Chapter 5

Trending Tremors: Cat Bond Developments in Mexico and Latin America

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I Introduction

The earthquakes that hit Mexico on September 7, 2017 and September 19, 2017 were an uneasy reminder of the country's vulnerable location. Mexico's territory lies at the intersection of the North American Plate, the Cocos Plate, the Caribbean Plate, the Rivera Plate and the Pacific Plate.

The September 7, 2017 earthquake had its most severe impact on the culturally rich but economically impoverished States of Oaxaca and Chiapas in the Mexican Southeast. Considering the 8.2 strength of the earthquake on the Richter scale, the death toll of 100 persons was relatively small; on the other hand, the misfortune of thousands of poor families – many in rural communities – who have been displaced from their destroyed homes has had tragic proportions.

By contrast, the rage of the September 19, 2017 earthquake was mostly felt in urban areas, namely in the populous Mexico City and small towns in the States of Morelos and Puebla. Despite a lower intensity of 7.1 on the Richter scale, its higher death toll of 369 persons and material losses that by some counts exceeded US$2 billion are attributable to the epicentre's closeness to the most densely populated area of the country. Also, the remembrance of the September 19, 1985 earthquake, which devastated Mexico City precisely 30 years before, took a heavy psychological toll on many Mexicans.

From a risk management and insurance perspective, the September 2017 earthquakes in Mexico highlighted the low levels of insurance that are prevalent; particularly in the homeowners' insurance sector. Hence, the programme recently launched by the Government of Mexico City, in which it has contracted a coverage that affords a capped payout to homeowners that are up to date on their local property taxes. The cornerstone of this novel programme is a much broader natural disaster fund created by the Federal Government almost 20 years ago: the Natural Disaster Fund (*Fondo de Desastres Naturales*) ("FONDEN").

In this chapter, we will describe the general features of the FONDEN framework; we will outline the catastrophic bond (Cat Bond) programmes that have been deployed by Mexico using the resources allocated to FONDEN and, finally, we will refer to the trend of using Cat Bonds as a risk transfer mechanism against earthquake risk throughout Latin America.

II Cat Bonds and Parametric Triggers

Over the past few decades, the insurance industry has made an increasing use of various alternate risk transfer instruments. Through the issuance of securities, insurers and reinsurers have gradually shifted a part of their assumed risk to the capital markets.

From a financial standpoint, risk-linked securities or risk-linked financial instruments provide investors with short- or long-term profits in exchange for transferring the risk from the sponsor to the investor itself. The most commonly known insurance-linked securities are divided into two major categories: life and non-life.[1] Cat Bonds fall within the non-life category and can be defined as:

> A high-yield debt security backed by insurance premiums. Insurance companies issue catastrophe bonds in order to raise funds for hypothetical insurance payouts resulting from one or more stated events such as floods or fires. The bondholder receives coupons from what the insurance company collects in premiums. However, if the insurance company suffers a loss from a payout of one of the stated events, the obligation to repay the bond is either relaxed or forgiven. The main advantage to a catastrophe bond, despite the stated risk, is the fact that it offers a high yield without much regard for the performance of the broader economy because people and institutions will almost always set money aside for insurance premiums.[2]

Insurance-linked instruments often have a loss-based coverage; however, not all coverage for this type of instruments is loss-based. Parametric insurance, for instance, pays a fixed amount upon the occurrence of a triggering event, instead of indemnifying the policyholder or beneficiary for the loss it incurs from an insured event. "A parametric trigger can be anything but is often set by reference to a measure of a catastrophic natural event which might lead to a loss or a series of losses."[3] This means that, once a previously determined threshold is met, the trigger activates the policy and as a consequence the payment is due.

III Mexico's Governmental Catastrophic Risk Management Framework

Mexico is among the countries in the world that suffer more severe seismic activity; while in 2016 the National Seismological Institute recorded 34 earthquakes at 5.0 or more points on the Richter scale, in 2017 this number spiked to 105. Also, Mexico's coastline faces both the Pacific and the Atlantic Oceans – including the Caribbean – and stands in the path of hurricanes and tropical storms that land with massive destructive wind force and rainfall that causes severe floods. As a result, despite the ebb and flow of Mexican politics and the various Federal administrations that have come and gone, there has been a constant policy aimed at efficiently allocating the budget for facing such unavoidable contingencies.

Originally, in 1996, FONDEN was a special appropriation – rather than an actual fund – from the Federal expenditure budget, which allowed the swift deployment of relief monies upon the occurrence of natural disasters without compromising other budgeted plans and programmes. Afterwards, in 1999, FONDEN was established as a Federal Government trust with Banobras – a Mexican development bank – as trustee. The FONDEN Trust holds its own assets and follows its own rules of operation. Annually, a portion of the Federal expenditure budget is contributed to the Trust.

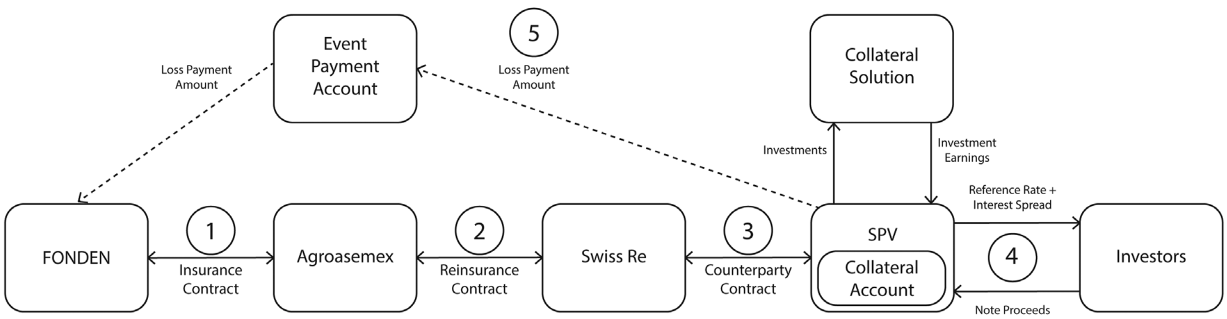
Between 2000 and 2004, the World Bank worked closely with the Mexican Government in the assessment of its risk management strategy. As a consequence, the operation rules of FONDEN were amended in 2005, granting Banobras, as FONDEN trustee, the authority to contract risk transfer instruments and products including the issuance of catastrophe bonds. This well-planned evolution placed Mexico at the forefront of its Latin American peers on catastrophe risk management.

IV Mexico's Cat Bond Programmes

Mexico's US$160 million Cat Bond issuance in 2006 ("Cat Mex") was the world's first parametric Cat Bond issued by a sovereign. Cat Mex transferred earthquake risks in three regions of Mexican territory to the international capital markets through the issued securities. Cat Mex, combined with a US$290 million parametric reinsurance structure, was part of Mexico's US$450 million catastrophe risk transfer strategy. The payout trigger to FONDEN under Cat Mex was subject to the following two conditions: (a) an official state of emergency or disaster declaration by the Ministry of Government (*Secretaría de Gobernación*); and (b) an earthquake registered with a magnitude of 8.0 on the Richter scale and a depth of 200 km in regions A (Northwest) and B (Central Cocos), and a magnitude of 7.5 on the Richter scale and a depth of 150 km in region C (Outer Mexico City).

In 2009, after Cat Mex matured, FONDEN decided to use the World Bank's newly established Multi Cat Program to issue a US$290 million multi-peril catastrophe bond ("Multi Cat Mexico 2009"), broadening its coverage to include US$150 million hurricane protection and US$140 million earthquake protection. Then, in 2012, a US$315 million multi-peril Cat Bond was issued as a successor, with a larger coverage area and a much more detailed structure than the 2009 transaction ("Multi Cat Mexico 2012"). Multi Cat Mexico 2012 was a three-tranche Cat Bond covering two additional regions – five regions total – for earthquake risk. With a pressure at landfall of 932mb, Patricia, a category 4 hurricane, triggered the Multi Cat Mexico 2012 with a 50% payout on the class C tranche notes, which amounted to US$50 million.

As explained above, the structure of the Cat Bonds issued by Mexico have placed FONDEN as the centrepiece, meaning it has paid the premiums that flow to the investors through the bonds and is the beneficiary of the payout in the event of a catastrophic event. In its Disaster Risk Financing and Insurance Case Study,[4] the World Bank used the following schematic summary to explain the operating structure of the Multi Cat Mexico 2009 and the Multi Cat Mexico 2012.



1. FONDEN enters into an insurance contract with local insurance company Agroasemex.
2. Agroasemex enters into a reinsurance contract with Swiss Re to transfer all of the catastrophe risk.
3. Swiss Re enters into a derivative counterparty contract with a Cayman Islands-based special purpose vehicle (MultiCat Mexico 2009 Ltd. And MultiCat Mexico 2012 Ltd.) to transfer the catastrophe risk.
4. The SPV issues floating rate notes (Cat Bonds) to capital markets investors to hedge its obligations to Swiss Re under the counterparty contract. The proceeds received from investors are invested in US Treasury money market funds and deposited in a collateral account.
5. A separate event payment account is established with a third-party bank to allow FONDEN to receive parametric loss.

In 2017, after a complex renovation process that followed the maturity of Multi Cat 2012, a new multi-peril CAT Bond ("FONDEN 2017") was issued by the World Bank Group's multilateral development bank, the International Bank for Reconstruction and Development ("IBRD"), which facilitated the transaction through the issuance of three tranches of catastrophe-linked Capital at Risk notes. The US$360 million FONDEN 2017 provides the same broad coverage of the five regions with a parametric trigger for earthquakes of at least a magnitude of 7.8 on the Richter scale, and parametric triggers for hurricanes of at least category 4.

Then an 8.2 magnitude earthquake struck on September 7, 2017, triggering the parametric insurance cover underlying the FONDEN 2017 Cat Bond issue. With it, FONDEN received a US$150 million payout which added to FONDEN's budget-driven resources, which it could rapidly deploy to support the Federal Government's relief efforts.

V A Model for Latin America

In February 2018, the IBRD Global Debt Issuance Facility issued the Joint Multi-Country Floating Rate Earthquake-Linked Capital at Risk Notes, which amount to USD$1.36 billion (the "Pacific Alliance Cat Bonds"). The Pacific Alliance Cat Bonds were designed between the IBRD and the countries of Chile, Colombia, Mexico and Peru. Such Cat Bonds are split into five series of notes, as follows: (i) USD$500 million for Chile; (ii) USD$400 million for Colombia; (iii) two Mexican bond series amounting to USD$260 million; and (iv) USD$200 million for Peru. This is the largest single issuance of catastrophe bonds the IBRD has ever facilitated, and the largest sovereign risk insurance transaction ever. For Chile, Colombia and Peru, this is the first time they have accessed the capital markets to source natural disaster risk insurance.

Each series has different terms to benefit the unique risks each sovereign sponsor faces. The two Mexican earthquake bond series, amounting to $260 million IBRD CAR 118–119, cover Mexico for earthquake risks on a parametric trigger basis. Mexico will have two years of coverage, aligning maturity with its still in-force FONDEN 2017 protection for hurricane risks.

VI Conclusions

The experience of the Mexican Government in dealing with catastrophic risks, through the use of Cat Bond structures with imbedded parametric triggers, has set the trend for other Latin American countries that are also exposed to large-scale natural disasters. While there is a clear understanding that the parametric trigger feature may not result in a payout when the modelled and agreed thresholds are not met – even if there is loss of life and property – it is equally clear that the meeting of such thresholds will guarantee a prompt payout of funds that can quickly be used to relieve communities in need and repair damaged infrastructure without proof of loss procedures of traditional insurance. It is key, however, that as in the case of Mexico, risk transfer instruments such as Cat Bonds should be used by countries as part of a broader risk management strategy which may also include traditional loss-based insurance as well as other risk transfer resources.

Endnotes

1. Life insurance risk securities include Longevity Bonds, Mortality Bonds, Embedded Value Financing and Triple X Securitisation. Non-life insurance-linked securities include CAT Bonds, CAT CDOs, Industry Loss Warranties, Side Cars and Motor Securitisation.
2. Farlex Financial Dictionary, 2012, "CAT Bond", consulted on February 6, 2018, https://financial-dictionary.thefreedictionary.com/cat+bond.
3. Clyde & Co LLP, *Parametric Insurance: closing the protection gap*, Clyde & Co LLP, 2018, 30 pgs.
4. Mexico Multi Cat Bond. Publication Number 98003. Available online at: http://documents.worldbank.org/curated/en/791171467997877421/pdf/98003-WP-Box391499B-PUBLIC-Mexico-MultiCat-22Feb2013.pdf.

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