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Health insurance in Rural Northern Thailand What is available What would be desirable

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Health insurance in Rural Northern Thailand:
What is available? What would be desirable?

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Abstract

Rural livelihoods are exposed to many risks and thus vulnerable. This contribution analyses the relationship between livelihood risks, particularly health risks, and risk management strategies, especially health insurance. The analysis is based on a 2004-survey in the northern mountainous region of Thailand. The random sample consists of 200 farm households. Among the top-ten risks (81% of respondents mentioned them), three were related to health. Interestingly, the Thai Government already offers a mandatory *Universal Health Care Scheme*, which provides access to medical care for 30 Baht per visit. 75% of the population is insured under this scheme. Nevertheless, it lacks flexibility for the beneficiaries. For this reason, a Choice Based Conjoint analysis was employed to determine traits of health insurance desirable for the rural poor. The traits considered are the premium, the choice of hospital, and the coverage of the microinsurance police.

1 Introduction

Rural livelihoods are exposed to many risks and thus vulnerable. This contribution aims at analysing the relationship between livelihood risks, particularly health risks, and risk management strategies, especially health insurance. The analysis is based on a survey in the northern mountainous region of Thailand (Mae Rim district, Chiang Mai province) in 2004. The random sample consisted of 200 farm households in nine villages: 142 households belonged to the local ethnic group known as Khon Muang and 58 Hmong households often referred to as a hill tribe.

Interestingly, the Thai Government already offers a mandatory *Universal Health Care Scheme*, which provides access to medical services for 30 Baht per person and per doctor's advice. 75% of the Thai population are insured under this scheme. Nevertheless, the scheme lacks flexibility for the beneficiaries. For this reason, a Conjoint Analysis was employed to determine traits of health insurance desirable for the rural poor.

Chapter 2 outlines the relationship between vulnerability and the 'risk chain'. The 'risk chain' starts with the realization of a risk (shock), the risk management, and the outcome of the shock. Thereafter, the contribution of health insurance on sustainable livelihoods is outlined (Chapter 3). Thailand's health insurance system is briefly presented; this is followed by the empirical results of shocks and risk management in rural northern Thailand. Chapter 4 presents the conjoint analysis of health insurance. After the model is presented, the results of a multinomial logit analysis are summarized. The contribution ends with concise conclusions and policy recommendations.

2 Vulnerability, Risks and Risk Management Strategies

Vulnerability is the forward-looking state of expected outcomes, which are in themselves determined by the correlation, frequency, and timing of realized risks and the risk management (IFPRI 2002). Vulnerability can mean two things: (1) It can mean that a livelihood is not poor now but may fall (with a given probability) below (or deeper below) a certain poverty-line in the near future. (2) A livelihood is also termed vulnerable if it is below the poverty line but the chances (with a given probability) of exiting poverty in the near future are not there. Vulnerability reduction requires a better understanding of risks, risk exposure, the outcomes that are likely to be generated, and the most efficient means of managing risks (Alwang, Siegel, and Jorgensen 2001).

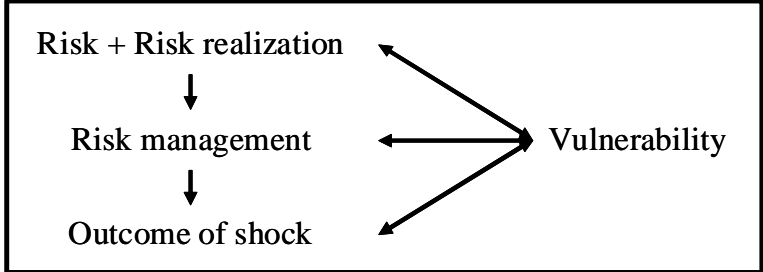
2.1 Risk as a cause of vulnerability

The risk chain (Figure 1) of vulnerable households consists of three components: (1) the risk (realisation), (2) the risk management, and (3) the outcome in terms of welfare loss (IFPRI 2002). A shock is the realisation of a risk that can cause significant negative effects on the livelihood in general and the degree of vulnerability associated to the livelihood.

Livelihoods face multiple risks, whether they are natural or man-made. Risks can be characterised by their magnitude (including size and spread), and their frequency and duration. Table 1 presents types of common risks. The risks are divided in human, economic and asset risks; some of them are associated to the idiosyncratic (individual) and some to the covariate risk category. If a risk becomes effective and creates a shock or crisis that affects just one person (one family/household), it is classified as an individual risk. Correspondingly,

risks changing the livelihood of a group of people bound together, e.g. by the same profession (e.g. farming) or the same region of residence, are called covariate risks.¹

Figure 1 The 'Risk Chain'



Source: IFPRI (2002: 3)

Of all of the risks listed in Table 1, the human risks such as illness, death of a main labourer, or the economic risks such as livestock loss and failure of an investment appear to be particularly prevalent and destabilizing (World Bank and DFID 1999). Nevertheless, not all types of risks can be insured against, i.e. only risks with a known probability of occurrence and a high degree of specificity are suitable for insurance (Litzka 2002). In agriculture, particularly incidents, which occur more frequently (quasi-secure incidents) and which have a covariate risk character (e.g., droughts, floods, animal epidemics etc.) are therefore normally insured against, albeit at relatively high pre-shock costs for the farmers. Of the idiosyncratic risks, health risks are sought to be insured against most frequently in developing countries (Jütting 1999). Farmers thus face the decision problem whether or not to invest in insurance as one risk management strategy, which is a function of risk.

¹ Covariance is the tendency for either i) many households to be affected by a risk at the same time or ii) several risks to consistently occur together. Covariant or mass risks differentiate crucially from individual risks: (1) they tend to be difficult or impossible to predict; (2) they affect many people at the same time, thus hampering the ability of risk-pooling mechanisms to protect against these risks; and (3) the cost associated with mass, covariant risks tends to be significantly greater than that resulting from other risks (Brown and Churchill 1999; Dercon 2002).

Table 1 Covariate and Indiosyncratic Risks of Vulnerable Rural Livelihoods

	Type of risks	Type of Shock	Outcomes
<i>Individual Risks</i>		Illness	Costs of treatment and reduced income through reduced labor
	Human risks	Death of working family member	Funeral expenses and loss of income from labor
		Alcoholism, drug addiction, gambling	Expenditures of addiction and reduced income through reduces labour
<i>Covariate Risks</i>	Economic (harvest) risks	Storage loss: varmints and other pests	Reduced income
		Crop loss: land degradation (landslide, volcanic eruption, earthquake)	Reduced income
		Crop loss: weather (floods, droughts, typhoons, storms & high winds)	Reduced income
<i>Individual Risks</i>	Economic (non-harvest) risks	Domestic economic crisis (e.g. balance of payment shock, financial crisis, currency crisis)	Reduced income through lack of trade and loss of employment etc.
		Animal epidemic	Reduced income, assets and security
		Death of animals	Reduced income, assets and security
<i>Individual Risks</i>		Failure of business/ investment	Reduced income, failure to repay debts
		Unemployment	Reduced income
		Birth of daughter	Expenditures because of marriage
		Old age	Reduced income through reduced labor
		Sudden moving away of working family member & breaking ties	No remittance flow
<i>Asset risks</i>		Damage of housing	High expenditure
		Theft & to be cheated	Loss of assets and costs of replacement

Source: extended from World Bank and DFID (1999) & Holzmann and Jorgensen (2000)

2.2 Risk Management as Part of the Livelihood Strategies

Livelihood strategies will differ with regard to whether people have to deal with gradual changes or sudden shocks. *Adaptive livelihood strategies* seek to mitigate risks through livelihood adjustment (e.g. family planning or accessing insurance) or change and diversification of income creating activities. This type of strategy is rather deliberate and adjusts the livelihood to long-term changes and challenges (i.e. socio-economic trends). Adaptive strategies are applied before the risk materializes (ex-ante risk management). *Coping strategies* (e.g. migration, sale of livestock or reduction of consumption expenditures) seek to minimize the impact of livelihood shocks and are a short-term, ex-post response to

sudden or periodic shocks (Carney *et al.* 1999, Korf 2002).² Coping strategies, although providing some protection in the short run, limit the poor's long-term prospects of escaping poverty (Kanbur and Squire 2001).

Table 2 Formal and informal risk management mechanisms

	Informal mechanisms		Formal mechanisms	
	Individuals and households	Group based	Market based	Public services
Reduce risks	<ul style="list-style-type: none"> • Health care • Migration • Secure income sources 	<ul style="list-style-type: none"> • Joint infrastructure measures • Management of common natural resources 	<ul style="list-style-type: none"> • Company based and market-driven labor standards • In-service training 	<ul style="list-style-type: none"> • Robust macro-economic policy • Environmental policy • Educational policy • Health policy • Infrastructure • Labor market policy • Labor standards
Mitigate risks				
<i>Diversification/Portfolio</i>	<ul style="list-style-type: none"> • Diversification of crops and plots • Diversification of income sources • Investment in physical & human capital 	<ul style="list-style-type: none"> • Professional associations • Savings & credit associations 	<ul style="list-style-type: none"> • Savings accounts with formal financial institutes • Microfinance 	<ul style="list-style-type: none"> • Multi-pillar pension systems • Asset transfers • Protection of rights (i.e. women) • Support for extending financial services
<i>Insurance</i>	<ul style="list-style-type: none"> • Marriage & extended family • Share tenancy • Tied labor • Buffer stocks 	<ul style="list-style-type: none"> • Investment in social capital 	<ul style="list-style-type: none"> • Old age annuities • Insurance (accidents, health, fire, etc.) 	<ul style="list-style-type: none"> • Mandated/provided insurance (unemployment, ill health, etc.)
Coping with risks	<ul style="list-style-type: none"> • Sale of assets • Money lender loans • Child labor • Reduce food consumption • Seasonal or temporary migration 	<ul style="list-style-type: none"> • Transfers from mutual aid networks 	<ul style="list-style-type: none"> • Sale of financial assets • Loans from formal financial institutes 	<ul style="list-style-type: none"> • Social assistance • Work programs • Subsidies • Social aid funds • Direct transfers

Source: Holzmann (2003), Holzmann and Jorgenson (2000), World Bank (2000)

Note: The table is not complete but serves as a reference. The area with the light gray background is of special interest to this paper, particularly with regard to health insurance.

Adaptive livelihood strategies can be further differentiated into risk reducing and risk mitigating strategies (**Table 2**). While the so called risk reducing strategies aim at reducing the probability of a shock occurring, the risk mitigating strategies look at reducing the impact

² The other two livelihood strategies not mentioned in the main body of the text are the accumulation strategy and the survival strategy. The first refers to strategies that seek to increase income flows and stocks of assets and the latter strategies that aim at preventing destitution and death.

of a shock on the livelihood. Insurance would count to the latter.³ Risk management strategies may be supported by the informal or formal sector, by the individual/household, the community, the market or public sector. In summary, risk management comprises all actions taken to respond to shocks and the associated adverse outcomes.

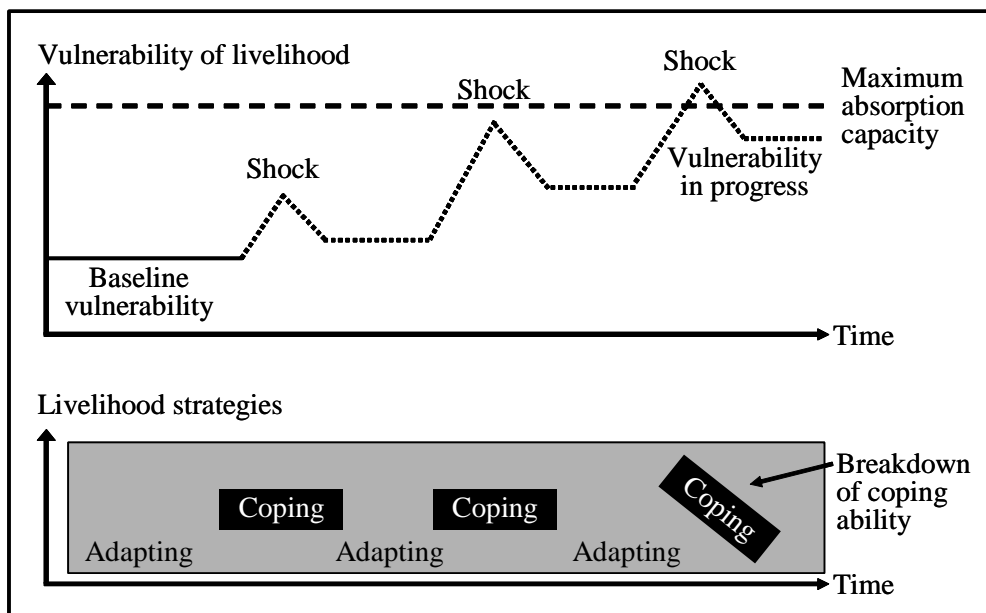
2.3 Outcomes of Shocks on the Vulnerability of Livelihoods

The concept of vulnerability and the related adaptive and coping strategies can be used to assess, which outcomes of shocks influence the livelihood of the exposed population in which way. Figure 2 illustrates how the realization of crises affects the vulnerability of livelihoods and how households adapt to and cope with these shocks. Starting from a baseline vulnerability, short-term shocks (e.g. natural disasters, death of animal) suddenly upset the precarious equilibrium and increase the current vulnerability level. People adopt strategies in response to the livelihood crisis. The immediate response relates to coping strategies.⁴ The system recovers and eventually, households employ new adapting strategies to develop a new portfolio of livelihood activities. The revision and expansion of adapting strategies can include the adaptation of existing informal local mutual-aid agreements and/or the development and adoption of formal or semi-formal microinsurance schemes for certain risks. Figure 2 shows that the livelihood concept is dynamic in that it attempts to understand change and complex cause-and-effect relationships (Murray 2001).

³ Insurance reduces the uncertainty for the insured, i.e. insurance covers future financial disadvantages that are the result from clearly defined damages or losses against a priori fixed premium (Schulte-Noelle 1995).

⁴ World Bank and DFID (1999) mention formal and informal borrowing, selling assets, liquidating savings, withdrawing children from school, selling women and girls for marriage and babies for adoption, reducing consumption, and collecting food or firewood from the forest as typical coping strategies. However, the access to formal or informal lending facilities depends on social and financial capital, both of which have to be developed over a longer timeframe and could thus equally counted to the adapting strategies.

Figure 2 Effects of Shocks on the Vulnerability of Livelihoods



Source: adapted from Korf (2002: 3)

Note: During a period of shock, the household applies coping strategies as an immediate reaction. Empirical evidence suggests that coping strategies leave the household with a higher level of livelihood vulnerability as compared to the time before the shock. If the household reaches its maximum absorption capacity of vulnerability, coping strategies may not suffice anymore to carry it over the difficult times. Adapting strategies have the potential to adjust the household's livelihood to a changed vulnerability environment and even decrease its level of vulnerability. They are normally applied in between shocks.

3 Health Insurance for the Vulnerable Livelihoods

Vulnerability for the poor is an everyday reality and is both a cause and a symptom of poverty. It resides in many shocks that pervade the lives of vulnerable poor. A relatively new option for vulnerable livelihoods to manage risk is microinsurance. Microinsurance is defined as the protection of low income people against specific peril in exchange for premium payments proportionate to the likelihood and cost of the risk involved (CGAP 2003). Microinsurance, if designed appropriately, offers a proactive opportunity to mitigate risk. Thus, it has a role in providing the poor with enhanced, market-based risk management options.

3.1 Thailand's Social Insurance and Health Insurance System

Thailand provides social insurance with regard to sickness, maternity, disability, death, childcare, old age, and unemployment. The social security system encompasses private-sector employees, public employees, and military personnel. In 1994, the Workmen Compensation

Act⁵ for the private sector was extended to cover work related injuries, diseases, loss of organ(s), disability, death or disappearance. State-employees are insured under separate schemes, but similarly to the system in the private sector. For people not covered by any of these systems, normally the informally and self-employed poor, the mandatory *Universal Health Care Scheme* exists, which provides access to medical services for 30 Baht per person and per doctor's advice (therefore, hereafter referred to as 30-Baht health insurance scheme). Several institutions offer assistance free of charge to special societal groups or the poor.

The 30-Baht health insurance scheme was implemented in 2001 and seeks to provide the same quality health services as offered under other health insurance schemes.⁶ It combines the previous social welfare health services and the voluntary health card scheme. These two services covered in 2001 more than 53% of the Thai population, still 29% of the 60 million Thai were uninsured. With the introduction of the 30-Baht health insurance scheme, the coverage of the Thai population with health insurance reached 95%. This scheme alone reaches out to about 75% of the population (National Statistical Office 2003). Public hospitals are the main providers of health care under this scheme; they serve 95% of the insured. Nevertheless, about 80 private hospitals are also registered under the scheme.

The 30-Baht health insurance scheme is funded by the Thai government out of tax revenues. Health care providers are reimbursed on a capitation grant basis: the payment per capita is 1,404 Bhat (about USD 37) per year (Sreshtaputra and Indaratna 2001, WHO 2003). The scheme is quite inexpensive for the poor Thai population and makes the difference between no health insurance coverage at all and some basic coverage. Nevertheless, it is associated with a number of problems (in order of severance): (1) slow service, (2) no service in a non-registered hospital, (3) scheme covers not all illnesses, especially obstetric delivery, infertility and drug addiction⁷ is not covered, (4) difficult to be transferred in other hospital under scheme, (5) access to medication under scheme is not satisfactory, (6) without card no service (Sricharoen 2006).

⁵ This act replaced the Announcement No. 103 of 1974, which prompted the setting up of the Workmen Compensation Fund.

⁶ The scheme covers health services, except cosmetic care, obstetric delivery, drug addiction treatment, haemodialysis, organ transplantation, infertility treatment, and other medical interventions.

⁷ The first two aspects refer particularly to women. Drug addiction is relatively frequent in northern Thailand, as many farmers still engage in some poppy seed production for own consumption.

3.2 Empirical Results of Health Risks, Risk Management in Rural Northern Thailand

Health risks are often mentioned as one of the most threatening risks to sustainable livelihoods in developing countries. Thailand is an interesting case because it offers since 2001 a *Universal Health Care Scheme*. The beneficiaries are the poor. Given this high health insurance coverage, health risks should take a relatively low rank in the risk perception of the insured. Yet, ill health and the related expenses seem still to be a huge risk on the livelihood of the rural poor in northern Thailand.

In 2004, a survey was conducted in Mae Rim district, Chiang Mai province, northern Thailand. The random sample consisted of 200 farm households in nine villages: 142 households belonged to the local ethnic group known as Khon Muang and 58 Hmong households often referred to as a hill tribe.⁸ 18.5% of the population in the north is classified as poor. If only the rural population is considered, it is 21.2% (NESDB 2005).

Among others, they were asked about the types of risk, respectively shocks they encountered during the year preceding the survey. The farmers mentioned 194 shocks that fall into the categories economic (harvest and non-harvest) and asset shocks. Fifty-seven shocks related to health, that is 23% of all shocks. The shocks relate to a total of 32 reported risks. Among the top-ten most often mentioned risks (81% of respondents mentioned them), three were related to health: (1) chronic disease of a non-working family member (6.4%), prolonged disease of a working family member (6.8%), and chronic disease of the household head (3.6%). The farmers, regardless of whether they had experienced ill-health during the past year or not, were asked about the order of choice of treatment. The most frequent first choice for medical treatment is the local health unit. Second are state hospitals because of their universal medical care, particularly as it concerns severe illnesses. The third choice is purchasing medicine at the nearby pharmacy.

Consider an average annual income per household, starting at 12,000 Baht (316 USD) at the minimum and going up to 480,000 Baht (12,632 USD) at the maximum.⁹ Forty-two percent of the 57 health shocks required expenses of up to 5,000 Baht (131 USD) that is 21% of the average income per adult household member. Despite the vast coverage with the 30-Baht

⁸ All empirical results refer to Sricharoen (2006).

⁹ The annual average income per household member reaches 23,800 Baht (627 USD) and per adult household member 33,000 Baht (868 USD).

health insurance scheme, almost 9% of the shocks prompted outlays beyond 50,000 Baht (more than 1,300 USD). Based on the risk management costs and the average income per household member, three risk groups were defined: low risk management costs (< 9,999 Baht; < 263 USD), medium (10,000-39,999 Baht), and high risk management costs (> 40,000 Baht; 13,330 USD). By this classification, the majority of the health shocks (67%) fell into the low risk group. However, 42% of the farmers stated that the health expenses still represent a relatively high burden on their household budget.

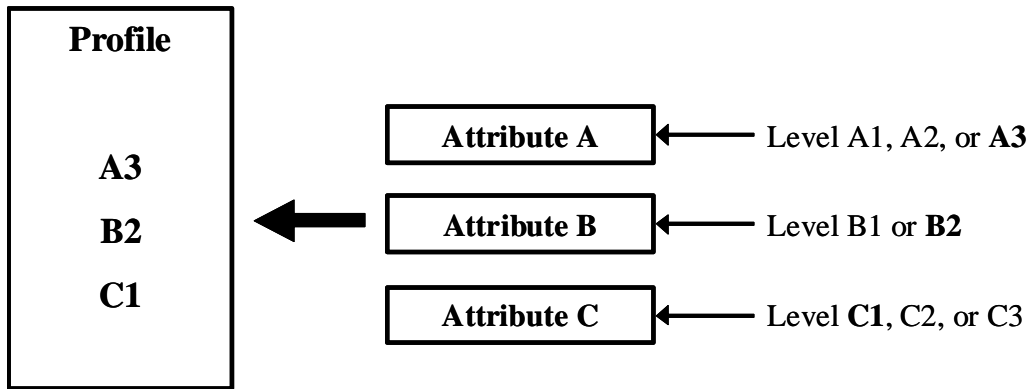
4 Conjoint Analysis of Health Insurance for the Rural Poor in Northern Thailand

The mandatory 30-Baht health insurance scheme in Thailand is very progressive in that it has provided insurance to 75% of the population. Impressive 88% of the sample households participated in the scheme. Nevertheless, it is a heavy burden on the state budget and beneficiaries complain, for instance, about the lack of flexibility when it comes to the choice of hospital (see Section 3.2 for other shortcomings of the scheme). Whether or not, the target group of the 30-Baht health insurance scheme could be better served by a different design of microinsurance, eventually even with a higher own contribution, is assessed by means of the so-called Choice Based Conjoint (CBC) analysis. Modelling a demand oriented future reality of microinsurance can possibly improve policy decisions with regard to the rural poor's livelihood and vulnerability.

4.1 The Conjoint Analysis Model

Conjoint analysis is a multivariate technique used to estimate or determine consumers'/clients' preference structure for products or services (Hair et al. 1998). It is often used in marketing research for consumer goods not as frequently for services. Conjoint Analysis can provide information about bundles of attributes that represent a potential product or service. These bundles of attributes and their levels are referred to as product/service profiles. Consumer preferences are reflected in their choices among product/service profiles and can be broken down to the individual attribute and its levels. Figure 3 illustrates relationship between attributes, their levels and their making up of a product/service profile.

Figure 3 Relationship between Profiles, Attributes, and Levels in Conjoint Analysis



Source: McLennon (2002)

Conjoint Analysis seeks to quantify and predict preferences for various levels of a multi-attribute product or service. The model proposed here is (Malhotra 2004):

$$Y = \sum_{i=1}^n \sum_{j=1}^m \beta_{ij} X_{ij} + \sum_{i=1}^n \sum_{k=1}^m \gamma_{jk} Z_k + \varepsilon$$

Y denotes overall preference for respectively choice of a financial service profile (construct) under investigation. The alternative profiles are described in terms of j-levels for i-attributes. β_{ij} is the part-worth utility¹⁰ associated with the jth-level of the ith-attributes. The part-worth utility measures the relative importance of X_{ij} , in estimating the dependent variable. X_{ij} is a control variable to flag either presence ($X_{ij}=1$) or absence ($X_{ij}=0$) of the jth-level for the ith - attribute. Interaction between a person's background variables and the attribute levels is represented by γ_{jk} . Similarly, Z_k is a vector of background variables (Schrieder 1996).

This research has selected the Choice Based Conjoint (CBC) analysis. The main characteristic distinguishing choice-based from other types of conjoint analysis is that the respondent expresses preferences by choosing from sets of profiles, rather than by rating or ranking them. The choice-based task is similar to what consumers actually do in the marketplace.

CBC data can be analyzed in a number of ways. First, the relative impact of each attribute level can be assessed just by counting "wins". In randomized CBC designs, each attribute level is equally likely to occur with each level of every other attribute. Therefore, the impact of each level can be assessed by counting the proportion of times, profiles including that

¹⁰ Part-worth utility is the contributed portion of various attribute levels to the overall preference, utility perceived (Green and Srinivasan 1978).

attribute level are chosen. This "counting" method can be used for main effects as well as for two- or three-way interactions.

CBC also performs multinomial logit estimation. This analysis results in a set of numbers comparable to respondent-level conjoint "utilities" but which differ in that they describe preferences of a group rather than of an individual (Sawtooth 2006). The relative importance of product attributes was calculated using the part-worth utility values from the ordered multinomial logit model. To determine the relative importance of an attribute, each attribute's highest and lowest part-worth utilities are utilized. The difference between the highest and lowest part-worth values establishes the utility range for the given attribute. Once the utility range for all attributes is determined, the relative importance of each attribute is calculated by dividing the utility range for the attribute by the sum of all attributes (Harrison et al., 1998). The equation used is

$$RI_i = \left[\frac{\text{Utility Range}}{\sum \text{Utility Range } \forall \text{ attributes}} \right] \times 100$$

where RI_i is the relative importance for the i^{th} attribute.

4.2 Attributes and Levels of CBC Analysis of Health Microinsurance

Based on expert interviews and participatory group interviews with the farm households, three attributes (and corresponding levels) were selected for the CBC analysis of health microinsurance in northern Thailand. The three attributes are:

(1) Price of insurance premium: The national health insurance policy of Thailand aims at providing health care to the poor, which covers most of diseases. Under the 30-Baht health insurance scheme, a farm household will pay per hospital visit just 30 Baht (80 US cents). Originally, the price was even lower. This policy is originated from a desire to charge only "what people can afford" without full consideration of the incurring costs. The health insurance products in this study are provided at three different prices, beginning from the base price 30 Baht, medium price with 60 Baht (1.60 USD) and a higher price of 90 Baht (2.40 USD).

(2) Choice of health care facility: There are medical health care institutions such as local health care units, public and private hospitals. Especially the health care units are located close to the community, easy to reach and economize on transportation cost. In Thailand, the

existing 30-Baht health insurance scheme is limited to registered hospitals, mainly public hospitals. In providing insurance, the health care concepts in this study provide more options to potential customers in accessing services in any hospital.

(3) Health coverage level: The 30 Baht health insurance scheme covers a wide range of services: (1) Outpatient services that cover visits to a range of health service providers. (2) Long-term illness and other chronic illnesses and sickness relating to old age. (3) Medications and diagnosis. (4) Transfer system from local hospital to other hospital in emergency cases. Nevertheless, the scheme covers only medical expenses, which are in the national drug lists. Therefore, medical expenses outside the national drug list are included here as one attribute level.

By way of summary, the attributes and related levels of the health microinsurance profiles analysed here are (see Section 4.1 for the model):

Y = Choice of health insurance profile

X = Explanatory health insurance concept variable

Z = Respondent's explanatory background variable

ε = Error term

X_i for $i = 1$ to 3: (1) Price of insurance premium,
(2) Choice of health care facility, and
(3) Health coverage level

The levels for each attribute are:

X_{ij} for $j = 1$ to 3: (1) 30 Baht,
(2) 60 Baht, and
(3) 90 Baht

X_{2j} for $j = 1$ to 2: (1) Registered hospital
(2) Any hospital

X_{3j} for $j = 1$ to 2: (1) Cover expenses only drug in national drug list
(2) Cover expenses of drug outside national drug list

The componential segmentation model emphasizes the interaction between service profile X , and the respondents' profile. This requires the extension of the additive model by a vector Z_k

that describes the background of respondents. Table 3 summarizes the background variables for the CBC analysis.

Table 3 Background Variables of CBC Health Microinsurance Analysis

	Gender					
	Men (N=106)		Women (N=94)		Total (N=200)	
	#	%	#	%	#	%
<i>Tribe</i>						
Thai	71	67.0	75	79.8	146	73.0
Hmong hill tribe	35	33.0	19	20.2	54	27.0
<i>Household income per month</i>						
< 3,000 Baht (US\$ 78.9)	22	20.8	14	14.9	36	18.0
3,000 - 5,000 Baht (78.9 - 131.6 USD)	40	37.7	41	43.6	81	40.5
5,001 - 10,000 Baht (131.6 - 263.2 USD)	33	31.1	23	24.5	56	28.0
10,001 - 15,000 Baht (263.2 - 394.7 USD)	4	3.8	5	5.3	9	4.5
15,001 - 20,000 Baht (394.7 - 526.3 USD)	-		6	6.4	6	3.0
> 20,000 Baht (526.3 USD)	7	6.6	5	5.3	12	6.0
<i>Card Type of household</i>						
Pay health expenses by own (No insurance)	2	1.9	2	2.1	4	2.0
30 Baht health insurance	92	86.8	83	88.3	175	87.5
Social security health insurance	4	3.8	2	2.1	6	3.0
Old age health insurance	7	6.6	2	2.1	9	4.5
Others	1	0.9	5	5.3	6	3.0
<i>Times consulting doctor last 12 month</i>						
< 2 times	54	50.9	43	45.7	97	48.5
3 to 4 times	21	19.8	17	18.1	38	19.0
5 to 6 times	15	14.2	16	17.0	31	15.5
7 to 8 times	4	3.8	2	2.1	6	3.0
> 8 times	12	11.3	16	17.0	28	14.0
<i>Health care when gently sick</i>						
Do not cure	9	8.5	10	10.6	19	9.5
Own treatment	8	7.6	3	3.2	11	5.5
Buy drug from pharmacy shop	38	35.9	39	41.5	77	38.5
Traditional medicine	2	1.8	...	...	2	1.0
Public hospital	7	6.6	6	6.4	13	6.5
Private hospital	-	...	...	...	...	...
Local health care unit	39	36.8	32	34.0	71	35.5
Clinic	3	2.8	4	4.3	7	3.5
<i>Health care when severely sick</i>						
Do not cure	...	...	1	1.1	1	0.5
Own treatment	...	...	1	1.1	1	0.5
Buy drug from pharmacy shop	2	1.9	...	...	2	1.0
Traditional medicine	...	...	...	...	...	...
Public hospital	78	73.6	76	80.9	154	77.0
Private hospital	6	5.7	2	2.1	8	4.0
Local health care unit	15	14.2	12	12.8	27	13.5
Clinic	4	3.8	2	2.1	6	3.0
Others	1	0.9	...	...	1	0.5

Source: Sricharoen (2006)

In this contribution, the CBC analysis will be presented for the whole sample plus the background variable 'gender'. It is hypothesized that the gender of respondents exhibit different utility functions.

4.3 Preference Analysis for Health Microinsurance

This section introduces the multinomial logit analysis for analyzing CBC data called multinomial logit analysis. A utility is a measure of relative desirability or worth. When computing utilities using logit, every attribute level is assigned a utility (also referred to as a part-worth). The higher the utility (part-worth), the more desirable is the attribute level. Levels that have high utilities have a large positive impact on influencing respondents to choose a product (Sawtooth 2000). Conjoint analysis begins with the estimation of the part-worth utilities for the total sample. This entails examining the part-worth coefficients, as the size and sign indicate the degree and direction in which respondents prefer a particular level of an attribute.

Table 4 depicts the estimation results regarding gender and all respondents. Logit analyses are often evaluated by Chi Square statistics. The Chi Square test shows that the overall model is significant at the 1%-level. A t-test was used to test the null hypothesis that the part-worth estimates are equal to zero. The estimated coefficients for all attribute levels were significant at the 1% level of confidence (McLennon 2002). The results indicate that the coverage attribute was determined to be most important, accounting for almost 30% of the preference rating. The second most important attribute, contributing 24% to the preference rating, was the freedom in selecting the health care facility. Interestingly, the premium-attribute ranks only third, contributing just 13% to the overall total preference rating. This would indicate that the poor farmers compare the costs with the performance of the health microinsurance profile. Obviously, they appreciate a low price but other attributes can outdo the price.

Nevertheless, looking at the whole sample at the right-hand side of Table 4, the relative large coefficient (effect) for the 'premium of 30 Baht' suggests that this premium level is the most desirable of all attribute levels. The presence of this attribute will increase the perceived utility with a part-worth of 0.66. The present policy of the 30-Baht health insurance scheme, namely to cover only medication listed on the national drug list is causing a substantial reduction in the part-worth utility, as indicated by the negative coefficient of -0.51. This indicates that the insured want more drug coverage. The 'registered hospital' level decreased the overall preference and utility by 0.27, which suggests that health care concepts that rely

on a pre-determined list of registered hospitals decrease the average respondent's preference for health insurance.

Table 4 Multinomial Logit Estimation of Average Utility Values for Health Microinsurance Attributes, by Gender

	Gender					
	Men		Women		Total	
	Effect	t Ratio	Effect	t Ratio	Effect	t Ratio
<i>Price of insurance premium</i>						
30 Baht	0.89283	9.40704	0.40646	4.16365	0.65899	9.73349
60 Baht	-0.40433	-4.21172	-0.30719	-3.21073	-0.35371	-5.23762
90 Baht	-0.48850	-3.91823	-0.09926	-0.77046	-0.30528	-3.42456
Relative importance in %	12.11		14.89		13.42	
<i>Choice of health care facility</i>						
Registered Hospital	-0.29079	-4.62447	-0.25621	-4.11994	-0.2708	-6.14989
Any Hospital	0.29079	4.62447	0.25621	4.11994	0.2708	6.14989
Relative importance in %	23.11		24.82		23.92	
<i>Health coverage level</i>						
Cover national drug list	-0.54642	-8.7381	-0.48373	-7.54752	-0.51472	-11.5325
Cover all drug list	0.54642	8.7381	0.48373	7.54752	0.51472	11.53253
Relative importance in %	30.19		29.08		29.67	
<i>No coverage</i>						
Relative importance in %	34.59		31.21		33.00	
Chi Square	252.33		131.97		369.33	

Source: Sricharoen (2006)

As expected, men and women are differing in the perception of the relative importance of premium attribute levels. Men perceive a higher utility from the premium of 30 Baht than women. Although it can truly be assumed that women have a lower average income than men, they opt more strongly for the higher premium insurance concepts. This result can only be interpreted in connection with their preference for more choice when it comes to the hospitals and the medication. It appears that they are willing to pay a higher price if the benefits of the insurance are improved accordingly. Women particularly suffer under the exclusion of obstetric delivery and the treatment of infertility in the mandatory 30-Baht health care scheme of the Thai government. Men also want to have better service within the insurance concept,

they are, however, not ready to pay a higher price for it. This may indicate that they rather keep the 'cheap' insurance, even if that means to cut down on service. As it is normally the household head who has to provide for the livelihood, men may be reluctant to accept a higher premium to be paid on a per-visit basis, as this would apply to all of their family members.

5 Conclusions and Policy Recommendations

Livelihoods in rural Thailand are prone to risks. One of the major risks that affect the income of households due to the associated lower income or higher expenses is ill-health. In 2004, a survey was conducted in Mae Rim district, Chiang Mai province, northern Thailand. The random sample consisted of 200 farm households in nine villages. Among the top-ten most often mentioned risks (81% of respondents mentioned them), three were related to health: (1) chronic disease of a non-working family member (6.4%), prolonged disease of a working family member (6.8%), and chronic disease of the household head (3.6%). Forty-two percent of the 57 health shocks in the recall period of one year required expenses of up to 5,000 Baht (131 USD) that is 21% of the average income per adult household member.

In 2001, the Thai government introduced the mandatory *Universal Health Care Scheme*, which provides access to medical services for 30 Baht per person and per doctor's advice. The mandatory 30-Baht health insurance scheme in Thailand is very progressive in that it has provided insurance to 75% of the population. Impressive 88% of the sample households participated in the scheme. The scheme is quite inexpensive for the poor Thai population and makes the difference between no health insurance coverage at all and some basic coverage. Nevertheless, it is associated with a number of problems (in order of severance): (1) slow service, (2) no service in a non-registered hospital, (3) scheme covers not all illnesses, especially obstetric delivery, infertility and drug addiction is not covered, (4) difficult to be transferred in other hospital under scheme, (5) access to medication under scheme is not satisfactory, (6) without card no service.

Whether or not, the target group of the 30-Baht health insurance scheme could be better served by a different design of microinsurance, eventually even with a higher own contribution, is assessed by means of CBC analysis. Modelling a demand oriented future reality of microinsurance can possibly improve policy decisions with regard to the rural poor's livelihood and vulnerability. The Chi Square test of the model is significant at the 1%-level.

The estimated coefficients of all attribute levels were significant at the 1% level of confidence.

The attribute 'health coverage level' attributes for almost 30% of the preference rating. The second most important attribute, contributing 24% to the preference rating, was the freedom in selecting the health care facility. Interestingly, the price premium-attribute ranks only third, contributing just 13% to the overall total preference rating. Nevertheless, the logit analysis demonstrates that the 'price premium of 30 Baht' is the most desirable of all attribute levels. The presence of this attribute will increase the perceived utility with a part-worth of 0.66. The present policy of the 30-Baht health insurance scheme, namely to cover only medication listed on the national drug list is causing a substantial reduction in the part-worth utility, as indicated by the negative coefficient of -0.51. This indicates that the insured want more drug coverage. The 'registered hospital' level decreased the overall preference and utility by 0.27, which suggests that health care concepts that rely on a pre-determined list of registered hospitals decrease the average respondent's preference for health insurance.

As expected, men and women are differing in the perception of the relative importance of premium attribute levels. Men perceive a higher utility from the premium of 30 Baht than women. Although it can truly be assumed that women have a lower average income than men, they opt more strongly for the higher premium insurance concepts. This result can only be interpreted in connection with their preference for more choice when it comes to the hospitals and the medication. It appears that they are willing to pay a higher price if the benefits of the insurance are improved accordingly. Women particularly suffer under the exclusion of obstetric delivery and the treatment of infertility in the mandatory 30-Baht health care scheme of the Thai government. Men also want to have better service within the insurance concept, they are, however, not ready to pay a higher price for it. This may indicate that they rather keep the 'cheap' insurance, even if that means to cut down on service. As it is normally the household head who has to provide for the livelihood, men may be reluctant to accept a higher premium to be paid on a per-visit basis, as this would apply to all of their family members.

Rural health insurance plays a key role in stabilising vulnerable livelihoods. The Thai mandatory 30-Baht health insurance scheme is very progressive and makes the difference between no health insurance coverage at all and some basic coverage. Most households are satisfied with this scheme. However, the existing scheme can be improved in some areas. For example, one result of the CBC analysis is that some households would pay a higher health

insurance premium than the 30 Baht if the services are adapted according to the demand. The true demand is a more flexible access to health care facilities and a better coverage with medication. Furthermore, the annual distribution of the 30-Baht health insurance certificate should be quicker, because some households receive their card only a few months before it expires.

List of references

- Alwang, J., Siegel P., and S. Jorgenson. 2001. Vulnerability: A view from different disciplines. World Bank SPDP No. 15. Washington, DC, USA: World Bank.
- Brown, W., and C. Churchill. 1999. *Providing insurance to low-income households: Part 1: A primer on insurance principles and products*. Bethesda, USA: Microenterprise Best Practices, c/o Development Alternatives Inc.
- Carney, D., Drinkwater, M., Rusinow, T., Neefjes, K., Wanmali, S., and N. Singh. 1999. Livelihoods approaches compared. London, UK: Department for International Development (DFID).
- CGAP. 2003. Working group on microinsurance: Donor guidelines for funding microinsurance. Washington, DC, USA: The Consultative Group to Assist the Poor (CGAP).
- Dercon, S. 2002. Income risk, coping strategies and safety nets. WIDER Discussion Paper No. 22. Helsinki, Finland: United Nations University, World Institute for Development Economics Research (WIDER).
- Green, P. E., and V. Srinivasan. 1978. Conjoint analysis in consumer research: issues and outlook. *Journal of Consumer Research* 5 (September): 103-123.
- Hair, J.F., Black, B., Babin, B., Anderson, R.E., and R.L.Tatham. 1998. *Multivariate Data Analysis. 5th Ed.* Upper Saddle River, NJ, USA: Prentice-Hall.
- Holzmann, R. 2003. Risk and vulnerability: The forward looking role of social protection in a globalizing world. In *Poverty and Social Exclusion in North and South*. Dowler, E., and P. Mosely (eds.): 15-30. London, UK: Routledge.
- Holzmann, R., and S.L. Jorgensen. 2000. Social risk management: A new conceptual framework for social protection and beyond. Social Protection Discussion Paper No. 6. Washington, DC, USA: World Bank, Human Development Network.
- IFPRI. 2002. Background information for presenters in improving understanding of risks and household responses to risk. Paper prepared at the World Bank Conference on "Risk and Vulnerability: Estimation and Policy Implications". Washington, DC, USA: International Food Policy Research Institute (IFPRI).
- Jütting, J. 1999. Strengthening social security systems in rural areas of developing countries. ZEF Discussion Paper on Development Policy No. 9. Bonn, D: Center for Development Research (ZEF).
- Kanbur, R., and L. Squire. 2001. The evolution of thinking about poverty: Exploring the interactions. In *Frontiers of Development Economics – The future in perspective*, Meier, G.M., and J.E. Stiglitz (eds.): 183-226. New York, USA: Oxford University Press.
- Korf, B. 2002. Rural livelihoods at risk: Land use and coping strategies of war-affected communities in Sri Lanka. Paper presented at Deutscher Tropentag 2002, Oct. 9-11, 2002, Witzenhausen, D: University of Kassel-Witzenhausen.
- Litzka, F.M. 2002. *Planung bei Unsicherheit*. Skript. Stuttgart, D: Universität Hohenheim, Fachgebiet Analyse, Planung und Organisation der landwirtschaftlichen Produktion.

- Malhotra, N.K. 2004. *Marketing research: an applied orientation*. USA: Pearson/Prentice-Hall.
- McLennon, E. A. 2002. Analysis of consumer perceptions toward biotechnology and their preferences for biotech food labels. M.S. Thesis. Baton Rouge , LA. USA: Louisiana State University, Department of Agricultural Economics and Agribusiness.
- Moore, W.L. 1980. Levels of aggregation in conjoint analysis: An empirical comparison. *Journal of marketing research* 17 (November): 516-523.
- Murray, C. 2001. Livihoods research: Some conceptual and methodological issues. Background Paper No. 5. Manchester, UK: University of Manchester, Department of Sociology, Chronic Poverty Research Center.
- NESDB. 2005. Thailand poverty profile and poverty reduction strategies. Bangkok, Thailand: Office of Community Economic Development and Income Distribution, National Economic and Social Development Board (NESDB).
- Sawtooth. 2000. *The Sawtooth software CBC Vs. 2.6*. Sequim, WA, USA: Sawtooth Software.
- Sawtooth. 2006. Choice base conjoint. Sequim, WA, USA: Sawtooth Software, <http://www.sawtoothsoftware.com> (accessed in September 2005).
- Schrieder, G. 1996. *The Role of Rural Finance for Food Security of the Poor in Cameroon*. Dissertation. Frankfurt, Germany: Peter Lang Verlag.
- Schulte-Noelle, H. 1995. Versicherungswirtschaft, Risikopolitik der Versicherungen. In *Handwörterbuch des Bank- und Finanzwesens*, Gerke, W. und M. Steiner (Hrsg.): 1914-1923. 2. Auflage. Stuttgart, D: Schäffer-Poeschel.
- Sreshthaputra, N., and K. Indaratna. 2001. The universal coverage policy of Thailand: an introduction. Paper prepared for the Asia-Pacific Health Economics Network (APHEN), 19th July 2001. Thailand: Asia Pacific Health Economics Forum (APHEN).
- Sricharoen, T. 2006. Vulnerability and risk management for sustainable livelihoods of farm households in Northern Thailand – The role of health insurance in managing risk. Dissertation. Stuttgart, D: University of Hohenheim.
- WHO. 2003. Pro-equity health systems: government's central role. USA: World Health Organization (WHO), www.who.int/whr/2003/chapter7/en/index7.html (accessed in September 2006).
- World Bank. 2000. *World Development Report 2000/01 – Attacking Poverty*. Washington, DC, USA: World Bank.
- World Bank and Department for International Development (DFID). 1999. Vietnam – Voices of the poor. Hanoi, V: World Bank.