Are the Poor Too Poor to Demand Health Insurance?

Rajeev Ahuja and Johannes Jütting

Abstract: Community based microinsurance has aroused much interest and hope in meeting health care challenges that face the poor. In this paper we explore how institutional rigidities, such as credit constraint, affect the demand for health insurance and how insurance could potentially prevent poor households from falling into the poverty trap. In this setting, we argue that the appropriate public intervention to generate demand for insurance is not to subsidize premium, but to remove these rigidities (i.e., ease credit constraint). Thus from an insurance perspective as well, our analysis highlights the importance of the poor having the appropriate saving and borrowing instruments.

After microcredit comes microinsurance.[1] Lately, the idea of microinsurance has caught the attention of researchers, NGOs, donor agencies, policy makers, and social scientists involved in tackling poverty. The optimism that accompanies microinsurance stems mainly from two different sources: (1) the success of microcredit programs[2] in ameliorating the conditions of the poor in different parts of the world by enabling them through asset and/or skill formation to generate sustained income (Morduch, 1999a), and (2) the growing recognition of the role that risk plays in the lives of the poor, and hence the need to increase the ability of the poor to cope with their various risks. Improving the risk management capacity of

the poor has come to be viewed as an integral part of any poverty alleviation program (Holzmann & Jorgensen, 1999).[3]

Although the empirical literature on the impact of micro-insurance schemes is limited, the available research suggests that microinsurance, if properly designed and implemented, can provide an effective mechanism for meeting the health care challenges of the poor. Microinsurance schemes meet these challenges by reducing out-of-pocket health expenses of poor households and improving their access to health care services.[4]

The potential upscaling, extending, and expanding of microinsurance programs crucially depends crucially on *affordability*, that is, to what extent resources for meeting health care costs can be mobilized by the people themselves.[5] Limited reach and the coverage of the existing microinsurance programs alone are not sufficient reasons for the poor to question the affordability of premium, and hence justify their need for subsidizing premium. In this paper we explore the issue of *affordability* and demonstrate with the help of a simple analytical device how institutional rigidities, in particular credit or borrowing constraint, suppress low-income households' demand for insurance, households that could otherwise afford to pay for insurance, and how households without insurance become vulnerable, forcing them into the poverty trap.[6]

This paper is organized in the following manner. In the next section we give a brief overview of microinsurance and highlight the importance of the affordability issue in the context of community-based health insurance schemes. After that we show with the help of a simple analytical device how easing credit constraint could potentially increase demand for micro-insurance, thereby decreasing the risk of poor households falling into the poverty trap. In the following section we review appropriate government intervention in the light of our analysis. The last section concludes the paper.

Rajeev Ahuja is a Senior Fellow at the Indian Council for Research on International Economic Relations (ICRIER). Email address: ahujaahuja@yahoo.com.

Johannes Jütting is a Senior Economist at OECD Development Centre. Email address: Johannes.jutting@oecd.org.

Overview: Health Risks, Microinsurance, and Affordability

Insurance is not the only way to deal with risks,[7] and not all risks are insurable.[8] However, *health risks* such as those relating to illness, injury, disability, maternity, and the like are considered to be eminently insurable, as these risks are mostly independent or idiosyncratic (i.e., not correlated among community members).[9] Moreover, among the several risks that face poor households, health risks are considered to be crucial as they have destabilizing effects on household finances—directly, by forcing health expenditure and indirectly, by affecting the income earning capacity of households (Asfaw, von Braun, Admassie, & Jutting, 2002).[10] Hence the need for a two-pronged strategy: (1) an aim at improving the health status of the poor, and (2) an aim at protecting the poor from the financial consequences of illness of other medical problems. For this reason, microinsurance that essentially protects households against the financial consequences of illness is regarded as a complement to, not as a substitute for, other health interventions.

Amidst shrinking government budgets, the failure of markets to reach the poor, and the widespread criticism of levying user charges, community based arrangements have aroused much interest and hope that health care challenges facing the poor can be met. Microinsurance is considered to be an important financing tool to protect the poor from adverse financial consequences in the event of sicknesses or ill health. While the out-of-pocket expenditure on health care payments imposes great financial hardships on the poor, community based health insurance is an effective way to finance health care costs. Health insurance that is determined by pooling the risks of members participating in health insurance lessens the financial burden of members affected by illness. Indeed, several types of community based health insurance schemes have emerged in sub-Saharan Africa (Wiesmann & Jütting, 2000; Atim, 1998), Asia (Krause, 2000) and other regions (Bennett, Creese, & Monash, 1998; Jakab & Krishnan, 2001).[11] Some of these

schemes are community based, while others are based on membership in a particular group. In this paper these community based and member based arrangements are collectively referred to as community financing schemes. In some cases, a health insurance feature is embedded in the other types of functions that community or member based organizations provide.[12] In fact, some microfinance programs have successfully introduced insurance on a limited scale (Morduch, 1999b).

Community health care financing schemes are usually based on the following characteristics: voluntary membership, nonprofit objective, link to a health care provider (often a hospital in the area), risk pooling, and reliance on an ethic of mutual aid/solidarity. These finance schemes have an advantage in their ability to reach low-income people in rural areas who work in the informal sector and are otherwise difficult to reach and their ability to exploit social capital to bring about greater awareness, correct for adverse selection and moral hazard problems,[13] encourage preventive measures, and increase access to health care. But community based schemes also have certain weaknesses, such as a low capital base, a low level of revenue mobilization, frequent exclusion of the poorest of the poor, small size of risk pool, limited management capacity, and isolation from more comprehensive benefits.

However, the reach of existing microinsurance schemes is still limited although attempts are continually being made to involve more and more people by upscaling, extending and replicating the schemes. In extending the reach of microinsurance, *demand side* and *supply side* factors and other factors relating to *design* and *development* of schemes are important (Dror & Jacquier, 1999; Wiesmann & Jütting, 2000; Siegel, Always, & Canagarajah, 2001).[14] However, this paper focuses only on the demand side factors, in particular on the issue of affordability.[15]

By and large the literature on demand side factors is limited.[16] A few microlevel studies that have tried to estimate demand for health insurance based on the willingness and the ability to pay for it have had positive findings. A survey-based study on willingness

to pay, even in the case of Ethiopia—one of the poorest countries in sub-Sahara Africa—shows that the poor are willing to pay up to 5% of their monthly income (Asfaw et al., 2002) to have a scheme that can take care of their illness costs. Jakab and Krishnan's (2001) review of existing schemes highlights that (a) microinsurance schemes can raise substantial resources but must obtain additional funds from donor agencies, the state, or health care providers, and (b) the poorest of the poor in a community are often excluded from microinsurance schemes. In order to increase this group's access to microinsurance, some schemes have developed mechanisms that lower entrance barriers for the poorest (e.g., flexibility in premium collection and exemption mechanisms).

One of the common perceptions about the poor is that they are too poor to either save or buy insurance. In other words, the poor are too poor to have insurance. While this may be true for the poorest of the poor who struggle to survive every day, it is not necessarily true for those living close to the poverty line (Martin, Hulme, & Rutherford, 1999; Zeller & Sharma, 1998). For people living close to the poverty line, their apparent inability to join insurance schemes may not be the result of affordability per se, but it may be the result of institutional rigidities such as credit constraint that prevent their latent demand from translating into effective demand for health insurance. In such situations, easing credit constraint rather than subsidizing premium may help improve the reach of microinsurance schemes. The manner in which borrowing constraint impinges on poor households' demand for insurance is demonstrated in the next section.

Insurance Demand

In this section we first analyze how borrowing constraint may affect the demand[17] for insurance in general, and then we show how it influences insurance demand in the case of poor households.[18]

The General Case

For this study, we used a two-period model in which a typical risk averse individual (or household) faces no uncertainty in

the first period and therefore has a fixed given income (y). In the second period, however, the individual has a random income. For simplicity we assume that there are only two possible states of nature: (1) *a good state* in which individual income is $y + z$ and (2) *a bad state* in which individual income is $y - z$. The bad state in this context refers to the state of the individual becoming sick.[19] The probability of the bad state, denoted as p, is assumed to be 0.5. The risk averse behavior is captured by the restriction on the utility function, U, that is, by its strict concavity ($U' > 0$ and $U'' < 0$). Expected utility of the individual in the absence of insurance is given as

$$EU = U(y) + 1/2 \{U(y - z) + (y + z)\}$$

Notice that the income loss suffered by the individual in period 2, if the bad state occurs, is $2z$, and the discount factor is assumed to be *1* (unity).[20]

We first consider a case where the individual faces no borrowing constraint. Furthermore, we assume that the individual can buy as much insurance coverage as wanted at actuarially fair price.[21] According to existing insurance literature, at an actuarially fair price, the utility maximizing individual would demand full insurance coverage (see Mas-Colell, Whinston, & Green, 1995, pp. 187–188). If D represents demand for insurance, full coverage implies $D^* = 2z$. The utility of the individual after the maximization would be

$$EU = U(y - z + B) + U(y + z - B)\}$$

where B represents borrowings by the individual. Since we have assumed no borrowing constraint, the optimal borrowing is one that would equalize income in both periods. This occurs when $B^* = z$. Substituting B^* in the above condition equation yields $EU^* = 2U(y)$.

If the individual faces a borrowing constraint (i.e., $B^* < z$), his demand for insurance would be *partial*. For example, suppose that the individual cannot borrow at all. If the individual still demands full insurance, his utility would be $U(y - z) + U(y + z)$,

which is lower than his initial utility ($U(y) + 1/2\{U(y - z) + U(y + z)\}$), suggesting that he would demand partial and not full insurance.[22] Now, if we allow for some borrowing but the borrowing falls short of the optimal level, the demand for insurance would continue to be partial.

Basically, from a point where the individual demands partial or no insurance and faces a borrowing constraint, the individual's demand for insurance increases as borrowing constraint is relaxed. This result is formally stated and proved in the proposition given in Appendix 1 to this paper.

Demand for Insurance by the Poor

Since the paper deals specifically with the poor's demand for insurance, we characterize the poor by assuming that they are at (or close to) their subsistence level in the current period (i.e., period 1), and face credit constraint (a well known fact about the poor in the developing world). An important implication of this assumption is that the poor cannot spare much, if anything, from their current income to insure their future. Let c denote the minimum consumption needed by the individual to remain at the subsistence level. In the above construct, let the relationship between c, y, and z be defined by the condition, $y - z < c = y$. This condition implies that the individual is only able to meet his minimum consumption (defined by c) in period 1. In period 2, the individual runs the risk of falling below his subsistence level (or the poverty line), in the case that the bad state (illness) occurs. In this case, if the individual cannot borrow at all, he will not demand any insurance. However, if the individual can borrow, he will demand full insurance, yielding utility $EU^* = 2U(y)$. Thus, the individual is able to stay above the poverty line (i.e., the individual is able to meet minimum consumption needs in both periods). This example is specifically constructed to highlight the importance of subsistence consumption that creates constraints on the individual's demand for insurance. If the poor individual is allowed to borrow against his future income, his demand for insurance will go up. This is the situation in which the poor are

aware of the benefits of purchasing insurance but cannot set aside any money from their current income for the purpose. In reality, borrowing for insurance need not necessarily take the form of actually taking credit at the prevailing interest rate. In fact, many schemes are designed to compensate for this fact. For example, a flexible premium option is one of the ways to address this issue. Another way to address this issue is to create a common pool of funds that can be used to give soft loans to group members. Although there is not a lot of literature on microinsurance, there is already some evidence available that illustrates this effect.[23] In fact, many microfinance organizations dealing with savings and credit have been successful in introducing and running micro-insurance schemes.[24]

Although in the above construct we equate consumption with income ($c = y$), it is not crucial for the result. To show this, assume that $c < y$, that is, the subsistence constraint is not rigidly defined. Assume further that the individual cannot borrow at all. In the normal case (in the case of the nonpoor), we noted that in the absence of any borrowing facility, the individual would demand partial insurance. Let this partial coverage be denoted by z°. Now in the case of the poor individual, who is faced with constrained subsistence, it may not be possible to buy even this partial coverage. This would be the case when $\{y - (z^\circ/2)\} < c < y$, that is, when the amount over and above the individual's subsistence consumption is insufficient to pay the premium required for this coverage. In this situation, his demand for insurance would be lower than z°, and allowing for borrowing would then increase this demand level.

To show that the above analysis is not a unique case, we also performed some robustness tests. In particular, we checked how the lack of access to credit affects demand for insurance under two different income scenarios (i.e., different combinations of present and future income). This is shown in Appendix 2 where we illustrate that the above result is also applicable to alternate income scenarios, and is not due to the specific example constructed above.

Thus, in the above analysis we show how subsistence constraint faced by the poor who can otherwise afford insurance interferes with their purchase decision, and how access to credit can mitigate the effect of subsistence constraint.

It must be stressed that the setting we outlined above is not applicable to the poorest of the poor for whom affordability is indeed the major issue, leaving them dependent on public subsidy.[25] The setting outlined in our study is applicable to those who, though currently living above or on the poverty line, are likely to fall into the poverty trap in the event of any unexpected major health issue.[26] If such people have access to credit, their need for health insurance may get translated into terms of effective demand for insurance; this translation fails due to their subsistence constraint. However through purchase of insurance, the poor may be able to protect themselves against the risk of falling into the poverty trap.

The existing literature points to the circularity between *poverty* and *vulnerability*: poor people are more vulnerable (exposed to risk), and their vulnerability is the cause of their poverty. In other words, the link runs both ways (Martin et al., 1999). The above analysis shows how the presence of credit constraint might reinforce this circularity, and how this cycle can be interrupted by easing such constraint. Another aspect where the above analysis can be useful is in understanding the *order* of priority between savings and credit on the one hand and insurance on the other. Whereas the importance of financial services (savings, insurance, and credit) in risk management literature is well recognized, it is not clear how to prioritize the allocation of public funding and effort between savings and insurance. This confusion occurs in the question of whether access to voluntary, flexible withdrawal of savings and credit should receive a higher priority over insurance or whether insurance should be assigned a higher priority than savings and credit. The above analysis indicates that savings and credit functions should at least be undertaken *concurrently* with insurance, if not before insurance. Perhaps it is appropriate to embed microinsurance

functions in microcredit schemes that already exist—a sugges-
tion about which there is some mention in the current litera-
ture (Sadoulet, 2001).

The Role of Public Intervention

There is no doubt that the poor living in developing countries
need public health intervention. Where affordability is the
issue, government subsidy is clearly needed and an important
policy issue here is the *extent* and the appropriate *form* that the
subsidy should take. Our deceptively simple model is powerful
enough to highlight several aspects dealing with this issue.

First, public intervention has an important role in upscal-
ing, extending, and replicating microinsurance schemes that have
emerged as promising routes for health care financing. One
important role that public intervention plays is in the removing
of present institutional rigidities (e.g., in labor, credit, and prod-
uct markets). These rigidities may take the form of pre-existing
patron-client relationships, interlinking of wage and credit con-
tracts, various government controls, and so on.[27] The presence
of such rigidities prevents the poor from fully participating in
market opportunities. The above analysis shows that removing
these rigidities, in particular, easing credit constraint, may be
an appropriate way to translate latent demand for insurance
into effective demand. However, this channel is likely to work
mainly for the poor who are currently able to meet their basic
needs but face the risk of falling into the poverty trap in the
future. For people who could afford premium except for the insti-
tutional rigidities, subsidizing premium may not be an appropriate
strategy. In fact, subsidizing premiums bears the disadvantage of
potentially aggravating associated moral hazard problems.

Second, for the poorest of the poor who are already below
the poverty line, easing of credit is unlikely to generate insur-
ance demand. If credit is made available to them, it will in all
probability be used to meet their current basic needs instead of
for protection against future risks. The poorest of the poor need
direct public support to meet their health care needs. These

needs can be met either directly through free access to public health care services or indirectly by integrating them into micro-insurance schemes and subsidizing premium. The idea behind integrating the poorest of the poor into microinsurance schemes is to enlarge the risk pool and thereby make the existing schemes more stable. Without subsidizing premiums, the poorest of the poor cannot be integrated into such schemes, since no resource pooling (distinct from risk pooling) can be effected by selling insurance to them. How can these people be integrated into micro-insurance schemes? Suppose that a microinsurance agency already offers insurance to members of a village community in which some members are too poor to afford insurance. If the government has a policy of subsidizing the premium for these poorest members, then the insuring agency can, for example, collect premium from the government after submitting proof of providing insurance to the poorest of the poor, who can be well identified.

Third, some inferences can be drawn from the design and development of microinsurance schemes. For example, schemes that allow flexibility in payment of premium (small amounts collected more often; allowing premium in kind as well as mon-etarily) are more likely to succeed, because such flexibility can actually serve in the role of credit.[28] Perhaps a credit facility could be built into the schemes by having a separate pool that can be used for paying premiums of members who are unable to make premium payments on time. Also, linking credit exclu-sively for the payment of premiums may also counterbalance its dissipation in meeting other less urgent needs.

In a broader sense, public intervention can play an impor-tant role in risk reduction activities such as improved sanita-tion, preventive health care, and controlling for communicable diseases. The burden of these shocks falls inequitably on the poor. Public intervention can contribute to the success of microinsurance schemes by insuring against the covariate risks that undermine microinsurance arrangements against *uncorrelated* shocks. Moreover, public intervention can also make microinsurance programs viable at least in the early stages of their formation

when these programs may have difficulty in breaking even because of limited risk pooling capacity and low capital base. Public intervention could also create a greater awareness among the people about protection through insurance.[29]

Reinsurance, a mechanism designed to guarantee the solvency of institutions that provide insurance, is one of the ways in which public intervention could contribute to the viability of microinsurance schemes (Dror & Prekar, 2002).[30] Because microinsurance is generally offered to a targeted population living in close proximity, the risk pool is not well diversified across geography, occupation, age, etc. Hence, there is a greater need to parcel out risk by transferring (also called *ceding*) it to a specialized agency (reinsurer) that insures the primary insurers. Just as the poor have no access to insurance, microinsurance institutions typically have no access to reinsurance as well.

Conclusion

In the context of the discussion on extending the reach of microinsurance schemes, which hold promise for reducing health related shocks facing poor households, it is essential to make a distinction between those who can afford health insurance and those who cannot. A lack of demand for insurance need not necessarily be the result of affordability, thereby justifying the need of government subsidy, but may be the result of other institutional rigidities, such as borrowing or credit constraint. This would mean that it is probably wise for donor agencies to look for potential ways to embed microinsurance in existing microcredit schemes rather than creating microinsurance schemes from scratch. Further research should test this hypothesis in an empirical setting by analyzing if microinsurance schemes have fared better in an environment where credit is less binding or where credit facility is built into such schemes than in an environment in which availability of credit is more restricted.

Appendix 1

Proposition: If the credit available to the credit-constrained individual is increased, demand for insurance will also increase.
Proof: The individual has the following objective function:

$$\text{Max } EU = U(y - 0.5\,D + B) + 1/2\,\{U(y - z + D - B) + U(y + z - B)\}$$

$$\{D\}$$

The first order condition (where $D°$ denotes the optimal coverage) would be

$$(-0.5)\,U'(y - 0.5\,D° + B) + 0.5\,U'(y - z + D° - B) = 0$$

or

$$U'(y - 0.5\,D° + B) = U'(y - z + D° - B)$$

The above condition implies $(y - 0.5\,D° + B) = (y - z + D° - B)$, which yields $D° = (2B + z)/1.5$. In the unconstrained case, we mentioned that $B^* = z$. Substituting this in the above equation confirms that optimal insurance in the unconstrained case is $D^* = 2z$. However, if the individual is credit constrained (i.e., $B^* < z$), demand for insurance is constrained as well (i.e., $D° < 2z$). To see how $D°(B)$ changes with B, we differentiate the f.o.c total with respect to B. It yields:

$$(-0.5)\,U''(y - 0.5\,D° + B)\,(-0.5\,dD°/dB + 1) + 0.5\,U''(y - z + D° - B)\,(dD°/dB - 1) = 0$$

$$dD°/dB = \{U''(y - 0.5\,D° + B) + U''(y - z + D° - B)\}/\{0.5\,U''(y - 0.5\,D° + B) + U''(y - z + D° - B)\}\ dD°/dB > 0$$

implying demand for insurance would increase as credit constraint is relaxed.

Appendix 2

We consider two different income scenarios (i.e., different combinations of present and future income), and each scenario

has two cases, depending on the assumption about the subsistence constraint.

Income Scenario (a): If $EU = U(y) + 1/2\{U(y) + U(y - z)\}$. In this scenario, while first period income continues to be y, it is the second period income which now becomes different—it could be y or $(y - z)$ each with probability of .5.

Case (i): $\{y - (z/2)\} < c < y$. In this case, the individual will only demand partial insurance, because with full insurance, first period income will fall below subsistence consumption (the expression $\{y - (z/2)\}$ denotes income less insurance premium for full loss coverage).

Case (ii): $c < \{y - (z/2)\}$. In this case, the individual will demand full insurance, because with full insurance, the individual gets the highest utility $(U(y - z/2) + U(y))$, compared to the case of either no insurance or partial insurance.

Income Scenario (b): If $EU = U(y) + 1/2\{U(y) + U(y + z)\}$. In this scenario also, income in the first period remains y, but the second period income now could be y or $(y + z)$, each with probability of .5.

Case (iii): $\{y - (z/2)\} < c < y$. In this case, the individual will demand only partial insurance, because subsistence constraint becomes binding before the individual reaches full insurance level.

Case (iv): $c < \{y - (z/2)\}$. In this case, the individual may still demand full insurance.

In the context of the results of this paper, the relevant cases are (i) and (iii), because it is in these cases that subsistence constraint becomes binding, which can be eased by having access to credit.[31] Note that in the above cases we have deliberately omitted the possibility of $(y < c)$, because this is applicable only to those who cannot meet even their subsistence consumption (i.e., the poorest of the poor).

Notes

referee for his valuable comments on an earlier draft of the paper. The views expressed in this article are entirely those of the authors.

1. We do not state this in any pejorative sense. We state this to illustrate the order in which research has proceeded and also to hint at the order (between credit and insurance) that we suggest in the paper.

2. Although credit and insurance are two very different concepts (for the difference between the two, see Siegel et al., 2001), it is believed that the success of microcredit shows how the impediments posed by informational asymmetries (giving rise to the moral hazard and adverse selection problems) and those relating to high transaction costs that prevent formal providers of financial services from catering to the low-income section of a society can be overcome.

3. According to Prekar et al. (2001), motivation for the provision of health insurance also comes from the failure of the public sector to provide health care at reasonable cost.

4. See Jakab and Krishnan (2001) and Prekar et al. (2001) for a summary of different case studies on the impact of community based health insurance schemes.

5. Unlike microcredit, where transfer in the first instance takes place from the credit provider to the poor, in the case of insurance, a reverse transfer takes place (i.e., from the poor to the insurance provider, for a promise of covering the loss resulting from a particular event). Therefore, in the context of insurance, affordability becomes an important issue.

6. The effects of borrowing constraint on the technology adoption by poor farmers, as well as on the risk preference of the poor, have been explored by Eswaran and Kotwal (1989, 1990) and Morduch (1994). The effect of borrowing constraints on saving behavior has also been well covered in current literature (see Besley 1995).

7. Depending on an individual's response to dealing with risks, the literature classifies all risk management practices into three broad groups: (1) risk reduction (RR), (2) risk mitigation (RM), (3) strategies and risk coping (RC). The first two strategies are ex ante risk management strategies (i.e., used before a risky event takes place) whereas the last strategy is an ex post strategy (i.e., used after a risky event takes place). Insurance, similar to savings and borrowings, is a part of risk mitigation strategy (Brown & Churchill, 1999; Holzmann & Joergensen, 2000).

8. Insurability of risks depends on the characteristics of the particular risk. Literature on risk management approach classifies risks along several lines (e.g., depending on the nature of risks—whether risk is independent vs. correlated, high frequency low cost vs. low frequency high costs—or depending on the appropriate agency handling risks). On insurability of risks, see Jütting (2002), Brown and Churchill (1999), and Siegel and Alwang (1999).

9. Unlike many health risks, political, social, and institutional risks are often covariate in nature (Weinberger & Jütting, 2000).

10. The current literature recognizes that improvement in health status is not just the result of higher incomes but is also an input for generating higher incomes, especially for the poor. This linkage has been recently demonstrated in the work of the Commission on Macroeconomics and Health of the WHO (CMH, 2001).

11. Four models of microinsurance have been discussed in the literature. In the partner-agent model, insurers, health care providers, and organizers of the scheme decide on the insurance-cum-health care package. In a community based insurance model, policyholders are owners and managers of all aspects of insurance operations. The full-service model is similar to formal sector insurance provision, and finally, the provider model where the health care provider and insurer are the same party in terms of insurance coverage is restricted to the services provided by the health care provider (Siegel et al., 2001). These arrangements should not be confused with other community schemes that merely subsidize the cost of health care for poor sick people. Such schemes are devoid of any risk pooling.

12. For example, the main objective of the Self-Employed Women's Association (SEWA) in Gujarat, India, is to help the poor generate their own income. Since 1992, SEWA has also provided medical insurance to its members (for more information on SEWA, see Ranson, 2001).

13. Both of these problems arise due to informational asymmetry between the seller and the buyer of insurance. Generally, the buyer of insurance is more informed about his health status and care level. While adverse selection problems tend to reduce the size of membership, the moral hazard problem leads to over consumption of benefits covered under the scheme.

14. This classification is only for the sake of simplicity. In reality, it is expected that these factors are interdependent. For example, weak supply of health care services may be the result as well as the cause of poor demand. Similarly, if the design of a health insurance scheme is poor, it may fail to attract households (see Dror & Jacquier, 1999).

15. This is not to deny the role of other demand side factors, such as the social and cultural milieu in which the poor live, access to other risk management instruments, and so on. To illustrate how social-cultural factors pose a barrier to demand for insurance, take for instance the belief in some societies that to think about the consequences of ill health or death is to wish upon yourself the same. Similarly, in some societies people interpret ill health as the wish of the gods or they link ill health to fate and hence refuse any medical treatment, turning to a religious leader (Wiesmann & Jütting, 2000).

16. Much of the existing literature on microinsurance focuses on supply and institutional issues (Siegel et al., 2001). In the words of Brown and McCord (2000), "The limited understanding of households' needs, preferences, and expectations will have to be deepened, if future experiments in micro-insurance are to be 'demand-driven.'

17. Demand for insurance, which is mandated by the providers of credit to the poor, needs to be distinguished from the demand for insurance that is necessitated purely by health considerations. In the former case, insurance protects the creditor's interest against the risk of default in the event that the borrower falls ill. In the latter case, insurance protects the financial interest of the borrower in the event of illness. Furthermore, in the former case, the premium is deducted from the credit extended to a borrower, and in the latter case, timings and mode of premium collection are important determinants of demand for health insurance. In this section we analyze the latter case.

18. See Eswaran and Kotwal (1989, 1990) for more information on how borrowing constraint affects adoption of technology by farmers, as well as on how such constraints shape their risk preference (also see Morduch (1994). See Besley (1995) on the effect of borrowing constraints on saving behavior.

19. In the case of illness, the individual not only suffers income loss but also loss on account of having to bear the cost of illness (i.e., the cost of medicines etc.). In our model we do not distinguish between these two costs and treat the entire loss to be insurable.

20. This is a simplifying assumption that implies that the future is as valuable to the individual as the present is.

21. Actuarially fair price is the price at which the insurance company selling insurance is expected to make no profit. This condition characterizes the competitive insurance market. In the absence of zero transaction costs, the actuarially fair price is the same as the probability of the bad state occurring.

22. This follows directly from the definition of risk aversion, which yields $U(y) > (1/2)\{U(y - z) + U(y + z)\}$.

23. The authors visited a microinsurance experiment in T. Narsipur region of Karnataka, India, where soft loans among members of self-help groups are common. The loan can be used for any purpose, including to pay insurance premiums.

24. A recent ILO compendium of microinsurance schemes in India shows that about one-third of insurance schemes are initiated by microfinance organizations.

25. The poorest of the poor would not buy insurance even if some credit was made available to them. According to Dror and Jacquier (1999), the needs of the excluded (the poorest of the poor) are often not structured in terms of "solvent demand."

26. According to Holzmann (2001), the group of poor that moves in and out of poverty is strikingly large when compared to the group that is always poor (poor at all dates). In fact, the poor who move in and out of the poverty could be further divided, depending on their income prospects.

27. These controls may, for example, take the form of preventing free movement of agricultural produce. The rigidity may also take the form of local government not being responsive to the needs of local people.

28. Allowing flexibility in paying premium is similar, in effect, to extending credit facility to the individual who buys insurance for the purpose of paying premium. The credit gets returned when the individual actually pays the premium amount.

29. In this context it is also important to recognize what public intervention should not do, because some interventions may actually have a negative impact on the functioning of community financing schemes (Hsiao, 2001).

30. Reinsurance in the context of microinsurance is also known by the name of Social Re

31. If $c < y$, and if there are some (fixed) transaction costs (say T) up front in buying insurance, the individual may be tempted to self-insure by setting aside (or saving, s) the excess of income over consumption ($s = y - c$) in the first period (i.e., saving in physical or financial form) rather than buying (partial) insurance. If the transaction costs are greater than the excess of income over consumption in the first period ($T > y - c$), the individual would not be able to buy insurance even if the desire or need existed.

References

Asfaw, A., von Braun, J., Assefa Admassie, A., & Jütting, J. (2002). *The economic costs of illness in low income countries: The case of rural Ethiopia.* Mimeo.

Atim, C. (1998). *Contribution of mutual health organizations to financing, delivery and access to health care: Synthesis of research in nine west and central African countries.* Technical report no. 18, Bethesada, MD: Partnerships for Health Reform Project, Abt Associates.

Bennett, S., Creese, A., & Monash, R. (1998). *Health insurance schemes for people outside formal sector employment.* ARA paper no. 16, Geneva: WHO.

Besley, T. (1995). *Savings, credit, and insurance.* Handbook of Development Economic. Vol. 3, ed. J. Berhman and T. N. Srinivasa, 2123–2207. North-Holland: Amsterdam.

Brown, W., & Churchill, C. (1999). *Providing insurance to low-income households.* Part I: Primer on Insurance Principles and Products. November.

Brown, W., & McCord, M. J. (2000). *Summary of discussions*. USAID MBP Virtual Conference on Microinsurance, October 9–27.

CMH. (2001). *A synthesis report on the role of communities in resource mobilization and risk sharing*. Commission on Macroeconomics and Health Working Paper Series, paper no. WGP3:4, August.

Dror, D., & Jacquier, C. (1999). Micro-insurance: Extending health insurance to the excluded. *International Social Security Review*, *52*(1), 71–98.

Dror, D., & Prekar, A. S. (2002). *Introd. to Social re insurance: A new approach to sustainable community health financing*. World Bank and ILO.

Eswaran, M.; & Kotwal, A. (1989): Credit as insurance in agrarian economies. *Journal of Development Economies*, *31*, 37–53.

———. (1990). Implications of Credit Constraints for Risk Behaviour in Less Developed Economies. *Oxford Economic Papers*, *42*, 473–482.

Holzmann, R. (2001). *Risk and vulnerability: The forward looking role of social protection in a globalising world*. Keynote speech, World Bank poverty forum, Manila February 5–9.

Holzmann, R., & Jorgensen, S. (2000). *Social risk management: A new conceptual framework for social protection, and beyond*. Social Protection Discussion Paper No. 0006, Washington, DC: World Bank.

Hsiao, W. C. (2001). *Unmet health needs of two billion: Is community financing a solution?* In Prekar, 2001.

Jakab, M., & Krishnan, C. (2001). *Community involvement in health care financing: A survey of the literature on the impact, strengths, and weaknesses*. In Prekar, 2001.

Jütting, J. (2002). *Social risk management in rural areas of low income countries*. Mimeo, Center for Development Research, ZEF Bonn.

Krause, P. (2000). *Non-profit insurance schemes for the unorganised sector in India*. (GTZ) Paper no. 24/, Germany: Deutsche Gesellschaft Für Technische Zusammenarbeit.

Martin, I., Hulme, D., & Rutherford, S. (1999). *Financial services for the poor and poorest: deepening understanding to improve provision, finance and development research program*. Working paper no. 9, IDPM, University of Manchester, October.

Mas-Colell, A., Whinston, D., & Green, J.R. (1995). *Microeconomic theory*. Oxford University Press.

Morduch, J. (1994). Poverty and vulnerability. *American economic review*, *84*(2), 221–225.

———. (1999a). The micro-finance promise. Journal of Economic Literature, *37*(4), 1569–1614.

———. (1999b). *Between the market and the state: Can the informal insurance patch the safety net?* Mimeo. Prepared for Social Protection Unit, Human Development Network, Washington DC: World Bank.

Prekar, A. S., ed. 2001. *Health care financing for rural and low-income populations, a collection of background reports for the commission on macro-economics and health*.

Prekar, A. S., Carrin, G., Dror, D. M., Jakab, M., Hsiao, W., & Arhin, D. (2001). *The role of community in resource mobilisation and risk sharing : A synthesis report*.

Ranson, K. (2001). *The impact of SEWA's medical insurance fund: Results of a household survey in Anand and Kheda districts, Gujarat*. Background Paper for Working Group 3, Commission of Macroeconomics and Health, Washington, DC: World Bank.

Sadoulet, L. (2001). *Learning from Visa? Incorporating insurance provisions in microfinance contracts*. Paper prepared for the WIDER Conference, Insurance against Poverty, Helsinki, June 14–15. http://www.wider.unu.edu/publications/2000-2001-3-2/2000-2001-3.2-10.pdf.

Siegel, P., & Alwang, J. (1999). *An asset-based approach to social risk management: A conceptual framework*. Social Protection Discussion Paper no. 0116. Washington, DC: World Bank.

Siegel, P., Alwang, J., & Canagarajah, S. (2001). *Viewing micro-insurance as a risk management tool*. Social Protection Discussion Paper no. 0115. Washington DC: World Bank.

Weinberger, K., & Jütting, J. (2000). The role of local organizations in risk management: Some evidence from rural Chad. *Quarterly Journal of International Agriculture*, *39*(3), 281–299.

Wiesmann, D., & Jütting, J. (2000). The emerging movement of community based health insurance in sub-Saharan Africa: Experiences and lessons learned. *Afrika Spectrum*, 193–210.

Zeller, M., & Sharma, M. (1998). *Rural finance and poverty alleviation*. Food policy report, International Food Policy Research Institute, Washington, DC.