find that they are served by the health system); and the distribution of the health system’s financial burden within the population (who pays the costs) (WHO 2000).

<sup>18</sup> While traditional common property arrangements have been observed to provide insurance against adverse shocks, the relevance of these institutions for social protection interventions is increasingly limited, given the observed evolution of land rights from open access to private property rights, probably due to increasing population pressures, market integration and commercialization (Baland and Platteau 1998).

<sup>19</sup> This does not deny the possible role of a “moral economy” in tribal or peasant societies which define solidarity as a moral obligation and subsistence as a right. In fact, as discussed by Fafchamps (1992), social norms of mutual assistance can serve to increase the costs of renegeing on (unwritten) contracts, thereby lowering enforcement costs, making informal insurance and moral economy explanations mutually reinforcing, not necessarily strict substitute explanations. On a related note, Platteau (1987) argues that traditional mutual insurance systems are based on “balanced reciprocity” rather than on the “conditional reciprocity” that characterizes modern insurance systems, implying that members of these societies are not necessarily always motivated by altruistic reasons.

<sup>20</sup> A related limitation of community-based arrangements, as summarized in Morduch (1999a), is their inability to withstand different growth rates in incomes and savings for community members. In this case, households that

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become relatively wealthier over time will have an incentive to opt out, thereby reducing the risk pool, as found in Platteau and Abraham's (1987) study of fishing communities in south India.

<sup>21</sup>Lentz and Barrett (2005) find that community-based targeting performs worse among east African pastoralists than does self-targeting food-for-work or traditional means targeting by project managers, an effect they attribute to an egalitarian ethos as northern Kenyan communities routinely insisted on equal food aid rations for all residents irrespective of their relative need or experience of shocks.