

Chapter 5

Discussion

5.1 Summary

Too often, health expenditures become a financial catastrophe for households in poverty. Micro health insurance potentially limits the financial hardship associated with these health expenditures. Among the poor, demand for voluntary health insurance however remains surprisingly low. Even when programs are heavily subsidized or discounted, and the financial benefits from these programs seem large at first glance, take-up is typically not higher than 20 to 30 percent of the targeted population.

Low take-up has puzzled practitioners, policy-makers and researchers, which resulted in a number of studies aiming to enhance demand. The first chapter of this thesis reviews this literature. In general, demand for micro health insurance is highly price-sensitive and a more convenient registration process boosts enrollment. But take-up remains lower than expected even when offered at high discounts or heavily subsidized premiums, and simplifying registration processes will in many cases increase transaction costs to unviable levels. Hence, these interventions to raise enrollment are unlikely to become sustainable in the long run.

Alternative solutions are necessary to enhance enrollment rates but rigorous evidence on successful interventions and the mechanisms driving their impact is limited. For instance, although price discounts enhance take-up, it is unclear whether this is because discounts relax liquidity constraints, attract hyperbolic discounters, etc.; financial literacy training enhances understanding of micro health insurance but does not translate into increased take-up; a lack of trust is a barrier to enrollment but identifying the channel through which trust can be increased proves difficult; and so forth. This thesis therefore addresses three gaps in the literature.

Reference-dependent consumption plans First, the existing literature typically attributes low demand either to behavioral factors like non-standard preferences, beliefs and decision-making processes, or to the institutional environment in which micro health insurance operates. Few studies investigate how the two interact. Chapter 2 contributes to this area by introducing financial market imperfections in prospect theory, one of the main behavioral theories of decision-making under risk. Specifically, the study models financial market imperfections as liquidity

constraints, and analyzes how these, combined with reference-dependent preferences, affect intertemporal consumption plans.

The theoretical framework in this study assumes that consumers do not only value consumption itself, but also derive utility from changes in plans regarding consumption. The utility from changing plans is modeled as the gain-loss utility function initially proposed in prospect theory (Kahneman and Tversky, 1979). To reflect loss aversion, consuming less than planned (a 'loss') is relatively painful. By diminishing sensitivity, the marginal value of gains and losses is decreasing in size. Further, to deal with the intertemporal nature of consumption, changing a plan is felt less when it involves future consumption than when it affects immediate consumption.

A key insight from the analysis is that when consumers have no access to credit, reference-dependence might induce them to save more than reference-independent consumers. The study demonstrates two examples of this savings anomaly. In one example, a consumer learns - to her surprise - that income in early periods is lower than expected. As a result, immediate consumption will be less than planned. Although this hurts, a loss averse consumer prefers not to give up future plans either. She might decide to take the full loss immediately and keep saving in order not to give up her future plans. By contrast, a reference-independent consumer prefers to smooth consumption and will therefore dissave after a negative shock to income.

In a second example, consumers do not know how much they will earn until the actual consumption-savings decision, but they make a contingency plan for how much to consume given every possible income realization. Suppose their plan is to smooth consumption, unless the liquidity constraint binds, in which case the consumer lives hand-to-mouth. This is the reference-independent optimum. Given this plan, the expected level of consumption is higher in future periods than in early periods. Because consuming less than planned is relatively painful, a loss averse consumer might save more than in the reference-independent plan to meet her future expectations. This finding contrasts predictions from the model without liquidity constraints. In other words, reference-dependence affects behavior in qualitatively different ways, depending on whether consumers face a liquidity constraint.

The study focuses on consumption-savings decisions. The findings may generalize to insurance decisions because both savings and insurance decisions entail a trade-off between immediate consumption and future consumption. Since reference-dependence combined with liquidity constraints might increase the optimal level of savings, the framework can also predict higher enrollment rates than reference-independent frameworks would predict. This is empirically inconsistent with the low take-up puzzle. I therefore conclude that in a context of liquidity constraints, prospect theory does not solve the low take-up puzzle. In imperfect financial markets, reference-dependent preferences may increase rather than decrease the willingness to pay for insurance.

The intra-household allocation of micro health insurance A second gap in the literature is that most non-experimental studies are based on correlational designs, using for instance cross-sectional surveys with only one observation for every decision-maker. As a result, these studies cannot control for confounding unobserved heterogeneity. A third variable like household wealth is correlated both with health and with take-up, so that a correlation between the latter two variables does not imply that households select into insurance on the basis of their health risk. Rather, the third variable could be driving the insurance decision. Chapter 3, testing for adverse selection in a health insurance program in rural Nigeria, uses panel data to control for such unobserved household characteristics.

This chapter identifies the magnitude of adverse selection in two stages. A first stage estimates to what extent self-reported and medical measurements at baseline correlate with follow-up health expenditures in a control district, where health insurance was not available. Moral hazard and other price effects do not affect this first stage. The second stage estimates whether the cross-sample prediction of health expenditures is significantly higher for insured than uninsured household members in the treatment district, which indicates adverse selection. Both stages include household fixed effects to control for unobserved household-level heterogeneity.

The study finds no substantial adverse selection within households. Thus, despite the opportunity to enroll individual members within the household, the decision-maker did not appear to take household members' health risk into consideration when enrolling members. This finding is robust across several subsamples and holds independent of whether the first stage uses self-reported subjective health or objectively measured health indicators as instruments. Differences in expected health expenditures cannot explain why households do not enroll all members. In other words, health risk does not appear to drive the insurance decision in this context.

Free-riding in a framed field experiment A third gap in the literature is that most experimental studies on micro health insurance do not investigate through which channels policy interventions have an impact. The external validity of policy interventions strongly depends on knowledge about these impact pathways. One of the main weaknesses of randomized controlled trials is indeed that they do not generate such knowledge. By contrast, laboratory experiments in the field are powerful instruments to identify which mechanisms drive the success of an intervention.

Chapter 4 therefore uses a framed field experiment to test whether jointly liable microcredit clients free-ride on social assistance from their credit group members when offered individual insurance. This study shows that less risk averse clients have a private incentive to forgo insurance because the group contributes for ill members who cannot repay their loan. Group insurance, in

which either all or no group member enrolls, eliminates free-riding, binding clients to the group optimum. More risk averse clients do not face this social dilemma and they are able to commit to full group enrollment when offered either type of insurance.

The experimental findings are consistent with this theory. While both more and less risk averse clients are willing to join group insurance, only the less risk averse clients opt out under individual insurance. In the laboratory environment, the only reason to enroll in group insurance and not in individual insurance is that under group insurance, an uninsured client bars her peers from having insurance as well. In that case, she cannot rely on contributions from insured peers. The framed field experiment isolates the possibility to free-ride on peers' assistance as an explanation for low demand.

5.2 Policy implications

Chapters 2 to 4 address three different research questions, but yield a similar policy implication: each highlights the role of the institutional setting. Chapter 2 shows that in a context of liquidity constraints, reference-dependent preferences can increase take-up, while such preferences explain low take-up in a context of perfect financial markets. In other words, the interaction with financial market imperfections can change the predictions of prospect theory substantially. When applying this theory, one should hence consider to what extent imperfect financial markets characterize the institutional context.

Chapter 3 suggests that institutional features shape intra-household allocations of insurance. This chapter studies a community-based health insurance program in rural Nigeria and finds no evidence of adverse selection within households, i.e. conditional on household-level characteristics. Individual-based enrollment therefore does not necessarily induce adverse selection. It might actually enhance enrollment if liquidity-constrained households face difficulties enrolling all household members in one go. This finding contradicts findings from voluntary health insurance markets in developed countries though. These studies typically provide evidence of adverse selection conditional on household characteristics, for instance wealth and risk aversion.

One way to explain these contrasting findings is that the insurance scheme in rural Nigeria could limit adverse selection by engaging community-based agents in the enrollment process. These agents can use local information to target not only high-risk household members but also low-risk individuals, creating a larger and more sustainable risk pool. Another explanation is that in the rural Nigerian context, households had no prior experience with health insurance. Hence, they may not have fully understood that high-risk members benefit from insurance more than low-risk members, in particular because the scheme was heavily subsidized. Both hypotheses require further research but highlight the importance of the context in which micro health insurance operates.

Finally, Chapter 4 attributes low take-up to pre-existing risk-sharing. Without access to formal insurance, the poor resort to alternative risk-coping mechanisms such as social risk-sharing arrangements. In microcredit groups, for instance, clients contribute for ill group members who cannot repay their loan themselves. Given this context, insurance offered at the individual level creates a social dilemma. Because clients can free-ride on contributions from their microcredit group, less risk averse clients will opt out of individual insurance, even when taking insurance will improve group welfare. Group insurance, eliminating the possibility to free-ride, potentially enhances enrollment rates.

The findings are also relevant to alternative types of risk-sharing arrangements and microinsurance. Microinsurance providers might for instance want to enroll entire villages, cooperatives or informal savings groups at once, especially when these networks engage in substantial risk-sharing. Likewise, our free-riding hypothesis has been derived for other types of insurance as well. The theoretical predictions apply not only to insurance for idiosyncratic risks, but also insurance for covariate shocks - as long as the risk is not perfectly correlated within the social network.

Even when looking at other types of health investments, for instance in lifestyle and preventive health care, similar considerations might be relevant. Individuals who do not bear the full burden of acute health care - because their network contributes for them - have an incentive to underinvest in preventive health care. The marketing of lifestyle interventions and preventive health technologies could hence be more successful when targeting an entire social network at once, although this remains an area for future research.

I conclude that the institutional context of micro health insurance shapes insurance decisions. The finding that liquidity constraints, community-based enrollment agents and pre-existing risk-sharing networks can greatly matter also suggests that there will be no one-size-fits-all solution to low enrollment rates. In addition, I show that the institutional context will interact with behavioral mechanisms. When trying to solve the low take-up puzzle, it is crucial to better understand how context, preferences, beliefs and the decision-making process *combined* affect take-up.

5.3 Directions for future research

Which questions to address when trying to better understand this role of the institutional context? To start, we can adjust behavioral theories to reflect the decision-making context of the poor and these theories. The chapter on reference-dependent consumption plans, for instance, derives testable propositions for consumption-savings decisions in a setting with imperfect financial markets. Nowadays, an increasing number of ongoing survey efforts focus on consumption, savings and insurance, including financial diaries that collect high-frequency data on household finances. These and other detailed household panel surveys can be used to investigate to what

extent consumers are indeed liquidity-constrained, and to what extent preferences satisfy the reference-dependent framework discussed in Chapter 2.

Another important research agenda is the principal-agent relationship between policy-makers and insurance providers on the one hand and their partner institutions on the other hand, e.g. microfinance institutions, community-based health providers and enrollment officers. These agents have information that might prove useful in targeting and marketing micro health insurance programs, but their interests are not necessarily aligned with policy-makers' objectives. Since an important subsample of micro health insurance programs are called 'community-based health insurance', it is puzzling that in this context the role of community-based agents has not been studied in more detail. Future research should explore how these agents affect demand for and impact of health insurance, and how to align their interests with the principal's objectives.

Also insurance providers and microfinance institutions on the one hand and their clients on the other hand face different incentives. Chapter 4 explains that conditional on the number of insured clients, microcredit groups are more likely to default under group insurance than under individual insurance. In the latter type of insurance, insured clients are more scattered over the client population since clients can enroll individually and independent of their peers' decisions. If the MFI does not adjust down the premium accordingly, the reduced default risk under individual insurance is a rent to the MFI. The MFI will therefore prefer to offer individual insurance, while clients and especially the more risk averse will benefit most from group insurance since it eliminates free-riding.

Moreover, the essay on free-riding in microcredit groups suggests that group insurance will enhance enrollment. However, the study - intentionally - did not explore long-run interactions between insurance and group composition, precisely to isolate free-riding within existing groups. Social networks are endogenous in the long run, that is, the introduction of health insurance will affect the choice with whom new microcredit clients form groups. Insurance may for instance reduce the optimal group size and induce sorting on risk preferences instead of health risk. Further, the threat of group expatriation offers an additional solution to free-riding. The relation between endogenous group formation, demand for health insurance and limited commitment is a promising area for future research.

To really answer the low take-up puzzle, we must understand how health insurance creates value compared to other financial instruments such as savings and credit, and shed light on the true nature of the financial constraints that the poor face when paying insurance premia. This requires qualitative and high-frequency data on people's financial livelihoods as well as their health, health care utilization and expenditures. Wendy Janssens and I, supported financially by the PharmAccess Foundation, are therefore currently collecting 'Health Finance Diaries' in Nigeria and Kenya. In this project, we interview 240 farming households weekly over the course

of a year, providing insights in the size and sources of costs related to illnesses and injuries; how households prepare for and manage these costs; and the financial constraints to seek health care or take insurance. Ultimately, diaries generate knowledge on how sound financial instruments and innovative payment systems may increase access to health care.

A final looming puzzle is how households cope with the financial burden of a global epidemic of chronic diseases. Non-communicable diseases (NCDs) like hypertension, diabetes, chronic lung conditions and cancer place a tremendous demand on health systems already overburdened by infectious disease. This is reflected in the 80 percent of all NCD-related deaths that occur in low- and middle-income countries. Financing health care for chronic diseases may be even more problematic than financing catastrophic illnesses. Health insurance for chronic conditions is difficult to offer affordably, even in developed countries. Since early treatment and an ounce of prevention are worth a pound of cure, rigorous research on how the institutional context shapes preventive investments - and how the context interacts with behavioral mechanisms - has significant value. Such research will shed light on how poor households can be encouraged to invest more in the prevention and treatment of chronic disease.

In conclusion, this thesis finds little evidence for the hypotheses that prospect theory and adverse selection drive low take-up. Nonetheless, the framed field experiment in Chapter 4 provides substantial evidence for the hypothesis that microfinance clients forgo welfare-improving insurance because they can free-ride on assistance from their social network. This suggests that, in order to enhance demand for health insurance, providers will have to design their programs around pre-existing risk-sharing arrangements. This is just one feature of the institutional context in which insurance operates. Ultimately, understanding how the environment shapes poor households' health financing - and how to help them do it better - is a crucial next step for health and well-being at the bottom of the income distribution.

