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## **Small States Catastrophe Risk Insurance Facility**

### **Draft Concept Note**

**Background information for the intervention by the World Bank Group in Session II**

# Small States Catastrophe Risk Insurance Facility

*Draft Concept Note, September 16, 2005<sup>1</sup>*

## Background

*Many small states and in particular small island states are highly exposed to adverse natural events (including hurricanes/typhoon, earthquakes, volcanic eruptions and tidal waves),* which can result in disasters affecting their entire economic, human and physical environment. For a series of reasons, ranging from a growing concentration of assets to poor environmental management, the loss burden from natural disasters is on the increase.

*Because of their limited size and borrowing capacity these countries also have limited resilience to disasters.* Larger countries can generally absorb the impact of adverse natural events; the affected region can be subsidized by revenues from unaffected regions. This type of geographic distribution of risk is not possible in the small island states. Their very limited borrowing capacity also prevents them from accessing loan when they get hit, preventing from spreading their risk exposure over time.

*Small states often depend on extensive financing from international donors to finance post-disaster needs.* Ex-post disaster funding from bilateral and multilateral agencies can be an important part of government catastrophe risk management strategy. Unfortunately, donor assistance can take a long time to materialize and usually supports specific projects, with limited possibilities of financing budget outlays such as civil servants' salaries, debt services, and other government obligations.

*Small states governments' access to insurance facilities is often limited because of high transaction costs* resulting from important start-up costs and the relatively small business brought to the reinsurance market. In the absence of well functioning insurance markets, most of the economic loss is borne by governments and households.

## Introduction

In response to increasing concerns about the vulnerability of small states, the World Bank Group is currently working on a Catastrophe Risk Insurance Facility that would allow small states to buy parametric insurance coverage against natural disaster risk. This facility would have the following characteristics:

- *The Catastrophe Risk Insurance Facility* would provide client government with immediate liquidity in case they get hit by an adverse natural event. The facility would essentially allow

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<sup>1</sup> This note was prepared for information of participants at the 2005 Small States Forum. More information is available from the World Bank Group team led by Francis Ghesquiere from the Finance, Private Sector and Infrastructure Unit of the Latin America and the Caribbean Region, e-mail [fghesquiere@worldbank.org](mailto:fghesquiere@worldbank.org).

small states exposed to adverse natural events to pool their risk in order to lower the cost of coverage. The ultimate cost of coverage will depend on the extent of this risk spreading effect, economies of scale and the amount of initial capital provided to start the program.

- ***The facility would be created with assistance from donor countries which would contribute to its initial capitalization.*** This reserve capital is needed to absorb some of the risks while buffering the effects of international reinsurance volatility. It would also increase the overall resilience of the pool with a positive impact on premium costs. Establishing such a reserve pool requires significant initial capital and would be created with donors' assistance.
- ***The facility would get access to additional risk capital through (multi-year) reinsurance or issuance of its own financial coverage instruments (e.g., catastrophe bonds).*** The Facility would purchase additional coverage on behalf of the client countries. This should provide for optimal pricing thanks to economies of scale and by providing a more diversified portfolio of risks. The accumulation of reserves should allow it to smooth the catastrophe reinsurance pricing cycle over time.
- ***Claims payments would depend on parametric triggers.*** Index-based insurance contracts pay claims based on the measurement of the intensity of a pre-defined natural event in a pre-defined area over a pre-defined period, up to a certain predetermined limit per year. This type of contract is less expensive than traditional insurance since it does not require the insurer to evaluate losses on an indemnity basis. The determination of intensity of the predefined event is generally made by an independent agency.
- ***The insured countries would pay an annual premium based on their own specific exposure.*** Participating countries would buy coverage for risks related to a specific return period (e.g., 20, 30, 50 years or more). This risk will be calculated using probabilistic risk modeling techniques and is specific to each state's location and size. This approach avoids cross subsidization from one country to the other while preserving the benefits of risk pooling and economies of scale.
- ***The Facility would be managed by a captive manager*** with expertise in insurance. The captive manager would collect premium from the participating countries, purchase the necessary reinsurance, pay reinsurance fees from the pool, manage the portfolio, and ensure claims are paid in a timely fashion.

### **Benefits of the program**

- By offering a mechanism to access liquidities immediately after a natural disaster, the proposed facility fills a gap in the range of instruments available to small states to manage their disaster risk. The use of parametric triggers would allow for immediate claim payments to the treasury of the affected countries.
- By ensuring that sufficient liquidity exists in the aftermath of a disaster, the facility will help countries remain on their feet when hit by a natural disaster. Such "financial safety net"

should help speed recovery and maintain economic development. It should also have a positive impact on the credit rating of highly indebted countries.

- The Facility would combine the funding capacity of donor countries and global reinsurance markets. Donors' contribution would help countries pool their risk and partially shield the participating countries from the high variability of the reinsurance markets. It would provide sufficient economies of scale for small states to access the international reinsurance where it is most efficient.

### **Pilot Phase: The Caribbean Catastrophe Risk Insurance Initiative**

Following the devastation caused by natural hazards in the Caribbean in 2004, the CARICOM governments have been asking the World Bank for assistance with gaining access to affordable and effective disaster risk financing arrangements. The Bank has since obtained assistance from the Japanese Government to finance studies that should allow the establishment of a pilot phase in the Caribbean Region.

Once established, this experience could be extended to small states in other regions, including the Pacific and Indian Oceans. Discussions have already started on foundation work, including the need for additional catastrophic risk assessments for the regions involved. Extending the pool to small states beyond the Caribbean that face similar hazards would provide further opportunities for risk diversification, thus lowering the cost of insurance for all.

## Frequently Asked Questions

### **1. Would the participating countries be fully covered against catastrophic losses?**

The insurance cover offered through the Facility will provide immediate liquidity to its client. This is not the same as saying that all reconstruction costs will be covered. It is most likely that countries will still depend on other sources of financing, including donor assistance, in case of major disasters.

### **2. What are the main benefits of joining the Facility?**

The purpose of the Facility is to help Small states gain access to affordable and effective disaster risk financing arrangements by:

- Providing an efficient risk transfer mechanism through parametric instrument;
- Getting optimal pricing from reinsurers through risk pooling and economies of scale (i.e. a larger and better diversified portfolio);
- Sharing administrative and operational costs.

### **3. What are the advantages of claims payments based on a parametric index?**

A parametric product is generally less expensive than the traditional insurance indemnity product, as it does not require a loss adjustment procedure in case of a disaster. It also provides for claims payments to be settled more quickly, as the measurement of the parametric index is almost instantaneous. Finally, it is less exposed to moral hazard and adverse selection problems (which are costly to monitor). Annex 1 illustrates how hurricane parametric insurance works.

### **4. What are the disadvantages of claims payments based on a parametric index?**

Parametric products are exposed to basis risk, i.e., the claims payments may not perfectly match individual losses. Careful design of index insurance parameters is important to help reduce basis risk.

### **5. Is there a risk of cross-subsidization of risk among the participating countries?**

No. The parametric index of the insurance product will be designed to offer individual coverage to any participating country, based on their particular catastrophic risk exposure. Parametric indices in each insurance contract will be set based on event frequency, e.g., for one in 20, 30 or 50 year events. This means, for example, that the trigger event for a hurricane/typhoon-prone country will be set at a higher level than the trigger event for a country with lower risk.

### **6. Why does the facility need to buy reinsurance?**

Reinsurance is required to ensure the resilience of the facility in the long run. During the early phases (3 to 5 years), reinsurers are expected to be the main risk carriers. However, in order to avoid overdependence on reinsurance (which is neither desirable nor sustainable in the long run), risk capital is required and is expected to be provided by donors. This initial risk capital will help smooth the underwriting cycle and ensure an optimal reinsurance purchase. This should also help reduce the cost of reinsurance, leading to lower insurance premiums paid by the country members of the pool.

**7. Why should donors contribute to reserves rather than subsidize the premiums of specific countries?**

Under the proposed program, the donors' financial contributions to the capital base of the pool will provide indirect support to all participating countries at once through a reduction in the catastrophe load of the premium. As reserves increase, the pool will become increasingly resilient and should be able to reduce the amount of reinsurance purchased and consequently the cost of the premiums.

**8. What would happen if one or more states defaulted on the annual risk premiums or decide to exit the pool?**

That state would lose the coverage. The departure of several members could also result in costly readjustments of the reinsurance cover provided (a reduced number of states would result in more expensive coverage but higher reserves can partially mitigate this), which would have to be reflected in the premium of the remaining countries in the pool. As a result, mechanisms must be devised to ensure the formal commitment of the participating states.

**9. Does the coverage offered by the facility exempt participating countries from buying additional coverage for their public assets?**

While the facility could be considered in a broader risk financing strategy, its main purpose is to provide client countries with immediate budget support in the aftermath of a disaster. It could also be used to cover specific tranches of risk that a country chooses not to insure in a more comprehensive risk financing strategy. However, a country designing such strategy will have to keep in mind that the coverage provided is parametric, hence not directly related to specific losses.

**10. Does the existence of the facility mean that private entities and households do not need to buy insurance for their assets?**

No. The facility will only provide a partial coverage to governments to help authorities fund urgent expenses in the aftermath of a catastrophe. The scope of coverage should not be perceived as replacing private insurance. In fact, countries would have an interest in promoting the use of private insurance so as to reduce their secondary obligations in case of a disaster.

**11. How does the facility support the development of emerging domestic insurance markets?**

In the short term, the Facility would be only available to sovereign governments. After a pilot period, one could consider opening it up to private entities, such as domestic insurers who could use it to buy catastrophe reinsurance at a competitive price. At the same time, the development of risk models under this initiative should provide better instruments and lower start-up costs for insurance initiatives in the region.

## Annex 1. How Parametric Hurricane Insurance Works

This annex demonstrates how parametric hurricane insurance works. This hypothetical scenario is based on real transactions. Assume that a CARICOM country wants to purchase a parametric insurance contract to cover losses caused by hurricanes. The parametric hurricane insurance contract pays a pre-determined indemnity if the eye of the hurricane (as measured by an independent weather agency like the US Weather Service) gets closer than a pre-determined distance (e.g., 30 miles) from a pre-determined location (e.g., capital city).

The National Hurricane Service in the United States utilizes the Saffir-Simpson scale to categorize hurricanes. This scale is a 1-5 rating based on the hurricane's present intensity and is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall. Wind speed is a determining factor in the scale, as storm surge values are highly dependent on the slope of the continental shelf in the landfall region (see Table 1 below).

**Table 1. Hurricane classification**

Hurricane category	Maximum sustained winds (mph)	Expected damages	Past experience
Category 1	[74,95]	No real damage to building structure	Allison (1995), Danny (1997)
Category 2	[96,110]	Some roofing material, door, and window damage of buildings	Bonnie (1998), Georges (1998)
Category 3	[111,130]	Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures	Roxanne (1995), Fran (1996)
Category 4	[131,155]	More extensive curtainwall failures with some complete roof structure failures on small residences	Luis (1995), Felix (1995), Opal (1995)
Category 5	>155	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away	Gilbert (1888), Mitch (1998)

The aggregate limit (i.e., maximum payout) for the contract is based on the potential loss. The claims payment can be a percentage of the aggregate limit as a function of the category of the

hurricane (see Table 2 below). The payout is triggered when a hurricane enters the insured location. The insurance policy can cover multiple hurricanes, as long as the cumulative loss payments in any one year do not exceed the aggregate liability for that given insurance year. In the example shown below, this means that the policy could cover up to five hurricanes of category 2, three hurricanes of category 3, two hurricanes of category 4, and one hurricane of category 5.

The premium rate of such an insurance policy is expressed as a percentage of the aggregate limit and is mainly a function of (i) the frequency of a hurricane (or a combination of hurricanes), i.e., the pure premium rate, (ii) the operating costs, and (iii) the cost of reserves/reinsurance.

**Table 2. Hypothetical indemnity payment table**

Hurricane category	Payout (% of aggregate limit)
Category 1	Nil
Category 2	20%
Category 3	33%
Category 4	50%
Category 5	100%