Guest Editorial

David M. Dror^{a,b}

^aMicro Insurance Academy, New Delhi 110020, India.

E-mail: daviddror@socialre.org

^bErasmus University Rotterdam, Rotterdam, DR 3000, the Netherlands.

The Geneva Papers (2016) **41**, 179–183. doi:10.1057/gpp.2016.10

The Geneva Papers on Risk and Insurance—Issues and Practice is publishing for the second time a special issue on microinsurance, exactly two years after the first such issue was printed. Judging by the articles accepted for publication in this issue, it would seem that the microinsurance discourse is transitioning from descriptive to analytical, with a more practice-based technical examination of direct and indirect impact on the insured, and more modelling of novel insurance solutions.

We retained six articles for this special issue, three of which are practice-based analytical (by Savitha, Bendig and Arun, and Zhang *et al.*), and three (by Radermacher *et al.*, Woodard *et al.*, and Jangle *et al.*) that deal with modelling novel concepts that are not yet applied but which offer solutions to known limitations of current practice.

Savitha explores the impact of health insurance on hardship financing for health-care costs. The concept of hardship financing (namely, the added cost of interest on money borrowed to pay health-care costs) was formulated in 2012 by others,¹ and shown to be quantitatively high compared with the health-care costs and to occur not only in cases of high-cost care, but also for outpatient services. The interesting new evidence in this article, from Karnataka State (India), is that insured persons rely less on usurious credit than uninsured individuals. This effect is unexpected because the shift in the sourcing of funds to cover health-care costs from expensive informal providers (mainly non-market money-lenders) to more affordable market-based mechanisms is associated with being insured, yet it is not a direct outcome of insurance coverage. Had this outcome been directly linked to the benefits package, it would be an important confirmation of the hypothesis that one of the factors affecting demand for micro health insurance is the quest to reduce hardship financing. But these results are even more interesting because they are reported in a setting where the coverage provided by the micro health insurance schemes in question was too narrow to obviate borrowing, sale of assets and dis-saving. The association of being insured with the ability to find cheaper hardship financing solutions than the uninsured group is reported here for the first time. It would be important to know whether insured households had better access to formal loans as part of becoming insured (already prior to enrolling in insurance). Stated differently, we cannot conclude from the data presented that the reduced hardship

¹ Binnendijk *et al.* (2012).

financing was due to insurance or because people already had better access to formal loans before buying insurance. Either way, the insured population could negotiate its situation to obtain a tangible financial benefit from being insured. This new expression of an indirect (and maybe even unintended) financial improvement over and beyond the direct benefit as defined by the insurance policy is not fully explained; so it is too early to assert that this effect occurs everywhere.

Bendig and Arun offer evidence from Sri Lanka of another behaviour change associated with being insured: households—all members of microfinance institutions (MFIs)—that were insured under one form of microinsurance were more likely to buy other insurance policies. That MFI members were likely to purchase at least one insurance policy is not surprising, considering that the reason for membership in an MFI is mostly to borrow money and considering that MFIs require borrowers to buy credit-life insurance to securitise repayment of the loan in case of borrowers' death. The authors argue that households that purchase insurance display characteristics that explain why they are more likely to do so (such as that the sampled insured households were larger, owned more land, received more remittances, their household heads were better educated, slightly more household heads were married, fewer heads were self-employed, significantly older, and more households experienced severe illness of a household member) compared to households that did not buy insurance. Wealthier households, that is, those with a higher asset endowment, were more likely to use micro life, health or vehicle insurance. Another important aspect is that female headship of a household was positively associated with enrolling in micro health insurance compared with male-headed households, and households that bought health insurance were more likely to buy life insurance. Even though most households are male headed, many MFIs consider women as their main target group and, overall, membership of MFIs is very large. Therefore, gender difference seems less critical, and the authors show that households that purchased any type of insurance had a significantly higher risk-assessment index. This suggests that participation in different types of microinsurance is complementary rather than conflicting or substitutive. A strategy to leverage this pattern would be to develop composite packages combining several classes of risk.

Whereas the first two papers dealt with the impact of behaviour change on the insured population, the third article deals with a topic that is of concern to insurers offering voluntary livestock insurance. The article by Zhang, Zhu and Turvey examines whether moral hazard (in this case measured through death loss of pigs) could explain the slow rollout of livestock microinsurance in developing countries, when the benefits of this type of insurance seem so obvious in developed countries. Specifically, the authors examine whether farmers increase death loss or become laxer in applying best-management vaccine practices when they obtain pig insurance in rural China. As it is hard to make reliable tests, this article fills a gap by measuring changes in death loss and heterogeneity in vaccination practices with actual data and a real example of pig insurance in Deqing County, China. The authors deduce from their analysis that there is no evidence of moral hazard and thus, insurers could offer more livestock microinsurance without concerns about moral hazard. Moreover, as the insurance had a positive impact on hog production in this experiment, there should be more buyers. Based on their results in China, the authors submit that there is a positive reason to promote more livestock insurance in developing countries. Practitioners in other countries might be more circumspect about such a general conclusion. That said, we can agree that this article provides the methodological elaboration on how to evaluate moral hazard in livestock

insurance by reference to other species of livestock, in other geographies and with other policies. Recalling that animal husbandry is a widespread source of livelihood activity in many low- and middle-income countries, this technical contribution is welcome.

We now move on to the three articles dealing with modelling, one on health insurance, another on livestock fodder insurance and the third on crop index insurance.

The first, by Radermacher *et al.*, proposes to apply risk adjustment to Cambodia's health insurance system (composed of several community-based health insurance schemes) in order to enhance inclusion of high-risk persons that might otherwise be excluded. The authors illustrate how this could work with 2010 data on the health-seeking behaviour of insured households from Kampong Thom district, Cambodia. Risk adjustment is a rather complex methodology to reduce insurers' risk selection practices (which occur when insurers have an incentive to avoid enrolling people who are in worse health and likely to require costly medical care) in order to counteract higher-than-average enrolment of persons who are most in need of health care (known as adverse selection). Risk adjustment is relevant in a health insurance market based on individual choice to insure; this conditionality is applied in the study setting, but is influenced by premium subsidies to certain subgroups. Risk adjustment functions by redistributing funds from plans with lower actuarial risk to schemes with a higher risk. At least in theory, risk adjustment is a zero-sum game. In this paper, the authors propose to compensate Cambodia's "Health Equity Funds" (i.e. social health protection schemes for poorer persons) for covering poor households whose—100 per cent subsidised—premiums are too low to cover their cost of care. This seems like a proposal to establish a transfer mechanism from one subsidy budget to another, based on risk-adjustment calculations. The risk adjustment would be calculated in relation to the age and gender of the insured group, and the location of the scheme. A simpler method of compensation might have been to cover deficits *ex post*, but the authors say that this solution was rejected when the health insurance schemes proposed it to the donor community. We are not informed why donors rejected that solution, but could surmise that *ex ante* risk-adjustments reduce the risk of inflated deficits. Hence the proposal to develop an *ex ante* subsidy calculation. On the one hand, the proposal integrates the current practice of community-rated premiums and accommodates the risk-adjustment principle that payments flow directly to the insurer, not through subsidies to the insured. On the other hand, operating this mechanism would require that all parties (as a minimum, all health equity funds and all community-based health insurance schemes) apply a standardised management information system that ensures that all schemes are comparable in terms of their membership, claims, income and expenditure. This is as desirable a requirement as it is challenging in the context of any developing country, and affects the authors' recommendation that their proposal might be applicable to other developing countries facing fragmented health risk pools.

Woodard, Shee and Mude deal with predicting availability of normal-growth fodder for pastoralists' livestock in Kenya. Pastoralism is a subsistence pattern in which people make their living by tending herds of herbivore animals. As pastoralism is most often an adaptation to semi-arid open country in which farming cannot be easily sustained, it allows pastoralists to disperse their herds or move them to new areas when there is a drought. A nomadic pastoral subsistence pattern reduces the risk of irregular climatic patterns, but insufficient fodder caused by widespread droughts would lead to animal deaths. About two-thirds of Africa is arid or semi-arid, where some 20 million pastoralists depend on livestock grazing as their main livelihood. An insurance product (called IBLI—Index Based Livestock

Insurance) has been piloted to compensate pastoralists in Marsabit County in northern Kenya for predicted livestock mortality by fitting statistically established household-level livestock mortality estimates to remotely sensed, normalised difference vegetation indexes (NDVI). Applying IBLI in additional regions, in order to scale up the project, requires area-specific mortality data and (remotely sensed) vegetation indexes, but such data and indexes are absent or sparse in many of the areas in question. This article deals with developing a spatial econometric method that captures cross-sectional dependence in the presence of sparse data. In addition, the authors also treat the question whether the contract should be designed for each area in isolation, for groups of areas, or in some combination of the former two options (“optimal contract aggregation”). Reviewers of most studies tend to look first at the data and the methodology. In this study, the household-level livestock mortality data are sourced from the Kenya Arid Land Resource Management Project survey of monthly observations, from 2001 to 2012. And the NDVI data is derived from NASA’s eMODIS data set, which is available from 2000 to the present, as 10-day, 250-meter composites. However, the more interesting (and probably unsettled) issue relates to the methodology for filling in gaps due to missing data (the authors reported that in their data set, about 40 per cent of divisions/seasons had no corresponding survey observations). Insurance economists might find this part of the study of greatest interest. Another thorny issue is whether one model can be fitted to all locations or whether, as constant insurance practice and common sense counsels, to structure an index for each location reflecting the heterogeneity across regions. The authors modestly caution practitioners not to view theirs as the be-all end-all solution. We can all celebrate the degree of intricacy that is offered here, which shows that there is no such thing as “micro modelling” of microinsurance risks.

The sixth article in this special issue deals with crop index insurance, which could offer insurance to hundreds of millions of farmers in all developing countries. Jangle, Mehra and Dror offer a new crop index method to quantify farmers’ cost of cultivation, taking account of climate change. Their point of departure is the low voluntary uptake of index-based crop insurance. They place their investigation in India, which boasts long experience with crop insurance and the largest agriculture insurance scheme in the world today in terms of the number of policyholders, and thus offers a good theatre to query why uptake is low. The authors look at two explanations: high basis risk, exemplified by a low correlation between actual losses and payouts, and design issues flowing from the practice in index insurance to focus on one climatic parameter while ignoring other relevant production costs/risks. Taking a clue from agricultural impact assessment studies, hydrological studies and vulnerability mappings that use both climatic and non-climatic parameters, the authors develop a new model of agricultural index insurance that is composed of multiple weather parameters plus non-climatic parameters, and test the hypothesis that their model (named CCC—Climate Cost of Cultivation, evoking that their index also computes the climate change-related contribution to the costs) performs better than typical index insurance. This is done with weather data for 34 years and crop yield data from 2000/01 to 2012/13 relating to wheat in Bihar, India. The importance of drought permeates the entire analysis, even as Bihar is an area that is usually considered water-rich. The methods devised to compose the CCC index make it adaptable to other locations, seasons and crops, subject to calibration of the data (and in the case of certain crops, also the addition of parameters, like wind speed or frost, which were not relevant for wheat). The comparison of CCC to typical index insurance is quite telling: CCC offers both a much better correlation between yield losses and insurance

payouts, and commands a much lower premium. Some insurance experts might be surprised to read that the typical index insurance used currently is associated with payments that are triggered not only by damages, but also by other decisions. The authors also devised the method to calculate the climate change-related component of the premium, so that policy-makers could apply the “polluter pays” principle rather than obliging farmers to pay for the results of carbon emissions they did not produce. When this loading is removed from premiums, the CCC crop index insurance becomes considerably cheaper. The combined effect of CCC and removal of climate-change loading makes crop index insurance cheap enough to be attractive even without reliance on premium subsidies. Considering the huge cost of subsidies to agricultural insurance, this insight should be of interest for policymakers in many countries.

In conclusion, the six articles published in this special issue of *The Geneva Papers on Risk and Insurance—Issues and Practice* on microinsurance offer a telling glimpse into the huge evolution of the thematic focus of microinsurance and the degree of complexity it has reached over the last few years. While in previous years there has been much more discussion of factors affecting demand or enrolment and much less evidence-based or data analytical elaboration of microinsurance issues, we now observe more concern with highly technical questions relating to package design and product efficiency. If ever we were looking for a compelling reply to claims that “there are no data” from the base of the pyramid to develop more and better microinsurance, we are rewarded with an answer here. The shift in focus from the single household (health) to a regional consideration (of climate, of data for indexes, of agriculture and livestock and other risks) is of course not new; the need to devise solutions at that level dates back to biblical times (ca. 1880 BC), where we can read about the first “biblical crop insurance solution” (which the Bible cites was priced at 20 per cent) initiated pursuant to Pharaoh’s dream² about seven years of plenty followed by seven years of famine. We can say that the fear of weather fluctuations causing covariate risks is time-tested, but in our day and age, microinsurance is now a powerful platform to apply all our faculties to devise better solutions, not just when calamity hits, but all the time. The articles in this issue illustrate the quality contribution of microinsurance to major developmental and risk management issues.

Reference

- Binnendijk, E., Koren, R. and Dror, D.M. (2012) ‘Hardship financing of healthcare among rural poor in Orissa, India’, *BMC Health Services Research* 12(1): 23.

² Bible: English Standard Version (ESV); Genesis, chapter 41.