

Risk for Financial Agencies in Providing Affordable Disaster Insurance to Developing Countries

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ABSTRACT: Under socio economic development practice in Hyogo Framework for Action (HFA) to make the world safer from natural hazards, emphasis is given to protecting and strengthening public infrastructure through proper design, retrofitting and re-building, in order to render them adequately resilient to hazards. Infrastructure facilities are not only important to fortify the nation against disaster risks but they are also crucial for nation's economic development and poverty reduction. While their need is well known to decision makers, they are still short supplied and in poor condition mainly in developing countries. This has caused larger economic losses due to extreme events. This is a result of not only substandard infrastructure but also of increased population and low insurance penetration in the vulnerable urban areas. In order to hedge disaster risks to international capital markets, developing countries have adopted various approaches such as issuing catastrophe (CAT) bonds or creating a pool of funds that are supported by multi-lateral agencies such as the World Bank, Swiss Re, etc. These agencies are also providing risk transfer instruments for financial assistance in emergency situations. Due to restricted budget, most of the developing countries may ignore needs for proper disaster risk reduction and rather divert their funds for development projects. Thus there is a need for a mechanism that would make risk transfer instruments affordable for developing countries so that they do not have to compromise with their spending on development projects. This presentation would discuss the role that multilateral financial agencies could play in establishing such mechanisms through partnerships with governments. It would also discuss the change in their risk profile for financial agencies when they enter into such partnerships.

Keywords: Developing countries, disaster risks, insurance.

1. INTRODUCTION

The economic losses due to natural disaster events have accounted for billions of dollars in both developed and developing countries. While cost of damages has been significantly higher in developed countries, it is much larger as a proportion of GDP in developing countries. This higher cost of damages has interrupted governments' budgets in developing countries. In developed countries, financially well-equipped governments are able to quickly utilize reserve funds or create funds through budget reallocation for immediate post-disaster response and recovery activities. Moreover, well established private insurance market also support governments by covering large portion of losses (World Bank 2011). However, it is difficult for less developed economies to repurpose funds and it is always at the cost of certain other initiatives. Also, the penetration of insurance is comparatively meager in developing countries. This leads to the wide gap between total economic and insured losses that governments have to fill in.

Typically, governments have different options, as shown in Figure 1, which provide funds at different times after catastrophes. Governments require immediate funding for response/relief phase and later for recovery and reconstruction phases after disasters. While financially equipped developed nations ensure availability of funds for disaster response, developing countries mainly depend on humanitarian assistance and financial aid to act in response of events. Figure 1 shows resource requirements and availability of funds from different sources during three post-disaster phases- relief, recovery and reconstruction phases. It should be noted in the figure that, compared to post-disaster financing sources, required funds are processed faster and are made available soon after the event through ex-ante financing sources. It is important for decision makers from all countries to accommodate these requirements and facts while structuring nation's financial protection plan that suits to country's disaster risk portfolio.

To mitigate the risks of catastrophes on governments' budget and to accomplish immediate liquidity needs during emergency, ex-ante financing mechanisms have been exercised in many developing countries. The decision makers have realized importance of advance financial planning after estimating monetary requirements related to vulnerability to disasters (World Bank 2011). Governments, the insurers of last resort, with the support of many international banks and (re)insurance companies, have successfully provided insurance safety net to citizens and protected them against the unexpected losses due to disasters.

In a normal insurance risk transfer chain, people buy insurance and transfer their risks to insurance providers through contracts. Insurance companies retain some of these risks and transfer the rest to reinsurance companies. Whereas, the reinsurance companies transfer some of their risks to retrocessionaire, reinsurer of reinsurer. This horizontal chain is also called the

traditional risk transfer chain as shown in Figure 2. Moreover, depending on the magnitude of expected losses, and sequence and level of attachment, insurer and reinsurer distribute risks and returns in specific horizontal or vertical layers (Banks 2005). As shown in Figure 3, in vertical layering, different reinsurer accepts risks of different loss layers. Whereas in horizontal layering, different reinsurers take up risks in the same risk layer. Third example in the figure shows how combination of vertical and horizontal layering can be used in risk layering structure.

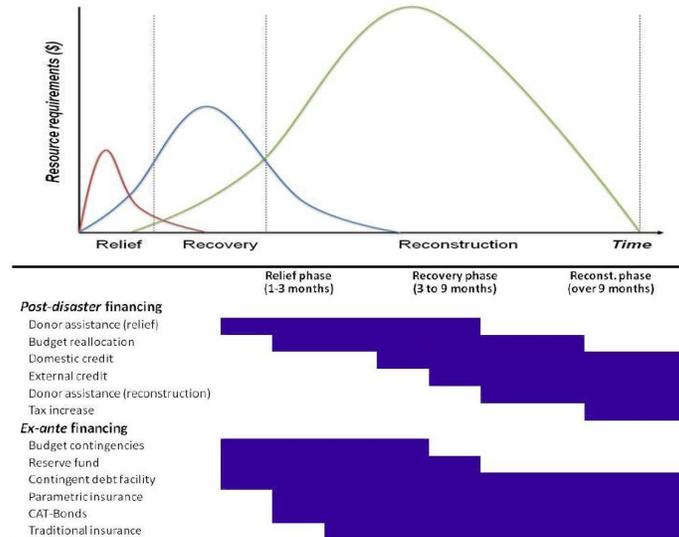


Figure 1. Timeline of resource requirements and availability of different funding sources during post-disaster phases (Ghesquiere and Mahul 2010)

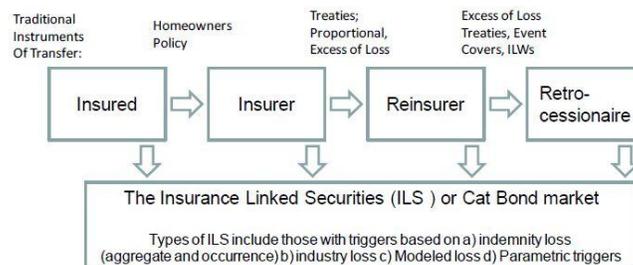


Figure 2. Traditional and new chain of risk transfer in the insurance and Insurance Linked Securities (ILS) markets (Lane 2008)

After hurricane Andrew, a vertical chain to transfer risk was included in the traditional risk transfer chain to hedge risks to capital market as shown in Figure 2. Industries in Florida lost around US\$17 billion due to the hurricane Andrew which was more than twice the losses most insurer risk managers had predicted (Swiss Re 2011). It caused a destructive wave of loss claims through the horizontal risk transfer chain, exhausting capital of each party (insurers, reinsurers and retrocessionaires) and forcing several insurers to file bankruptcy. This largely affected the ability and willingness of these firms to provide same coverage after this event. This led to the innovation of introducing securitization of insurance risks in the risk transfer chain. Its position strengthened in the 2005 hurricane season when hurricanes like Katrina, Rita, Wilma, Ophelia and Dennis contributed for US\$80 billion in insured losses.

Insurance linked securities (ILS) provided essential link between global capital market and (re)insurance market. Being a global source of capacity, it helped (re)insurance industry to sustain in the high risk market while provided a diversifying asset for investors (Swiss Re 2011). CAT bonds are most common type of ILS whose coupon and principal payment depend on the non-occurrence of a predefined disaster event scenario. Developing country governments with the support of multilateral banks and reinsurance companies, have hedged their risks using CAT bonds. MultiCAT and CatMex bonds by Mexico government are examples of such type of ILS. A simple structure that incorporates collateralized capital to cover losses from a natural catastrophe is shown in Figure 4. There are three parties involved in the transaction: the ceding company (or sponsor), the special purpose vehicle (or issuer) and the investors (or buyers). Moreover, some other innovative concepts have been introduced in the ILS market to attract investors and build financial capacity. These concepts include overlapping bond coverage by United Services Automobile Association (USAA), the Cafeteria approach by Swiss Re, and multi-country risk pooling (Caribbean Catastrophe Risk Insurance Facility (CCRIF)).

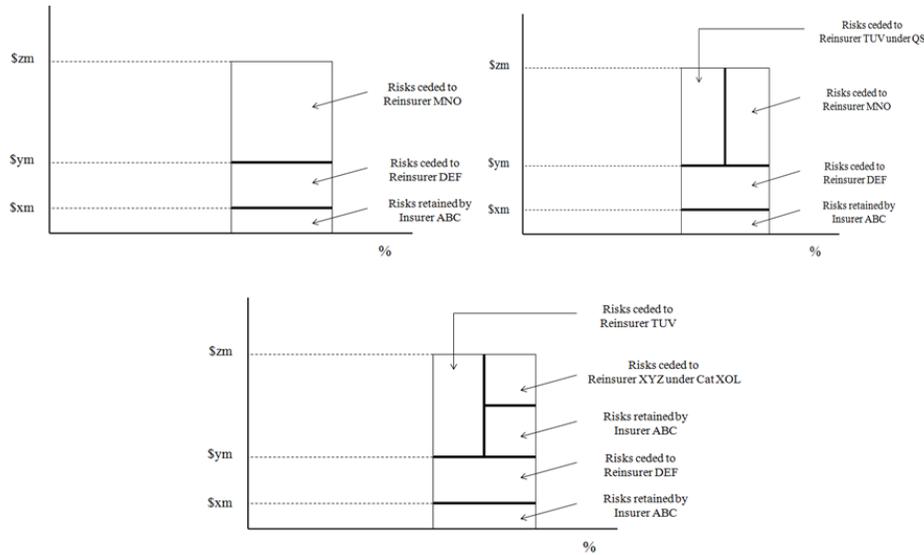


Figure 3. Vertical, horizontal, and combination of vertical and horizontal (re)insurance risk layering structures (Banks 2005)

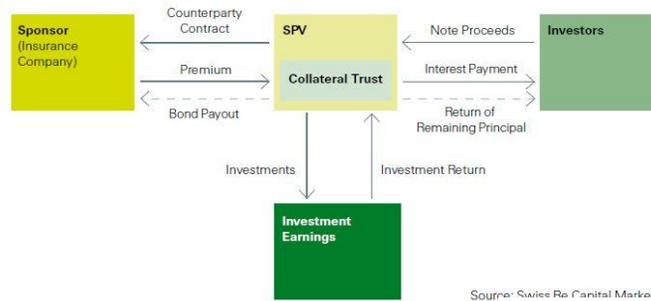


Figure 4. Collateralized capital structure for ILS (Swiss Re 2011)

As mentioned before, infrastructure facilities are essential to reduce vulnerability or country (UNISDR 2005). Infrastructures are not only important to fortify the crucial for nation's economic development and reduce poverty (UN 2011). While their need is well known to decision makers, they are still short supplied and in poor condition mainly in developing countries (Briceno-Garmendia et al- 2004). Substantial investments in construction and related spending on operations and maintenance (O&M) are required to improve the quality and provide access to most of the people. This scenario is even found in some of the developed countries like United States of America (USA). The American Society of Civil Engineers (ASCE) has given USA infrastructure a grade of "D" in the year 2009 and USA would require to make an investment of US\$2.2 trillion between 2009 and 2014 to improve the condition (ASCE 2009). It is critical to reduce or nullify this finance gap in the current infrastructure system in both developing and developed countries, particularly in areas prone to natural disasters. Figure 5 below shows possible funding sources for a typical infrastructure project.

Moreover, many nations have shown proactive approach in reducing their vulnerability to disaster risks by proper investments in infrastructure. For example, in the Asia and the Pacific region, the countries of the Republic of Korea and Japan have demonstrated the importance of investing in infrastructure in order to mitigate disaster risks. According to EM-DAT, the OFDA/CRED¹ International Disaster Database, Asia and the Pacific being world's most disaster prone region suffered about 91 percent of the deaths from natural disasters in the past century and accounted for 49 percent of the resulting economic damages. Moreover, natural disasters have caused an average of 41,000 deaths in the region in last 15 years with \$29 billion worth of damages inflicted annually. Five of the 10 most severe natural disasters in the year of 2004 occurred in this region accounting for \$55 billion of damages that is about 70 percent of total estimated damage of \$80 billion (Omachi and Le-Huu 2003).

¹ OFDA-Office of U.S. Foreign Disaster Assistance
 CRED- Centre for Research on the Epidemiology of Disasters

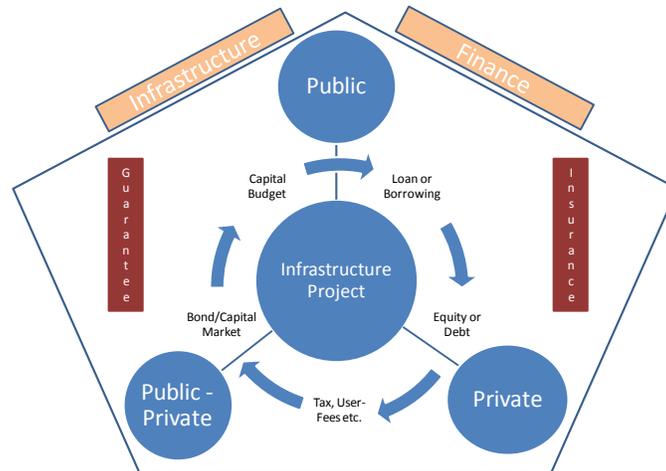


Figure 5. Entities and sources of infrastructure finance

2. ADDED VALUE TO INTEGRATIVE RISK MANAGEMENT

The impact of losses due to natural disasters is significant in developing nations. It would deprive these countries of essential resources which could otherwise be used for economic and social development. The severity of this shock is high enough to push the nations' developmental goals back for years. Regional cooperation for disaster risk management, including infrastructure development, is essential, not only to cope with the impacts but also to ensure that the region sustains its economic growth. This research is expected to contribute into critical infrastructure development and rehabilitation by exploring new sources to fund these projects. This would fill the gap in the infrastructure financing. Moreover, these critical infrastructure facilities would reduce the disaster risks for insurance companies, preventing their payments to insured parties and thus companies' losses. Development of critical infrastructure would improve economic growth of the nation and create an opportunity to build economic/financial capacity to disasters. This would perhaps minimize the gap between economic and insured losses due to disasters.

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