Gobierno de Chile

Ministry of Finance

Chilean Experience - Pacific Alliance Cat Bond

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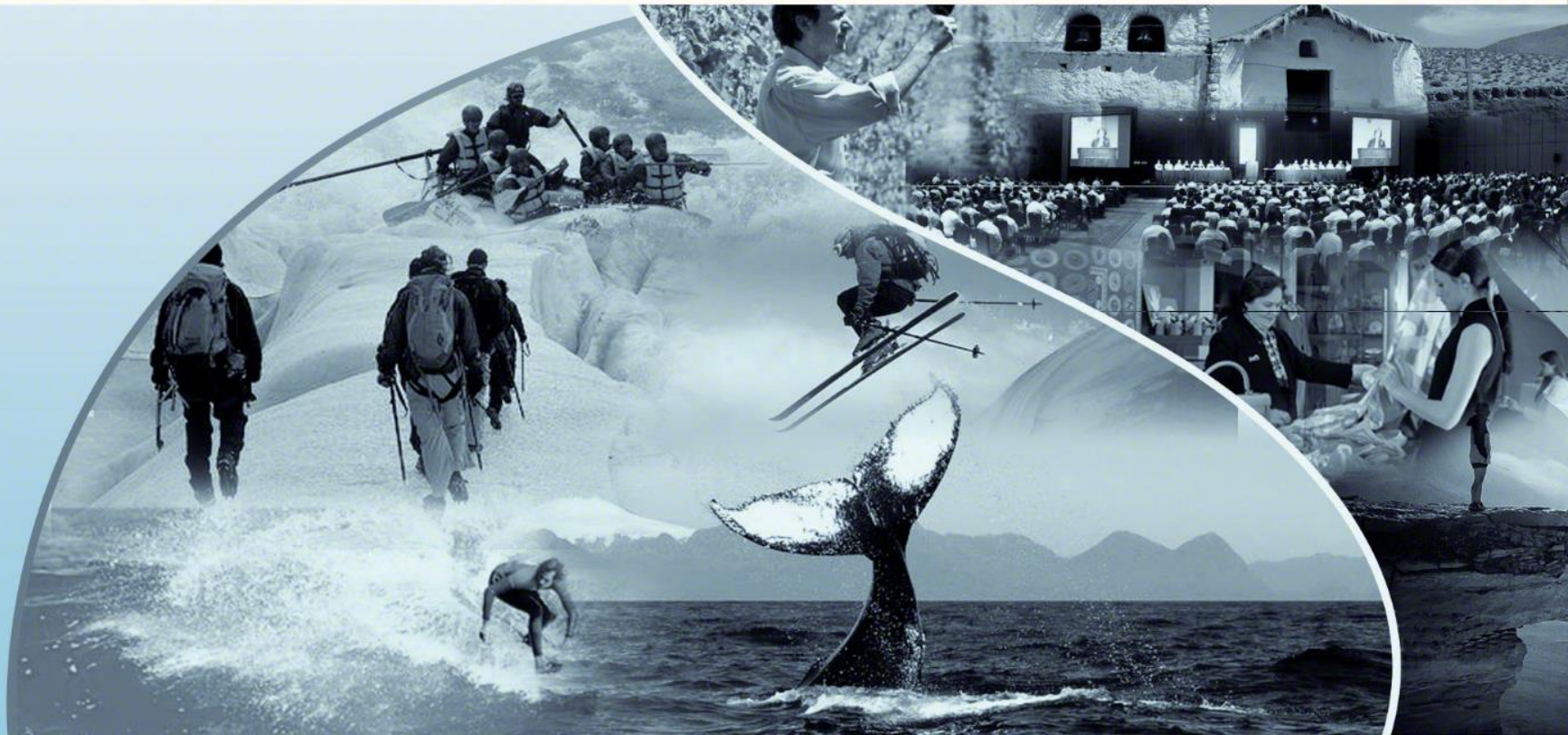
Agenda

Gobierno de Chile

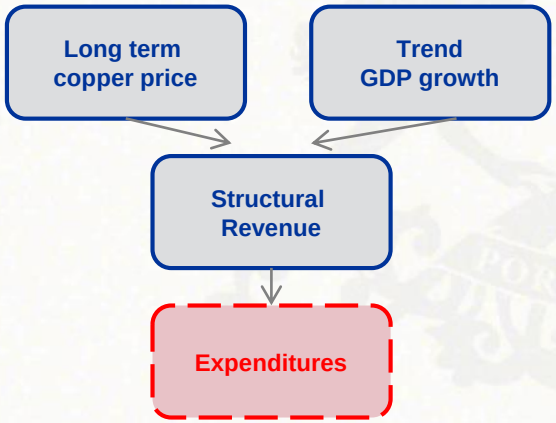
Risk Management Framework



Structural Balance Rule

Guiding principle: Expenditures constrained by permanent revenues

- Countercyclical rule:
  - Saving during economic booms, when extraordinary revenues are received
  - Use savings to finance spending in downturns, when fiscal revenue drops
- Long-term (trend) GDP growth and copper prices are set every year by an independent panel of experts in a transparent process



Structural Balance Rule has effectively helped to:

I. Add predictability and credibility to fiscal policy

II. Make long-term public spending sustainable, decreasing its vulnerability to abrupt external changes

III. Provide a source of internal savings in periods of strong growth, limiting the need for foreign capital in period of slow growth

Other Explicit Contingent Liabilities

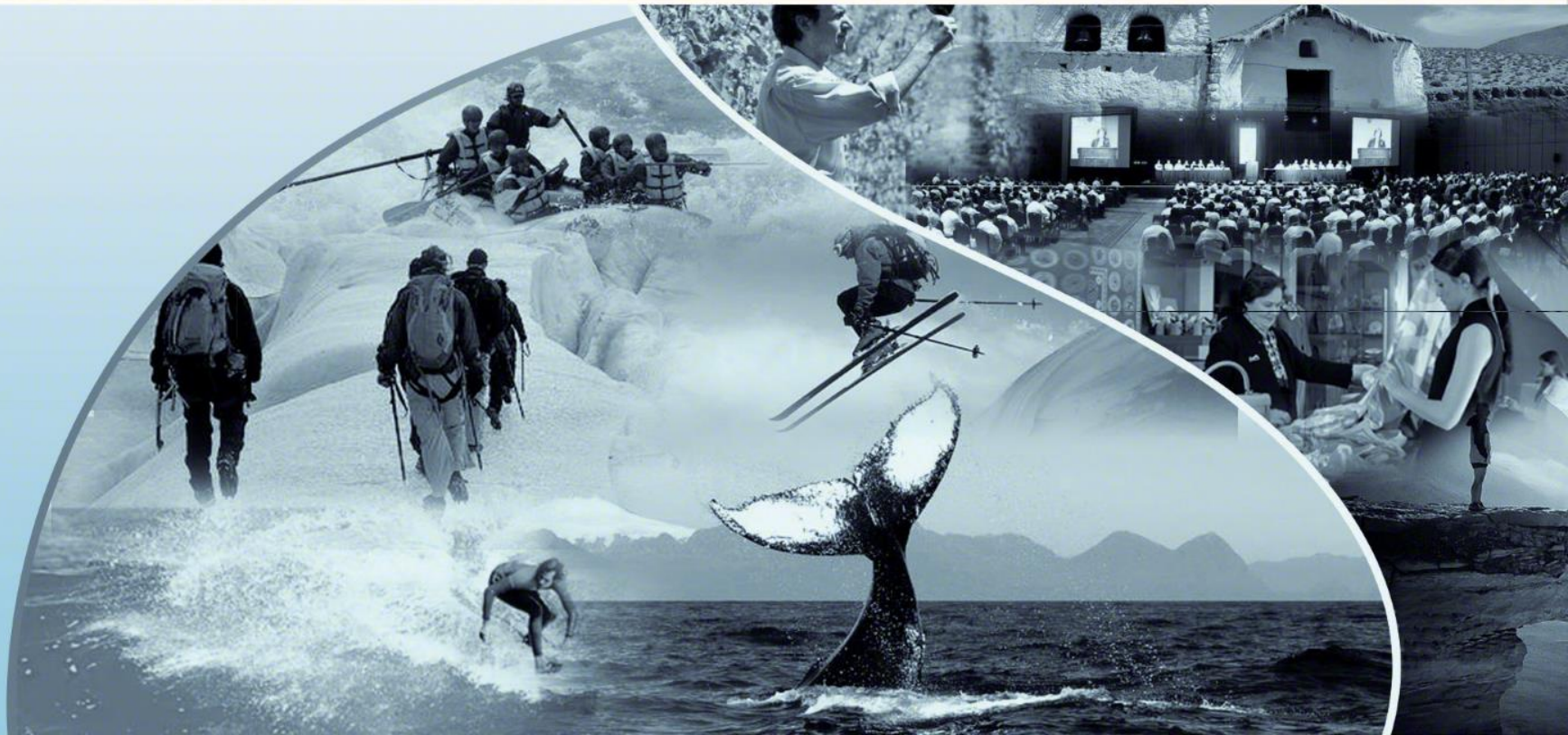
- Annual Report of Contingent Liabilities
- Created in 2006, by the Fiscal Responsibility Law
- Reports annually the magnitude and characteristics of explicit contingent liabilities

2017 - %GDP	Annual flow	Stock
Guaranteed Minimun Incomes of Concession System	0.02%	0.20%
Guaranteed Debt of Public Companies	0.00%	0.95%
University Loans Guarantees	0.07%	1.27%
State Guarantee for Deposits	0.00%	1.31%
Litigation of Concession System	0.00%	0.19%
Lawsuits against Fisco	0.01%	0.49%
Investement Funds (CORFO)	0.00%	0.00%
Small Enterprise Guarantees Funds	0.00%	0.00%
TOTAL	**0.09%**	**4.41%**

Fiscal risks and contingent liabilities

Key variables that increase the fiscal risk

Top decision and structuring of CAT Bonds

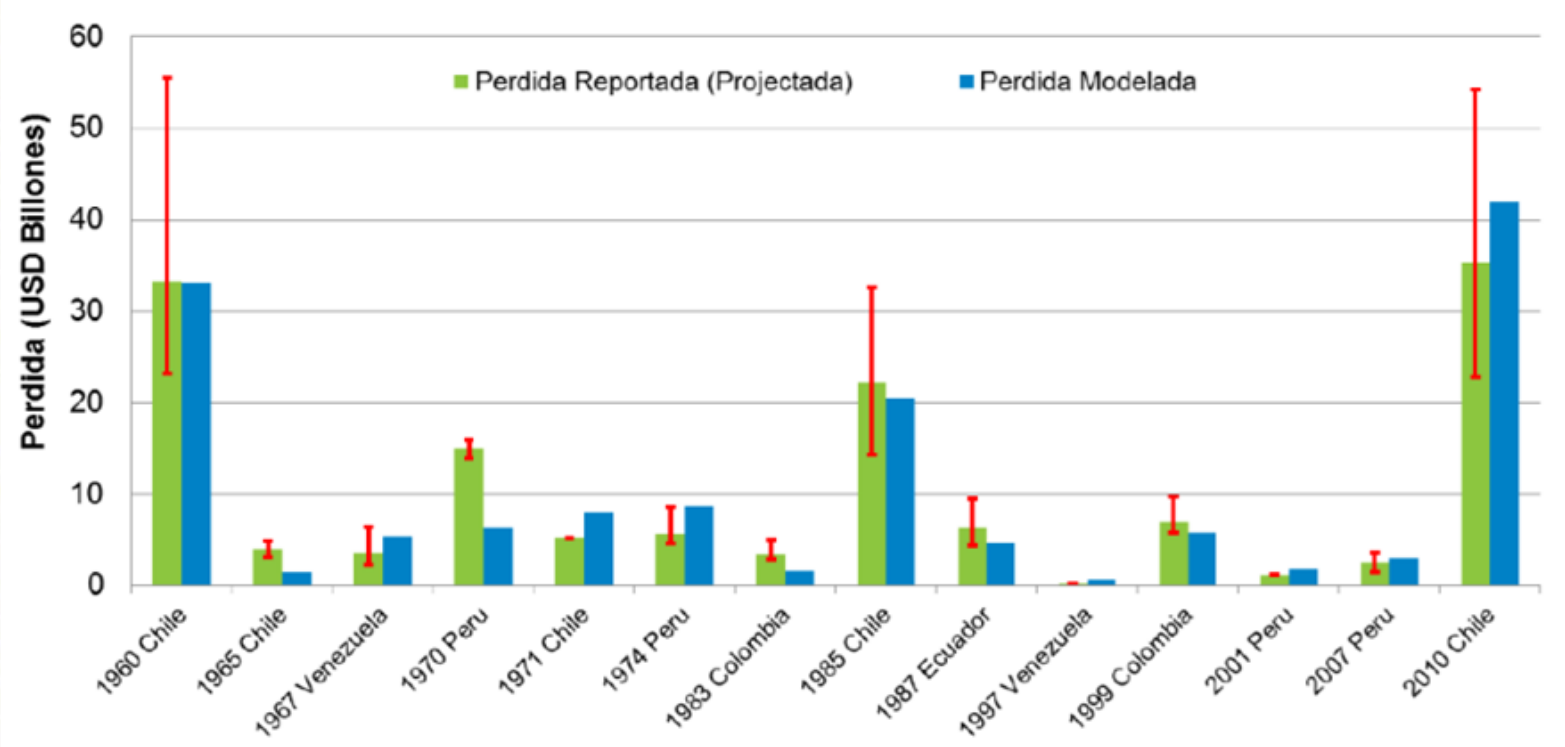


Air Models: Many years for a better simulation

Fuente: Air world Wide

AIR Model validation

Reported v/s Modeled losses



Red line shows the variability of the economic losses reported in the different sources

Source: Air Worlwide

Pacific Alliance – World Bank

- In 2015, the countries of the Pacific Alliance considered necessary to move forward in finding solutions that could alleviate the negative impact of natural disasters in our countries.
- In 2015, the Finance Ministers commissioned the Catastrophic Risk Management Group of the Pacific Alliance to evaluate the convenience of issuing a joint catastrophic bond.
- With the help of the WB, a modeling company (Air Worldwide) was contracted to carry out the study.

Basis Risk and modeling

- Basis risk:

Basis Risk

Negative:	Positive:
An event which causes strong losses occurs The payment is not activated	An event without relevant losses occurs Payment is activated

One of the main goals of the modelling process is to reduce basis risk, but avoiding complexities.

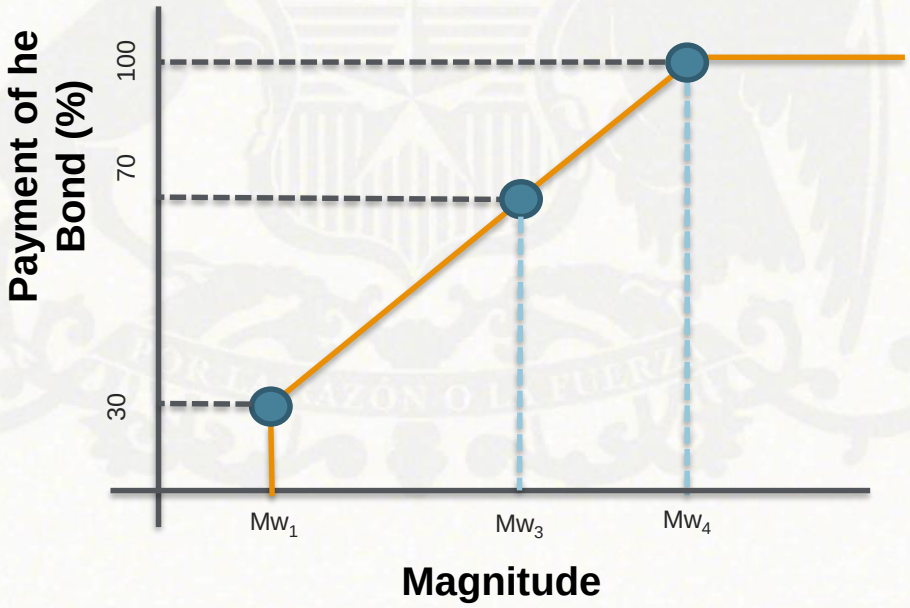
Different Structures or Triggers

	Parametric Triggers		
	1st Generación CAT-In-A-Box	2nd Generation	Modeled Loss
Indemnity (Traditional Insurance) A payment is activated acording to the damage	**Classic**: Different zones are defined with a different trigger for each one	It defines a ground acceleration index, measured by seismographs	A transparent and replicable model is used to estimate acceleration. Modeled Loss is calculated according to it
	Cat in a Grid: high resolution zones are defined, with an specific trigger for each one, in order to reduce basis risk		
	Air recommendation	**Not feasible for any AP country**	**More complex and doesn't avoid basis risk**

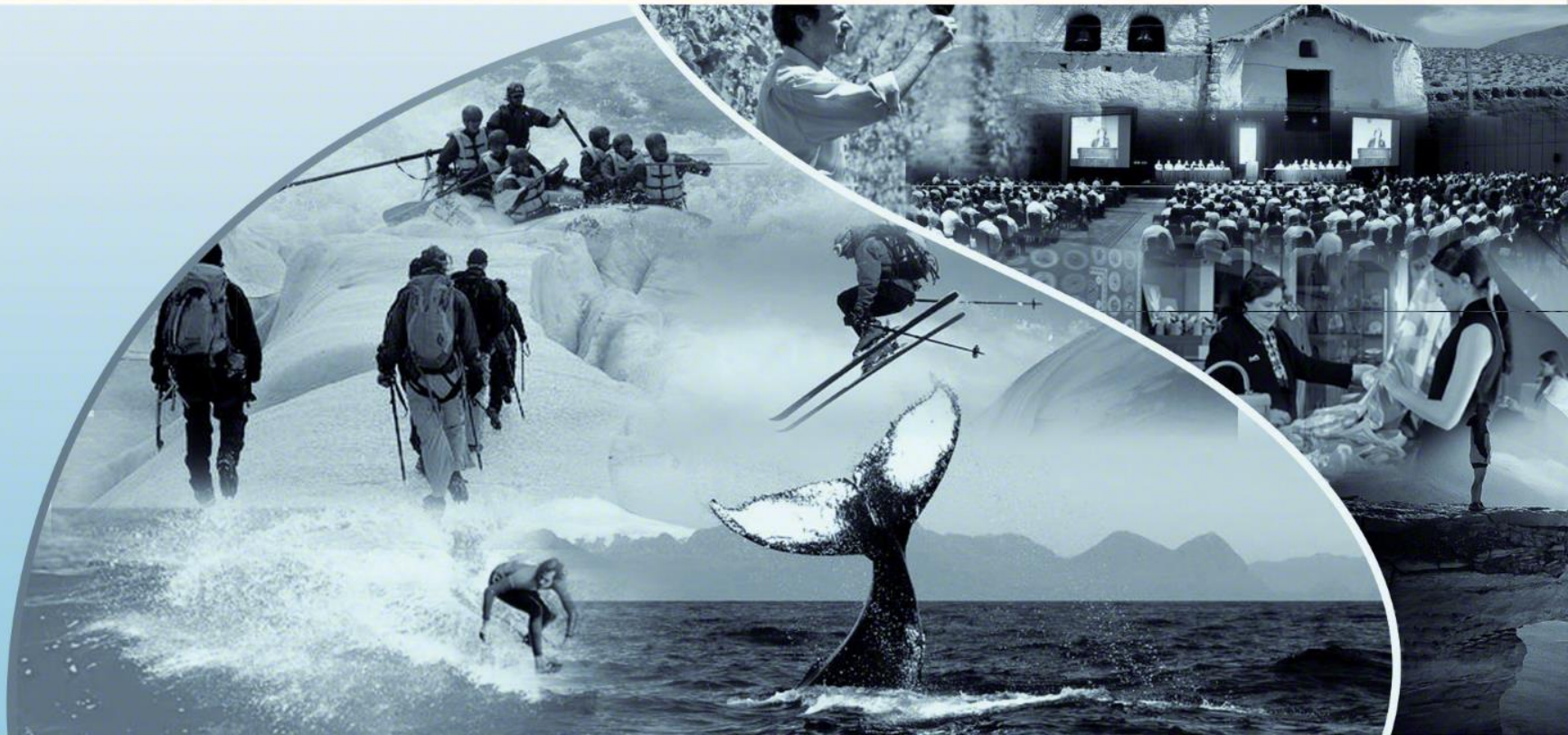
Linear step function

- Better correlation between economic loss and payment, reducing basis risk.

(*) Function recommended by AIR.



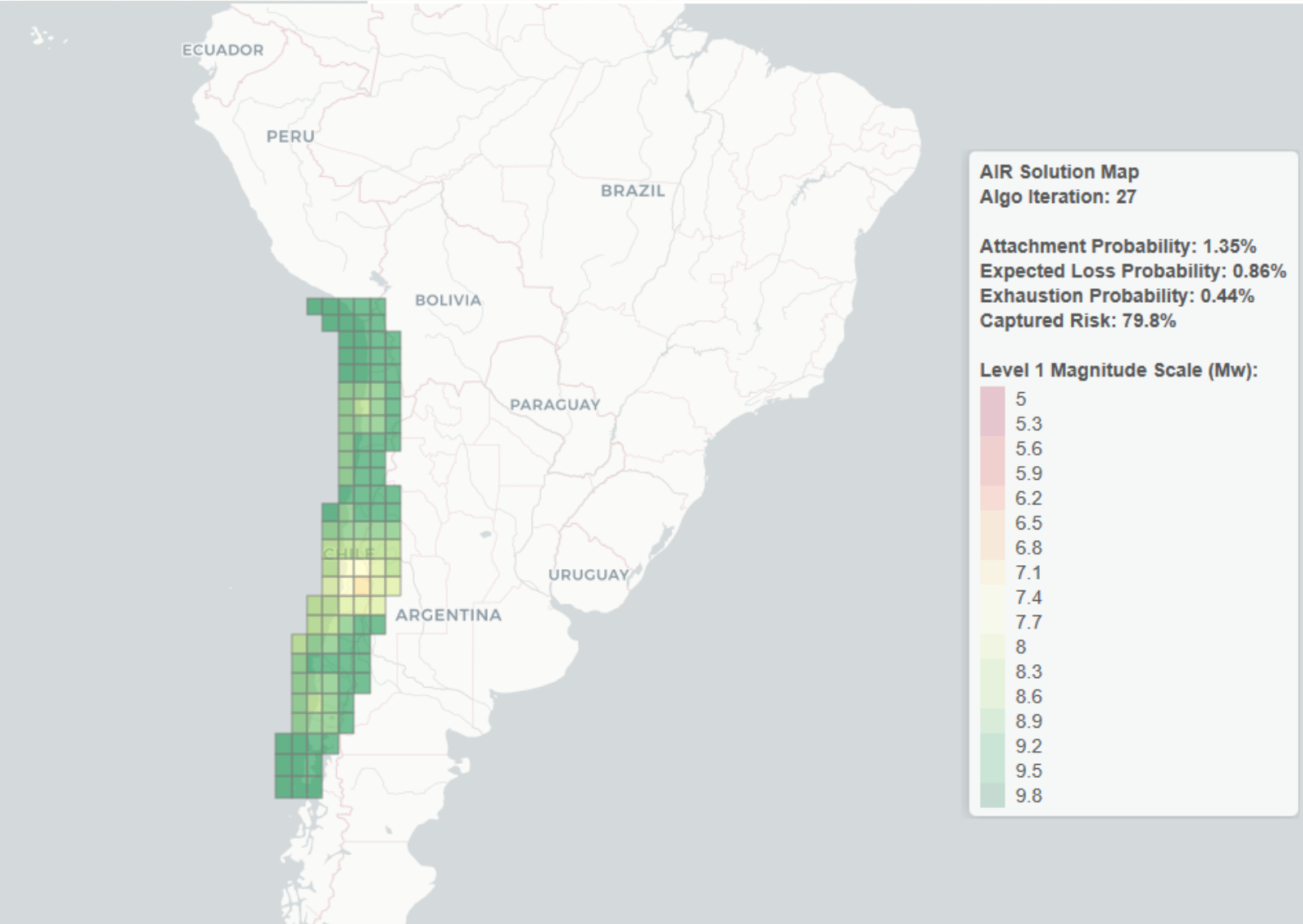
Pricing and cost/risk considerations



CAT Bond for Chile

- Ministry of Finance Input: to cover events which causes at least US$400 million expenses for the Government.
- Air result: This corresponds to events with an economic cost of at least US$8.5 billion. This was calculated considering a 4.5% ratio between government spending and the country's economic cost **The model showed that this corresponds to events that occur on average every 75 years (Return Period).**
- This, together with other elements that allow to reduce the basis risk, is equivalent to an expected loss probability of 0.86% (calculated by Air Worldwide).
- Estimation established that an Expected Loss of 0.86% corresponded to an annual premium of 2.75%-3.5%.
- Considering our annual premium budget, the notional amount of the bond was established between US$360-460 million.
- The book allowed to reduce the premium up to 2.5%. The final notional amount was of US$500 million.

CAT Bond Structure for Chile



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Coordination within the Chilean Government and among the members of the Pacific Alliance

Coordination within the Chilean Government and Pacific Alliance countries

- Coordination within the Government and the role the DMO.
- The notional amount was a unilateral decision of each country, according to:
  - Their particular needs.
  - Budget availability.
  - The insurance structure chosen.
- Coordination would not have been possible without the participation and support of the World Bank team.
- Productive induction and learning sessions in Santiago, Washington and Mexico, with the World Bank team and the modeling company.
- We managed to execute the transaction in the exact time we had planned and successfully: we got a high demand and reached a very competitive premium.

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