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**CENTRE FOR HEALTH ECONOMICS**

**Theoretical insights into the  
development of health insurance  
in low-income countries**

*Matthew Jowett*

**DISCUSSION PAPER 188**



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**March 2004**

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### **ACKNOWLEDGEMENTS**

This Discussion Paper builds on a research project, funded under the DfID HP-ACORD research grant scheme (R7177), conducted by the author whilst working as a Research Fellow at the Centre for Health Economics.

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**ABSTRACT**

This Discussion Paper is concerned with the development of risk-sharing systems for health, in low- and middle-income countries. It questions whether insurance theory developed in wealthier economies, in particular the central ideas of adverse selection and moral hazard, has relevance in the context of poorer countries with high levels of unmet health needs, and low utilisation of health services. Empirical evidence on these two issues is reviewed, as is the debate around social capital and collective action, and its relevance to extending risk sharing in poorer countries. Drawing on thinking and evidence from development economics, it is argued that informal risk-sharing may crowd-out formal risk-sharing schemes, the reverse of arguments found in much of the literature. Rooted in a holistic framework of household risk-reducing strategies, the paper considers the dynamic of demand for insurance in poorer countries, influenced by factors such as social cohesion, perceived corruption, and duty to the state. A central argument in the paper is that much of the literature on health insurance in low-income countries fails to consider well-developed and highly relevant bodies of literature in development economics and sociology.



## 1. Introduction

Choices about how to finance health services have become, over the past two decades, of primary concern to health policy-makers, and are increasingly seen as central to achieving broader health policy goals. For example, the choice of financing mechanism creates incentives and disincentives for both providers and consumers, such as service usage rates across income groups, an issue of major concern in low-income countries (LICs). The increased attention given to health financing policy has been driven, in part, by better information on the magnitude and composition of financial resources flowing through health systems. Improved data have exposed the dominance of out-of-pocket health expenditures in most low-income countries, one implication of which is that access to health care is principally a function of individual ability to pay. This fact largely explains observed inequalities in access to services. It also suggests that ill health represents a real risk to the maintenance of other essential welfare-enhancing consumption expenditures e.g. food and education.

Vietnam, a low-income country, altered the way its public health services were funded in the late 1980s, prompted by growing fiscal indebtedness. During subsequent economic reforms, agricultural cooperatives, previously the basis for funding primary health services, were dismantled, and private financing promoted through the introduction of direct patient charges in 1989. This significant policy decision reflected a trend towards the reform of health financing strategies in low-income countries (LICs) (see, for example, the arguments presented by (Akin 1987). During the late 1980s and early 1990s, however, concern grew that patients charges demanded at the point of service delivery were the cause of reduced service usage amongst priority, high need, population groups. Several authors, including (Enyimayew and Waddington 1989; Creese 1991; Gilson 1997), produced evidence that poor households, in response to user charges, were increasingly turning towards self-treatment, and lower-cost health services provided by untrained and unregulated practitioners. This shift in treatment-seeking behaviour was exacerbated by the ineffectiveness, or non-implementation, of official exemption mechanisms for the poor and, possibly, changing perceptions of value for money in government facilities.

Growing evidence that user fee revenues were not translating into quality improvements, and were negatively affecting overall welfare levels, exposed the lack of risk-sharing within health systems in LICs. In response, international agencies such as the WHO (2000) have stated that they consider prepayment schemes, including mandatory health insurance, to be the 'best' form of health financing. The report of the Commission on Macroeconomics and Health advises governments in low-income countries to promote community-financing schemes, in order to facilitate risk-pooling amongst poor households (Sachs 2001).

Several ideas and concepts have developed around the current focus on health insurance, in particular the more challenging voluntary schemes<sup>1</sup>. Models include micro-insurance (Dror and Jacquier 1999), community-based health insurance (Chabot, Boal et al. 1991; Ron and Kupferman 1996), mutual health organisations (Atim 1998; Criel and Van Dormael 1999), and social re-insurance (Dror and Preker 2002). A primary objective is to increase and protect access to health services, both amongst low-income rural populations, and workers in the informal sector (see, for example, (Bennett, Creese et al. 1998) and (Preker, Carrin et al. 2001)).

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<sup>1</sup> As opposed to compulsory schemes that can relatively quickly cover public servants, and others receiving regular salaries, allowing contributions to be deducted at source.

This paper presents further conceptual insights into the development of voluntary risk-sharing in LICs, using the example of Vietnam. The Vietnamese government launched a national Vietnamese Health Insurance scheme, comprising both compulsory and voluntary elements, in 1992, three years following the introduction of user charges.

In Section 2, prevailing theoretical frameworks of health insurance are examined, together with a review of empirical evidence from both rich and poor countries. Section 3 presents some conceptual developments in the development of health insurance in LICs, whilst Section 4 concludes.

## **2. Health insurance: theoretical frameworks**

Given the relatively recent introduction of health insurance in most LICs, policy-makers have little evidence on which to draw i.e. previous successes and failures. In many LICs, the decision to introduce health insurance is motivated principally by theoretical arguments. Most theoretical frameworks, however, emerged in the context of wealthy countries, in which health providers are effectively regulated, and held accountable for their actions (see the discussion by Ensor and Witter (2001)). It is debatable how useful empirical evidence from richer countries is for LICs, given the very different structure of health systems, and the institutional and regulatory environment within which these function. This issue is revisited in Section 4.

Health insurance builds on the 'law of large numbers', which states that the average behaviour of a group of individuals is more predictable than that of a single individual (Black 1997). In other words, the tendency to behave more systematically and predictably increases with the size of the group. This is the rationale for pooling individual risks, the key function of an insurance fund, discussed in Section 2.1. The health insurance literature, however, is dominated by analysis of two market failures, adverse selection (Sections 2.1.1 to 2.1.3) and moral hazard (Section 2.2).

### **2.1 Demand for health insurance**

Why does demand for health insurance exist? Besley (1989) provides a theoretical framework, drawing on the work of several authors, including Grossman (1972). Just as Grossman points out that demand for health services is derived from demand for health, demand for health insurance is derived from demand for health services. In Besley (1991) framework, demand for health, health services and health insurance all build on conventional economic theory of demand. Following this approach, health is a commodity traded-off against other goods (e.g. smoking) and, as such, individual demand for health can be elicited through an analysis of tastes or preferences.

Besley continues that individuals maximise their utility within budget constraints, health being one of the many goods contributing to utility. Better health is achieved by investing in goods that improve health, which in turn leads to both a consumption gain (i.e. being healthy enables a range of activities to be achieved), and an investment gain (i.e. better health increases lifetime earnings). In terms of demand for health services, in addition to the influence of income, education, and health status, other characteristics such as age, aversion to receiving health care, and the availability of health-related information, will each influence demand for health services. However, many of these factors are not easily observed.



Conventional models of demand assume that individuals maximise expected utility, within a budget constraint, and according to their preferences. However, in the health sector these assumptions do not hold, as information is subject to asymmetry. For individuals, uncertainty over the quantity and type of care required, and the need to consult a third party who holds the necessary information (i.e. a physician), significantly erodes their sovereignty over the consumption decision. This asymmetry is the basis of the principal-agent relationship within health care markets. Not only is it difficult for individuals to assess the quality of the good or health service before receiving it, which is true of many products, but it is also difficult for them to assess its quality retrospectively.

### **2.1.1 Adverse selection - theory**

For health insurance markets to spread risks efficiently, several conditions must hold true. First, the probability that insured individuals will fall ill must be known, in order to allow the insurer to make reasonably accurate predictions about the number and size of claims, in a given time period. Secondly, these risks must be largely independent of each other. If an event occurs in which all insured individuals, or a significant proportion of them, simultaneously suffer an insured loss, the scope for sharing risks is severely limited, and the insurance function may collapse. Examples include earthquakes, tropical storms, epidemics, and major crop failures; most of which are common in LICs. The third condition is that the probability of an individual requiring medical treatment must be significantly lower than one (i.e. not certain). For this reason, elderly patients often face problems purchasing health insurance, as their probability of falling ill tends towards one.

Insurers face problems accurately assessing the first and third condition i.e. the likelihood of an individual making a claim. Where the information held by the insured and the insurer is asymmetrical, the health insurance market may *unravel*. Akerlof (1970) formalised this phenomenon using the example of second-hand car markets, in which the seller holds more accurate information than the buyer about the quality of a particular car. The potential buyer cannot easily distinguish between good and bad cars and, as a result, prices move towards the average quality of cars in the market. In response, owners of good quality cars remove theirs from the market, leaving poorer quality cars to dominate. Prices fall further to reflect lower average quality, pushing out more good quality cars, until only low quality cars are traded.

In health insurance markets, the problem is essentially the same, although it is the consumer (patient), rather than the seller (insurer), that holds more accurate information, in this case about the *quality* of their own health. If new customers provide biased information to the insurer, in favour of good health, the actual number of claims and payouts will be higher than predicted. In order to protect profits, the insurance agency adjusts premia upwards. Indeed, where the insurer expects new customers to provide biased information, the premium may already be loaded, or upwardly adjusted. In both cases, individuals in relatively good health may leave the market, increasing the average risk of those remaining in the insured pool. Premia will rise further in response, increasing the incentive for lower risks to leave the pool, and for high-risk individuals to provide biased information about their health in order to lower the premium offered to them. A vicious circle of increasing average risk and increasing premia ensues. This process of *unravelling* describes adverse selection, which violates the third condition for insurance markets to operate efficiently.

There are two common approaches to setting insurance premia. Profit-maximising insurers set premia according to an individual's health status, adjusting for the probability of a claim being made. In contrast, non-profit schemes typically offer the

same premium to all members, based on the average risk of the group. In this approach, individuals in poor health are not excluded, or discriminated against, through higher premia, consistent with the policy objective of protecting access to services amongst the poor. Adverse selection is more likely to be a problem when all consumers face the same premium. Whereas for high-risk individuals a premium based on average risk is low, relative to a risk-rated premium, for healthy individuals the average premium is relatively high. Individuals with poor health are thus more likely to purchase insurance and, where possible, more of it.

To summarise, adverse selection is likely to be a problem in all health insurance schemes based on voluntary membership, whether motivated by profit or social concerns. In a private market, the insurer may eventually go out of business if adverse selection is not dealt with and, typically, will further price discriminate in response. In non-profit schemes, such discrimination is rarely used as a policy tool, often creating pressures for greater public subsidy.

### **2.1.2 Adverse selection: evidence from richer countries**

Formal tests of adverse selection estimate a demand function for health insurance in which health status is incorporated as an explanatory variable; if those in poor health are significantly more likely to purchase insurance, this is considered evidence of adverse selection. A number of studies conduct such analysis using data from richer countries, in which supplementary health services are commonly covered by insurance e.g. dental services not financed through general taxation or compulsory insurance. Another common benefit is better quality services provided, for example, in separate facilities or wards.

Estimating a probabilistic model, Besley, Hall et al. (1999) find that as waiting lists in the U.K. National Health Service increase, demand for private health insurance also increases. Perceived service quality, measured in terms of waiting times and the hotel aspects of health services, are important factors motivating the purchase of health insurance. Harmon and Nolan (2001) find similar results in Ireland, where insurance purchase is motivated by a demand for service quality, timely access, as well as reductions in out-of-pocket expenditures. These studies suggest that health insurance purchase is driven more by a taste for quality than by aversion to risk.

In Australia, Cameron et al. (1988) jointly model demand for health care and health insurance, the latter using a probit model, and concludes that income is a better predictor of health insurance purchase than health status. Cameron and Trivedi (1991) provide further evidence that income and price are more important than health status in explaining choice of insurance plan. Evidence from the U.K. also supports the positive influence of income (Propper 1989; Propper 1993), with political beliefs and health status having some, but a less significant, impact.

Further evidence of adverse selection is found by Hopkins and Kidd (1996), in their analysis of Medicare in Australia; by Marquis and Phelps (1987), who analyse demand for supplementary health insurance in the USA; and by Wolfe and Goddeeris (1991), who conclude that the magnitude of adverse selection is unlikely to create serious efficiency problems. Rubin and Koelln (1993) find evidence of adverse selection using data from the USA, as does Browne (1992). A few studies, however, find that health status does not have a statistically significant influence on the purchase decision, including Propper (1989; Cameron and Trivedi (1991; Harmon and Nolan (2001). Harmon and Nolan (2001) conclude, unexpectedly, that good health status is positively associated with probability of purchase, the opposite to

theoretical predictions. The authors suggest that further analysis and better data on health status is required.

### **2.1.3 Adverse selection: evidence from poorer countries**

Few studies test empirically for adverse selection in health insurance schemes in LICs. Two studies examine willingness to pay using contingent valuation techniques. In Ghana, willingness to pay for social health insurance increases with income, as well as in households with high recent health expenditures and difficulties in making payments, (a possible indication of adverse selection). Better education and being male also increases the amount people say they are willing to pay (AsensoOkyere et al. 1997). In India rural health insurance is linked to private providers, and willingness to pay is found to be a function of consumer perceptions of greater inaccessibility, and lower quality of government services (Mathiyazhagan 1998).

There is, however, a substantial literature concerned with health insurance more generally (Chao; Abel-Smith 1986; Chabot, Boal et al. 1991; Kutzin and Barnum 1992; Kutzin and Barnum 1992; Bloom 1993; Ensor 1995; Criel 1998; Atim 1999; Carrin, DeGraeve et al. 1999; Criel and Van Dormael 1999; Ensor 1999; Ron 1999; Soderlund and Hansl 2000; Bärnighausen and Sauerborn 2002; Carrin 2002). This literature does not consider the relevance of the fact that most households in LICs operate in the informal economy, and rely on a range of informal risk-sharing arrangements to maintain expenditures on essential goods and services, such as food, health, and education. Section 3 attempts to do so.

## **2.2 Moral hazard and principal-agent problems**

### **2.2.1. Theory**

Moral hazard refers to the tendency for insured individuals to increase their consumption of health care<sup>2</sup>. Pioneering work into this issue was conducted by Arrow (1963); Pauly (1968); Pauly (1974); Cutler and Zeckhauser (2000). Cutler and Zeckhauser (2000) provide a comprehensive overview of the topic, a central theme of which is the conflict between moral hazard, and efficient risk-sharing.

On the demand side, two types of behavioural change may result from insurance. *Ex-ante* moral hazard refers to the reduced consumption of preventive care, or changes in lifestyle, that result when an individual is insured, increasing the probability they will require more expensive curative services. For example, if as a result of being insured, an individual feels less worried about the financial implications of falling ill, they may decide to forego certain preventive, health-improving actions. Reducing consumption of immunisations, for example, significantly increases the risk of illness.

In practice, *ex-ante* moral hazard is not considered a major problem in the literature, however, given that the full costs of not taking care of one's own health can never be fully compensated for by an insurance scheme (i.e. in the case of death, or disability). *Ex ante* moral hazard does exist to some extent as pointed out by Cutler and Zeckhauser (2000). Using the example of cigarettes, they expect that consumption would fall if individuals faced the full cost of smoking in higher out-of-pocket payments. Whereas *ex-ante* moral hazard refers to the situation prior to an illness

<sup>2</sup> Arrow (1985) refers to the less judgmental, and more informative term, *hidden action*.

occurring, *ex-post* moral hazard refers to the increased consumption of health services once an individual has already fallen ill.

In health insurance markets, the marginal cost to the patient of accessing care is lower than the marginal cost to the provider of supplying care. The insurer pays the provider a price, which is sufficient to cover the marginal cost. The extent to which the reduced price to the patient leads to increased consumption, depends on the extent to which they are price sensitive. In some circumstances, patients may also be able to influence the cost of care received, for example by demanding the best quality of treatment available. Where increased consumption is considered a problem, insurers respond by shifting part of the cost of care back on to the patient, for example through co-payments and deductibles.

Referred to in the literature as supplier-induced demand, providers may, for example, conduct more diagnostic tests on a patient than might otherwise be considered necessary. In higher income countries, one response to this problem has been to remove third-party payers, and integrate the insurance and provision functions. In many LICs, where the decentralisation process has increased the autonomy of individual health facilities, revenue from patient user charges tends to be retained, creating an incentive for supplier-induced demand. Whilst much of the literature focuses on the detrimental effect of moral hazard, Zweifel and Manning point out that there may also be benefits:

“..... some amount of moral hazard may be deemed beneficial for two reasons. First, to the extent that physicians wield a collective monopoly, the quantity of medical care consumed falls short of the optimum. The increase in quantity caused by the moral hazard effect of insurance can be efficiency-enhancing in this situation. Secondly, moral hazard may encourage the use of a more cost-effective medical service at the expense of a less cost-effective one within an insurance scheme. Thus the optimal amount of moral hazard is positive rather than zero.” (Zweifel and Manning 2000 :413-4.)

Nyman (1999) argues that, as much necessary care is unaffordable, the purchase of health insurance is often simply motivated by a desire to access certain services, rather than risk-aversion. Whilst it is debatable how relevant many of these theoretical frameworks are for LICs, Nyman’s argument appears particularly relevant, given the context of high health needs coupled with low levels of service usage. In other words, higher levels of consumption are desirable, and insurance may help to generate demand. Careful analysis is required, however, to establish whether or not any additional care consumed is *necessary*. Given these arguments, the central conflict between efficiency and risk-sharing which dominates the literature in higher-income countries, may not of less importance in LICs.

### **2.2.2 Evidence from richer countries**

The most comprehensive analysis of a health insurance scheme is the RAND Health Insurance Experiment, conducted between 1974 and 1982, and based on data collected from 2005 families in six locations across the USA. In the study, families were randomly assigned to fourteen different experimental insurance plans, which helped to avoid any bias resulting from self-selection by participants. One of the plans provided free access to services and the others a varying degree of cost-sharing. The study concluded that as the rate of cost-sharing fell, per capita out-of-pocket payments increased, and calculated a price elasticity of demand of -0.2 for outpatient services (Manning, Newhouse et al. 1987).

Cutler and Zeckhauser (2000) summarise several further studies in the USA, concluding that price elasticity of demand ranges from -1.5 to -0.14. Using data from Australia, Cameron et al. (1988) find evidence of moral hazard, whilst in Germany Geil et al. (1997) conclude that other factors, rather than the incentives resulting from insurance, explain rapid increases in demand for inpatient services. Finally, Cameron et al. (1988) model demand for health care and health insurance in Australia, where joining a private insurance scheme obliges individuals to opt-out of the public insurance system. He concludes that health status is more important in determining utilisation levels than choice of insurance plan.

In terms of the impact of health insurance on out-of-pocket medical expenditures, Newhouse (1993) finds that when health insurance coverage is complete, private health expenditures increase by almost 50% relative to those insurance policies combined with a large deductible. A similar effect is found by Rubin and Koelln (1993) in the USA, which they consider evidence of moral hazard. Using data from the Republic of Ireland, Harmon and Nolan (2001) find that being insured under Voluntary Health Insurance (which is supplementary to public insurance) increases the probability of being admitted to hospital by 3%, relative to those without insurance.

### **2.2.3 Evidence from poorer countries**

In Vietnam, analysis of VLSS data by Trivedi (2002), concludes that health insurance has a strong positive effect on the use of outpatient services at public hospitals, and that income elasticity of demand is 0.4. The analysis is unable to distinguish between compulsory and voluntary insured patients, however. Waters (1999) assesses the impact of the General Health Insurance scheme for formal sector workers and a separate scheme for agricultural workers in rural communities, both in Ecuador. Using both univariate and bivariate probit estimators, and correcting for the effect of clustering in the sampling framework (i.e. heteroscedasticity), as well as selection bias resulting from adverse selection, he finds that being insured has a strong, positive, and highly statistically significant effect on the use of curative services, but no statistically significant effect on the use of preventive services. He also concludes that the scheme increases access to health care for its members but has a negative impact on equity overall. The primary reason for this is that insurance coverage tends to be for those already in employment, and for whom access is already relatively good.

Yip and Berman (2001) analyse the Egyptian School Health Insurance Programme (SHIP), which aims to increase access and equity in access to health services. Using a logit model and data from a survey of over 10,000 households, insured children are found to have a higher probability of seeking outpatient care than the uninsured, in particular those in the lowest income quintile. On average, those children enrolled in the scheme are 34% more likely to visit a provider than children not in school, and 9% more likely than those in school but uninsured are. School Health Insurance is found to reduce out-of-pocket health expenditures by one half for the middle-income group, but only marginally for low and high-income groups. One weakness of the study is that the effect of illness severity is not controlled for within the regression analysis.

Amongst other empirical evidence not based on econometric analysis, Ron (1999) finds some evidence that health care became more affordable for rural families with low and unstable incomes, as a result of joining a community health insurance scheme. In China, Carrin, Ron et al. (1999) evaluate the extent to which health insurance reduced the risk of paying health care bills that would otherwise have been

a burden on families. The study concluded that the burden of health care costs on families was reduced, but that, in general, this reduction has been modest. In Bangladesh, Desmet et al. (1999) highlight the natural link between health insurance as a means of spreading the risks of treatment costs, and credit programmes as a means of decreasing the relative impact of illness on household income. The authors suggest that the credit schemes in which many individuals are already involved may provide the entry point for health insurance. Atim (1999) study in sub-Saharan Africa concludes that the *social movement* dimension has little impact on the performance of two community-based insurance schemes measured in terms of general organisational efficiency, impact on equity in and access to health services, and financial performance. Kutzin and Barnum (1992) review insurance schemes in four countries, concluding that their impact, in terms of equity and efficiency, has been limited. Institutional weakness limits the ability to mitigate incentive problems within insurance schemes, often leading to greater income-related inequalities in access to health services.

In terms of the effect of health insurance on private health expenditures in LICs, Jowett et al. (2003) find, using econometric analysis, that membership in the voluntary health insurance scheme organised by the Vietnamese government significantly reduces out-of-pocket payments.

### **3. Extending risk-sharing in LICs: conceptual developments**

Extending risk-sharing in the health sector through compulsion i.e. mandatory contributions into a national scheme, a common financing strategy in richer countries, is generally not feasible in poorer countries. Limits to extending compulsory contributions beyond workers in salaried employment is the focus of analysis by Ensor (1999). The ease of registering individuals, assessing income levels, and collecting contributions, is estimated using several characteristics, each reflecting the structure of a country's economy and society. These include per capita income levels, population density, degree of urbanisation, and the percentage of the labour force working in industry. Ensor predicts that Vietnam, which scores low on each measure apart from population density, faces significant constraints to extending compulsory health insurance nationally. Due to the limitations of compulsion, policy-makers have turned their attention to the promotion of voluntary mechanisms, although almost ten years' ago, Brian Abel-Smith seriously questioned the potential of such schemes, writing that:

'It has still to be shown that voluntary local prepayment schemes can make a major contribution to health financing, except perhaps in a coercive political system.' (Abel-Smith 1994 :174.)

Interestingly, there are anecdotal reports of coercion being used to generate uptake of school health insurance in Vietnam, with attempts to enrol entire classes of students. Political culture in Vietnam is the product of a series of influences, including Confucianism, Communism, and more recently corruption. Each affects the way in which insurance is organised, and delivered, and consumer attitudes towards it. Beyond the standard expected utility framework, which provides an excellent starting point, a range of other factors may be important, in LICs. For example, Sobel (2002) notes that '*When people decide how to behave, they take into account the social, economic, and legal implications of their actions. These implications depend on the environment in which people make their choices.*' A fuller understanding of individual behaviour should thus take into account community levels features.

### 3.1 Social capital and collective action

One attempt to develop this idea focuses on the importance of social capital, which, it has been suggested, facilitates collective action, which in turn is important for the development of health insurance. Theoretical writings claim that informal risk-sharing mechanisms are more likely to emerge in communities rich in social capital. Two texts, Coleman 1990 and Putnam (1993), argue that the various types of informal financial networks widely observed in low and middle-income countries are evidence of social capital. Generically referred to as ROSCAs, the authors suggest that such arrangements could not exist without spontaneous social solidarity, which can only occur in high-trust communities. Social capital, it is argued, is an essential ingredient in the evolution of institutions for collective action. Interestingly, Besley (1995), in a review of the literature, points out that previous attempts to explain the evolution of informal risk-sharing institutions typically ignore the level of social capital in the host community. As with many other studies, however, no attempt is made to define social capital, and the argument is not developed in any detail.

Clear definitions enable clear measurement. Due to serious definitional problems in the social capital literature (see Jowett (2003)), the term currently adds more confusion than clarity. Attempts at measurement tend to use one of two approaches. The first assesses inter-personal trust in a defined community. The second measures social network density, typically through a quantification of membership in voluntary associations. This second approach extends from Putnam's study of regional government performance in Italy, in which social capital is equated with civil society<sup>3</sup>. Subsequent studies have attempted to measure not only how connected a person is, but also the quality of those connections i.e. their relative contribution to social capital (see Narayan and Pritchett (1997) and Grootaert (1999)). One criticism of this approach is the lack of value given to vertical connections, despite their importance for collective action (see Jowett (2002)). Conceptual problems such as these impede a clear understanding of what social capital actually is, and a universally accepted approach to measurement. In turn, it is not clear whether the term offers any original insight, and whether it is of any practical relevance to those formulating policy.

Hsiao (1995) draws heavily on Coleman's work in extending this idea to community-based health insurance. In doing so, he develops what he refers to as a socio-economic theory, incorporating both expected utility theory and social theory. *Ceteris paribus*, Hsiao argues that levels of social capital can be used to predict whether risk-sharing for health will emerge voluntarily. Socially cohesive communities recognise the mutual benefits of pooling, and are more likely to 'pull together', in order to make a health insurance scheme work. By implication, Hsiao suggests that voluntary risk-sharing is less likely to emerge in less socially cohesive communities. In the same way that Putnam sees ROSCAs as a manifestation of spontaneous risk-sharing in high-trust communities, and evidence of collective action, Hsiao views the re-emergence of cooperative health care organisations in rural China as further evidence of social capital. In Hsiao's initial exploration, the mechanisms through which cohesive communities are more prone to collective action are not discussed in detail and, as with Coleman's discussion of ROSCAs, the argument relies on assumptions about the effect of community level trust on individual willingness to voluntarily enter a risk-sharing agreement.

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<sup>3</sup> Putnam uses measures such as the density of cooperatives, membership in mutual aid societies, and the number of local associations.

To the extent that entering a risk-sharing alliance constitutes a risk, and assuming most individuals are risk-averse, levels of inter-personal trust in a particular community may be important in mitigating perceptions of risk. Essentially, if a person is asked to join a risk-sharing arrangement, but she does not fully trust the others involved, and their default would have negative implications for her, then she is unlikely to consider pooling money with them. Better information about others allows a more accurate assessment of the risk involved in entering an informal agreement i.e. one not underpinned by a written, legally enforceable contract. Other factors may also influence the decision to enter such an agreement, including altruism, and a desire to maintain reputation.

It is questionable whether any of the arguments based on community structure are relevant in the context of large formal schemes, such as the Vietnamese Health Insurance. The institutional design of the scheme (i.e. little community control or involvement in decision-making), is such that inter-personal trust at the local level would be of less relevance than simple calculations about expected utility. However, if a scheme is perceived to be the embodiment of national social solidarity, social structure, to the extent that they generate norms of behaviour, may influence uptake, even where a scheme is highly centralised. Whilst the sociological literature would probably classify feelings of national solidarity as social capital, given the large number of ideas bundled into it, the two are clearly not synonymous.

In conclusion, the hypothesis that social cohesion has a positive effect on insurance purchase, via collective action, is unlikely to hold true in the context of Vietnamese Health Insurance. As Sobel (2002) notes, one of the few benefits of the social capital literature is that it has drawn attention to the importance of networks<sup>4</sup>. The next section reviews frameworks and empirical evidence related to risk in the development economics literature.

### **3.2 Informal risk-sharing and crowding out**

For many years, development economists have used risk as a central framework in their analysis of welfare. Despite this, health economists concerned with the development of health insurance, the primary objective of which is to mitigate the negative effect of falling ill on welfare, rarely draw on ideas and empirical evidence from the development economics literature. In this literature, risk is conceptualised in terms of *shocks to consumption expenditures*, whether they result from the cost of treating an unexpected illness, a poor harvest, or any number of events. Indeed, many studies use the example of ill-health as one of the major risks facing individuals and households in LICs.

A major focus of this literature is the functioning of informal systems of risk-sharing. Besley (1995) draws parallels between risk-sharing and credit, particularly in traditional rural communities, given that the latter tends to substitute for insurance when market opportunities are limited. For example, an individual may borrow in lieu of an insurance payment, and lenders frequently relent on part of a repayment in the event of an unforeseeable shock to the borrower. Townsend (1995) points out that insurance functions exist both implicitly and explicitly, a useful conceptual separation given the wide range of actions that fit into the framework of consumption smoothing, or risk-reduction.

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<sup>4</sup> Social network analysts have already examined the structure of social networks in considerably more detail than most studies about social capital, focusing, for example, on the relevance of internal structure for collective action (see, for example, Marwell, Oliver et al. 1988; Gould 1993; Flache and Macy 1996).



Most empirical studies conclude that informal risk-sharing is only partial and, hence, inefficient (Cox and Jimenez 1992; Grimard 1997; Ligon 2001), a factor likely to influence expected utility under formal insurance. Dercon and Krishnan (2002) make a similar point in a review of the evidence, concluding that informal risk-sharing arrangements provide only limited protection for households, especially for the poor. Morduch (1999) questions whether informal insurance can fill the gaps in public safety nets, and makes several further points of interest: households with more friends (especially richer ones) have greater ability to use informal insurance; public transfers pool risks more efficiently than local private arrangements; reciprocal transfer systems work best when people have more money; the family is the most stable unit for informal insurance (especially in the context of urbanisation etc.); and micro-finance programmes directly operated by governments often fail in terms of compliance. Morduch also notes that under government schemes, borrowers are more likely to default and governments less likely to enforce penalties.

With respect to the importance of community structure for informal risk-sharing, parallels can be drawn from a number of studies in the development economics literature. Rosenzweig (1988) stresses the importance of kinship ties in sustaining information flows, which are crucial to maintaining insurance-based private transfer arrangements across space and time. Grimard (1997) provides similar evidence from Cote d'Ivoire, and recent work by Foster and Rosenzweig (2001) concludes that altruism within families facilitates risk-sharing by overcoming problems of imperfect commitment and unenforceable contracts. Interestingly, none of these studies refers to social capital.

Several authors (see Attanasio and Rios-Rull (2000), and Attanasio and Rios-Bull (2000); Albarran and Attanasio (2002) are concerned that simplistic government interventions may crowd out private insurance arrangements, to the extent that welfare levels actually decrease, and provide evidence to support this concern. Morduch (1999) suggests that by contributing to informal schemes, households may actually retard their income growth and social mobility. He claims that overall, despite the crowding-out of informal networks, communities tend to benefit from government schemes. Furthermore, he argues, some crowding-out of informal networks may be necessary to reach the most vulnerable sections within a community.

Informal credit flows within networks of families and friends are essentially what Cox, Fetzner et al. (1998) analyse using data from the Vietnam Living Standards Survey 1992-3, concluding that as private transfers tend to flow into poorer households, in a similar way to means-tested public transfers, there is a possibility that the two are substitutes, and that the former is crowded out by the latter. They add that, as private transfers are widespread in Vietnam, the scope for such crowding-out is substantial. In an earlier paper, Cox and Jimenez (1991) categorise private transfers into those that are motivated by altruism, and those motivated by exchange.

Evidence that it is informal networks that are crowded out by formal schemes are, however, based on evaluations of freely available safety net programmes such as direct cash transfers and food aid. In contrast, the decision facing individuals in Vietnam is whether to *purchase* health insurance. The next section asks whether informal risk-sharing networks may act as a barrier to uptake of formal health insurance.

### 3.3 Might informal risk-sharing crowd out public interventions?

Despite evidence that informal and formal risk-sharing arrangements interact may be substitutes, the relevance to policies aimed at promoting voluntary health insurance has not previously been considered in the literature. The question for health policy-makers is, do cohesive social networks lead to the formation of informal financial networks, which crowd-out i.e. are preferred to, government promoted health insurance? The question seems particularly valid where membership is voluntary, and a premium must be paid, in contrast to freely available public safety-net schemes.

With respect to corruption, and perceptions of corruption in government institutions, there is substantial evidence that this is widespread and in many cases growing in many low-income countries, including Vietnam<sup>5</sup>. As Hsiao (1995) points out, one reason for the collapse of the cooperative health system in China, was excessive patronage and corruption. Relatives of officials were frequently included on the payroll of health facilities, despite having no qualifications, or indeed not actually working there. Hsiao rightly poses the question, why should communities pay voluntarily to maintain a corrupt system? An individual who considers others in her community to be trustworthy, possibly altruistic, or with whom she has reciprocal relationships, may feel such informal support networks to be reliable, and immediately available in a time of need. Furthermore, such arrangements may be preferable to purchasing government-provided insurance, in particular where accountability to clients is perceived as limited or non-existent.

Furthermore, drawing on the broad view of risk and insurance presented by Besley (1995), similar strategies may be used to mitigate risk, whatever its cause. Faced with user charges in order to obtain health services, households will adopt one, or possibly several, of the risk-reducing strategies available to them (assuming that they consider it part of their choice-set). Clearly, some households will have more options available to them than others. Voluntary health insurance promoted by government is, from the perspective of the consumer, one more strategy that can be added to their existing portfolio. Viewing demand for health insurance in this way allows it to be placed in a more holistic context, enabling the development of a more comprehensive, analytical framework.


Table 1 builds on this broader definition of insurance, and presents a range of options, or strategies, that households may use to deal with risk i.e. to smooth consumption expenditures in the face of a shock. Placed at one end are strategies that do not require collective action i.e. voluntary cooperation between individuals. At the other end, are actions based on formal, or institutionalised, cooperation such as traditional government social security schemes. Some options involve collective action organised informally. Formal collective action is defined as that which is institutionalised i.e. some form of official membership is required to access benefits. Informal collective action thus refers to arrangements between individuals that are not anonymous, and require no official membership in an organisation<sup>6</sup>.

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<sup>5</sup> A detailed review of modern Vietnamese society is provided by Templer (1998), who devotes considerable space to the issue of corruption in government.

<sup>6</sup> This is similar to the distinction between informal and formal risk-sharing in which the latter are defined as agreements that have a money price.

**Table 1: A framework of risk-reducing strategies**

Strategy	Details	References	Informal
Self-insurance	<b>NO COLLECTIVE ACTION</b> Self-insurance for those with sufficient income or savings. In Vietnam, future health costs are the primary motivation for saving amongst survey respondents.	Levin 1995; Rosenzweig 2001.	
Unofficial commercial lending / loan sharks	<b>NO COLLECTIVE ACTION</b> Widely reported in rural communities in low-income countries. May form the only source of credit at short notice, and tends to be expensive i.e. high interest rates. Known as 'vay lai' in parts of Vietnam.	Besley 1995.	
Private transfers	<b>INFORMAL COLLECTIVE ACTION</b> Particularly important in low-income countries. Primarily intra/inter household/familial transfers, but also between friends. Can be both financial and non-financial (e.g. food, clothing, durables, favours). Remittances are an example, and are important in Vietnam, particularly in the south. May be motivated by altruism or self-interested exchange.	.Rosenzweig 1988; Cox and Jimenez 1991; Cox, Fetzer et al. 1998; Morduch 1999.	
Informal credit and insurance schemes	<b>INFORMAL COLLECTIVE ACTION</b> Informal credit is most commonly found in the form of rotating savings and credit associations (ROSCAs). Credit performs an insurance function by allowing consumption to remain smooth in the face of 'shocks'.	Besley, Coate et al. 1993; Bouman 1995; Calomiris and Rajaraman 1998.  Morduch 1999.	
Guilds / loan funds / credit cooperatives / credit unions	<b>FORMAL COLLECTIVE ACTION</b> Range of institutions from guilds in 14 <sup>th</sup> century Europe, to credit cooperatives in mid-19 <sup>th</sup> century Germany, and loan funds in Ireland around the same time. Micro-credit organisations can be found in most low-income countries today e.g. the Grameen Bank. In many rich countries, such as Ireland, the popularity of credit unions is increasing, again in response to the failure of banks to provide credit to poorer individuals. Member organisations of the Irish League of Credit Union, for example, tend to have a common bond e.g. living in the same community, having a common profession.	Putnam 1993.  Hollis and Sweetman 1998.  Besley and Coate 1995.  Guinnane 2000.	
Public insurance (both compulsory and voluntary)	<b>FORMAL COLLECTIVE ACTION</b> Range from public safety net programmes (e.g. cash or food transfers) to community based schemes.	Dercon and Krishnan 2002.	
Development banks	<b>FORMAL COLLECTIVE ACTION</b> Provide loans / credit at relatively low interest rates. Examples include Agricultural Banks such as those in Europe in the mid-19 <sup>th</sup> century. Also widespread in agrarian economies. The World Bank is one example.	Coleman 1990; Putnam 1993; Besley, Coate et al. 1994; Besley and Coate 1995.	
Commercial bank loans	<b>FORMAL COLLECTIVE ACTION</b> Commercial banks, charging higher interest rates than development banks. Tend to be a feature of industrialising economies. Generally underdeveloped in poorer countries.	n/a	

At one end of the spectrum, individuals self-insure with savings. If an individual's level of income, or savings, is sufficient to self-insure e.g. to pay full user charges for health services, then the need to enter reciprocal or similar arrangements with other individuals diminishes. Expectations that collective action is less pervasive in wealthier communities are based on this observation, even if empirical evidence is mixed. At the opposite end of the spectrum are commercial bank loans, a common arrangement in wealthier, modern economies. Whilst borrowing from a commercial bank is a form of collective action, in that one individual makes an agreement with another individual or, in this case, an institution, this is a formal arrangement. As with development banks and formal, compulsory insurance schemes, community structure is largely irrelevant with respect to whether an individual is eligible to enter such an agreement. It is argued, however, that community social structure is important for the development of risk-sharing based on informal collective action, and helps to explain why such institutions emerge in certain communities but not others. One consistent theme in the sociological literature is that favours, private transfers, and the various ROSCA type organisations cited by various authors, tend to flourish in communities with a strong degree of network closure. For individuals living such a community, it is likely that the number of risk-mitigating options available to them will be greater, *ceteris paribus*, than for individuals living within non-closed networks.

Support for the idea that informal financial networks may actually crowd out formal insurance, the opposite to most predictions, is provided by Rosenzweig (1988), who reports that in India formal credit is seen as inferior to familial transfers and self-insurance. There is however, little evidence of this effect elsewhere, largely as this is an under-researched issue. It is unlikely that formal insurance will completely crowd out informal insurance, or vice versa - the most probable outcome lies between these two positions, with formal and informal mechanisms co-existing, and the balance between them shifting over time. Levenson and Besley (1996) provide some evidence from Taiwan to support this, and is consistent with the idea that individuals effectively move up and down the continuum presented in Table 1.

In this framework, expected utility under government health insurance (formal collective action), which must be purchased, may be lower than that under the private financial networks (informal collective action). Expected utility under formal health insurance may reduce, for example, as the number of alternative risk-reducing strategies available increases. Bringing together these various ideas, Figure 1 shows the range of possible outcomes when formal health insurance is introduced into a highly socially cohesive community, with a dense network of informal risk-sharing. The figure incorporates the expected effect of perceived corruption amongst government officials, as well as a sense of duty to the State, a unique feature of Confucian doctrine, which maintains an important influence in Vietnamese culture. Uptake of insurance is expected to be relatively high in communities perceiving there to be benefits from joining a formal health insurance scheme, having trust in government, and having a sense of duty to the State (represented by the extreme left-hand side of the diagram). In contrast, where the benefits of the scheme are perceived to be low, government officials are seen as corrupt, and there is little sense of duty to the State, then uptake will be relatively low (represented by the extreme right-hand side of the diagram). The six outcomes between the two extremes are a function of the interplay between perceptions of corruption and duty to schemes implemented by government. Where both are negative, or positive, then a definite outcome is expected. However, where one is positive but the other negative the outcome is ambiguous – the one exception is where benefits are perceived and there is trust in government. By incorporating duty into the framework, a fundamental concept in Confucian doctrine, the model of expected utility can be extended. Rather than predicting purchase of health insurance only if expected utility is greater than

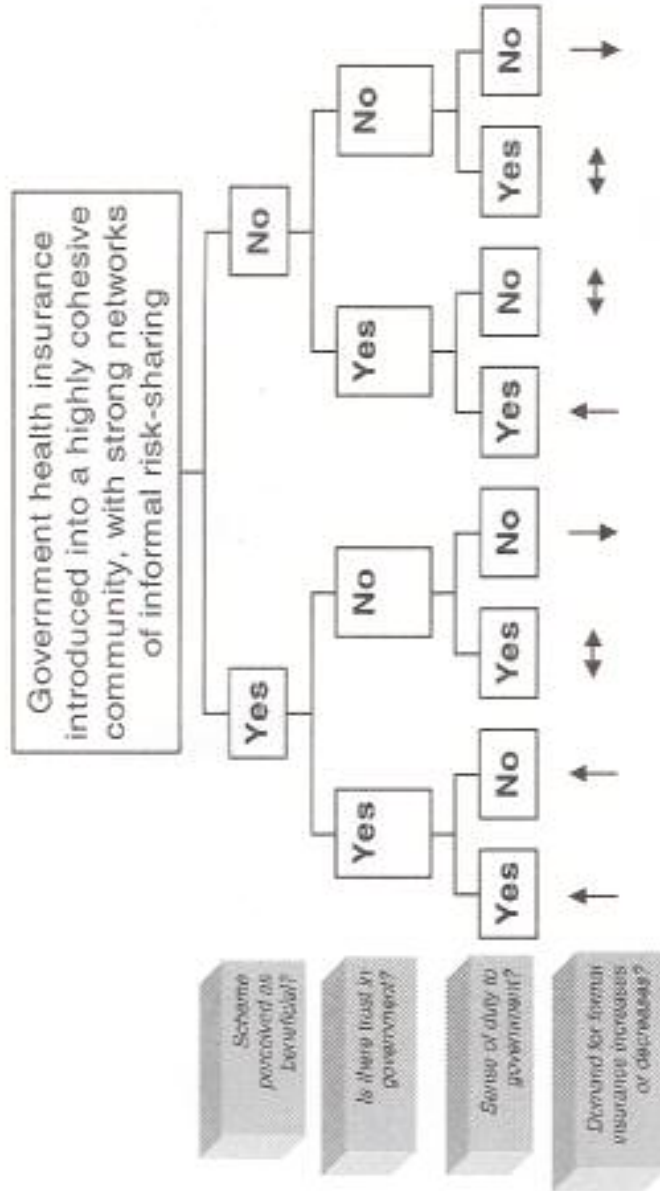


Figure 1: Interaction of formal and informal risk-sharing systems

under informal risk-sharing arrangements, duty may generate demand even where the perceived benefits are low, or where there is little trust in government. The relationship between duty and trust, however, requires further research. An alternative view, for which the evidence from Taiwan offers some support, is that formal and informal risk-sharing arrangements are complements rather than substitutes.

In summary, the purchase decision of a risk-averse individual, in a low-income country such as Vietnam, will be influenced by the availability of alternative risk-sharing mechanisms, and the expected utility under each. Dense social networks may increase the portfolio of options available, through willingness to trust others and enter risk-sharing arrangements. Hence, individuals living in communities rich in social capital will probably have a broader set of risk-sharing strategies on which they can draw. Finally, perceptions of corruption, and a sense of duty to the State, may also influence an individual's decision to purchase health insurance. Figure 2 attempts to summarise the ideas presented in this section, by incorporating the possible influences of perceptions of corruption amongst government officials, and a sense of duty amongst the population to the State and its programmes, on demand for voluntary health insurance.

### **3.2 Mitigating market failures**

In certain social contexts, information asymmetry within insurance markets may be mitigated, without recourse to the collection of large quantities of data, a major activity and expense for commercial insurers. Evidence of this is available from group lending schemes and informal insurance mechanisms such as rotating savings and credit associations, in which members tend to have good information about each others actions. This is particularly the case in traditional, pre-industrial societies, and is an issue investigated by Wydick (1999), who asks whether social cohesion can repair market failure (i.e. moral hazard) in a group lending scheme in Guatemala. He finds that better repayment performance results not from stronger social ties between members, but primarily from peer monitoring, the use of sanctions against poor performers, and intra-group insurance, which assists borrowers who are victims of unavoidable mishaps.

The information asymmetry, which limits the ability of formal institutions to monitor contracts, is the reasons for the use of peer monitoring in many group-lending schemes, such as the Grameen Bank in Bangladesh, whose clients typically have insufficient physical collateral to secure loans from traditional banks. Arnott and Stiglitz (1991) find evidence that peer monitoring mitigates moral hazard, as do Besley and Coate (1995). The second key advantage of informal institutional arrangements lies in their ability to enforce contracts through the threat and use of social sanctions, for example by banning an individual who reneges on an agreement, from future risk-sharing alliances (Besley and Coate 1995).

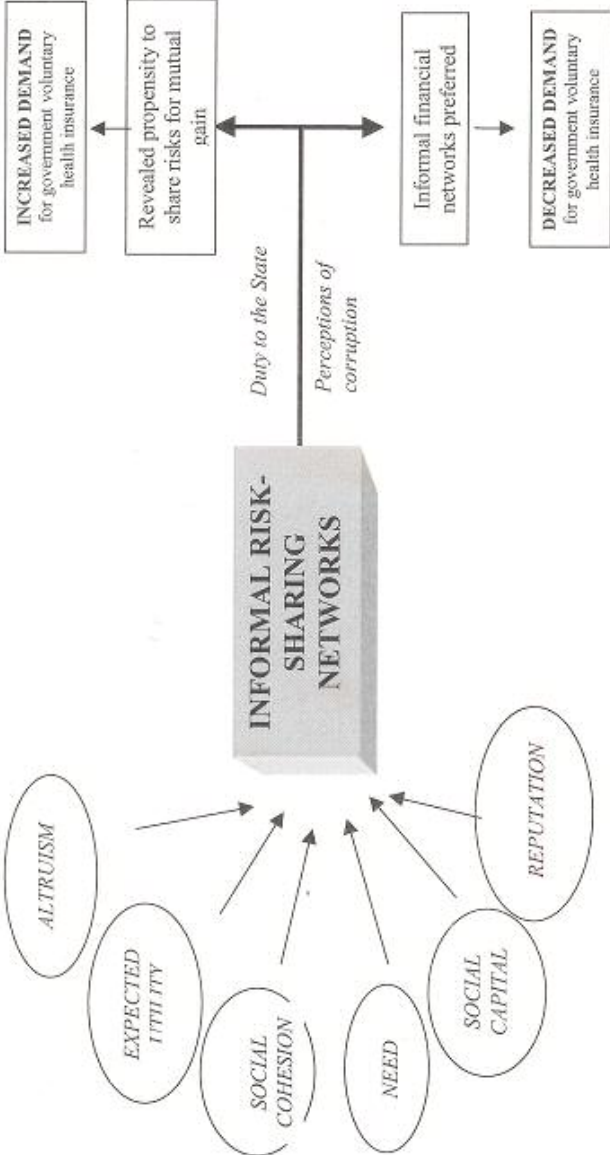


Figure 2: Informal risk-sharing and demand for health insurance

Dufwenberg and Lundholm (2001) idea of a *per capita externality* is useful here. Where an insurance scheme is locally organised, in terms of fund pooling and management, the per capita externality of another person reneging on their contract, or using health services unnecessarily is likely to be relatively high. In the case of voluntary health insurance in Vietnam, management and policy decisions are relatively centralised, and risk-sharing takes place at the provincial level. Under this scenario, the per capita externality of another person's inappropriate behaviour is very low. In other words, it is unlikely that one member would view what she thought to be the inappropriate use of health services by another member, as having a negative consequence for herself. If, however, the per capita externality of misuse by another is perceived to be considerable, or if such behaviour is deemed immoral, then highly cohesive communities may be less likely to suffer from moral hazard problems under insurance.

#### **4. Conclusions and policy implications**

Following the transition from health services provided free at the point of service, to the introduction of user charges, health insurance is now high on the policy agenda in low-income countries. Whilst user charges were introduced primarily as a response to financial sustainability concerns, interest in health insurance is driven more by a concern over income-related inequalities in access to services. However, the widespread introduction of health insurance schemes is motivated primarily by theoretical frameworks, which evolved in the context of wealthy countries. The structure of economy and society in low-income countries tends to be very different, for example in terms of the extent of informal activity, subsistence agriculture, relatively closed traditional communities, and the effective regulation of health professionals. It is debatable how relevant these frameworks are.

This paper reviews the main theoretical frameworks found in the literature, and reflects this by paying particular attention to adverse selection and moral hazard, two issues that dominate. Empirical evidence is also reviewed. In terms of the relevance of these frameworks to low-income countries, whereas adverse selection appears to maintain its validity across economic and social contexts, for moral hazard this is less so. In the context of most low-income countries, where levels of unmet health needs tend to be substantial, increased in consumption are not necessarily problematic.

One of the key issues facing the development of health insurance in low-income countries is the extension of risk-sharing beyond those in formal employment. For this reason, there is a particular interest in schemes based on voluntary membership, and the suggestion has been made that communities rich in social capital are more likely to join collective endeavours such as risk-sharing. This idea is further explored in this paper, in particular those based on closure in social networks, and its importance for information and individual behaviour. It is suggested that whilst high-trust communities may be more likely to develop risk-sharing arrangements, which tend to be informal, these networks may act as a barrier to uptake of formal government-organised health insurance. Furthermore, this argument is more likely to hold true where corrupt is perceived to be widespread in government, as is the case in many low-income countries.

Finally, the issues discussed in this paper highlight the fact that current conceptual frameworks informing the development of health insurance in low-income countries, can benefit considerably from ideas and empirical evidence from other disciplines, in particular sociology and development economics. A rich research agenda lies ahead.



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