



Weather Index Insurance: Promises and Challenges of Promoting Social and Ecological Resilience to Climate Change

Summary

Rural communities are particularly vulnerable to weather shocks and ecosystem decline. Traditionally, farmers have adapted to climate variability and extremes through various risk management strategies, either individually or cooperatively. However, climate change amplifies the frequency and intensity of extreme weather events and exacerbates environmental degradation processes.

Market-based risk transfer instruments are now being developed as complements to these conventional risk management strategies to shield rural households from increasing climate risks. At present, risk transfer solutions play a central role in the global climate and development agenda. International- and regional-level initiatives such as the InsuResilience Global Partnership support vulnerable developing countries to increase their financial protection coverage through climate risk finance and insurance, including through innovative micro-level schemes such as weather index insurance.

Over the last decade, index-based weather insurance has been gaining attention in the climate resilience discourse. These schemes compensate insured individuals based on a pre-defined weather index instead of individual losses, as with traditional types of insurance. Therefore, this instrument has several advantages, including greater time- and cost-effectiveness and reduced moral hazard risk.

Although weather-index insurance holds great promise, there are several challenges in designing and promoting it in

developing countries. First, on the demand side, there is a lack of accessibility to affordable insurance, especially for the poorest rural populations exposed to climate hazards. Second, on the supply side, insurance providers are facing an elevated risk of paying larger claims due to the increasing frequency and severity of weather extremes, while reinsurance services are often missing. Third, the ecological effects of implementing weather index microinsurance initiatives receive little attention in research and policy. Yet, protecting the environment and building ecological resilience are critical policy dimensions of climate risk management in rural regions, where the poor disproportionately depend on ecosystem goods and services for a living, as they often lack alternative livelihood strategies.

Looking into the key challenges to microinsurance initiatives and drawing upon findings of a review of literature on weather index insurance and field research, this Briefing Paper derives recommendations for development cooperation, governments and insurers for an enhanced action agenda on climate risk insurance. The discussion is focused on the specific case of weather index insurance for the rural poor at the micro level. We emphasise the importance of enhancing knowledge on the potential positive and negative ecological effects of weather insurance schemes, and the need to develop a diverse set of climate risk management strategies for the poor, including social protection mechanisms.

Introduction

Over the last years, the political commitment has been growing to create risk finance and transfer mechanisms, including an insurance market in developing countries vulnerable to climate change. Risk transfer solutions play a central role in the Sendai Framework for Disaster Risk Reduction (2015-2030), the Paris Agreement, the Addis Ababa Action Agenda and the 2030 Agenda for Sustainable Development. Most notably, the Warsaw International Mechanism for Loss and Damage recognises the role of insurance coverage in averting, minimising and addressing residual loss and damage from climate change.

At the 23rd session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in 2017, the G7, G20 and V20 jointly launched the InsuResilience Global Partnership. This large-scale collaborative initiative aims to strengthen the capacities of poor and vulnerable rural populations in developing states to deal with the growing impacts of climate change by enabling timely and reliable ex-ante and ex-post responses through climate risk finance and insurance. Its 2025 vision includes, among other goals, increasing the insurance coverage in developing countries to 500 million people.

Although weather index insurance has been promoted from macro- to micro-scales, significant challenges remain in extending the coverage to many rural populations highly exposed to weather extremes, especially to the poorest groups. The latter are most often subsistence producers (fisherfolk, pastoralists and farmers) with limited access to productive assets such as finance, technology and land. Furthermore, the potential ecological effects of implementing weather index insurance, including maladaptation, have so far received little attention in research and policy. Yet, protecting the environment and building ecological resilience are critical policy dimensions of climate risk management, especially in rural regions where the poor disproportionately depend on ecosystem goods and services for a living, as they often lack alternative livelihood strategies.

This Briefing Paper discusses some of these challenges and emphasises the need to generate knowledge and to design and implement insurance solutions, which contribute to avoiding maladaptive environmental outcomes and enhancing ecosystem resilience. We focus on a micro-level weather index insurance for rural populations dependent on ecosystem goods and services for their livelihoods.

Weather index insurance – impacts and challenges

Weather index insurance differentiates from traditional agricultural insurance approaches in certain aspects. In particular, traditional insurance provides payments to farmers based on individual losses, whereas in the case of index-based insurance, payments are triggered by a predetermined weather index (e.g. precipitation), which is related to, but independent of, the actual loss of individual households. Moreover, weather index insurance has certain

advantages in comparison to traditional insurance. First, it can largely reduce the cost of loss evaluation. Second, it can effectively limit moral hazard and adverse selections, that is, the incentive of the insured to take higher risk because they do not bear the full costs of that risk owing to insurance. Currently, weather index insurance in developed countries is provided mostly by private companies, whereas in developing countries, it is often promoted through government-led projects with subsidies.

Weather index insurance schemes are supportive for their timely and simple process payments made directly after extreme events are experienced. If properly designed and implemented, they can incentivise the uptake of new technologies and riskier, but more profitable types of crops. Evidence also indicates that assured access to index insurance payouts can enable affected households to recover from shocks and avoid negative coping strategies such as distress sales of assets. This is mostly observed in pastoral and agro-pastoral areas, where, traditionally, uninsured farmers sell and slaughter large numbers of animals after experiencing a weather shock (Bertram-Huemmer & Kraehnert, 2018).

Despite increasing interest among policymakers, insurers and researchers in weather index insurance, to date, there is very limited empirical evidence of the ecological impacts. However, several of the studies that exist indicate that climate risk insurance schemes can have maladaptive environmental effects, as these may encourage unsustainable agricultural practices (Müller, Johnson, & Kreuer, 2017). These include overgrazing, land cover changes, intensification of crop patterns, shifts to cash crops as well as increased use of fertiliser and pesticides, all of which may lead to land degradation and pollution of water resources. In the long term, these effects may condition the higher vulnerability of farmers to climate change and hazards.

Another widely acknowledged concern is that, although weather index insurance has been found to benefit insured populations in general, the gains for the poorest people, who are likely to suffer the most from climate extremes and environmental degradation, remain negligible. In many locations, insurance remains inaccessible for the poorest populations due to lack of affordability and limited coverage of services. Furthermore, the negative impacts of disasters on the poorest groups can hardly be resolved by insurance alone, as illustrated in the case study from southern China (Box 1), where diverse social protection mechanisms should play a critical role in supporting affected people returning/restarting their agricultural production or business. The same empirical case contributes to the larger literature on the challenges to extending index insurance coverage. On the demand side, these include low take-up rates due to unaffordability of insurance products among the poor, overall low financial capacity of target groups and high dependence on subsidies, which adversely affects the long-term sustainability of interventions. On the supply side, the main barriers are underdeveloped rural finance markets and unavailable reinsurance mechanisms, among others.

Box 1: Aquaculture farmers facing typhoon: An empirical case from southern China

In 2017, an index-based typhoon insurance was piloted in the rural coastal area of Fujian province, China. This is also one of the earliest index-based insurance schemes implemented in the aquaculture regions in China. In 2018, eight days after typhoon Maria hit the coastal area of Fujian, 82 insured households received payouts. This case led to a significant increase in the willingness of local farmers to buy the insurance in 2019, which is now included in a governmental support scheme for agricultural development, with 40 per cent of the premium of individual households being subsidised.

In 2019, field research was undertaken to explore the impact of the disastrous typhoon on the demand of index insurance among rural coastal communities. Findings reveal that although the take-up rates increased greatly, comparatively, the demand of insurance among the rich was much higher than among the poor. Furthermore, despite the government introducing subsidies covering 90 per cent of the premium of the registered poor, none have applied for these schemes. This is most likely because the poorest farmers lack the capacity to enter/return to the aquaculture business due to the huge loss from typhoon Maria. One more key research result is that, even though the demand for insurance has been increasing, the service provider was reluctant to scale-up the insurance service coverage in the short term unless long-term governmental financial support is guaranteed. This is because the insurer experienced high financial losses following the typhoon in 2018 and an increased risk of disaster claims in the context of climate change.

Source: Author (Lu Yu)

Opportunities

Multiple state and non-state actors play a vital role in stimulating the activation of innovative solutions to climate risks and in sustaining the index insurance industry. These include governments, global insurance partnerships, reinsurance companies and local microfinance organisations. Access to the reinsurance services of local providers, either through international reinsurers or governments, is critical for expanding the insurance supply. However, reinsurance service remains limited in developing countries for incorporating climate change factors such as extreme weather events into the initiatives. Insurance services delivered at a meso level by community-based organisations can render climate risk insurance accessible and affordable for the poor (Matias, Fernández, Hutfils, & Wings, 2018).

Another promising approach to reaching out to the poorest groups in rural regions, who are otherwise unable to afford index insurance, is to combine index insurance schemes with social protection programmes. The latter generally comprise social assistance (e.g. cash and asset transfers, public work programmes, subsidies), contributory social insurance and, in some contexts, microinsurance schemes, social health protection and labour market interventions. Often, weather index insurance is considered a vital social protection mechanism, whereas subsidies for this insurance are a prominent social assistance instrument.

Creating synergies between weather index insurance and social security instruments can help reduce rural poverty and inequality, and equip farmers with diverse risk management strategies along the full risk continuum – from climate extremes to slow onset processes such as land degradation or loss of ecosystem services. For instance, during and after extreme weather events, prices of agricultural products can fluctuate and even inflate. This can have significant adverse and unequal impacts on the uninsured poor, as illustrated in the case study (Box 1) showing the poorest were unable to return to aquaculture after a 2018 disaster without further/external support. In such cases, social assistance programmes such as

cash-for-work can play a complementary role in supporting affected households to deal with direct and indirect impacts of weather extremes.

Looking into implications for building ecosystem resilience, both weather index insurance and social protection provide opportunities. For instance, a recent report commissioned by the InsuResilience Global Partnership (Beck, Quast, & Pflieger, 2019) demonstrates that innovative risk insurance products, including microinsurance schemes, can be used to generate environmental benefits by: creating incentives through a reduction of premiums in relation to undertaking nature-based measures; designing insurance products for ecosystems to finance the restoration of natural capital damaged by hazards; or by tying insurance payouts to ecosystem-based adaptation. A few such pilot projects are already being implemented worldwide. Although there are numerous challenges associated with scaling-up such innovative schemes, there is growing interest from both donors and finance institutions in examining their potential (Beck et al., 2019). Likewise, in recent years, social assistance programmes have been increasingly used to deliver environmental objectives. For example, South Africa's Working for Water programme provides direct employment in public-sector projects aimed at the conservation and restoration of ecosystems.

In that manner, (innovative) weather index insurance and social protection instruments share common socioeconomic and ecological objectives and can play complementary roles in risk coverage and ecosystem stewardship. Yet, impediments to the integration of index insurance and social protection should be addressed. These relate to, for example, discrepancies in the level of geographic coverage, and ineffective institutional structures.

Recommendations

To overcome some of the challenges described above and to benefit from prospective opportunities, several key recommendations should be considered in order to enhance the

action agenda on weather index insurance as a climate risk management instrument for the poor.

First, governments, development cooperation and insurers need to better understand and consider the short- and long-term ecological impacts of weather index insurance. To this end, it is crucial to integrate comprehensive environmental impact assessments in the design, implementation and evaluation of index insurance schemes, with suitable indicators for measuring effects on ecological resilience in the long run. Importantly, future efforts should be directed towards exploring opportunities for building ecological resilience through insurance schemes for nature-based solutions.

Second, donors and governments should invest in interventions that ensure the rural poor have access to a diverse set of risk management instruments such as microcredit and social protection. A robust understanding of what risk management approaches are most suitable at a given

location – and careful examination of the factors that influence the demand for weather index insurance – is key to effective risk management.

Third, it is fundamental that the promotion of innovative microfinance products in developing countries, including index insurance and hybrid products, is supported by well-established risk finance markets. The provision of governmental subsidies for microinsurance should be aimed at creating enabling conditions in developing countries to establish sustainable insurance markets in the long term.

Fourth, index insurance solutions could be integrated into relevant national, sectoral and local climate change frameworks – including in countries' nationally determined contributions under the UNFCCC – and linked with key socioeconomic and environmental objectives. This will require knowledge as well as technical and institutional collaboration across multiple sectors, levels of governance and diverse stakeholders.

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