REPUBLIC OF THE PHILIPPINES
BUREAU OF THE TREASURY

BAGONG PILIPINAS

Catastrophe Bonds

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Risk Transfer

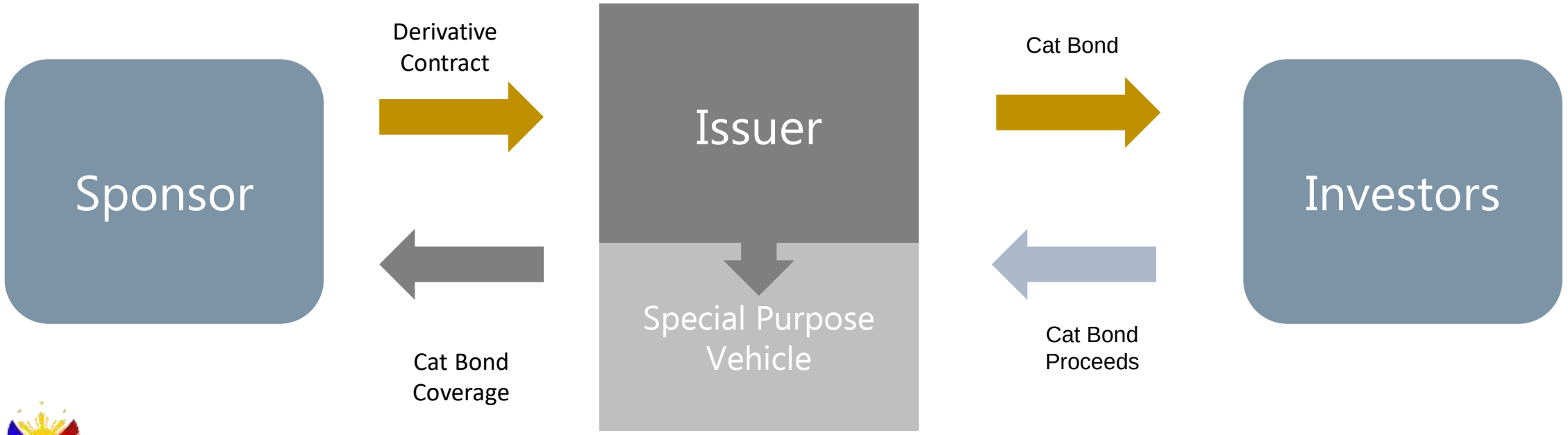
Risk Transfer

- Risk transfer is a risk management technique by which risk is transferred to a third party at a certain **cost**
- Example: insurance, catastrophe bonds

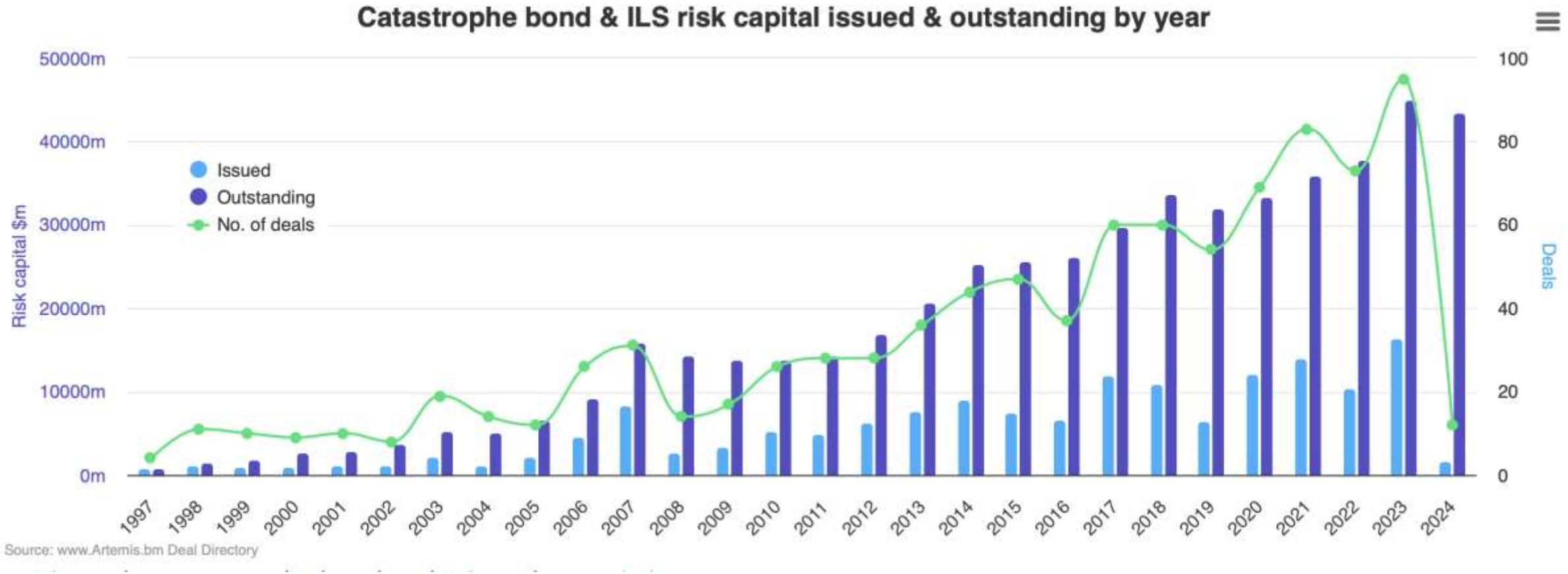
Catastrophe Bond

Catastrophe Bond

- A Catastrophe Bond (CAT Bond) is an insurance-like security whose potential payouts are secured through a bond issuance. The CAT Bond is an insurance-linked security that transfers a specific set of risks to the capital market
- This is typically a multi-year program.



Catastrophe Bond



Catastrophe Bond

Why would a country want to get a CAT Bond?

- Protection against unforeseen catastrophic events
- Manage fiscal health
- Proceeds used for post-disaster relief and recovery

What can you use the proceeds for?

- General budget support. It is not tied to an actual asset.

Why is it labeled a bond?

- It is a bond because investors of the securities can trade these in the capital market.

Catastrophe Bond

Is it a form of debt?

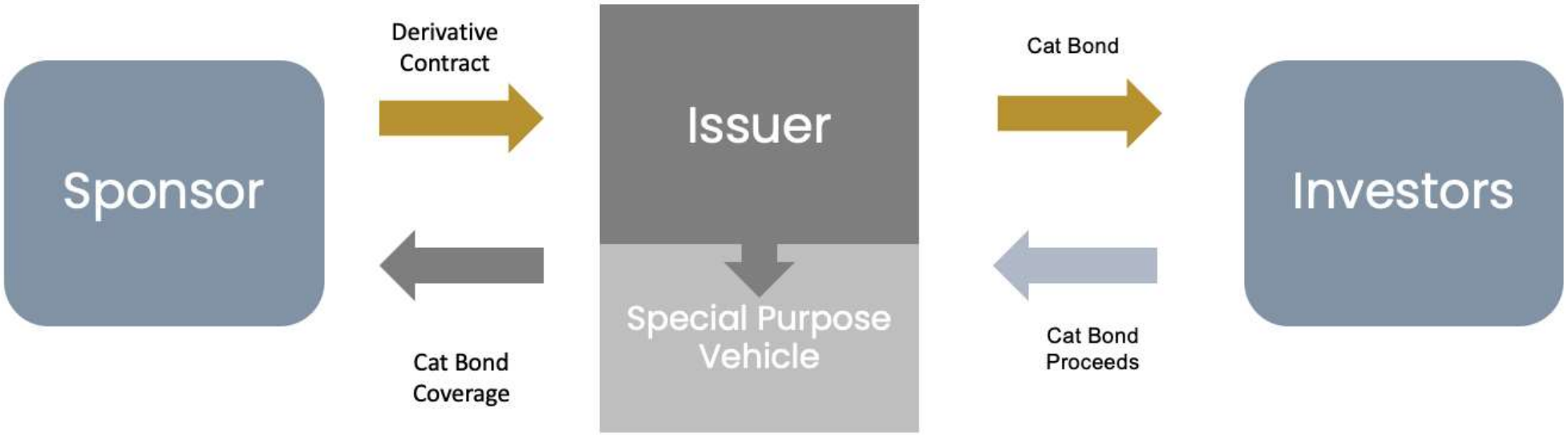
- For the sponsor - No. It is an insurance-like security.
- You do not pay back the payout you receive

Why would investors purchase this?

- Relatively higher returns (compared to sovereign bond issuances)
- Diversifying nature (catastrophe risk is not related to economic/market risk)

Catastrophe Bond

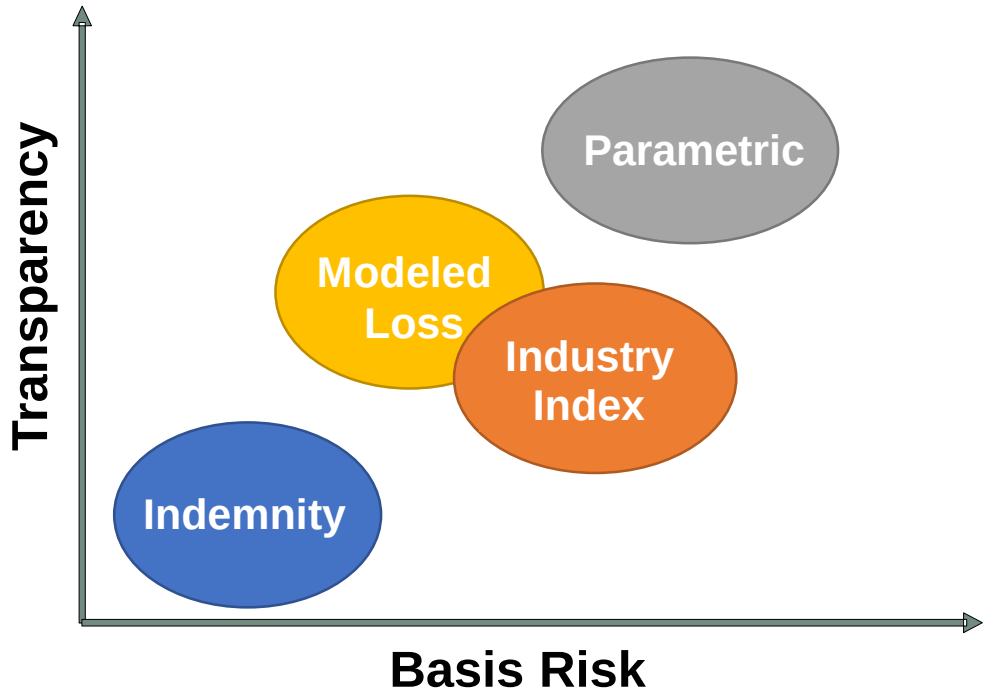
Process Flow



- Sponsor – Entity whose risk/s is/are covered
- Issuer – Issues the CAT Bond
- Special Purpose Vehicle – Where CAT Bond proceeds are set aside
- Investors – Purchasers of the CAT Bond

Catastrophe Bond

Trigger Types and Structure



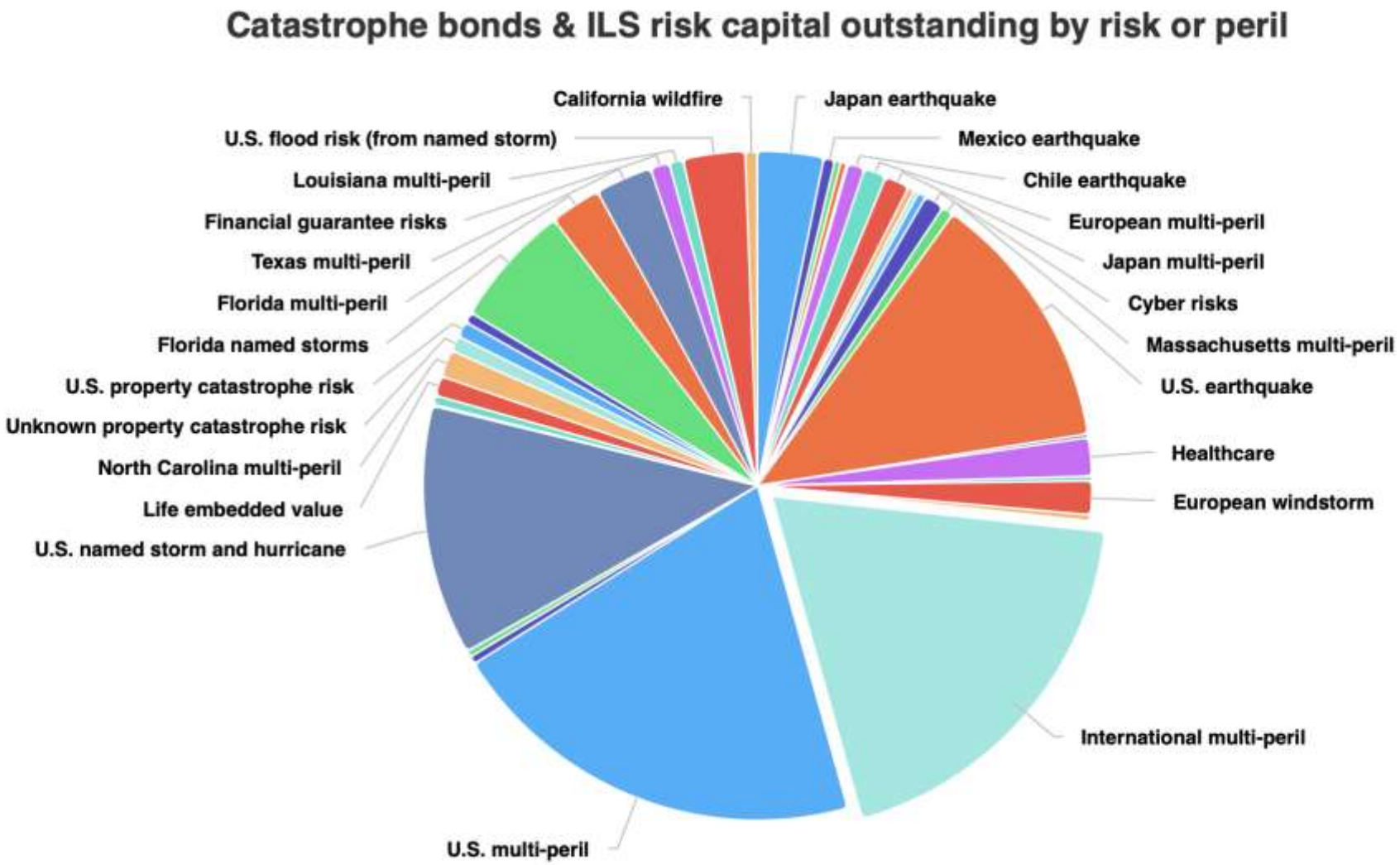
- **Indemnity** – Triggered based upon actual claims of sponsor
- **Modeled Loss** – Triggered based upon modeled results of sponsor portfolio
- **Parametric** – Triggered based on event parameters or an index-based parameters
- **Industry Loss Index** – Triggered based upon insured damaged for entire industry

- Trigger steps – Can structure a program that can be triggered at lower parameters.

- Can be CAT in a box/grid, nationwide, select area

Catastrophe Bond

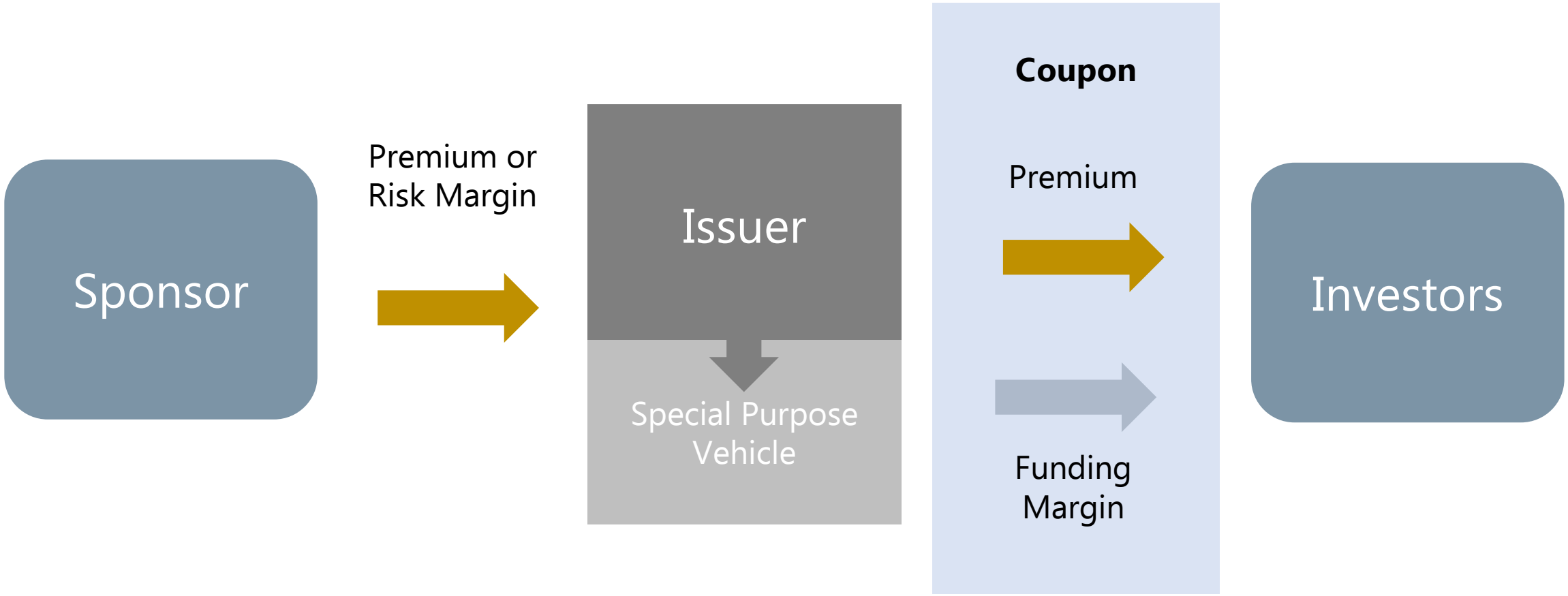
Perils Covered



Source: www.Artemis.bm Deal Directory

Catastrophe Bond

Pricing



Catastrophe Bond

Pricing

COUPON

PREMIUM

LOSS MULTIPLE	Premium demanded by investors for the risk. Can be thought of as "Spread" for sovereign issuers. Typically a multiple against the expected loss
EXPECTED LOSS	Annual likelihood that the CAT Bond would be triggered expressed in %
FUNDING MARGIN	Return on Collateral provided to the investors for placing their investment in a Special Purpose Vehicle

Catastrophe Bond

Pricing – Expected Loss and Return Periods

- Illustrates the average frequency of an event.
- The higher the number of years (denoted by X), the less frequent the event will occur.

- If multi-step trigger: the likelihood that the program will be fully exhausted in a given year

Return Period (RP)	Computation (1/X)	Annual Probability
1-in-10 Years 10-Year RP	1/10 = 0.10	10.00%
1-in-20 Years 20-Year RP	1/20 = 0.05	5.00%
1-in-50 Years 50-Year RP	1/50 = 0.02	2.00%
1-in-100 Years 100-Year RP	1/100 = 0.01	1.00%
1-in-200 Years 200-Year RP	1/200 = 0.005	0.50%
1-in-500 Years 500-Year RP	1/500 = 0.02	0.20%

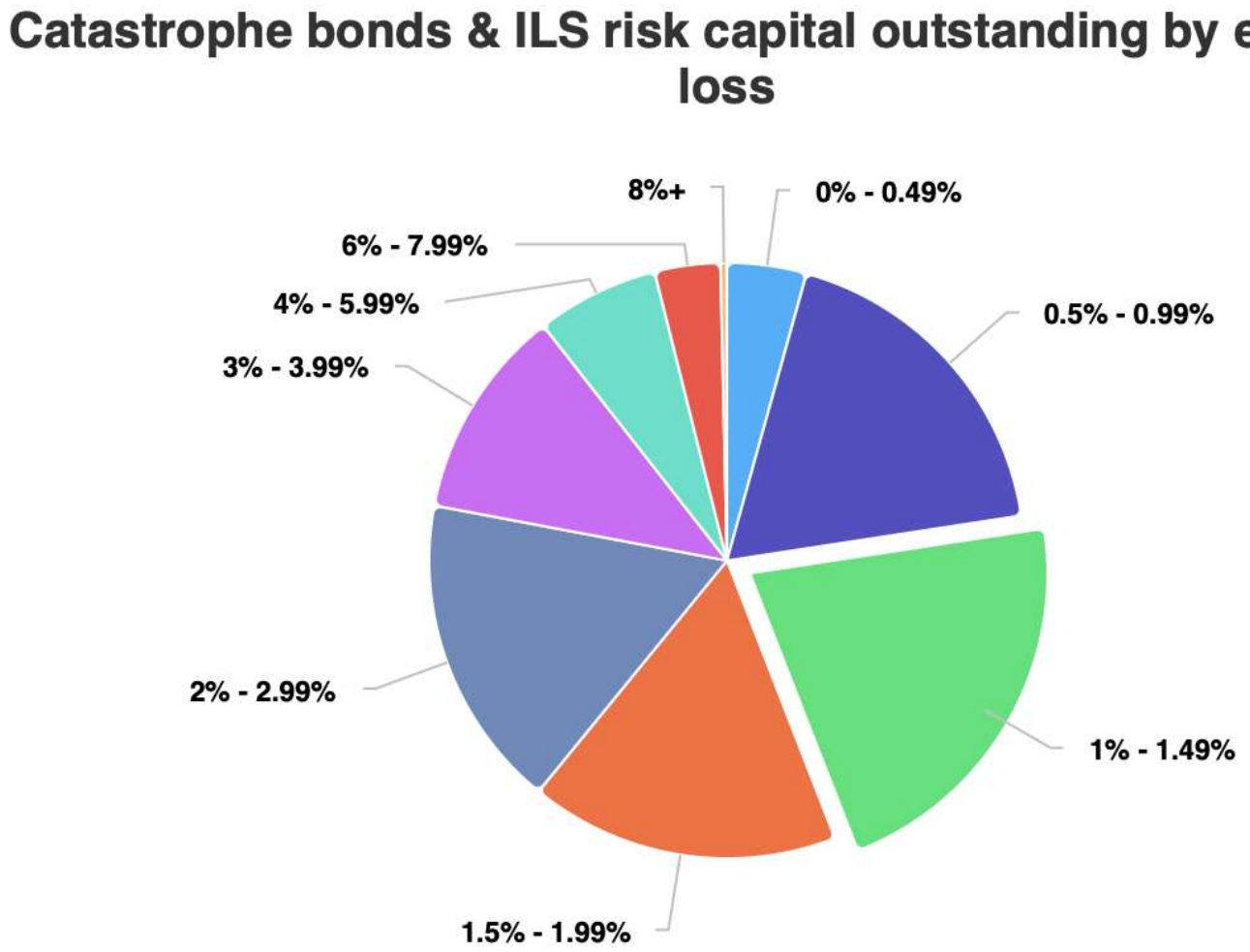
Catastrophe Bond

Pricing – Expected Loss and Return Periods

ATTACHMENT POINT	Likelihood that the bond is triggered at the lowest trigger point (lower bound). The return period for the more frequent event.
EXHAUSTION POINT	Likelihood that the bond would be triggered at the highest trigger point. The return period for the least frequent event.
EXPECTED LOSS	Likelihood that the bond would be fully exhausted within the year. This can be due to multiple smaller events. Computation varies based on trigger structure.

Catastrophe Bond

Pricing – Expected Loss and Return Periods



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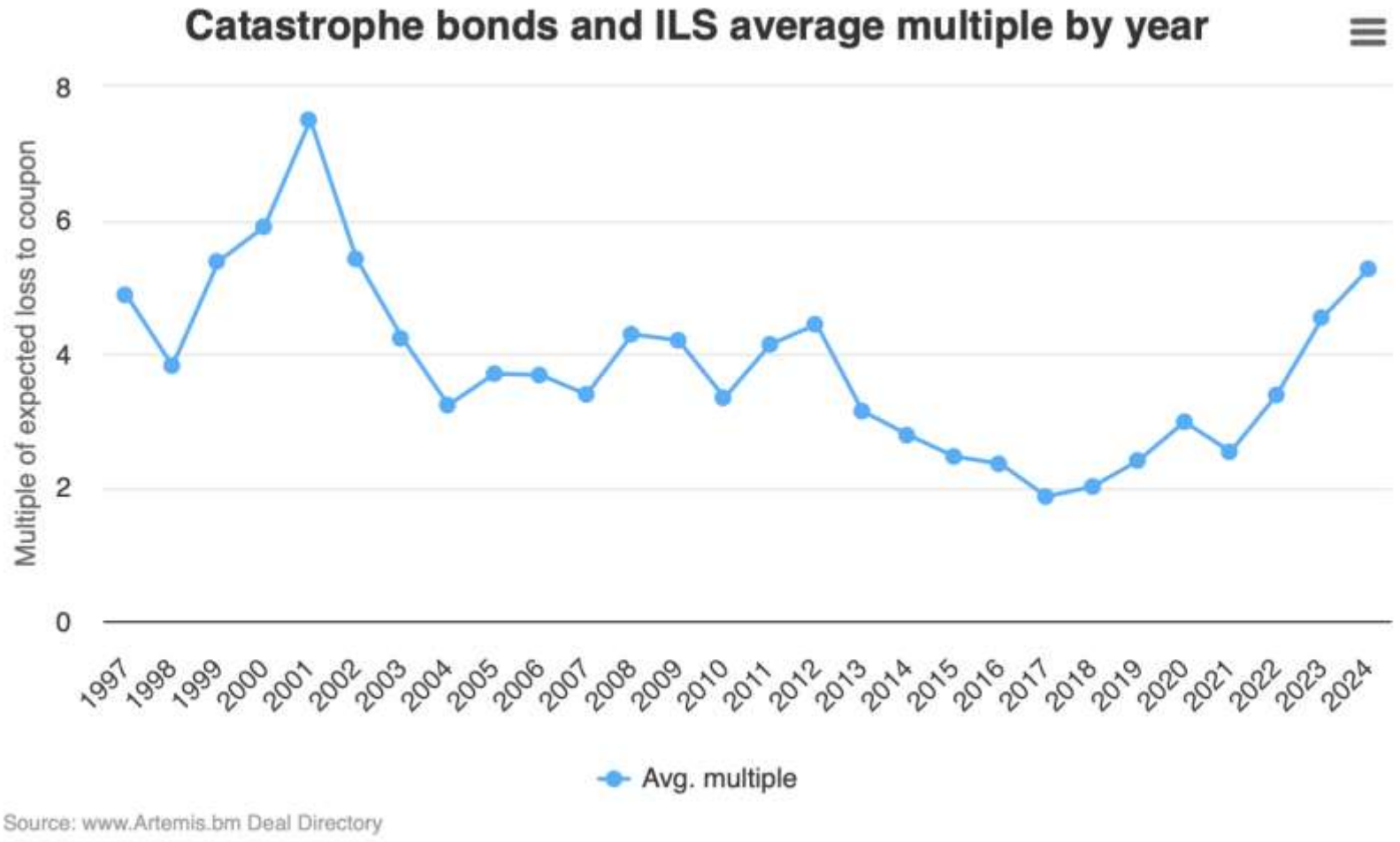
Catastrophe Bond

Pricing – Loss Multiple

- The multiple required by investors to partake in the security. This value is multiplied to the expected loss to arrive at the premium.



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Catastrophe Bond

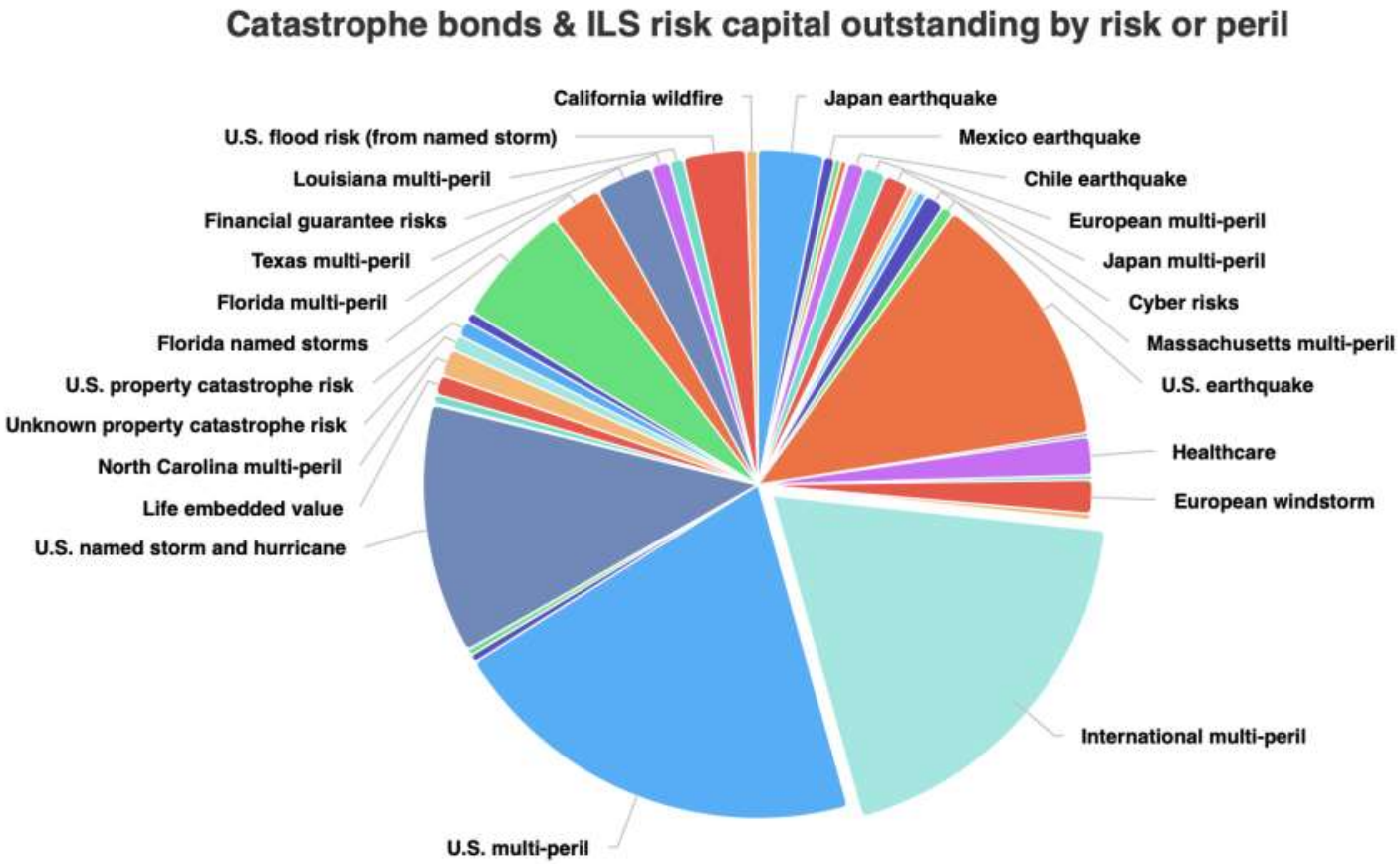
Pricing – Computing the Premium

EXPECTED LOSS	×	LOSS MULTIPLE	=	PREMIUM RATE
3.00%	×	2.00	=	6.00%

Catastrophe Bond

Market and Issuance Considerations

- Concentration of your risk in the market – Are you a diversifier? Are there a lot of that risk in the market?
  - Market often saturated with US and Japan risks.
- Pipeline – Are you competing for the supply?
- Market Appetite – Is market willing to take on that risk?
- Peril – Is it a peril you are vulnerable to?



Source: www.Artemis.bm Deal Directory

Philippine Experience

Philippine Experience

Strategic Policy Goals

NATIONAL LEVEL

To maintain **sound fiscal health** at the national government level, necessary to support long term rehabilitation and reconstruction needs

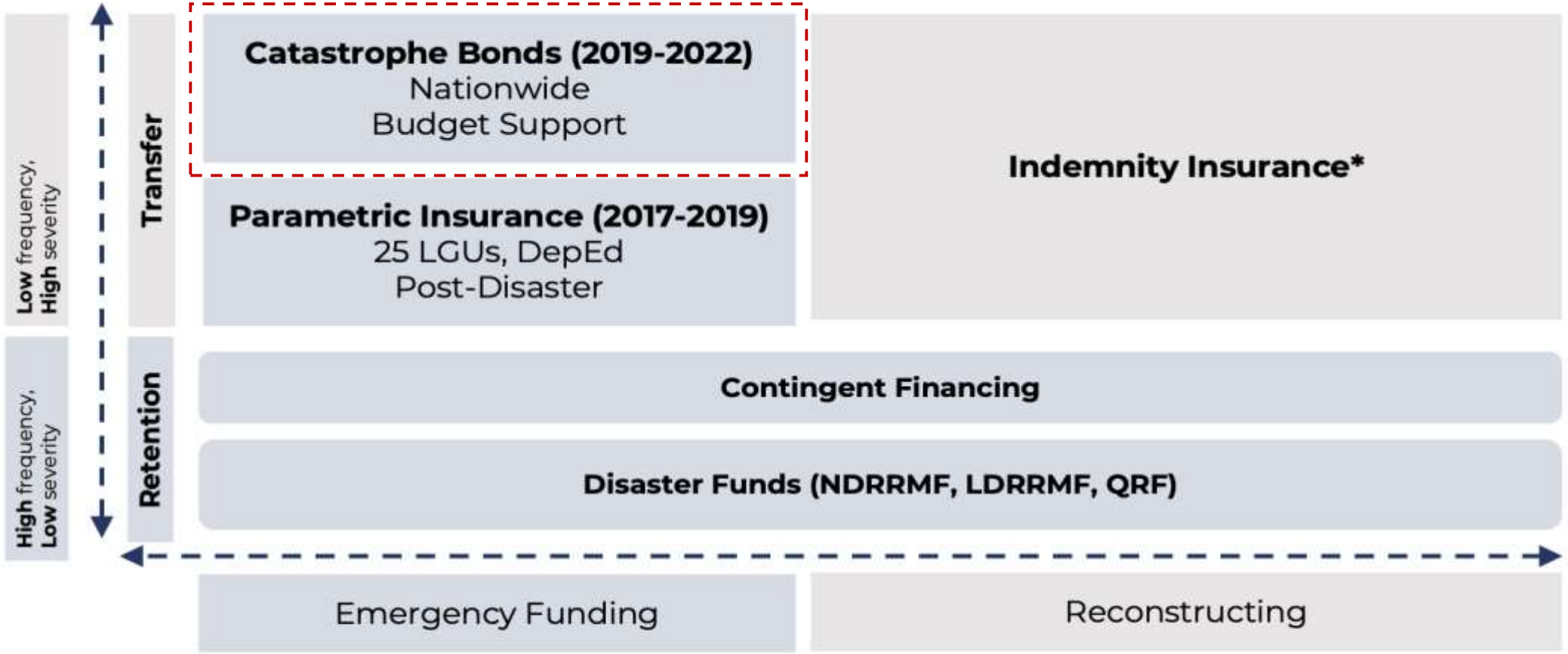
LOCAL LEVEL

To develop sustainable financing mechanisms for local government units, necessary to **provide immediate liquidity** at the onset of a disaster

INDIVIDUAL LEVEL

To **reduce the impact on the poorest and most vulnerable** and **prevent them from falling into a cycle of poverty**, while also shielding the near-poor from slipping back into poverty

Philippine Experience



Rationale: Retaining all risks would divert funds from key government programs, while transferring all risks would be too costly for government.

Philippine Experience

Key Questions

What is the Philippine CAT Bond?

The Philippine CAT Bond is an insurance-linked security that **transfers the Philippines' typhoon and earthquake risk to the capital market**.

Does it count towards the Philippines' debt?

No. For the Philippines, the CAT bond is a risk transfer instrument and **not a debt**

Why get a CAT Bond?

Tap investors in the Capital Market

Minimize counterparty risk because payout is secured in an SPV

What does it cover?

Provides coverage against **typhoons (USD 125 Million)** and **earthquakes (USD 75 million)** for a period of **3 years**

Philippine Experience

Key Features

- NOT a bond issuance by ROP
- Provide immediate liquidity post disaster
- Based on Emergency Modeled Loss
- Serves as an **additional layer of financial protection** for government to cover losses arising **from more severe disaster events**
- Payout for budget support

Coverage

- Nationwide coverage
- Coverage against typhoons (USD 150 Mn) and earthquakes (USD 75 Mn)
- Coverage from November 2019 – December 2022 (3Y)

BAGONG PILIPINAS

Philippine Experience

Program Structure

- 3-step trigger structure:
  - 1-in-19 year, 5.26% annual probability (partial payout)
  - 1-in-40 year, 2.50% annual probability (partial payout)
  - 1-in-100 year, 1% annual probability (full payout)

Funding Source

- BTr excess income

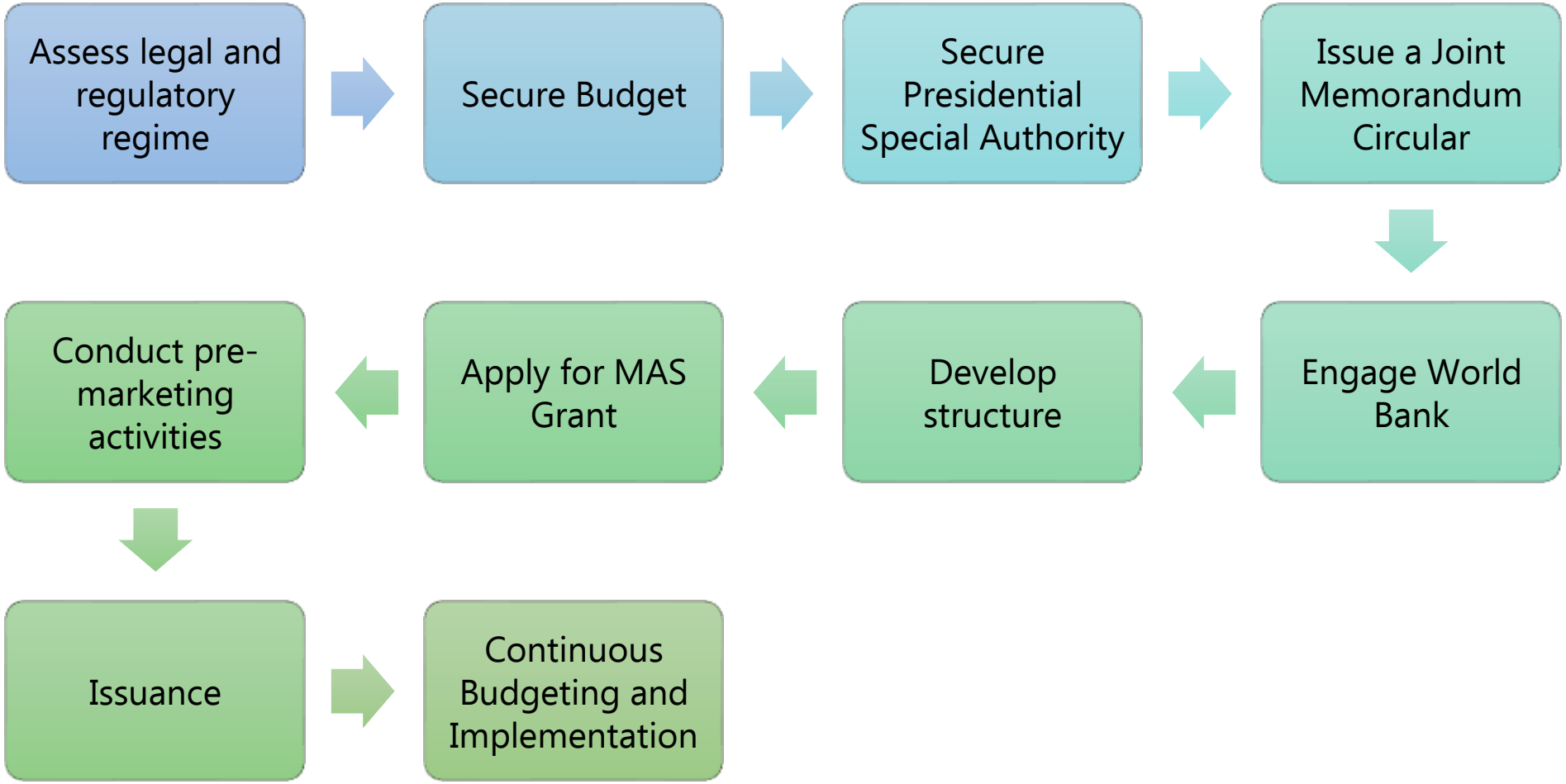
Triggering Event

- Triggered in 2022: Typhoon Odette, Payout of USD 52.5 Mn

BAGONG PILIPINAS

Philippine Experience

Philippine Process



Philippine Experience

Legal and Regulatory Framework

- Issuance of a Joint Memorandum Circular
- Presidential Special Authority

Budget

- BTr excess income
- BTr regular budget for succeeding years

Monetary Authority of Singapore Grant

- Insurance-Linked Security Grant Scheme
- Up to SGD 2 Million
- Compliance with structure minimum requirements

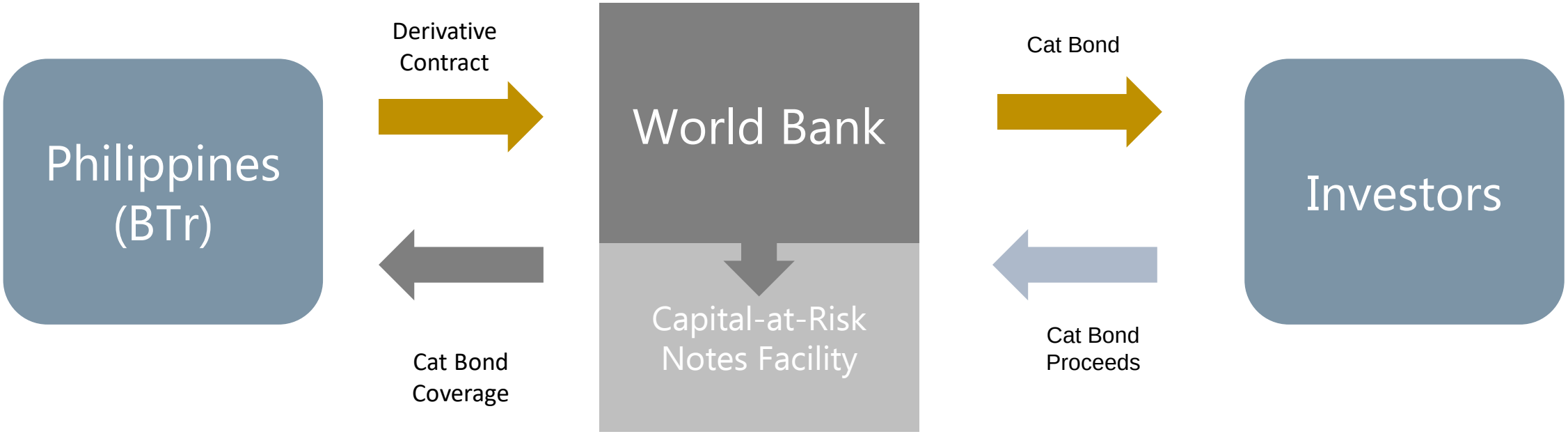
Philippine Experience

Monetary Authority of Singapore Grant

Condition	ROP Cat Bond Details
Principal amount of at least SGD 50M or its equivalent in another currency	ROP Cat Bond principal amount is USD 225M
Non-redeemable tenure of at least 3 years	ROP Cat Bond had a 3 year tenor
Bond is to be listed on SGX	ROP CAT Bond listed on SGX in November 2019
More than 20% of total costs incurred in issuing the bond is attributable to companies in SG	Per confirmation of WB, more than 80% of the total expenses will be attributable to Singapore affiliated companies.

Philippine Experience

Process Flow



- Why World Bank?
  - Experience and expertise in issuing a CAT Bond
  - Take advantage of WB AAA Rating

Philippine Experience

Pricing

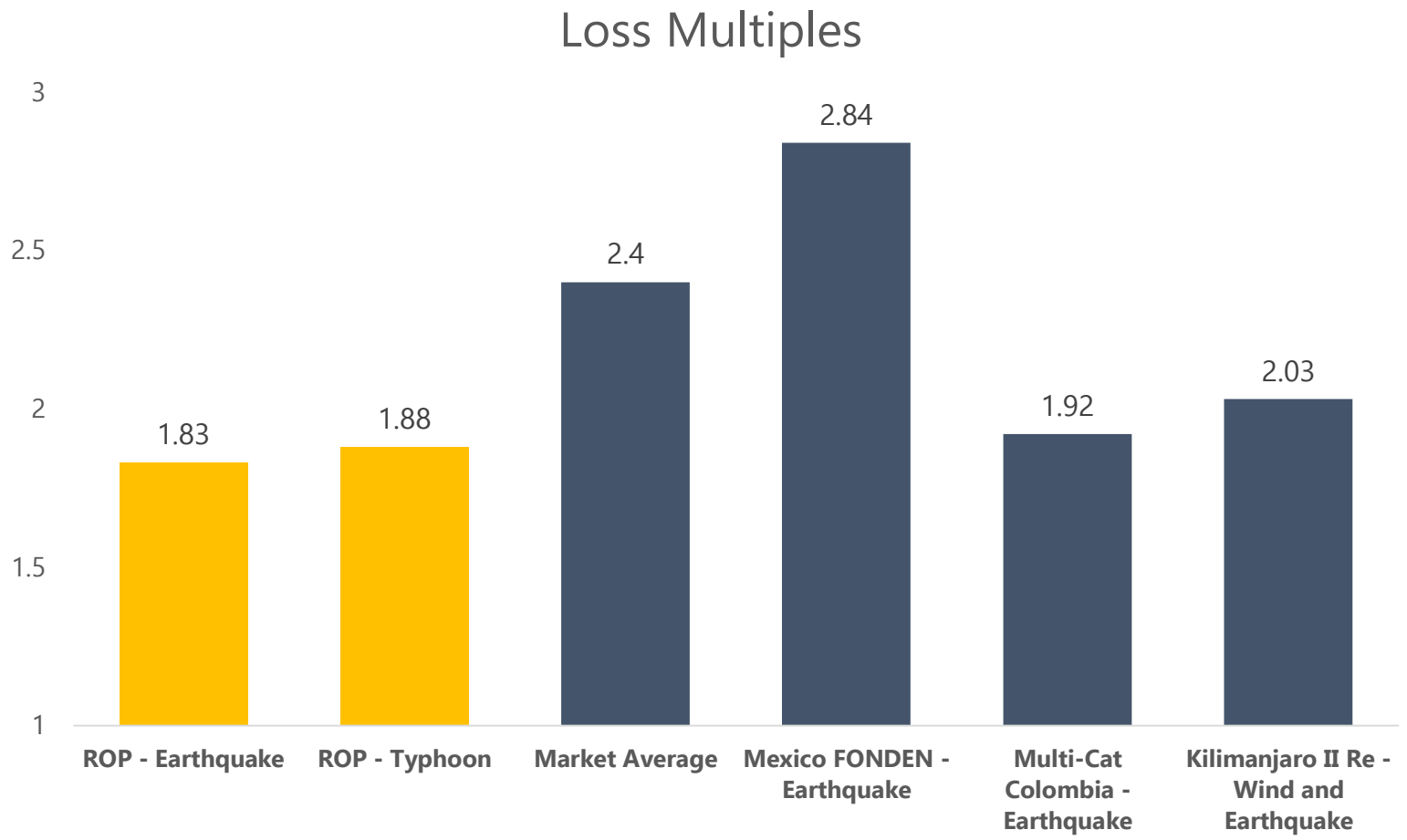
	EARTHQUAKE	TROPICAL CYCLONE
Average Expected Loss	3%	3%
Risk Margin	5.50%	5.65%
Loss Multiple	1.83	1.88

Philippine Experience

Pricing – Loss Multiple

PH risk regarded as a **diversifier** in the CAT Bond market

Achieved **tighter pricing** compared to peers and market average



Philippine Experience

Pricing – Computing the Premium

EXPECTED LOSS	×	LOSS MULTIPLE	=	PREMIUM RATE
3.00%	×	1.83	=	5.50%

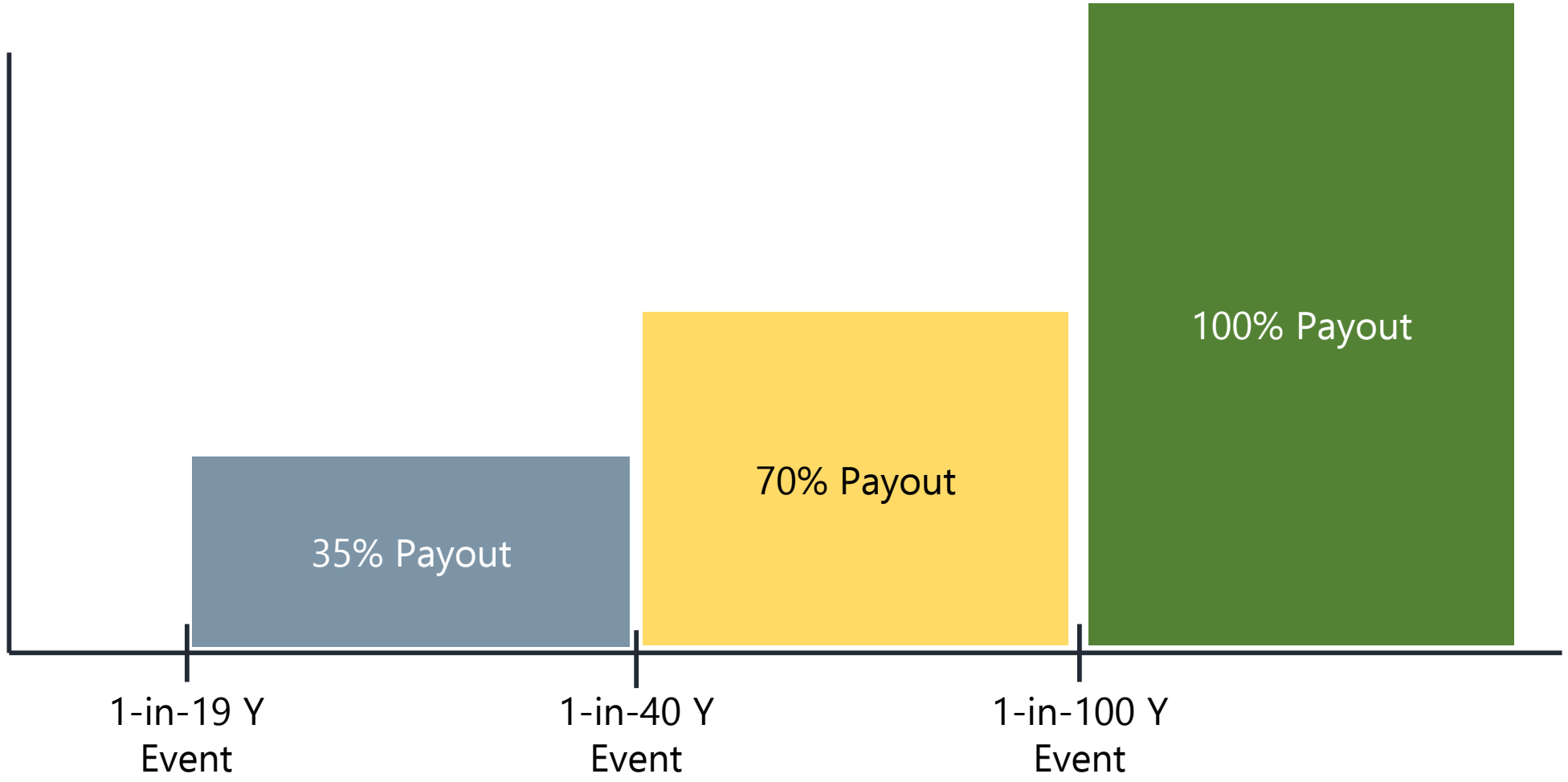
Philippine Experience

Structure

	EARTHQUAKE	TROPICAL CYCLONE
Trigger Structure and Corresponding Payouts	35% Payout (USD 26.25M): 1-in-19 Years (modeled loss of PhP 11.1 billion similar to 1990 Luzon)	35% Payout (USD 52.5M): 1-in-19 Years(modeled loss of PhP 40.64 billion similar to Typhoon Yolanda)
	70% Payout (USD 52.5 million): 1-in-40 Years (modeled loss of PhP 28.92 billion)	70% Payout (USD 105 million): 1-in-40 Years(modeled loss of PhP 81.06 billion)
	100% Payout (USD 75 million): 1-in-100 Years(modeled loss of PhP 115.78 billion)	100% Payout (USD 150 million): 1-in-100 Years(modeled loss of PhP 152.71 billion)

Philippine Experience

Structure



Philippine Experience

Triggering the Bond - Calculation

Philippine Experience

Triggering the Bond

Example scenario:
Year 1: A Haiyan-like (1-in-19) typhoon happens (A)
Year 2: A typhoon stronger than Haiyan happens. For illustration purposes, let us assume a 1-in-40 year type of typhoon (B)
Year 3: Another Haiyan-like typhoon happens (C)

(A) will trigger 35% of your payout ($70M). From that triggering event onwards, you will only pay the premium for the $ 230M.
(B) will then trigger 70% of your payout. But, since the total payout for typhoons can only be $200M and you triggered $70M, you will only trigger $130M (instead of $140M).
(C) will not trigger anything as your typhoon coverage was already fully paid out.

Philippine Experience

1st Asian Sovereign-sponsored CAT Bond

1st CAT Bond listed in the Singapore Exchange (SGX)

1st CAT Bond listed in an Asian Exchange

MAS ILS Grant Recipient

2019 Best Catastrophe-linked Bond (Asian Asset Award)

Philippine Experience

Challenges

BUDGETARY CONSTRAINTS

LEGAL AND REGULATORY FRAMEWORKS

TECHNICAL EXPERTISE

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Thank you!