Sources of Financial Instability of Community-Based Health Insurance Schemes: How Could Social Reinsurance Help?

PHRplus

Partners for Health Reform*plus*

Mission

Partners for Health Reformplus is USAID's flagship project for health policy and health system strengthening in developing and transitional countries. The five-year project (2000-2005) builds on the predecessor Partnerships for Health Reform Project, continuing PHR's focus on health policy, financing, and organization, with new emphasis on community participation, infectious disease surveillance, and information systems that support the management and delivery of appropriate health services. PHRplus will focus on the following results:

- ▲ *Implementation of appropriate health system reform.*

- ▲ *Generation of new financing for health care, as well as more effective use of existing funds.*

- ▲ *Design and implementation of health information systems for disease surveillance.*

- ▲ *Delivery of quality services by health workers.*

- ▲ *Availability and appropriate use of health commodities.*

July 2003

Abstract

Community-based health insurance (CBHI) is a promising component of health financing reform in developing countries, offering protection to individuals against the potentially high costs of a sudden illness or injury. But, because CBHI schemes may themselves run the risk of insolvency, advocacy of CBHI scheme development has brought parallel concerns that the plans themselves need protection from the various kinds of financial risks that could jeopardize their survival. One potentially helpful mechanism is social reinsurance that would cover CBHI schemes for the risks of bankruptcy in return for their payment of relatively small premiums. In principal, social reinsurance offers such "survival" benefits primarily to relatively small insurance plans that would each have insufficient reserves to weather a bad year (when expenses would greatly exceed income). But, in practice, the requirements of developing a potentially beneficial social reinsurance mechanism are considerable. This paper is an effort to analyze the varied threats to financial stability that CBHI schemes face and to explore what role social reinsurance might play in helping to preserve their solvency. The paper discusses the range of potential threats to the financial stability of CBHI schemes, and distinguishes between those that are avoidable (due to nonrandom events) and those that are unavoidable (due to random events). The paper describes the terms and conditions under which a social reinsurance program could be designed to provide reinsurance coverage of the simplest type – excess loss (stop-loss) coverage. It discusses the requirements for designing and implementing such a program, describes a general rule for determining a fair premium, and explains why substantial (and indeterminate) subsidies would be required for at least five years before a social reinsurer would (at best) achieve breakeven status. It details how the lack of needed data and the threats from avoidable risks make the need for additional subsidies – particularly for technical assistance – virtually certain. With this kind of uncertainty about the requirements for subsidies and the length of time they may be needed, the early emphasis of technical assistance may be most profitably focused on preventing the *avoidable* risks faced by CBHI schemes, while the long-term prospects for social reinsurance – as designed to address the *unavoidable* threats – are more fully developed.

Table of Contents

Acronyms

CBHI   Community-Based Health Insurance

MHO   Mutual Health Organization

MHO   Mutual Health Organization

OOP   Out-of-Pocket

SD   Standard Deviation

WHO   World Health Organization

Acknowledgments

Executive Summary

There has recently been increasing interest in community-based health insurance (CBHI) as a promising approach to health financing reform in developing countries, particularly for poor communities with limited access to formal, government-subsidized health care. Both the World Health Organization's (WHO's) Commission on Macroeconomics and Health and the World Bank have endorsed such an approach as affording protection to individuals against the high costs of a sudden illness or injury. While CBHI schemes may offer the benefits of risk-spreading, they themselves may be at risk of insolvency in the early days of their development due to various causes, some preventable, some unavoidable. Thus, the advocacy of CBHI scheme development has brought parallel concerns that the schemes themselves need protection from the various kinds of financial risks that could jeopardize their survival.

One potentially helpful mechanism that has been proposed is social reinsurance that would cover CBHI schemes for the risks of bankruptcy in return for their payment of relatively small premiums. A recent book jointly published by the World Bank and the International Labour Office (ILO) (Dror and Preker 2002) explores the multiple facets of designing and implementing such a program, including results of preliminary efforts to launch such a program in the Philippines. It describes the ways and means by which the protection such a program would provide would enable many small schemes to survive when they otherwise would not. Moreover, it notes how the technical and financial requirements of defining the particular parameters (and price) of a reinsurance contract with a CBHI scheme would call for technical expertise that a social reinsurer could share with the CBHI schemes to assist them in designing and executing their own business plans.

In principle, social reinsurance offers such "survival" benefits primarily to relatively small insurance schemes that would each, by and for themselves, have insufficient reserves to weather a bad year (when expenses would greatly exceed income). But, in practice, the requirements of developing a potentially beneficial social reinsurance mechanism are considerable, and extend beyond the difficult task of identifying that part of losses that could actually be considered reinsurable (and, of course, what the price that a contract for such reinsurance would be). Furthermore, in contrast to CBHI schemes that, while relatively new as health financing alternatives, have developed some experience and lessons learned over the past several years, social reinsurance is so far untested in the field. So, while there is much written about the potential benefits and design requirements of social reinsurance, there is no prior experience to guide the design of a social reinsurance scheme in a developing country.

This paper is an effort to analyze the varied threats to financial stability that CBHI schemes face and to explore how social reinsurance might be designed and implemented to help to preserve their solvency. It tries to examine how the theoretical model of social reinsurance might have application in practice. To do this, it discusses the range of potential threats to the financial stability of CBHI schemes, and distinguishes between those that are avoidable (due to nonrandom events) and those that are unavoidable (due to random events). The paper describes in some detail the terms and conditions under which a social reinsurance program could be designed to provide reinsurance coverage of the simplest type: excess loss (stop-loss) coverage. It discusses the requirements for designing and implementing such a program, and explains the general rule for determining the maximum premium a

CBHI scheme would be willing to pay for reinsurance and the minimum a reinsurer would be willing to accept, under the terms of the model postulated.[1]

The principal conclusion of the simulation described is that substantial subsidies (of the reinsurer's contractual obligations to its covered schemes) would very likely be required for at least five years, and that additional subsidies would be desirable to pay for the considerable technical assistance such CBHI schemes would need, to bring their data and operations management capabilities up to the standard that would be required for reinsurance coverage. For any real-world situation (in which the needed data are scarce), however, it would be difficult to estimate the magnitude of the subsidies required, and/or the length of time the subsidies would be needed.

With this kind of uncertainty, potential donors and/or investors may be understandably reluctant to commit the financing needed for start-up of a social reinsurance program in a developing country. Meanwhile, there may be a significant number of CBHI schemes that may well fail (particularly among the smaller ones) because they did not, or could not, prevent those avoidable (unreinsurable) events that tend to undermine scheme solvency – events that certainly would have to be prevented to enable the design (and successful operation) of any viable social reinsurance program. In lieu of social reinsurance, then, it may well be possible (as much as it is necessary) to design other kinds of programs to assist CBHI to avoid financial problems, particularly those that could be caused by events and behaviors that could be prevented.

While the ideal sequence of programming assistance to these schemes could be debated (in relation to the start-up of a social reinsurance program), and while the likely cost (and likely duration) of subsidies needed by proposed social reinsurance programs continues to receive deliberate consideration, the needs of existing (and newly formed) CBHI schemes for technical assistance in preventing the *avoidable* fiscal threats they face will continue to mount. Addressing the problem of these avoidable threats should proceed, and solutions designed, even while the long-term prospects for social reinsurance to address the *unavoidable* threats are considered.

---

[1] The general rule is that the required premium would be roughly one-half the standard deviation in the mean benefits costs per accounting period.

1. Background and Purpose

There has recently been increased interest in community-based health insurance (CBHI) as a promising approach to health financing reform in developing countries, particularly for poor communities with limited access to formal, government-subsidized health care. In endorsing such an approach, the WHO Commission on Macroeconomics and Health noted that "this method would offer a degree of risk spreading, so that households would not face financial catastrophe in the event of an adverse health shock to household income" (World Health Organization [WHO] 2001: 61) A recent publication of the World Bank, based on background reports of the same Commission, observed that any broad-scale effort to mobilize community resources for health of rural and low-income populations should include "insurance to protect against expenditure fluctuations" (Preker forthcoming).

This increased interest in CBHI has stimulated promotion of its development and advocacy of the protection of any newly created schemes from financial risks that would jeopardize their survival. One potentially helpful mechanism proposed is social reinsurance that would cover schemes for the risks of bankruptcy in return for their payment of relatively small premiums.[2] It is thought that the protection afforded to schemes by the availability of such social reinsurance would enable many such small schemes to survive when they otherwise would not. Moreover, the technical and financial requirements of defining the particular parameters (and price) of a reinsurance contract with a CBHI scheme would require technical expertise that could be shared with the CBHI schemes to assist them in designing and executing their own business plans.

But financial instability in CBHI schemes can have multiple causes, and social reinsurance can by no means address them all. In fact, the potential benefits from social reinsurance may be quite limited by its narrow applicability to a specific subset of the broad range of financial risks that are faced by CBHI schemes. The feasibility of social reinsurance will likely depend, moreover, on the success that schemes realize in substantially reducing, through their own efforts, the impacts of the many kinds of financial risks that social reinsurance cannot address. Indeed, the mechanism of social reinsurance can only help a CBHI scheme to survive; it can do nothing to help it to thrive.[3]

In principle, social reinsurance offers such "survival" benefits primarily to relatively small insurance schemes that would each, by and for themselves, have insufficient reserves to weather a bad year (when expenses would greatly exceed income).[4] But the practical requirements of developing a potentially beneficial social reinsurance mechanism are considerable and extend beyond the difficult task of identifying that part of losses that could actually be considered reinsurable. Furthermore, in contrast to CBHI schemes that, while relatively new as health financing alternatives, have developed

---

[2] Preker (forthcoming) observes that policies and programs to "enhance the viability and sustainability of the financial protection" provided by CBHI schemes would include, inter alia, "re-insurance to enlarge the effective size of small risk pools."

[3] Technical assistance made available through the social reinsurer could, of course, help. But it would have a cost, perhaps a substantial one, that could not reasonably be covered by the reinsurance premium charged.

[4] As will be discussed later in this paper, large CBHI schemes would have a much greater capacity than would small schemes to create large enough reserve funds to weather any bad years.

some experience and lessons learned over the past several years,[5] social reinsurance is so far untested in practice (except for the pilot now underway in the Philippines). Thus, although there has been much written about the potential benefits and design requirements of social reinsurance,[6] there is little prior experience or "lessons learned" to guide the design of a social reinsurance scheme in a developing country. It would therefore be helpful to examine how a policy analyst could evaluate the potential benefits and feasibility of initiating social reinsurance as a tool to promote financial stability among CBHI schemes.

To that end, it is the purpose of this paper to describe and analyze the kinds of financial risks that are most commonly faced by CBHI schemes and to propose a conceptual framework for assessing which risk(s) can be reinsured and for assessing the feasibility of designing and implementing a program of social reinsurance to reinsure the identified risk(s). The next section (Section 2) introduces the basic principles and features of health insurance and reinsurance. Section 3 describes the various factors that can lead to financial losses in CBHI schemes. Section 4 describes the principles and features of a proposed program of social reinsurance. Section 5 discusses the prospects, prerequisites, and potential problems of attempting to design and implement such a program in a developing country. (Definitions of terms can be found in the Annex A.)

---

[5] Evidence on the effectiveness of CBHI schemes is still rather limited. But notable contributions have been made by Atim (1998) and Musau (1999).
[6] See Dror and Preker (2002): Part 4 of this publication focuses on various elements of the design and implementation of the social reinsurance pilot project in the Philippines.

---

2. Principles and Features of Health Insurance and Reinsurance

2.1 Community-Based Health Insurance

CBHI is health insurance that is provided at the community level and often organized and managed by community or community-related organizations. While there are numerous distinct forms for such organizations and for the financial arrangements characterizing their operations, the one common feature of such schemes is that they spread at least some of the financial risks of getting sick across the entire (enrolled) community.[7] For there to be financial risks, of course, patients must face user fees when trying to access services, and such fees must be significant relative to an individual's income.[8] And, because financial risk necessarily has two dimensions – first, how frequently it might occur, and, second, how large the financial cost would be from its occurrence – pooling of risks within a community will vary along a spectrum incorporating both of these two dimensions. At one extreme in the spectrum of alternatives, a scheme could cover only very expensive medical care events that occur relatively rarely (e.g., nonelective inpatient surgery). At the other extreme, a CBHI scheme could cover only inexpensive medical care events that occur relatively frequently (e.g., routine ambulatory consultations). It is common to find CBHI schemes that cover some combination of these extreme forms of risk pooling. Needless to say, it is rather common in poor countries for many individuals to have insufficient cash on hand to be able to afford (even small) payments in the case of illness or injury. If CBHI can make medical care more affordable by spreading these risks, it is also likely to make medical care more accessible to those enrolling in the schemes. The kinds of risks to be covered by a CBHI scheme are usually responsive to the needs and desires of the community. But, whatever combination of frequency and magnitude of losses is offered in scheme coverage, the risk covered would need to be "insurable"[9] in order for the CBHI scheme to be sustainable over time.

2.2 Reinsurance

Because insurance schemes seek to spread "insurable" risks, they must themselves take on the risk that their income from premiums may not be enough, over a given period, to cover the financial obligations they may incur according to the contracted terms of coverage. While there can be a wide

---

[7] If the scheme does not offer to spread risk, there is no basis for calculating a reinsurance premium.

[8] While distinct from user fees, the risk-spreading offered by CBHI schemes is not an alternative to fees. Where services are provided free of charge (or when fees are relatively low), there is no financial risk – even though access and quality may be less than desired.

[9] An event is insurable if it is a future, randomly occurring event (from the *individual insured's* perspective) *and* if its chance of occurring for any *group* of insureds is reasonably predictable (from the *insurer's* perspective). In other words, the insured individual cannot control its frequency (or fact of) occurrence, and the insurer can accurately predict how often it will occur within the insured group. For a further discussion of "insurability" and other definitions of relevant terms, see Annex A.

variety of reasons for incurring an operating deficit, small health insurance schemes are likely to experience pronounced instability over time, i.e., a volatility in the difference between income and expenses, if only because of their relatively small enrollments. A small group of insureds experiences much greater variation (from one year to another) in its total (and average) benefit costs than does a large group. This makes it more difficult for smaller schemes to achieve a proper balance of income and expenses for a given benefit package (of insurable benefits) offered in the contract. (More will be said about this in Section 3.)

A small health insurance scheme can reduce its exposure to financial instability by obtaining reinsurance of its own risk of excessive losses. In return for a modest premium paid by the scheme, a reinsurance scheme would agree to pay that insurance scheme's (insurable) losses above a certain amount, or to pay according to an agreement that generally would serve to modify the scheme's risk exposure or composition.[10] By making such agreements with many small schemes, a reinsurer can spread the (insurable) losses some of them may suffer over a large group of them. To ensure its own solvency, the reinsurer would need to meet certain financial parameters in setting the reinsurance premiums, and could spread its (insurable) risks by reciprocal arrangements with other reinsurers or by reinsuring again its own risks.

2.3   Social Reinsurance

To the (minor) extent that reinsurance is available at all in developing countries, it typically offers coverage to commercial insurers at relatively high premiums. Reinsurance is not available at all for CBHI schemes at present. Not many countries have significant numbers of schemes, and, in those few that do, any social reinsurance program would face multiple, unknown risks and high start-up costs to begin with.[11] Where CBHI schemes have been initiated, however, as the number of schemes grows, the risk is great that many will fail simply because they will have insufficient funds (or access to funds) to finance what could well be only temporary deficits in their finances.

Social reinsurance would provide reinsurance to such schemes for social reasons rather than for commercial reasons.[12] The primary benefit of social reinsurance would be to ensure the survival, and if possible the continued expansion, of CBHI schemes that would otherwise fail as a result of financial instability. By providing a mechanism for financing its financial losses when they are excessive, social reinsurance would, in essence, guarantee sustainable financing to CBHI schemes. If it succeeded at this, social reinsurance could then be said to have provided a broader social benefit if the survival of such CBHI schemes were shown to be promoting the achievement of a broad social and/or health status goal sought as part of the country's national health systems development strategy.

---

[10] Reinsurance can be of two types. Proportional contracts specify the share of any specific exposure that would be resinsured (quota-share or surplus share). Nonproportional contracts specify how, for a specific exposure, an excess of risk would be reinsured (excess loss per risk, excess frequency of loss for a given risk, or aggregate excess loss [stop loss]). Reinsurance for CBHI schemes would most logically be "stop loss" contracts to begin with. See J.F. Outreville, "Introduction to Insurance and Reinsurance," Chapter 3 (pp. 59-74) in Dror and Preker (2002).

[11] It is estimated that start-up costs (for administrative costs and capital reserves) for a program in the Philippines would be at least $3 million and could be as high as $6 million. See F.G. Feeley et al., "Assessment of Piloting Social Reinsurance in the Philippines," Chapter 22 (pp. 423-446) in D. Dror and A Preker (2002).

[12] It is presumed that any social insurance program would operate on a not-for-profit basis and that its objective would be to support the expansion and long-term financial stability of many small CBHI schemes.

One could conceivably distinguish between social reinsurance programs that were sponsored by a government and those that were sponsored by a nongovernment organization. At present, there are no examples of either approach. But the idea of social reinsurance has recently attracted much interest, as evidenced both by the publication of a book (Dror and Preker 2002) on the subject by The World Bank and the International Labour Office and by expressions of interest by CBHI schemes in Senegal and Ghana.

2.4   Assessing Feasibility of Social Reinsurance

As already noted, a major goal of social reinsurance is to improve the prospects that CBHI schemes will be financially sustainable over the long run. For this to be accomplished, a social reinsurance program would itself need to be financially sustainable over the same period. It is, of course, true in both cases, that, while financial sustainability may be a necessary ingredient, it is not sufficient for guaranteeing long-term survival. Analysts often cite other important dimensions of sustainability: managerial and organizational capacities, for example. In addition, in the resource-poor environments in which both insurance schemes and social reinsurance are being considered, external subsidies are a commonly needed ingredient of financial sustainability. Determining the feasibility of social reinsurance in any particular environment must necessarily presume that the CBHI schemes it would seek to assist are themselves sustainable – even if that sustainability were to be conditioned on technical assistance from the social reinsurer. Even after making this presumption, determining the feasibility of social reinsurance will involve assessing the degree to which the specific prerequisites of successful implementation of social reinsurance are capable of being met. The next section discusses the potential role of social reinsurance in addressing sources of financial losses among CBHI schemes. It serves as an introduction to a later discussion of the prerequisites of starting up such a social reinsurance program.

3. Sources of Financial Instability and the Potential Role of Social Reinsurance

Long-term financial sustainability of community-based health insurance schemes depends on their success in balancing, over time, their benefit payouts and other costs (expenses) with their members' contributions and other income.

For any given accounting period, however, the cause(s) of any imbalance will usually be several, if only because the balance is determined by the levels of the two (somewhat independent) variables of expenses and income. Thus, for any given accounting period, expenses are never "too high" except in relation to income, and income is never "too low" except in relation to expenses. Financial sustainability is achieved by equilibrating the two, on average, over many accounting periods.

In order to help CBHI schemes to achieve this goal, it would be useful to know the most important determinants of any negative imbalances of expenses and income (when they occur), so that measures can be designed to prevent them from occurring.

3.1 Categorizing the Causes of Financial Losses by CBHI Schemes

As a very general rule, a CBHI scheme aiming to achieve financial stability and sustainability would set benefits offered and the associated contribution rate charged at levels expected to generate financial balance, net of any subsidies received.[13]

Financial balance will result if and when the total of actual expenses incurred (in any accounting period) in paying the benefits of the enrolled group is no more than the total of the enrolled group's contributions. But when a scheme experiences a deficit in its financial results (i.e., expenses exceed income), it can be attributed to one or more of a limited number of events or circumstances. These events or circumstances can be divided into two categories:

1. Those that cannot be avoided but sometimes result in surpluses and sometimes result in deficits; and

2. Those that can (and should) be avoided (or, at least, should be minimized).

To the degree to which a scheme could document that its losses were due to random fluctuations (category one losses), it would become feasible for a reinsurance program to offer to reimburse the scheme for any costs in excess of the mean benefit costs (in any given accounting period), if contracted to do so in return for an appropriate premium. However, no reinsurer would be able to cover category two losses simply because it would be, for those losses, impossible to determine what

---

[13] For purposes of this discussion, it is assumed that both benefits and contributions are set without consideration of any subsidies.

an appropriate premium for such coverage would be (the probability of losses, as well as their magnitudes, being unpredictable).

Thus, it is important for a scheme to show that it has the data and the actuarial expertise to be able to estimate accurately the mean benefits cost it can expect to incur for the benefit package it offers and for the group of enrollees that choose to participate. An accurate estimate is needed for two reasons:

▲ It would make it possible to calculate accurately an appropriate reinsurance premium; and

▲ It would increase the confidence of a reinsurer that the losses it would be reinsuring are only (or, certainly, mostly) category one losses (i.e., randomly occurring, and thus insurable losses) and that it would not be reinsuring for any (or, certainly, very minor amounts of) category two losses (avoidable liabilities that the scheme must either prevent or absorb as they occur).

In practice, of course, it would be difficult, if not impossible, to distinguish quantitatively the financial losses that are due to one category and those that are due to the other category – even if there were adequate and reliable data available. However, making this categorical distinction provides a sound rationale for a scheme to identify and take steps to protect from category two losses. Any scheme that took such steps would have a higher likelihood of making itself eligible for reinsurance – if it were available – than one that did not take such steps.

3.1.1 Losses due to Random (Unavoidable) Fluctuations

In the first category are random fluctuations in the incidence and cost of cost-generating events. That is, the negative imbalance in financial results (income less expenses) occurs only because the actual payouts for benefits exceed the level expected in the calculation of the contribution (for a given accounting period) because of randomly occurring, excessive cost-generating events. In theory, over time, these periodic losses would be offset by equivalent amounts of periodic surpluses if (and only if) the contribution rate were, over many accounting periods, exactly equal to the average benefits cost (plus the loading charge for administrative costs and reserves). In practice, of course, it is unlikely that the scheme would survive long enough for this to be the case, if only because early losses might be difficult to finance in the absence of any certain knowledge that they are only the result of random fluctuations that will be offset by surpluses in the future. This uncertainty is typically aggravated by the virtual certainty that the financial losses experienced were caused (at least, in part) by other (nonrandom) identifiable (if not quantifiable) causes independent of the random fluctuations around the average benefits cost.

3.1.2 Losses due to Nonrandom (Avoidable) Events

The identifiable causes of (nonrandom) financial losses are, at least to some degree, avoidable. They comprise the events and circumstances in the second category that any scheme should strive to avoid or prevent. These are:

▲ Errors in estimating accurately the contribution rate required by the benefits package offered;

- △ Insufficient or unreliable data on the risk profile of the likely enrollee group for any given benefit package;

- △ Inadequate provisions to limit adverse selection in enrollment (to the extent assumed in the contribution rate);

- △ Ineffective provisions in the benefits package to limit moral hazard (to the extent assumed in the contribution rate);

- ▲ Ineffective safeguards against fraud and abuse, manifested by a failure to detect and prevent false claims or wasteful or unnecessary use of benefits;

- ▲ Loose management controls that lead to excessive administrative costs and to erroneous benefits payments to ineligibles, among them being those whose eligibility had lapsed due to nonpayment; and

- ▲ Insufficient enrollment or excessive disenrollment.

Each of these potential causes for financial losses in a CBHI scheme will be discussed below. Implications for designing a scheme for monitoring and evaluating financial results, and for researching the empirical evidence on the predominant causes of financial imbalances, will also be discussed.

3.2 Causes of Financial Distress

3.2.1 Financial Losses Due to Unavoidable Random Fluctuations in Benefit Costs

In order to maximize the chances that expenses will equal (or, at least, not exceed) income, the scheme would need to predict accurately both the probability that cost-generating events will occur among the contributing group and the average cost of each such event.

There are three separate (but related) analytical exercises and operational activities that are involved in trying to maximize the chances of fund balance:

1. Choosing a benefits package;

2. Establishing the contribution rate implied by the benefit package; and

3. Marketing the benefits package (with its associated contribution rate) so as to attract a population with a risk profile not substantially different from the risk profile assumed in the calculation of (2) given (1).

The definition of the benefits package is best made in consultation with the community to which it is to be marketed, since its members will be the ones to judge its net value in deciding to join. Moreover, to judge its net value, the community members will naturally assess its potential benefits (e.g., the degree of reduction in financial risk to the individual) against the periodic contribution required to access them. So the scheme must balance its need to set a contribution rate sufficient to cover expected benefits against its need to set a rate that makes the benefits offered attractive to potential enrollees.

The calculation of a contribution rate associated with any particular benefits package can be made most accurately (if relevant data are available) when all the risks covered in the package are "insurable" (as defined above in footnote 10 and discussed in more detail in Annex A). Some "uninsurable" risks might be included if they are of modest cost and are relatively frequent. Their inclusion may serve a marketing purpose: attracting enrollees while at the same time being of limited liability for the scheme. "Uninsurable" risks of this nature that are most often included in CBHI schemes are routine ambulatory visits to clinics and inexpensive outpatient prescription drugs. "Uninsurable" risks that pose large, unpredictable liabilities for the scheme (e.g., coverage for expensive outpatient drugs) should be excluded because the scheme would have no way of predicting what the cost of covering such a risk would be (e.g., they would attract enrollees most likely to use them (the phenomenon known as adverse selection), but there is no way of telling exactly how many would enroll just for the drug benefit and how much it would cost).

3.2.2   Financial Losses Due to (Potentially) Avoidable Events and Circumstances

The potentially avoidable events and circumstances that could lead to financial losses can be mitigated by the adoption of certain preventive practices and safeguards, and by improving the availability and reliability of data on use and costs of medical care in the scheme area, both for enrollees and for nonenrollees, including both covered and noncovered benefits.

3.2.2.1 Errors in Setting the Contribution Rate

In practice, it is almost always the case that financial losses are caused, at least to some unknown degree, by errors in calculating accurately the contribution rate required by the benefits offered. Accuracy in such a premium calculation requires not just correct estimates of future use of the benefits by the population expected to enroll, but also a marketing plan that successfully attracts a population that is very similar, in its demographic and risk characteristics, to that assumed by the use rates applied in the premium calculation. There are three main sources of error: bad data, excessive adverse selection, and higher than expected use attributable to the lower effective prices of covered services (also known as "moral hazard").[14] While it is unreasonable to expect CBHI schemes in developing countries to have the same capacities as insurance schemes in developed countries have to avoid these errors (e.g., industry "best practices" and actuarial tables), recognizing potential sources of avoidable error may help CBHI schemes to devise innovative ways of preventing them.

3.2.2.1.1 Insufficient or Unreliable Data

The lack of reliable data on medical care utilization and costs in general, and of any kind of data on use and costs disaggregated by age cohorts, gender, and geographical location in particular, is the biggest obstacle to setting a reasonably accurate contribution rate for the chosen benefits package. Often the only way to know the accuracy of the contribution rate is to observe the subsequent

---

[14] Note that a scheme cannot avoid the effects of moral hazard or adverse selection altogether. They can only be minimized or mitigated somewhat (as discussed below in Section 3.3.2.1.2). After deciding what steps are to be taken to minimize their effects, the contribution rate should be determined after explicitly accounting for the effects assumed to remain (i.e., the effects of both phenomena on raising average use above the average for the target population as measured in the absence of insurance coverage). Negative errors would occur if scheme experience proved the estimates used in the contribution rate to have been too low.

experience resulting from enrollees' paying a particular offered rate – a rate that is usually based on national data lacking adjustments for local characteristics of the patient population and the provider base. Even repeated observation over time cannot help one to distinguish easily between random fluctuations and nonrandom errors in estimating the contribution rate.

Before offering the insurance scheme to the community, it would be ideal to have a full demographic and medical risk profile on the target population. These data (gathered by household surveys) would include age, gender, and geographic distributions of the target population, as well as data on the utilization and associated out-of-pocket (OOP) costs for major categories of medical care used by that same population. Use and OOP cost breakdowns should be available at least for inpatient, outpatient, and prescription drug use, and ideally should be obtained according to major demographic groups (age, gender, and geographic location). Of course, in setting the contribution rate, overall use and OOP cost rates for the population as a whole (even if broken down by demographic groups) would need to be adjusted for anticipated adverse selection and moral hazard effects of offering particular benefits. (This is discussed further below.)

After offering the insurance scheme to the community, it would be ideal to have such data available both for the enrolled and for the nonenrolled populations, in order to be able to calculate the (combined) effects of adverse selection and moral hazard inherent in the benefits package. Collection of such use and cost data should be routine for the enrollees in the scheme itself, but would have to be collected for non-enrollees on a periodic basis through household surveys. Moreover, the overall demographic profile of the enrolled group would also need to be monitored in order to be aware of any changes (e.g., in age or gender distributions) that could affect the risk profile of the scheme. These data are independent of use and thus should be collected as part of the enrollment and disenrollment procedures.

3.2.2.1.2 Inadequate Provisions to Limit Adverse Selection

Standard provisions designed to limit adverse selection are: (1) waiting periods (the length of time after an enrollee starts paying a contribution and before he or she is eligible to start receiving benefits); (2) pre-existing condition limitations (enrollees are prohibited from receiving benefits for a condition that existed prior to enrollment); (3) minimum participation thresholds for affinity groups, such as inhabitants of one village or employees of one employer (often set at 60 percent of those eligible); (4) coverage exclusions for conditions over which enrollees have some control (e.g., elective surgery and normal deliveries); and (5) limited open enrollment periods.

Without instituting and enforcing at least some of these provisions, it may occur that those enrolling would end up with a higher likelihood of using benefits than was anticipated when the contribution rate was set, thus leading to higher than expected payouts for benefits. The most effective protection against adverse selection (of the five listed above) is ensuring that as many people as possible join the scheme – hence, the minimum participation rate required for anyone enrolling for a particular group – and that people who know they are sick cannot join just to cover that illness, before dropping out.

3.2.2.1.3 Ineffective Provisions to Limit Moral Hazard

"Moral hazard" is the effect on demand for covered benefits of the lower effective prices made available to enrollees by virtue of their coverage. The principal provisions available to minimize this effect are deductibles and copayments assessed at the point of service. Deductibles mean that enrollees must pay a certain minimum amount out-of-pocket before the scheme pays any benefits.

Copayments mean that the price of services is never zero and that enrollees must pay something (say, 20 percent to 50 percent of the price for the uninsured) in order to receive reimbursement for the rest. Utilization of services inevitably rises when effective OOP prices are reduced; it rises the most when prices are reduced the most, i.e., when there are no deductibles or copayments for covered services.

3.2.2.2 Ineffective Safeguards Against Fraud and Abuse

Providers need to have incentives to deny covered services to ineligible persons (and therefore need to be able to identify currently covered enrollees, i.e., those who have paid to date), to bill only for services actually rendered, and to render only those services needed. Enrolled patients need to have incentives to seek services only when needed, and need to know there will be sanctions for fraudulent claims. In the absence of such incentives, or of their adequate enforcement, benefits paid out could easily exceed the level assumed in setting the contribution rate.

3.2.2.3 Loose Management Controls

Management controls are needed to detect and to prevent fraud and abuse. But they are also needed to ensure that scheme operations run smoothly and that scheme policies and procedures are enforced as intended. Three areas in which poor management controls can lead to financial losses are provider relations, eligibility determination, and collections and cash management. In the area of provider relations, management's task is to negotiate for the scheme advantageous prices for the enrollees' copayments and overall scheme payments. Eligibility determination must ensure that those who have stopped paying the required contribution are denied benefits as soon as the grace period is over. Finally, procedures for regular collection of contributions need to be effective in ensuring that members pay in full and on time. Close monitoring of the collection rate (and of the proper handling of cash revenues) would enable management to take the appropriate steps to investigate the causes of, and to respond promptly to, any significant decline in the percentage of members keeping current with their payment obligations. Clear rules for suspending access to benefits by those not paying also need to be in place and need to be enforced.

3.2.2.4 Insufficient Enrollment or Excessive Disenrollment

Insufficient enrollment or excessive disenrollment cannot be, in and of themselves, causes for financial losses – unless that portion of the contribution allocated to the loading charge is insufficient to reach breakeven. However, enrollment must reach some minimum level (both for each affinity group allowed to participate [say, 60 percent of each group] and for the scheme as a whole) in order for financial viability to be feasible. Sheer numbers of enrollees give some protection from financial losses simply from the fact that the standard deviation of random fluctuations around mean benefit costs are inversely proportional to enrollment (i.e., the higher the enrollment, the lower the variance around the mean). In addition to large numbers, however, schemes need to monitor the demographic composition of the enrolled group to ensure that the risk profile is not changing adversely (e.g., that the proportion of enrollees who are older people, who are sick more often, is not increasing relative to what was assumed when the contribution rate was set). This can be done by comparing the demographic characteristics of those enrolling with such characteristics of those disenrolling, and noting any significant changes.

4. Designing a Social Reinsurance Program: Specifications and Feasibility

This section discusses the importance and the substance of specifying the goals and objectives of social reinsurance, and the range of possible components of a program of social reinsurance.

4.1   Specification of Goals and Objectives

The framework proposed here for assessing the feasibility of social reinsurance is based not only on the forgoing definitions and principles, but also on a recognition that:

▲   Performance of the function of social reinsurance should be targeted to achieve the objective for which it is designed: to reduce the likelihood of financial instability (or bankruptcy) in many small health insurance schemes by pooling their risks of excessive losses; and

▲   Such a program is a means to an end, and not an end in itself, and design of the program to perform this function of financial protection of small health insurance schemes should be linked in specific ways to the broader goal(s) set out by government for the development of the national health system.

This section addresses each of these proposed requirements, the second issue being addressed first.

4.1.1   Support of Government's Social and Health System

The key to a successful program of social reinsurance should not lie in what it prevents (bankruptcies of many small schemes and loss of money and trust of the members), but rather in what it may promote. It is reasonable to require that any program of social reinsurance be designed to promote development of a system that is consistent with national health policy – insofar as that policy includes promotion of CBHI as an explicit component of the health financing system.

While it is not uncommon for national health financing policies of developing countries to include support for development of the health insurance function in general, and of community-based risk-spreading schemes in particular, it is less common to see government health policies that articulate in any detail how such development will be pursued (and is expected to be achieved) in the design and implementation of particular programs. In many countries, the domain of health insurance has only a generally specified relationship both to health financing policy and to the primary programmatic focus of ministries of health – the delivery of subsidized medical care to as much of the population as it can afford. Thus, CBHI may, in certain cases, develop relatively rapidly in the absence of any specific national policy framework that seeks to guide its development toward support of specific national goals.

Unregulated development of small CBHI schemes (and, also, of any social reinsurance program supporting that growth) could raise a number of difficult policy issues regarding how best to target the subsidies inherent in government-sponsored health services that are typically covered by CBHI schemes.[15] A program of social reinsurance would provide an opportunity, through its programmatic framework, for addressing many of these policy issues within the context of broader government health policy. On the one hand, if they are not addressed, the possibility exists that any success by social reinsurance in sustaining a large number of CBHI schemes could lead to results that were counter to the government's health financing or delivery system goals. On the other hand, the widespread failure of CBHI schemes, or of a social reinsurance program that ultimately does not work, could have severe adverse effects both from the monetary losses suffered by those enrolled as well as from the possibility that government services would be strained to provide services for those no longer covered by the schemes.

4.1.2   Support of Financial Viability of Small CBHI Schemes

The principal function of social reinsurance (indeed, its reason for existing) is to reduce the likelihood of financial instability (or bankruptcy) in many small health insurance schemes by pooling their (insurable) risks of excessive losses. Whether this goal is achieved can be measured by the number of small CBHI schemes that fail in the long run (it should be few) and by whether the social reinsurance program can remain solvent in the long run.

The means and methods by which reinsurance can be programmed to achieve this social goal of sustaining small CBHI schemes are relatively straightforward,[16] at least from a statistical/actuarial point of view. These will be discussed in the next section.

4.2   Program Specification (Assuming Goal 4.1.2 Above)

A program of social reinsurance could be designed (by government) with the specific intent of organizing and implementing a national policy that was explicitly designed to ensure that government-sponsored care and CBHI schemes were mutually supportive and consistent with national health policy (Bennett, n.d.). Presumably, one facet of this broader policy would be to ensure that subsidies targeting the poor were as effective as intended. Such a design objective, however, is a complex subject, and could conceivably involve government's requiring that social reinsurance be mandatory for all CBHI schemes. This would certainly seem to imply an associated regime of regulation of CBHI schemes that could involve the imposition of standards that might be required as a condition of becoming reinsured, even though it were mandated. Exploring the complex issues of mandatory social reinsurance,[17] however, is beyond the scope of this paper.

Even in the more likely event of a social reinsurer being created that offered voluntary reinsurance to CBHI schemes (whether sponsored by government or by a nongovernment agency), it

---

[15] For a detailed discussion of the potential problems, see S. Bennett (n.d.).
[16] See S. Bonnevay, D. Dror, G. Duru, and M. Lamure, "A Model of Microinsurance and Reinsurance," Chapter 7 (pp. 153-186) in Dror and Preker (2002).
[17] It is conceivable that "mandatory social reinsurance" could be initiated by a private association of CBHI schemes as a condition of membership. If such an association were to charge premiums that served to cross-subsidize the reinsurance costs (from larger to smaller schemes), however, the association might well need to offer considerable "solidarity-related" benefits of membership to persuade the larger schemes from dropping out.

is also likely that government would need to regulate the activities and finances of that social reinsurer. Many of the regulatory issues and concerns that would arise in any event are addressed in consideration of the feasibility of a voluntary social reinsurance scheme. In order to better understand the prospects and problems that are inherent in voluntary social reinsurance, the features and prerequisites of a proposed model scheme are described below.

To explore these prospects and potential problems, we assume the simpler case, as discussed above, that the goal of social reinsurance is merely to promote financial sustainability of CBHI schemes by stabilizing their losses and/or enhancing their surpluses. With this approach, we can proceed to describe a model program that would, theoretically at least, offer the possibility of achieving that goal. The description of the model program below summarizes that offered by Bonnevay *et al*.[18] (in Dror and Preker 2002) is preceded by a list of the principles and assumptions upon which the model is based.

4.2.1   Principles and Assumptions of a Proposed Program Model

The major principles upon which this representative model is based are two. First, the reinsurer would agree to cover only those risks associated with random fluctuations in the occurrence of insurable risks, as translated into the corresponding fluctuations in business results during any particular accounting period. Second, the reinsurer would cover those costs (excesses of total costs over total income) that exceeded some threshold level – a stop-loss amount.[19] Both principles are necessary for the reinsurer to be able to calculate with any precision the probability distribution of its own risks given the insurable risks that it may agree to reinsure

The assumptions made in developing the model program are the relevant facets of a simplified representation of the problem (above) to which the program is addressed, and of the important aspects of the program's expected operation. These assumptions address, first, the essential features of the contract between the CBHI scheme and its enrollees, and, second, those of the contract between the reinsurer and each CBHI scheme purchasing reinsurance.

4.2.1.1 Features of the Insurance Contract between CBHI Scheme and its Enrollees

In its contract with its enrollees, the CBHI scheme agrees to pay for the costs of specific health benefits (for a given time period) for all who enroll in return for their payment of a specific premium (covering that given time period). The long-term viability of the CBHI scheme depends on its financial stability which, in turn, is determined by its being able to fully cover its total costs with its total income over multiple successive accounting periods. From one time period to another, both costs and income will fluctuate randomly; hence the difference between them will be randomly positive or negative.[20] However, because the CBHI scheme would (should) know the probability distributions[21]

---

[18] Criteria for feasibility addressed in this paper will be applied to this model for assessment purposes.

[19] Other types of reinsurance could be made available, such as the proportional contracts as described in footnote 7, but stop-loss posits the simplest case. But they would be even more difficult to model than (excess) stop-loss contracts.

[20] "Randomly" means that, while the various probabilities of particular values of costs and of benefits may be known, the particular value that will be experienced in actuality in any given period cannot be precisely predicted. That is, it is randomly distributed around its most probable value.

both of its future costs and of its future income, it should be able to predict the probability that the difference between its actual cost and actual income will be any particular amount.

For each individual enrollee, the cost of providing the contracted health benefits is unknown. However, it is possible (and necessary[22]) for the scheme to be able to predict the average costs for the whole group of enrollees. It can do this if it knows, for the risk profile represented by the expected composition of the enrolled group, the probabilities of the risk events covered as benefits (e.g., hospitalization up to five days, costs of drugs after a fixed copayment). For each risk event, it should also know the probabilities of various treatment costs of local medical care providers for each covered risk event. If the probability distributions of both unit cost and of incidence of each covered event can be known for the enrolled group, then the probability distribution of the overall cost of coverage can be calculated. It is this calculation that produces the expected (i.e., average) benefit costs, which, when supplemented by the apportioned amounts for administrative costs and for reserves, generates the amount of the premium to be charged to enrollees.

Note that the number of enrollees determines both the level of expected costs and the level of expected premium revenue. As enrollment increases, both costs and revenues should increase, on average, proportionately – as long as the enrolled group has a risk profile equivalent to the one expected by the scheme when it calculated the expected benefit costs that were the basis for the premium. If enrollees experience a higher rate of illness than expected, or a higher rate of benefit use than expected, then costs would be higher than expected, and premium revenue would likely be below incurred costs, resulting in a deficit.

It can be seen that, with adequate actuarial information, the CBHI scheme would be able to predict the probability of excessive losses in any year – or, in other words, its risk of becoming insolvent. If it could reduce this risk, by transferring part of this risk to a reinsurer, then it would reduce its probability of failure.

4.2.1.2 Features of the Contract between Each CBHI Scheme and its Reinsurer

In a basic contract between any participating CBHI scheme and a reinsurer, the scheme would pay to the reinsurer a periodic premium, and, in return, the reinsurer would reimburse the scheme for any costs it would incur (during the period of coverage) over a specified threshold amount (a stop-loss level). The need for such contracts lies in the (randomly) fluctuating business results that schemes are likely to experience. For a given benefit package, the scheme would expect – over multiple accounting periods – that its average total costs would equal its average total revenue. But in some years it would have excess revenues and run a surplus, and in some years it would have excess costs and run a deficit.

Theoretically, its surpluses (reserves) should be enough to cover its deficits, when both are averaged over time. But it cannot be known in advance whether surplus years will precede the deficit years, and whether there would be sufficient reserves from the surpluses at any given time to cover the deficits, particularly if there are several deficits in succession.

---

[21] A "probability distribution" gives independent probabilities for the occurrence of each value in a range of values.

[22] Necessary, that is, for the social reinsurer to be able to calculate a fair premium for reinsurance coverage. It may not be necessary, even though it would be desirable, for the CBHI scheme itself to be very precise in its predictions of costs (if social reinsurance is not available), as long as it errs on the side of caution.

Reinsurance would lower the financial risk of cost overruns in a CBHI scheme by having that risk spread across a number of other such schemes, each paying a small premium for the same stop-loss coverage. With reinsurance, a CBHI scheme would avoid the risk of bankruptcy in bad years and would also benefit from a reduced obligation to maintain high contingency reserves to insure itself against such a bankruptcy risk.

For the CBHI schemes to enjoy the enduring benefits of reinsurance, however, the reinsurer must itself remain solvent, its total revenue (reinsurance premiums collected) covering its total expenditures (reimbursements to CBHI schemes plus administrative costs) over multiple accounting periods. A reinsurer's risk of insolvency is determined by the probability distribution of enrolled CBHI schemes' business results, the terms of its reinsurance contracts, and its administrative costs. Moreover, the number of enrolled schemes (the size of the risk pool) will also influence the reinsurer's risk of insolvency.

4.2.2   Proposed Program: Financial Model

4.2.2.1 Theoretical Rules for Deciding to Reinsure

Given the above brief description of the nature of the contracts that would potentially exist linking the three parties involved, two questions arise for CBHI schemes:

1.   Under what conditions would a CBHI scheme want to purchase reinsurance?

2.   What would be the maximum that the scheme would be willing the pay as a premium?

Two questions simultaneously arise for the social reinsurer:

1.   Under what conditions would a social reinsurer be prepared to offer reinsurance?

2.   What would be the minimum premium that the (social) reinsurer would be willing to accept for stop-loss coverage for a CBHI scheme?

For a scheme and the reinsurer to agree to a contract, the scheme's maximum would need to be at least as much as the reinsurer's minimum.

The objective of a CBHI scheme would be to lower its risk of insolvency to a very low probability, preferably near zero. In order to achieve this without reinsurance, it would have to have sufficient resources (at the beginning of an accounting period) to cover the excess expenses (during the accounting period) of a worst-case scenario. It should be standard practice, of course, for a scheme to include an allowance for reserves in the premium charged in order to accumulate the resources needed to cover such a contingency. But a sufficient reserve allowance would very likely be quite large (especially for smaller schemes) and would raise the premium to a level that would discourage enrollment.

To put this requirement in mathematical terms, to insure itself for excess losses, a scheme would need to have (in advance) resources equal to its mean (expected) benefit expenses, plus a safety

margin (the reserve allowance) that would be proportional to the variance of those benefit expenses.[23] Since the variance is itself proportional to sample size (the number of enrollees), it would decline as enrollment rises. Thus, any particular reserve allowance included in the premium would be sufficient (for self-insurance) only if the enrollment reached the level assumed by the size of that allowance. It would be virtually impossible for a scheme with a very small enrollment to charge a sufficient reserve allowance to adequately protect itself from insolvency.

The reinsurance alternative gives a small scheme the option of paying a premium for stop-loss coverage that lowers its risk of insolvency to an acceptable level. The maximum a scheme would be willing to pay for such a premium is equal to the safety margin it would need if it self-insured, that is, the amount of reserves it would have to set aside itself to ensure that same low risk of insolvency.

4.2.2.2 Simulating the Estimation of the Safety Margin Required

The liability of a scheme for excess expenses, hence the associated risk of insolvency, is unknown in advance. But, because it is assumed to be a random fluctuation around the mean of a known probability distribution, it can be estimated if the expected (mean) benefit cost is known and the variance in that benefit cost can be calculated using appropriate assumptions about the statistical distribution of the incidence of benefits and of unit cost.[24] (Knowing the relevant probability distribution of expected cost-generating events to be covered by the CBHI scheme is essential for the determination of the optimal premium for the group of enrollees expected to enroll.)

Very few existing CBHI schemes, however, have real data adequate for the determination of the needed statistical distributions.[25] In the absence of any real data for illustration purposes, then, it would be useful to report the results of a simulation by Bonnevay *et al.* that sought to illustrate the dynamics of the financial relationships between small CBHI schemes and a reinsurer. *This simulation model used simplifying assumptions[26] that attempted to simulate the estimated business results of a number of CBHI schemes of varying sizes, with varying mean benefit costs, and with varying claims experiences.* A simulation was first run assuming homogenous risk profiles across schemes, then assuming heterogeneous risk profiles.[27] The simulation results generated answers to a number of questions about different aspects of the interaction between small CBHI schemes and a hypothetical reinsurer. The questions, and the answers *given by the simulation,* are as follows.

What is the failure rate of small schemes that are not reinsured?

Small CBHI schemes (say, of 500 members or less) are extremely vulnerable to failure (without reinsurance), even when they set the premium at substantially more (even 40 percent more) than the

---

[23] Of course, the scheme would need to include an amount in the premium to cover administrative costs also, unless these were being covered from other sources of funds.

[24] As suggested in Bonnevay *et al.,* it is reasonable to assume a Poisson distribution of benefit incidence and a Chi-squared distribution of unit costs. The mean benefit cost would be that used as the basis for the calculation of the premium assuming full cost recovery. See Annex 7C (pp. 179-183) of Bonnevay *et al.* in Dror and Preker (2002).

[25] Even with adequate data, there are considerable barriers. As pointed out in Bonnevay *et al.* in Dror and Preker (2002)*,* "Even when the mean benefit cost…is known…the statistical distribution function of the overall cost for each microinsurer turns out to be too complex for an analytical solution under most realistic scenarios." Thus, there is a need to run a simulation (p. 158).

[26] An important assumption was that cost-generating events for any CBHI scheme were independent or each other.

[27] Heterogeneous risk profiles exist when the benefit packages of the schemes, and the characteristics of the populations enrolled in the schemes, differ significantly one from another.

---

expected benefit cost for the premium. The failure rate declines as the size of the scheme increases and as the risk profile is reduced. The differences among schemes (for the same risk profile) are solely the result of the differences in their variances in benefit costs, which is very sensitive to group size. In other words, as size of enrollment increases, the additional amount (as a percentage of the premium) required to be devoted to reserves (to cover the worse-case benefits payout experience) decreases.

What level of premium should be set for the scheme's reinsurance?

To evaluate the conditions under which a reinsurance contract would guarantee that a small scheme would never become insolvent (because the reinsurer would pay all costs above the mean benefit costs), a simulation was done to estimate the lowest value of a reinsurance premium needed to ensure a 95 percent survival rate of the reinsurer. Since the safety margin needed by a small scheme is proportional to the variance of its benefit costs, the higher the variance (i.e., the smaller the enrollment), the higher the premium required. As a function of the variance, the required premium was found to be moderately influenced by the number of schemes in the pool – declining as more schemes joined. But after 20 schemes have joined, the premium stabilizes at *one-half of the standard deviation of the mean total benefit costs* (in the simulation, this result was the equivalent of about 24 percent of the average total cost of benefits of a scheme of 500 members each). Since the standard deviation of a scheme's benefit costs declines as enrollment increases, larger schemes would pay a smaller percentage of the basic contribution income (to cover mean benefits) as a reinsurance premium. For a scheme with 5,000 members, the reinsurance premium declines from that 24 percent (for a scheme with 500 members) to only 7.5 percent. However, the simulation also shows that, when schemes have heterogeneous risk profiles (very different benefit packages), the required premium rises significantly. This effect is accentuated for smaller schemes.

What is the reinsurer's balance and risk of insolvency? What is its need for subsidy?

The simulation shows that, when the reinsurance premium is set at the lowest possible rate (of one-half of the standard deviation of benefit costs), it takes up to five accounting periods of small pools being reinsured (i.e., the number of reinsured schemes being below 20) for the reinsurer to be guaranteed a 95 percent survival rate. Thus, a reinsurer would need possible external financing of a worst-case scenario in the first four accounting periods, unless it could begin operations with, say, as many as 75 schemes covered from the very first accounting period. In other words, in the absence of external financing, small pools would require a higher premium from the small number of schemes in order to secure 95 percent solvency of the reinsurer from the beginning. A further simulation reveals that, for a pool of only five schemes, a subsidy of 26 percent of the minimum reinsurance would be required to guarantee 95 percent solvency for the reinsurer. The required subsidy would drop to 3 percent (from the first accounting period) when the pool increases to 40 schemes. This required level of subsidy to the reinsurer would be higher to the degree the pool is composed of schemes with heterogeneous risk profiles. After five accounting periods, however, a reinsurer could experience 95 percent solvency with only 20 schemes paying the minimum premium in the pool, and external resources would no longer be needed.

4.2.2.3 Conclusions about the Financial Model

The above section gave a description of a proposed program model and of the results of a simulation representing simplified assumptions of the salient features of CBHI schemes and of the social reinsurer offering protection from insolvency. It was premised on social reinsurance addressing two major problems threatening the long-term survival of CBHI schemes:

1. Shortage of reserve capital; and

2. The small sizes of their respective risk pools.

Recall that the principal objective of social reinsurance would be to ensure 100 percent solvency for the CBHI schemes and virtually the same solvency (95 percent solvency rate was used in the simulation) for the social reinsurer.

The simulated scenarios that were run in order to estimate what would be required for this to be achieved came to the following general conclusions:

▲ Even with CBHI schemes having homogeneous risk profiles (similar benefit packages offered to similar populations), the maximum reinsurance premiums the schemes would be willing to pay would be insufficient to guarantee reinsurer solvency in the early years, as it built up its pool of reinsured schemes. Substantial subsidies of the reinsurer's operations would be needed through as many as the first five years from inception.

▲ The maximum reinsurance premium that CBHI schemes would be willing to pay would be a function of the standard deviation (SD) of its mean benefit cost – about half of that SD would be the limit. Assuming the scheme's maximum is the minimum a reinsurer would require,[28] the smaller the scheme, the higher would be the required reinsurance premium (as a percentage of the CBHI premium revenue).

▲ The more heterogeneous the schemes' risk profiles, the higher the subsidy required by the reinsurer and the longer the initial period for which the subsidy is needed.

4.2.3   Proposed Program: Implementation Model

The law of large numbers applies to reinsurance programs just as it does for the insurance schemes they would reinsure. That is, stability and predictability of a reinsurer's financial operations are improved[29] by any increase (1) in the number of schemes reinsured by the reinsurer, and (2) in the number of participants enrolled by each insurer. An insurance scheme can actually reduce its exposure to excess risks, and thus its need for reinsurance, simply by expanding scheme enrollment (as long as adverse selection does not increase in the process). In other words, the feasibility of social reinsurance actually rises with the average enrollment size of the universe of CBHI schemes that might seek to be reinsured.

Similarly, as has been noted above, a reinsurance scheme can reduce its need for subsidies by quickly expanding the number of schemes covered to more than 40. In both cases, there is greater potential for liabilities to greatly exceed income during any accounting period in the early stages of growth. It is, indeed, the relatively small size of the CBHI schemes that creates the urgent need for reinsurance. And, similarly, it is the small numbers of covered schemes (and the need to keep reinsurance premiums low) that creates a corresponding need in the reinsurer for reinsurance premium subsidies in its early years.

---

[28] Because the scheme's maximum willingness to pay is already well below the amount needed for a reinsurer to break even in the early years (as it built up a pool of reinsured schemes to the breakeven level), it is reasonable to expect a reinsurer not to charge any less.
[29] As long as the benefit package is priced to recover fully the expected costs of providing those benefits.

The current state of affairs in some developing countries creates something of a dilemma for any proposed social reinsurance program. On the one hand, it would help any reinsurance program for many CBHI schemes to have already been established, so that there would be an ample supply of schemes (potentially) willing and able to pay the reinsurance premium that would provide the early financing of reinsurance coverage. On the other hand, wherever such schemes already exist in large numbers, there is most likely an existing high degree of variation and heterogeneity, not only of risks, but also of benefit plans, enrollment sizes, management and administrative practices, data availability, and retention experience (premium levels and benefit costs are wildly uncorrelated, let alone predictable). The result is that reinsurance programs do not have (despite the existence of CBHI schemes) a sufficiently homogeneous set of risks across schemes, nor sufficiently large enrollments to generate reasonably low reinsurance premiums. They also certainly do not have enough data documenting the level of risks to allow them to make the statistical calculations necessary for setting that reinsurance premium (more on this below).

On the other hand, if a reinsurance program were to receive a government's blessing, and an adequate subsidy, to begin operations from scratch, it could benefit immensely from its attendant ability to set standards, provide consistent technical assistance, and collect uniform and comparable data for a variety of start-up CBHI schemes that would begin at roughly the same time. But such an approach would be slower to develop, and, in a country where CBHI schemes had already developed, could prove politically difficult to implement (unless some provision were made to include existing schemes under some other parallel but separate regime of reinsurance).

The need to set relatively low reinsurance premiums would argue for a reinsurance program designed to offer stop-loss coverage for one particular benefit package covering similar populations which enroll in relatively large numbers in each CBHI scheme. But, as noted, these requirements may be difficult to meet in countries where CBHI schemes are most numerous and developed. They may be numerous because they would, for the most part, have small enrollments (raising the variance of the mean cost, hence the reinsurance premium). In some countries, they also may have different benefit packages, each designed by the community to fit its own particular needs and desires (a heterogeneity that also raises the reinsurance premium).

Since immediate enrollment of large numbers of standardized schemes is an unlikely scenario, we shall postulate the general implementation requirements of the alternative: a social reinsurance program that has access to subsidies as needed to cover its losses while it tries to enroll already existing CBHI schemes – each with benefits plan, premiums, and size of covered populations (hence, risk profiles) that are substantially different, one from another.

The program implementation model to be briefly outlined below is preceded by the articulation of the critical questions that need to be answered before specific design questions, in the categories of the outline, are addressed.

4.2.3.1 Feasibility Questions for Design Process

In the absence of any previous experience-based knowledge about how social reinsurance can and does work, it is clear that there is a need to test many aspects of the theoretical model program. This is best done in a pilot project that would last from three to five years – or roughly the amount of time that it is thought to take, in theory at least, for social reinsurance to fully cover its costs (with a large enough pool of paid-in schemes) and guarantee a 95 percent solvency probability. The more immediate task therefore is to develop a framework for assessing whether the ultimate likelihood of feasibility is sufficient to warrant a concerted effort to design and implement a pilot project.

To establish a positive basis for proceeding with design of a pilot program of social reinsurance, the following questions need to be answered:

1. Is the market large enough to support a social reinsurance program? (Based on the simulations, it would appear that a projected minimum of 30 to 40 microinsurance schemes may need to be enrolled by the end of year five in order to justify commencing design). This level of market penetration may be optimistic, even if the total market size were well over 100 schemes. However, to determine the likelihood that this might be achieved, some scrutiny of scheme characteristics would be needed, and some canvassing of their interest under alternative premiums would be extremely helpful.)

2. Do the existing microinsurance schemes have adequate data concerning their risk profiles and their claims experience to enable a social reinsurer to estimate the premium it would require? What has been the general experience of the schemes with respect to their business results in recent years? (These questions refer to the specific scheme characteristics that are relevant for determining feasibility of design. Their answers would be used as inputs to consideration of the next series of questions.)

3. What would be the financial (capitalization) and subsidy requirements for start-up of a social reinsurance program, and under what assumptions (and in what period) could it be projected to break even?

4. What would be the optimal administrative structure for a social reinsurance program to operate effectively? Given the nature of the target market of microinsurance schemes, what would be the requirements for providing them with the technical assistance they may need to comply with the standards for coverage?

5. What are the various risks and uncertainties inherent in answers to the above questions? What do the answers imply for the critical issues and decisions that need to be made in designing the program?

6. If it seems relatively certain that, even with subsidies, the social reinsurance program would be unable to reach breakeven within a reasonable period (say, five years) without its offering subsidies to the reinsurance premiums it charges, how much should introductory discounts to the schemes be and who would pay for them?

7. Should these introductory discounts (or any other kind of subsidy supporting social reinsurance) be granted if it is likely that recipients would be forever dependent on them for their continued existence? Should any social reinsurance program be initiated without a firm prospect that it will reach solvency within a reasonable period of time?

4.2.3.2 Hypothetical Institutional Structure of a Social Reinsurance Program

Depending upon the specific answers to the basic feasibility questions above, there could be variations on the basic institutional structure of a social reinsurance program. For illustrative purposes, the below describes the basic outline of an institutional structure that would have four basic divisions:

- ▲ Administration and operations management

- ▲ Financial management

- ▲ Marketing and scheme relations

- ▲ Technical assistance

One should assume that this institutional structure could very well be affected by the nature of the regulatory environment as may apply, or as may be constructed to apply, to a social reinsurance program. Given the high financial stakes that would be created by the reinsurer's collection of premium revenues from community-based organizations, government would seem to have a political (and perhaps economic) interest in overseeing how a social reinsurance program would operate. The level of capital reserves to be required by law would be an important element of the regulatory regime that should be developed by government prior to initiation of any social reinsurance program, regardless of the ownership and governance provisions of such a program. The following proposed institutional structure for a social reinsurance program gives a general idea of the scope of functions and activities that would need to be performed by any entity set up to provide social reinsurance such as that being described in this paper.

4.2.3.2.1   Administration and Operations Management

Overall management of the operations of a social reinsurer would include departmental offices dedicated to administration of the services required to support the various key functions of reinsurance operations. *Underwriting and actuarial support* would be responsible for estimating the premiums required of applicant plans for coverage by the specific types of reinsurance schemes to be offered. *Contract development and administration* would be responsible for ensuring that the specific conditions required by the underwriting department are spelled out in the contracts with the covered schemes, and that any claims to be paid under the contracts are within the terms specified. C*laims administration* would process claims for loss reimbursement made by schemes and would coordinate adjudication of claims with the contract development and administration department. The *legal department/general counsel* would perform all the legal functions required or necessitated by law and would be responsible for representing the reinsurer to various relevant government agencies at all levels. All of these departments would report to an *operations administration* office that would have systems to monitor and supervise all operational departments.

4.2.3.2.2   Financial Management

The financial management division would be responsible for maintaining the capital reserve required by law and/or by prudent operation and for performing the various functions of managing the reinsurer's operational finances. These would include departments for *billing and collection,*

accounting, internal audit, escrow account management, internal reporting, and claims payment. The financial management division would be responsible for external reporting to the government and to any external donors on all aspects of the reinsurer's finances.

4.2.3.2.3   Marketing and Scheme Relations

Selling reinsurance to qualified CBHI schemes would be the responsibility of a division for *marketing and scheme relations*. Given the presumed need among prospective customers for technical assistance in achieving and determining qualification for reinsurance coverage, this division would work closely with the technical support division, described next.

4.2.3.2.4   Technical Support to Enrolling Schemes

The technical assistance and knowledge transfer needed by CBHI schemes from a social reinsurer would cover a variety of areas:

- ▲ Setting premiums for alternative benefit packages

- ▲ Provider relations and network development

- ▲ Marketing and enrollee/community relations and services

- ▲ Financial management/claims administration

- ▲ Scheme governance

- ▲ Prerequisites for obtaining reinsurance

This division would have a very important responsibility for the achieving breakeven according to the business plan devised by the social reinsurer. Its activities, however, being only indirectly related to reinsurance operations, would need to maintain separate financing, even if, as to be expected, it would have to be subsidized by external donors. While it is reasonable to distinguish subsidies intended to support technical assistance from those intended to support operations (and, implicitly, capital reserve requirements), there would ultimately be a need to incorporate the technical support function (and its costs) into the ongoing operational budget at some later point, after the reinsurer reaches breakeven and matured as an ongoing institution. It may be difficult to plan for this future transition at the inception stage, but it is necessary to consider how sustainable (and, hence, how feasible) a proposed reinsurance program could be if it is likely to be dependent on external donors for subsidies of the technical support function (not to mention subsidies for operations) for an indefinite period.

5. Designing a Program of Social Reinsurance: Potential Benefits, Prerequisites, and Potential Problems

5.1   Potential Benefits

Any successful program of social reinsurance would achieve the central goal of **protecting its enrolled schemes from insolvency.** As an approach to increasing its chances of success, the social reinsurer would (and should) **provide a broad range of technical support to enrolled schemes** – support that would bring improved structure and discipline to the design and operation of those schemes. It is likely that the technical assistance, which would be responsible, in large measure, for bringing many of the enrolled schemes into compliance with the data and management requirements of reinsurance enrollment, would also constitute a potential benefit from social reinsurance that would be just as important as the availability of the reinsurance itself. Indeed, the survival of CBHI schemes, particularly small ones, is likely to be achieved without the availability of reinsurance only with greater difficulty.

Social reinsurance would also present the opportunity for realization of another potential benefit, that of **supporting the government's overall goal of improving access and protecting the population from severe financial risks of illness and injury.** However, the achievement of this goal is not necessarily coincident with a successful social reinsurance program (at least, by the standard of one simply protecting enrolled schemes from insolvency). The government would have to make a concerted effort at crafting a consistent policy on CBHI schemes that would be supportive of risk-spreading while protecting the government's interests (however they are articulated) in targeting its subsidies towards the poorest in the population and/or towards the most essential services. A successful social reinsurance program would divide the population into three groups: (1) those in reinsured CBHI schemes, (2) those in CBHI schemes without reinsurance, and (3) those in the population not covered by any CBHI scheme. "Success" may not be easy to define for social reinsurance in the event that a conflict of interest develops among these three groups.[30]

5.2   Prerequisite Conditions for Determining Social Reinsurance to be Feasible

The feasibility of successful development of social reinsurance is dependent upon on a variety of interrelated factors, as indicated by the list of questions outlined above. But there are several absolute prerequisites for establishing the minimum conditions for design of such a program. First, the concept of there being "enough schemes" should be linked to the minimum number of schemes a social reinsurance program would need to break even after, say, five years. That number is at least forty.

---

[30] The issues involved here are discussed in Bennett (n.d.).

For each scheme among this minimum number of schemes, there would be at least three requirements: (1) sufficient, reliable data to confidently set a reinsurance premium; (2) adequately mitigated nonrandom sources of financial losses; and (3) a sufficient number of schemes that have reasonable prospects of meeting (and maintaining) the reinsurer's minimum enrollment and financial management standards.

5.2.1 Adequate, Reliable Data for Setting a Reinsurance Premium

Setting the reinsurance premium, which would be (as noted above in Section 4.2.2.1.2) proportional to the standard deviation of mean total benefit costs, requires adequate, reliable data for accurately predicting average total benefit costs and average income. Both the insurer and the reinsurer need to know (for insurable risks) what benefits are covered, the expected mean cost of each benefit (and of the whole package), which distribution laws best describe the probability of occurrence of the cost-generating events covered, who is entitled to benefits, the income due from premiums, and the insurer's predicted balance between expenses and income in each accounting period.

To the extent to which the above data are unavailable or unreliable, it will be more difficult to set the reinsurance premium and more risky for any reinsurer to cover excess losses. Enrollment in a social reinsurance program should be postponed for such high-risk schemes until such time as adequate data makes a reinsurance premium calculation more reliable.

5.2.2 Mitigation of Nonrandom Sources of Financial Losses

Reinsurance can be written only for insurable losses, as has been noted. Yet financial losses experienced by small CBHI schemes are likely to include losses that are nonrandom and that could and should be prevented. Some of these nonrandom losses are generated simply by incorrect estimation of the contribution rate. Improved data could partially address this problem. Other kinds of nonrandom losses (e.g., adverse selection, moral hazard, fraud and abuse) can be prevented and should be addressed by improved technical management. When one experiences financial losses, of course, it is impossible (after the fact) to separate out the part caused by avoidable (nonrandom) losses from the part caused by unavoidable (random) sources. But minimization of uninsurable losses should help to qualify a small scheme at least to be considered for reinsurance coverage.

5.2.3 Minimum Enrollment and Financial Management Standards

A social reinsurer would require a small CBHI scheme to have minimum enrollment and management standards as an essential part of the reinsurance enrollment conditions. These standards would have to be maintained, once achieved, in order for the reinsurance to be renewed at each renewal time.

5.3   Potential Problems (After Meeting Prerequisite Conditions)

Even after small CBHI schemes meet the prerequisites and qualify for social reinsurance, and after the social reinsurer satisfies its conditions for minimum breakeven operations within a certain time (with minimum capital and/or subsidies committed), there are a number of risks that could jeopardize the long-term success of a social reinsurance program.

5.3.1   Potential Goal Conflicts (Lack of Clear and Unambiguous Direction)

A social reinsurance program that deviates from its primary purpose of reinsuring only insurable risks would be in jeopardy of failing. A primary focus on its reinsurance function, and on executing those tasks needed to execute it effectively, is required for long-term success and financial viability. There is therefore a need for a reinsurer to constantly reinforce the need to mitigate all nonrandom sources of financial losses, in order that those losses that are incurred can be reasonably covered by reinsurance.

5.3.2   CBHI Schemes Fail to Maintain Prerequisite Conditions for Participation

Long-term success as an insurer requires constant attention to those elements of scheme management that keep scheme costs to a minimum, while seeking to maximize the benefits that can be made available within that reasonable cost. Pressure from enrollees to increase benefits while reducing or maintaining the level of the premium can be expected. But long-term sustainability of CBHI schemes (and of any social reinsurance program that might be developed) will depend on continuing efforts at keeping costs to a minimum.

5.3.3   Opportunity Costs of Subsidies and of Technical Assistance to Schemes

Since the costs of providing subsidies to social reinsurance programs and of financing the technical assistance that social programs would provide to CBHI schemes are likely to be significant and ongoing for at least five years, it is important to keep in mind that these expenditures do not serve to provide medical or health services directly. The opportunity cost of using them to subsidize insurance or reinsurance, rather than for some other worthy purpose (such as providing services directly to those who cannot afford them), should be kept in mind. Continuing to provide subsidies and technical assistance beyond the point when breakeven is expected (and planned for) might constitute a use of funds that is not cost-effective given the purposes originally stated.

6. Conclusions

This paper has discussed the range of potential threats to the financial stability of CBHI schemes and has distinguished between those that are avoidable (due to nonrandom events) and those that are unavoidable (due to random events). The paper has described in some detail the terms and conditions under which a social reinsurance program[31] could be designed to provide reinsurance coverage of the simplest type – excess loss (stop-loss) coverage. It has discussed the requirements for designing and implementing such a program and explained the general rule for determining the maximum premium a CBHI scheme would be willing to pay for reinsurance and the minimum a reinsurer would be willing to accept, under the terms of the model postulated. The principal conclusion of the simulation described is that substantial subsidies (of the reinsurer's contractual obligations to its covered schemes) would very likely be required for at least five years, and that additional subsidies would be desirable to pay for the considerable technical assistance such CHBI schemes would need to develop their data and operations management capabilities up to the standard that would be required for reinsurance coverage. For any real world situation (in which the needed data are scarce), however, it would be difficult to estimate the magnitude of the subsidies required, and/or the length of time they would be needed.

With this kind of uncertainty, potential donors and/or investors may be understandably reluctant to commit the financing needed for start-up of a social reinsurance program in a developing country. Meanwhile, there may be a significant number of CBHI schemes (particularly the smaller ones) that will fail because they did not, or could not, prevent those avoidable (unreinsurable) events that tend to undermine scheme solvency – events that certainly would have to be prevented to enable the design (and successful operation) of any viable social reinsurance program.

While the ideal sequence of programming assistance to these schemes could be debated (in relation to the start-up of a social reinsurance program), and while the likely cost (and likely duration) of subsidies needed by proposed social reinsurance programs continues to receive deliberate consideration, the needs of existing (and nascent) CBHI schemes for technical assistance in preventing the *avoidable* fiscal threats will continue to mount. Addressing the problem of these avoidable threats should proceed, and solutions be designed, even while the long-term prospects for social reinsurance – designed to address the *unavoidable* threats – are considered.

---

[31] Specifically, those terms and conditions proposed by S. Bonnevay *et al.* in Dror and Preker (2002).

Annex A: Definition of Terms

Health insurance

The function of insurance is to provide protection to individuals against financial loss. It does so by pooling the risks of each individual across an entire group of individuals who participate by paying to be covered. Thus, an insurer of a particular financial risk faced by an individual will offer to "cover" that risk in return for payment of a premium. This premium is determined by averaging the expected losses (during the time period covered) for the whole group of individuals[32] buying the coverage, and adding a charge for the administrative and other expenses of the insurer.

When applied to the area of health care, a similar logic applies: for any one person, getting sick or injured can be an unpredictable and very costly event, but it will happen to relatively few people during any particular time period. By "pooling" the risk of large health care costs over many people, health insurance can make necessary health care relatively more affordable and thus more available to all.[33]

"Pooling" health risks, however, does not need to be done through commercial insurance markets. Besides, there are relatively few opportunities to do so in developing countries where private markets for medical services are mostly small and underdeveloped. Instead, in these countries, the broader function of health insurance – to provide protection against loss of good health – has traditionally been performed by governments' organizing and financing a system for delivering medical care, when needed, for the whole population. Despite broad-scale efforts and the best of intentions, governments of developing countries have not been able to cover all of their populations with the needed (acute, inpatient) services. Often these services that are available have been delivered inefficiently. Community-based health insurance has been introduced in many countries as a potentially effective way to supplement or to complement government-sponsored health care. Efforts to promote the development of health insurance in developing countries may therefore be needed as a part of overall health reform efforts.

---

[32] For reasons described below, most health insurance is provided to existing *groups of individuals,* like a company's employees or an association's members. If an insurer itself forms groups made of individuals (one-at-a-time), each individually interested in obtaining coverage, the cost per person is typically much, much higher. Indeed, it is often so costly that insurers find it unprofitable.

[33] Note that the essence of insurance is the protection of *individuals* from catastrophic loss. The individuals who are in such a group affording such protection value that protection enough to be willing to pay more – in some cases, much more – than the average amount of losses the group as a whole will suffer. The medical care services that thus become more affordable are those that are "covered" (i.e., needed to treat serious illness or injury – high-cost treatment), and it becomes more affordable for participating individuals only. It is not at all necessarily less expensive for society as a whole, even, or especially, if participation is mandatory. Where the development of CBHI is subsidized, in whatever manner, enrollees are not asked to pay extra for the risk-spreading services provided, and how to value the spreading of which risks is a function assumed, at least in part, by the donor of the subsidies.

Insurability[34]

Not all financial risks are insurable, and this is certainly true of expenses incurred for diagnosis and treatment of an individual's illnesses. Whether an event is insurable depends on whether (1) an insured individual can determine whether and/or when the insured event occurs, and (2) the insurer can accurately predict (for the group of insureds) the probability that it will occur. Thus, an event is insurable if it is a future, randomly occurring event (from the *individual* insured's perspective) and if its chance of occurring for any *group* of insureds is reasonably predictable (from the insurer's perspective). Not only is it important that CBHI schemes insure only (or mostly) insurable events, but it is also important (indeed, required) that the only risks assumed by the reinsurer are insurable events. And, if the first were not true, it would be impossible for the second to be true.

Some CBHI schemes do cover uninsurable events (such as deliveries) as well as high-frequency, low-cost events like ambulatory care visits because there is a community demand for such coverage.[35] But such uninsurable events do not have stable predictabilities for the *group* of insureds (from the insurer's perspective) and make the coverage very difficult to price accurately. A reinsurer would not offer to reinsure such coverage simply because the risk exposure (being contaminated by adverse selection) would be impossible to predict with any certainty. (This distinction between insurable and uninsurable risks lies at the heart of the question of the feasibility of social reinsurance. It is discussed in more detail in the next section, which outlines which insurable risks (among all financial risks faced by CBHI schemes) can actually be addressed by social reinsurance.)

Sustainable financing

"Sustainability" of any effort or project is the capacity to keep it operating over time. A definition would acknowledge that both sides of the income/expense equation are important – the ability to raise sufficient operating funds and the ability to utilize them efficiently and effectively. In general, it is "the ability of the system to produce benefits valued sufficiently by users and stakeholders to ensure enough resources to continue activities with long-term benefits."[36] In many cases in developing countries, sustainability of health or medical care services must rely upon the willingness of government and/or donors to subsidize their delivery. Analysts often refer to several dimensions of sustainable development: political, social, managerial, and financial. The last dimension is the one most relevant to our concerns: sustainable financing. While sufficient financing is not enough, in and of itself, to ensure sustainability, if requirements in other dimensions meet minimum requirements, continued operations will depend upon income being at least as much as expenditures, over any given period of time.

Unfortunately, one can rarely consider financing issues without considering their interaction with other important factors. One such interacting factor is organizational capacity. Inadequate organizational capacity is often a principal cause of unnecessary costs and/or low enrollment or

---

[34] For a detailed explanation of this concept and its application to social reinsurance, see M. Vate and D. Dror, "To Insure or Not to Insure: The Limits of Insurability," Chapter 6 (pp. 125-152) in Dror and Preker (2002).
[35] While such coverage does not offer much risk spreading as such, there are tangible benefits from such coverage for populations with little or no access to banking services for parking their savings. Like banking services, however, such coverage has relatively high administrative costs (relative, that is, to the amounts of money processed as claims).
[36] Definition proposed by the International Development Management Centre at the University of Maryland in UNICEF (1992).

utilization, leading to a waste of resources, especially when their provision is sustained in spite of such waste. In any case, in most of the situations that are relevant for this paper, "sustainable financing" must be considered in the context of ongoing subsidies from whatever source. While such subsidies could not be expected to provide the financing for "social reinsurance" for CBHI schemes,[37] however defined, they must be specifically acknowledged and accounted for when calculating the level of the social reinsurance premium that is to be charged to any CBHI scheme.

Feasibility

"Feasibility" of any proposed scheme or program is the level of likelihood that it can be designed and implemented so as to achieve the goal(s) to which it is dedicated. If a scheme or program is "feasible," the likelihood that it will succeed is sufficient to justify proceeding with its design and the initial steps towards it implementation. Generally speaking, the analyst needs to consider, in addition to the stated goal(s), the environment in which the scheme or program is to be designed and implemented, and the capacity that may exist (or is accessible) for implementing the scheme or program as designed. Consideration of the goal(s) is important because, in a very real sense, a scheme or program can only be assessed with reference to what it is intended to accomplish. Consideration of the environment and available implementation capacity is critical because there are typically both necessary and sufficient conditions that must be met. If the prerequisites are not met, then "feasibility" is impossible to achieve.

With regard to the feasibility of social reinsurance, it must be presumed that the feasibility of the health insurance schemes that seek its coverage has already been satisfactorily determined.[38] Indeed, many of the prerequisites that a health insurance scheme must meet in order to qualify for social reinsurance are elements that would have been, or should have been, determined prior to the launching of the scheme itself. Even if such prerequisites had been met, however, there is a different set of prerequisites that apply for determining the feasibility of developing a social reinsurance program. Determining whether these prerequisites exist could be called a prefeasibility assessment of such a program.

---

[37] If only because they are already being provided either of the direct costs of the services being insured or of the CBHI scheme's administrative costs or of the premiums for the poor.
[38] A social reinsurance program could, of course, assist with the process of feasibility assessment and development of CBHI schemes that would become eligible for reinsurance in the process.

Annex B. A Proposed Framework for Assessing Feasibility of Social Reinsurance: Commentary on its Application in Senegal

By François Pathé Diop

1. General Comments and Suggestions

As discussed by Fairbank in *Sources of Financial Instability of CBHI Schemes: How Could Social Reinsurance Help? A Proposed Framework for Assessing Feasibility*, social reinsurance is a new concept and approaches to the new model still need to be tested in the field. However we approach social reinsurance proposals, only these real-world tests will determine the course that social reinsurance models ultimately will take. From my perspective – working with a reinsurance initiative for the community-based health insurance, or mutual health insurance (MHO), scheme in the Thies region of Senegal – it helps a great deal to read the various social reinsurance models being proposed and consider them in the context of needs emerging or being expressed from the field. Before commenting on specific points in the current paper, let me describe my understanding of social reinsurance proposals as well as components of the Thies reinsurance initiative in Senegal.

Social Reinsurance Proposals

Let us call *CBHI support systems* any deliberate actions whose primary motives are to contribute to the development and sustainability of CBHI. Like the CBHI schemes with which they are associated, the support systems are emerging at the local level through the initiatives of community-based organizations, socio-professional organizations, and/or opinion leaders, etc. They include supportive actions of health care providers that partner with CBHI schemes. Government agencies and nongovernment organizations that offer assistance to communities in order to promote the development of schemes, such as organizations involved in the 'Concertation' network in West Africa, are also key components of CBHI support systems.

Social reinsurance attempts to strengthen current support systems through the introduction of a reinsurance function within promotion activities. Its premise is that CBHI schemes face a dilemma associated with their small size. This smallness endows them with the social regulation mechanisms (proximity of social control, peer pressure, reciprocity, and shared solidarity values of local communities) that encourage their establishment and institutional sustainability. At the same time, the smallness, which I call the *"liability of smallness,"* is associated with financial instability, identified as the main source of failure of CBHI schemes.[39]

---

[39] I do not share this premise; many CBHI schemes fail not because they are small but for other reasons including poor design and limited administrative capacities. But for the purpose of the current exercise, let us assume that smallness is a liability of CBHI schemes.

Social reinsurance proposals offer an integrated support system approach to counter the liability of smallness of CBHI schemes; this explains the emphasis on the reinsurance component. However other components of the integrated approach may be more instrumental to the development and sustainability of CBHI schemes notably: knowledge transfer, package enhancement, and linkages with formal health financing institutions (LFHFI). While the reinsurance component remains untested, these other three components are being elaborated in many CBHI initiatives and explain most of the significant growth of CBHI schemes in many African countries during the past five years.

Fairbank's paper emphasizes the information gap, the implementation capacity gap, and the LFHFI gap that need to be filled for social reinsurance to benefit from a more supportive environment in developing countries. Accordingly, too great an emphasis on the reinsurance component seems like '*mettre la charrue devant les bœufs*'[40]; the other three components could do much to increase financial sustainability. These components may serve as entry points towards the most integrated approach of social reinsurance.

Thies Reinsurance Initiative

The Thies region of Senegal has a large number of well-established mutual health organizations. The regional body that supports MHOs in Thies, the GRAIM (*Groupe de Recherche et d'Appui aux Initiatives Mutualistes*, or Group for Research and Support for Mutual Health Initiatives), has developed a proposal (including a reinsurance initiative) aimed at ensuring the financial sustainability of MHOs in the region. The reinsurance initiative, however, is bundled in a larger initiative that echoes Fairbank's arguments and provides uses knowledge transfer and technical assistance as the first component of an integrated approach to social reinsurance.[41]

In this way, the Thies proposals respond to the limited response capacity to the growing demand for the initiation and implementation of CBHI schemes in Senegal. More specifically, the proposals attempt to fill this information gap with a regional feasibility study that could result in a generic CBHI model that CBHI promoters could use with adaptation to local circumstances. Starting from a generic model may evolve as a strategy for putting a structure and more discipline in the development of CBHI schemes in a given region or country, a course of action that Fairbank seems to favor.[42]

In contrast to the social reinsurance proposals, the second component of the Thies initiative does not identify *a priori* smallness as the main factor affecting sustainability of CBHI; rather, the second component plans an investigation of the factors that could inhibit the long-term survival of CBHI schemes and the identification of the potential contributions of other actors. It is within this second component that a proposal is made to investigate the feasibility of a reinsurance project.

A few MHOs in the Thies region are already experiencing financial difficulties as a consequence of the coverage of surgery procedures and hospitalization, as well as lending practices within MHOs. Coverage of these events is associated with large copayments, and the MHOs finance these copayments, i.e., the share of the bill that scheme members are supposed to reimburse to the MHO. In other words, the MHOs have two overlapping financing functions: insurance and lending. It is not

---

[40] A French metaphor for stalled action or argument which results from one starting from where one should end.
[41] Partners for Health Reform*plus* and GRAIM. 2002. *L'Etude de Faisabilité et de Viabilité des Mutuelles de Santé dans la Région de Thies – Première Phase: Etude de Faisabilité Générique et d'Un Projet de Fonds de Réassurance.* Dakkar. (Janvier)
[42] This also has been the strategy used by the Ministry of Health in Rwanda, which facilitates standardization and development of an information system for CBHI schemes, the federation of CBHI schemes founded to provide for a framework for specific support functions, and the replication of pilot schemes in other areas.

clear, however, whether the financial difficulties of MHOs are a consequence of the limited capacity of the MHOs to cover these specific benefits (problem with the insurance function), or of beneficiary members defaulting on loans received from the MHO (problem with the lending function). These real-world circumstances need to be investigated before designing a reinsurance program.

Building on these two components (a regional feasibility study of CBHI and the study of the sustainability of CBHI) the Thies initiative plans to address the feasibility of social reinsurance as a potential solution to problems facing existing and future CBHI schemes in the region.

Comments below build on both the broad understanding of social reinsurance proposals and the specific components of the Thies reinsurance initiative. They focus on Sections 4 and 5 of the Fairbank paper and point out implications for the Thies initiative.

2. Specific Comments and Suggestions

Support to the Government Health System

Section 4.1.1 of the paper does not sufficiently recognize the reality that CBHI schemes are emerging in many communities as a consequence of the failures of government health financing policies in developing countries; rather, it overemphasizes the risks that could be associated with failures of CBHI schemes and social reinsurance programs. The failures of CBHI schemes are partly a consequence of the schemes being in an early stage of development and the limited capacities of scheme initiators and developers. Key stakeholders (actors in local communities, health care providers, support organizations, governments, etc.) are learning from their own experiences and the experiences of their peers. Governments, at least in African countries, are just starting to recognize the potential contribution of an emergent health financing strategy and to debate its integration into national policy frameworks and deliberate health financing strategies.

A perspective that is not adequately articulated in the paper is the potential contribution of a social reinsurance program, through its four components, in (i) providing a structure and content to this learning process and (ii) bridging bottom-up local initiatives and top-down support systems of CBHI.

Scheme Willingness to Purchase Insurance and Alternative Models of Solidarity

Most CBHI initiatives, similar to the MHOs in the Thies region, are likely to fall in the "small scheme and heterogeneous risk profile" end of Bonnevay *et al.*'s simulations. The conclusions that (i) smaller schemes would pay a higher reinsurance premium than larger schemes and (ii) the more heterogeneous the risk profiles of the schemes, the higher the required level of subsidy to improve the solvency of the reinsurance scheme raise two feasibility issues.

i. Would smaller CBHI schemes be willing to pay a higher reinsurance premium than larger ones? Or, would larger schemes be willing to participate in a solidarity mechanism with the same level of reinsurance premium where larger schemes will end-up subsidizing smaller ones?

As recognized by Bonnevay *et al.*, the basis for calculating reinsurance premiums under the simulation model is a form of risk rating. Such a basis is not consistent with certain principles underlying the CBHI initiatives: solidarity and community rating in the calculation of premiums. But

it is one thing for community members and schemes to accept such principles within their own community, and another to accept solidarity between communities and schemes.

Fostering solidarity among CBHI schemes is supported by the regulatory environment where scheme regulatory structures already exist. Most regulatory frameworks cover not only individual schemes, but also federations of schemes, which provide an institutional framework for promoting solidarity between schemes. In many countries where federations are not in place, CBHI networks are developing as a consequence of actions initiated by support organizations that could also provide a framework for supporting a policy of risk distribution among MHOs under a reinsurance program.

   ii.   Who will pay for the required subsidy given the heterogeneity of risk profiles and the difficulty of enrolling many MHOs in the first accounting period of the reinsurance scheme?

This is one of the most critical feasibility issues of the reinsurance proposals. As suggested above, the first feasibility issue could be addressed by conditioning the subsidy upon the willingness of potential CBHI schemes to collaborate through a solidarity mechanism that could allow setting the same reinsurance premium for all participating schemes. This will amount to matching the solidarity motive of the subsidy provider (be it the government or a donor) with the demonstration of solidarity among schemes in a given area.

This issue is one of the most critical feasibility issues of the reinsurance proposals because it could take appreciable time and debate for a government to assume the risk of providing a subsidy to support the initiation of a social reinsurance program. In addition, enrolling a large number of schemes, which would lower the level of subsidy needed for ensuring solvency of the reinsurer, could also take time. These time pressures may of course be reduced by an external source of funding; the question remains, however, which external source of funding?

Institutional Structure of a Reinsurance Program

To be realistic, we should think of the reinsurer as an organization emanating from the schemes themselves because trust and time are key here. It will take a lot of time for individual schemes to trust an external organization as a reinsurer, be it an organization created by government or a well-intentioned nongovernment organization. Alternatively, a federation of schemes, owned and managed by the schemes themselves, would engender more trust and thus might need less time to enroll a large number of schemes under a social reinsurance initiative.

In the absence of a federation of schemes, existing local organizations providing technical assistance to individual schemes (such as the GRAIM in the Thies region) or already functioning networks of schemes may be starting points for the design of the institutional structure of a social reinsurance program. Without such organizations, it will be very difficult to get individual schemes to buy into the social reinsurance initiative. This is why it was suggested above that the components of knowledge transfer and technical assistance, and package enhancement could be entry points for a more integrated social reinsurance program.

3. Implications for the Thies Initiative

Fairbank's paper has two main implications for the Thies MHO initiative: First is the need to separate the MHOs' insurance and lending functions. Second is to adapt the terms of reference of the feasibility study proposed in the paper to the Thies region.

Regarding the first implication, the cost-generating events that are the primary reason for Thies MHO promoter interest in the feasibility of reinsurance are surgical procedures and hospitalization: By any definition, these services are insurable events that could be assumed by a reinsurer: otherwise, the reinsurance component of the social reinsurance proposals will not be attractive for any CBHI scheme.

Coverage of these cost-generating events in the Thies MHOs is associated with very high copayments that are financed by the MHOs as "loans" to beneficiary members. This practice exposes the MHOs to financial losses as members default on the "loans." Therefore, the discussion of feasibility of reinsurance in the Thies region must address these two issues:

▲ Reinsurance covering surgical procedures and hospitalization under a contract between the reinsurer and individual MHOs;

▲ MHO financing of member copayments is a benefit under the contract between the individual MHO and its members.

Not all MHOs cover currently these two cost-generating events, but there is mounting pressure from members of other MHOs to extend their benefit packages to do so. As Fairbank suggests, the number of participating MHOs and the size of their membership pools, as determinants of the solvency of the reinsurer, are key parameters in the feasibility of reinsurance.

Regarding the financing of copayments, MHOs have imitated policies being applied in the social insurance schemes (*Institutions de Prevoyance Maladie*) in the formal sector in Senegal, but without having the transaction base to support such practices. Hence, the issue of lending is a design weakness that needs to be addressed along with the assessment of the feasibility of reinsurance.

This raises the following questions:

▲ What is the size of the reinsurance market?

  △ How many MHOs that already cover surgery procedures and hospitalization would be willing to participate in a reinsurance program?

  △ How many MHOs that are interested in including these events in their benefit packages would be willing to participate in a reinsurance program?

▲ How will the benefit package be redesigned?

  △ Would MHOs be willing to redesign the coverage of surgery procedures and hospitalization in order to minimize copayments and the source of financial instability associated with the financing of copayments?

  △ What will be the implications of redesigning the coverage of these cost-generating events on (i) premiums paid by members to MHOs, and (ii) premiums paid by MHOs to the reinsurer?

Fairbank's second implication is that information gaps need to be filled in order to assess the feasibility of the design of a reinsurance program. While the Thies proposals include data collection activities to support the feasibility study, the terms of reference of these activities do not meet the data requirements identified by Fairbank. There is a need to reassess with the MHOs, regional institutions, and providers in Thies the type of data available to determine the extent to which the information needs can be met.

References

Atim, C. 1998. *The Contribution of Mutual Health Organizations to Financing, Delivery, and Access to Health Care in West and Central Africa: Synthesis of Research in Nine Countries.* Bethesda, MD: Partnerships for Health Reform, Abt Associates Inc.

Bennett, S. n.d.. The Role of Community-based Health Insurance within the Broader Health Care Financing System: A Framework for Analysis. Journal submission, 2003.

Dror, D. and A.S. Preker, eds. 2002. *Social reinsurance: a new approach to sustainable community health financing.* Washington, DC: The World Bank; Geneva: The International Labour Office.

Musau, S.N. 1999. *Community-based Health Insurance: Experiences and Lessons Learned from East Africa.* (PHR Technical Report No. 34). Bethesda, MD: Partnerships for Health Reform, Abt Associates Inc.

Preker, A.S., ed. Forthcoming. *Health Care Financing for Rural and Low-Income Populations: The Role of Communities in Resource Mobilization and Risk Sharing.* Washington, DC: The World Bank.

UNICEF. 1992. *Health Policies and Strategies, Sustainability, Integration and National Capacity-building.* E/ICEF/1992/L.2. New York: UNICEF. Cited in Olsen, Ingvar Theo. "Sustainability of health care: a framework for analysis." *Health Policy and Planning* 13(3): 287-295.

World Health Organization. 2001. *Macroeconomics and Health: Investing in Health for Economic Development.* Report of the Commission on Macroeconomics and Health. Geneva.