

Determinants of Microinsurance Demand: Evidence from a Micro Life Scheme in Indonesia

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PURPOSE OF THE STUDY

The objective of this research is to identify and evaluate socio-economic determinants of micro life insurance demand in Indonesia. The study is motivated by the fact that, while microinsurance is considered to facilitate poverty alleviation and economic development in emerging economies, take-up rates remain behind projections. To attract the required private capital needed for the provision of financial access and market development, however, high take-up rates are essential to create a commercially viable business opportunity. This study aims to provide insight in customer characteristics which cause actual microinsurance take-up and, thereby, facilitate more effective product design and distribution to seize the opportunities in microinsurance.

DATA

For this study a sample of 208 microfinance customers was collected through personally-administered questionnaires in the urban and semi-urban area of Jakarta, Indonesia. All interviewees were previously offered to participate in a micro life insurance program. About half of the sample decided to participate while the other half abstained from the program. Based on the socio-economic household data gathered in the field study, factors influencing the demand for microinsurance are determined through econometric analysis.

RESULTS

The results of this thesis, based on marginal effects probit regression analysis, support earlier findings regarding the positive influence of education and household wealth on life insurance uptake. In addition, economic capacity measurements deemed more appropriate for low-income households are introduced and corroborate an unambiguous strong positive influence of households' relative economic capacity. Further, positive influence is found for respondents' financial literacy and product understanding as well as client trust attitude and brand recognition. A strong negative life-cycle effect is revealed when taking into account economic self-sufficiency of dependents.

KEYWORDS

Microfinance, Microinsurance, Insurance, Bottom-of-the-Pyramid, Data Collection, Probit Regression, Indonesia

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"Microfinance recognizes that poor people are remarkable reservoirs of energy and knowledge. And while the lack of financial services is a sign of poverty, today it is also understood as an untapped opportunity to create markets, bring people in from the margins and give them the tools with which to help themselves."

Kofi Annan (2005)

1 Introduction

Poverty alleviation, economic development for third world countries, as well as creating attractive opportunities and new markets for the business community are the high expectations set in microfinance (Morduch, 1999; Karlan & Zinman, 2009). While the former expectations were crystallized in awarding the Nobel Peace Prize to Muhammed Yunus and his Grameen Bank in 2006 as well as the UN's decision to name 2005 the 'Year of Microcredit', the latter is more quietly evident by the efforts economic institutions like the World Bank or multinational private companies spend on developing the field of microfinance. Since the time Muhammed Yunus received the Noble Peace Prize for establishing the Grameen Bank and promoting microcredit, the field of microfinance has expanded into more diversified services. Even though many microfinance institutes have also included the offering of insurance and savings in their portfolio, microcredit remains the most intensively researched subject within microfinance (Giesbert, 2010; Bendig & Arun, 2011).

Microinsurance, in particular, is a vital tool in the fight against poverty (Siegel et al., 2001; Churchill, 2002; Cohen & Sebstad, 2005; Dercon, 2006; Dercon & Kirchberger, 2008; Chandhok, 2009). An anecdotal story reported in Adams and Raymond (2008)

highlights why microcredit alone cannot achieve sustainable poverty alleviation. One customer of the Grameen Bank in Bangladesh was able – with the help of the loan – to start a successful rice threshing and betel nut shop. After a devastating cyclone in 2007, however, she lost all her productive assets but was still sitting on an outstanding loan of USD 900. She had lost her capability to service the loan and was even more impoverished than before. Insurance would have helped her to gain back her assets, continue to service the loan, and improve her and her family's economic situation. This example illustrates how microinsurance can have a positive impact. However, to capitalize on the poverty alleviating potential of microinsurance, involved parties have “to fully understand the needs and demands of the poor to extensively contribute towards poverty alleviation” (Mawa, 2008, p. 881). It is recognized that studies on the ‘microfinance revolution’ are needed to develop the field and monitor its success (Robinson, 2001). An enormous potential for microinsurance has been suggested by numerous studies (e.g. Cohen & Sebstad, 2005; McCord et al., 2006). Yet, the observed take-up rates of the offered microinsurance policies seem disappointing (Ito & Kono, 2010). Dercon and Kirchberger (2008) state “the key questions to understand [...] *why people buy or don't buy insurance products when offered*” (p. 18). To contribute in answering this question, for the present thesis primary data was collected from the clients of a microinsurance program in Indonesia and econometric analysis applied to identify socio-economic determinants of microinsurance demand.

Microinsurance 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, p. 12). Hence, microinsurance is in essence the same as regular insurance; certainly, with lower sums insured, lower premiums, and simpler terms and conditions to cater to the characteristics of the target market. Therefore, the research on microinsurance demand can build upon the more established field of demand studies for regular life insurance. The pioneer empirical studies on life insurance demand were ascribing influence on consumption levels to factors such as income, age, education, and number of dependents on a common sense basis (e.g. Hammond et al, 1967; Mantis & Farmer, 1968; Duker, 1969). While income consistently was found to be of positive influence, the direction of the other characteristics seemed ambiguous. In parallel, theoretical

models to explain the demand for life insurance were developed (e.g. Yaari, 1965, Campbell, 1980; Lewis, 1989; Browne & Kim, 1993). Acknowledging that life insurance is basically a form of savings, the life insurance demand models took a start in existing theoretical work of savings utility (Marshall, 1920; Fisher, 1930). Later Campbell (1980) added a discussion of the bequest motive and Lewis (1989), lastly, established the still predominant model for life insurance consumption based on the interest of dependents. A multitude of empirical studies on macroeconomic and household level were using this theoretical framework to explore a varied set of hypothesis. Particularly influential variables include: age, education, marital status, number of dependents, income, net wealth, and occupation (c.f. Table 1).

As pointed out above, micro life insurance is in principal the same as regular life insurance. Therefore, the few empirical studies on micro life insurance also take these as a starting point (Bendig & Arun, 2011; Giesbert et al., 2011). However, the context of microinsurance is arguably very different. Studies on the demand for agricultural insurance, for example, revealed that risk aversion has a negative influence on microinsurance uptake (Giné et al., 2007). A suggested explanation for this odd result is that the unfamiliar concept of insurance might represent a risky option itself for prospective customers (Cole et al., 2008; Ito & Kono, 2010). A lack of understanding for the product and insufficient funds to pay for the premium are cited as main reasons for not buying the offered microinsurance product (Giné et al., 2007). Formal education and financial literacy were examined as factors improving customers' product understanding and showed a positive influence (Cole et al., 2008; Cole et al., 2010). Dercon et al. (2011) suggested that a lack of trust in the insurance provider is one of the reasons for the observed low take up rates for microinsurance. This hypothesis is supported by their findings in an experimental study from Kenya (Dercon et al., 2011).

For micro life insurance in particular, factors regarding need perception and affordability were investigated. In two distinct samples from Ghana and Sri Lanka, the number of dependents in a household was consistently reported of positive influence (Bendig & Arun, 2011; Giesbert et al., 2011). The examination of an age effect revealed ambiguous results. In Ghana a life-cycle effect based on age squared is conceivable, however, in Sri Lanka no life-cycle effect could be identified (Bendig & Arun, 2011;

Giesbert et al., 2011). Generally, the studies on micro life insurance find a positive influence of formal education on insurance uptake. Further, these studies explored the effect of recent economic shocks, such as death or serious illness in the household, and found some evidence for the positive influence of experiencing illness (Bendig et al., 2010). Also the role of remittances received by the household was investigated but yielded ambiguous results. While the negative influence in the one study is suggested as a result of substitution effects (Giesbert et al., 2011), the positive finding in the other is attributed to additional financial income through remittance payments (Bendig & Arun, 2011). A positive influence of household asset endowment levels was consistently found in both studies.

For this contribution, primary data on a voluntary micro life insurance was collected from Indonesia. The research opportunity came into existence thanks to the launch of a new microinsurance product, namely *Tamadera*, in the end of 2010. The micro-endowment insurance plan which integrates life and basic health insurance is suited to investigate determinants of household demand since customers voluntarily chose to buy this product. In addition, also other characteristics are facilitating the research objective of identifying socio-economic demand determinants. The product fulfills many aspects which are considered vital in the literature (Murdoch, 2002; Churchill, 2002, 2007; Akula, 2008). It is a deposit-cum-insurance scheme distributed via a local and trusted partner, has a cap on claim payments, utilizes technology in order to reduce costs, and is simply structured and easy to understand. The product marketing and distribution is organized as a partnership between a multinational insurance company and a local NGO. In 2011, about six months after the launch of the product, a sample of 208 respondents were interviewed via personally administered questionnaires. The interview organization was assisted by the NGO and two strata of 99 insurance participants and 109 non-participants could be collected. The comprehensive questionnaire comprised 83 questions on demographic and economic aspects of the respondent's household as well as on the respondent's product knowledge, financial literacy, and experience with the insurance providers. In the subsequent econometric analysis of the sample, using a marginal effect at the mean probit regression, a strong negative life-cycle effect (-0.37, $p < 0.01$), which was assessed as an interaction variable between age and mature children, could be found. Further, a positive effect for economic capacity of the

household is suggested. In order to test the hypothesis that relative economic capacity is a decisive factor rather than absolute wealth terms in a low income environment, a set of new variables was included. The analysis for this hypothesis yielded a positive effect for asset endowment (0.38, $p < 0.1$), relative consumption development (0.01, $p < 0.1$), regular employment (0.16, $p < 0.05$), and payment of remittances (0.29, $p < 0.01$). In the light of previous findings on remittances, an interesting observation is presented in this analysis: the direction of influence changes with absolute value of remittances received. Low remittances seem to have the substitution effect proposed by Giesbert et al. (2011) and higher values seem to have the effect of an additional financial resource as suggested by Bendig and Arun (2011). Basically, the understanding could be supported that in a low income environment liquidity is always stressed and available cash is competing for alternative uses. And also previous findings by Bendig & Arun (2011) and Giesbert et al. (2011) that micro life insurance is mainly purchased by the wealthier households were supported in the Indonesian sample. The result for financial literacy's influence is positive (0.40, $p < 0.05$) as expected. For product knowledge the regression coefficient is also positive but not significant. Finally, it could be found that the client's experience with the institutions involved in the transaction has a positive effect ($p < 0.05$) and a strong brand recognition of the insurer is positive for micro life insurance uptake ($p < 0.05$). For the latter, however, causality was not tested. With these new results the present study adds to the literature due to three reasons. Firstly, it extends the literature by adding more empirical data to a subject which is scarcely researched until today. Secondly, it deepens the empirical literature on microinsurance demand since it introduces a variety of new variables which were not tested until now. And, finally, it allows for a comparative analysis since the investigated data can be tested against a reference group.

In the remainder, the thesis proceeds as follows. In the next chapter, the context of microinsurance is described and the angles of the high expectations in this concept are explained. Here, particular respect is given to the situation in Indonesia, the country of investigation. After detailing the research field's context and the relevancy of the investigated research question, the following chapter provides important background information on the life insurance history and concept. Firstly, the historical development of insurance is presented and elaborated how this relates to the current development in

microinsurance; secondly, the notion of demand is delineated with particular respect to factors influencing insurance demand. In the fourth chapter, a review of the relevant literature is given. This chapter is divided into a review of the established field of quantitative studies on regular life insurance demand and the rather unexplored field of microinsurance demand to highlight similarities and differences. Subsequently, building up on the discussed pertinent previous research the methodology for this thesis is established, including the description of hypotheses, the data collection process, and the theoretical framework underlying this study. Based on the literature review and theoretical framework, the sixth chapter comprises an econometric analysis of the sample in order to identify the socio-econometric determinants of micro life insurance demand in Indonesia. Chapter seven concludes the thesis by relating the research findings to the context of microfinance and provides ideas for further research in this young field of interest.

2 Microinsurance in context – why understanding the customer matters

The focus of this study is examining the socio-economic determinants for microinsurance demand to gain a better understanding on who are the buyers of insurance in the BoP market. There are three underlying reasons which render this question relevant: (i) poverty alleviation, (ii) new market opportunities, and (iii) macroeconomic development. In this chapter, the context of microinsurance and its importance in it is introduced. The expectations towards microinsurance are shown to be important factors motivating demand research and constitute the benchmark for verification with empirical results.

2.1 Microfinance – more than just credit to fight poverty

Microfinance is widely regarded as the appropriate tool to overcome the adverse consequences of economic downturns, nature catastrophes, and social shocks which are considered the main hindrance for many low-income households to escape the cycle of poverty (Radermacher et al., 2009). As pointed out before, this widespread belief is

reflected by the acknowledgments of reputable institutions like the UN and the Nobel Peace Prize Committee. In light of international praises and microfinance success stories, some even see a more profound societal change towards an inclusion of the Bottom-of-the-Pyramid (BoP) market in the global economic system by means of micro financial services (Valadez & Buskirk, 2011).

The scope of microfinance has evidently evolved and widened over time. While Hossain (2002, [www](#)) describes it as “the practice of offering small, collateral-free loans to members of cooperatives who otherwise would not have access to the capital necessary to begin small business or other income generating activity” in 2002. Today, the Consultative Group to Assist the Poor (CGAP) understands microfinance to be more than just microcredit. For them microfinance is the provision of basic financial services – such as loans, savings, insurance, and money transfer services – to the poor (CGAP, 2012). An integral part of the microfinance concept is providing financial access through field workers who bring the financial services to the homes and neighborhoods of the poor. But there is more to it than just the provision of scaled-down, common financial services via intense distribution channels. Microfinance works on the assumption that the poor have unutilized skills. That poverty is not created by the people but the policies and institutions surrounding them. Thus an access to financial services can help the poor to leverage their skills and become entrepreneurs (Yunus, 2003).

Financial arrangements are nothing new to the BoP market participants. People in developing countries often create informal financial associations themselves as instruments to cope with financial necessities (Cohen & Sebstad, 2005; Maleika & Kuriakose, 2008). Yet, it can be observed that informal solutions created are inferior to formal financial markets. Prahalad (2005), for example, finds goods and services offered in the BoP markets are inefficient and often come at a “poor”-premium. The same holds true for informal burial societies – a quasi life insurance – in rural India (Murdoch, 2002). Moreover, it is questionable if these informally created solutions are effectively addressing the participants’ needs. In 1994, Robert Townsend investigates the informal mechanisms existing in rural India. While he does find cooperative solutions, he realizes that these are not able to effectively address idiosyncratic risks

(Townsend, 1994). The available institutions are insufficient to fulfill the requirements of poor communities. Thus, the extension of formal financial services to the BoP market is empowering the poor. A competitive and regulated market decreases individuals' dependence on reciprocal social networks and the usury interest of moneylenders. Microfinance provides the tools low-income households need to improve quality of life and enable entrepreneurship (Valadez & Buskirk, 2011). People can increase their productivity by investing in education, machinery, or technology. It enables BoP households "to build assets, increase incomes and reduce their vulnerability to economic stress" (Mawa, 2008, p. 876). Moreover, a sense of self-efficacy raises confidence and self-esteem of individuals (Bandura, 1997). Consequently, today numerous development organizations employ microfinance as a central instrument for social interventions in Africa, Asia, and Latin America (Hossain & Rahman, 2001).

Recognized institutions like The World Bank, the International Labor Organization (ILO), and the United Nations Development Program (UNDP) see a direct relation between the persistence of poverty and the lack of insurance and thus put risk reduction on top of their development agenda (Murdoch, 2002). Low-income households are especially vulnerable to the materialization of risks (Maleika & Kuriakose, 2008). Due to their limited resources and access to financial markets, these households are inhibited to make investments in their business or education. Individual, *ex ante*, risk management strategies lower chances for prosperity. And coping with financial shocks, *ex post*, is costly due to inefficient financial markets (Cohen & Sebstad, 2005). As Churchill (2007, p. 401) puts it "poverty and vulnerability reinforce each other in a downward spiral". Jalan and Ravallion (1999) find that 40 percent of income shocks directly translated into reduced consumption. And Dercon (2006), in a time-series study in Ethiopia, observes that if the occurring income shocks during this period were insured, poverty could have been lowered by about a third. A detailed review of existing studies investigating the impact of microinsurance *ex post* is provided by Radermacher et al. (2009). For example, Ekman (2004) reports a reduction of out-of-pocket spending and improved recovery thanks to micro health insurance. Agricultural insurance in China is found to increase farm productivity and asset base (Cai et al., 2010). Nonetheless, the importance of product design and understanding for the target group to

ensure microinsurance can actually work towards poverty alleviation is expressed in a study by Hintz (2010).

Another issue arising due to the success of microfinance is its commercial viability. A concept which originated from humanitarian and philanthropic ideas is becoming a business, raising questions about its purpose (Valadez & Buskirk, 2011). Often a dilemma is perceived between achieving commercial viability and service to BoP households (Robinson, 2002). It is questioned if profits are appropriate if poverty alleviation is the objective (Magnoni & Powers, 2009). In the young history of modern microfinance, microfinance institutions mainly relied on donors and subsidies and only rarely raised capital or were able to mobilize savings (Robinson, 2002). Yet, the experience and resourcefulness of commercial organizations could address the needs of BoP households far more effectively (Otero & Rhyne, 1994). And Magnoni and Powers (2009) add that commercial capital markets need to be tapped if the estimated credit need of USD 45 billion by the poor is to be satisfied. However, fostering a for-profit orientation in microfinance raises the danger that institutions employ questionable and exploitive practices in marketing to the poor (Augsburg, 2010).

In a nutshell, there are great expectations towards microfinance and its contribution to poverty alleviation. Particularly, microinsurance is praised for protecting BoP households against important risks and enabling them to take chances which can ultimately lead to prosperity and break the circle of poverty. Yet, the success of microfinance and effects of the financial crisis on development budgets tests the capacity of development institutions. And while development actors remain skeptical about the contribution of commercial organizations, private capital is needed to fuel microfinance's growth trajectory.

2.2 New market opportunities for financial service providers

Not only the development lobby is critical about commerciality of microfinance, also private companies are cautious to enter the BoP markets. Nonetheless, commercial organizations are increasingly urged to participate in the microfinance movement by development advocates as well as opportunity-seeking investors. The small, local MFIs

are often not able to sustainably service the BoP market due to high transaction costs and small premiums (Brau & Woller, 2004). Moreover, the subsidizing by governments and development organizations is constrained due to budget deficits and financial crisis (Clark, 2004). But also multinational companies are aware of the considerable benefits they can reap by entering the microinsurance market. Exploring an untapped market of up to 3 billion potential customers not only provides profit opportunities but also helps to diversify the risk pool, yield process innovations, and increase reputation and brand value (Lloyds, 2010). Comparisons to the more advanced microcredit market show a market volume of USD 43 billion outstanding loans and more than 500 million borrowers for 2009 (Daley-Harris, 2009). In the period from 2003 to 2008 the compounded average growth rate (CAGR) for the microcredit market of 34 percent – whereas most of the traditional financial service markets were weathering the storm of a global financial crisis (Gonzalez, 2010).

The market potential for microinsurance is considerable. In 2006 more than 78 million people from the BoP market already made use of some kind of microinsurance (McCord, 2008). Long-term trends such as increasing life-expectancy, urbanization, breaking up of traditional family systems, and the weakness of social security systems are expected to foster further market growth (Chandhok, 2009). A study by USAID, for example, projects a number of one billion microinsurance clients worldwide by 2018 (McCord, 2008). Also for Indonesia the market potential is enormous. About 53 percent of the country's 238 million population lives on less than USD 2 per day and are regarded as the microfinance's target market (McCord et al., 2006).

It is a remarkable challenge for private insurers, however, to develop this market. The commercial programs are still in its infancy since microfinance “only recently garnered global attention as a commercially viable activity” (The Economist, 2009, p. 4). It is mainly a lack of understanding, experience, and data on BoP customers which hampers the provision of insurance services (Wipf & Garand, 2007). Limited experience and asymmetric information reinforce the risks due to adverse selection and moral hazard for the insurer. In addition, transaction costs are usually higher and contracts harder to enforce in the BoP market. Irregular cash flows and limited literacy of the target market adds to these problems.

The key for successful for-profit initiatives servicing the BoP is volume (Churchill, 2007). To achieve significant numbers, marketing and analytical tools are needed to study and understand the clients; then transaction costs can be further decreased by the employment of technology (Valadez & Buskirk, 2011). In order to mitigate adverse selection and moral hazard issues seasoned microfinance concepts, like group lending, can be utilized. Cooperation with existing trusted MFIs and innovative concepts to use the entrepreneurial spirit of BoP market subjects are needed to create cost effective distribution channels. As Prahalad (2005) puts it “the best allies in fighting poverty are the poor themselves” (p. 138). Having them participate in the mammoth task also creates business perspectives for low-income households. Nonetheless, the incentive structure in selling microinsurance always needs to be carefully evaluated. Incentives are, on the one hand, necessary to achieve rapid market penetration, but, on the other hand, need to ensure that sales agents keep the good of the customer in mind. Reputation is fragile and in order to create sustained customers, the low product understanding of customers should not be exploited.

But not only is the distribution system vital to for-profit success in microfinance, also competitive products, which provide value to clients’ needs at a fair price, are required (McCord, 2008). The BoP market is highly competitive. Not only want customers maximum value for the little money they have, but also competition from informal arrangements or other MFIs is high (Prahalad, 2005). A study by Webb et al. (2009) found that institutional characteristics such as reputation and involvement are the strongest predictors for microfinance customers’ purchase decision. These features are controllable by the financial service provider but will require some effort to build and maintain. To develop the market often financial literacy training and high involvement marketing efforts are considered necessary which are costly for the insurance providers. Yet, for-profit insurers might convince their shareholders to invest in microinsurance markets based on the rationale of sheer market size and future potential corresponding with economic growth, income development and loyalty of microinsurance customers.

For the case of Indonesia, the country is particularly suited for pilot studies in microinsurance and can provide ground for aging experience (McCord et al., 2006).

Dense population of 117 persons per square kilometer and a high literacy rate of 88.5 percent¹ facilitate quick distribution of new microfinance products. Being the 5th largest country worldwide and experiencing high economic growth rates make it an attractive market itself. In addition, experiences made in this favorable environment can be utilized for the provision of microinsurance elsewhere.

To sum up, although skeptical, development organizations recognize the potential of for-profit orientation in microfinance and also private companies are aware of the business opportunity. But private companies are unfamiliar with the BoP market and need to develop new skills and gradually gain experience in order to successfully include the BoP into the global market economy for the benefit of all participants.

2.3 The macro-impact of microfinance

Besides benefitting low-income households and providing new business opportunities to private companies, on a macroeconomic basis microfinance can also foster economic growth. The development of the national economy and its financial sector are strongly intertwined (Han et al., 2010). Indeed, so important is insurance in the trade and development matrix that, at its first session in 1964, the United Nations Conference on Trade and Development formally acknowledged that "a sound national insurance and reinsurance market is an essential characteristic of economic growth" (UNCTAD, 1964, p. 55). Generally, the role of the banking sector for economic development is prominent (King & Levine, 1993; Beck et al. 2000). Applying various econometric methods and cross-country examples, these studies exhibit a high degree of robustness for the banking sector's positive influence on economic prosperity. The insurance market, however, is comparably less examined (Han et al., 2010). However, it is recognized that the quality of the insurance market has a strong influence on economic growth, since it promotes financial stability, possibly substitutes for government programs, facilitates trade and commerce, mobilizes savings, enables efficient risk management, encourages loss mitigation, and fosters a more efficient capital allocation (Skipper, 1997).

Besides the capital-market effect, also the improvement of education levels, technology, and creation of entrepreneurial spirit need to be accounted for (Valadez & Buskirk,

¹ According to the CIA World Factbook, 2011.

2011). In developing countries, often an abundance of labor exists which is not efficiently utilized. If microfinance is able to give an impulse to microeconomic development, this will also have an effect on an aggregated level. Woller & Parsons (2002) believe that the presence of microfinance can have a positive impact on a society's economic capability and output "reaching well into the millions of dollars" (p. 11).

In the context of Indonesia, the mobilization of savings and increased efficiency in national capital allocation cannot be underestimated since about 50 percent of the Indonesian people belong to the income group which is targeted by microinsurance products. For example, if all potential microinsurance target customers in Indonesia would participate in the investigated microinsurance plan, *Tamadera*, that would mean about USD 25 billion of national savings (approx. 2.5 percent of GDP) which can be utilized for financing investments in the capital market and, thereby, increasing national income. Thus even though the individual policy's nominal value has to be considered as "micro", the sum of these mobilized savings can represent a significant share of national productive capital. As anecdotal evidence from the field in Indonesia suggests that in the absence of adequate saving opportunities precious metals in form of jewelry is often utilized.

The positive effect of insurance on economic development is found to be particularly strong in developing countries with an elasticity of 1 percent increase in insurance density to 9.172 percent increase in economic growth per capita as compared to the elasticity in developed economies of 1 to 1.873 respectively (Han et al., 2010). Another study shows that even in an economic downturn in 1998, when the overall insurance industry experienced negative growth, the life insurance industry was still able to achieve a small positive development (Lim & Haberman, 2004).

Altogether, a strong relationship between sound and formalized financial markets and national economic welfare exists. The impact microfinance can have on the individual level will be reflected in the aggregated numbers of any society with a significant low-income population. The mobilization of national savings and more efficient capital allocation can further add to the positive macroeconomic effect of microinsurance.

In this chapter, it was shown that (i) microfinance in general and microinsurance in particular can have a positive effect on poverty alleviation and inclusion of the BoP market, (ii) represents an attractive business opportunity for private financial service companies, and (iii) promotes economic growth. Interestingly, all of these three microfinance' potentials are interrelated. Currently, MFIs are often constrained in servicing the BoP market by limited funding from donors and governments. The resources of commercial organizations can take MFIs capability to provide financial access and efforts in alleviating poverty to a new level. Inclusion of the BoP market, in turn, can boost economic growth and enable national governments to improve society's development. Higher national education and incomes, ultimately, increase the market potential for private companies. Given that these positive effects of microfinance exist, proving the commercial viability of microfinance is crucial to initiate this upward spiral. While some pilot projects are already under way, a lack of data and experience with the BoP market inhibits for-profit companies to participate.

In the next chapter, a look at the historical development of the insurance industry shows that once it had to overcome the similar issues. Dwelling on the concept of demand shows that an understanding for the insurance purchase decision is the basis for rapid product dissemination and gaining volumes which create commercial viability of microinsurance.

3 Insurance and Demand: Fundamental concepts of the analysis

Before immersing into the literature on determinants of demand for life insurance, and more particular the demand for a micro life insurance policy, establishing an understanding for the concepts of insurance and demand is beneficial. Therefore, in the following chapter, firstly, a brief overview on the historic development of insurance, a differentiation of the two main insurance types and its implications is given. Secondly, the nature of demand and factors influencing it are highlighted to provide the grounds for further analysis.

3.1 Historical development of insurance: a blueprint for microinsurance?

Insurance evolved as a result of the economic development of societies. Already as early as 2250 B.C. the Code of Hammurabi, a Babylonian King, set forth that a borrower should be freed from its liability if he is befallen by an accident in return for higher interest payments (Trennery, 1926). Nelli (1972) argues that the Commercial Revolution in the 13th century sparked the need for a true insurance device. The first documented insurance contract dates back to 1343 and was written for a merchant ship, the *Santa Catlina* (Nelli, 1972). By pooling the risk associated with an individual venture, many commercial undertakings were made possible in the first place. In its definition insurance is a private contract in which one party accepts the transfer of a risk, the other party is exposed to due to the uncertain materialization of an adverse event, in exchange for certain premium payments (Rejda, 2010).

An important step in the evolution of the insurance industry took place in the 19th century. Until then, the premiums for an insurance contract were basically established as result of haggling and business knowledge of the contracting parties. With the advent of premium pricing based on actuarial models, insurance provision became feasible beyond a group of knowledgeable business men. Nowadays, statistical modeling allows calculating insurance for more or less any risk which can be quantified (Rejda, 2010). As a result an interminable list of available insurance policies was created which is generally divided into either Property & Casualty Insurance or Life Insurance.

As expounded above, the development of P&C Insurance has its historic roots in the necessities of commerce. Legal frameworks and innovative policies evolved in parallel to the requirements of commercial activities. Life Insurance, on the other hand, has a less explicit origin. The burial societies which already existed 2500 B.C. in Egypt and thrived in antique Greece and Rome can be considered as early types of life insurance (Vance, 1908). Similar informal arrangements are still widespread in developing countries today. The modern form of life insurance, however, took a controversial origin in the 15th century (Clark, 1999). First, as part of a merchant ship's freight insurance the lives of the slaves aboard were also covered under the merchant's casualty

policy. Later it became common to underwrite an insurance on a debtor's life to increase his line of credit and provide a collateral for the principal (Stefani, 1958). This concept is similar to the common Credit Life insurance policies offered today. As the trade with life insurance evolved into a type of gambling, were people, for example, also wrote policies on the life of popes or kings, life insurance got condemned as immoral by the church and banned in Continental Europe (Clark, 1999). In England life insurance remained legal and its development continued until the 19th century when actuarially-based life insurance companies and annuity societies emerged (Clark, 1999). Nonetheless, it was still regarded objectionable based on ethical considerations (Clark, 1999). Also in the US the market for life insurance had a delicate evolution. Insurance on life was considered as speculation with death and represented a bet against God which would be punished by God as a crime (Zelizer, 1979). But with the progress of enlightenment and industrialization life insurance became gradually popular among middle-class families as a tool to preserve wealth and for protection of dependents. The trends of urbanization, disintegration of families, and spread of financial access further promoted life insurance.

When evaluating the opportunities in the microfinance market also the experience of microbanking in 18th century Europe should be considered. In the 18th century, member-owned microfinance institutes emerged in many parts of Europe which were a driving force of economic development (Seibel, 2010). In Germany, for example, these former microfinance institutions, such as *Raiffeisenbank* or *Sparkasse*, are dominating the national banking sector until today. The current boom in microfinance should leverage on this historical success story in its further development.

In summary, the life insurance as it is now established in industrialized countries had its origins in informal finance institutions – just like microinsurance today. At the beginning of a formal market development, were simple credit-life schemes. Furthermore, before its success story it was considered immoral and undesirable for centuries. In fact, insurance was still regarded as a service for the low-income populations in the 19th century. The bourgeois households preferred to self-insure by means of their wealth (Churchill, 2007). Not before historic philosophical and economic societal changes and a rising middle-class, life insurance gained momentum in the

western markets. Nowadays, life insurance premiums account for almost 60 percent of total insurance premiums. The global life insurance premium market accounted for four percent of worldwide GDP that is about USD 2.5 trillion in 2009 (SwissRe, 2010).

3.2 Demand for life insurance and the importance of volume

In today's market economy the concepts of supply and demand are fundamental. In this thesis, the focus of the investigation is on the demand side of this elemental economic equation. Demand is characterized as the quantity of a given product consumers are willing to buy at a given price. Thus, in economic theory the critical factor for the demand for a given product is its price. However, besides the price of a product there are other factors determining the demand for a product. Salient factors are preferences, income, and number of consumers in a market as well as prevailing interest rates and prices of complementary or substitute products. Altogether these factors determine the level of effective demand which is the quantity consumers are willing and able to buy of a given product (Mankiw, 2008).

In the life insurance market in particular, the price elasticity for demand is considered of lesser importance. Life insurance is "characterized as a 'sold good' not a 'bought good'" (Babbel, 1985). This notion is supported by two reasons: firstly, typically the initiative in a life insurance transaction comes from the seller and not the buyer (Zultowski, 1979); secondly, the complexity of pricing in life insurance contracts makes comparisons difficult for buyers (Auxier, 1976; Crosby & Stephens, 1987). In a survey amongst insurance agents, it was found that less than 20 percent of sales are initiated by the consumer (Zultowski, 1979).

The complexity of life insurance pricing, or insurance premium, lies in its combination of actuarial value and loading factor. Actuarial value is the expected payoff from an insurance policy. Following this definition, a risk-averse person will always be better off by entering into an actuarially fair insurance coverage (Hofmann, 2009). But the provision of insurance is also costly. The second price component, the loading factor of a policy premium usually includes a safety buffer, taxes, and all the administrative costs attached to providing an insurance plan (Vaté & Dror, 2002). For example, in the US

market the average load for a life insurance policy is estimated at 18 percent; and if the policy is terminated before maturity these costs can increase up to 51 percent due to high front-loads (Browne & Finkelstein, 2007). Thus, besides the complexity in actuarial valuation of a policy and differences in models across insurance companies, the load factor is a considerable price component with potential for differentiation.

Despite the difficulty of comparing insurance prices, particularly in microinsurance, competitive pricing is of high importance. On the one hand, low-income households in emerging markets are particularly price-sensitive (Prahalad, 2005). On the other hand, with its very small premiums and risks covered the loading factor as a percentage of the premium is relatively higher in microinsurance (Churchill, 2007).

This constitutes sort of a dilemma for microinsurance: While demand for life insurance is negatively correlated with its price (Mantis and Farmer, 1968; Campbell, 1980; Babbel, 1985; Browne and Kim, 1993), the costs of insurance provision can be expected to significantly decrease with high volumes. Diamond (1992), for example, finds that the load factor on insurance for fewer than five persons insured is 40 percent, whereas the load for a group of 10,000 or more insured is at 5.5 percent. Therefore, an understanding of the other factors influencing demand for life insurance is of utmost importance in the development of the microinsurance market. It is the objective of this research to find demand determinants for micro life insurance besides insurance premium.

In the next section, previous empirical studies on the demand for life insurance are presented. While some of them were investigating the influence of insurance premium, most are focusing on other factors. The discussed results will lay the foundation for the hypotheses investigated in this study.

4 Empirical investigations of the demand for life insurance

To examine the demand determinants for a micro life insurance policy in Indonesia, it is beneficial to explore and relate to previous research on the topic. A review of the literature enables identification of potentially relevant factors and qualified methods of analysis. Further, unexplored niches can be detected. Hence, the review builds the basis for formulation of hypotheses and choice of analytical method. However, quantitative demand research for micro life insurance is a young and relatively unexplored field in the literature. Therefore, first the contribution of qualitative examinations on microinsurance demand is recognized. Second, insights are drawn on insurance demand determinants in general from the established field of quantitative demand studies on regular life insurance. Lastly, quantitative studies on microinsurance demand in general and micro life insurance in particular are discussed.

4.1 Relevant insights from qualitative research on microinsurance

Qualitative research is a widespread methodology in social science and development studies in particular (Hulme, 2007). Also in order to identify factors contributing to the demand of microinsurance a qualitative approach is deemed useful (McCord et al., 2006). Techniques usually used in qualitative research are: observation, in-depth interviews with key persons, focus group discussions, and biographical methods (Ritchie & Lewis, 2003). Often employed for the demand research on microinsurance are interview and focus group techniques. Both techniques inherent are the importance of the relationship between research subject and researcher. The researcher's objectivity is constrained since she needs to purport the issues addressed as well as record and interpret the individual answers given. However, in a new field of research, like microinsurance, qualitative approaches can be a valuable instrument to explore the topic and narrow down important issues to be addressed in further investigations.

Gathering qualitative data from key people often involves the supply side by interviewing knowledgeable practitioners on insurance or MFI level. Focus group discussions are more appropriate for examination of the microinsurance target group. They generally consist of 8 to 12 persons and are used as an explorative tool to learn about needs and concerns of the target group (PlaNet Finance, 2011). The topics

investigated include clients' comprehension of insurance, risk understanding, and willingness and ability to pay as well as life-cycle, time series of crisis, income seasonality, expenditures, savings and credit, and seasonality of risk (McCord et al., 2006). Relevant to this study, for example, through in-depth interviews it was found that a lack of understanding is an important factor impeding the participation in microinsurance (De Allegri et al., 2006). And other qualitative studies identified trust in the involved institutions as an important influence on microinsurance demand by means of focus group discussions and case studies (Schneider & Diop, 2001; Basaza et al., 2008; Patt et al., 2009).

While qualitative techniques are valuable tools in identifying insurance demand drivers within a community, this study focuses on quantitative techniques and results. A considerable body of literature is directed at the examination of demand determinants of regular life insurance, which can provide important insights for the analysis at hand. Thus in the next section an overview of this literature is given. Regarding microinsurance demand, however, quantitative data is rather limited. Results of qualitative studies can amend these investigations and are, therefore, considered subsequently when considered appropriate.

4.2 Review of quantitative empirical studies on life insurance demand

In this chapter, quantitative studies regarding the demand for regular life insurance are reviewed to learn more about research designs and factors related to the life insurance demand. First of all, differences in the design of these studies as well as the development of the research field are stated. Subsequently, a more detailed review of the findings on the most important demographic and economic influence factors is provided.

4.2.1 The design of regular life insurance demand studies

The following section consists of a synopsis of methods applied and results reported in empirical, quantitative studies regarding the demand for life insurance.

Prior work on the consumption of life insurance recognized three important demand drivers: demographic, economic, and institutional factors. Institutional factors are generally subject of country-comparison studies. It is found that the development of the financial service sector is a significant predictor of life insurance demand (Beck & Webb, 2003). An established legal framework which protects creditor's and property rights and facilitates the enforcement of contracts is arguably of positive influence (Beck & Webb, 2003). Though, existent empirical results did not support this proposition so far (Beck & Webb, 2003). The present study comprises an analysis of demand factors on a household level in a homogenous institutional environment. For this reason, the presented review of relevant literature is focused on the work on demographic and economic demand factors.

Demographic and economic demand determinants are either investigated on a household level or based on macroeconomic data. The use of aggregated data to explore demographic and economic determinants of life insurance demand, however, brings about some limitations: (i) the indicators aggregate supply and demand factors for life insurance and a subsequent distinction is not possible, (ii) prices for life insurance are affected by national government policies and market structure and thus a cross-national comparison has limitations (Beck & Webb, 2003). According to Beck and Webb (2003) these problems are mitigated by the fact that price is related to supply-side factors and, since they are included in the regression model, it can be controlled for the price effect. In addition, comparing insurance demand on a country basis requires the assumption that national aggregate data represent an average national household and thus assume that inhabitants in one country are homogenous as compared to other countries (Browne & Kim, 1993). This causes an additional potential source of error, for developing countries in particular this measurement of insurance consumption arguably leads to a bias since often considerable differences in income distribution exist.²

Due to the loss of information in the aggregation of data, empirical macroeconomic studies can only provide limited insight into the determinants of life insurance demand. However, they are an important source for comparisons across country and can provide valuable hints regarding which factors should be examined in more detail.

² Based on distribution of family income – Gini Index (CIA, 2011, www).

Microeconomic data on the demand for life insurance, on the other hand, are more difficult to obtain. Researchers either need to fall back on general household and consumer surveys which hamper the possibility to investigate specific research questions or conduct their own laborious consumer surveys. In a first empirical investigation of determinants of household life insurance premium expenditures, Hammond et al. (1967), for example, used two cross-sectional data sets which were published by the Survey Research Center of the University of Michigan in 1953 and 1962 respectively. The data do not distinguish for the type of insurance owned, thus, term, whole life, and endowment policies have to be treated equally. Their investigation is said to be “the first to address specific life insurance demand determinants” (Zietz, 2003, p. 160). The pioneer empirical studies on the demand for life insurance were conducted in parallel to the theoretical discussion of life insurance demand models in the 1960s and apply a common sense approach to justify the selection of variables (e.g. Hammond et al., 1967; Mantis & Farmer, 1968; Neumann, 1969; Duker, 1969). Nowadays, it is common practice to relate the identification of variables to theoretical models (e.g. Lewis, 1989; Browne & Kim, 1993; Outreville, 1996).

Hammond et al. (1967) in their study focused on nine different independent variables to explain household expenditure on life insurance premium. For their sample of US households’ income and net worth – *inter alia* – proved to be statistically significant factors. Since their groundbreaking empirical work at least 26 additional empirical investigations for life insurance demand determinants were published in peer-reviewed journals (Zietz, 2003, p. 160). The results of Hammond et al. (1967) for income and net wealth were replicated in an array of additional studies. Hence, the empirical, quantitative examination of life insurance demand seems to produce reliable results. In Table 1 below an overview on the empirical findings of the determinants for life insurance demand is presented.

Table 1: Determinants of regular life insurance demand

Variable	Positive	Negative	Nonsignificant
Age	Berekson (1972) Showers & Shotick (1994) Truett & Truett (1990) Gutter & Hatcher (2008)	Ferber & Lee (1980) Auerback and Kotlikoff (1989) Bernheim (1991) Chen et al. (2001)	Hammond et al. (1967) Duker (1969) Anderson and Nevin (1975) Burnett & Palmer (1984) Fitzgerald (1987) Gandolfi & Miners (1996)
Age squared		Showers & Shotick (1994)	
Gender	Gandolfi & Miners (1996)		
Married		Hammond et al. (1967) Mantis & Farmer (1968)	Burnett & Palmer (1984) Berekson (1972)
Housewife	Ferber & Lee (1980) Showers & Shotick (1994) Auerbach & Koltikoff (1989)	Duker (1969) Gandolfi & Miners (1996)	
Number of Dependents	Berekson (1972) Ferber & Lee (1980) Burnett & Palmer (1984) Lewis (1989) Bernheim (1991) Browne & Kim (1993) Showers & Shotick (1994) Outreville (1996)	Hammond et al. (1967) Mantis & Farmer (1968) Auerback and Kotlikoff (1989) Ward & Zurbruegg (2002)	Duker (1969) Anderson and Nevin (1975)
Religion		Burnett & Palmer (1984)	
Islam		Browne & Kim (1993)	
Education	Hammond et al. (1967) Ferber & Lee (1980) Burnett & Palmer (1984) Truett & Truett (1990) Browne & Kim (1993) Gandolfi & Miners (1996)	Duker (1969) Anderson & Nevin (1975) Auerback and Kotlikoff (1989)	
Financial Literacy		Browne & Kim (1993) Outreville (1996) Ward & Zurbruegg (2002)	
Asset Endowment	Hammond et al. (1967) Duker (1969) Headen & Lee (1974) Anderson & Nevin (1975) Ferber & Lee (1980) Lewis (1989) Bernheim (1991) Eisenhauer & Haylek (1999)	Fortune (1973)	Fitzgerald (1989) Auerback and Kotlikoff (1989)
Occupation/ Employment	Hammond et al. (1967) Mantis & Farmer (1968) Duker (1969) Ferber & Lee (1980) Miller (1985) Fitzgerald (1987) Auerbach & Koltikoff (1989)		Anderson & Nevin (1975)
Income	Hammond et al. (1967) Mantis & Farmer (1968) Duker (1969) Neumann & Berekson (1972) Fortune (1973) Anderson & Nevin (1975) (low and high income class) Ferber & Lee (1980) Burnett & Palmer (1984) Truett & Truett (1990) Browne & Kim (1993) Showers & Shotick (1994) Gandolfi & Miners (1996) Outreville (1996) Ward & Zurbruegg (2000)	Anderson & Nevin (1975) (mid income class)	Berekson (1972)
Expected Future Income	Anderson & Nevin (1975)		
Brand Loyalty	Burnett & Palmer (1984)		

Source: Based on Zietz (2003) with adjustments by the author.

As shown in Table 1 the most commonly investigated variables are Age, Number of Dependents, Education, Asset Endowment, and Income. While the first three influence factors can be considered demographic, the latter two are attributed to the economic situation of a household. The influence of demographic characteristics seems – *prima facie* – rather ambiguous, whereas the results for economic factors offer an unequivocal picture. Subsequently, these commonly tested variables are regarded as the standard variables in life insurance determinants research. For a better understanding of these important influences, in the following a brief description of studies, findings and their interpretations is given.

4.2.1.1 The demographic determinants

Age

Based on theoretical considerations age is expected to be an influential variable on life insurance demand since it influences the expected probability of death and the amount of future earnings an individual is expected to accumulate (Campbell, 1980; Lewis, 1989). Further it can serve as a proxy for the life-cycle stage of a family (Duker, 1969; Ferber & Lee, 1980). The positive influence due to higher death probability, however, is probably offset by adjusted insurance premiums and decreasing dependency of children (Hammond et al., 1967). In addition, people of higher age are likely to have accumulated wealth which can serve as a substitute for life insurance. This offsetting effect due to actuarial calculations and life-cycle development might be an explanation for the ambiguous results found for age in the literature (cf. Table 1). Empirical tests suggest that the influence of age depends on income class and type of insurance (Hammond et al., 1967; Ferber & Lee, 1980). While people on lower income classes seem to find less value in life insurance as they age, more affluent households perhaps consider it as an appropriate tool for retirement savings. Controlling for a life-cycle effect, age is found to be of positive but diminishing influence as the household matures (Showers & Shotick, 1994). On a country level, the positive effect of population age might be related to higher economic development and increased need for retirement savings (Truett & Truett, 1990).

Education

Education is intuitively associated with increased life insurance spending. Higher formal education is thought to foster need awareness and enable more objective analysis for the life insurance purchase decision (Hammond et al., 1967). Moreover, higher educated individuals are hypothesized to have a stronger inclination to protect their dependents by means of life insurance (Truett & Truett, 1990). Generally, education correlates with higher demand for life insurance in empirical investigations (Hammond et al., 1967; Burnett & Palmer, 1984). The report by Gutter and Hatcher (2008) that higher educated individuals “had greater proportion of their human capital insured” (p. 685) supports these earlier results. Yet, there is evidence that the effect of education is influenced by additional factors. Higher educated spouses, for example, even though aware of life insurance’s benefits, are less dependent on the income of their husbands (Ferber & Lee, 1980; Gandolfi & Miners, 1996). Alternatively, higher educated parents anticipate longer financial dependency of their offspring due to pursuit of higher educational levels (Browne & Kim, 1993). Results suggesting a negative influence of education in the reviewed literature are potentially biased by exogenous factors such as inflationary periods (Anderson & Nevin, 1975) or assess the relative insurance consumption of households (Auerbach & Kotlikoff, 1989).

Number of Dependents

The number of dependents is thought to increase the financial protection requirements of a household throughout the literature. Already the early studies incorporated this variable on an *a priori* basis in their models (Hammond et al., 1967; Mantis & Farmer, 1968; Duker, 1969; Berekson, 1972). Hammond et al. (1967) state “if an individual has no one dependent on his earnings [...], then the need for life insurance [...] may not exist at all” (p. 399). In his application of the economics of uncertainty, Campbell (1980) tied the influence of dependents to an individual’s intensity for bequests. Acknowledging income transfers on behalf of dependents, it was Lewis (1989) who developed the prevalent model in which the demand for life insurance is primarily driven by the interest of dependents. A review of the empirical literature demonstrates a predominantly positive influence of dependents on regular life insurance demand (cf. Table 1). However, in some cases a high number of dependents lead to lower insurance demand, possibly due to budget constraints (Ferber & Lee, 1980). Also demand

elasticity is decreasing in the number of children suggesting economies of scale in life insurance demand (Showers & Shotick, 1994). From macroeconomic data it was inferred that life insurance demand development lags behind number of births by two years (Mantis & Farmer, 1968). Browne and Kim (1993) found a strong positive influence of national dependency ratios, that is children below age 15 over population between 15 and 64, for life insurance uptake and even stronger for the amounts insured.

4.2.1.2 The economic determinants

Asset Endowment

Theoretical considerations relate the individual asset endowment to the demand for life insurance (Pratt, 1964; Babbel, 1985; Lewis, 1989). Based on the model proposed by Lewis (1989) the direction of wealth's influence should be negative. Also Fortune (1973) theorizes an inverse relationship between asset endowment and life insurance demand and finds some supportive empirical evidence in a time-series of macroeconomic US data. On the other hand, Babbel (1985) states that the influence of wealth is ambiguous and "dependent upon the shape of the absolute risk aversion function of the insurance consumer" (p. 230). This notion is supported by Hammond et al. (1967) who argue that net worth of a household could intuitively either be perceived as substitute for life insurance which can be utilized to maintain its standard of living or it could have a positive effect on life insurance consumption since family heads might want to protect the household's asset endowment beyond their life time by using life insurance. In empirical studies a positive influence of household's wealth on life insurance uptake prevails (cf. Table 1). Yet, a differentiation for income classes suggests a more articulate effect of wealth levels in low and high income classes than in the middle income class (Hammond et al., 1967). Furthermore, wealthier households utilize life insurance rather as a protection against the risk of premature death, whereas less well endowed households have an increased utility from a policy which is including a savings component (Anderson & Nevin, 1975).

Income

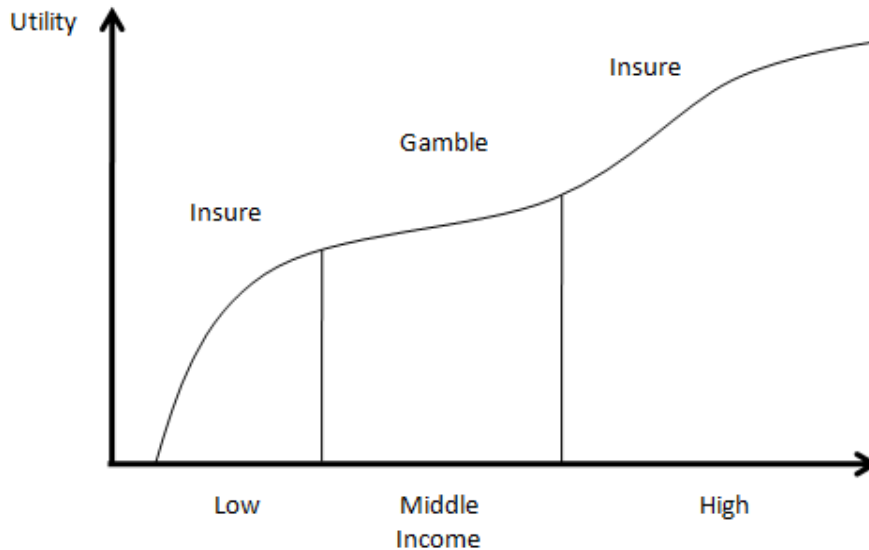
Income is the most frequently tested factor and consistently found to be of significant influence (cf. Table 1). Contrary to the representation in economic literature, not capital

income uncertainty but uncertainty from labor income – or human capital uncertainty – is the prevalent risk for household consumption (Campbell, 1980). In the existing literature, life insurance is regarded as the appropriate means to mitigate the risk inherent to a household's income stream due to uncertain lifetime of the main breadwinner (Yaari, 1965; Fischer, 1973; Pissarides, 1980; Lewis, 1989). Thereby, income itself is a relevant factor regarding the demand for life insurance: firstly, a certain minimum level of income is required to make life insurance affordable and, secondly, income determines the level of a household's total consumption and, therefore, the rational amount of life insurance according to theoretical models (Yaari, 1965; Lewis, 1989).

Empirically, the influence of income was tested on aggregated macroeconomic data and on household level. In macroeconomic studies often the GDP per capita is related to life insurance premium expenditures. Several studies found a statistically significant, positive influence with elasticity figures ranging between 0.32 and 0.62 (Browne & Kim, 1993; Outreville, 1996; Li et al., 2007). Noteworthy for the present investigation of micro life insurance, two studies reported somewhat higher income elasticity figures in less developed countries (Truett & Truett, 1990; Beck & Webb, 2003). Ward & Zuerbruegg (2000) investigate the reverse relationship between GDP and life insurance premiums, testing if life insurance promotes economic growth. In their sample of OECD countries from 1961 to 1996 they find ambiguous results. A Granger causality analysis reveals that the direction of the relationship depends on national circumstances, such as national culture or regulative norms.

On a household level positive income elasticity was also consistently reported, however, figures between 0.02 and 0.35 are somewhat lower (Hammond et al., 1967; Showers & Shotick, 1994). Differentiation for income classes reveals a particularly high elasticity for middle income households (Hammond et al., 1967). The absolute amount of life insurance coverage purchased, on the contrary, is rather high for low and high income groups (Anderson & Nevin, 1975). This non-linear relation between income and life insurance purchased is thwarting prior emphasis (c.f. Hammond et al., 1967; Duker, 1969; Berekson, 1972).

One explanation for this unforeseen result is a utility function as proposed by Friedman and Savage (1968) (Figure 1).

Figure 1: Friedman-Savage utility function

Source: Adapted from Anderson & Nevin (1975, p. 382)

Assuming that the two convex portions of the curve apply to low and high incomes and the concave part in between applies for middle incomes, then the middle income households might have a preference for risk taking (Anderson & Nevin, 1975). A relationship between life insurance demand and income following this pattern could explain why income elasticity is higher in developing countries. As the population average income increases from very low towards middle class levels, the utility of insurance is particularly strong.

Finally, another household level study focused on the influence of income risk diversification (Showers & Shotick, 1994). It was found that the demand for life insurance is significantly lower in multi-earner households.

In summary, income was shown to be of positive influence by almost all empirical studies (cf. Table 1). As discussed above macroeconomic data strongly suggests a positive relationship between GDP per capita levels and life insurance consumption. On a household basis, researchers were able to show that differences exist for income classes and multi-earner households. Unexpectedly, lower income classes seem to have a higher utility from life insurance than the middle classes.

Other determinants relevant for the study

Other demand determinants previously investigated which are also relevant for the present thesis include: Occupation, Expected Future Income, Religion, and Brand Loyalty.

The occupation of the insured is subject to several life insurance demand studies. In their pioneer study, Hammond et al. (1967) find a positive association of working in a white-collar type profession with household's life insurance demand. This result is supported by subsequent investigations (Duker, 1969; Ferber & Lee, 1980; Miller, 1985; Fitzgerald, 1987; Auerbach & Kotlikoff, 1989). On a macroeconomic level, Mantis and Farmer (1968) report a positive relationship between employment rates and life insurance demand.

Income expectation of households and its relation to life insurance demand was investigated by Anderson and Nevin (1975). They found that households which expected to be in a higher income category in ten years ahead purchased higher amounts of life insurance today.

Religion is theorized to be associated with life insurance demand for two reasons: firstly, historic development of life insurance was often in conflict with religious views and for some time condemned as distrust in God's protective care (cf. Chapter 3.1); secondly, a society's culture is said to be influenced by religious beliefs and related to levels of risk aversion (Douglas & Wildavsky, 1982). On a household level, Burnett and Palmer (1984) investigated the relationship between religion salience and life insurance consumption a middle-sized US city. The respondents who indicated a high importance of religion owned considerably less life insurance than people who claimed a low interest in religion. Macroeconomic studies have found that the demand for life insurance is significantly less widespread in predominantly Muslim countries – like Indonesia (Browne & Kim, 1993). Yet, this might not be evidence for higher religious salience or risk aversion in Islamic imprinted societies but rather a result of constrained life insurance supply. For a believing Moslem the regular life insurance contract is not a viable option due to Islamic regulations (Redzuan et al., 2009). To meet the demands of Muslim consumers the *takaful* insurance was developed in Sudan in 1979. Since then,

the new concept is successful marketed in Islamic countries. For example, since the introduction of *takaful* in Malaysia in 1985 it was able to gain a market share of 13 percent (Redzuan et al., 2009).

Finally, respondents from households which owned higher amounts of life insurance indicated a lower brand loyalty (Burnett & Palmer, 1984). As possible explanation, Burnett and Palmer (1984) suggest “that owners of large amounts of insurance purchase coverage from several different insurers” (p. 459).

The review of the empirical literature on regular life insurance demand above yielded a set of socio-economic determinants which can, generally, be considered influential. However, the demand for life insurance is dependent on individual consumer’s characteristics and needs (Burnett & Palmer, 1984). Arguably, the reality of low income households in developing countries – the target group for micro life insurance – differs in some aspects from the context in which the above studies were conducted. As per definition the target group of microinsurance is low-income households, besides the obvious lower financial capabilities and asset endowment other relevant characteristics are attributed to this particular group. Foremost it is a lack of access to finance, less experience with financial services, irregular income streams, a lower understanding of the product and need awareness, as well as preponderance of informal financial service arrangements (Murdoch, 2002; Churchill, 2007). Hence, factors found influential on the demand for regular life insurance in developed countries might have a different or no effect in the microinsurance context. Moreover, also factors which were previously not considered relevant might be of interest in the analysis of microinsurance demand. Unfortunately, there is only limited empirical work on the demand for micro life insurance. To learn more about context-specific demand determinants, in the next section also studies on agricultural and health microinsurance are considered as well as work which was not yet published in a peer-reviewed journals.

4.2.2 Studies on microinsurance uptake

Until today, quantitative, empirical studies on what determines the demand for microinsurance are scarce. However, the available studies from various developing

countries provide important insight for the analysis in this thesis. While the focus of these studies varies, they are all investigating peculiarities of low-income customers in developing countries. Typically, the focus of the studies is on “product and marketing characteristics, socioeconomic household characteristics and the degree of risk aversion as potential explanatory factors for demand” (Morsink, 2011, p. 5). The different product types researched can be grouped into: (i) life insurance, (ii) health insurance, (iii) agricultural insurance, and (iv) other microinsurance studies. Table 2 provides an overview of influence factors investigated and the according findings.

Table 2: Significant variables in microinsurance demand research

Variable	Life	Health	Agricultural	Others
Demographic				
Age	[+] Bendig et al. (2010)	[+] Chankova et al. (2008)*	[-] Giné et al. (2007)	
	[+] Giesbert (2010)	[+] Ito & Kono (2010)*	[-] Cole et al. (2008)	
	[-] Bendig & Arun (2011)		[+] Cai et al. (2011)	
	[+] Giesbert et al. (2011)*			
Gender (male)	[+] Giesbert (2010)	[+] Schneider & Diop (2001)	[+] Cole et al. (2008)	
Marital Status				[+] Akotey et al. (2011)*
Number of Dependents/ Household Size	[+] Giesbert (2010)	[+] Schneider & Diop (2001)		[+] Cole et al. (2010)
Muslim			[+] Cole et al. (2008)	
Life-Cycle				
Age squared	[-] Bendig et al. (2010)			[+] Cole et al. (2010)
	[-] Giesbert (2010)			
	[+] Bendig & Arun (2011)			
	[-] Giesbert et al. (2011)*			
Economic Characteristics				
Occupation/ Employment	[-] Bendig et al. (2010)	[+] Chankova et al. (2008)*		
	[+] Giesbert (2010)			
Income/ Expenditures			[+] Giné and Yang (2009)*	[+] Cole et al. (2010) [+] Akotey et al. (2011)*
Wealth	[+] Bendig et al. (2010)	[+] Chankova et al. (2008)*	[+] Cole et al. (2008)	[+] Morsink & Geurts (2011)
	[+] Giesbert (2010)		[+] Giné and Yang (2009)*	
	[+] Bendig & Arun (2011)			
	[+] Giesbert et al. (2011)*			
Credit Constrained			[-] Giné et al. (2007)	
Remittances (received)	[-] Bendig et al. (2010)			
	[+] Bendig & Arun (2011)			
	[-] Giesbert et al. (2011)*			
Product Understanding				
Education	[+] Bendig et al. (2010)	[+] Schneider & Diop (2001)	[-] Cai et al. (2011) - Illiteracy	[+] Cole et al. (2010)
	[+] Bendig & Arun (2011)	[+] Chankova et al. (2008)*	[+] Giné and Yang (2009)*	
	[+] Giesbert et al. (2011)*			
Financial Literacy			[+] Cole et al. (2008) [+] Gaurav et al. (2011)	
Insurance Skills		[+] Patt et al. (2010)*	[+] Cole et al. (2008)	[+] Akotey et al. (2011)*
Trust				
Other known HH purchasing			[+] Giné et al. (2007)	
Membership in other MFIs/groups	[+] Giesbert (2010)		[+] Giné et al. (2007) [+] Cole et al. (2008) [+] Cai et al. (2010)	
			[+] Cole et al. (2008)	
			[-] Cole et al. (2008)	
Other Insurance Policy			[+] Cole et al. (2008)	
MFI Unknown			[-] Cole et al. (2008)	
Low Trust in MFI				[-] Dercon et al. (2011)
Move			[+] Giné et al. (2007)	
Claim Payment			[+] Cai et al. (2010)	[+] Dercon et al. (2011) [+] Morsink & Geurts (2011)
				[+] Akotey et al. (2011)*
Perception of MFI/ Insurer				[+] Akotey et al. (2011)*
Shock				
Death Experience				
Illness Experience	[+] Bendig et al. (2010)	[+] Ito & Kono (2010)*		
Health Status		[+] Ito & Kono (2010)*		
Other Shock	[+] Giesbert (2010)			
	[-] Bendig & Arun (2011)			
Other Factors				
Perception of risk				[+] Morsink & Geurts (2011)
Risk Aversion	[+] Bendig et al. (2010)	[+] Chankova et al. (2008)*	[-] Giné et al. (2007)	[-] Dercon et al. (2011)
	[+] Bendig & Arun (2011)		[-] Cole et al. (2008)	[-] Clarke and Kalani (2011)
	[-] Giesbert et al. (2011)*		[+] Giné and Yang (2009)*	
Loss Aversion			[+] Stein (2010)	
Hyperbolic Preferences		[+] Ito & Kono (2010)*		
Own Risk Assessment	[-] Giesbert (2010)			
	[-] Giesbert et al. (2011)*			
Premium / price elasticity			[-] Cole et al. (2008)	[-] Dercon et al. (2011)
Premium Flexibility				[+] Akotey et al. (2011)*

Note: [+] indicates positive influence of researched variable and [-] negative influence respectively. Studies marked with an asterisk * were published in a peer-reviewed journal.

Source: Compiled by author.

Comparing the results with the findings for the demand on regular life insurance age, wealth, and education show a similar relationship. The number of dependents seems to have a somewhat more reliable positive influence in the microinsurance context and, oddly, risk aversion is in some cases negatively related to insurance participation. While income – a commonly significant variable for regular life insurance demand – is rarely investigated, credit constraints, reception of remittance, insurance skills, recent shock events and trust are added to the analyses on microinsurance.

The first noted quantitative study on the demand for microinsurance was conducted by Giné, Townsend, and Vickery in 2007 for the World Bank. They investigated a rainfall-index agricultural insurance which was offered through a cooperation of an international insurer and a local MFI in southern India. Respondent's age, credit constraints, sedentary residence and risk aversion were found to be of negative influence. Land cultivation, technology adoption, membership in financial groups and familiarity with other participating households were positively related. Most prominent reasons cited by respondents for non-participation were a lack of product understanding and money to pay premiums (Giné et al., 2007).

Interestingly, the take-up rate for the product researched by Giné et al. (2007) lagged considerably behind microinsurance demand projections with mere 4.6 percent participation at the time of research. Subsequently, the focus of many quantitative studies shifted to exploring why the microinsurance uptake lags to such an extent behind projections (e.g. Cole et al., 2008; Ito & Kono, 2010; Cai et al., 2010; Cole et al., 2010; Cai et al., 2011; Dercon et al., 2011). With a set of experimental studies the roles of liquidity, financial literacy, and trust on microinsurance uptake in particular were investigated.

Low financial capability and constrained liquidity is theorized to be a main barrier for low-income households to utilize microinsurance as risk management tool (Cole et al., 2008). Field experiments in India and Indonesia suggest that a positive liquidity shock at the time an insurance product is offered or the subsidization of financial services have a positive effect on participation (Cole et al., 2008; Cole et al., 2010).

Education is consistently found to be a positive predictor of microinsurance uptake in the literature (cf. Table 2). A study on the demand for financial services in Indonesia revealed a positive influence of education and cognitive abilities on demand for formal

financial services – including insurance – and negative influence on participation in informal arrangements (Cole et al., 2010). More specifically, financial literacy is found “an important predictor of financial behavior in emerging market countries” (Cole et al., 2010, p. 37). Experimental studies employing a financial literacy education module, however, showed to have only an insignificant effect (Cole et al., 2008; Cole et al., 2010; Dercon et al., 2011)³. A brief training module is possibly insufficient to substantially enhance client education and, consequently, product comprehension. “Clients’ understanding of insurance products [however] is key not only to take up of insurance, but also to use and appreciation of the policy as well as satisfaction with the insurance” (Dercon, 2008, p. 16).

Further, in contrast to prior findings on regular insurance, a negative relation between risk aversion and uptake was identified. Supposedly, participation in the unfamiliar insurance represents a risky option by itself to the surveyed households (Cole et al., 2008; Ito & Kono, 2010). Trust is a mitigating factor and its importance for microinsurance participation is suggested (Dercon, 2008; Schneider, 2005; Basaza et al., 2008; Patt et al., 2009). As pointed out above, among the services offered by microfinance providers, insurance needs the highest degrees of trust on customer side. Trust, however, is a vague concept and cannot be easily tested for. Various quantitative studies tried to control for this influence. Cole et al. (2008), for example, used the endorsement by a well-known party as a proxy. Studying a sow insurance product offered by the government in China, Cai et al. (2010) used the participation in another health insurance provided by the government and the previous reliable reception of government subsidies as proxies for trust and found both to have a significant positive impact. Fortunately for the research, a snow storm occurred in the sample area which killed some of the insured sows and provided a new research opportunity. It could be shown that in villages with more claim payments, demand for insurance coverage significantly increased. The positive effect of observing satisfied claims is also reported by Morsink & Geurts (2011).

³ In cost benefit analysis, a USD 17 per head financial literacy training yielded only an increase of formal financial service demand of about 5 percent; subsidies, on the other hand, of USD 14 increased probability of opening a bank account by 7.6 percent; making subsidies about 2.5 times more cost efficient than financial literacy training (Cole et al., 2010).

The importance of social networks was shown in another study from China. Respondents who participated together with friends in a microinsurance marketing event were more likely to take-up the offered product than respondents who were informed individually about the insurance (Cai et al., 2011). In an experimental design in Kenya, Dercon et al. (2011) could show that persons who were more trustful in a classical sender-receiver trust game, in which the receiver was always the field staff of the participating MFI, were also more likely to take-up insurance.

In a nutshell, studies on microinsurance other than life policies show mixed results for the influence of age and number of dependents. Income and asset endowment of the household as well as education and financial literacy of the respondent is positively related to microinsurance demand. In contrast to regular life insurance demand, risk aversion seems to be negatively related to insurance demand. Regarding the influence of trust, endorsement by a trusted party, membership in other financial groups, and observation of claim payment served as proxies and exhibited significant positive influence.

The demand for micro life insurance is so far a rather unexplored field. Presumably a lack of appropriate sample data is one of the main reasons for the limited research on this interesting and important topic. In the literature, two distinct data sets build the basis for quantitative micro life insurance research so far. The first is from 1030 households and once more from 350 households of one population in Ghana and the second from 330 households in Sri Lanka.

For the samples from Ghana, consistently a positive influence of age and negative for age squared is found which is interpreted as life-cycle effect (Bendig et al., 2010; Giesbert, 2010; Giesbert et al., 2011). In Sri Lanka, age is negatively related to insurance demand and 'no life-cycle effect at all' could be found (Bendig & Arun, 2011). The number of dependents exhibits a positive correlation in all micro life insurance studies (cf. Table 2). Income from non-agricultural activities increases the demand for life insurance in Ghana suggesting a negative influence of income seasonality (Giesbert, 2010). In Sri Lanka, on the other hand, self-employment and associated irregular cash flows have a positive influence on micro life insurance purchase (Bendig & Arun, 2011). Also the role of remittances is ambiguous between the

two countries. While remittances received are negatively related to insurance uptake in Ghana and believed to have an substituting effect (Bendig et al, 2010; Giesbert et al., 2011); they seem to serve as an additional financial resource in Sri Lanka and increase micro life insurance participation (Bendig & Arun, 2011). Wealth is consistently of positive influence in all studies (cf. Table 2). This suggests that the very poor households are still excluded from microinsurance (Bendig et al., 2010; Giesbert, 2010). Educational level of the household head is, generally, a positive predictor of insurance demand (cf. Table 2). The specific influence of financial literacy was not tested for micro life insurance so far, even though it is considered a more fruitful control factor than education levels (Giné et al., 2008; Cole et al., 2009, Bendig & Arun, 2011). The – theory contradicting – negative influence of risk aversion is often associated with a lack of product understanding (Bendig & Arun, 2011; Giesbert et al., 2011).

Commonly, also a location dummy is included in the studies on microinsurance demand and often found significant. However, since the meaning of this dummy changes from study to study – at the onetime meaning distance to MFI, the other it represents treatment groups, next environmental settings – it is not considered in the literature review above.

In summary, age is also showing mixed results for micro life insurance uptake. While a life-cycle effect and bequest motives based on age are found for the African sample, in Sri Lanka no life-cycle effect at all could be found by Bendig and Arun (2011). A motive for bequests, however, is suggested due to positive influence of household size in Sri Lanka. Regarding the economic household situation, mixed results are reported. While wealth is consistently related positive, employment and remittances exhibit ambiguous findings. Furthermore, the experience of economic shocks is generally positively associated, even if not always significant. For microinsurance, the effect of risk aversion is yielding different results. While constantly negative for agricultural insurance, it is also found of positive influence for micro life insurance. On the one hand, this perhaps suggests that understanding and trust for micro life insurance is more straightforward and the insurance product is thus not perceived as risk itself. On the other hand, in one study, participation in other social groups in general showed a positive sign. Thus, a positive influence of trust proxies – as in the agricultural insurance investigations – might also exists on micro life finance uptake. Participation

in an alternative credit and savings association was, to the contrary, negatively related – suggesting a substituting effect.

5 Methodology

Based on the previous review of life insurance demand literature and the objectives of this thesis, the following chapter expounds the research methodology chosen. First of all, the hypotheses tested in this analysis are stated and rationalized. Secondly, the micro life insurance product which provides the research opportunity is explained in more detail. Thirdly, the mode of research and the data collection process are described. Finally, the theoretical framework and research model applied build the fundament for the subsequent statistical analysis.

5.1 Hypotheses

Rooted in the objectives commonly associated with microinsurance and the previously reported studies on life insurance demand four hypotheses were formulated. The remainder of this subchapter provides the rational why these are considered relevant for the uptake of micro life insurance. Furthermore, the variables used and constructed to test these hypotheses are described.

5.1.1 Life-cycle effects

One important characteristic of a household is its current life-cycle stage. The life-cycle correlates with the probability of the insured's death and the level of total consumption if the breadwinner survives (Campbell, 1980; Lewis, 1989). Further the dependency of children will decrease in later stages of a household's life-cycle (Hammond et al., 1967). Hence, it is expected that households in an advanced life-cycle stage are less likely to participate in micro life insurance.

H1 : Life-cycle stage is negatively related to micro life insurance uptake.

The age of an insured is often considered an appropriate proxy to test the life-cycle effect (Duker, 1969; Ferber & Lee, 1980). However, prior investigations have found mixed results for the influence of an insured's age (cf. Table 1 and Table 2). In the microinsurance context, Giesbert et al. (2011) find a positive effect of age and negative effect of age squared for their sample from Ghana. Whereas Bendig and Arun (2011) find a negative influence of age and a positive effect for age squared in their sample from Sri Lanka. Investigating the factor age by itself, therefore, seems not to grasp the whole picture.

In this thesis, the investigation of life-cycle's effect is extended beyond the examination of respondent's age. In order to test the life-cycle hypothesis an interaction variable is constructed. The variable *life_cycle* is 1 for households with the household head over the age of 49 and children over the age of 16 (product $age49 * ch_{16plus}$). The value for age is chosen because Bendig and Arun (2011) report that an age of 49 was found as tipping point for micro life insurance demand. And children over 16 are assumed to be less dependent on the income of the household head and even likely to contribute to a household's income in times of hardship. This is supported by dependency definitions of the UN.⁴

5.1.2 Economic Capacity

Household's economic characteristics such as income and wealth are highly related to life insurance demand (cf. Table 1 & Table 2). They indicate households' ability to afford life insurance and the appropriate amount of insurance protection. In the microinsurance context, however, all households are generally of low income and wealth levels, many times earning only irregular cash flows (Churchill, 2007). Yet, the economic capacity of household differs and is expected to have a positive influence on micro life insurance uptake:

H2 : Economic capacity is positively related to micro life insurance uptake.

Due to characteristics of the microinsurance market, research on microinsurance demand already takes different measures into account besides income and wealth.

⁴ See http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/demographics/dependency_ratio.pdf

Households' wealth is often included in the analysis. But in contrast to regular insurance studies it is not measured as household's net capital wealth but rather as an asset endowment index. Households already owning most of the basic goods which are commonly acquired in the low-income peer group, have either more productive assets or less need to save for future acquisitions. Liquidity is an important issue in financially constrained household. Therefore, ability to access further credit and reception of remittances were also investigated in microinsurance demand studies (Giné et al., 2008; Giesbert et al., 2011; Bendig & Arun, 2011). The ability to access further credit might be an appropriate measurement for a household's decision to invest in insurance of productive assets; however, it is arguably not related to a household's decision to invest in life insurance. And also the examination of remittances produced contradicting results so far. It could not be determined if it serves as additional financial resource or substitute for insurance (Bendig et al., 2010; Bendig & Arun, 2011). In this thesis, it is hypothesized that in the microinsurance context differentiation due to household's economic situation needs to take a different approach. With the – by definition – scarce resources microinsurance customers have, the economic capacity of a household needs to be assessed differently. Therefore, measurements depicting the free or discretionary financial resources of a household are investigated. That is: form of employment, multi-earner household, relative asset endowment, consumption development and remittances. In addition, the payment of remittances by the household is introduced to test the influence of economic capacity. The payment of remittances is regarded as a sign that the household has a higher economic capacity relatively to the peer group and can thus afford remittance payments.

5.1.3 Financial Literacy and Product Understanding

In the microinsurance literature a lack of understanding for the insurance concept is often cited as one of the main reasons for low take up ratios (McCord, 2001; Chankova et al., 2008; Ito & Kono, 2010; Bendig & Arun, 2011; PlaNet Finance, 2011). Arguably, an understanding for the product is of high importance for the participation decision of a household's decision-maker. Therefore, a positive influence of product understanding on life insurance demand is expected.

H3 : Product understanding is positively related to micro life insurance uptake.

In the literature, the effect of education on life insurance demand is often examined and consistently found positive (cf. Table 1 & Table 2). It is suggested that higher formal education fosters need awareness and the inclination to protect dependents (Hammond et al., 1967; Truett & Truett, 1990; Beck & Webb, 2002). Also in the microinsurance context it is found that higher education levels increase the uptake of life insurance (Chankova et al., 2008; Giné et al., 2008; Giesbert et al., 2011; Bendig & Arun, 2011). Particularly, the importance of financial literacy of customers is stressed (McCord, 2001). Recently, a study found that financial literacy “is one of the strongest and most consistent predictors” of financial service demand among low-income households (Cole et al., 2010, p. 38). Understanding for the insurance concept itself, was reported as an often quoted reason for abstaining from an offered policy (Giné et al., 2008). And a test of insurance comprehension on a fictional product showed ambiguous results (Cole et al., 2008). To the best of my knowledge, this paper is the first which undertakes a comprehensive survey of *product knowledge* for the actual product offered and analyzes its effect on the micro life insurance purchase decision. Further, respondents’ *financial literacy* is also evaluated for the first time with respect to micro life insurance building up on the procedure applied by Cole et al. (2010).

5.1.4 Trust and Experience

The importance of trust on the demand for financial services in general is shown in previous studies (Doherty & Schlesinger, 1990; Guiso et al., 2008). Of all financial services, insurance is the one which requires the highest trust levels on the consumer side (Churchill, 2000; Cai et al., 2010). It is considered as a crucial factor to the success of microinsurance programs (Maleika & Kurakose, 2008). In this thesis, individual trust levels and the experience with the provider is expected to have an effect on microinsurance uptake.

H4 : High trust levels and a positive experience are positively related to micro life insurance uptake.

The importance of trust on microinsurance participation was recognized by previous studies on agricultural insurance policies. Measurements related to clients trust comprised, for example, endorsement by a trusted person, high-involvement of socializers, observation of claim payment, and experiments with sender-receiver trust games (Cole, 2008; Cai et al., 2010, Dercon, 2011).

To assess trust levels of individuals in this research, a Likert-scale type survey was utilized. First of all, respondents were asked to indicate their degree of *trust* in general and towards specific groups of persons. Second, a set of questions inquired about the respondents *experience* with the insurance socializer, the MFI, and the insurance provider. Third, the *membership* in a ROSCA-type informal finance group was also evaluated and serves as a proxy for trusting others with one's money. Finally, *brand recognition* was measured to assess if a reputable brand is of positive influence. However, causality direction in this respect is not further tested.

The hypothesis regarding life-cycle stage (H₁) and economic capacity (H₂) are related to the characteristics of the household, whereas product understanding (H₃) and trust levels (H₄) are associated with the characteristics of the decision-maker. The data set which will be subject to the analysis was generated by the researcher. The following chapter describes the background of the data set and provides an overview of the data collection process.

5.2 Background and suitability of the researched product

A crucial requirement for the purpose of the present analysis is the voluntary nature of the insurance product offered to the clients. Generally, the most widespread microinsurance concept is so called credit-life products which are often mandatory attached to the provision of microcredit and, hence, less suited for the examination of demand factors. The product subject to this research is a voluntary capital-endowment life insurance policy which integrates basic health and life insurance with a saving component. The product, *Tamadera*, was developed by the multinational insurance company Allianz. It is actually an adaption from *Sarva Shakti Suraksha*, a microinsurance product which was successfully launched 2008 in India, to the Indonesian market. Compared to the product successfully marketed in India, *Tamadera*

has lower death benefits and no interest payments but offers coverage for five defined serious illnesses⁵. Tamadera policyholders pay IDR 10,000 (approx. USD 1.10) weekly for a period of five years. During those five years the customer benefits from insurance against the five specified, common critical illnesses and death. In either case, the beneficiaries receive IDR 2.5mn (approx. USD 272.50) as one-time payout and the policy automatically terminates. In case of survival, the insurance plan returns the complete savings amount net of interest at maturity. Hence, instead of interests customers benefit from a basic health and death protection plan during the policy duration. This might be an appealing characteristic to the preponderant Islamic market, even though the product is not classified as a takaful insurance and not marketed as such. The reason to include critical illness insurance is rather to differentiate the offering from the widespread local ROSCA schemes, *Arisan*, than to cater to requirements of Islamic insurance.

The product was introduced in the Indonesian market in the end of 2010. For sales and distribution Allianz Life Indonesia cooperated at the time of research with Vision Fund Indonesia (VFI). VFI, a subsidiary of the Christian development organization World Vision, is striving to empower the enterprising poor and liberate families from poverty. The non-profit organization is targeting groups of entrepreneurial women with existing microbusinesses and a lack of access to commercial banks to provide microloans ranging between USD 50 and USD 600 (average USD 175) in the communities World Vision is present (KIVA, 2012, www). In June 2011 VFI served 7,584 MFI clients in the Jakarta region. The insurance plan is offered to the institution's microcredit customer base.

The product is socialized by representatives of the MFI to groups of about 5 to 10 persons. The representatives approach their clients with simple, illustrative material and explain the product's structure before offering them the choice to participate in the five year insurance scheme. If people decide to sign up for the insurance product, the MFI officers transmit client data electronically to the insurer who in return issues the policy.

⁵ The serious illnesses covered are Cancer, Heart Attack, Kidney Failure, Major Burns, and Stroke.

The launch of this microinsurance product provided a new research opportunity because it is the only such voluntary life insurance product for low-income people in Indonesia and one of the few products globally that combines death and health benefits with the character of a savings products. However, its voluntary nature is the crucial factor for the investigation of household demand drivers.

In addition to the products favorable design for the research interest, Indonesia is particularly suitable for commercial pilot studies and can provide a ground for aging experience (McCord et al., 2006). Dense population of 117 persons per square kilometer and a high literacy rate of 88.5 percent facilitate quick distribution of new microinsurance products. Being the 5th largest country worldwide and experiencing high economic growth rates make it an attractive market itself. Experiences made in this favorable environment can potentially be utilized for the provision of microinsurance elsewhere.

In a nutshell, Tamadera is a deposit-cum-insurance scheme distributed via a local and trusted partner, has a cap on claim payments, utilizes technology in order to reduce costs, and is simply structured and easy to understand (cf. Appendix). Hence, the product fulfills many aspects which are considered vital in the literature (Murdoch, 2002; Akula, 2008). We therefore consider the analysis of the Tamadera product and its disbursement appropriate to identify reasons other than product design which influence the take-up for new microinsurance products in a typical market environment.

5.3 Data Collection

In 2011, an own data collection was conducted in Indonesia for the purpose of this thesis. The respondents were selected from 56 microfinance groups spread across 24 different areas in the Jakarta area. In total 208 responses were collected using a personally administered, comprehensive questionnaire. Of the 208 respondents 99 voluntary chose to participate in a microinsurance scheme and 109 abstained from the offered product.

The decision for an own data collection was due to the lack of available data suited for the objective of this research. Furthermore, gathering additional data and diversifying data bases is a crucial task in the novel and dynamic field of microinsurance research.

The objective of this thesis is to investigate the factors influencing the take-up of voluntary microinsurance policies. The above review of relevant literature revealed that a variety of demographic, social, and economic factors proved to be influential on a household's life insurance demand in the past. For microeconomic studies on household level a comprehensive questionnaire addressing these areas has proved the most appropriate tool to gather the required data in previous research (e.g. Hammond et al., 1967; Duker, 1969; Burnett and Palmer, 1984; Lewis, 1989; Showers and Shotick, 1994; Bendig et al., 2010; Cole et al., 2008; Bendig and Arun, 2011).

5.3.1 Sample Selection

The data sample was selected from clients of a microfinance provider, namely *Vision Fund Indonesia* (VFI), who services – at the time of research – approximately 7,500 MFI clients in the Jakarta region. The sample analyzed in this thesis is thus a subgroup of the population targeted by VFI and subject to pre-selection. Being the pilot distribution partner in Indonesia, VFI was offering the product as a voluntary choice to its existing clients since November 2010⁶. At the time of the field research, the product lacked considerably behind its projected sales numbers with a total of 136 clients who had paid the weekly premium. Almost three quarters of the insured were interviewed in the process of the study and matched by an equal number of persons who chose to abstain from the offered microinsurance program. In practice, the product was socialized by representatives of the MFI to groups of about 5 to 10 persons of whom some decided to participate and others to abstain from the offer. Since the population subject to this research did not meet the projected numbers until interviews commenced, a high response rate was of particular importance to obtain sufficient data sets for the subsequent statistical analysis. The small population required a particular carefulness for the selection of interview partners. Therefore, data from the insurance partner and distributing MFI was analyzed and such microfinance groups which comprised of

⁶ Due to low take up, later it was considered to make the product mandatory for more affluent microcredit customers.

participants and non-participants were primarily selected in order to mitigate bias from fixed-effects of the MFI representative, context of socialization or group dynamic effects.

5.3.2 Design and Mode of Questionnaire

As pointed out above, a comprehensive questionnaire was considered to be the most appropriate instrument to gather the required data. When designing a questionnaire the “experience of those who have gone before” should be utilized (Webb, 2000, p. 197). Thus the questionnaire design is based on previous studies in a similar context (Giné et al., 2008; Cole et al., 2010) and adjusted for the additional hypotheses which are intended to be tested. When formulating the questions, not only the data need according to the hypotheses was considered but also social and cultural aspects in order to increase the reliability and validity of the given responses. After consultation of academics and practitioners, the questionnaire was tested in a pilot study with actual microfinance customers and further refined after each round. The final questionnaire consisted of 47 closed-end questions and 36 Likert-type scaled questions spread over nine pages (*cf.* Appendix). It was divided into four sections: A. Attitude towards microinsurance and providers; B. Economic situation of household; C. Product Understanding and Financial Literacy; D. Demographic Information.

Initially, the questionnaire was designed to also address clients’ risk aversion. Risk aversion is arguably considered an important determinant of insurance demand and thus part of several quantitative studies on microinsurance demand (Bendig et al., 2010; Bendig & Arun, 2011; Chankova et al., 2008; Cole et al., 2008; Giesbert et al., 2011; Giné et al., 2007). However, reliably surveying respondents’ risk aversion is difficult. In the previous studies on micro life insurance demand, respondents were asked for a self-assessment of their risk-taking behavior or risk behavior (Bendig & Arun, 2011; Giesbert et al., 2011). Both studies acknowledge the limitations of this question design, yet incorporate it as a proxy for risk aversion in their analysis. Other studies on microinsurance in general used a superior but more intricate experimental design (Cole et al., 2008; Giné et al., 2007). For the study at hand, a mixture of these methods was planned. A question tree regarding the respondents’ time-preference should reveal their grasp for time-value of money and risk aversion. However, during the pilot phase this

part of the questionnaire proved to be too complex and too much facilitation by the interviewer was needed. Therefore, it was removed from the final questionnaire design.

The mode of questionnaire administration had to take the sampling frame, characteristics of the target population, and required response rates into consideration. The objective of high data reliability and validity was also of high importance regarding the way of questionnaire administration. Face-to-face interviews are found to generate more valid responses than other survey methods (Belson, 1986). In addition, the specific characteristics of the research subjects, who were unfamiliar with answering questionnaires and in part showed low literacy levels; as well as the need for high and reliable response rates favored the research mode of personally administered, questionnaire-based interviews. On the one hand, this research form facilitates the understanding of the respondents for the asked questions. On the other hand, it also guarantees that questions are answered individually and the importance of genuine answers can be stressed and somewhat controlled. A personal administration of questionnaires is also expected to increase the response rate from the interviewed subjects due to higher involvement of interviewer and interviewee (Yu and Cooper, 1983). Consequently, the personal administration of questionnaires was regarded as the most appropriate way of conducting the data collection. The interviews were conducted over a time span of three months. Interpreters were recruited locally to assist with the data collection. Before going to the field for the actual data collection, the research assistants were made familiar with the questionnaire, learned about the importance of independent and genuine data collection, and mock interviews with feedback discussions were conducted. The interview sessions were organized with the help of the local distribution partner, VFI. Thus it was unavoidable that they would perceive an affiliation between the interviewers and VFI. However, during the interview process itself the interviewers aimed to establish an independent atmosphere and anonymity of answers was reassured to the respondents. The fact that interviews were conducted in the familiar atmosphere of the respondents' homes and neighborhoods eased the situation further.

Despite careful questionnaire administration, reassurance of the respondent's anonymity and stressing the fact of the importance of genuine answers for this independent

academic interview, answering bias due to personal motives cannot be completely mitigated. In order to enhance data validity, however, subsequently to the data collection process via the comprehensive questionnaire, the gathered data was cross-checked with client information provided by the MFI and the Insurer.

5.4 Theoretical Framework

This research on factors influencing the demand for micro life insurance continues in the tradition of the research on regular life insurance. Consumers are expected to make use of financial markets to level their lifetime consumption by means of savings and credit (Ando & Modigliani, 1963). Basically, life insurance contracts can be considered as a means of saving (Beck & Webb, 2003). Therefore, it is no surprise that the first widely recognized model for life insurance demand by Yaari (1965) takes the works of Marshall (1920) and Fisher (1930) on the utility of savings as a starting point. Life insurance provides an instrument to reduce uncertainty in a household's income stream due to the death of the breadwinner (Browne & Kim, 1993). Hence, Yaari (1965) extends the previous saving models with a provision for income uncertainty, due to lifetime uncertainty, in order to explain the demand for life insurance. He argues that for a proper evaluation of life insurance demand the context of a consumer's lifetime allocation process must be considered. In his adapted life-cycle model the utility of an arbitrary consumption plan $U(c)$ is a function of the consumption c at any time t valued by g and discounted by α plus the value of any bequest S at random time of death T weighted by β and φ for time and size of bequest respectively.

$$(1) \quad U(c) = \int_0^T \alpha(t)g[c(t)]dt + \beta(T)\varphi[S(T)]$$

In a world where life insurance is available, the consumer is able to separate the consumption decision from the bequest decision and the consumption of life insurance can be beneficial to an individual who is interested in leaving any bequest (Yaari, 1965). The bequest motive is not further expounded in Yaari's (1965) model. From a philosophic, utilitarian view, however, the virtuous behavior is on which increase the welfare of all affected individuals (Hume, 1751); and thus an individual can increase his

own expected utility by buying a life insurance policy to protect dependents. In Yaari's (1965) model the expected utility of the life insurance purchaser depends on the discounted present utility of consumption and the discounted utility of any bequest.

Lewis (1989) advances this model by incorporating the preferences of dependents in the model. He assumes that the breadwinner in a family conducts regular income transfers to his dependents. Therefore, the dependents have their own utility function on the breadwinner's uncertain income. Formerly exogenous explanation factors are made endogenous and the demand for life insurance can be analyzed according to the preferences of dependents. A utility maximizing dependent will prefer that some income is allocated to insure the ability of the breadwinner to generate non-capital income (Lewis, 1989). In the maximization problem (Equation 2), F is the face value of all insurance contracts written on the breadwinner's life. The probability of the breadwinner's death is written as p . The loading factor of insurance is noted as l . And the dependents' risk aversion is accounted for in δ . TC stands for the present value of dependents' total consumption in case the breadwinner survives and, finally, W is the household's net wealth.

$$(2) \quad (1 - lp)F = \max \left\{ \left[\frac{1 - lp}{i(1 - p)} \right]^{\frac{1}{\delta}} TC - W, 0 \right\}$$

In this model five factors explain the demand for life insurance: (i) policy loading factor l , (ii) probability of breadwinner's death p , (iii) household's risk aversion δ , (iv) net wealth W , and (v) total transfer of wealth on dependents TC . While the policy loading factor is subject to actuarial calculations, the other factors can be inferred from socio-economic characteristics of households (Lewis, 1989).

More recently and adequately for the microfinance context, Ginè et al. (2008) provided a framework regarding the demand for rainfall index insurance in rural India. The determining factors here are: (i) risk aversion, (ii) size of risk exposure, (iii) correlation between risk insured and insurance payout, (iv) high actuarial value of insurance, and (v) financial constraints of household. Their one-period model is based on the assumption of symmetric information and thus neglects effects of moral hazard and adverse selection. The concepts of moral hazard and adverse selection from new institutional economics play a crucial role in the insurance market. Various

contributions (e.g. Rothschild & Stiglitz, 1976; Cawley & Philipson, 1996) assign them a hampering effect for the development of insurance markets. Bendig and Arun (2011) consider adverse selection and moral hazard problematic in the context of micro life insurance since the insurer is disadvantaged in assessing the individual's death probability at reasonable costs *ex ante* and the insured's risk taking behavior might change *ex post*. Murdoch (1995), however, argues that life insurance is particularly suited to explore new markets because of low adverse selection and moral hazard effects and easy verification of claim legitimacy. Therefore, adverse selection and moral hazard considerations are excluded from the scope of this analysis.

The theoretical model applied in this thesis follows the approach by Bendig and Arun (2011) which is rooted in the described models of Lewis (1989) and Giné et al. (2008). Bendig and Arun (2011) argue that a household's participation in a microinsurance scheme is conditional on its wealth status (w), other household characteristics (Z), personal characteristics of the household's decision maker (H), regional characteristics (R), and an uncovariant error term (u). Thus the probability that a household participates in an offered insurance scheme is described with the following equation:

$$(3) \quad p_i = f(w_i, H_i, Z_i, R, u)$$

The dependent variable in this econometric analysis is of binary form: either the respondent is participating (1) or is not participating (0) in the offered insurance scheme. Therefore, the common ordinary least square (OLS) regression method cannot produce the best linear unbiased estimator and is not applied. In fact, a maximum likelihood estimation method is apt for the analysis at hand. The binary probit function used is:

$$(4) \quad p_i^* = \beta_1 w_i + \beta_2 H_i + \beta_3 Z_i + \beta_4 R + u_i$$

with $p_i^* = 1$ if the respondent is participating in the insurance scheme and $p_i^* = 0$ if the respondent is not participating.

The previous chapter reviewed the literature on life insurance demand and reported a set of standard explanatory variables which have become widely accepted and repeatedly

tested in empirical investigations. Therefore, they will be included in the econometric analysis in this thesis. In addition, this paper wants to explore a set of variables which are expected to influence the factors of the above model for insurance participation, related to the household characteristics (Z) and the characteristics of the decision-maker (H). The additional areas under investigation can be clustered into four categories: (i) life-cycle effects and (ii) economic capacity of the household Z , (iii) product understanding and (iv) trust of the respondent H . In the following chapter, firstly, the collected data is described and, secondly, a marginal effect probit regression analysis is conducted.

6 Empirical Results and Analysis

In this chapter, the data sample collected is analyzed and tested for the hypotheses stated above. To begin with, a statistical description of the collected data provides an overview and understanding for the sample. Subsequently, the data set is regressed on insurance participation of the interviewed sample. A marginal effect probit regression is reported to allow for evaluation of the individual variables' effect.

6.1 Data Description

The data collection process yielded an array of data from microinsurance participants and non-participants. Before the above expounded hypotheses are tested applying econometric analysis, a sound understanding for the sample and its characteristics is expedient. Therefore, in the following an overview of the data set is given using descriptive statistics. The data comprises a sample of 208 microfinance customers in the greater Jakarta area. Respondents from 56 different MFI groups were interviewed in 25 different locations. The selection of groups interviewed was driven by two objectives: firstly, to prefer groups which consisted of participants and non-participants; secondly, to achieve parity of the two strata. The majority of the respondents live in an urban surrounding (83.7 percent). All 208 interviewed individuals were offered to participate in the microinsurance scheme according to the information provided by *Vision Fund Indonesia*. However, 12 respondents claimed that they were never offered any insurance

scheme. Ultimately, 99 (47.6 percent) respondents voluntarily decided to take part in the offered micro life endowment insurance scheme, namely *Tamadera*.

Demographics

Evaluating the demographic characteristics of respondents reveals that the sample is skewed for gender with 91 percent of respondents being female. This is mainly due to the lending policy of the MFI, who preferably lends to groups of women due to better repayment experiences. Similarly, Bendig et al. (2010) finds that women represent the preferred target groups for MFI's due to higher social connectivity in groups and incentive to provide security to their families. The gender distribution in this sample is close to the distribution in the MFI's total client base of 7,582 persons (89.1 percent female). The average respondent is 39.3 years of age (Standard Error (SE) 0.61), Muslim (90.9 percent) and married (86.5 percent). For comparison, the average age for Indonesia is 28.2 years and 86.1 percent are Muslim (CIA Factbook, 2011). Most respondents consider themselves to be rather religious with a standardized average score of 0.83 (SE 0.01) on three Likert-scale type indicators. The typical household size is 4.51 persons (SE 0.11) with 2.72 children (SE 0.11). The household's children are in average 17.3 years old and spend 8.3 educational years in school. The mean for respondents' years of schooling is 9.92 (SE 0.22). A difference between the two strata suggests general higher education of insurance participants with 10.2 (SE 0.32) school years and non-participants with 9.68 (SE 0.31) respectively. Consequently, the proportion of participants with secondary or higher education exceeds that of non-participants by 13 percent (cf. Table 3).

Financial Literacy and Product Knowledge

One focus of this thesis is to better encompass how education and knowledge relate to the participation in microinsurance offers. Therefore, in addition to educational levels of respondents, their grasp of mathematical and financial concepts as well as their individual knowledge of the microinsurance product offered is evaluated.

Formal education of individuals is expected to be related to financial literacy. And, indeed, a Pearson correlation coefficient of 0.27 between formal education and financial literacy scores is found (cf. Appendix: Table 19). The financial literacy of interviewees was tested using a set of seven questions on fundamental mathematical and financial

concepts such as: (i) summation, (ii) distraction, (iii) multiplication, (iv) percentages, (v) diversification, (vi) interest, and (vii) inflation. The questions applied to test respondents' knowledge on these concepts are taken from the Harvard Business School questionnaire used by Cole et al. (2010) and adjusted for the survey context. The relative amount of interviewees' correct answers is reported in the table 3 below. Results show that insurance participants consistently achieve higher financial literacy scores than non-participants. Only in the area of diversification the group of non-participants performed slightly better.

To assess the sample's understanding for fundamental insurance concepts in general and specific attributes of the product at hand in particular, six closed-end questions were included in the survey (cf. Appendix: 9.3 Questionnaire). Insurance participants performed better in all six knowledge areas (cf. Table 3). On the question regarding which five events constitute a termination of the insurance policy, insurance participants could identify in average 2.72 (SE 0.14) events and non-participants 2.33 (SE 0.16) events. Asked to name the five critical illnesses insured under *Tamadera* participants recalled 1.91 (SE 0.16) and non-participants 1.59 (SE 0.14) respectively. The question on how much the product will yield in the end of the five year term was answered correct by 43.3 percent of non-insured and 45.5 percent of the insured interviewees. When inquired about the financial effect of an insurance claim, 71.7 percent of participants returned the correct answer and 58.1 percent of non-participants. Particularly, interesting is the result on the lock-in period of the insurance. Anecdotal and analytical evidence suggests that the five year term of *Tamadera* is a too long period to commit to and a main reason deciding against the product (cf. Appendix: Table 18). Thus an understanding of the possibility to opt out of the scheme could have a mitigating influence. And, indeed, the question on fund lock-in period reveals that 38.5 percent of non-participants believe that they can get their paid in funds back only after the course of five years. However, even 47.5 percent of the participants believe in such a long lock-in period. The correct answer – 12 months – is given by 23.1 and 25.3 percent of non-participants and participants respectively. The last question on the appropriate cancelation fee was answered correct by 55.2 percent of non-participants and 59.6 percent of participants. Based on all answers, a product knowledge score was constructed to reflect the understanding of the respondents for the offered product. The mean for this indicator is 0.43 (SE 0.02) for persons abstaining from *Tamadera* and 0.49

(SE 0.02) for participants. The level of significance of difference for this indicator is significant at the 5 percent level (cf. Table 11).

Table 3: Education, financial literacy, and product knowledge of respondents

	Non-Participants	Participants
Higher Education	69.7%	82.8%
Financial Literacy		
Summation	81.0%	92.9%
Distraction	81.0%	84.8%
Multiplication	60.0%	70.7%
Percentages	45.3%	59.6%
Diversification	29.2%	26.3%
Interest	83.0%	90.9%
Inflation	37.8%	51.5%
Product Knowledge		
Termination Events (average out of 6) ⁺	2.33	2.72
Coverage (average out of 5) ⁺	1.59	1.91
Product Yield	43.3%	45.5%
Claim Benefit	58.7%	71.7%
Lock-in Period	23.1%	25.3%
Cancelation Fee	55.8%	59.6%

Note: Table states the portion of respondents who have secondary or higher education and who answered the corresponding questions for financial literacy and product knowledge correctly in percent; all items separated for the non-participants and participants strata.

⁺ average correct answers

Source: Author's calculation.

Occupation

Commonly, also economic characteristics of households are investigated as explanatory factors for life insurance participation (cf. Chapter 4). In the present study, a set of data was collected in order to analyze the economic capacity of sample households. These comprise occupation of household earners, household's average daily expenses as a proxy for income, and asset endowment of respondents' households. In addition, the interviewed MFI clients were asked about any remittances they pay or receive and their personal perception of development regarding their household's economic situation.

With respect to occupation, respondents were asked to indicate to which out of six typical job categories they and their spouse are associated with. The categories were

Employee, Trader, Farmer, Food Stall, Housewife, or Production of Goods. If they could not associate themselves with one of these categories, the option to name another profession was provided. Being an entrepreneur was repeatedly mentioned and is thus reported in addition to the six categories. The overview in table 4 shows that the respondents themselves mainly fall into the category of being either a Trader or a Housewife. This result has to be considered together with the fact that 91 percent of sample is female due to the marketing policy of the partnering MFI. Divergence between *Tamadera* participants and non-participants are minor. The female spouse's income mainly seems to stem from petty trade and serves as complementary financial resource. For the spouses – that is mainly the male breadwinner of the family – differences are somewhat more striking (cf. Table 4). In the group of participants 19.7 percent more employees and 13.2 percent less traders are found. These results hint at a distinct influence of regular income streams and working capital needs on the participation in the microinsurance scheme.

Table 4: Occupations in sample households

Occupation	Respondent		Spouse	
	Non-Participant	Participant	Non-Participant	Participant
Employee	6.5%	10.1%	34.1%	53.8%
Trader	45.4%	50.5%	33.0%	19.8%
Farmer	1.9%	0.0%	3.3%	1.1%
Foodstall	10.2%	9.1%	4.4%	2.2%
Housewife	26.9%	25.3%	0.0%	4.4%
Production	1.9%	3.0%	2.2%	2.2%
Entrepreneur	3.7%	0.0%	11.0%	7.7%
Other	3.7%	2.0%	12.1%	8.8%

Note: Table states main occupations found in sample households segregated for respondent and respondent's spouse and the non-participant and participant strata.

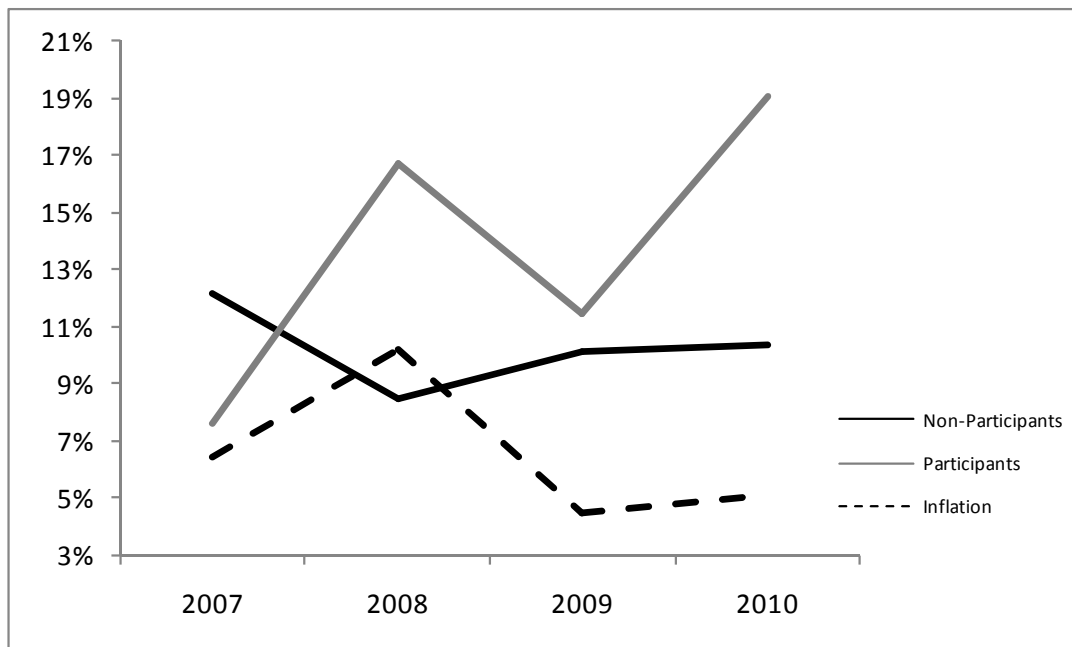
Source: Author's Calculation.

Income

The level of income is one of the most important predictors of life insurance consumption found in the literature review above. However, since income is rather a personal matter, not readily shared, and often subject to considerable fluctuations among the microinsurance target group, the questionnaire asked for average daily

expenses instead. This is in line with the World Bank approach to measure poverty levels as daily consumption and not income (Coudouel et al., 2002). In order to allow for an analysis of dynamic effects of consumption levels, the questionnaire asked for the average daily expenses of the past five years. Of course, the report of consumption levels of past years is subject to bias of the interviewee's ability to remember exact numbers for several years ago. However, the collected data for past years can still serve as an indicator of the direction of consumption development. The development of average daily expenses for both groups over the last five years is shown in figure 2.

Figure 2: Average growth rate of daily expenses



Note: The figure depicts the average growth rate of daily expenses separated for the non-participants and participants strata and benchmarked against the average annual inflation for each year between 2007 and 2010.

Source: Author's calculation.

The above exhibit reveals that the income development for both groups is positive for the period from 2006 to 2010. However, the compounded average growth rate (CAGR) of consumption is noticeably higher for participants (13.7 percent) than non-participants (10.3 percent) and well above average inflation of consumer prices (6.5 percent)⁷.

⁷ Inflation rates are retrieved from <http://www.inflation.eu/inflation-rates/indonesia/inflation-indonesia.aspx> (02/01/2012).

In absolute numbers the group of participants spends in average IDR 67,310 per day (USD 7.5) and non-participants IDR 58,430 per day (USD 6.5) in 2010. In the average household this constitutes daily expenses of USD 1.66 and USD 1.41 per capita for participants and non-participants respectively. The development of consumption during the last year is significantly different for both groups at the five percent level (cf. Table 11). Insurance participants experienced an increase of daily expenditures of IDR 10,778 (USD 1.20), whereas expenditures of non-participants only increased by IDR 5,495 (USD 0.61) during the same period.

Asset Endowment

The asset endowment of households was also subject to the survey. The respondents were asked to indicate which of nine assets their household possesses. The list comprised a set of assets of different value and commonly desired and acquired by Indonesian households. Namely these are: Power Supply, Clean Water Dispenser, Fridge, Mobile Phone, TV, Motorcycle, Computer, Car, and House. The investigation revealed that asset endowment of participants is relatively higher in all categories (cf. Table 5). Only regarding housing property the relative ownership in the non-participant strata is slightly higher. For further analysis, the asset data was aggregated and an equally weighted asset endowment index (AE_{ix}) was constructed. The index value is 0.60 (SE 0.02) for non-participants and 0.67 (SE 0.02) for participants with a level of significance of difference significant at the 1 percent level (cf. Table 11).

Table 5: Asset endowment of sample households

Asset Endowment	Non-Participant	Participant
Electricity*	92.5%	94.9%
Clean Water Dispenser	53.8%	66.3%
Fridge	74.3%	84.8%
Mobile	75.2%	88.9%
TV	95.4%	98.0%
Motorcycle	67.9%	81.8%
Computer	21.1%	26.3%
Car	4.6%	7.1%
House	59.6%	58.6%

*Respondents living in boarding houses may not have their own electrical connection.

Note: Table shows the portion of sample households which own the stated assets in percent and separated for non-participants and participants strata.

Source: Author's calculation.

Remittance

Previous work on the uptake of microinsurance recognized the role of remittances; though, with mixed results. The study by Giesbert et al. (2011) in Ghana found that remittances received by a household have a significant ($p < 0.05$), negative influence on microinsurance participation, whereas Bendig and Arun (2011) found a significant ($p < 0.05$), positive effect. Suggested interpretation of these results were either that remittances work as a kind of substitute for insurance products (Giesbert et al., 2011) or that they provide an additional resource which can be allocated to microinsurance participation (Bendig & Arun, 2011). In the literature, so far, only the role of remittances received by a household was considered. In this study, additionally the role of payment of remittances by a household is examined. As these could either have a negative effect due to the outflow of funds or, as hypothesized in this thesis, have a positive effect since it is an indicator of relatively higher economic capacity of a household. Therefore, survey subjects were asked about any remittances they receive or pay and the monthly value in IDR of these. The results differentiated for the group of *Tamadera* participants and non-participants are reported in table 6 below.

Table 6: Remittances paid and received

Remittances		
	Non-Participants	Participants
Received	12%	13%
<i>Mean Value</i>	479,167	1,179,286
Paid	6%	15%
<i>Mean Value</i>	221,429	392,667

Note: The table states the portion of respondents who received and/or paid remittances in percent as well as the mean value of these payments per household in IDR separated for non-participants and participants strata.
Source: Author's calculation.

The table 6 above shows an equal distribution of remittance reception across both groups. Yet, the value of remittances received is considerably higher for microinsurance partakers. Regarding the payment of remittances, however, it shows that nine percent more of the *Tamadera* participants are paying remittances to other households. And also the value of the remittances paid is higher than for the non-participating households. A possible inference from this in light of the results by Giesbert et al. (2011) and Bendig & Arun (2011) might be that influence of remittances received depends on the value of them. For lower values they serve as a substitute to microinsurance, however, once a certain threshold is exceeded they are regarded as additional financial resource fostering microinsurance participation. A better indicator for households' economic capacity might be their payment of remittances as a sign of economic capacity in excess of personal needs.

Economic Shocks

Besides economic capacity, another conceivable factor influencing the demand for insurance is the previous experience of materialized risks. Previous work on microinsurance demand investigated the influence of the experience of death, illness or other severe shocks to the household. In Ghana a positive but non-significant effect for death and illness and non-significant, negative for other shocks was found (Giesbert et al., 2011). In Sri Lanka a positive, non-significant influence was found for death experience and a negative and significant effect for severe illnesses or other shocks (Bendig & Arun, 2011). For this study, data was collected regarding the influence of the experience of death, illness, flood, fire, and tuition payments. Table 7 shows that most

households were affected by tuition payments in the past (NP 69.7 percent / P 67.7 percent). However, for none of the risk events a significant level of difference could be found. Absolute numbers, though, show that 6.4 percent more households of participant had the experience of death in their household.

Table 7: Shock experience of sample households

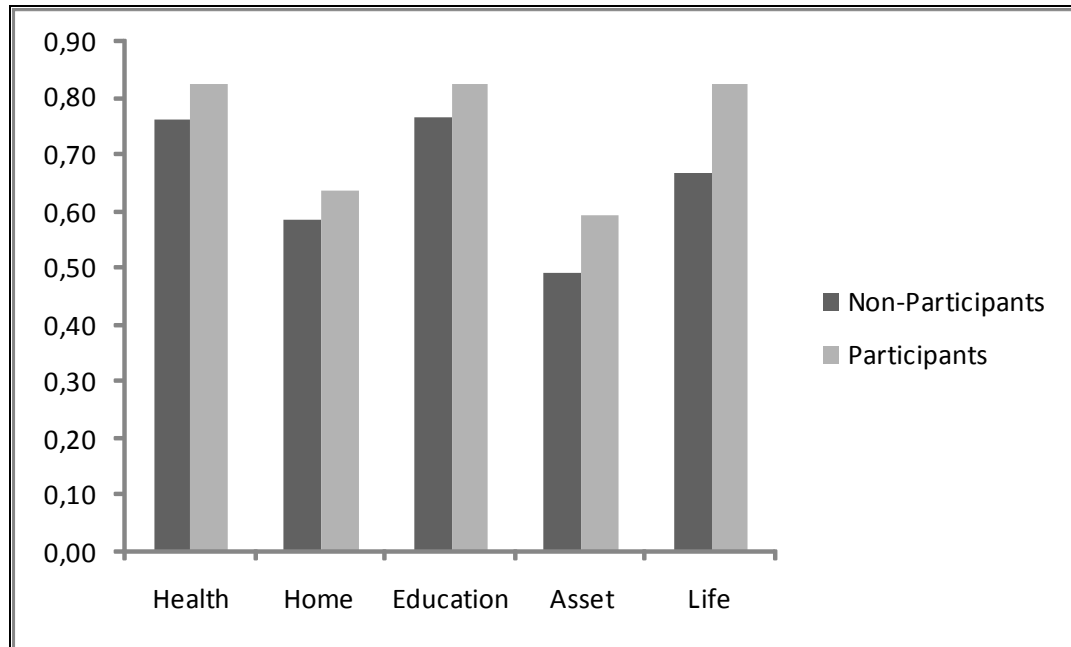
Shock Experience	Non-Participants	Participants
Death	13.8%	20.2%
Serious Illness	11.9%	14.1%
Flood	24.8%	22.2%
Fire	5.5%	3.0%
Tuition	69.7%	67.7%

Note: The table states the portion of households which experienced the indicated shocks separated for non-participants and participants strata.

Source: Author's calculation.

Demand Research

In many countries microinsurance market research was conducted which tested prior to product conception and piloting of microinsurance policies if a demand exists. These studies usually use qualitative tools, like interviews with the target population and focus group discussions, to assess demand for certain insurance products. A study conducted by the GTZ, UNDP, and Allianz for Indonesia in 2006, revealed five major risks people are concerned about: (i) serious illness, (ii) education costs, (iii) loss of harvest, (iv) death of a relative, and (v) accidents (McCord et al., 2006). Part of the questionnaire in the survey underlying this thesis asked people about their interest in certain insurance products. The motivation for this question is to investigate if *ex ante* statements made about interest in certain insurance products – as it is typically done in demand studies – are corresponding with actual microinsurance take-up. The questionnaire asked the respondents to rate on a 7-point Likert-scale their interest in five different insurance products, namely Health, House, Education, Motorcycle/ Assets, and Life insurance. This question was asked in an early part of the questionnaire before respondents were asked about their participation in *Tamadera* to mitigate that respondents are influenced by their earlier answers given. The results are differentiated for the two groups interviewed and means reported in figure 3 below.

Figure 3: Interest in insurance products

Note: The graph depicts the respondents' subjective interest in given insurance products indicated on a 7-point-Likert scale and standardized between 1 and 0 separated for the non-participants and participants strata.

Source: Author's calculation

The graph shows that participants indeed report a higher interest in insurance products across all product types. While this difference was particularly strong for asset and life insurance with a level of significance of difference of 3 percent and below 1 percent respectively, it also shows that the interest in health and education insurance was high across the whole sample (Mean 0.79 / SE 0.02). This result suggests that the indicated interest in insurance products indeed corresponds with actual participation rates. Noteworthy, however, one question remains: 21 percent of non-participants reported a high interest in a life insurance product, yet decided to abstain from participating in the offered product.

Trust and Client Experience

Trust is deemed a highly relevant factor regarding individual's participation in financial markets (cf. Doherty & Schlesinger, 1990; Guiso et al., 2008). It is one objective of this thesis to examine if an individual's degree of trust in third-parties and, particularly, the players involved in the microinsurance transaction influences the respondent's decision to participate in the offer. Firstly, to assess the degree of trust an array of Likert-items

regarding individual's trust and experience with the involved parties, namely the socializer, the MFI, and the insurer, is asked (cf. Appendix: 9.3 Questionnaire). Secondly, respondents brand recognition is examined since a strong brand can be associated with trust. Finally, the interviewed microfinance customers were asked how long they cooperate with the MFI and if they participate and informal financial saving scheme as well.

Results show that microinsurance participants in average exhibit higher degree of trusts towards other people (cf. Table 8). Significant in a t-test for level of significance of difference revealed the degree towards relatives (5 percent level) and the insurer (10 percent level). Also the respondents' experience with the socializer is significantly different (5 percent level) and better for the group of microinsurance participants. While the experience with the MFI and attitude towards it is not significant it also shows a higher mean value for the insurance buyers. And, finally, the attitude towards the insurer is suggested to be significantly different (1 percent level) and more benevolent for the group of participants.

Table 8: Trust and experience of respondents

Ordinal Variables	Non-Participants		Participants		Full Sample		t-Test Pr(T > t)
	Mean	SE	Mean	SE	Mean	SE	
Trust							
General	0.48	0.03	0.45	0.02	0.46	0.02	0.44
Neighbors	0.54	0.03	0.55	0.02	0.54	0.02	0.81
Friends	0.63	0.02	0.64	0.02	0.63	0.02	0.74
Relatives	0.73	0.02	0.80	0.02	0.76	0.01	0.01
Work colleagues	0.55	0.03	0.59	0.02	0.57	0.02	0.31
MFI	0.78	0.02	0.80	0.02	0.79	0.01	0.56
Insurer	0.70	0.02	0.76	0.02	0.73	0.02	0.05
Experience							
Socializer Index	0.76	0.02	0.82	0.02	0.79	0.01	0.01
MFI Index	0.80	0.01	0.82	0.01	0.81	0.01	0.11
Insurer Index	0.74	0.02	0.82	0.01	0.78	0.01	0.00

Note: The table states the respondents' subjectively rated trust levels in general and for certain groups of people and their perception of the experience with the institutions involved in the sales process indicated on a 7-point-Likert scale. All values are standardized and separated for non-participants, participants, and the full sample. Further, the t-test statistic for level of significance of difference is reported.

Source: Author's calculation.

To assess the respondents' ability to recall the brand name of the insurer, they were asked to pick one brand name out of a list of four well-known insurers in the Indonesian market (cf. Appendix: 9.3 Questionnaire). Results show 56.9 percent of non-participants and 78.8 percent of participants were able to name the correct brand. The "Do not know" option was chosen by 10.1 percent of non-participants and 3.0 percent of buyers. However, the results are subject to *ex post* bias since respondents who decided for the insurance received a certificate of insurance which boldly stated the brand name of the insurer. Causality, therefore, cannot be reliably determined.

Further, people were asked how long they already have a credit relationship with the MFI. It showed that the group of non-participants in average cooperated with the MFI for 9.8 months (SE 0.88) and *Tamadera* clients for 11.0 months (SE 1.31). A longer tenure with the MFI *per se* can arguably be regarded as trust increasing characteristic. On the one hand, since the behavior of the other party feels more familiar it increases comfort of making business with each other. On the other hand, the fact of continuing to work together is a sign of trust in the MFI. In practice, the new insurance product was predominantly marketed to clients who either received a new loan or renewed an existing one. Thus, this result reported here has to be treated with care. Actual influence of MFI tenure might even be stronger.

ROSCA participation

Lastly, the participation in informal financial groups – so called Rotating Savings and Credit Associations (ROSCA) – is deemed as a sign of trust with ones money in third parties. Also in a ROSCA "participants take a chance by placing their money in one another's hand" (Fessler, 2002, pp. 29/30). An investigation of ROSCA participation in the sample yielded that 67.0 percent of non-participants and 72.7 of participants took part in at least one ROSCA. If people are participating in a ROSCA, in average they are participating in 1.6 informal saving groups. The maximum for one single person, however, is participation in five different ROSCAs. Differentiated for non-participants and participants the average group participation is 1.47 and 1.76 respectively. Contributions to the ROSCA differ from group to group. For the strata of non-participants the mean monthly payment to ROSCAs is IDR 182,383.60 (SE 43,434.32; USD 20.25) and for insurance participants IDR 168,661.80 (SE 26,118.82; USD 18.72). While *Tamadera* customers in average take part in more different ROSCA groups they

put less money in these schemes. This could suggest that they are more wary to put ‘all eggs in one basket’; but also that they are more ready to trust their money into someone else’s hands.

Regarding the question if income spend on insurance actually competes with money spend on ROSCA groups, 42.5 and 31.9 percent of non-participants and participants respectively said they did plan to reduce their ROSCA contributions as a result of engaging in microinsurance. However, at a later stage in the questionnaire only the participants were asked again if they actually reduced their ROSCA participation since starting *Tamadera*. An actual reduction of ROSCA contributions is reported by 23.9 percent (cf. Table 9). The majority of 74.6 percent can still not decide if they should opt out the ROSCA scheme and answered with *Maybe* in the questionnaire.

Table 9: ROSCA reduction when participating in microinsurance

ROSCA Reduction	Non-Participants	Participants	
	<i>Intended</i>	<i>Intended</i>	<i>Actual</i>
yes	42.5%	31.9%	23.9%
maybe	38.4%	38.9%	74.6%
no	19.2%	29.2%	1.5%

Note: The table states separated for non-participants and participants strata the intention of respondents to reduce participation in Rotating Saving and Credit Associations (ROSCA) given the participation in microinsurance. For participants also their actual decision on ROSCA spending following microinsurance participation is collected.

Source: Author’s calculation.

Fund Application

An interesting observation was made regarding the respondents’ plan on what they want to use the financial services offered by the MFI for. While for the application of MFI credit the overriding plan was to use funds for investments in working capital (46.8 percent NP / 54.8 percent P), the *Tamadera* customers reported they want to use the proceeds of the micro endowment life insurance after five years to invest in education of children (67 percent). Of course, framing of the product has to be taken into account: the insurance product is sold as one way to protect the family and save up for education of children which could distort responses.

Table 10: Application of financial services

Product Application	Non-Participants	Participants	
	<i>Credit</i>	<i>Credit</i>	<i>Insurance</i>
Working Capital	46.8%	54.8%	21.0%
Children Education	22.8%	17.8%	67.0%
Other	30.0%	27.0%	12.0%

Note: The table states for which purpose respondents' plan to use the funds from their microcredit facility and their microinsurance savings respectively, separated for non-participants and participants strata. .

Source: Author's calculation.

In this chapter data collected in the client interviews was summarized and described. The data description revealed that there are significant differences between the group of non-participants and participants with respect to a number of factors (cf. Table 11). Respondents' age and number of dependents does not yield significant differences for both groups. However, the t-statistics for the interaction life-cycle variable which is based on these two factors and constructed to test for hypothesis 1 expounded above, exhibits a significant difference at the five percent level. Further, the variables related to individual's product understanding, namely formal education, financial literacy, and product knowledge, all present with significant difference levels.

From the factors expected to be related to households' economic capacity only employment, asset endowment, consumption development, and payment of remittances significantly differ for the two groups. The experience of shocks did not yield the expected differences; however, the microinsurance customers had more experience with death inside their family. The interest expressed by respondents in insurance product corresponds with the actual decision-making. Finally, data gathered on trust levels and proxies for individuals are in line with the hypothesis of having a positive influence on microinsurance uptake. In the next chapter, the above introduced variables will be included in an econometric regression model to test the hypothesis stated in chapter 5.

Table 11: Summary statistics for explanatory variables

Variable	<i>Participants</i> Mean	<i>Non-Participants</i> Mean	Level of significance of difference, if any (%)	<i>Full Sample</i> Mean	Standard Deviation	Min.	Max.	N
Age	39.394	39.238		39.313	0.612	21	71	208
Dependents	2.647	2.796		2.725	1.591	0	9	208
Education ⁺	0.828	0.697	5	0.760	0.428	0	1	208
Location	0.869	0.807		0.837	0.371	0	1	208
Life-Cycle ⁺	0.091	0.193	5	0.144	0.352	0	1	208
Employee ⁺	0.556	0.321	1	0.433	0.497	0	1	208
Multi-Earner Household ⁺	0.707	0.734		0.721	0.450	0	1	208
Asset Endowment	0.672	0.600	1	0.635	0.187	0	1	208
Consumption Development	10.778	5.495	5	8.010	16.555	-50	150	208
Remittance – received ⁺	0.141	0.119		0.130	0.337	0	1	208
Remittance – paid ⁺	0.162	0.064	5	0.111	0.314	0	1	208
Financial Literacy	0.672	0.598	1	0.634	0.193	0	1	203
Product Knowledge	0.486	0.432	5	0.459	0.184	0	1	203
Trust Degree	0.654	0.626		0.640	0.147	0	1	199
Client Experience	0.821	0.769	1	0.794	0.108	0	1	197
ROSCA Participation	1.296	1.029	10	11.584	1.053	0	5	202
MFI Tenure	11.030	9.798		10.385	11.170	1	58	208
Brand Recognition ⁺	0.788	0.591	1	0.686	0.465	0	1	204

⁺ indicates dummy variables with value between 1 and 0.

Note: Definitions for explanatory variables included in the analysis are: *Age* of respondent measured in years; *Dependents'* number in household; *Education* of respondent is secondary or higher level; *Location* of respondent is in urban environment; *Life-Cycle* as interaction variable between respondent's age over 49 and has children over 16; *Employee* indicates formal employment of respondent or spouse; *Multi-Earner Household* are households with more than one breadwinner; *Asset Endowment* is an index value for number of common assets owned by household; *Consumption Development* defined as difference in IDR between households daily consumption value today and one year before; *Remittance - received* indicates household receives regular payments from relatives; *Remittance – paid* indicates household pays regular payments to relatives; *Financial Literacy* is an index value based on the respondent's ability to answer a set of financial literacy assessing questions; *Product Knowledge* is an index value based on the respondent's ability to answer a set of questions related to the previously offered product correctly; *Trust Degree* is an index value based on the respondent's own trust assessment in general and towards specific groups of persons on a 7-point Likert scale; *Client Experience* is an index value based on the respondent's own experience and attitude assessment towards the socializer, the MFI, and the Insurer on a 7-point Likert scale; *ROSCA Participation* states number of informal financial groups the respondent is participating in; *MFI Tenure* is the number of months the respondents is already cooperating with the MFI which offers the microinsurance plan; *Brand Recognition* for respondents' ability to recognize brand name of insurance partner.

Source: Author's calculation.

6.2 *Probit Regression Model and Discussion of Results*

In this section, the previously described data sample is examined using econometric analysis to identify the socio-economic determinants of micro life insurance participation. Firstly, the choice of econometric analysis instrument is explained and rationalized. Subsequently, the regression results for the control variables and the investigated hypotheses are reported and interpreted.

6.2.1 **Choice of econometric analysis instrument**

When the dependent variable is dichotomous, commonly, either a logit or a probit regression model is applied to estimate the effects of the explanatory variables. Basically, both estimation techniques return similar results (Chambers & Cox, 1967). Earlier studies on the uptake of microinsurance, however, tend to prefer the probit regression (e.g. Giné et al., 2008; Giesbert et al., 2011; Bendig & Arun, 2011). Thus, to pander comparison with previous studies, in this thesis also a probit estimation model is applied.

The binominal probit model is generally denoted as

$$(5) \quad y_t = \beta_0 + \beta_1 x_{t1} + \dots + \beta_k x_{tk} + u_t$$

(Wooldridge, 2000). In the model applied here, y_t represents the binary response variable either taking the value of 0 for non-participants and 1 for microinsurance participants. The regressions constant value is described by β_0 and β_k represent the coefficients for the according variable x_k . An error term u_t is also included in the equation. In a probit model it is assumed that error terms are independent and normally distributed. The probit estimation is based on a standard normal distribution of observations; whereas a logit regression makes use of the logistic distribution function which is flatter in its tails. Using an iterative maximum likelihood process, the binominal probit regression estimates the coefficients, β , which maximize the probability of observing the given sample.

However, probit regression is not assuming a linear relationship between the response variable and the regressors. The estimated coefficients β , hence, provide no direct measure of a variables effect. The direction of the effect can be inferred from the sign of the coefficient, yet the size is unclear. Brooks (2008) describes a method to make interpretation of coefficients more meaningful. The marginal effect a one unit change of any variable has on the probability of $Y=1$ can be calculated, but it is different for every person. Therefore, the model coefficients are scaled at its mean and, subsequently, can be interpreted as the marginal effect a one unit change of the independent variable from the sample mean – *ceteris paribus* – has on the probability of $Y=1$. Interpreting the marginal effects coefficients, it needs to be distinct for discrete and continuous variables x . For continuous variables the coefficient provides the percental change an infinitesimal alteration of x has on the probability that $Y=1$. For discrete variables, however, the coefficient denotes the change in probability that $Y=1$ if the discrete variable switches from 0 to 1.

In order to identify which variables have a statistically significant effect, a *z-statistic* is modeled. This z-statistic is a standardized value calculated as the raw score of x minus the population mean divided by the population standard deviation. The z-statistics are the same for the binominal probit regression model estimating probit coefficients and the one estimating marginal effects.

The explanatory power of a binominal probit model – as measured by the F-statistic for OLS regression – can also be assessed. Generally, a Chi²-distribution test for model fit is utilized. This test statistic analyzes the probability that all regression coefficients are simultaneously equal to zero and, hence, whether the model as a whole is statistically significant.

Several attempts were made to develop a coefficient of determination for probit regression – as the R^2 represents for the analytical OLS regression – to measure a model's goodness of fit. This coefficient of determination should measure how much of Y 's variance is explained by the regression model. Commonly, McFadden's *Pseudo R²* is used in binominal probit regressions. In maximum likelihood estimations this statistic is not of much value on an absolute basis. Yet, it can serve as a relative measure to compare the various models estimated in this thesis.

In addition, each of the four estimated models is tested for multicollinearity by using a variance inflation factor (VIF) analysis. To mitigate effects of any heteroskedasticity a robust probit regression model is estimated.

6.2.2 Control variables included in the model

In accordance with previous quantitative studies on life insurance demand (cf. Chapter 4), a set of standard variables is considered in the model. However, the variables regarding gender, marital status, and religion were excluded from the analysis due to the nature of the sample. As described above 90.1 percent of the sample were female, 86.5 percent married, and 91.3 percent Muslim, thus these distributions are considered too skewed to provide meaningful results. Yet, they depict standard characteristics of the Indonesian microfinance market. The control variables kept for further analysis comprise age, number of dependents, education and location. An univariate marginal effects probit regression suggests a positive influence of age ($\beta=0.0005$), number of dependents (0.0150), urban location (0.1119), and education (0.1790) (cf. Table 16). A statistical significant effect at the 5 percent level is only found for education. The positive, significant effect of education on micro life insurance demand confirms prior results by Giesbert et al. (2011). It is also in line with the majority of findings on regular life insurance demand (cf. Chapter 4) and affirms the notion that higher formal education fosters need awareness and enables an informed life insurance purchase decision (Hammond et al., 1967). In the subsequent analysis, these four variables will be included as controls.

6.2.3 Regression results for Life-Cycle

In the first model I, the hypothesis that later stages in a family's life-cycle are negatively associated with the uptake of a micro endowment life insurance product is tested. Therefore, an interaction variable *life-cycle* is included in the model. This dichotomous variable takes the value 1 if a household's head is older than 49 and has children older than 16 as described above. Including this variable in the regression changes the coefficient estimates for the control variables. The marginal effect of age increases to 0.0134 and becomes significant at the 5 percent level. The direction regarding the

influence of the number of dependents variable turns positive but remains insignificant. The life-cycle interaction variable itself is negative (-0.3677) and highly significant at the 1 percent level. The model estimation uses robust standard errors. An analysis of multicollinearity yielded a mean VIF of 1.46 and thus collinearity of variables seems not to be an issue. In this model the Chi²-statistic and McFadden Pseudo R² are 0.0071 and 0.0543 respectively.

Table 12: Marginal effect probit regression for life-cycle effect

Model	Life-Cycle
	I
Age	0.0134** (0.0059)
Dependents	0.0024 (0.0260)
Education ⁺ (Secondary or Higher Education)	0.1976** (0.0819)
Location ⁺	0.1017 (0.0940)
Life-Cycle ⁺	-0.3677*** (0.0956)
Prob > Chi ²	0.0071
Pseudo R ²	0.0543
Multicollinearity (Mean VIF)	1.46
Observations	207

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

⁺ indicates dummy variables with value between 1 and 0

Note: Definitions for explanatory variables included in this table are: *Age* of respondent measured in years; *Dependents'* number in household; *Education* of respondent is secondary or higher level; *Location* of respondent is in urban environment; *Life-Cycle* as interaction variable between respondent's age over 49 and has children over 16.

Source: Author's calculation.

A direct comparison with previous findings in the literature is not possible as such a variable was – to the best of my knowledge – never tested before. The studies by Bendig and Arun (2011) and Giesbert et al. (2011) also discussed a life-cycle effect, although based on the influence of the age variable (cf. Chapter 4). A similarity might exist with the findings for an age-squared variable previously tested by the same studies. Both included age-squared and found a significant negative relationship with microinsurance demand. According to Bendig & Arun (2011) one possible explanation

for this result might be that “older household heads [...] are less educated and thus, less able to understand insurance products and markets than their younger counterparts.” (p. 15)

The result of the life-cycle model in this thesis suggests an alternative explanation. The coefficient estimate for number of dependents turns positive when including the life-cycle interaction variable. This indicates that the number of children indeed could have a positive effect as reported in earlier studies (Giesbert, 2010; Bendig & Arun, 2011). Also the age control variable’s marginal effect becomes stronger and significant in specification I suggesting that other factors – perhaps a more solid financial situation and increased experience – outweigh the education factors proposed by Bendig and Arun (2011). The results could be explained if having children above 16 in a family represents a kind of insurance by itself since they can contribute to a household’s income in times of need. Yet, one caveat regarding this result needs to be mentioned: the MFI distributing this product is particularly concerned with the well-being of children and thus this result could be influenced by the MFIs pre-selection. The hypothesis (*H1*) that a household’s life-cycle is negatively related to micro life insurance uptake, however, is supported by the regression results in specification I.

6.2.4 Regression results for Economic Capacity

In the second estimation model, the hypothesis that the economic capacity of a household has a positive influence on microinsurance participations is tested. In contrast to the many studies on influence of wealth and income presented above (cf. Chapter 4), in this analysis not protection of living standard but liquidity and thus affordability of the insurance premium is highlighted to account for the microfinance context. The marginal effects at the mean estimated by the probit regression are positive as expected and significant for the employment status ($p < 0.05$), asset endowment ($p < 0.10$), consumption development ($p < 0.10$), and payment of remittances ($p < 0.01$). However, the expected positive effect of remittances received is not found to be significant. Further the effect of multi-earner households turns out negative as expected but is insignificant. This marginal effects at means estimation uses robust standard errors. An analysis of multicollinearity yielded a mean VIF of 1.20 and thus collinearity of variables seems not to be an issue. Yet, a high Pearson correlation could be found

between the variable for formal employment with education (0.3096) and asset endowment (0.2316) (cf. Appendix: Table 19). Due to the high correlation it is not surprising that the control variable education turns insignificant in the specification II. Regarding the models explanatory power, an improvement of the Chi²-statistic (0.0015) and the McFadden Pseudo R² (0.0986) is observed (cf. Table 13).

Table 13: Marginal effect probit regression for economic capacity

Model	<i>Economic Capacity</i> II
Age	0.0046 (0.0048)
Dependents	-0.0157 (0.0283)
Education ⁺ (<i>Secondary or Higher Education</i>)	0.1029 (0.0980)
Location ⁺	0.0655 (0.1023)
<i>Economic Capacity</i>	
Employee ⁺	0.1636** (0.0783)
Multi-Earner Household ⁺	-0.0142 (0.0859)
Asset Endowment	0.3793* (0.2005)
Consumption Development	0.0052* (0.0027)
Remittance – received ⁺	0.0190 (0.1225)
Remittance – paid ⁺	0.2884*** (0.1046)
Prob > Chi ²	0.0015
Pseudo R ²	0.0986
Multicollinearity (Mean VIF)	1.20
Observations	207

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

⁺ indicates dummy variables with value between 1 and 0.

Note: Definitions for explanatory variables included in the analysis are: *Age* of respondent measured in years; *Dependents'* number in household; *Education* of respondent is secondary or higher level; *Location* of respondent is in urban environment; *Employee* indicates formal employment of respondent or spouse; *Multi-Earner Household* are households with more than one breadwinner; *Asset Endowment* is an index value for number of common assets owned by household; *Consumption Development* defined as difference in IDR between households daily consumption value today and one year before; *Remittance - received* indicates household receives regular payments from relatives; *Remittance – paid* indicates household pays regular payments to relatives.

Source: Author's calculation.

The economic capacity model II shows a positive and significant effect of formal employment. This suggests that calculable income streams are an important determinant regarding the demand for microinsurance. Taking into consideration that the long term of the microinsurance product – 5 years – was reported as the main reason for deciding

against participation, it seems as if the worry on how to finance the insurance for such a long term with uncertain income is a main reason for abstaining from the insurance. The payment of remittances by the household is also of significant positive influence which suggests that a household who is able to help providing for others has the ability to pay for the insurance premium and take a financial precaution for the own family. The positive effect of asset endowment is in line with the vast majority of previous research on regular and micro life insurance (cf. Table 1 & Table 2). A high asset endowment is not only a sign of higher income and economic capacity but it could also hint at the fact that the most important assets are already part of the household, i.e. the household is not constrained by saving for necessary additional assets. The positive relationship with consumption development supports the notion that additional income represents a windfall and discretionary consumption alternatives are still competing for the most efficient use of the increment.

Microinsurance is targeting poor households in particular and great hopes regarding poverty alleviation are associated with this market (cf. Chapter 2). Nevertheless, also this study supports earlier findings that it is particularly households with already relatively high asset endowments, formal employment, and the ability to pay remittances who consume this product (Bendig & Arun, 2011; Giesbert et al., 2011). Hence, it is rather the better off, more liquid households who become microinsurance customers. Altogether, the hypothesis (*H2*) that economic capacity of a household is positively related to micro life insurance uptake is supported by the results of the analysis.

6.2.5 Regression results for Product Understanding

The specification III examines the hypothesis that a better understanding for the offered insurance product increases the likelihood of participating in the microinsurance scheme. A lack of understanding for the insurance concept is often mentioned as a principal reason for low product adoption in the microfinance market (McCord, 2001; Chankova et al., 2008; Ito & Kono, 2010; Bendig & Arun, 2011). Therefore, in this analysis a thorough evaluation of the target group's financial literacy and product understanding is conducted.

The estimation results for the marginal effects of the binary probit regression analysis show a strong positive effect of product comprehension on microinsurance participation. A positive marginal effect at the mean is found for financial literacy and significant at the 5 percent level. The coefficient of 0.4073 implies that an increase of financial literacy by one unit for an average respondent increases – *ceteris paribus* – the probability to participate in the microinsurance by 40.7 percent. Also the marginal effect at the mean for product knowledge is quite strong (0.3005), though, not significant (Robust SE 0.2000). An analysis of multicollinearity resulted in a mean VIF of 1.22 and thus collinearity of variables seems not to be distorting the results. A two-sided t-Test for the individual variables yielded a clear level of significance of difference for the group of microinsurance participants and non-participants for both variables (cf. Table 11).

Table 14: Marginal effect probit regression for product understanding

Model	<i>Product Understanding</i>
	III
Age	0.0021 (0.0050)
Dependents	0.0008 (0.0295)
Education ⁺ (<i>Secondary or Higher Education</i>)	0.1148 (0.0913)
Location ⁺	0.0774 (0.0972)
<i>Product Understanding</i>	
Financial Literacy	0.4073** (0.1919)
Product Knowledge	0.3005 (0.2000)
Prob > Chi ²	
Pseudo R ²	0.0435
Multicollinearity (Mean VIF)	0.0465
Observations	
	201

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

⁺ indicates dummy variables with value between 1 and 0

Note: Definitions for explanatory variables included in the analysis are: *Age* of respondent measured in years; *Dependents'* number in household; *Education* of respondent is secondary or higher level; *Location* of respondent is in urban environment; *Financial Literacy* is an index value based on the respondent's ability to answer a set of financial literacy assessing questions; *Product Knowledge* is an index value based on the respondent's ability to answer a set of questions related to the previously offered product correctly.

Source: Author's calculation.

The sentiment in the literature that an understanding for the concept of insurance and specific product features is beneficial for microinsurance uptake is supported. As expected the relationship between financial literacy and product knowledge is quite strong with a Pearson correlation of 0.1745 (cf. Appendix). The analysis shows that an understanding for the product increases the demand for the abstract product 'insurance' and probably also increases faith in the concept. In conclusion, the hypothesis (*H3*) that product understanding is positively related to micro life insurance uptake is supported by the empirical findings presented here.

6.2.6 Regression results for Trust

Insurance participation requires trust in the provider. Participants are paying a regular premium and receive in turn the promise of a payment in the future if certain conditions are met. Particularly in the microinsurance context trust can work as a mitigating factor for a lack of understanding and risk aversion towards the unfamiliar concept. Trust, however, is an abstract concept and cannot be measured easily. Therefore, a set of variables is investigated and included in the analysis to examine if trust is influential.

The binary probit regression model IV yields positive marginal effects at the mean for all trust related variables included in the model. Significant at the 5 percent level, however, are only the variables for experience (0.9724) and brand recognition (0.1742) (cf. Table 14). In the case of experience, the strong effect supports the intuition of previous work (e.g. Churchill, 2000; Cai et al., 2010; Bendig & Arun, 2011). A breakdown of the aggregated variable *experience* reveals that the correlation between being a microinsurance participant and the attitude towards the insurer (0.2472) and the experience with the socializer (0.1875) is somewhat stronger than the correlation with the MFI experience (0.1133) (cf. Appendix). The influence of branding, though, is less meaningful since it could not be controlled for the direction of causality of brand recognition observations. While, on the one hand, higher brand recognition might be a sign for increased familiarity with the insurer and thus trust, on the other hand, it could also be a result of the participation in the micro life insurance.

Table 15: Marginal effect probit regression for trust

Model	<i>Trust</i>
	IV
Age	0.0025 (0.0053)
Dependents	-0.0022 (0.0295)
<i>Education</i> (Secondary or Higher Education)	0.1411 (0.0940)
Location	0.1584 (0.1063)
<i>Trust</i>	
Trust Degree	0.2492 (0.2838)
Client Experience	0.9724** (0.3831)
ROSCA participation	0.0361 (0.0360)
MFI Tenure	0.0027 (0.0033)
Brand Recognition	0.1742** (0.0814)
Prob > Chi ²	0.0075
Pseudo R ²	0.0931
Multicollinearity (Mean VIF)	1.23
Observations	189

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

+ indicates dummy variables with value between 1 and 0

Note: Definitions for explanatory variables included in the analysis are: *Age* of respondent measured in years; *Dependents'* number in household; *Education* of respondent is secondary or higher level; *Location* of respondent is in urban environment; *Trust Degree* is an index value based on the respondent's own trust assessment in general and towards specific groups of persons on a 7-point Likert scale; *Client Experience* is an index value based on the respondent's own experience and attitude assessment towards the socializer, the MFI, and the Insurer on a 7-point Likert scale; *ROSCA Participation* states number of informal financial groups the respondent is participating in; *MFI Tenure* is the number of months the respondents is already cooperating with the MFI which offers the microinsurance plan; *Brand Recognition* for respondents' ability to recognize brand name of insurance partner.

Source: Author's calculation.

A breakdown of the trust index reveals that the level of significance of difference is significant for the observations regarding the trust towards relatives (1 percent level) and the insurer (5 percent level) (cf. Table 8). This result supports the conjecture that trust towards the insurer is of particular importance. Further, it might indicate that

respondents who are particularly close with their family are more likely to purchase a product which protects their financial interests. The low marginal effects and insignificant value for ROSCA membership could be explained by the close proximity of the participants, usually either among neighbors or relatives. Peer monitoring is intensive and, hence, perhaps does not require a high trust level on the participant's side. Yet, the positive marginal effect of all considered influence factors and the statistically significant effect of experience and brand recognition support the initial hypothesis that trust level is positively related to micro life insurance consumption.

6.2.7 Probit Regression results for Full Model

The full model V including the control variables and the variables on life-cycle, product understanding, economic capacity, and trust is estimated (cf. Table 15). A statistically significant model fit at the 1 percent level ($\text{Prob} > \text{Chi}^2$) and approximation of the model's coefficient of determination of 0.1890 (McFadden's Pseudo R^2), suggest that the factors investigated in this thesis indeed have explanatory power regarding the uptake of voluntary micro life insurance. The fact that direction of effect of the explanatory variables remains the same in the integrated model implies that no considerable rivalry between the formulated hypotheses exists. Multicollinearity for the full model is acceptable low with a VIF of 1.35.

The findings indicate a particular important influence on micro life insurance uptake of the factors life-cycle, asset endowment, formal employment, remittance payments, consumption development, respondent's experience with the involved parties, and brand recognition.

Table 16: Marginal effect probit regression for full model

Model	<i>Univariate</i>	<i>Full Model</i>
Age	0.0005 (0.0039)	0.0168** (0.0070)
Dependents	0.0150 (0.0218)	-0.0065 (0.0308)
Education [†] (Secondary or Higher Education)	0.1790** (0.0781)	0.0332 (0.1172)
Location [†]	0.1119 (0.0918)	0.1360 (0.1137)
Life-Cycle [†]	-0.2056** (0.0919)	-0.4437*** (0.0969)
Employee [†]	0.2382*** (0.0682)	0.1696** (0.0859)
Multi-Earner Household [†]	-0.0333 (0.0775)	-0.0331 (0.0967)
Asset Endowment	0.5425*** (0.1873)	0.4259* (0.2528)
Consumption Development	0.0063** (0.0025)	0.0051* (0.0029)
Remittance – Received [†]	0.0489 (0.1033)	0.0372 (0.1233)
Remittance – Paid [†]	0.2470** (0.1029)	0.2091* (0.1177)
Financial Literacy	0.5240*** (0.1818)	0.3338 (0.2203)
Product Knowledge	0.4077** (0.1929)	0.0873 (0.2247)
Trust Degree	0.3263 (0.2423)	0.1579 (0.3151)
Client Experience	1.2314*** (0.3632)	0.9421** (0.4140)
ROSCA participation	0.0613* (0.0339)	-0.0143 (0.0372)
MFI Tenure	0.0025 (0.0031)	0.0029 (0.0034)
Brand Recognition [†]	0.2290*** (0.0723)	0.1975** (0.0871)
Prob > Chi ²		0.0001
Pseudo R ²		0.1890
Multicollinearity (Mean VIF)		1.35
Observations		188

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

[†] indicates dummy variables with value between 1 and 0

Source: Author's calculation.

7 Conclusion

In this thesis, socio-economic determinants of micro life insurance demand were analyzed in light of the microfinance context and based on previous research on life insurance as well as microinsurance demand. The expectations and hopes towards microinsurance with respect to poverty alleviation, new market opportunities, and economic growth were established to begin with. In combination with an abstract of the historical development of insurance and particularly the important role of microfinance institutions for the development of the middle-class in 19th century Europe, the potential of microinsurance in today's emerging economies is underscored. Microinsurance is found an important tool to enable bottom-of-the-pyramid communities to benefit from *ex ante* risk management strategies which contribute to breaking out of the poverty circle. It empowers entrepreneurs to make more efficient use of their productive assets or helps family's to safeguard the well-being and education of their dependents. Furthermore, due to its sheer size the microinsurance market worldwide holds huge revenue potential for international insurance providers despite the low, individual premium. As an aggregate the contributions of microinsurance customer can provide an important capital source for national and economic development in emerging economies once they are included in the formal economy. Yet, however, in contrast to the successful microfinance movement in Europe, the current microfinance revolution is less participative and without sound regulation the fears of development organizations and donors that private capital will seek to exploit the bottom-of-the-pyramid market instead of developing it might comes true. It was also expounded in this thesis, for what reasons volume is a crucial consideration in insurance provision next to actuarial modeling and appropriate loading factors. Since volume seems to be the key for successfully developing the microinsurance market, the question what determines the demand for offered products is of crucial importance.

Further, previous research on demand determinants of life insurance in general and microinsurance in particular was reviewed in this thesis and provided the basis for the empirical analysis. The review showed that in accordance with the predictions of theoretical models a number of variables was commonly found influential. Moreover, the analysis revealed that emerging markets in particular are responsive to the growth of

the insurance sector and national economies can benefit from a developed insurance industry.

Based on the previous research introduced in the literature review and the expectations expressed towards microinsurance, four hypotheses were formulated. Two of them concerned the properties of the decision-maker's household, that is life-cycle stage and economic capacity, and the other two were directed at characteristics of the insurance purchaser individually, namely product understanding and trust levels. The data availability for microinsurance research is still scarce and thus for the purpose of testing the formulated hypothesis, an own data collection was conducted. For this, 208 microfinance clients in urban Indonesia were surveyed with personally administered, comprehensive questionnaires. The resulting data set was prepared for the analysis and described. A marginal effects probit regression analysis revealed significant influence, either in full or in part, for all four demand determinants investigated in this research. For microinsurance, the demand determinants were generally in agreement with the findings for life insurance demand in developed countries. Yet, a contradicting result for the influence of risk aversion was reported (Giné et al., 2008; Giesbert et al., 2011). An explanation for this finding could be the unfamiliarity of the BOP market with the concept of insurance which presents a risk for them itself.

Further, it could be shown that the life-cycle stage of households is significantly related to micro life insurance consumption. In contrast to earlier studies which based their analysis on the effects of age and suggested a negative life-cycle effect due to decreasing comprehension of the insurance concept among older persons (Bendig & Arun, 2011), the results in this thesis points at the importance of mature children which can substitute for risk protection through their ability to earn additional income. However, this indicative result needs to be corroborated by future research. Especially, an *ex post* investigation could provide the required data to undermine this result.

Regarding economic capacity as a demand determining factor, this research focused on the relative capability of households to afford the insurance premium rather than considering the economic situation of a household as determinant of the proper amount of life insurance. Earning regular income as an employee, an already higher endowment with desired basic assets, a current increase of consumption capacity, and regular

transfer payments to relatives were found to be positively related to micro life insurance uptake. These results suggest that a household whose liquidity situation is relatively stable and allows for discretionary allocation is more likely to add life insurance to its financial portfolio. Moreover, it was revealed that in line with previous findings also microinsurance in Indonesia is not yet able to reach out to the very poor community members.

As suggested by the reviewed literature a positive relation between product understanding, expressed as higher financial literacy and better product knowledge, to micro life insurance demand was found. Also the clients experience with the involved parties and the recognition of the insurer's brand seem to be important demand determinants. Already Webb et al. (2009) suggested that insurers' reputation is an important selection criterion for clients. A derivation from this result for the microinsurance practice could be that providers need to take a high involvement distribution approach in order to stimulate the demand volumes needed to achieve commercial viability for microinsurance. In addition, the analysis revealed that the understanding of microinsurance customers in Indonesia for the financial product is rather low which makes them vulnerable for exploitation. In order to create a sustainable market, insurers need to carefully cultivate their reputation among the BoP community.

The findings in this thesis might offer some additional insight for policy- and decision-makers in a development context. For NGOs and other institutions with a preponderant poverty alleviation interest, it is relevant that support on education and, specifically, financial literacy potentially accelerates the acceptance of microinsurance services. Further, an independent advisor role to help household heads on how to make best use of additional financial resources could help the dispersion of insurance in the low income households. Moreover, it can protect the economically advancing families against exploitation by dubious businesses. Also for commercial market participants this analysis can hold some interesting findings. Firstly, the insight on economic and demographic demand determinants, such as life-cycle effects, occupations, or asset endowments, can facilitate a more focused targeting. Successful targeting is crucial to keep transaction costs down and make micro life insurance commercially viable. Secondly, the importance of clients experience and significant correlation with brand

recognition is an opportunity and a warning at the same time. While commercial businesses can use micro insurance to gain an early foothold in a market segment of increasing attraction, they need to offer high quality services to build a good reputation and also be wary to maintain this fragile good. Last but not least, government officials and policy-makers need to take the micro insurance movement serious and see the potential for economic development which can be recognized looking at the aggregated numbers. In addition, enabling a private market solution for basic health and social services can take some pressure off public budgets and tension from a quickly developing society, characterized by urbanization, disintegration of traditional family structures and widening gaps between rich and poor classes. However, therefore a sound legal framework needs to be established which protects customers and creates sufficient trust to commit to long-term financial products; but also encourages commercial businesses to invest in the development of a market whose profitability depends on volume.

A recent study from Ghana on general willingness-to-pay, *ex ante*, for a microinsurance product supports the results from the present analysis discussed above. Akotey et al. (2011) find that the possibility of flexible premium payments is appreciated as well as positive demand effects of an increase in income, sound insurance knowledge, and positive perception of the insurer. However, the findings presented here are subject to certain limitations and thus further research is needed to validate them. Firstly, the sample size which could be utilized in this analysis is rather small and the investigation if these results hold for a larger sample size is considered necessary. Secondly, the insurance purchasers interviewed in this research are the first ones from their peer group to participate and, hence, represent a group of early-adopters. If the characteristics which are influential for the micro life insurance demand of the whole populace are the same, needs to be assessed at a later point in time after market introduction. Moreover, in this context not only an analysis of the factors which influence microinsurance uptake but also determinants' of persistency is of importance. Thirdly, this investigation was conducted for a micro life insurance product marketed in urban Indonesia, more specifically, the greater Jakarta area. Additional testing of the hypothesis examined in this work in alternative surroundings is desirable. Based on the results of this and previous research an investigation of the interaction between the effect of risk aversion,

trust and product understanding could provide interesting insights in how far the three are interrelated and can substitute for another. Additional research can help to better explore and understand the field of microinsurance and, thereby, contribute to tap its full potential.

8 References

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9 Appendix

9.1 Additional Graphs & Tables

Table 17: Definition of explanatory variables

Variable	Description
Age	The respondents' age measured in years.
Dependents	The number of dependents in household.
Education	Dummy variable indicating the education level of respondent. Takes the value 1 for secondary or higher education and 0 for no or primary education.
Location	Dummy variable taking the value 1 for urban environment and 0 for rural environment of the respondent's household.
Life-Cycle	Constructed interaction variable taking the value 1 if respondent is over the age of 49 and has children over age 16 and the value 0 otherwise.
Employee	Dummy variable taking the value 1 if one household member is formally employed and the value 0 otherwise.
Multi-Earner Household	Dummy variable taking the value 1 if more than one household member is earning income and the value 0 otherwise.
Asset Endowment	Index value based on the amount of commonly desired assets owned by the household.
Consumption Development	Measures the difference in IDR between households' daily consumption value today and one year before.
Remittance - received	Dummy variable taking the value 1 if respondent's household receives regular payments from relatives and the value 0 otherwise.
Remittance - paid	Dummy variable taking the value 1 if respondent's household pay regular payments to relatives and the value 0 otherwise.
Financial Literacy	Index value based on the respondent's ability to answer a set of financial literacy assessing questions.
Product Knowledge	Index value based on the respondent's ability to answer a set of questions related to the previously offered product correctly.
Trust Degree	Index value based on the respondent's own trust assessment in general and towards specific groups of persons on a 7-point Likert scale.
Client Experience	Index value based on the respondent's own experience and attitude assessment towards the socializer, the MFI, and the Insurer on a 7-point Likert scale.
ROSCA Participation	Number of informal financial groups the respondent is participating in.
MFI Tenure	Number of months the respondents is already cooperating with the MFI which offers the microinsurance plan.
Brand Recognition	Dummy variable taking the value 1 if respondent is able to recognize the brand name of the insurer and the value 0 otherwise.

Source: Author's compilation.

Table 18: Reason to decide against micro life insurance

Abstaining Reason	
Long Term	22
Unattractive Benefits	16
Price	14
Low Coverage	13
Offer	12
Interest	11
Similar Product	5
Undecided	5
Understanding	4
Cancellation Fee	3
Other	4

Note: Respondents were asked to choose any of the reasons from the options given above for abstaining from the product. Multiple selection was possible.

Source: Author's compilation.

Table 19: Pearson correlation coefficient of explanatory variables

<i>Pearson Correlation Coefficient</i>	Participation	Age	Dependents	Education	Location	Life-Cycle	Asset Endowment	Multi-Earner Household	Employee
Participation	1								
Age	0.0088	1							
Dependents	-0.0472	0.5077	1						
Education	0.1531	-0.2407	-0.2971	1					
Location	0.0829	-0.0847	-0.1509	0.1469	1				
Life-Cycle	-0.1446	0.6692	0.4000	-0.1533	-0.0406	1			
Asset Endowment	0.1923	0.0939	-0.0154	0.2316	-0.0604	0.0379	1		
Multi-Earner Household	-0.0299	0.0988	0.0476	-0.1491	-0.1009	0.1027	-0.0557	1	
Employee	0.2363	-0.1203	-0.1303	0.3096	0.1499	0.0005	0.2251	-0.0628	1
Remittances received	0.0329	0.1422	0.1034	0.0164	0.1320	0.0857	0.0238	0.0807	-0.1352
Remittances paid	0.1551	-0.0700	0.0006	-0.0887	0.0315	-0.0138	0.0697	0.0825	0.0324
Consumption Development	0.1597	-0.0695	-0.0043	0.1012	0.0522	-0.0400	0.0570	-0.0308	0.1123
Financial Literacy	0.1942	-0.0091	-0.1226	0.2648	0.1163	-0.0596	0.0325	-0.0037	0.1724
Product Knowledge	0.1461	-0.0362	-0.0523	0.1265	0.0391	-0.0446	-0.0386	0.0605	0.0746
Trust Degree	0.0946	0.0716	0.0140	0.0267	-0.1774	-0.0013	0.1502	-0.0419	-0.0810
Client Experience	0.2434	-0.0145	0.0143	0.0694	0.0470	-0.0088	0.0495	0.0749	0.0207
ROSCA participation	0.1271	0.0276	-0.0993	0.0842	0.0678	-0.0752	0.2005	0.0181	0.1431
MFI Tenure	0.0552	0.0290	0.0516	-0.0563	-0.2309	0.0018	-0.0097	0.0753	0.0082
Brand Recognition	0.2126	-0.1104	-0.0273	0.1480	-0.0675	-0.0772	0.0883	-0.0208	0.1261
	Remittances received	Remittances paid	Consumption Development	Financial Literacy	Product Knowledge	Trust Degree	Client Experience	ROSCA participation	MFI Tenure
Remittances received	1								
Remittances paid	0.0919	1							
Consumption Development	0.1184	0.0379	1						
Financial Literacy	-0.0842	0.1026	0.0168	1					
Product Knowledge	-0.0380	0.1353	0.0235	0.1745	1				
Trust Degree	-0.0531	-0.0294	0.1038	0.0163	0.0882	1			
Client Experience	0.0541	0.1220	0.0575	0.0263	0.1515	0.3196	1		
ROSCA participation	0.0687	0.0201	0.1694	0.1399	-0.0045	0.1386	-0.0338	1	
MFI Tenure	0.0804	0.0883	-0.0658	0.0151	0.0737	0.0122	-0.0487	0.0899	1
Brand Recognition	0.0147	-0.0262	0.0222	0.0430	0.2349	0.0954	0.1137	0.1057	0.0876

Note: Table states Pearson correlation coefficients for all explanatory variables included in the analysis.

Source: Author's calculation.

Table 20: Correlation coefficients of client experience breakdown

Experience Correlation	Experience Socializer	Attitude MFI	Attitude Insurer
Experience Socializer	1		
Attitude MFI	0.4044	1	
Attitude Insurer	0.3396	0.3732	1

Note: Respondents were asked to rate their perception of the experience with the institutions involved in the sales process on a 7-point-Likert scale. The results for the three distinguished institutions, Socializer, MFI, and Insurer, exhibit high Pearson correlation coefficients and were thus aggregated in the Client Experience variable.

Source: Author's calculations.

Table 21: Variables with Pearson correlation in excess of +/-0.2

Age	Education	-0.2407
Age	Dependents	0.5077
Age	Life-Cycle	0.6692
Dependents	Education	-0.2971
Dependents	Life-Cycle	0.4000
Education	Employee	0.3096
Education	Financial Literacy	0.2648
Education	Asset Endowment	0.2316
Location	MFI Tenure	-0.2309
Asset Endowment	Employee	0.2251
Asset Endowment	ROSCA participation	0.2005
Product Knowledge	Brand Recognition	0.2349

Source: Author's calculations.

Table 22: Additional specifications excluding highly correlating variables

	Full Model	Age	Dependents	Education	Location	Assets	Product
	V	VI	VII	IIX	IX	X	XI
Age	0.0168** (0.0070)	0.0021 (0.0046)	0.0041 (0.0055)	0.0167** (0.0070)	0.0167** (0.0070)	0.0150** (0.0070)	0.0141** (0.0069)
Dependents	-0.0065 (0.0308)		-0.0188 (0.0307)	-0.0063 (0.0302)	-0.0054 (0.0308)	-0.0054 (0.0310)	0.0008 (0.0312)
Education ⁺	0.0332 (0.1172)			0.1722* (0.0963)	0.0344 (0.1160)	0.0788 (0.1135)	0.0431 (0.1173)
Location ⁺	0.1360 (0.1137)	0.1326 (0.1131)	0.1256 (0.1142)	0.1504 (0.1088)	0.1153 (0.1106)	0.1560 (0.1113)	0.1033 (0.1136)
Life-Cycle ⁺	-0.4437*** (0.0969)			-0.4021*** (0.1070)	-0.4446*** (0.0963)	-0.4087*** (0.1040)	-0.4263*** (0.1010)
Asset Endowment	0.4259* (0.2528)	0.4001* (0.2316)	0.4009* (0.2306)		0.4210* (0.2517)	0.4830** (0.2450)	0.4159* (0.2478)
Multi-Earner Household ⁺	-0.0331 (0.0967)	-0.0576 (0.0930)	-0.0611 (0.0935)	-0.0495 (0.0915)	-0.0328 (0.0966)	-0.0398 (0.0943)	-0.0406 (0.0964)
Employee ⁺	0.1696** (0.0859)	0.1292 (0.0837)	0.1286 (0.0838)		0.1726** (0.0854)		0.1752** (0.0863)
Remittance Received ⁺	0.0372 (0.1233)	0.0500 (0.1247)	0.0497 (0.1241)	-0.0198 (0.1251)	0.0477 (0.1213)	-0.0058 (0.1251)	0.0593 (0.1235)
Remittance Paid ⁺	0.2091* (0.1177)	0.1719 (0.1168)	0.1832 (0.1151)	0.2466** (0.1170)	0.2148* (0.1180)	0.2198* (0.1213)	0.1786 (0.1258)
Consumption Development	0.0051* (0.0029)	0.0045* (0.0027)	0.0048* (0.0028)	0.0055* (0.0028)	0.0050* (0.0029)	0.0057** (0.0028)	0.0050* (0.0029)
Financial Literacy	0.3338 (0.2203)	0.3802* (0.2066)	0.3727* (0.2073)		0.3250 (0.2179)	0.3461 (0.2195)	0.3271 (0.2202)
Product Knowledge	0.0873 (0.2247)	0.1136 (0.2270)	0.1091 (0.2290)	0.0814 (0.2175)	0.0905 (0.2253)	0.0849 (0.2222)	0.1680 (0.2181)
Trust Degree	0.1579 (0.3151)	0.2067 (0.3090)	0.1991 (0.3094)	0.1776 (0.3095)	0.1611 (0.3148)	0.0839 (0.3119)	0.1791 (0.3088)
Client Experience	0.9421** (0.4140)	0.9194** (0.3935)	0.9325** (0.3919)	0.9136** (0.4023)	0.9396** (0.4130)	0.9482** (0.4083)	1.0266** (0.4127)
ROSCA Participation	-0.0143 (0.0372)	0.0046 (0.0365)	0.0013 (0.0369)	0.0127 (0.0358)	-0.0113 (0.0365)		-0.0039 (0.0374)
MFI Tenure	0.0029 (0.0034)	0.0029 (0.0033)	0.0030 (0.0033)	0.0026 (0.0034)		0.0031 (0.0034)	0.0034 (0.0035)
Brand Recognition ⁺	0.1975** (0.0871)	0.1736** (0.0857)	0.1793** (0.0854)	0.1974** (0.0859)	0.2011** (0.0868)	0.1994** (0.0879)	
Prob > Chi ²	0.0001	0.0001	0.0001	0.0014	0.0000	0.0000	0.0001
Pseudo R ²	0.1890	0.1490	0.1503	0.1512	0.1871	0.1747	0.1712
Mean VIF	1.35	1.16	1.35	1.33	1.35	1.33	1.35
Observations	188	188	188	188	188	188	188

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%


⁺ indicates dummy variables with value between 1 and 0

Note: The additional specifications above exclude variables which have a Pearson correlation coefficient over +/- 0.2 with the variable stated on top of the table.

Source: Author's calculation.

9.2 Tamadera Leaflet


Figure 4: Marketing brochure for Tamadera microinsurance



Premium
Rp. 10,000 per week
Payment and protection period
5 Years (250 weeks)
Maturity Benefit
Rp. 2,500,000 (250 weeks x Rp. 10,000)
Death Benefit
Rp. 2,500,000
Benefit for 5 Critical Illnesses (Cancer, Heart Attack, Stroke, Kidney Failure, Major Burns)
Rp. 2,500,000

100% of your premium will be returned to you after 5 years if there is no claim

In cooperation with:




Tamadera - Secure and clear

- ⊙ TAMADERA combines the benefit of saving for the future with insurance protection
- ⊙ No administrative charges
- ⊙ No medical examination needed for joining
- ⊙ Attractive membership certificate
- ⊙ Life insurance protection starts on the first day
- ⊙ Protection for 5 critical illnesses* starts after the 90th day
- ⊙ Free usage of the maturity benefit, for example for the education costs of your child
- ⊙ You can choose the beneficiary, for example your child
- ⊙ Your husband can join as well (with a separate membership)
- ⊙ The staff of the group policy holder will assist you if there is a claim. After a claim, the membership ends
- ⊙ 100% of your premium will be returned to you after 5 years if there is no claim
- ⊙ Cancellation of membership will be subject to a charge of 15% of the premium already paid**

About Allianz

Allianz is one of the largest insurance and financial services providers in the world. Established in Germany in 1890, today Allianz is present in over 70 countries and serves approximately 75 million customers worldwide.

This brochure is not a membership contract and serves as product information only.



* Allianz only covers the 5 critical illnesses mentioned above

** subject to Allianz guidelines

Source: http://www.allianz.co.id/NR/rdonlyres/9DA5669E-75F2-4A0E-A746-EF1AC231B648/8242/AsuransiTamadera_Eng_v11.pdf, (29.02.2012)

9.3 Questionnaire

A''

Questionnaire on Socio-Economic Determinants of Microinsurance Demand



Dear Sir or Madam,

Thank you very much for participating in this survey. This survey aims at identifying the socio-demographic backgrounds of microinsurance customers in Indonesia. Ultimately, the results will contribute to provide improved insurance services to the Indonesian community. Therefore, your effort in answering these questions is of high importance and deeply appreciated. You're kindly asked to answer all questions to the best of your knowledge. Should you have any questions your interviewer will be glad to assist you. All collected data will be treated confidential and anonymous.

Thank you,

Your research team

For Interviewer

Group Name _____

Interview-ID _____ Name of Interviewer _____

Date _____ Time _____

Location _____ Name of Interviewee _____

Surroundings: Urban Semi-Urban Rural

Allianz/ VFI Staff present: Yes No

Fabian Huber, Aalto School of Economics, University of Cologne

1

A Microinsurance Attitude

VFI Customer Information

- VFI customer since: _____
- Amount of last VFI loan: _____ IDR
- VFI is partnering with an insurance company to provide Tamadera. Can you please name this insurance company:

Bumiputera Allianz BTN
Prudential

Interest in Microinsurance

- Do you use any other Insurance product than *Tamadera* and *Payung Keluarga*?
No Yes, please specify: _____
- Do you intend to acquire any other financial service in the next three years, e.g. VFI Loan?
Yes No Do not know yet
If yes, for what reason: _____

A''

Questionnaire on Socio-Economic Determinants of Microinsurance Demand



- Please read the following statement carefully. Then indicate the extent to which you agree or disagree:

I am very interested in financial matters.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

In order to inform myself about financial services I use the following sources:

	1	2	3	4	5	6	7
Tetangga	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Koran	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radio/ TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VFI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

If it was offered to me I would be interested in Insurance for my:

	1	2	3	4	5	6	7
Kesahatan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rumah	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pendidikan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Motor/ Milik	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jiwa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

Ethical Considerations

- Did you consult with any religious council before you decided on buying Tamadera?
No Yes
- Do you think that Tamadera is Sharia compliant (takaful)?
No Yes
- Please read the following statement carefully. Then indicate the extent to which you agree or disagree:

I am willing to pay a 10% higher premium for a Sharia compliant product over an otherwise equal conventional product

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

Trust & Customer Satisfaction

- Who was introducing Tamadera to you?

VFI Agent Allianz Rep.
Friend/ Neighbour
Other, please specify: _____

Fabian Huber, Aalto School of Economics, University of Cologne

2



11. Please read the following statement carefully. Then indicate the extent to which you agree or disagree:

Generally speaking, I trust most people.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

I trust the following people.

	1	2	3	4	5	6	7
<i>Tetangga</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Temannya</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Saudara</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Temannya kerja</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>VFI Agen</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Allianz Agen</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

VFI

When Tamadara was offered to me, I felt understood and well-advised by the VFI Agent and/or Allianz Rep.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

My VFI advisor pays attention to what I say.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

The financial advisor from VFI puts my customer benefit as the first consideration.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

I have confidence in the VFI Agent.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

Even though other financial advisors provide more favorable terms, I'll continue to purchase insurance services with my VFI advisor.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

Allianz

I feel safe to keep my money with Allianz

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

I have confidence in Allianz.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree



When I intend to purchase any additional insurance, Allianz will be my first choice.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

I am willing to recommend Allianz to my friends.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

3. Does your household (i.e. those indicated in question A10) own any of the following?

Electricity	<input type="checkbox"/>	Since _____
Water Dispenser	<input type="checkbox"/>	Since _____
Fridge/ Freezer	<input type="checkbox"/>	Since _____
Handphone	<input type="checkbox"/>	Since _____
TV	<input type="checkbox"/>	Since _____
Motorcycle	<input type="checkbox"/>	Since _____
Computer	<input type="checkbox"/>	Since _____
Car	<input type="checkbox"/>	Since _____
House	<input type="checkbox"/>	Since _____

B Economic Situation

1. Please specify your principal occupation:

Employee	<input type="checkbox"/>	Trader	<input type="checkbox"/>	Farmer	<input type="checkbox"/>
Food stall	<input type="checkbox"/>	Housewife	<input type="checkbox"/>		
Goods or Food production (self-employed or family business)	<input type="checkbox"/>				
Other:	_____				

2. Please specify the principal occupation of your spouse:

Employee	<input type="checkbox"/>	Trader	<input type="checkbox"/>	Farmer	<input type="checkbox"/>
Food stall	<input type="checkbox"/>	Housewife	<input type="checkbox"/>		
Goods or Food production (self-employed or family business)	<input type="checkbox"/>				
Other:	_____				

4. Please read the following statement carefully. Then indicate the extent to which you agree or disagree:

Compared to the prior year the economic situation of my household definitely improved.

	1	2	3	4	5	6	7
2006	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2007	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2008	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2009	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2010	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

A”

Questionnaire on Socio-Economic Determinants of Microinsurance Demand



I believe my household is saving enough for the future.

1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

5. Please indicate your average daily expenditures over the last five years:

2006	_____	IDR
2007	_____	IDR
2008	_____	IDR
2009	_____	IDR
2010	_____	IDR

6. Do you pay regular remittances to relatives?

No Yes Since _____
If yes, how much in average per month: _____ IDR

7. Do you receive regular remittances from relatives?

No Yes Since _____
If yes, how much in average per month: _____ IDR

8. Do use any formal financial services? If yes, please indicate which:

Bank Account (e.g. ATM)	<input type="checkbox"/>	Since _____
Credit (e.g. VFI)	<input type="checkbox"/>	Since _____
Savings Account	<input type="checkbox"/>	Since _____
Insurance	<input type="checkbox"/>	Since _____
Pawn Shop	<input type="checkbox"/>	Since _____
Other:	_____	

9. Please indicate if your household (i.e. those indicated in question A10) suffered from any of the events listed below and the last year of occurrence?

Flood	<input type="checkbox"/>	Year _____
Fire	<input type="checkbox"/>	Year _____
Serious illness	<input type="checkbox"/>	Year _____
Death	<input type="checkbox"/>	Year _____
Tuition Payment	<input type="checkbox"/>	Year _____

Other: _____

10. How did you cope with the financial burden of the event indicated in B9?

Savings	<input type="checkbox"/>	Credit	<input type="checkbox"/>	Pawn Shop	<input type="checkbox"/>
Borrow from friends/neighbors	<input type="checkbox"/>	Borrow from Relatives	<input type="checkbox"/>		

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Questionnaire on Socio-Economic Determinants of Microinsurance Demand



Arisan Participation

11. Are you a member in an Arisan or other financial group?

No → Continue with C1.
Yes How many groups? _____

12. Can you borrow money from your financial group or Arisan?

No Yes

13. Please indicate the purpose of the financial group you are participating in and your average monthly contribution:

Type	Monthly Average
_____	_____ IDR
_____	_____ IDR
_____	_____ IDR
_____	_____ IDR

14. Imagine you start participating in a formal insurance plan, would you reduce the participation in Arisans as a consequence?

No Yes
Do not know yet

C Financial Literacy & Product Understanding

Product Understanding

1. Are you a Tamadera customer?

No
Yes Since: _____ → Continue with 3.

2. Why did you decide not to participate in Tamadera? (Multiple answers possible)

Price	<input type="checkbox"/>	Unattractive Benefits	<input type="checkbox"/>
Low Coverage	<input type="checkbox"/>	Similar Product owned	<input type="checkbox"/>
Term too long	<input type="checkbox"/>	High Cancellation Fee	<input type="checkbox"/>
Not yet offered	<input type="checkbox"/>	Other, please specify: _____	

3. In what events will you receive a pay-out from the Tamadera insurance plan? (Multiple answers possible)

Death	<input type="checkbox"/>
Serious Illness	<input type="checkbox"/>
Schooling of Children	<input type="checkbox"/>
Failure to pay premium for 2 weeks	<input type="checkbox"/>
Upon request	<input type="checkbox"/>
After 5 years	<input type="checkbox"/>

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4. How much Rupiah will you get returned at the end of *Tamadera's* five year saving plan?

More than I paid in Same as I paid in
Less than I paid in

5. Please name the serious illnesses covered under the *Tamadera* insurance plan:

1. _____ 2. _____
3. _____ 4. _____
5. _____

6. What is the monetary effect of premature termination of *Tamadera* due to death or serious illness?

Higher return than paid in funds
Exact return of paid in funds
Lower return than paid in funds

7. After deciding for *Tamadera* when can you cancel your policy at the earliest?

Immediately 12 weeks
12 months 5 years

8. How much is the cancellation fee for premature termination of *Tamadera* upon request?

100,000 IDR None
15 % of paid premium

9. (For *Tamadera* customers only) What do you plan to use your *Tamadera* savings for?

Working Capital Pilgrimage
Safety Cushion Education of Children
Daily Consumption Needs Repay Debt

Other, please specify: _____

10. (For *Tamadera* customers only) Did you reduce your participation in Arisan groups after engaging in *Tamadera*?

No Yes

If yes, how much: _____ IDR

Financial Literacy

11. If you have 2,000 Rupiah and a friend gives you 5,000 Rupiah, how many Rupiah do you have?

_____ IDR

12. Suppose you want to buy a bag of rice that costs 37,000 Rupiah. You only have a 100,000 Rupiah note. How much change will you get?

_____ IDR

13. If you have four friends and would like to give each friend four sweets, how many sweets in total must you have to give away?



14. What is 10% of 400?

15. Do you think the following statement is true or false? For farmers, planting one crop is usually safer than planting multiple crops.

True False

16. Suppose you borrowed Rupiah 100,000 from a moneylender, and the rate of interest was 2% per month. If you made no repayment for three months, how much would you owe: Less than Rupiah 102,000, exactly Rupiah 102,000, or more than Rupiah 102,000?

Less than Rp 102.000
Exactly Rp 102.000
More than Rp 102.000

17. Imagine that you saved Rupiah 100,000 in a saving account, and were earning an interest rate of 1% per year. If prices were increasing at a rate of 2% per year, after one year, would you be able to buy more than, less than, or exactly the same amount as today with the money in the account?

Less than today
Exactly as much as today
More than today

D Demographic Questions

1. Are you: male female

2. Please provide your real age (NOT ID card): _____

3. From where in Indonesia does your family originate?

4. Place of Residence

- a. In which year did you change your place of residence for the last time?

_____ No change

- b. Approximately how many kilometers distance is between your new and old place of residence?

_____ km

5. Please indicate your marital status and year of change:

single married since: _____

divorced widowed

6. How many years did you spend in school? _____



7. Do you hold any educational degrees?

- None SD (Elementary S.) SMP (Junior High S.)
 SMA (Senior High S.) SMK (Vocational S.)
 D1-D3 (Diploma Vocational S.) S1 (Bachelor Degree)
 S2 (Master Degree) Other _____

8. What is your religion?

- Muslim Protestant Catholic
 Hindu Buddhist Confucian
 Other, please specify: _____

9. Please read the following statements carefully. Then indicate the extent to which you agree or disagree:

In everyday life I follow the rules of my religion.

- | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Strongly
Disagree | Disagree | Somewhat
Disagree | Neutral | Somewhat
Agree | Agree | Strongly
Agree |

I speak with my family/ friends often about religious matters.

- | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Strongly
Disagree | Disagree | Somewhat
Disagree | Neutral | Somewhat
Agree | Agree | Strongly
Agree |

My religion is very important to me.

- | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Strongly
Disagree | Disagree | Somewhat
Disagree | Neutral | Somewhat
Agree | Agree | Strongly
Agree |

10. How many people live in your household? _____

- a. Number of own children: _____
- b. Please indicate the age of all your children and, if they attend school, the number of years in school:

	Age	Years in School
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

**Thank you,
for your participation!**

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