

Disaster Risk Finance (DRF): A Learning Program Designed for Bangladesh

DAY 2: DEEP DIVE INTO CAPITAL MARKET INSTRUMENTS

Fabio Aparecido Da Silva
World Bank

Disaster Risk Financing
& Insurance Program



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What is a Cat Bond?



Different Types of Trigger Structures for Cat Bonds:

- **Indemnity:** Payout is based on the issuer's **actual insured losses** exceeding a threshold
- **Parametric:** Payout is based on **event characteristics** (e.g., earthquake magnitude, hurricane wind speed).



Financial instrument that transfers catastrophe risk from a sponsor to bond investors



Investors provide money upfront, which is usually held in a collateral trust .



Risk coverage period is typically 3-4 years



Sponsors receive a payout when a disaster event occurs or in the case of a parametric cat bond, when a pre-defined criteria occurs

Why use Cat Bonds?

- Transfer catastrophe risk to capital markets, reducing exposure to extreme losses
- Enable fast, transparent payouts within weeks
- Help sovereigns protect public finances and fund disaster response
- Help insurers/corporates manage large loss portfolios and diversify risk beyond reinsurance markets
- Support broader disaster-risk financing strategies (complementing reserves, insurance, and contingent credit)



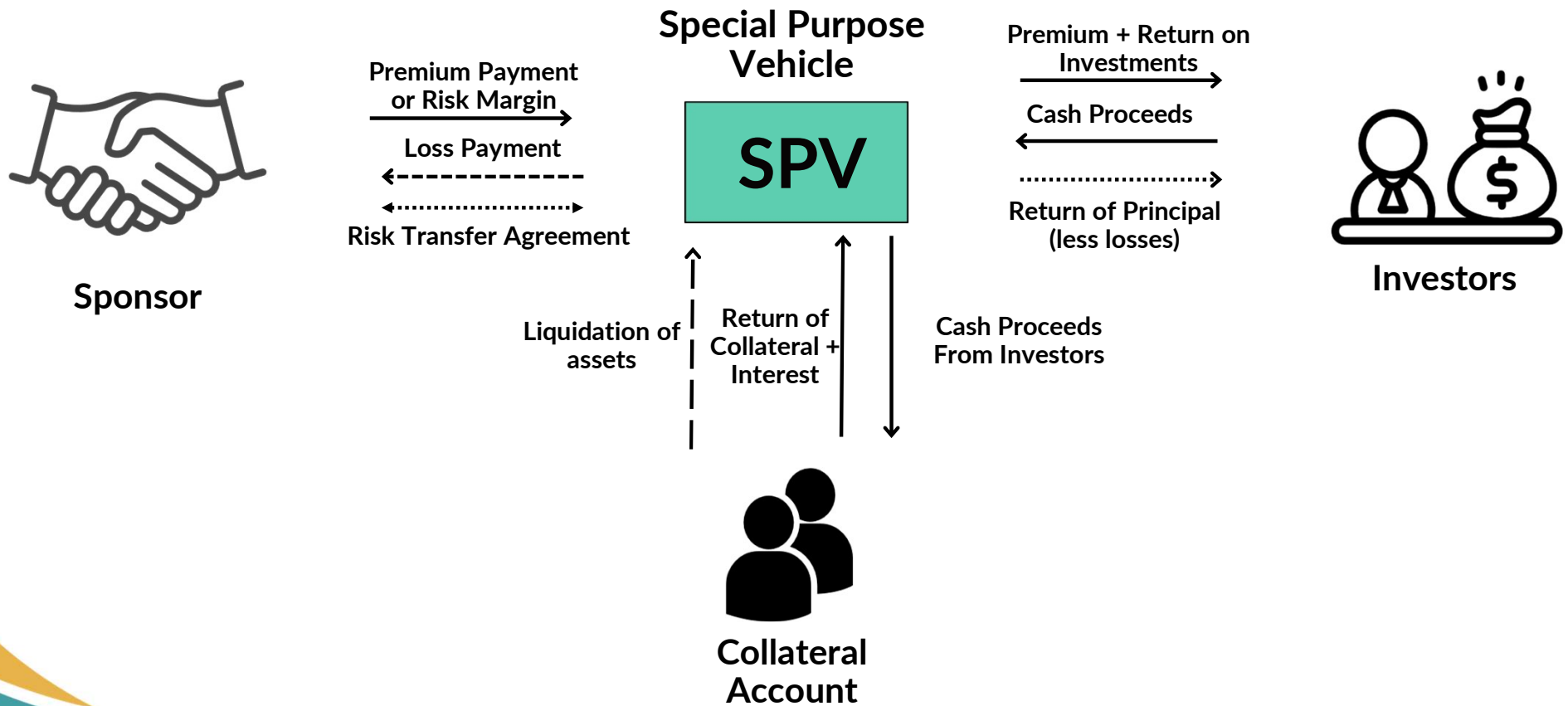
Differences between Cat Bonds and Insurance

	CATASTROPHE BOND	INSURANCE
Counterparty	Capital market investors	Reinsurance companies
Term	<p>Typically, 3-5 years Allows clients to lock-in premiums, and spread administrative burden and transaction costs</p>	<p>Typically, 1 year</p>
Counterparty credit risk	<p>Fully funded transactions No risk of default by the investor and no risk of missed or late payments.</p>	<p>Typically, unfunded transactions</p>
Transaction costs	<p>More complex documentation and associated transaction costs</p>	<p>Less complex documentation and lower transaction costs.</p>

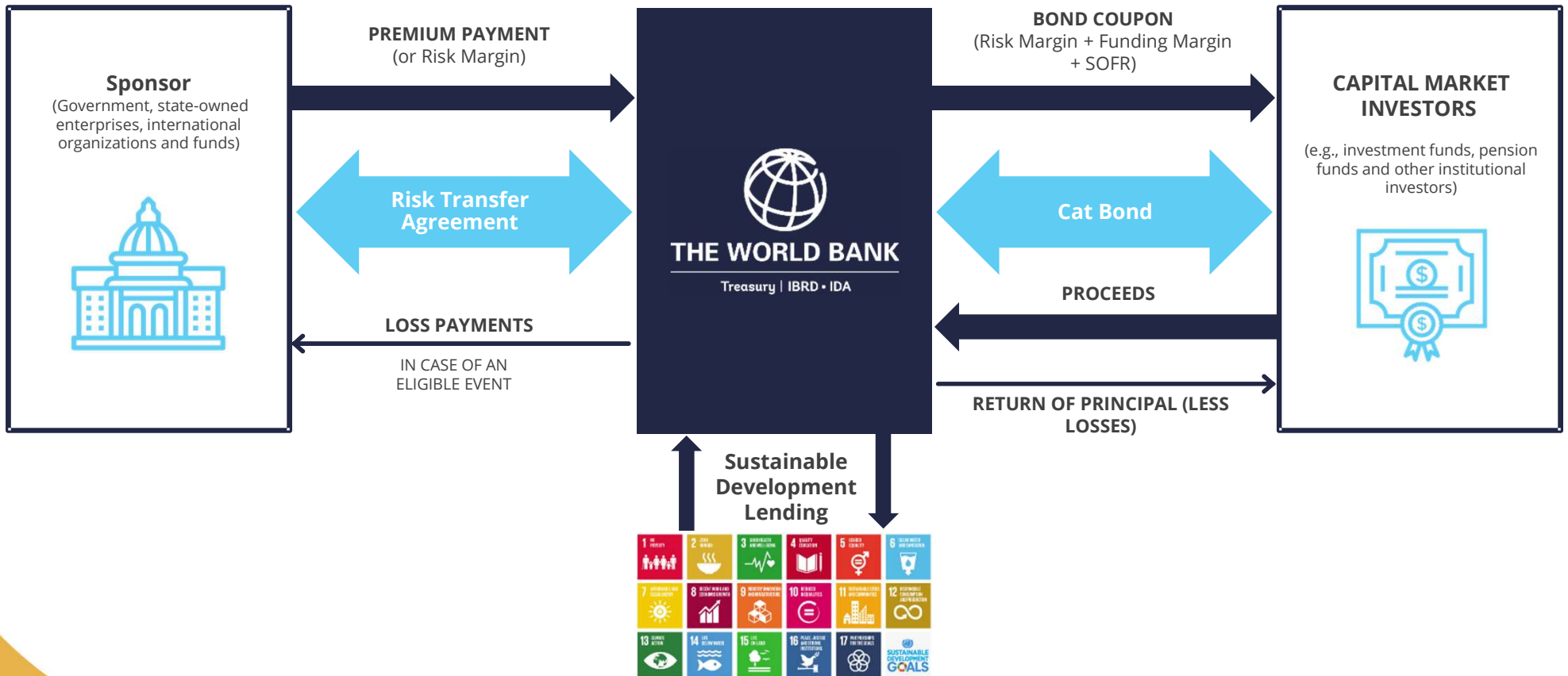
Parties involved in a Cat Bond transaction

Parties Involved	Role and Responsibility
Sponsor	<ul style="list-style-type: none"> • The sponsor is the entity seeking protection from specified catastrophe risks (for example, a government or insurer). • Defines the peril, coverage period, trigger, and payout terms, and pays the risk premium. • Enters a risk-transfer contract with the Issuer to get paid if a qualifying event occurs
Lead Manager / Structuring Agent	<ul style="list-style-type: none"> • Designs the structure (triggers, tranches, sizing, collateral terms) and manages execution. • Working with the sponsor, modeler, legal counsel, and issuer, it develops the risk layers, trigger mechanics, tranche sizing, collateral and investment terms, and investor documentation • Coordinates due diligence, investor marketing, book-building, pricing, and settlement
Risk Modeling Firm	<ul style="list-style-type: none"> • Produces catastrophe risk analytics (e.g., expected loss, attachment/exhaustion probabilities) under proposed triggers. • Supports calibration of coverage and informs investor pricing and risk assessment
Investors	<ul style="list-style-type: none"> • Provide at-risk principal; receive coupons funded by sponsor premiums (SOFR, funding margin and risk margin) • Bear event risk: principal is reduced/forfeited upon a qualifying event; returned at maturity if no event occurs
Legal Counsel	<ul style="list-style-type: none"> • Draft and negotiate offering materials, risk-transfer contract • Ensure enforceable triggers, regulatory compliance, and accurate risk disclosure
Bond Issuer (SPV)	<ul style="list-style-type: none"> • A bankruptcy-remote legal entity created solely for the transaction. It acts as issuer/intermediary for Sponsors: issues notes to investors, channels premiums/collateral, and passes event-triggered proceeds to the Sponsor.

How does a Cat Bond Theoretically Work?



Alternative Structure: World Bank Catastrophe Bond

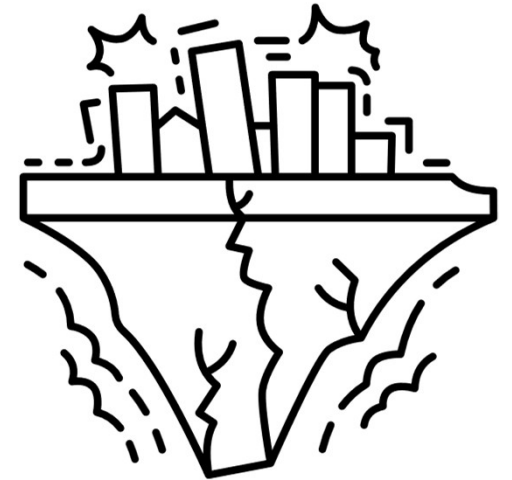


Cat Bond Transaction Considerations

Target Size	Cat bonds allow clients to access a large pool of capital and are therefore suitable for large transaction sizes
Risk Metrics	Cat bonds are typically used to cover infrequent and severe events
Term	Cat bonds typically provide cover for longer periods than conventional insurance (2 to 5 years versus 1-year for insurance)
Market conditions	Liquidity and demand in capital markets will influence size and price
Credit Risk	Cat bonds are fully funded transactions with no credit risk from market counterparties
Transaction Costs	Transaction costs of external service providers consist of fixed fees for legal and modelling, and other related expenses, and variable fees for underwriting and expertization fees.
Timing	It can take 3-12 months to design and execute a cat bond transaction depending on availability of risk models
Market and Legal Requirements	Information, models, procedures, documentation required

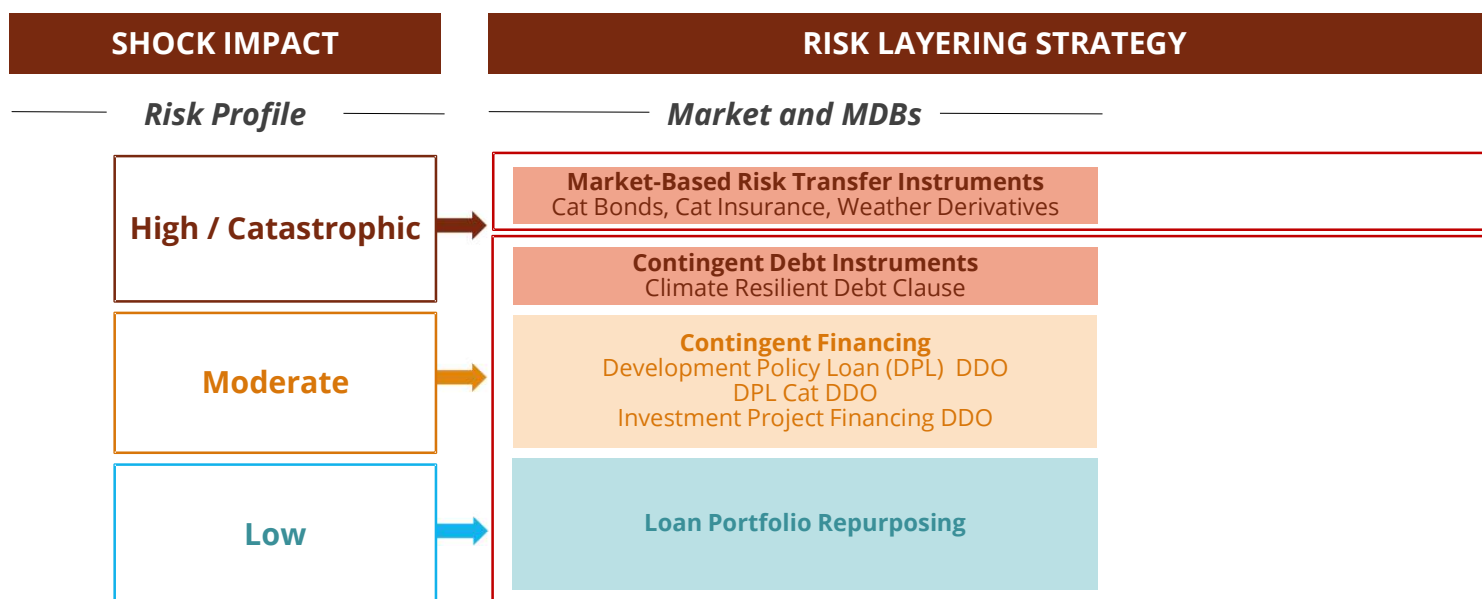
When is a Cat Bond most useful?

- For **low-frequency, high-severity catastrophe risks** (e.g., major earthquakes, hurricanes)
- When **large, pre-arranged capital** is needed to absorb disaster losses
- When organizations seek to avoid balance-sheet stress or reliance on emergency financing
- Where there is **sufficient data and modeling** to structure risk and triggers appropriately
- To **diversify risk management** alongside traditional insurance, reinsurance, or reserves



Key Ideas for policymakers to remember

- **Setting of clear triggers:** Ensure payouts are objective, transparent, and trusted.
- **Usage robust data:** Reliable modeling is critical for accurate pricing and coverage.
- **Integration with broader strategy:** Combine Cat Bonds with reserves, insurance, and contingency plans for overall disaster risk management.
- **Engage early with markets:** allow time for design and investor confidence.



Interactive Segment

Q1

What is the main purpose of a Cat Bond?

- A. Finance public infrastructure projects
- B. Transfer disaster risk to investors
- C. Increase government borrowing
- D. Replace traditional insurance entirely

Q2

What happens if the triggering event occurs?

- A. Investors get their principal back with interest
- B. The funds are released to support recovery
- C. The bond automatically renews
- D. The bond is cancelled without payout



Interactive Segment

Q3

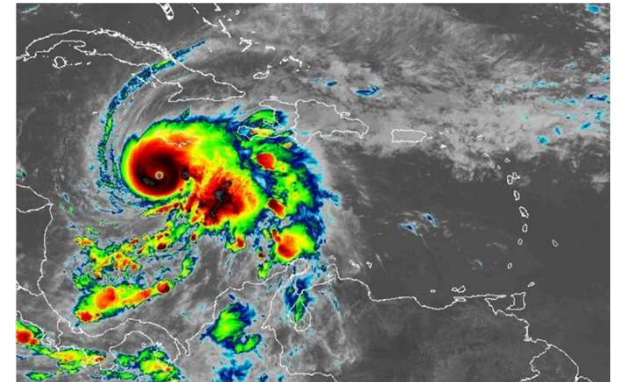
Which of the following best describes a parametric Cat Bond?

- A. Triggered by verified financial losses
- B. Triggered by measurable event data (e.g., wind speed)
- C. Triggered when government declares an emergency
- D. Triggered by insurance company losses

Q4

If a Cat bond does not trigger, what typically happens to investors' principal?

- A. Principal is partially refunded
- B. Principal is returned; investors retain earned coupon
- C. Principal is donated
- D. Principal is converted to equity

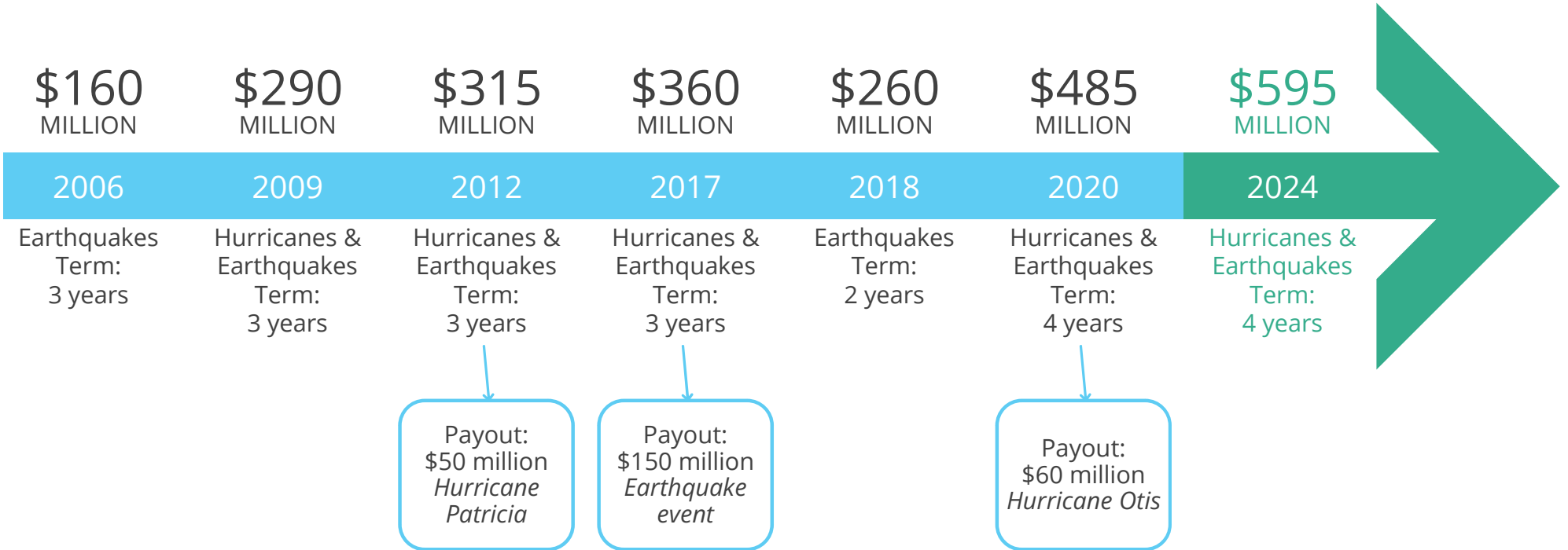




Real World Example: Mexico

Four cat bonds covering earthquake and hurricane risk

Mexico Parametric Catastrophe Bonds



Read the complete case study at: <https://thedocs.worldbank.org/en/doc/8f7222d60ec54d0b6571131b754319c1-0340012025/original/Case-Study-Mexico-2024-Cat-Bond.pdf>

Appendix



Main Catastrophe Bond Triggers:

- **Indemnity Triggers:** These are based on the sponsor's actual, verified losses from a catastrophic event. Verifying actual losses can be a complex and lengthy process, which may delay the payout.
- **Industry Loss Triggers:** Payout is triggered when the total losses for the entire insurance industry from a specific event, as reported by an independent third party (like Property Claims Services), exceed a predefined threshold.
- **Parametric Triggers:** These activate when specific, objective physical parameters of the catastrophe itself are met or exceeded.
 - Earthquake magnitude: E.g., an earthquake of magnitude 7.0 or greater on the Richter scale in a specified region.
 - Hurricane/wind speed: E.g., sustained wind speeds exceeding 120 mph at a specific measurement station.
 - Flood/rainfall levels: E.g., a certain level of precipitation recorded over a set period.

Contact Us



Fabio da Silva

Senior Financial Officer
Financial Products and Client Solutions
World Bank Treasury
+1-202-830-9708
fdasilva1@worldbank.org



Klement Martin

Financial Analyst
Financial Products and Client Solutions
World Bank Treasury
+1-202-790-2745
kmartin6@worldbank.org



