Essay 4

4. Microfinance, Micro Life and Health Insurance Enrolment of the Poor in Sri Lanka

Abstract:
Microinsurance is an emerging and promising approach for protecting households from the potentially catastrophic expenditures associated with family related shocks. This paper is the first to present and analyse the sequential steps of a household’s decision to participate in microinsurance. First, we estimate the determinants of microinsurance participation which is conditional on a household’s MFI enrolment, using probit models of household survey data from Sri Lanka. Second, we employ multivariate probit regressions to analyse factors affecting participation in different types of insurance. We find that the household’s experience of a family related shock is positively associated with its participation in the micro health insurance schemes under study. There is strong evidence that neither micro life nor micro health insurance has succeeded in proportionately reaching the most vulnerable households in Sri Lanka. Notably, the education level of the household head appears to be a strong determinant of microinsurance participation.

4.1 Introduction

Few recent ideas have generated as much hope for alleviating poverty of poor households in developing countries as the idea of microfinance. In recent years, microfinance has grown and become more and more diversified, due to a higher demand orientation. Taking the demand of low-income groups into consideration has led the microfinance industry to diversify its products into savings and more recently insurance products (Zeller and Sharma 2002, Armendáriz and Morduch 2005). This evolution of microinsurance brings the prospect of reducing the vulnerability of poor people to negative shocks and the consequences of these on income and consumption.

The type of risks faced by the poor, such as those of death, illness, injury and accident, are no different from those faced by others, but the poor are significantly more exposed to family related risks that can severely affect their livelihoods, due to their economic status, and lower income and earning abilities (Holzmann and Joergensen 2000, Siegel et al. 2001). A household can cope with risk at two stages, ex ante and ex post of the occurrence of such shock (Morduch 1995, Townsend 1995, Kazianga and Udry 2006). First, households can smooth income by diversifying economic activities and choosing traditional production or employment activities to protect the households from the conse-
quences of shocks before they occur. Second, households can smooth consumption by borrowing, saving, depleting and accumulating non-financial assets, changing labour supply, or by using formal and informal insurance arrangements to cover the costs after the incidence of a shock. Therefore, the availability of sufficient and efficient risk coping mechanisms are widely seen as an important factor to any poverty reduction strategy.

In the past, insurance was not considered to be an option as an ex ante risk mitigation strategy for low-income groups, as the poor were seen as unable to afford insurance premiums and as uninsurable because of the wide variety of their risk exposure (Siegel et al. 2001). This understanding dramatically changed after the emergence of microinsurance, which is commonly defined as the “protection of low-income people against specific perils in exchange for regular premium payments proportionate to the likelihood and cost of the risk involved” (Churchill 2006: 12). Using risk pooling in return for regular affordable premium payments proportionate to the likelihood and cost of the risk involved, microinsurance policies respond to the limited and variable cash flow of low-income households, and their often unstable economic environment.

In the literature, quantitative studies on micro health (e.g. Asfaw 2003, Jütting 2003, Bhat and Jain 2006, Hamid et al. 2010, Ito and Kono 2010), micro life (e.g. Essay 1 and Essay 3), and on weather or agricultural related micro-insurance as rainfall insurance (e.g. Giné et al. 2008, Giné and Yang 2009, Cole et al. 2009) have recently appeared to identify determinants of insurance participation in developing countries. However, none of these studies, as we do, analyses the various sequential steps of the household’s insurance participation decision. Moreover, the joint analysis of different types of insurance has received rather limited attention in the academic literature. Therefore, our main objective is to emphasize these sequential steps in a household’s decision to participate in different types of microinsurance.

By doing so, we first estimate conditional probit models that account for the first two steps of the insurance participation decision, i.e. what determines the enrolment of a household in an MFI and what are the determining factors of a household’s insurance participation which is conditional on the household’s

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94 The paper is related to another thread of literature, i.e. the growing body of research emphasizing the household’s ability to draw on their savings or their entering into informal risk sharing arrangements in order to smooth consumption. Various empirical studies show that households are able to protect consumption against certain income risks in developing countries, but not yet to achieve full insurance so far (See, for example, Townsend 1995, Morduch 1995, Dercon 2002, Kurosaki and Fafchamps 2002, Fafchamps and Lund 2003). We cannot provide a full review of this extensive literature here.
MFI membership. Microinsurance has emerged out of the microfinance sector and can be understood as an extension and adjustment of the microcredit approach to insurance. Several linkages still exist to existing microfinance programmes and institutions worldwide (Siegel et al. 2001), so that we find that microinsurance is mainly offered through existing MFI, especially in Sri Lanka. Households which purchase insurance may have unobservable characteristics because of their MFI membership, which – we argue – makes them more likely to have access to and also participate in such insurance schemes. Such characteristics might be such things as an informational advantage, higher financial literacy, higher trust in microfinancial services and institutions due to their previous experience with these kinds of institution and products compared to non-members (Essay 1, Section 1.1). Furthermore, it is also possible that a household’s membership of an MFI might reduce the likelihood of the household’s participation in insurance, as other financial services, for instance savings, might be employed as insurance substitutes to protect against the occurrence of certain hazards.

Second, to date there has been very little research on the joint decision making processes of participation in different types of microinsurance (see Essay 1, Table A. 4 in Appendix A). Thus, we employ multivariate probit regressions to estimate what affects a household’s decision to take up micro life, health or any other type of microinsurance. There are several households which use more than one form of insurance in our data set, so that a household’s choice of microinsurance might be influenced by the availability of the different forms of microinsurance. And finally, to our knowledge, we are the first to analyse micro life, health and other forms of insurance participation in Sri Lanka. Based on a comprehensive household survey of 330 households from Sri Lanka, we interpret the estimation results concerning the actual usage of microinsurance, i.e. the access to insurance on the supply side and as well on the demand side (World Bank, 2008).

We find some evidence consistent with our expectations. A household’s experience of a family related shock – for instance the death of a household member – is positively associated with its participation in the micro health insurance schemes under investigation. Further, there is strong evidence that micro life and health insurance have not yet succeeded in proportionately reaching the most vulnerable households in Sri Lanka. In fact, the poor are less likely to become a member of a respective MFI and are more likely to be excluded from microinsurance participation in Sri Lanka, even if they are a member of an MFI. Education of the household head is a strong determinant of a household’s MFI enrolment and microinsurance participation. Finally, larger households are less likely to be enrolled in an MFI, but, conditional on MFI enrolment, larger
households are more likely to participate in micro life and/or other microinsurance schemes in Sri Lanka.

The outline of the paper is as follows: Section 4.2 presents the promise of micro life and health insurance, and their possible insurability in Sri Lanka. Section 4.3 provides our conceptual framework, and discusses theoretical and empirical determinants of microinsurance participation and respective propositions in the literature. Section 4.4 presents an overview of the microinsurance market in Sri Lanka, the research design and estimation methodology. The results of the estimations are discussed in Section 4.5. Section 4.6 concludes.

4.2 The Promise of Micro Life and Health Insurance

A high potential of microinsurance, especially of health and life insurance, is identified as a way of reducing family related vulnerabilities of low-income households in developing countries. Microinsurance provides options to overcome the inability to use ex ante preventive risk management strategies or the lack of access to methods to secure against specific perils sufficiently (Loewe et al. 2001, Cohen et al. 2005, McCord et al. 2006). Another motive for microinsurance provision is that insurance markets are still incomplete in developing countries, so that the poor are, in the main, excluded from existing formal insurance schemes. On the demand side, this is constrained by the limited access, abilities and empowerment of the poor to enter the formal insurance markets and, on the supply side, most of the formal insurers are not interested in market segments outside the mainstream formal economy. Hence, the poor depend highly on very costly and mostly insufficient traditional informal coping mechanisms and public social security systems, which are unable to adequately smooth consumption (Townsend 1995, Siegel et al. 2001).

However, microinsurance may play a key role as a possible option or additional element of an integrated social risk management strategy (Siegel et al. 2001). Siegel et al. (2001) suggest that vulnerability can be separated into three components of a “risk chain”. First, there is the incidence of the shock or several shocks simultaneously. Second, after the occurrence of the shock the household selects the risk management strategies to respond to the consequences of the peril and third, there is the outcome of the catastrophic event, in terms of a welfare loss. If the shock experienced has led to a loss of household’s income, then the household’s vulnerability comes from risks (Siegel et al. 2001).
The risks households are faced by can be classified using a number of factors: idiosyncratic or covariate, low- or high-loss, single or repeated events, and combinations of the three previous categories (Siegel et al. 2001). The financial viability of insurance and whether a risk can be covered by an insurance policy depends to a large extent on the type and characteristics of the risk. It is obvious that some risks are insurable, while others are not. Siegel et al. (2001) define three criteria for the “ideal risk”, which may be suitable for economic protection and coverage under a private insurance scheme. The most important criteria are “that: a) the risk must be randomly and independently distributed among insured clients, b) risks and losses of insured clients should be determinable, measurable and not catastrophic, and c) the risk and loss should be not influenced by the actions of insured clients” (Siegel et al. 2001: 9). In developing countries, households and individuals are faced by risks that threaten their lives, health, and property from day to day. Low-income households are more affected by these risks, as they are more vulnerable and lack adequate means to manage or minimise their exposure to risk.

Although insurance markets are growing in the developing world (Giné et al. 2008), the global outreach of microinsurance products is so far very limited. Micro life insurance products are identified as the most widely provided microinsurance, but with only 67.2 million people covered so far by life insurance in Asia. Nevertheless, micro health insurance is seen as the most demanded insurance policy around the world (Roth et al. 2007). It is obvious that these new products are established with varying degrees of success. However, microinsurance could cover a wide range of different types of risks, including illness, death, disability and property loss or damage – in fact any risk which can be insurable.

As a new option for low-income households, micro life or health insurance provides a payout in the case of the death of the breadwinner/policy holder or the illness of a household member covered by the insurance. Microinsurance – as a form of low-cost health insurance based on a community, cooperative, or mutual, self-help arrangement – besides financial protection for the poor, can also improve access to health care. Nevertheless, in low-income countries, out-of-pocket payments remain so far the principal means of financing health care, so that out-of-pocket payments for care in relation to an experienced hazard, such as payments for hospitalization or surgery, can push entire households into poverty.

Microinsurance payoffs have to be correlated with the household’s income and consumption, so that the risk exposure of the households, especially the risks with the expected highest impact on household income and consumption, are crucial in identifying possible insurable risks in Sri Lanka. We ask the
households surveyed to list the most important, second most important and third most important sources of risk that they faced in the following five years (self reported rankings presented in Table 2.1, Essay 2)\(^95\). We find that households report war and terrorism (19%), which explicitly includes the fear of death or injury to the family due to an act of violence, as the most important future peril. It appears that a dramatic increase in input prices (18%) and the serious illness of a working adult household member (8%) are cited second and third most frequently. Environmental or weather related shocks such as drought (8%) follow with the same or floods (1%) and economic shocks such as the loss of a job (5%) with significantly lower frequency. Other important family related shocks such as the death or disablement of a working adult or other household member are reported only in small proportion of the households.

From this, we argue that family related shocks are key risks faced by households in Sri Lanka, as a high share cites war and terrorism, which are related to a fear of family related hazards, and the serious illness of a working adult household member as important future risks. Yet, the death of any household member is marginally reported as an important peril for the household. However, in terms of severity, the death or severe illness of any household member, or an accident or illness leading to permanent disability are in general seen as those risks that have the highest financial impact on household’s income and consumption. Family related shocks are generally characterized by their low frequency and thus, they are eligible and suitable for insurance under a micro-insurance scheme.

Risks with higher frequency and impact such as less serious health problems are harder to insure, as they are predictable and repetitive events. Aggregate or covariate shocks such as weather related risks, like drought or flood, are harder to insure or the insurance may be limited (Townsend 1995). Due to the limited depth of the resource pool of vulnerable households, existing microinsurance programmes have so far covered only a limited range of risks (Siegel et al. 2001). Overall, idiosyncratic, low loss and single event types of risk, which are mostly represented by the family related shocks in the case of Sri Lanka, are most suitable for insurance under a form of micro life or health insurance scheme (Siegel et al. 2001).

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\(^95\) For this, the data comes from the household survey conducted with 330 households surveyed in Sri Lanka in 2008. The survey was undertaken for a research project on the demand for microinsurance among low-income households for South Asia.
4.3 A Conceptual Framework of Microinsurance Participation

Two theoretical models are most closely related to the various types of insurance in our study: (1) the standard full information neoclassical model from Ginè et al. (2008) applied on a household participation in an innovative rainfall insurance in India (see Essay 1, Section 1.3) and (2) the model of the demand for life insurance developed by Lewis (1989) (see Essay 3, Section 3.3.1).

In a simple scenario Ginè et al. (2008) consider a model of insurance participation with symmetric information, which predicts that a household’s willingness to pay for an insurance contract (i) increases if the household is more risk averse, (ii) increases with the expected insurance payout, (iii) increases with the size of the insured risks and (iv) decreases with basis risk. The willingness to pay for security depends fundamentally on the degree of risk aversion of the household; conversely, thus, the uptake of insurance increases with the household’s risk aversion. However, it is obvious that the uptake rate of microinsurance is still low, so that several households, for various reasons, remain uninsured against significant income risks.

Deviating from the above-described simple full information model, adverse selection and moral hazard are often largely seen as potential explanations for barriers to insurance participation (Akerlof 1970, Rothschild and Stiglitz 1976, Browne and Doerpinghaus 1993, Cawley and Phillipson 1999, Winter 2000, Abbring et al. 2003). Therefore, we consider that private household information influences insurance demand and equilibria, so that models of adverse selection and moral hazard are applicable to the micro life and health insurance contracts studied here. In the case of life or health insurance, the insurance providing institution can not fully determine whether an individual is at high or low risk of death. Although the national life expectancy and health status is public information, to observe these on a case by case basis requires a high and not efficient effort of time, costs and human resources. If the households have differential risks and are not charged a premium equal to the expected marginal cost of insurance, adverse selection then exists in the microinsurance market, which can lead to problems, in practice, in the area of microinsurance.

96 I.e. Increases in the correlation between the insurance payout and the risk that is to be insured, or more generally, the household’s consumption risk (Giné et al. 2008). Cole et al. (2009) and Essay 1 use the model as a benchmark. We cannot control for the prediction in relation to the basis risks, as our data set does not include any index based forms of insurance policies.
Moral hazard may also exist in the setting of microinsurance markets, if the household may live with less caution, risk more after contracting microinsurance, omit precautionary actions and overuse care, while the latter is a major problem, particularly for health insurance (Pauly 2004). **Essay 1** (Section 1.7) finds indication for adverse selection in micro life insurance participation. Further, there is evidence for the prevalence of adverse selection, as households having a higher ratio of sick members are more likely to purchase micro health insurance (Ito and Kono 2010). Adverse selection seems to be one reason, in combination with mistrust in the providers and unfamiliarity with insurance, for low take-up rates, high claim rates and low renewal rates. The providers are faced by difficult challenges to manage the incentive problems and simultaneously to educate the poor. Incentive structures such as solidarity enhancing rules seem to keep individual interests restrained by group interests, whereas co-payment rules may be a strong deterrent to very poor households (Hamid et al. 2010). In line with the literature, we test for the presence of adverse selection in micro life and health insurance participation in Sri Lanka.

To consider arguments from existing theoretical work on the demand for life insurance, we present predictions from the model presented by Lewis (1989), which explicitly includes the preferences of the dependents and beneficiaries. Lewis (1989) posits the demand for life insurance as a maximization problem of the beneficiaries, spouse and offspring of the policy holder. The household’s willingness to pay for life insurance will then (i) increase with the probability of the breadwinner’s death, (ii) increase with the degree of risk aversion, (iii) increase with the present value of the beneficiaries’ consumption, (iv) decrease with the policy loading factor and (v) decrease with the household’s wealth (Lewis 1989).

From this model, we derive the outcome that the present value of the beneficiary’s consumption increases with the number of dependents within the household (**Essay 3**, Section 3.3.1). A household’s micro life insurance participation seems to be associated with the number of dependents, especially young dependents, and the marital status “being married”, due to intended bequest motives expressing a “joy-of-giving” motive (Hurd 1987, Hurd 1994, Inkmann and Michaelides 2010). Further, we assume that participation in micro health insurance is positively linked to the household size, as household heads seem to have high incentives to insure the entire household (Dror et al. 2007). In particular, women-led households are more likely to be enrolled in health insurance, reflecting the traditional roles of women as the main health caregivers in the family (Khandker 1998, Chankova et al. 2008), so we control for this as well.

Both underlying models show an association between insurance participation and the degree of risk aversion. In a developed country context, there is
evidence for a life-cycle effect of the degree of an individual’s risk aversion in life insurance participation, although the latter decreases after a certain amount of wealth, income or age (Barsky et al. 1997). Therefore, it is plausible to assume that better off households have a higher ability and willingness to bear a given amount of risk compared to relatively poor households. For developing countries, there is evidence that risk averse households are less likely to purchase an index-based, agricultural microinsurance (Giné et al. 2008) and that households who feel themselves more exposed to risk are less likely to use micro life insurance (Essay 1, Section 1.7). Due to this, it may be the fact that risky households, i.e. the households who feel themselves more exposed to risk, have lower access to insurance. However, development theorists assume the poor to be the most risk averse, so that a given loss can be ruinous for the poor in developing countries (Ray 1999). Moreover, the exposure to shocks has an influence on the usage of insurance, but it differs for the tested risks (Essay 1 Section 1.7, Essay 2, Section 2.7, Essay 3, Section 3.5). Thus, we control for both the degree of risk aversion and the previous risk exposure in our analysis.

Several contributions to the academic literature have shown that life insurance participation is positively related to income and wealth, using individual household data both in a developed and developing country context (Lewis 1989, Truett and Truett 1990, Browne and Kim 1993, Outreville 1996). For participation in an index-based, agricultural microinsurance scheme (Giné et al. 2008) and especially for health insurance (Jütting 2003, Pauly 2004, Bhat and Jain 2006, Dror et al. 2007), it is also evident that households in developing countries are more likely to take up insurance with the increasing income or wealth of the household. In contrast to this, Chankova et al. (2008) find no evidence that individuals from the poorest quintiles are more likely to be excluded from mutual health organizations. Evidence for Bangladesh suggests that micro health insurance placement has a significant beneficial effect only on food sufficiency, but not on other poverty indicators (Hamid et al. 2010). Interestingly, Ito and Kono (2010) find that households with sick household heads are less likely to purchase health insurance, as the sickness of the heads reduces the household’s income streams and so makes it difficult for the household to finance appropriate insurance premiums. In sum, we expect that micro life and health insurance participation is positively correlated with the income and wealth status of the household.

In principle, a higher level of education is positively correlated with the purchase of any type of insurance product, as it raises a household’s ability to understand the benefits of risk management and insurance (McCord 2001, Beck and Webb 2002, Chankova et al. 2008, Giné et al. 2008). Factors relating to financial literacy have a significant impact on an insurance participation decision.
(Cole et al. 2009), but we did not collect data to study this issue here. Nevertheless, we expect that more educated heads are more likely to understand insurance, and thus, be more likely than their less educated counterparts to participate in such insurance schemes. It is important to note that education has an increasing effect on the length of dependency and so on the participation in forms of micro life insurance which offer the extension of mortality coverage for the breadwinner. In the case of micro health insurance, the poor may additionally not only not understand the concept fully, but their medical knowledge is also often poor, and it is difficult for them to understand what is and what is not covered under the policy (Chankova et al. 2008, Ito and Kono 2010).

Another important aspect in the microinsurance participation of low-income households is the trust of the clients towards the providers (Cole et al. 2009). Participation in village networks, familiarity with the insurance vendor or various community-based organisations, and endorsement from a third party are strongly correlated with the decision to participate in an insurance scheme (Schneider 2005, Gine et al. 2008, Chankova et al. 2008, Cole et al. 2009). We expect that factors related to trust significantly determine insurance participation decisions.

4.4 Market Overview, Research Design and Methodology

4.4.1. The Microinsurance Sector in Sri Lanka

The microinsurance market is still an emerging one in Sri Lanka, from both the demand and supply side perspectives (Rajivan 2007, Roth et al. 2007). Even though a significant increase in microinsurance provision is predicted for the coming years, the average penetration of life insurance in Sri Lanka has ranged between 1.4 to 1.6% during the last three years (ADB 2006). One reason for this was the high inflation rates in the past, which have reduced the maturity value of cash-value life insurance policies and so led to public apathy regarding contracting life insurance. This is a dilemma faced by the life insurance business, but is not relevant for the as yet low uptake rates of micro health insurance.

In Table 4.1, we present the main characteristics of the Sri Lankan microinsurance providers which are covered by the underlying analysis. From a historical perspective, the development of microinsurance schemes arose out of
the Mutuals and CBOs, starting with funeral aid society concepts in the 1990s. We find that the five MFIIs under examination, the WDF, the WDBF, SANASA, YASIRU and SEEDS served a total of more than 241,800 clients with their microinsurance products in 2008. Contrary to the numbers from the ADB (2006), the number indicates a reasonably high outreach of microinsurance in Sri Lanka. Even though the private insurance market is dominated by private insurance companies, the main providers or distributors of microinsurance contracts are still the unregulated mutuals and NGOs, such as YASIRU and SEEDS (Enarsson and Wirén 2006, Roth et al. 2007). Some of these MFIIs retail the products of registered insurance companies, while some have built up and registered their own insurance companies (GTZ 2009).

Table 4.1: Characteristics of Microinsurance Providers in Sri Lanka

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<th>General characteristics of microinsurance providers</th>
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<tr>
<td>Microinsurance schemes</td>
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<tr>
<td>Types of microinsurance products</td>
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<td>Group or individual product</td>
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<td>Clients in total</td>
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<td>Enrolment requirements</td>
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<td>Premium payments on average</td>
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Source: Authors’ illustration.

All microinsurance providers covered in the study encouraged enrolment of the entire household, as a measure to prevent adverse selection, but some providing institutions limit the number of beneficiaries. A wide variety of microinsurance products are provided by these five MFIIs, namely health, property, and life insurance, which includes death benefits, which can thus be

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98 This concept was invented by ALMAO, the predecessor organisation of SANASA.
99 Since one client can have multiple insurance contracts, the total number of insured clients probably overestimates the client outreach of the respective MFIIs.
100 In comparison to the overall population size of more than 20 million people, the outreach of microinsurance is still not sufficient, but succeeds in reaching a reasonable number of households from rural Sri Lanka.
101 For Sri Lanka, the number of clients is from November 2008.
102 US$ at exchange rate at time of survey.
interpreted as a term life insurance, or combined additionally with the death compensation, accident, hospitalization, health and other benefits\textsuperscript{103}. Therefore, we argue that the microinsurance product types and portfolios are highly diversified in Sri Lanka, not only because of their high coverage, but as well due to the prevalence of a high number of providing institutions and the long involvement of these actors in the market. Most of the microinsurance policies discussed in this study are based on an individual basis of monthly premiums, with temporary exclusion from the policy benefits for households who do not regularly pay their dues. It appears that the minimum and total premium payment per month is relatively low in Sri Lanka.

4.4.2. Sources of Data, Definition of Variables and Summary Statistics

The data for this study comes from a household survey conducted in Sri Lanka in 2008. The survey is based on a questionnaire which is also used for the study in Essay 1, except for some adaptations due to country-specific features. Additional specific objectives of the individual country studies and household sample selection are described in greater detail elsewhere\textsuperscript{104}.

In total, 330 households were interviewed in 30 villages in Sri Lanka, drawn from two strata of (micro)insured and non-insured households, of which 240 households use and 90 do not use any insurance, including as well insurance policies offered by institutions other than the five respective MFIs. 304 households of the participating household heads are members of, associated with an MFI, and/or at least use a financial service, i.e., all 240 insured households are considered MFI members. Among the insured, 142 households purchased a life insurance policy, 29 households health insurance and 79 households another type of insurance, for instance vehicle insurance\textsuperscript{105}. These

\textsuperscript{103} For instance, YASIRU offers products with coverage of death, accidents and health. The WDF in Hambantota provides special products in addition to death, hospitalization and health products, namely marriage and child birth. ALMAO covers death, disability, hospitalization and life savings.

\textsuperscript{104} See Essay 2, Section 2.5 and Essay 3, Section 1.1.3.4.1.

\textsuperscript{105} We focus on voluntary insurance offers so that compulsory insurance products such as credit life insurance, which is typically linked to the uptake of a loan or any other financial product, are dropped from the analysis. Further, it is important to note that the use of insurance is not exclusive.
insurance purchases are not exclusive, i.e. there are households which use more than one insurance type.

In a first step, we identified the main suppliers of voluntary microinsurance for low-income households in Sri Lanka. Those are the so far mentioned five MFIs, namely WDF, WDBF, SANASA, YASIRU and SEEDS. In a second step, two or three MFIs were selected from each district, except for Vavuniya and Batticaloa. For each district two or three villages were chosen, due to the high density of insured households. In total, we included 30 villages in Sri Lanka, which are at least representative for all villages, in which microinsurance is accessible via the selected MFIs. As microfinance is clearly concentrated in rural areas\textsuperscript{106}, the underlying survey seems representative for rural villages in Sri Lanka. Third, the insured households in the respective villages were randomly chosen from the client bases of the MFIs surveyed. Fourth, the non-insured households were randomly selected from household lists provided by CBOs located in the villages where the MFIs operate. However, the CBOs selected are not involved in the microfinance activities of the microinsurance provider, but are involved, for instance, in community strengthening, infrastructure, health or economic issues beyond microfinance. The number of insured and non-insured households selected from each village varied from 10 to 15. Fifth, the data collection was based on a household characteristics questionnaire including a special section about the household’s integration in financial markets, their enrolment in different financial institutions, and their use of the financial services, i.e. loans, savings and insurance (Zeller and Sharma 2002).

Table D. 1 (in Appendix D) summarizes the definition of the variables in the estimations\textsuperscript{107}. We include different household characteristics like demographic and wealth variables, the household head’s education level and economic activities, information about remittances received by the household, the household’s self-perception of risks, the household’s previous risk exposure, and regional dummies. To avoid potential endogeneity problems, we constructed an asset index, which is controlled for so that none of the financial services contracted are used to purchase any asset. The index variable “household’s self-perception of risk” is constructed from three questions related to the household’s self perception of exposure to health shocks, weather and environ-

\textsuperscript{106} More than 90 percent of MFI branches are located in rural areas (GTZ 2009).

\textsuperscript{107} To test for potential problems of multicollinearity, we computed the pairwise correlations between the explanatory variables. For the correlation matrix of the explanatory variables, we see no reason for concern. We calculated the variance inflation factors using the \textit{collin} command in Stata. Except for the regressors “age” and “age squared” all VIFs were less than 2.38 for the survey data (Specification II: 2.58) for Sri Lanka. We see no reason for concern as none of the variance inflation factors was higher than 2.58.
ment related shocks, and economic shocks compared with neighbouring households, and one question about the household’s own rating of its willingness to take risks, using factor analysis. Sample characteristics are summarized in the descriptive statistics for insurance participation in Table D. 2 (in Appendix D) and for micro life, health and other insurance participation in Table D. 3 (in Appendix D). The proportion of female households is higher among insurance non-buyers than among insurance buyers, while only 17% of the households are female-headed. The share of female-headed households which participate in micro life or health insurance is even smaller. Insurance buyers for all types of insurance covered typically live in larger households, and among them are slightly more married household heads than among non-buyers. The ratio of ill household members is significantly higher among participants, especially in micro health or any other form of insurance, than among non-participants. Insurance buyers are significantly older than insurance non-buyers. Among the insurance buyers, the households own more land, have more remittance receipts, a lower share of uneducated, only primary or secondary educated household heads and a lower share of self-employed household heads than among the insurance non-buyers. In Sri Lanka, insurance buyers belong to wealthier households as compared with non-buyers. The households which have purchased any of the underlying types of insurance have a significantly higher risk assessment index in Sri Lanka. A higher share of insurance and especially micro health insurance buyers experienced a severe illness of a household member than was the case for non-buyers. The same is true for health insurance users in the case of the experience of any other severe shock.

4.4.3. Methodology

We use econometric analysis to identify the factors affecting the insurance participation decision. The decision to buy insurance can be formulated in two interrelated choices. First, the choice of the household is related to the decision to buy or not buy any insurance. Second, if the household decides to buy insurance, then the second choice is which type of insurance to buy. Furthermore, the household has to define for how many people in the household and for what ex-

108 For more details see Essay 2, Section 2.5 and Table B. 2 (in Appendix B).

109 Economic status quintiles were assigned at the household level using the asset endowment index. Table C. 2 (in Appendix C) reflects the households’ distribution among quintiles.
tent of coverage the insurance is purchased. When estimating the determinants of insurance uptake based on cross-sectional data, one encounters the important challenge of dealing with both the problems of “endogeneity” and “self selection” (Jütting 2003). Therefore, we treat any implication of a causal relationship with caution and control as far as possible for potential endogeneity issues; thus, for instance, we apply an adjusted asset index. Household heads who self-select the insurance uptake may have unobservable characteristics – related to preference or existing enrolment in an MFI – which make it more likely for them to participate in an insurance scheme (which are mainly offered by such MFIs) and may influence their decision to use insurance (Waters 1999). That is why the two ways of choosing to take up insurance may proceed in three sequential steps.

To control for self-selection, we utilise two binary probit models to estimate the first two sequential steps of the insurance participation decision, i.e. the participation in an insurance scheme conditional on the household’s enrolment in an MFI. In the first probit model we estimate the determinants on the whole sample of a household’s enrolment in an MFI. We hypothesize that, after controlling for individual, household and regional characteristics, members of an MFI have better access to and are more likely to use insurance than non-members. In the second model, we investigate the effect of the determinants of a household’s usage of insurance on the subsample of the households that were members of an MFI, i.e. we examine insurance participation which is conditional on MFI membership. In contrast to Essay 1, our analysis is in this way not faced with the problem of limited variance on the supply side, as all provinces and the five major microinsurance providing institutions are covered in the underlying survey.

It is assumed that MFI enrolment or the insurance participation of a household \( p \) depend on the following factors: the wealth status of the household \( w \), characteristics of the household head \( H \), household characteristics \( Z \), regional characteristics \( R \) and on the error term \( u \), which is uncovariant with the other regressors. The following equation is applied for both models using the described sample structure:

\[
p_i = f(w_i, H_i, Z_i, R, u) \tag{1}
\]

In order to estimate the probability of participation for each equation we use a binary probit model:

\[
p_i^* = \beta w_i + \alpha H_i + \phi Z_i + \delta R + u_i \tag{2}
\]

\[p_i^* = 1 \text{ if } p_i^* > 0, \text{ meaning the household } i \text{ is member of an MFI (equation 1) or uses insurance (equation 2),}
\]

\[p_i^* = 0 \text{ otherwise.} \]
For the third step of the insurance participation decision, we apply a trivariate probit model for the use of different types of insurance, i.e. life, health and any other insurance. Since preliminary analyses of our three outcomes of interest revealed that there may be a correlation between the different outcome categories\textsuperscript{110} and the use of any insurance is not being exclusive among the households, so that there are households who use more than one insurance type, we assume that households' choices of different types of insurance are interrelated. The trivariate probit model enables us to estimate three dichotomous dependent variables simultaneously and explicitly model the correlation in disturbance terms, using a method of simulated maximum likelihood\textsuperscript{111}. Therefore, we use it to estimate the determinants of the three different types of insurance, which is given by:

\[ L^* = X \beta_L + \epsilon_L, \quad L^* = 1 \text{ if } L^* > 0, \quad 0 \text{ otherwise,} \]
\[ H^* = X \beta_H + \epsilon_H, \quad H^* = 1 \text{ if } H^* > 0, \quad 0 \text{ otherwise,} \]
\[ O^* = X \beta_O + \epsilon_O, \quad O^* = 1 \text{ if } O^* > 0, \quad 0 \text{ otherwise,} \]  

(3)

where \( L^*, H^* \) and \( O^* \) are the true, unobserved propensities to use life insurance, health insurance or any other insurance. The term \( X' \) represents the vector of independent variables, i.e. the socio-demographic control variables. We assume that the distribution of the three outcomes is multivariate normal, i.e.:

\[ E[\epsilon_L] = E[\epsilon_H] = E[\epsilon_O] = 0 \quad \text{and} \quad \text{Var}[\epsilon_L] = \text{Var}[\epsilon_H] = \text{Var}[\epsilon_O] = 1 \]  

(4)

In multivariate probit models the computation of marginal effects is difficult. We therefore calculated the APEs on the marginal probabilities of the independent variables for each equation by averaging sample partial effects\textsuperscript{112}.

\textsuperscript{110} Analyses that ignore the correlations across outcomes, such as simple univariate probits, could therefore lead to biased results (Jones 2007). The coefficient estimates from the trivariate probit model account for unobserved correlation among the outcomes and are therefore less biased than those produced by three separate probit models.

\textsuperscript{111} We use the Stata application \textit{mvprobit}, which uses the Geweke-Hajivassiliou-Keane simulator (Cappellari and Jenkins 2003, Greene 2003, Kis-Katos 2007).

\textsuperscript{112} We use the Stata application \textit{mvppred} to calculate the predicted probabilities of a positive response for each of the three outcomes (Capellari and Jenkins 2003) and, based on this, we calculate the APEs using the Stata routine \textit{margeff} (Bartus 2005).
4.5 Estimating the Patterns of Microinsurance Participation

4.5.1. Marginal Coefficients for Microfinance Enrolment and Insurance Participation

The estimation outcomes of the first two sequential steps of the microinsurance participation decision, i.e. a household’s MFI enrolment and microinsurance participation conditional on MFI membership, estimated using a conditional probit model, are presented in Table 4.2. Two model specifications have been estimated for each dependent variable and estimation: the first one includes, among the other regressors, an asset endowment index as continuous variable and the second uses dummies for asset endowment quintiles. Further, we calculated marginal effects for two reference households: (1) a female-headed household which has eight household members, a household head at age 45 years with no formal or only primary education, but self-employed, with an asset endowment index of zero, without any land, who receives remittances, has an household’s self-perception of risk index of one, has experienced a death, an illness of a household member and an additional shock in the past five years, and (2) a male-headed household which has four household members, a head who has attained secondary education, an asset endowment index of two, without any remittances and, for the other variables, the same outcomes as the first reference household. In the following, we highlight our interpretations of the statistically significant associations.

In the literature, female-headed households are generally expected to have relatively lower abilities and resources to enter the microfinance market, as they are commonly assumed to be less wealthy than their male-headed counterparts in developing countries. Interestingly, we find the opposite for Sri Lanka, where female-headed households are significantly more likely to be enrolled in an MFI than male-headed households. This indicates that in the Sri Lankan microfinance sector women are treated as a particular target group by MFIs, such as WDF and WDBF, due to an underlying higher repayment probability which is caused by the use of group loans of socially connected women, and a higher in-

113 We estimate binary probit models for microinsurance use without control for membership of any MFI. We find changes due to the signs and significance levels of the estimation coefficients (Table D. 4 in Appendix D).

114 It is important to note that it may be better to create a benchmark value – a reference case – for which the marginal effects are calculated (Cameron and Trivedi 2009).
We find that household size is significantly negatively linked with membership in an MFI\textsuperscript{115}. In Sri Lanka, the probability decreases for the first reference household by -0.08 and for the second by -0.02. This implies that households with a larger number of dependents have a higher share of consumption in relation to their income, are less able to provide collateral, and thus have limited access to MFIs. However, in line with the Lewis model, household size is significantly positively linked to microinsurance participation. If the household is an MFI member, the access to microinsurance seems not to be limited for households with a higher number of dependents. Indeed, our results imply that larger households may have a higher incentive to use their limited resources to obtain risk-reducing effects, as they are commonly more exposed to family-related risks.

The age of the household head is significantly related to microinsurance participation. The turning point is 57\textsuperscript{116} years of age, which implies that household heads with increasing age do not request more insurance. One explanation for this outcome may be that older household heads with MFI membership are less educated and thus, less able to understand microinsurance products and markets than their younger counterparts.

In line with our expectations and previous findings, we find that household heads with no formal, only primary or secondary education are less likely to be enrolled in an MFI or participate in the microfinance market than more highly educated heads\textsuperscript{117}. This indicates that a higher level of education may raise a household’s ability to understand the benefits of risk management, in particular of microfinancial services, and so may increase a household’s willingness to become a member of an MFI. We find the opposite for microinsurance uptake which is conditional on a household’s MFI enrolment, as no formal, either primary or secondary education is positively correlated with microinsurance uptake. This implies that the commonly identified constraint of poor understanding of insurance products among lower-educated households seems to be relieved if these lower-educated households are MFI members.

\textsuperscript{115} In the data set, the correlation coefficient shows that household size is highly correlated with the number of dependents (0.79).

\textsuperscript{116} The turning point is 49 years of age for the specification II.

\textsuperscript{117} It may be better to use here years of schooling instead of the three educational dummies, but the survey does not include reliable data on that.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Membership Purchase (I)</th>
<th>Insurance Purchase (II)</th>
<th>Membership Purchase (I)</th>
<th>Insurance Purchase (II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female head</td>
<td>0.3278***</td>
<td>-0.0021</td>
<td>0.2503***</td>
<td>-0.0069</td>
</tr>
<tr>
<td>Household size</td>
<td>-0.0583**</td>
<td>0.0069***</td>
<td>-0.0936***</td>
<td>0.0055**</td>
</tr>
<tr>
<td>Age</td>
<td>-0.0482</td>
<td>-0.0036**</td>
<td>-0.0084</td>
<td>-0.0029**</td>
</tr>
<tr>
<td>Age squared</td>
<td>0.0003</td>
<td>0.00003*</td>
<td>-0.00007</td>
<td>0.00003**</td>
</tr>
<tr>
<td>Education of household head (base: tertiary education)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No or only primary education</td>
<td>-0.9615***</td>
<td>0.6278***</td>
<td>-0.9692</td>
<td>0.2097</td>
</tr>
<tr>
<td>Secondary education</td>
<td>0.0532</td>
<td>0.0118</td>
<td>-0.0172</td>
<td>0.0075</td>
</tr>
<tr>
<td>Occupation of household head (base: formal employee/employer)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head is self-employed</td>
<td>-0.8374***</td>
<td>0.0125</td>
<td>-0.8161***</td>
<td>0.0098</td>
</tr>
<tr>
<td>Head is unemployed</td>
<td>-0.7462***</td>
<td>0.0096</td>
<td>-0.7659*</td>
<td>0.0039</td>
</tr>
<tr>
<td>Asset index</td>
<td>0.2132***</td>
<td>0.0171***</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Asset quintiles (base: richest 20%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>-</td>
<td>-</td>
<td>-0.9996***</td>
<td>-0.2621***</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>-</td>
<td>-</td>
<td>-0.9999***</td>
<td>-0.0251***</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>-</td>
<td>-</td>
<td>-0.9984***</td>
<td>-0.0781***</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.0033</td>
</tr>
<tr>
<td>Land ownership</td>
<td>0.2632</td>
<td>-0.0017</td>
<td>0.3424*</td>
<td>0.0046**</td>
</tr>
<tr>
<td>Remittance</td>
<td>0.0899*</td>
<td>0.5448</td>
<td>0.0901**</td>
<td>0.6719**</td>
</tr>
<tr>
<td>Household’s self-perception of risk (base: no risk experience)</td>
<td>0.0028</td>
<td>0.0031**</td>
<td>0.0408</td>
<td>0.0017</td>
</tr>
<tr>
<td>Household’s risk experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced death of a household member</td>
<td>-</td>
<td>0.1648</td>
<td>-</td>
<td>0.0361</td>
</tr>
<tr>
<td>Experienced severe illness</td>
<td>-0.1737</td>
<td>-0.0029</td>
<td>-0.1308</td>
<td>-0.0043**</td>
</tr>
<tr>
<td>Experienced other severe shock</td>
<td>0.4426***</td>
<td>-0.0422*</td>
<td>0.4806***</td>
<td>-0.0419*</td>
</tr>
<tr>
<td>Regional dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>330</td>
<td>304</td>
<td>330</td>
<td>304</td>
</tr>
</tbody>
</table>

Source: Authors’ calculation.

Note: Probit model. Coefficients are normalized to display marginal effects (MEs). The asterisks indicate level of significance (Robust z-statistics): ***significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.
According to our results, we confirm earlier contributions that households with a head who is either self-employed or a contractual worker are significantly less likely to obtain membership in an MFI than households with a head who is either regularly employed or an employer. Due to the irregular nature and low level of their incomes, such households seem to have only limited access to the microfinance market. Our results indicate, in line with our expectations and earlier contributions (Hulme and Mosley 1997, Navajas et al. 2002, Datta 2004), that better off households are more likely to become a member of an MFI and thus, to purchase microinsurance in Sri Lanka. For the asset index the probability of being enrolled in an MFI in Sri Lanka for the female-headed reference household increases by 0.297, while for the male-headed reference household it increases by 0.553.

Households from the richest quintile are more likely to participate in microinsurance compared to those from the poorest quintiles (Table 4.2), so the poorest households are not covered by the microinsurance schemes under consideration in Sri Lanka. This may indicate that the poor have reduced accessibility to MFIs and are less likely to take up microinsurance than their better off counterparts.

Deviating from the standard neoclassical model of Giné et al. (2008), we find that households among the MFI members who perceived themselves as being more exposed to risk, are significantly more likely to use microinsurance.118 This indicates that households may not see insurance as an additional risk which is related to mistrust in the MFI and its staff or to misunderstanding of the offered microinsurance products.

Remittances are highly associated with enrolment in the microfinance market and the use of microinsurance as well. In contradiction to earlier findings from Essay 1, Section 1.7, we find a positive association of remittances with microinsurance uptake. This implies that remittances function more as an additional financial resource to take up microinsurance in Sri Lanka. Further, we find for the tested three risk dummies that households who experienced an additional shock are significantly less likely to use microinsurance, whereas the estimates for the experience of death and illness are not statistically significant.118

However, a household’s self-perception of risk exposure can only function as a proxy for the risk aversion of the household. It may give an indication that a higher exposure to risk of a household may represent a higher awareness of the household towards risks and its higher aversion of risks. Due to the subjective measurement of the households’ self-perception of risk exposure, it can function only as an approximate measure of the individual’s risk aversion and thus, has limited explanatory power.
4.5.2. **Multivariate Probit Models on the Type of Insurance Participation**

The results of the trivariate probit regressions for the third sequential step of a household’s insurance participation decision, i.e. what determines the usage of micro life, health and other forms of insurance, are presented in Table 4.3 and in Table D.5 (in Appendix D), showing the APEs of the explanatory variables on the marginal probability of using the different types of insurance. Deviating from the previous estimations, two more explanatory variables – namely married head and the ratio of ill household members – are added here according to the relevance of bequest motives, particularly for micro life, and adverse selection for micro life and health insurance. Similar to the previous estimations, we calculate two specifications.

It is important to note that the three outcome categories, i.e. the types of insurance, are not mutually exclusive. The estimated correlation coefficients, listed at the bottom of the tables, indicate that the residuals of the three outcome categories are correlated. Two of the estimated correlation coefficients are negative and statistically significant for Sri Lanka\(^{119}\). The correlation coefficient between the unexplained part of the use of micro life and other insurance amounts to -0.69 and between micro health and other insurance to -0.41, suggesting that there exist unobservable characteristics of the household that influence a household’s decision to purchase life or any other form of insurance, and likewise health or any other form of insurance\(^{120}\). This outcome shows that, from the household’s perspective, the participation in life or any other form of insurance and health or any other form of insurance are conflicting alternatives.

In line with the literature, female-headship of a household is positively associated with the use of micro health insurance in Sri Lanka, which may reflect a higher incentive to provide security, especially health care, to the household compared with male-headed households.

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119 Hence, the application of the trivariate probit regression is appropriate for the Sri Lankan case, as the assumption, that the correlations between the error terms of the three equations are all zero, can be rejected at a high significance level \((X^2 = 31.439; p = 0.000)\). However, separate probit estimations for each outcome yield very similar coefficients to those of the multivariate probit model. We find only slight changes due to the signs and significance levels of the estimation coefficients.

120 In the second specification, these correlation coefficients amount to -0.71 and -0.58.
Table 4.3: Multivariate Probit Results on the Type of Insurance for Sri Lanka (I)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Life Insurance</th>
<th>Health Insurance</th>
<th>Other Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeff.</td>
<td>APEs</td>
<td>z-stat.</td>
</tr>
<tr>
<td>Female head</td>
<td>0.016</td>
<td>0.0003</td>
<td>0.00</td>
</tr>
<tr>
<td>Household size</td>
<td>0.241</td>
<td>0.049</td>
<td>2.39**</td>
</tr>
<tr>
<td>Married head</td>
<td>0.056</td>
<td>0.009</td>
<td>0.09</td>
</tr>
<tr>
<td>Ratio of ill household members</td>
<td>0.335</td>
<td>0.073</td>
<td>0.38</td>
</tr>
<tr>
<td>Age</td>
<td>-0.204</td>
<td>-0.032</td>
<td>-3.91***</td>
</tr>
<tr>
<td>Age squared</td>
<td>0.002</td>
<td>0.0003</td>
<td>4.24***</td>
</tr>
<tr>
<td>Education of household head (base: tertiary education)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No or only primary education</td>
<td>1.939</td>
<td>0.568</td>
<td>5.02***</td>
</tr>
<tr>
<td>Secondary education</td>
<td>0.958</td>
<td>0.193</td>
<td>5.09***</td>
</tr>
<tr>
<td>Occupation of household head (base: formal employee/employer)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head is self-employed</td>
<td>0.768</td>
<td>0.127</td>
<td>1.69*</td>
</tr>
<tr>
<td>Head is unemployed</td>
<td>0.332</td>
<td>0.066</td>
<td>0.82</td>
</tr>
<tr>
<td>Asset index</td>
<td>1.117</td>
<td>0.338</td>
<td>6.29***</td>
</tr>
<tr>
<td>Land ownership</td>
<td>0.528</td>
<td>0.079</td>
<td>1.35</td>
</tr>
<tr>
<td>Remittance</td>
<td>0.629</td>
<td>0.154</td>
<td>1.35</td>
</tr>
<tr>
<td>Household’s self-perception of risk</td>
<td>0.016</td>
<td>0.003</td>
<td>0.08</td>
</tr>
<tr>
<td>Household’s risk experience (base: no risk experience)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced death of a household member</td>
<td>0.709</td>
<td>0.177</td>
<td>1.15</td>
</tr>
<tr>
<td>Experienced severe illness</td>
<td>-0.051</td>
<td>-0.009</td>
<td>-0.11</td>
</tr>
<tr>
<td>Experienced other severe shock</td>
<td>-0.956</td>
<td>-0.143</td>
<td>-3.18***</td>
</tr>
<tr>
<td>Regional dummies</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Est. correlation coeff. $\rho_{21} = 0.094$ 1.04 $\rho_{31} = -0.693$ -9.13*** $\rho_{32} = -0.411$ -3.03***

Source: Authors’ calculation.

Note: Results of the trivariate probit model are estimated by SML with 20 pseudorandom draws. The t-statistics refer to the estimated coefficients and are based on robust standard errors. Average partial effects (APEs) are calculated with respect to the marginal probability of each type of insurance. The model also includes a constant. Sample size is N = 240 observations. The asterisks indicate level of significance: *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.
This confirms the fact that women are the main health caregivers in the family due to traditional role models of women; thus, they prioritize more health-related expenditures for the family than men, including the premium paid to a micro health insurance scheme.

From the predictions of the model for life insurance demand, we expected a positive relationship between household size and the participation in micro life insurance due to bequest motives. Indeed, we find a positive association for micro life and any other form of insurance. In our first specification, household size, indicating the number of dependents in the household, is an economically and statistically significant predictor of micro life insurance participation due to an intended bequest motive (Hurd 1987, Hurd 1994).

However, we find no significant relationship between micro life insurance participation and the marriage status of the head as the other possible bequest related determinant. Nevertheless, the outcome shows that being married is significantly positively linked to the uptake of micro health insurance in our first specification and negatively related to the use of any other form of insurance in our second specification. Most notably, married household heads – similar to female-headed households – seem to have a higher propensity to internalize the costs and consequences related to health shocks and related care than unmarried heads.

In contrast to earlier findings in the literature, we find no evidence of the existence of adverse selection or asymmetric information in the microinsurance market, as there is no significant outcome for the ratio of ill household members. Further, our results show no life-cycle effect for any of the three insurance types, which indicates a u-shaped age pattern for Sri Lanka. There is significant evidence for such an age pattern for micro life participation in both and for health insurance participation only in the second specification. It appears that household heads have a decreasing willingness to pay for insurance up to a specific age, before their willingness increases due to higher incentives to protect their families from certain hazards.

Deviating from the underlying theoretical model of Lewis and the bulk of the literature, we find that household heads with no formal, only primary or secondary education are significantly more likely to buy life and health insurance than heads with tertiary or higher education in Sri Lanka. This implies that lower educated household heads are not excluded from microinsurance partici-

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121 We also checked for the explanatory variable “households with a sick household head” and find no significant association.

122 The turning point of the age variable for micro life insurance is 59 years, for health insurance 61 and for any other form of insurance 63.
pation and do not have a lower willingness to pay for it than highly educated heads. In contrast to the findings of Chankova et al. (2008) and Ito and Kono (2010), our results imply that the concept of micro health insurance is also capable of being understood by the less well educated heads. Moreover, we suggest that these households may have lower income earning opportunities, so that they may have higher incentives to secure their families against the negative outcomes of certain shocks, such as death or sickness. Following previous contributions in the literature (Giné et al. 2008, Cole et al. 2009), it would be better to use additional determinants related to financial literacy, especially insurance knowledge, to capture the relationship between the understanding of insurance concepts and the propensity of low-income households to participate in different types of microinsurance schemes (Giné et al. 2008, Cole et al. 2009).

We find that self-employment and unemployment are significantly negatively associated with the use of micro health insurance, and unemployment only with the uptake of any other insurance. Since we do not know much about the specific causality here, it is important to note that both occupational statuses are related to lower income earning possibilities, which indicates a lower ability and willingness to pay for micro health or any other form of insurance.

In line with the benchmark model from Lewis, wealthier households in Sri Lanka, i.e. households with a higher asset endowment, are more likely to use micro life, health or any other form of insurance. Due to the fact that households from the poorest quintile are significantly less likely to participate in a micro life and health insurance scheme compared to those from the richest quintile (Table D. 5), it seems that the poorest households have rather limited access to micro life and health insurance policies. Furthermore, land ownership underlines this positive association for the uptake of any microinsurance type in the second specification (Table D. 5).

From the predictions of the underlying standard neoclassical model and of the model of life insurance demand developed by Lewis (1989), we expected a positive relationship between the degree of risk aversion and the participation in any type of microinsurance. We confirm this expectation, as households which perceived themselves as being more exposed to risk, are significantly more likely to participate in a micro health insurance scheme in the second specification (Table D. 5). This implies that micro health insurance seems to been seen by the households in Sri Lanka as a risk coping mechanism and not as an additional risk.

Interestingly, we confirm that the situation differs depending on whether and how the exposure of shocks, i.e. the tested three risk dummies, is associated with the participation in any type of microinsurance. It appears that the experi-
ence of a household member’s death is significantly positively related with the participation in a micro health insurance scheme in the first specification and with the uptake of any other kind of insurance in the second. The experience of a severe illness is significantly negatively related to the use of any other insurance type. The same is true for the experience of any additional other severe shock for the uptake of micro life or any other form of insurance. Therefore, it seems plausible that households who have experienced a family related shock – namely a death of a household member – have a higher incentive to secure for the negative outcome of such a shock in the future, whereas after the experience of a household member’s illness or any other severe shock the households may not regard insurance as an appropriate risk management tool, as they may not have the abilities and financial resources for the purchase, or their access may be restricted.

4.6 Conclusion

Deviating from existing contributions in the literature, this study aims to estimate three sequential steps of a household’s microinsurance participation decision and subsequently analyse the factors affecting a household’s decision to participate in a particular type of microinsurance. Resulting from this, we find that the residuals of two of the estimated correlation coefficients are significantly negatively correlated. Our estimations show evidence that the participation, either in life and any other form of insurance, or in health and any other form of insurance, are conflicting alternatives for the households.

Additionally, the results of our study, using the household survey data of 330 households in Sri Lanka, reveal several patterns which contribute to the literature on the determinants of participation in different types of microinsurance. First, female-headship of a household is positively associated with enrolment in an MFI and the use of micro health insurance in Sri Lanka. The same is true for married household heads. Microinsurance providers, especially in the case of micro health insurance, should take into consideration the higher propensity of female-headed households to participate in such schemes.

Second, household size is negatively linked with membership in an MFI, but positively associated with the usage of micro life insurance – presumably due to an intended bequest motive – and any other form of microinsurance in Sri Lanka. Third, there appears to be no life-cycle effect at all, but a u-shaped pattern may be noted. Fourth, we confirm that remittances may function as an
Fifth, we find that the poor are less likely to enter any of the MFIs in the study and also to use microinsurance. In short, the poor are less likely to participate in a micro life and micro health insurance scheme in Sri Lanka. It is important to note that the microinsurance products we study here do not reach the most vulnerable households, households which are most in need of microinsurance. Therefore, it would be necessary to establish two strong pillars for a higher uptake of microinsurance products: (1) the extension of the outreach through governmental or donor support of capacity building in existing MFIs and (2) more inclusive microinsurance products, i.e. better suitability to and a higher financial inclusion of the poor, which also has to be supported by practitioners, policy makers and other stakeholders. From a household perspective, it is crucial to obtain efficient risk management measures for asset building, wealth creation and hence social protection. As microinsurance is also motivated by the lack of sufficient social security measures, especially social health insurance systems, another option would be the provision of affordable public social security measures to protect the poor from consequences related to family associated shocks. If the government seems unable to meet the social security needs of the very poor, it would be necessary to invent specific products for these target groups, adapt existing microinsurance schemes and address the poor by adequate marketing and distribution channels.

Sixth, there is evidence that the educational level of the household head is a strong determinant of a household’s MFI enrolment and microinsurance participation in Sri Lanka. Therefore, the implementation and promotion of insurance education measures by the providing MFIs would be essential in order to improve a household’s understanding of and knowledge about insurance, while reducing mistrust in the providing institutions among possible target groups and existing clients in the communities. Further, it would be necessary to establish better training facilities and resources for the MFI staff members, so that they are able to distribute microinsurance products honestly and transparently. Both measures may lead, in the long run, to more financially capable individuals and households, especially in the rural communities. However, we did not collect data to study households’ capabilities for microinsurance participation, so that this remains an area for further research. It would be desirable to conduct randomized experiments in this area.

Seventh, in contrast to earlier findings, there is evidence that households which perceived themselves as more exposed to risks are positively associated with the use of microinsurance in general, in particular micro health insurance. It seems plausible that the households in question do not see microinsurance as
an additional risk. This may be traced back to the long presence of the providing MFIs in Sri Lanka, so that reliable institutions seem to play a key role by implementing new product concepts such as microinsurance.

Finally, we stated in the beginning that family related shocks are key future risks faced by households, which are mainly comprised of idiosyncratic, low loss and single-event types of risk. Interestingly, there is evidence in our estimates that the household’s experience of a family related shock is positively related to the use of any of the existing microinsurance programmes under examination. This implies that existing programmes have the potential to function as effective ex ante risk management strategies which can protect households from the potentially catastrophic expenditures associated with family related shocks. Nevertheless, there is still a strong need to build up an insurance culture of the poor by extending their access to microinsurance through the increased adaptation of the product features to the needs of the target groups, i.e. the most vulnerable population groups in the regions under study, building on the experiences from informal measures and existing products in Sri Lanka.