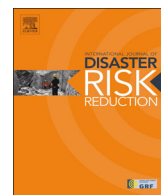


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Flood insurance schemes and climate adaptation in developing countries



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ABSTRACT

Risk transfer, including insurance, is widely recognized as a tool for increasing financial resilience to severe weather events such as floods. The application of this mechanism varies widely across countries, with a range of different types and schemes in operation. While most of the analytical focus has so far been on those markets that have a long tradition of insurance, there is still a clear gap in our understanding of how this mechanism works in a developing country context. This paper assesses 27 insurance schemes that transfer the risk of economic losses arising from floods in low- and middle income countries, focusing on the linkages between financial risk transfer and risk reduction. This aspect is important to avoid the effect of moral hazard and has gained particular relevance in the context of the climate change adaptation discourse, where some scholars and practitioners view insurance as a potential tool not just for current risks, but also to address projected future impacts of a changing climate by incentivizing risk reduction. We therefore look beyond the pure financial risk transfer nature of those 27 insurance schemes and investigate any prevention and risk reduction elements. Our analysis suggests that the potential for utilizing risk transfer for risk reduction is far from exhausted, with only very few schemes showing an operational link between risk transfer and risk reduction, while the effectiveness and implementation on the ground remains unclear. The dearth of linkages between risk reduction and insurance is a missed opportunity in the efforts to address rising risk levels, particularly in the context of climate change. Rising risk levels pose a threat to the insurability of floods, and insurance without risk reduction elements could lead to moral hazard. Therefore a closer linkage between risk transfer and risk reduction could make this a more sustainable and robust tool.

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1. Introduction

Floods can lead to widespread destruction and human tragedy—severely affecting communities, businesses, public services, ecosystems and individuals all around the globe. As seen with recent events in Thailand, which caused an estimated loss of USD45.7 billion (World Bank estimate according to [1]) the impacts can be felt near and far: on the

ground, where the flooding occurs, and beyond, through business supply-chains and cascading effects, leading to high economic damages.

Climate change is likely to increase the frequency and severity of extreme weather events such as floods [2]. Statistics on the number of natural disasters world-wide between 1980 and 2011 show that floods are the most common hazard, and its annual frequency for this period has increased comparatively more than other climatic hazards including storms, droughts and extreme temperatures [3].

It is the interplay of hazard, exposure and vulnerability that determines the consequences of a flood. But despite a range of efforts at international level, for example through the

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UNISDR, or nationally by Governments and locally through NGOs, flood risk levels continue to rise in many areas and pose a threat to our society [4]. This is particularly true in the context of low- and middle income countries: While total economic losses from floods are higher in developed countries, the relative size of economic impacts (economic losses expressed as a proportion of Gross Domestic Product) and the number of fatalities are more significant in developing countries. Many developing countries are located in high risk areas—with regular floods already affecting large parts of the population. In addition to these geographic factors there are a range of other aspects that drive risk levels [5], such as high economic importance of agriculture (a sector highly vulnerable to floods) and population growth. Currently about 800 million people are living in flood prone areas, of which on average about 70 million people are experiencing floods each year [6]. Population growth, particularly in developing countries, is expected to increase the future exposure to floods significantly [7]. In addition, the lack of financial resources to prepare for and prevent floods can pose a key constraint for developing countries' efforts in increasing their climate resilience. Linked to this are gaps in technical know-how, skills and data, which all influence the way a country responds to natural disaster risks. Severe floods can put at risk past development gains by damaging natural capital and infrastructure, undermining economic development and setting back poverty reduction efforts [6]. In response, a wide range of tools and mechanisms have been developed to reduce and manage the risks of flooding. Traditionally, flood risk management has mainly focused on engineered responses, such as dykes and flood walls or ex-post on rebuilding and compensation. But over the last decades, there is evidence of a broader approach to flood risk management – sometimes referred to as 'holistic' – which also considers so-called 'soft measures' such as planning, building regulation, early warning schemes [8], as well as financial instruments, such as risk transfer.

Insurance is one tool that can assist with the ex-ante management of flood risk by removing or reducing the financial risks arising from flooding. This instrument can be aimed at individuals such as home owners and farmers, or at entities such as companies, organizations and governments.

It is widely acknowledged that risk transfer can be a cost effective way of managing risks, including floods (see for example [9]). But less clear is how insurance can influence risk levels beyond the financial dimension by fostering risk reduction. This aspect is traceable back to the early days of insurance, when marine policies sold by Lloyd's of London were conditioned on the adherence to basic safety rules in order to reduce the risk of losing a ship or its cargo, or where the provision of fire insurance triggered the development of fire services.

In this paper we explore the insurance–risk reduction link for flood risk in developing countries. While not widely available and mostly offered in the context of multi-peril crop insurance, we note a range of new schemes and pilot projects that explore the option for rolling out flood insurance across low-income countries [10]. Recently, this aspect has gained renewed attention in the context of the climate change adaptation discourse, where some scholars and practitioners view insurance as a potential tool in response

to not just current risks, but also to address the projected future impacts of a changing climate. Currently, policy makers within the UNFCCC's Loss and Damage programme are considering the potential of setting up so called 'climate insurance schemes' in highly vulnerable countries, that would transfer financial risk arising from floods and other climatic risks to increase those countries' climate resilience.

This discussion occurs against the backdrop of growing concerns about sustainability of flood insurance in many developed countries, triggered by increasing losses and rising risk levels, with fear of unaffordable premiums and decreasing commercial viability for private sector companies involved in the risk transfer provision. While some experts warn that risks might become uninsurable in the future (see [11,12]), others argue that there are some clear opportunities for the insurance sector to develop new products [13]. One key aspect emerging in this context is the importance of linking risk transfer to risk reduction, seen as an effort to address the insurability challenge of rising risk levels.

This principle is well established in the context of commercial insurance: the higher a company's health and safety standards are, the more attractive the risk becomes for private insurers. But to what extent is this applicable to the situation of flood insurance in developing countries? Is there any evidence of flood insurance and risk reduction linkages in those schemes that do offer flood insurance? These are the research questions that we want to explore in this paper. Our paper aims to contribute to the growing literature on flood insurance in two ways: through expansion of the empirical evidence base through the analysis of schemes in developing countries; and second through an assessment of how risk reduction is promoted or incentivized in those schemes.

Based on the premise that insurance can in theory incentivize and promote risk reduction beyond the pure financial risk transfer, we explore the current level of integration within existing flood insurance schemes. Our evidence is derived from the recently published Compendium of Disaster Risk Transfer Initiatives in the Developing World, published by ClimateWise [10]. While reporting on a broad range of natural perils, the Compendium contains 27 schemes that provide cover against flood risk. We conclude by discussing the relevance of our findings for the current climate adaptation discourse, including the role of risk transfer in the context of overall climate resilience.

2. The theoretical context: Flood insurance and risk reduction

Insurance risk transfer has been used for centuries as a tool to manage the risk of uncertain losses. In its most basic form insurance is a mechanism where risks or part of a risk are transferred from the insured to the insurer in return for a premium payment. This reduction in uncertainty is widely seen as an important mechanism driving our economic systems: without insurance many activities and processes would be deemed too risky and would not be undertaken, and those affected by a loss might struggle

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