

# COMMUNITY-BASED RISK MANAGEMENT ARRANGEMENTS:

## A REVIEW

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## Summary

*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.*

**Keywords:** community institutions, risk management, developing countries.

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## 1. INTRODUCTION

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 effects of risk and shocks on poor households, and individual, household and community responses to risk.<sup>1</sup> If risk is salient to understanding poverty dynamics, then an understanding of the strategies the poor employ to cope with shocks is also important for development policy and practice.

Although many previous 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 sources in order to provide as extensive a coverage of existing arrangements as possible, including arrangements which have not yet received much scrutiny from researchers, yet are commonly instituted by states or nongovernmental organizations (NGOs). Given the increasing importance of community-based and community-driven development funding (Mansuri & Rao, 2004), as well as the growing recognition of the critical role of social protection policy in risk management and poverty reduction (Barrett, Carter & Ikegami, 2008), we expect that this review will be of immediate interest to policymakers, practitioners and researchers.

Community-based risk management arrangements (CBRMAs) have the potential to fill the gap between household-level and national-level strategies for risk management. These arrangements have the ability to help households cope with idiosyncratic shocks but are likely to

break down in the face of covariate shocks (unless they find ways to transfer risk outside the community). However, there is always some idiosyncratic component in shocks, even largely covariate ones, because of differences among households in their exposure and capacity to respond to shocks. In addition, a growing body of empirical evidence indicates that idiosyncratic risk dominates covariate risk in rural Africa and Asia (Deaton, 1997; Kazianga & Udry, 2006; Lybbert, Barrett, Desta, & Coppock, 2004; Morduch, 2006; Townsend, 1995). This suggests the potential for CBRMAs to address a diverse range of shocks. Given these reasons, a review of existing CBRMAs can facilitate a better understanding of their limitations and advantages 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 2, we define the main features of CBRMAs. In section 3, we catalog a range of CBRMAs commonly observed across the developing world. In section 4, we discuss the strengths and shortcomings of these arrangements. In section 5, we discuss the policy implications for social protection programs which aim to support CBRMAs. Finally, in section 6, we provide some concluding remarks.

## 2. COMMUNITY-BASED RISK MANAGEMENT: STYLIZED FEATURES

We adopt a broad definition of CBRMAs to include all coordinated strategies used and managed by social groupings of individuals for the purpose of protection against the adverse effects of different types of risk. These include mutual insurance groups of various sorts which have been extensively documented in previous literature, but also groups that provide facilities for savings and credit and provision of public goods, among other things. 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. 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 typically executed by members of the groups themselves.

Community-based arrangements are 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. Contracts, generally 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 as well as repeated interactions over time between the same individuals.

In this review, we discuss CBRMAs which are homegrown, completely decentralized, and typically sustained by a system of unwritten rules,<sup>2</sup> as well as CBRMAs that are initiated by an external agent such as a donor, government or NGO and often governed by a system of codified rules (but like the homegrown initiatives, usually managed by members of the community themselves). We refer to the former as “homegrown” CBRMAs and to the latter as “externally-induced” CBRMAs.

There are at least three important differences between homegrown and externally-induced CBRMAs. First, unlike the latter, homegrown arrangements are characterized by very simple transactions and have little or no requirement for accounting and financial management skills. Since the administrative, management and technical requirements of externally-induced arrangements are more onerous, their scalability is inherently limited by the capacity of individuals to track transactions informally. Second, as discussed by Platteau (1997), in homegrown arrangements, transfers to beneficiary households typically take place *ex post* (i.e.,

after the realization of a shock). In externally-induced 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). Third, unlike externally-induced arrangements, premiums and coverage are not well-defined in homegrown arrangements and often state-contingent and implicit, embedded in the cost of establishing and maintaining social ties.

In spite of these differences, we choose not to distinguish CBRMAs on the basis of whether they are indigenous or externally-driven, since they share a more important feature which we define as key to CBRMAs, namely, the use of preexisting interpersonal relations for risk management purposes. In addition, due to the evolving nature of these groups in response to increases in market penetration and the monetization of the economy, many externally-induced institutions are based on traditional, homegrown arrangements.

We instead categorize CBRMAs on the basis of the primary function they are designed to serve, including the provision of mutual insurance, insurance for major life events, savings and credit facilities, social assistance facilities, and public goods and services. This taxonomy is by no means exhaustive. Rather, it is merely suggestive of the different types of risk sharing arrangements found in low-income communities. In fact, the diversity of CBRMAs across the developing world is immense, and any attempt to categorize them in a systematic fashion necessarily involves a loss of descriptive richness. In using our taxonomy, we recognize that arrangements for the provision of informal mutual insurance, typically enforced via social mechanisms, can be distinguished from CBRMAs, which tend to be more institutionalized and typically involve community-based groups with explicit, often codified, rules. Consequently, in the next section, we describe these informal, typically homegrown, arrangements separately before we proceed to describe more codified, group-based arrangements (which may be either

homegrown or externally-induced).

### 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 the primary function which they are designed to serve.

#### (a) Informal mutual insurance

A well-developed literature in anthropology, political science and sociology 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 (see, for example, Colson, 1962; Popkin, 1979). These observations have been extensively empirically corroborated in the economics literature. For example, Rosenzweig (1988) found that the net transfers received by a household increase when income falls relative to its average value. Lucas and Stark (1985) provided 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, Garcia, and Subbarao (2003) documented the dramatic increase in receiving foster children by Ugandan households in the wake of deaths of biological parents due to the HIV/AIDS epidemic.

Mutual insurance is also incorporated into many informal credit arrangements, 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 which happen to either borrower or lender. In one of the best known examples of this, Udry (1990) found evidence of informal, state-contingent loans in rural Nigeria that provide insurance against a wide variety of idiosyncratic production and consumption shocks (such as flooding, wind or rain damage, insect infestation, illness). In this arrangement, loans are state-contingent, that is, the borrower pays a lower interest rate or over an extended repayment period if faced by a negative

shock after the loan was agreed. Similarly, the lender receives a higher interest rate or earlier repayment if faced by a negative shock after the loan was agreed. 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) after entering into the lending agreement.

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) found evidence of a traditional arrangement of reciprocal subsistence credit as hunger insurance in small fishing communities in 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 borrower makes an implicit commitment that when the lender falls into distress, the borrower 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 borrower and lender). Due to the frequent realization of risky events, risks are pooled over time.

Mutual insurance is also incorporated into traditional systems of rights to common property resources. For example, Goodhue and McCarthy (1999) described 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 available rangelands on the basis of

relative rainfall shocks to their own pastures and those of affiliated clans. Common property resources which involve access on a rotating basis also have a quasi-insurance character. In these cases, community members have equal likelihood 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).

#### (b) Insurance for major life-events

Because events such as death are commonly uncorrelated across participating households, community-based institutions which provide insurance for expenses associated with 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 the timing was certain, simple savings products would suffice for managing the lumpy expenses associated with these events. 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.

##### (i) 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. Burial societies in Africa and Asia, described, for example, in Dercon, De Weerd, Bold, and Pankhurst (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. Moral hazard and adverse selection are not as significant a problem in the case of funeral insurance as with other forms of insurance as individuals are unlikely to induce death because they have funeral insurance. 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, with the amount typically being a function of the relationship of the deceased to the member.

(ii) Health insurance associations

A number of community-based health financing schemes have been initiated in recent years in Africa, Asia and Latin America (Tabor, 2005; Preker & Carrin, 2004; Jutting, 2003). These are variously known as community health funds, mutual health organizations, rural health insurance, microinsurance programs, revolving drug funds, and community involvement in user-fee management. They are often externally-induced, though there are examples of homegrown community-based health insurance arrangements such as the Self-Employed Women's Association in India, which are innovative microfinance schemes that incorporate elements of health insurance. Typically, these community-based health insurance initiatives are established in partnership with health care providers. They are usually characterized by voluntary membership (which may create adverse selection problems) and have strong community involvement in pooling, revenue collection, resource allocation, and often, service provision (which, on the other hand, may ameliorate moral hazard and adverse selection problems). Members make regular ex ante contributions and receive a payout in the event that an 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) found 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. They also found 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). The authors found that community-financed health initiatives frequently suffer from low resource mobilization, small size of the risk pool, and poor management capacity in rural and low-income areas. Perhaps most critically from the viewpoint of risk management by the poor, they also found evidence that the poorest are often excluded from these schemes in the absence of some kind of subsidy.

(c) Savings and credit arrangements to insure against income risk

Savings, credit and insurance arrangements help with 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 shows, there exist a wide range of CBRMAs for managing risk through finance.<sup>3</sup>

(i) Cereal banks

The primary function of cereal banks, an 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 agricultural 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, and uses the revenues generated as a revolving fund to refinance its operation in the following agricultural cycle. Apart from providing the start-up grant or loan, the external agency typically also finances the construction of a storage facility. Cereal banks sometimes also assist 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) found evidence that cereals banks in Madagascar reduce intra-annual price volatility, an uncommon form of community-based insurance against covariate risk, and one that benefits nonparticipants (i.e., food buyers who do not sell grain to the cereal bank) as well as participants. Cereal banks largely redress geographic variation in price risk that tends to disfavor infrastructure-poor rural areas (Barrett, 1996). When they are well-managed, they can also increase real incomes and reduce the risk of food insecurity by smoothing income seasonally, providing lower prices for net buyers in the agricultural lean season and higher prices for net sellers in the post-harvest period, and by reducing post-harvest losses and creating local emergency buffer stocks.

#### (ii) Grain banks

The main function of grain banks, an externally-induced arrangement established in recent years in various parts of tribal India, is to enable households to save grains in order to smooth food consumption over the agricultural cycle. These institutions 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. Grain banks are initiated by one-time grants from an external agency—an NGO or the government—with or without the requirement of contributions by member households. Once established, grain banks are managed by member households themselves. Members borrow grains at times of food scarcity, typically during the agricultural 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) found 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, the author also found 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.

(iii) Rotating or accumulating savings and credit associations

A rotating savings and credit association (ROSCA) is a traditional savings and credit arrangement that typically comprises of a group of individuals who make regular contributions to a common pot, which is allotted to each of the individuals in turn, either in a pre-determined order or on the basis of a lottery or auction (Besley, Coate, & Lury, 1993). The process continues, with past winners excluded, until each member of the group obtains the pot at least once. 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 & Rajaraman, 1993, as cited in Besley, 1995).

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), making it an even more flexible insurance arrangement compared to a traditional ROSCA.

Another community-based savings and credit arrangement is an accumulating savings and credit association (ASCA). Typically, this is an externally-induced savings arrangement in which, like a ROSCA, 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 in crowded urban areas in Bangladesh. In the case of a fire (a highly likely event in the community under study), 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 predetermined 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 require greater accounting and fund management skills.

#### (iv) Microfinance

Microfinance is a well-known category of an externally-induced, community-based credit, savings and insurance arrangement. Typically, microfinance institutions (MFIs) offer loans in small amounts (“microcredit”), although some MFIs 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 prespecified conditions (“microinsurance”).

As summarized by Armendáriz de Aghion and Morduch (2004), loans provided by microcredit institutions are typically characterized by individual loans but joint liability. If any member of the borrowing group fails to repay their own loan, then all members of the group become ineligible for future loans from the microcredit institution. This creates an added incentive for group members to provide each other with insurance against shocks. Microcredit arrangements can lower informational costs for lenders by taking advantage of peer selection as well as peer monitoring effects. Microcredit institutions are also less likely to require traditional collateral (e.g., housing or 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 the associated risk rationing of credit.<sup>4</sup> Lower or no collateral requirements also tend to improve the access of the poor to credit in order to enable them to cope with shocks. For example, Khandker (2007) found that microfinance institutions in Bangladesh enhanced flood-affected households’ access to finance and thereby played a central role in enhancing their coping ability after devastating floods.

Microfinance institutions often also offer microsavings facilities to members. Typically, the various fees associated with savings in formal financial institutions are too high to make bank accounts attractive investments for poor households, thereby inducing them to hold their assets in less liquid form, such as livestock, grain or jewelry (McPeak, 2005). Microsavings arrangements commonly reduce or eliminate 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 (Armendáriz de Aghion & 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 cope with unanticipated shocks. In the latter case, they act as a form of collateral which can be accessed in the event a borrower experiences 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.

Some microfinance institutions also offer microinsurance services. 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 event occurs. Because of the pro-poor nature of microfinance interventions, their clients are low-income individuals or households who 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, 2006). Due to its group-based, community character, it can exploit informational advantages that are not available to private or public insurers who deal with individuals, thereby overcoming moral hazard and adverse selection problems. 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). Recently, index-based disaster-management schemes that cover sudden-onset events, such as earthquakes, floods and cyclones, as well as slow-onset events, such as droughts, are also being developed. These use microfinance institutions for promoting and distributing the product to target communities (typically, farmers in low-income economies) (Cohen & McCord, 2003).

#### (d) Social assistance facilities

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 (Evans, 2006; Musi, 2007; Ismail, Immink, Mazan & Nantel, 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, chiefs and their communities are provided with seeds, fertilizers, pesticides, tractors and technical assistance by the government, 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. While promising, the Indlunkhulu Programme faces a number of challenges, both in the form of physical resource constraints (such as the lack of irrigation facilities and the timely receipt of inputs) as well as human resource constraints (such as the lack of quality leadership, owing, for example, to the absence of a resident chief within the community and changes in the historical context) (Evans, 2006).

Similar to the *indlunkhuku*, 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. However, as discussed by Kaseke (2006) and Mararike (2001), the program is constrained by resource shortages, high inputs costs, and changes in the historical context (which have diminished the power and authority of chiefs and resulted in difficulties in securing community volunteers).

(e) 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 immunization, deworming and 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 externally-induced arrangements established by NGOs or local governments to deliver goods and services which have a public good character.

The evidence on the effectiveness of community-based provision of public goods and services compared to other models of service delivery that are not based on the community is inconclusive. For example, Miguel and Kremer (2004) found 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 found 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. In another example, in a recent review of interventions for reducing diarrhea in developing countries, Zwane and Kremer (2007) summarized evidence on the effectiveness of handwashing 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. However, the authors found that community-based rural water infrastructure (such as wells), which are low-cost alternatives to

piped water, are not effective in reducing diarrheal disease. This suggests that the effectiveness of community-based arrangements in reducing risk through the provision of institutional versus physical “public good” infrastructure varies from case to case.

#### 4. COMMUNITY-BASED RISK MANAGEMENT: STRENGTHS AND LIMITATIONS

CBRMAs have a number of potential advantages relative to public or private risk management schemes that do not involve communities in program identification and administration. First, there exists a substantial body of evidence that community participation often (albeit not always) results in improved targeting outcomes (Alderman, 2002; Coady, Grosh, & Hoddinott, 2004; Conning & Kevane, 2002). Not surprisingly, relative to project managers from outside the community, communities can better identify the most needy and vulnerable among them.

In addition to the targeting advantages of community-based programs, they also have an advantage of 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 resulting from asymmetric information 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. Thus, even in the absence of formal legal courts, CBRMAs can ameliorate problems of moral hazard and contract enforcement which plague impersonal credit and insurance contracts (Platteau, 2000). Evidence of CBRMAs whose successful functioning hinge on the targeting and informational advantages of community-based arrangements include, among

others, microfinance institutions (Armendáriz de Aghion & Morduch, 2004).

However, the interpersonal relations at the heart of community-based interactions also make these arrangements vulnerable to fraud, corruption and 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) found evidence that community-driven development projects may also be vulnerable to fraud, corruption and manipulation by non-traditional leaders. Especially in isolated rural communities where effective checks and balances are absent, individuals 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, as discussed in Conning and Kevane (2002), only communities with reasonably egalitarian preferences and relatively transparent decisionmaking systems will generally be more effective than outside agencies in targeting resources so as to benefit poor households within communities. In addition, the advantage of communities in identifying the poor and the needy among them can only be realized if the community perception of how project benefits should be distributed is the same as that of a social planner.

Secondly, there may be significant holes in social safety nets. 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) found 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. Similarly, Vanderpuye-Orgle and Barrett (2009) found that nearly ten percent of individuals in rural Ghana are socially invisible and have effectively no risk pooling while socially well-connected neighbors enjoy nearly complete risk pooling. Morduch (2005) provided empirical evidence from south India that a system of reciprocal transfers is more effective for higher-caste households. Msuya, Jutting, and Asfaw (2007) and Jutting (2003) found similar evidence from community-based health insurance institutions in Tanzania and 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.

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. In addition to the exclusion of the poorest, endogenous group formation can also lead to exclusion along the lines of ethnicity, occupation, gender, geographical proximity or other characteristics.

Additionally, on the one hand, while 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, 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) discussed 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 discussed, for example, by Schremmer, Coheur, Jacquier, and Schmitt-Diabaté (2009) in the context of community-based health insurance associations. 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, Delgado, and Matlon (1988) found that after the 1984 drought in the Sahel, transfers accounted for only three 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, 2006).

## 5. POLICY IMPLICATIONS

Given potential differences between CBRMAs in terms of their membership and leadership structure and the nature of activities, history, longevity, etc., clearly not all will be equally good candidates for being scaled up and receiving external assistance. The political economy and socioeconomic environment of the community will also affect how successfully a social protection program can be implemented in order to bolster existing risk management arrangements. For example, as discussed by Dercon et al. (2006), homegrown burial societies in Tanzania and Ethiopia possess certain characteristics such as inclusiveness that make them prospective models for being scaled-up to provide insurance and other development initiatives successfully. At the same time, their independent nature makes them resistant to outside

intervention. In addition, while homegrown arrangements may not require the same level of technical assistance or external resources as externally-induced arrangements, some of them (such as management of common property resource rights) are not easily amenable to external intervention relative to others (such as funeral insurance societies which have well-defined membership and operational rules). However, given the absence of evidence on which features of existing CBRMAs and their environments make them better candidates for outside intervention or scalability, we do not try to provide a hierarchy of CBRMAs that could be successfully supported by social protection programs. Instead, we discuss the gaps present in most CBRMAs that social protection programs can potentially bridge.

As discussed earlier, firstly, the interpersonal relations underlying CBRMAs can lead to the exclusion of marginalized subpopulations that are often of particular interest to policymakers, such as women or the poorest, due to the endogenous nature of group formation. Where natural barriers to entry into CBRMAs exist, social protection policy can potentially be deployed to help households overcome them. For example, in the case of many externally-induced 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.

Secondly, resource constraints afflict many CBRMAs. For example, both the *zunde raMambo* and *indlunkhulu* programs face challenges in meeting their objectives due to insufficient inputs and other resource constraints, which can be alleviated by the increased

provision of external resources. These two institutions also highlight the challenges of adapting an old, homegrown institution to a new context. For example, in the case of the *zunde raMambo*, the decrease in the authority of traditional chiefs can present a leadership vacuum. Scaling up of homegrown arrangements thus requires taking into consideration differences in the historical and new contexts, and investment in human capital necessary for successfully adapting traditional arrangements. Evidence of insufficient resources in these state-run programs also indicates the importance of an integrated national strategy for the successful provision of social protection.

Thirdly, social protection policy can also address capture by local elites by supporting CBRMAs which have a public good character. For example, in a study of corruption in a community-led project in Kenya, Ensminger (2007) found that local project leaders may have preferred to choose an investment project vis-à-vis a public works project, as it provided a greater opportunity to embezzle the largest percentage of funds, indicating that projects with a public good character may have somewhat greater immunity from fraud and corruption. However, while the latter projects may be less vulnerable to corruption, they may have more onerous technical decisionmaking and management requirements. In such cases (and this is true for support to any community-based arrangement), policymakers need to be aware that community-based arrangements may have inadequate technical decisionmaking and management skills (Khwaja, 2004). Thus, greater external assistance in building these skills may be critical for successful outcomes of projects with more onerous technical knowledge requirements.

Fourthly, external intervention can also alleviate problems that arise due to the small size of risk pools inherent to community-based arrangements. For example, social protection programs can support community-based mutual insurance groups to build their capacity to tap into reinsurance markets necessary for sustaining large, correlated losses and by underwriting the

start-up costs needed to create the relevant insurance products. Social protection programs can also be used to support index-based risk transfer products such as the weather insurance contracts being used by Mexican states and municipalities to insure against drought (Alderman & Haque 2007) or the famine insurance scheme posited for northern Kenya by Chantarat, Barrett, Mude and Turvey (2007). Much of the cost of developing such products is sunk, associated with developing the data series necessary to price the instruments and the monitoring infrastructure to provide objectively verifiable, non-manipulable reporting on the trigger variable or event of interest (e.g., rainfall). As discussed by Barnett, Barrett and Skees (2008), weather-based index products can be used to facilitate mutual insurance if a group buys the index and then determines how to distribute payments to members of the group.

Finally, social protection programs can harness the power of community-based targeting for effective two-tier allocation of assistance. Alderman (2001) described a two-tier allocation of social assistance in Albania, whereby the central government provides grants to communes based on commune-level criteria. Local governments then allocate these grants to poor households within their communes based on household-level criteria. In the context of post-disaster assistance provision, social protection programs can similarly adopt a two-tier allocation process, whereby they provide in-kind or cash assistance to a community organization on the basis of a non-manipulable index measure (such as rainfall below a certain level over some duration). The community organization can then use its superior local information to allocate assistance to the poorest households.

It is important to be cognizant of the potential pitfalls of external intervention as it may lead to moral hazard problems, as households may have an incentive to engage in risky behavior if they do not (fully) internalize the costs of insurance. In addition, 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 have broader disruptive effects on information flow, cooperative decisionmaking in production, marketing and community resource management processes. For example, in a randomized evaluation of external assistance to women's groups in western Kenya, Gugerty and Kremer (2008) found that assistance changed the characteristics of groups that had originally made them attractive to donors. Group membership shifted towards younger, more educated women having a steady flow of income. Group leadership was systematically taken over by men and younger, more educated and better-off women, and the dropout rate from groups due to conflict doubled. Similarly, Munyao and Barrett (2007) documented how efforts to devolve authority over land management to local communities in 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 the household or community levels.

A related concern is that external financing can have a negative effect on the incentives for efficient functioning of an existing social insurance arrangement. An empirical study by Bogan (2009) of the capital structure of large microfinance institutions indicated that an increased use of grant financing (as opposed to equity and debt capital) decreases institutional sustainability. However, limited knowledge on the impact of external financing on institutional sustainability, let alone on inclusiveness and outcomes, limits present capacity to identify when and how much external financing is efficient and operationally sustainable.

A literature on the possible crowding-out effects of new, exogenous transfers also emphasizes the prospective problems of disrupting existing social insurance arrangements (Cox & Jimenez, 1998; Cox, Hansen & Jimenez, 2004). The extent to which these problems are prevalent, however, remains an open question. For example, Lentz and Barrett (2006) found no evidence of crowding out of private transfers by food aid, whether allocated by communities or external agencies, in northern Kenya and southern Ethiopia. The key is whether cleavages can be identified and addressed directly through the design of social protection programs. For example, Chantarat and Barrett (2008) showed 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 non-recipients with whom recipients 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 reduce the costs of social interaction may enable people to come together more easily. Thus, they may have crowding-in effects, rather than the crowding-out effects on which most attention has focused to date.

## 6. CONCLUSION

There is widespread evidence that poor households often group together as part of informal community arrangements in order to reduce risk exposure and provide informal (typically incomplete) mutual insurance among group members. 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. This article reviews a plethora of CBRMAs across the developing world. However, evidence on which characteristics of community-based arrangements and their environments make them better

candidates for outside intervention or scalability is limited. We therefore do not distinguish CBRMAs into different categories based on how successfully they can be supported by social protection interventions. Instead, in order to provide policymakers with some guidance regarding the design of policies to bolster community-based risk management, we discuss the gaps present in most CBRMAs, such as social exclusion and the small size of the risk pool, which social protection intervention can potentially fill. Notwithstanding, future studies that provide evidence on what features of such arrangements make them most suitable for outside intervention would provide compelling lessons.

To conclude, while CBRMAs 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. In addition, existing evidence on the impact of external financing on crowding out of private initiatives, opportunities for fraud and corruption, and the effectiveness and sustainability of community-based arrangements is limited. 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 regarding whether to bolster CBRMAs or allocate scarce resources elsewhere in efforts to address the pernicious effects of risk.

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## Notes

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<sup>1</sup> See Alderman and Paxson (1992), Besley (1995), Townsend (1995), Morduch (1995, 1999a), Bardhan and Udry (1999) and Dercon (2005) for comprehensive reviews.

<sup>2</sup> Although typical, there are important exceptions to this rule, as shown, for example, by De Weerd (2002) and Dercon et al. (2006) in their descriptions of traditional community organizations in rural Tanzania and Ethiopia.

<sup>3</sup> See Morduch (1999b) or Armendáriz de Aghion and Morduch (2005) for reviews of the microfinance movement as well as the stylized features of microfinance institutions. See Rutherford (2000) for a general overview of formal and informal financial services used by the poor in developing countries.

<sup>4</sup> See Boucher, Carter and Guirking (2008) or Boucher and Guirking (2007) for a theoretical discussion and empirical evidence, respectively, on risk rationing in credit contracts in rural Latin America.