Discussion Paper No. 05/2008

Insurance Preferences of Smallholders: Results from an Adaptive Conjoint Analysis in Northern Vietnam

Isabel Fischer and Gertrud Buchenrieder

Forschung zur Entwicklungsökonomie und -politik
Research in Development Economics and Policy

Universität Hohenheim
Institut für Agrar- und Sozialökonomie in den Tropen und Subtropen
Department of Agricultural Economics and Social Sciences in the Tropics and Subtropics

Tropenzentrum
Centre for Agriculture in the Tropics and Subtropics

Isabel Fischer[1] and Gertrud Buchenrieder[2]:

Insurance Preferences of Smallholders: Results from an Adaptive Conjoint Analysis in Northern Vietnam.

Department of Agricultural Economics and Social Sciences in the Tropics and Subtropics (Ed.), Forschung zur Entwicklungsökonomie und -politik – Research in Development Economics and Policy, Discussion Paper No. 05/2008.

ISSN 1439-4952

Printed in Germany.
Druck: F. u. T. Müllerbader GmbH
Forststr. 18, 70794 Filderstadt, Germany

VERLAG ULRICH E. GRAUER
Hohenzollernstr. 12, 70178 Stuttgart, Germany
Tel.: +49 (0)711 4704309, Fax: +49 (0)711 2485219
Internet: http://www.grauer.de/, E-mail: grauer@grauer.de

---

[1] Dipl. Ing.sc.agr. Isabel Fischer – Dept. of Rural Development Theory and Policy (490a), University of Hohenheim, fischer.isabel@gmx.de

[2] Prof. Dr. Gertrud Buchenrieder – Head of Dept. 'External Environment in Agriculture and Policy Analysis', Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), buchenrieder@iamo.de

Department of Agricultural Economics and Social Sciences
in the Tropics and Subtropics

- **Chair: Rural Development Theory and Policy (490a)**
- **Chair: International Agricultural Trade and Food Security (490b)**
- **Chair: Farming and Rural Systems (490c)**
- **Chair: Land Use Economics in the Tropics and Subtropics (490d)**

Centre for Agriculture in the Tropics and Subtropics

Discussion papers in this series are intended to stimulate discussion among researchers, practitioners and policy makers. The papers mostly reflect work in progress. This paper has been reviewed by Prof. Dr. Dr.h.c. Franz Heidhues and Dr. Thomas Dufhues whom we thank for their valuable and pertinent comments.

Table of Contents

List of Tables

List of Figures

Abstract

Livestock plays a pivotal role for smallholder production systems in mountainous Northern Vietnam. Poor rural farm households are vulnerable and their livelihood systems are often so fragile and finely-balanced that a small misfortune can destabilize the households for many years. Economic risks, especially loss of livestock, are one of the major reasons for slipping into poverty. Normally, insurance systems could step in here. In developing countries however, insurance markets are usually underdeveloped. Empirical research reveals that raising livestock and selling it in case of a livelihood emergency is a particularly popular risk management strategy. Based on the results of a computer-based Adaptive Conjoint Analysis (ACA) with 155 responding households of different ethnic minority groups in Son La and Bac Kan provinces of Northern Vietnam, this article examines insurance preferences of rural farm households. In general, smallholders are very interested in livestock insurance. The 'insured animal' is the most important attribute for all respondents and the buffalo is the highest valued animal. However, the critical issue is how to design the insurance package. It is argued that the provision of adapted livestock insurance could help decreasing household vulnerability by a forward looking risk management strategy. Insurance preferences of smallholders are presented and policy recommendations are given to improve the overall situation of vulnerable households in mountainous Northern Vietnam.

Keywords: Risk Management, Livestock Insurance, Adaptive Conjoint Analysis (ACA), Vietnam

Insurance Preferences of Smallholders: Results from an Adaptive Conjoint Analysis in Northern Vietnam

Isabel Fischer and Gertrud Buchenrieder

1 Introduction[3]

Vulnerable[4] rural households in the mountainous regions of Northern Vietnam are exposed to various risks, crises and shocks. In rural livelihood systems, where households are inseparable from their agricultural activities, the respective endowment with and access to assets and resources determine the severity of vulnerability. In many developing countries, livestock is an important source of household income and has additional non-economic functions (e.g. keeping social networks alive by lending draught animals to network members). Given the pivotal role of livestock in most farming systems, livestock death, after accident or disease, is considered to be one of the main factors for slipping into poverty (World Bank and DFID 1999). According to Evans et al. (2007: 46), "almost 61% of the ethnic minority population [in Vietnam] is poor". In 2004[5], the time of the survey, the average income per capita for the Northwest region was 265,690 VND per month[6] or 3.2 million VND per annum respectively, which is equivalent to 52% of Vietnam's average annual per capita income (Evans et al. 2007). In comparison, the average prices[7] for cattle (7 million VND) or buffalo (5 million VND) are enormous.

In livestock dependent households, failure of an investment, especially when funded by a loan, can leave a household in an extremely vulnerable position. According to Dufhues et al. (2004), farmers using credit to purchase livestock face two risks at once: (1) loss of the livestock and subsequently (2) failure of investment. Lack of accessible veterinary services and high expenses for medical treatment of livestock worsen the situation. Formal agricultural or more general rural insurance products hardly exist in developing countries, therefore rural farm households have to rely mainly on informal mutual aid schemes within their social networks to reduce their risks (Vandeveer 2000). The adopted livelihood strategies will differ according to whether people have to deal with gradual changes or sudden shocks and crises. In the mountainous regions of northern Vietnam, raising livestock and selling it in case of a livelihood emergency is one of the most popular risk management strategies.

Microinsurance is hypothesized to reduce the economic hardship from livestock loss and its consequences for vulnerable rural households. A computer-based Adaptive Conjoint Analysis

---

[3] The research for this paper was carried out within the framework of the German-Thai-Vietnamese Collaborative Research Program 'Sustainable Land Use and Rural Development in Mountainous Regions of Southeast Asia' (SFB 564) also known as *The Uplands Program*. The funding from the Deutsche Forschungsgemeinschaft (DFG) and the co-funding from the Ministry of Science, Technology, and Environment of Vietnam is gratefully acknowledged. All errors and omissions are the responsibility of the authors.

[4] Vulnerability refers to "the relationship between poverty, risk and efforts to manage risk" (Alwang, Siegel and Jorgenson, 2001: 1). Vulnerable households are characterized by the potential for well-being to change in a negative direction or by no change within an existing negative status i.e. remaining in poverty (Conway and Turk 2001). Dercon (2002:16) proposes to define "vulnerable households as those liable to fall under an agreed poverty line over time with a particular high probability". In 2001, one third of the Vietnamese population lived in poverty and many of those who were not poor lived close to the poverty line. This sums up to 45% of the population, if 'the vulnerable' are defined as the poor population in 2001 plus those who were near-poor within a line of 10% above the poverty line (Conway and Turk 2001).

[5] On average, 20,000 Vietnamese Dong (VND) are equivalent to 1€ (EUR) in the survey period.

[6] According to national statistics cited in the article 'Unequal regional development in Vietnam'; source: http://www.euromonitor.com/Unequal_regional_development_in_Vietnam (accessed : 05.02.2008)

[7] Source: http://www.vietnamnet.vn/ (accessed : 20.02.2008)

(ACA) was carried out in two provinces of Northern Vietnam. The demand analysis was focusing on insurance options for livestock loss and its consequences for vulnerable rural households. Based on empirical data, insurance preferences of smallholders will be presented and policy recommendations will be given to improve the overall situation of vulnerable rural households in Northern Vietnam. While most literature on insurance in developing countries discusses crop insurance schemes and micro-insurance for health and life, little research has so far been conducted on livestock insurance schemes. This research paper will thus help to close that gap.

2 Methodology and Data Base

In 2004 and 2005, a computer-based ACA was carried out in six villages in the provinces of Son La and Bac Kan of Northern Vietnam. Qualitative data served as basis for the conceptual outline of the demand analysis for livestock microinsurance. This ACA used a stratified cross-sectional sample with 155 responding farm households of different ethnic minority groups. Eighty-three male and 68 female respondents participated in the ACA interviews. Three interviews had to be deleted from the sample due to incomplete data; one interview was cut short after the respondent explained that he is (due to bad experience in the past) neither interested in livestock insurance in general, nor willing to purchase any kind of insurance in the future.

ACA is derived from the original Conjoint Analysis (CA)[8] and is considered "an excellent technique for many product design and market segmentation studies, it is not generally recommended as a pricing research technique" (ACA User Manual: 3-1). The demand for microinsurance is dependent on numerous economic and non-economic attributes of the insurer and insured. Research on the adaptive and coping strategies with shocks will have to consider a wide range of attributes of the supply and demand side. Hence, respondents may be provided with too much information to be considered thoroughly. The quality of the research is also constrained by limitations in the respondents' time and attention. ACA moves beyond those limitations by adapting the interview for each respondent[9]. Focusing on each respondent's values and areas of importance, so-called 'average utilities[10]' and 'average importances' are calculated during each interview, using ordinary least square (OLS) regression. In contrast to the 'average utilities', which provide some information concerning the levels, the 'average importances' focus on the examinated attributes. Combining traits of a potential livestock microinsurance scheme, for instance 'insured animal' with explanatory background variables of the respondents (e.g. 'gender' and 'wealth strata') gives more profound insights into the design of suitable and adapted livestock insurance products. The exclusive analysis of the conjoint data, the 'average importances' of the attributes as well as the 'average utilities' of the attribute levels tells only part of the story. Only by including the non-conjoint data, the real demand for a certain product, in this case livestock insurance for ethnic minority farm households in northern Vietnam can be assessed.

---

[8] Conjoint Analysis has become one of the most widely-used quantitative methods in marketing research. It is used to measure the perceived values of specific product features, to learn how demand for a particular product or service is related to price, and to forecast what the likely acceptance of a product would be if brought to market (SKIM, 2002; Orme, 1998).

[9] According to the ACA User Manual (3-1), "an ACA survey includes a series of questions used to first estimate approximate preferences for features, and then later refine them through focused trade-off-questions".

[10] According to the ACA User manual, "Products or services are thought of as possessing specific levels of defined attributes, and a respondent's 'liking' for a product is modelled as the sum of the respondent's 'utilities' for each of its attribute levels" (ACA User Manual: 3-2).

3 Livestock Insurance

Vulnerable households have developed sophisticated (ex-ante) risk-management and (ex-post) risk-coping strategies. Although providing some protection in the short run, the coping strategies limit the poor's long-term prospects of escaping poverty (Kanbur and Squire 2001: 210). In contrast, adaptive livelihood strategies (e.g. accessing insurance[11]) may seek to mitigate risks through livelihood adjustment, or change and diversification of income-creating activities. However, Skees et al. (2002) state that as farming remains the dominant activity in many rural areas, diversification may not actually spread certain types of risk. Moreover, the average household income in a diversified portfolio may be lower than in a specialized portfolio, but the variation in income is also normally less in a diversified portfolio. Thus, there is potential economic gain if households are offered options that provide them with alternative mechanisms for reducing and managing risk, such as formal savings and insurance mechanisms (Dunn 1997 cited in Kaweesi 2005).

In global terms, the first livestock insurance scheme, a so-called 'Compensation Fund' was established in Germany in 1909[12]. Nowadays, several types of national livestock insurance systems exist in most developed countries. The majority of them are focusing on direct losses due to epidemic diseases and/or on the associated consequential losses. In developing countries, animal insurance schemes have developed mainly in Asia, e.g. in India, where a fairly successful, credit-tied cattle insurance scheme exists (Otte, Nugent and McLeod 2004). Most farm households in developing countries have, however, still to rely on informal mutual aid schemes within their social networks to reduce their risks (Vandeveer 2000). According to Kaweesi (2005), informal livestock insurance arrangements, which usually involves restocking and change in herd composition, exists for instance in West African countries. Formal livestock insurance is challenging especially if it is meant to serve low-income households. In some countries, public intervention has been the only alternative available in the provision of livestock insurance, in which the livestock insurance services are invariably supplied by state-owned or state-subsidized organizations. In other countries, development projects, community based organizations and non-governmental organisations (NGOs) have been involved in the supply of livestock insurance services.

Private livestock insurance is available in some developing countries, including the South of Vietnam[13]. The drawback is that subsistence farmers (or some semi-commercial farmers) are usually below the "threshold of insurability" for the offered insurance products, since they are considered incapable to pay the commercially rated premium due to their generally low income levels. Consequently, the livestock insurance schemes are not commercially viable

---

[11] Summing up the essential characteristics of insurance, it may be observed that insurance is a social device, which aims at reducing the uncertainty of loss through combination of a large number of similar uncertainties and through the use of accumulated funds, distributing the burden of loss, should there be any, over space and time (Ray 1967 cited in Kaweesi 2005).

[12] Based on the Bismarckian model of public health insurance (1883), Germany was the first country in the world in which the state engaged in the social insurance of its citizens. Already in 1880, veterinaries discussed options to contain contagious livestock diseases by law. In 1886, chancellor Otto von Bismarck established a national law on contagious livestock diseases. So-called 'Compensation funds' (*Tierseuchenkasse*) were introduced in all federal states as a compulsory scheme. The aim was to control and fight as well as to prevent the outbreak and spread of contagious livestock diseases. (Sources: Kaweesi (2005), http://www.denmark.dk/en/menu/AboutDenmark/Society Welfare/ScandinavianWelfareModel/History/ and http://www.diss.fu-berlin.de/2006/495/disk.pdf; accessed: 20.06.2008)

[13] Groupama is one of Europe's leading multi-line insurers and has specialized in agricultural insurance worldwide. In September 2002, Groupama started to offer livestock insurance in 13 provinces of the Mekong Delta in Vietnam. The main target group are shrimp farmers and the minimum premium per contract is 200.000 VND. According to national statistics[4] the average monthly income of farmers in the Mekong Delta is 471.070 VND. For more detailed information, please refer to Dufhues et al. (2004).

and the private sector insurance, solely on their own and without assistance from the public sector, may be unable to play a substantial role in providing livestock insurance in developing countries. Nevertheless, the interests of the poorer farmers ought not be ignored, either politically or from the human, social, and economic point of view. Hence, the critical issue is how to design the insurance package that can benefit poor farmers most and keeps the possible state support at a minimum.

4 Adaptive Conjoint Analysis

Focusing on financial market research, especially on insurance options for livestock loss and its consequences for vulnerable rural households, the hypothetical demand analysis for livestock microinsurance is based on results of a computer-based ACA. ACA was first introduced by Sawtooth Software in 1985 and has since become the most widely used conjoint analysis technique for quantitative marketing research worldwide (Green et al. 2001). As already mentioned above, the applications are usually concerned with consumer preference and they attempt to assess the effect of specific product features on overall preference. Respondents evaluate product alternatives (concepts) described by previously selected attributes and indicate which product alternativ they prefer.

4.1 Adaptation of the ACA to the Local Context

In northern Vietnam, as elsewhere, the demand for livestock microinsurance is dependent on numerous economic and non-economic (cultural and social) attributes of the insurer and insured. Research quality is constrained by limitations in the respondents' time and attention and respondents may be provided with excessive information to be digested thoroughly. Computer-based ACA moves beyond those limitations by customizing the interview for each respondent. Step by step, the questions are based on previous answers. Hence, the respondent is asked in detail only about those attributes and levels of greatest significance.

Following Green and Srinivasan (1978), those attributes that are most frequently regarded as relevant for the consumers were identified through expert and group interviews. As economic shocks, e.g. livestock loss, affect all members of a household, gender-sensitive group discussions were carried out concerning issues like ownership and use of assets, labor division and decision making as well as risks, management strategies and social networks. Based on this information, the questionnaire for the ACA was developed and divided in a conjoint and a non-conjoint part.

The non-conjoint part offers the option to include additional questions into the analysis, which are asked at the beginning and therefore (1) serve as ice-breaker and (2) have the advantage of providing more information without substantially prolonging the interview time. In this ACA, the following non-conjoint issues were included in the questionaire: gender, age and wealth strata of the respondent, number of working family members in the household, preferences concerning certain insurance schemes and level of premiums, as well as ability to pay. The questions in the conjoint part relied on the attributes and levels listed in Table 1. With respect to the time availability of the respondents and in order to keep the necessary clarity, the number of attributes and levels were kept as low as possible.

Table 1: Attributes and Levels of the ACA on Livestock Microinsurance

Attributes	Attribute levels
Insured animal	- buffalo - cow - pig - goat - poultry
Coverage	- death A (after accident) - death D (after disease) - death A&D (after accident & disease)
Payment	- monthly - yearly
Contract	- individual - group

4.2 Use of Stimuli

In order to ensure that future insurance products reflect the necessities and preferences of the potential clients, profound participation of the target group throughout the research process is important. In a challenging intercultural research context, where one has to deal with different languages, educational levels, illiteracy, as well as different perceptions of risks and problem solutions, the use of so-called stimuli, reduces problems of misunderstanding and improves communication. In this ACA, innovative stimuli, to be precise black and white drawings, were used for the presentation of attributes' levels to the respondent (see Figure 1).

Figure 1: Examples of Black and White Drawings Used as Stimuli in the ACA

Geppert and Dufhues (2003) found that the role and functions of pictures as communication tools for research and extension is widely discussed in the literature and scholars mostly agree about the concept's advantage and disadvantages. For example, Hoffmann (2000) states that pictures and drawings can mediate particularly well between the observer and reality and bridge cultural differences. According to Green and Srinivasan (1978), important advantages of pictorial representation in CA provide several benefits over verbal profiles, including reduced information overload, higher homogeneity of perceptions as well as more realistic and interesting stimuli. In this research, computer-based ACA was combined with the use of black and white drawings[14] as stimuli.

[14] The drawings were drawn by a local student, thus they were locally adapted and the production costs were very low. Once successfully pre-tested, the drawings were laminated to make them stronger and durable. Due to their small size and light weight, they could be transported easily, even to remote villages.

The ACA-interview consists of a number of sections, each designed for efficiency in obtaining the information needed to estimate respondent preferences. It used the 'paired comparison' approach to collecting respondent trade-offs, and presents concepts customized for each respondent, each composed of combinations of the above mentioned four attributes. In addition, level order presentation within an attribute can be randomized in 'priors (rankings)' to control for potential order presentation bias. Further sections in this ACA survey included 'importances' and 'calibration concepts'. Stimuli were used throughout the conjoint part of the ACA to simultaneously visualize the respective questions that were selected by the software and displayed on the screen of the laptop (see Figure 2).

Figure 2: Application of Stimuli During the 'Ranking' and the 'Pairs' Section of the ACA-Interview

5 Results

The empirically derived results are two-fold and can be divided into two components, one regarding content, another focusing on methodology. Starting with the later, it can be summarized that the joint application of such a 'traditional' tool like black and white drawings with a computer-based ACA revealed very satisfactory results for all participants, researcher, interpreters and responding household members. The stimuli fully served their purpose to support the interview through visualizing the contents by "translating" the more or less complex attribute levels into visual aids. In order to make sure that all drawings were comprehensible, the interpreter explained the meaning of each drawing at the beginning. However, the respondents were able to ask for more information during the process of the interview. Second, by listening to the translator and working with the drawings, the smallholder farmers were less distracted by the Laptop. The following sections will present major results of this ACA.

5.1 Smallholders''Knowledge of Insurance' and 'Ability to Pay'

The variables that are included in the non-conjoint part of this ACA have two objectives that are closely interrelated. They were added to get more information on the demographic characteristics of the respondents as well as on their knowledge and preferences concerning insurance. This information is crucial for private and public insurers in order to provide appropriate products and to assess whether the provision under these circumstances is cost covering or even profitable. Only if the requirements of the target group are met and insurance products cover the real demand, insurance could, in the long run, help to decrease household vulnerability.

Starting at the base, by asking all respondents about their knowledge of 'insurance' (in general – not only livestock insurance), the following results were gained (cf. Table 2.1 and 2.2):

Table 2.1: 'Knowledge of Insurance' by Gender

	Total (N=151)	Male (N=83)	Female (N=68)
No, not at all	78	31	47
in %	*51.7*	*37.3*	*69.1*
Yes, I know a little bit	48	33	15
in %	*31.8*	*39.8*	*22.1*
Yes, I know insurance	25	19	6
in %	*16.6*	*22.9*	*8.8*

Source: Own data

Focusing on gender (Table 2.1), more than half (52%) of all respondents have no idea what insurance is or how it works. For female respondents, the percentage is even as high as 69%. Those, who state that they already have heard about insurance (e.g. on TV), but have no idea how it works exactly or where they could buy it, sum up to about another third (32%), whereas the male share (40%) is almost double as large as the females (22%). The percentage of participants that really know insurance and how it works is as low as 17% in total, with only 9% female and 23% male knowing respondents.

Table 2.2: 'Knowledge of Insurance' by Wealth Strata

		Wealth strata			
Knowledge of insurance	Total (N=151)	Poor (N=21)	Average (N=107)	Better-off (N=18)	Rich (N=5)
No, not at all	78	15	59	2	2
in %	*51.7*	*71.4*	*55.1*	*11.1*	*40.0*
Yes, I know a little bit	48	5	31	11	1
in %	*31.8*	*23.8*	*29.0*	*61.1*	*20.0*
Yes, I know insurance	25	1	17	5	2
in %	*16.6*	*4.8*	*15.9*	*27.8*	*40.0*

Source: Own data

Note: The hungry wealth strata is not indicated as non of the respondents belonged to this group.

Incorporating the respondent's wealth strata (Table 2.2), the results for the 'rich' are mixed, with 20% declaring to know a little, while half of the remaining 80% either state to know nothing (40%) or everything (40%) about insurance. More than 70% of the 'poor' and more than 55% of the 'average' are not familiar with insurance. While less than one third (23% 'poor' / 29% 'average') state to know a little, less than 5% ('poor') / 16% ('average') really know what insurance is. The results clearly differ for the 'better-off'-group, where the majority (>61%) state to know a little and 27% declare to really know the concept of insurance.

After explaining the basic concept of insurance to the unknowing majority, the respondents were asked about their preferences concerning varying possible insurance schemes, premium payment and ability to pay. As displayed in Table 3, the majority (53%) favour a combined 'credit & insurance' package. About one third (32.5%) select the 'saving & insurance' option and only 14.6% choose the pure 'insurance' option.

Table 3: Possible 'Insurance Schemes' by Gender

	Total (N=151)	Male (N=83)	Female (N=68)
Insurance	22	12	10
in %	*14.6*	*14.5*	*14.7*
Saving & insurance	49	23	26
in %	*32.5*	*27.7*	*38.2*
Credit & insurance	80	48	32
in %	*53.0*	*57.8*	*47.1*

Source: Own data

Furthermore, the respondents were asked if they would, in general, rather pay a lower premium and thus receive lower indemnity or higher premium and accordingly receive higher indemnity in case of a claim. In total, 37.7% of the respondents (men: 33.7%, women: 42.6%) choose the 'lower premium' option, while 62.3% of the respondents (men: 66.3%, women: 57.4%) prefer the 'higher premium' option. The preference of the 'higher premium' is verified in the results of the respondent's ability to pay for insurance (see Table 4). Focusing on the results by wealth strata (Table 4), the majority of the 'poor' choose low premiums: 0-5.000 VND/year (33.3%) and 5.000-10.000 VND/year (38.1%) respectively. While the 'average' group achieved mixed results, both, the 'better-off' and the 'rich' group clearly favoured to pay more than 40.000 VND/year (better-off: 44.4% and rich: 60%), followed by 20.000-30.000 VND/year (better-off: 27.8% and rich: 40%).

After presenting some results from the non-conjoint part of this ACA, the next sections will focus on results derived from the conjoint part of the ACA. First, looking at the average importances, it appeared that the most important issue to the respondents is the 'insured animal' (35.6%). This confirms previous results from group discussions in different villages of the research area. The least important attribute is 'contract' (19.6%) that is the choice between individual and group contract. The remaining two attributes, 'coverage' (23.1%) and 'premium payment' (21.7%) are ranked second and third.

5.2 The 'Insured Animal'-Attribute

Focusing on the 'insured animal'-attribute of the conjoint part and combining it with the 'gender' variable of the non-conjoint part, the following results can be presented (cf. Table 5): First of all, the striking position of the buffalo remained unchanged. Both, male as well as female respondents consider it the most important animal and therefore would first of all insure the family's buffalo. As in the total sample, poultry and goats are considered least attractive for insurance. Second, the remarkable last position of the goat can be explained by the fact that only a minority of all households possess goats, whereas most other animals are more or less common in each household. Usually, an average household would possess at

least one buffalo (or a bull and/or a cow), one/a few pigs and a few chicken[15]. Very poor households often lack a draught animal or do not possess any animals.

Table 4: 'Ability to Pay' by Wealth Strata

Ability to pay (VND/year)	Total (N=151)	Wealth strata: Poor (N=21)	Average (N=107)	Better-off (N=18)	Rich (N=5)
0 VND	1	-	1	-	-
in %	*0.7*		*0.9*		
0-5.000 VND	15	7	8	-	-
in %	*9.9*	*33.3*	*7.5*		
5.000-10.000 VND	33	8	22	3	-
in %	*21.9*	*38.1*	*20.6*	*16.7*	
10.000-20.000 VND	33	4	27	2	-
in %	*21.9*	*19.0*	*25.2*	*11.1*	
20.000-40.000 VND	31	1	23	5	2
in %	*20.5*	*4.8*	*21.5*	*27.8*	*40.0*
>40.000 VND	38	1	26	8	3
in %	*25.2*	*4.8*	*24.3*	*44.4*	*60.0*

Source: Own data

Note: The hungry wealth strata is not indicated as non of the respondents belonged to this group.

Table 5: Average Utility Values of the 'Insured Animal'-Attribute Levels by Gender

	Total (N=151)	Male (N=83)	Female (N=68)
Buffalo	51.16	57.28	43.70
Cow	14.49	17.34	11.02
Pig	2.69	-5.41	12.57
Poultry	-22.74	-26.14	-18.59
Goat	-45.60	-43.06	-48.71

Source: Own data

Cows are usually raised as in-kind savings and commonly financed by a bank loan. Focusing on the data for cows and pigs, it turned out that male respondents clearly prefer insurance for cows (17.35), wheras pig insurance even has a negative utility value (-5.41). In contrast, female respondents prefer pig insurance (12.57) and insurance for cows is ranked third

[15] This statement has been true at least before the Avian Influenza hit Vietnam in 2003/2004.

(11.02). One reason for this diverting result might be the traditional labor division. Participatory, qualitative research reveals that women (beside other tasks) are usually responsible for housework, including the breeding of pigs. Male household members are usually in charge of the big ruminants, although women and children also take big ruminants for grazing. All in all, large ruminants are a crucial part of the household's physical capital assets and therefore considered worthy additional expenditures, e.g. insurance premiums. Small livestock like pigs, which play a very important role in poorer households, are usually only considered worth insuring by those households that do not posess any large ruminants.

5.3 The 'Coverage', 'Contract' and 'Payment' Attributes (by Gender)

Taking a closer look on the interrelation of the other three attributes with the 'gender' variable, the following results were revealed (Table 6):

Table 6: Average Utility Values of the 'Coverage', 'Contract' &'Payment'-Attribute Levels by Gender

		Total (N=151)	Male (N=83)	Female (N=68)
Coverage	Death (D)	24.01	25.91	21.70
	Death (A&D)	19.58	18.09	21.41
	Death (A)	-43.60	-44.00	-43.11
Contract	individual	16.75	18.22	14.95
	group	-16.75	-18.22	-14.95
Payment	monthly	2.29	-4.36	10.40
	yearly	-2.29	4.36	-10.40

Source: Own data

There is no gender difference concerning the 'coverage'-attribute, both, male and female respondents follow the trend of the combined sample, where 'death after disease' is considered most important, followed by the mixed option 'death after accident & disease'. The least attractive option, 'death after accident' was usually only chosen by those respondents residing close to the road or who had recently lost an animal through an accident.

A similar result was generated by the 'contract'-attribute. Here women and men agreed that an 'individual' contract is more desirable than a 'group' contract. During the interviews, respondents gave several reasons for their choice. The most common reason for an individual contract is the perception of having 'less trouble' and the 'freedom of choice'. Supporters of group contracts appreciate for instance the idea that a bigger part of all villagers would be included in the insurance scheme, which implies that everybody would take better care of their own animals and thus reduce the spread of diseases.

For the remaining attribute 'payment', the analysis produced contradictory results. Women approved the overall result and preferred 'monthly' payments, while male participants mainly supported the 'yearly' payment option. The explanations for either option were almost identical during all interviews, hence, it may be summarized that 'monthly' payment is more suitable for less wealthy households. In contrast, 'yearly' premium payment is considered 'easier', because one doesn't have to take care about it each month. The perfect timing for the yearly payment would be the time after the maize harvest, when cash is available more easily in households.

5.4 The Distribution of Wealth

In Vietnam, households are classified once a year according to their living standard into one of five classes: 'hungry', 'poor', 'average', 'better-off', or 'rich'. The ranking is based on the household's monthly income. The threshold for classifying 'hungry' and 'poor' households is defined by the Ministry of Labour, Invalid and Social Affairs (MOLISA). The communes can adjust the boundaries only slightly depending on the local situation[16].

In order to get more significant information concerning the demand for livestock insurance of households with different income levels, the 'wealth strata' variable was applied in the analysis. The results of the analysis of the 'average utility' values as well as the 'average importances' are summarized in Table 7.

Starting over with the 'average importances', the most important issue to all respondents remains the 'insured animal'-attribute. The three remaining attributes, 'coverage', 'payment' and 'contract' change their rank between the different wealth groups. The avarage households, which mainly determined the total results, considered 'coverage' more important than 'payment'. The least important attribute is 'contract'. Both, the 'better-off' and the 'rich' households ranked 'coverage' second. 'Contract' was considered more important than 'payment'. In contrast to all other groups, the 'poor' consider the 'payment' attribute second most important before 'contract' and 'coverage'.

Focusing on the average utility values of the 'insured animal' attribute, the above mentioned striking preference for the buffalo remains unchanged for all wealth groups. Whereas the 'poor' only focus on the buffalo[17] other groups also consider insuring their cows and pigs (only the 'average' and 'better-off'). Taking a closer look at the levels of the 'coverage' attribute, the 'better-off' prefer to cover 'death after accident & disease', all others choose 'death after disease'. 'Death after accident' was uniformly ranked last. Likewise, only the 'better-off' favored 'yearly' payment, whereas all other wealth groups prefer 'monthly' payment. Finally, the households of all four groups rather select an 'individual' than a 'group' contract.

[16] For example, the classifications in Xuan La and Nghien Loan communes (Bac Kan province) for the years 2001-2005 (the research period) were (in VND person^{-1} month^{-1}): 'hungry': <55.000/60.000; 'poor': <80.000; 'average': 80.000 – 150.000/180.000; 'better-off': >150.000/200.000; 'rich': >4.5mio VND person^{-1} year^{-1}. The classifications were considerably increased for the years 2006-2010. For example, in Xuan La commune (in VND person^{-1} month^{-1}): 'hungry': <100.000; 'poor': <200.000; 'average': >200.000; 'better-off': >300.000 (Source: own data, personal communication with commune officials; 07.09.2004).

[17] Although the 'poor' might not possess a buffalo right now, it was repeatedly mentioned during the interviews that they would be willing to spend some of their scarce money to buy buffalo insurance, because the buffalo is the most valuable animal. In contrast, poultry insurance is not requested by anybody.

Table 7: Average Utility Values and Average Importances by Wealth strata

Average utility values		Total (N=151)	Wealth strata: Poor (N=21)	Average (N=107)	Better-off (N=18)	Rich (N=5)
Insured animal	buffalo	**51.16**	**61.45**	**49.35**	**51.74**	**44.79**
	cow	14.49	-1.66	14.72	28.22	28.16
	pig	2.69	-4.52	5.42	1.95	-22.93
	goat	-45.60	-46.50	-43.75	-61.74	-23.46
	poultry	-22.74	-8.77	-25.74	-20.17	-26.56
Coverage	death (A)	-43.60	-24.55	-45.83	-47.43	-62.06
	death (D)	24.01	18.08	25.82	13.06	49.75
	death (A&D)	19.58	6.47	20.01	34.37	12.31
Payment	monthly	2.29	27.22	0.90	-11.62	22.64
	yearly	-2.29	-27.22	-0.90	11.62	-22.64
Contract	individual	16.75	19.66	14.10	23.77	36.01
	group	-16.75	-19.66	-14.10	-23.77	-36.01
Average importances						
Insured animal		35.61	31.38	35.86	38.70	36.84
Coverage		23.10	15.19	24.27	23.97	28.07
Payment		21.71	28.44	21.24	17.96	17.08
Contract		19.59	25.00	18.64	19.37	18.01

Source: Own data
Note: There were no 'hungry' households in the sample, thus this column is not displayed in the table.

6 Conclusion and Recommendations

Up to now, there are no functioning insurance markets in mountainous, rural northern Vietnam. Therefore farmers are still forced to sell assets, primarily livestock, in case of a livelihood emergency. The situation grows even more acute, if a household looses a credit-financed animal, which immediately increases household vulnerability, substantially limits its long-term livelihood strategies and very often directly sustains poverty or makes them slip into poverty.

Based on the above presented results it can be concluded that both, men and women are in general interested in livestock insurance, although only a very small percentage of potential clients is really familiar with the concept of insurance. Hence, insurance providers face a great task, not only in offering suitable insurance schemes, but also in reducing the information deficit that is obviously wide-spread in the rural areas of northern Vietnam. Out of the knowing minority, some already have gained negative experiences with previously held insurance products (including different kinds of products, e.g. motorbike insurance or health insurance). High transport costs to the responsible claims office of the insurance companies, nontransparent contracts, especially concerning coverage, and very long pay-back periods

were the most common problems. Nevertheless, people of all wealth strata emphasized their demand for products, e.g. livestock insurance, which helps them to reduce their vulnerability and enables them to cope more easily with livelihood emergencies. Taking into consideration the four analyzed attributes, it turned out that the 'insured animal' is the most important attribute for all respondents and the buffalo is the highest valued animal. Regarding the pivotal role of buffalos in the farming systems of mountainous, rural northern Vietnam, private and/or public insurance companies may want to offer suitable insurance packages.

The critical question is how to design the insurance package? Although the provision of adapted livestock insurance could help to decrease household vulnerability, a suitable concept is difficult to develop for the insurance companies, which have to work profitably. All in all, the insurance products should be suitable for a huge variety of households (male/female, poor/average/better-off) and at least include the option to choose the 'insured animal', 'coverage', terms of 'payment' and form of 'contract'. In addition, analysis of data revealed that most respondents would prefer a mixed product that combines 'insurance & credit' or 'insurance & saving'.

The advantages of combining insurance services with other financial products is for instance the already existing infrastructure of the financial institutes in the district towns, which would be attractive for the providers of insurance. However, the already existing disadvantages such as long distances to the next bank including high transportation costs, difficult, not comprehensible contracts; language problems; etc. would remain the same for the clients. A better option may therefore be the supply of microinsurance through a 'middleman', e.g. the village headman, directly in each village or the commune. In general, the most important precondition for a suitable insurance scheme is the transfer of all necessary information to the potential clients (e.g. in their own ethnic minority language), who should know exactly how insurance works, which losses are covered and where and how they can submit their claims.

Although not analysed in detail in this paper, parallel qualitative research indicates that improved veterinary service is a crucial pre-condition for both, the supplier as well as the potential client of livestock insurance. Lack of skilled veterinary staff (at the village and commune level), combined with high expenses for (often unsuitable) medical treatment, increases expenses of affected households, leads to higher losses and thus also harm insurance companies. Furthermore, the lack of skilled extension workers in the research area is currently only partly covered through mass-organizations like 'Womens Union' or 'Farmers Union', which are quite successful in some villages, but yet not able to reach all households. Finally, it has to be mentioned once again, that poor farmers (which were included in this analysis) often do not possess any big ruminants. In addition, they are usually not able to pay insurance premiums that would cover the costs of private insurance providers. Hence, separate solutions have to be found, e.g. by adding an insurance component to already existing support projects like the Hunger Eradication and Poverty Reduction (HEPR) program in Vietnam.

In order to stop the gradual trend of the already existing downward spiral of many smallholders in Northern Vietnam and to guarantee a sustainable development for vulnerable households, a bundle of strategies have to be initiated. All actors will have to focus on locally adapted risk management strategies, e.g. micorinsurance. The basis of the strategies has to be respective access to different capital assets, especially existing financial institutions. The combination of credit and insurance, especially for credits that are taken to purchase livestock, might help people to decrease household vulnerability and save them from slipping into poverty.

References

ACA User Manual. ACA User Manual Version 5. Sawtooth Software, Inc. Sequim, WA

Alwang, J., Siegel P., and S. Jorgenson, 2001. Vulnerability: A view from different disciplines. World Bank SPDP No. 15. Washington, DC, USA: World Bank.

Conway, T. and C. Turk, 2001. Addressing Vulnerability and Providing Social Protection: Localizing IDTs for Poverty Reduction in Viet Nam. Hanoi, VN: World Bank/Poverty Task Force.

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).

Dufhues, T., Lemke, U. and I. Fischer, 2004. Constraints and potentials of livestock insurance schemes - A case study from Vietnam. Research in Development Economics and Policy Discussion Paper No 5/2004. Stuttgart, Germany: Grauer Verlag.

Dung, P.T.M., 2001. Personal communication 16.10.2001. Hanoi, Vietnam: HAU.

Evans, M., Gough, I., Harkness, S., McKay A., Thanh, H.D. and N.D.L. Thu, 2007. How Progressive is Social Security in Viet Nam? UNDP Viet Nam. Hanoi. Vietnam.

Geppert, M. and T. Dufhues, 2003. Visualizing rural financial market research in Northern Vietnam through pictures. Research in Development Economics and Policy Discussion Paper No 2/2003. Stuttgart, Germany: Grauer Verlag.

Green, P.E. and V. Srinivasan, 1978. Conjoint Analysis in Consumer Research: Issues and Outlook. In: The Journal of Consumer Research, 5, 103-122.

Green, P.E., Krieger, A.M. and Y. Wind, 2001. Thirty Years of Conjoint Analysis: Reflections and Prospects. In: Interfaces, Vol. 31 (3), 56-73.

Hoffmann, V., 2000. Picture supported communication. Weikersheim, Germany: Markgraf Verlag.

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.

Kaweesi, R., 2005. Livestock insurance schemes in developed and developing countries: Overview, crucial issues and outlook. Unpublished Master Thesis. Stuttgart, Germany: University of Hohenheim, Department of Agricultural Development Theory and Policy in the Tropics and Subtropics (490a).

Orme, B. (1998): Sample size issues for conjoint analysis studies. Sawthooth Software Research paper Series. Squim, WA, USA: Sawthooth Software Inc.

Otte, M.J., R. Nugent and A. McLeod. 2004. Transboundary animal diseases: Assessment of socio-economic impacts and institutional responses. Rome, Italy: Food and Agriculture Organization (FAO).

Skees, J., Varangis, P., Larson, D. and P. Siegel, 2002. Can financial markets be tapped to help poor people cope with weather risks? Discussion Paper No. 23/2002. Helsinki, Finland: World Institute for Development Economics Research (WIDER), United Nations University.

SKIM (2002): Adaptive Conjoint Analysis. Rotterdam, NL: SKIM Software, http://www.skim. nl/software/index.html, accessed July 16, 2002.

Vandeveer, M.L., 2000. Demand for area crop insurance among litchi producers in Northern Vietnam. Agricultural Economics 26 (2): 173-184.

World Bank and DFID, 1999. Vietnam – Voices of the poor. Hanoi, Vietnam: The World Bank and Department for International Development (DFID).

Recent Discussion Papers

No. 01/1999 Heidhues, F. and G. Schrieder, *Rural Financial Market Development.*

No. 02/1999 Heidhues, F., C. Karege, B. Schaefer and G. Schrieder, *The Social Dimension of Policy Reforms.*

No. 03/1999 Heidhues, F., W. Erhardt, A. Gronski and G. Schrieder, *The Social Dimension of Policy Reforms and World Bank Case Studies.*

No. 04/1999 Erhardt, W., *Credit for Poor and Low-Income Entrepreneurs in Urban and Rural Northern Thailand.*

No. 05/1999 Senahoun, J., F. Heidhues and D. Deybe, *Structural Adjustment Programs and Soil Erosion: A Bio-Economic Modelling Approach for Northern Benin.*

No. 06/1999 Kyi, T. and M. von Oppen, *An Economic Analysis of Technical Efficiency of Rice Farmers at the Delta Region in Myanmar.*

No. 07/1999 Schrieder, G., J. Munz, and R. Jehle, *Rural Regional Development in Transition Economies: Country Case Romania.*

No. 08/1999 Hartwich, F. and T. Kyi, *Measuring Efficiency in Agricultural Research: Strength and Limitations of Data Envelopment Analysis (DEA).*

No. 09/1999 Hartwich, F., *Weighting of Agricultural Research Results: Strength and Limitations of the Analytic Hierarchy Process.*

No. 01/2000 Neubert, D., *Poverty Alleviation as Intervention in Complex and Dynamic Social Fields.*

No. 02/2000 Neef, A., C. Sangkapitux and K. Kirchmann, *Does Land Tenure Security Enhance Sustainable Land Management? - Evidence from Mountainous Regions of Thailand and Vietnam.*

No. 03/2000 Breitschopf, B. and G. Schrieder, *The Development of the Rural Nonfarm Sector in Transition Economies – Implication of Capital Intensity on Labor Productivity and Employment.*

No. 04/2000 Erhardt, W., *Urban Bias in Reverse: Have Urban Small Enterprises Been Neglected by Policy Makers and Bankers in Thailand?*

No. 05/2000 Senahoun, J., F. Heidhues and D. Deybe, *Impact of Agricultural Policy and Food Security: An Agricultural Sector Modelling Approach for Benin.*

No. 06/2000 Heidhues, F., *Globalisierung, Einkommensverteilung und ländliche Regionalentwicklung in Entwicklungsländern.*

No. 07/2000 Heidhues, F., *The Future of World, National and Household Food Security.*

No. 08/2000 Buchenrieder, G. (née Schrieder) and I. Theesfeld, *Improving Bankability of Small Farmers in Northern Vietnam.*

No. 09/2000 Dufhues, T.B., *Economic Appraisal of Sugarcane Production in Peasant Households in the Son La Province, Northern Vietnam.*

No. 10/2000 Heuft, A. and G. Buchenrieder (née Schrieder), *Decentralisation in Peru's Agricultural Policy: A Critical Review from 1993 to 1998.*

No. 01/2001 Knüpfer, J., *Landnutzungsentscheidungen ethnischer Minderheiten im Kontext der institutionellen Rahmenbedingungen Nordthailands.*

No. 02/2001 Daude, S., *WTO and Food Security: Strategies for Developing Countries.*

No. 03/2001 Knüpfer, J. and G. Buchenrieder, *Rural Poverty Alleviation Through Non-farm Income in Transition Economies.*

No. 04/2001 Dufhues, T., P.T.M. Dung, H.T. Hanh, and G. Buchenrieder, *Fuzzy Information Policy of the Vietnam Bank for the Poor in Lending to and Targeting of the Poor in Northern Vietnam.*

No. 01/2002 Brüntrup, M. and F. Heidhues, *Subsistence Agriculture in Development: Its Role in Processes of Structural Change.*

No. 02/2002 Alker, D. and F. Heidhues, *Farmers' Rights and Intellectual Property Rights – Reconciling Conflicting Concepts.*

No. 03/2002 Buchenrieder, G., J. Knüpfer and F. Heidhues, *A Cross-Country Comparison of Non-farm Rural Employment in the Balkans.*

No. 04/2002 Knüpfer, J., S. Xhema und G. Buchenrieder, *Armutsreduzierung durch Einkommens-diversifizierung - Eine Studie im ländlichen Kosovo.*

No. 01/2003 Dufhues, T., G. Buchenrieder, F. Heidhues and Pham Thi My Dung, *Towards demand-driven financial services in Northern Vietnam: A participatory analysis of customer preferences.*

No. 02/2003 Geppert, M. and T. Dufhues, *Visualizing rural financial market research in Northern Vietnam through pictures.*

No. 01/2004 Nguyen Manh Hai and F. Heidhues, *Comparative advantage of Vietnam's rice sector under different liberalisation scenarios – A Policy Analysis Matrix (PAM) study*

No. 02/2004 Breisinger, C. and F. Heidhues, *Regional Development Perspectives in Vietnam – Insights from a 2002 Provincial Social Accounting Matrix (SAM)*

No. 03/2004 Basu, A.K. and M. Qaim, *On the Distribution and Adoption of Genetically Modified Seeds in Developing Countries*

No. 04/2004 Fischer, I., *Media Supported Communication in Agricultural Extension and Participatory Rural Development in Northern Thailand*

No. 05/2004 Dufhues, T., U. Lemke and I. Fischer, *Constraints and Potential of Livestock Insurance Schemes – A Case Study from Vietnam*

No. 06/2004 Neef, A. and D. Neubert, *Assessing Participation in Agricultural Research Projects: An Analytical Framework*

No. 01/2005 Dufhues, T. and Buchenrieder, G., *Outreach of credit institutes and households' access constraints to formal credit in Northern Vietnam*

No. 02/2005 Houssou, N. and F. Heidhues, *Debt position of developing countries and new initiatives for debt reduction – A panel data fixed effects estimation of the impacts of the HIPC Initiatives*

No. 01/2006 Piotrowski, S. and X. Jia, *Land property, tenure security and credit access: a historical perspective of change processes in China*

No. 02/2006 Friederichsen, R., *Agricultural Sciences in Upland Northern Vietnam: Situating Research in a Dynamic Environment*.

No. 03/2006 Hönicke, M., O. Ecker, M. Qaim, and K. Weinberger, *Vitamin A and iron consumption and the role of indigenous vegetables: A household level analysis in the Philippines.*

No. 04/2006 Stein, A.J., M. Qaim, J.V. Meenakshi, P. Nestel, H.P.S. Sachdev and Z.A. Bhutta, *Potential Impacts of Iron Biofortification in India*

No. 05/2006 Stein, A.J., H.P.S. Sachdev and M. Qaim, *Can genetic engineering for the poor pay off? An ex-ante evaluation of Golden Rice in India*

No. 01/2008 Alcaraz V., G. and M. Zeller*, Use of household food insecurity scales for assessing poverty in Bangladesh and Uganda*

No. 02/2008 Seeberg-Elverfeldt, C., S. Schwarze and M. Zeller, *Payment for Environmental Services – Incentives through Carbon Sequestration Compensation for Cocoa-based Agroforestry-Systems in Central Sulawesi, Indonesia*

No. 03/2008 Saint-Macary, C., A. Keil, M. Zeller, F. Heidhues and Pham Thi My Dung, *Land titling policy and soil conservation in the Uplands of Northern Vietnam*

No. 04/2008 Keil, A., C. Saint-Macary and M. Zeller, *Maize boom in the uplands of Northern Vietnam: What are the socio-economic and environmental implications?*

No. 05/2008 Fischer, I. and G. Buchenrieder, *Insurance preferences of smallholders: Results from an Adaptive Conjoint Analysis in Northern Vietnam*