



Climate Change and Insurance-Linked Securities

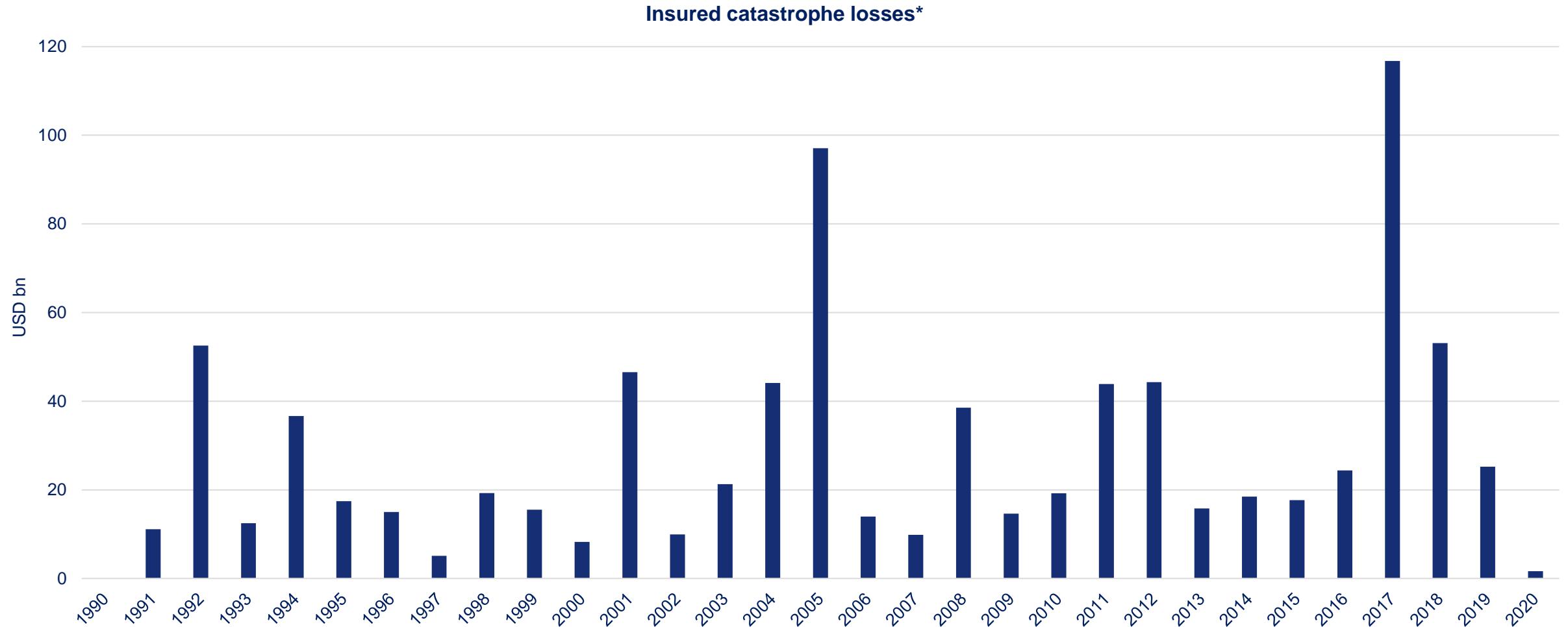
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Founding Partner, Twelve Capital

28 April 2021

Pricing Climate Change and building resilience

Insured catastrophe losses in the US, 1990 – 2020, in USD billion at 2020 prices

In terms of insured catastrophe losses in the US, 2017 and 2018 were the most expensive and third most expensive years respectively.



Pricing Climate Change and building resilience

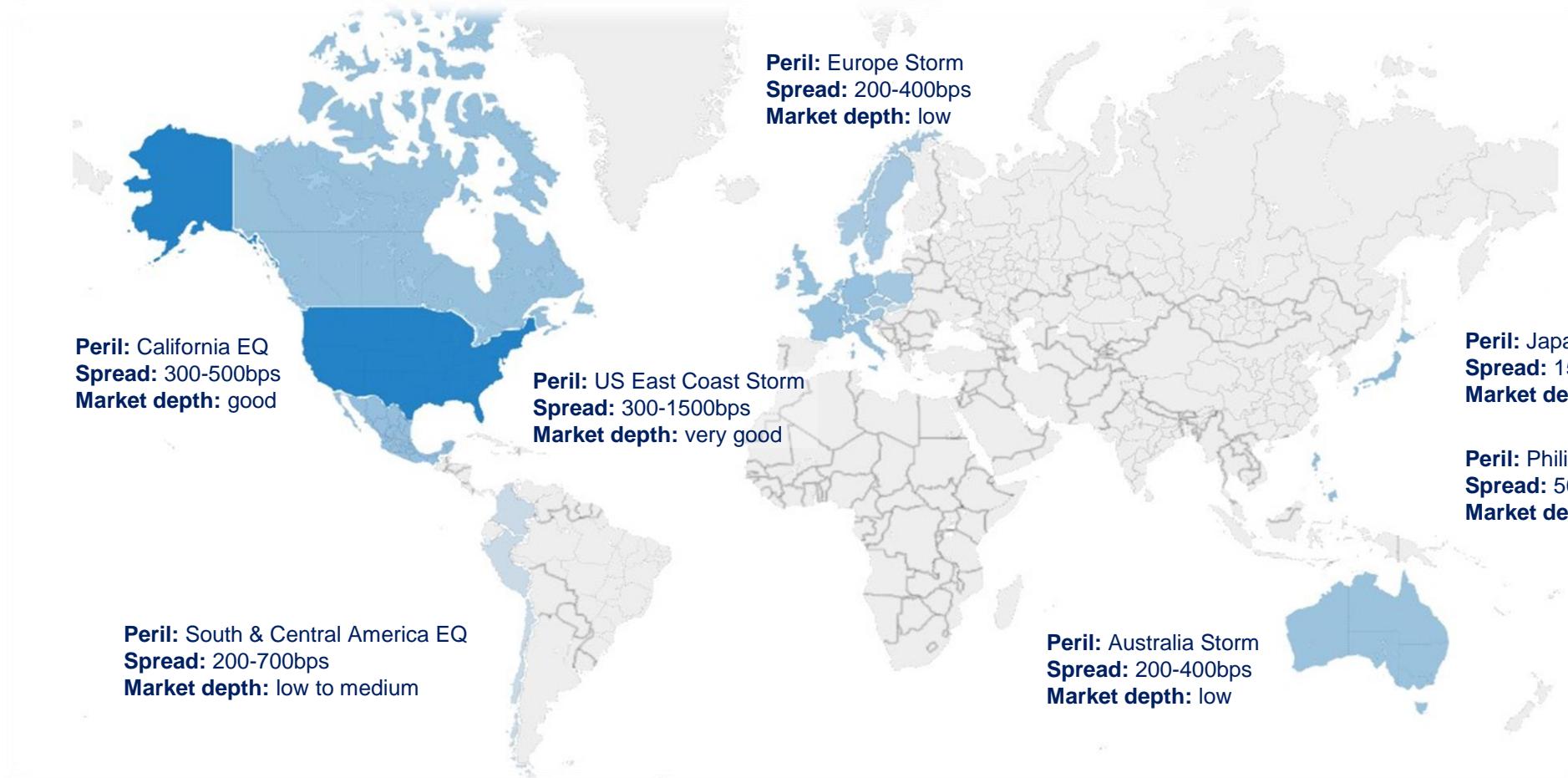
Reinsurance and ILS provide protection

USD 512bn
Capital available in traditional reinsurance market

USD 100bn+
Estimated size of ILS market

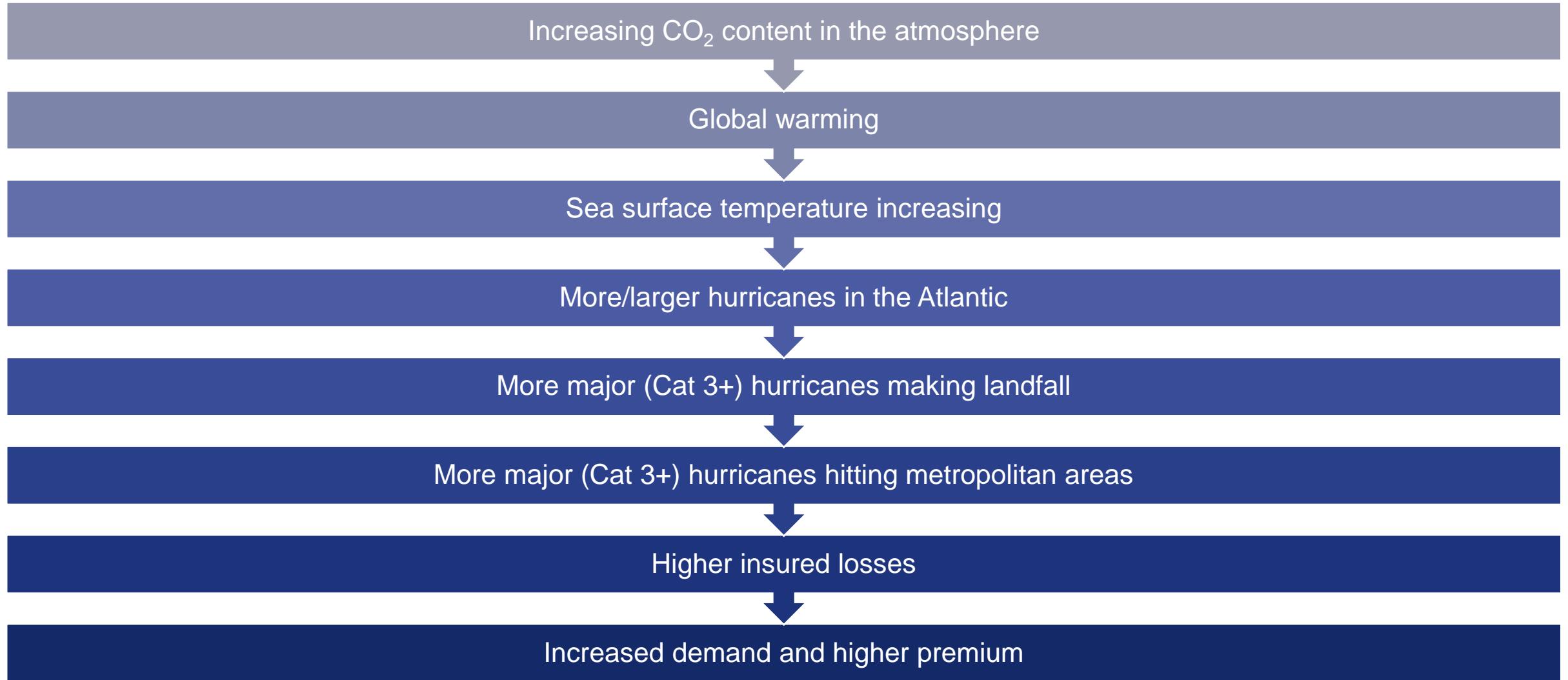
~ USD 40bn
Liquid Cat Bond market size

+547%
ILS market size growth since 2006



Pricing Climate Change

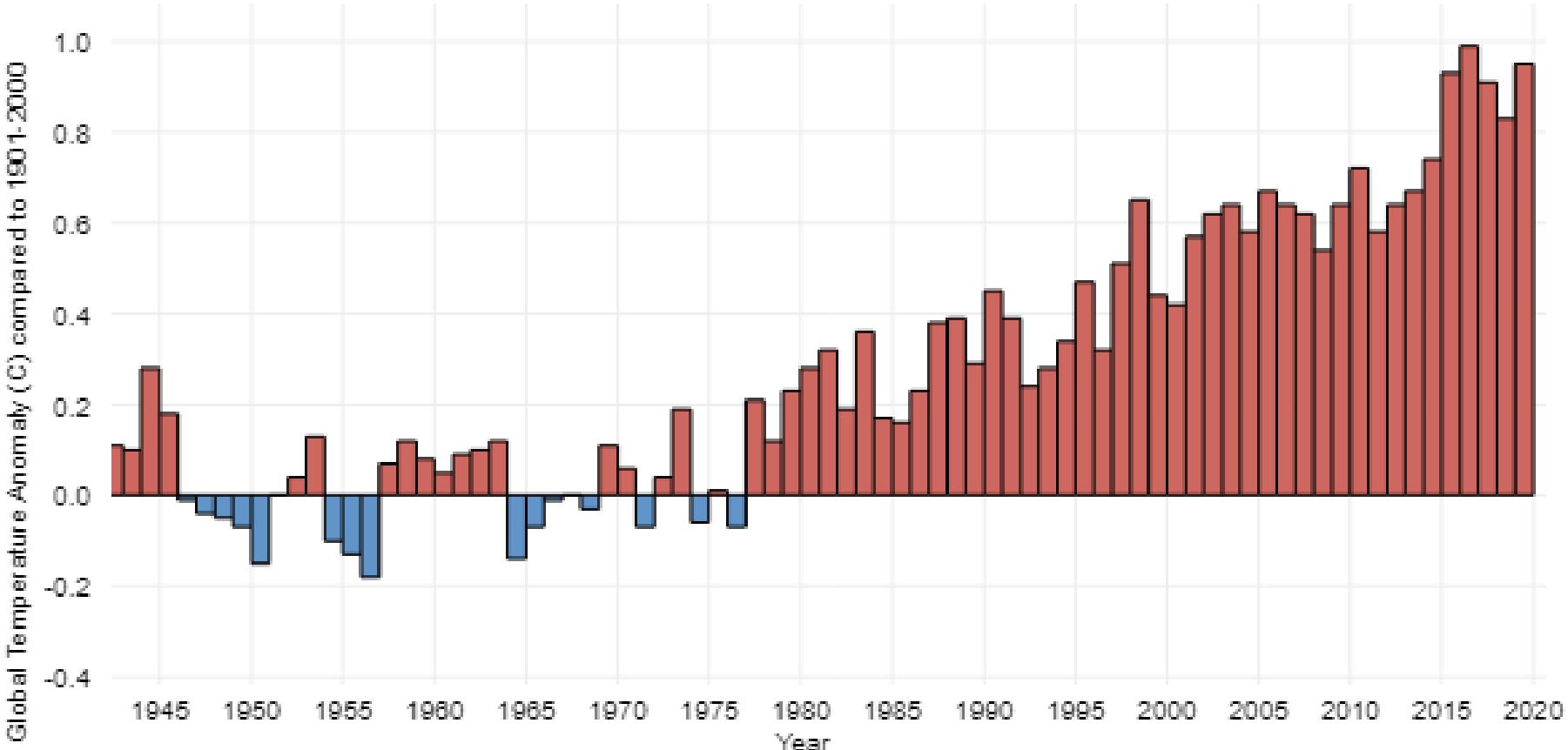
US Hurricanes



Source: <https://climatedataguide.ucar.edu/climate-data/atlantic-multi-decadal-oscillation-amo>. Cat = Category. A major hurricane is classified as a hurricane that experienced an intensity of 3 or greater on the Saffir-Simpson scale during its lifetime.

Pricing Climate Change

Global sea surface temperature



Pricing Climate Change

Hurricane forecasts with machine learning techniques

- reask is a climate tech start up utilising machine learning techniques to allow for better predictions of basin activity and to more accurately assess hurricane landfall potential
- Twelve Capital has established a partnership with reask to apply machine learning techniques to North Atlantic Hurricane forecasting
- reask’s forecast utilises larger volumes of data to generate predictions from automated algorithms aimed at delivering greater value to users than traditional hurricane forecasts

	reask* forecast	Traditional forecast
Volume of data processed	Large (10,000+)	Limited (less than 20)
Climate pattern recognition	Global and automatic (output)	Manual (input)
Risk forecast	Full risk distribution	Mean estimate
Risk metric	Potential for high impact land falling systems	Basin wide activity

Pricing Climate Change

Hurricane activity

Activity	1980-1999 CESM	2000-2019 CESM	2020-2060 CESM
North Atlantic Basin	12.4	13.2 (+6.5)	15 (+13.6%)
East Coast	4.5	4.8 (+6.7%)	5.5 (+14.6%)
Main Development Region	4.7	5 (+6.4%)	5.7 (+14%)
Gulf/West Caribbean	3.2	3.4 (+6.2%)	3.8 (+11.8%)

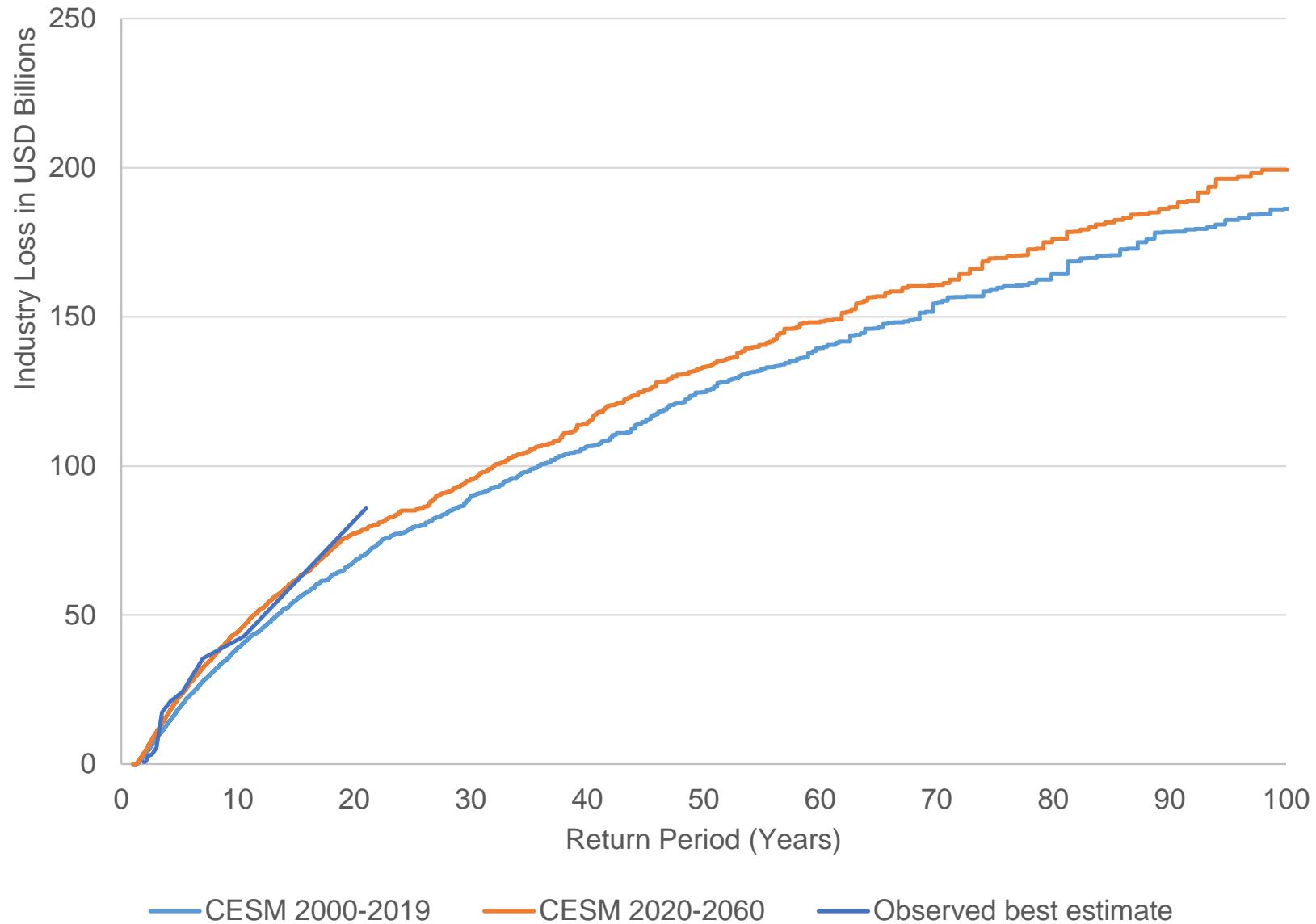
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Assessing hurricane landfall risk

Landfalls	1980-1999 CESM	2000-2019 CESM	2020-2060 CESM
East Coast	0.9	0.96 (+6.7%)	1.15 (+19.8%)
Main Development Region	0.95	1 (+5.3%)	1.11 (+11%)
Gulf/West Caribbean	1.81	1.86 (+2.76%)	2.01 (+8%)

Pricing Climate Change

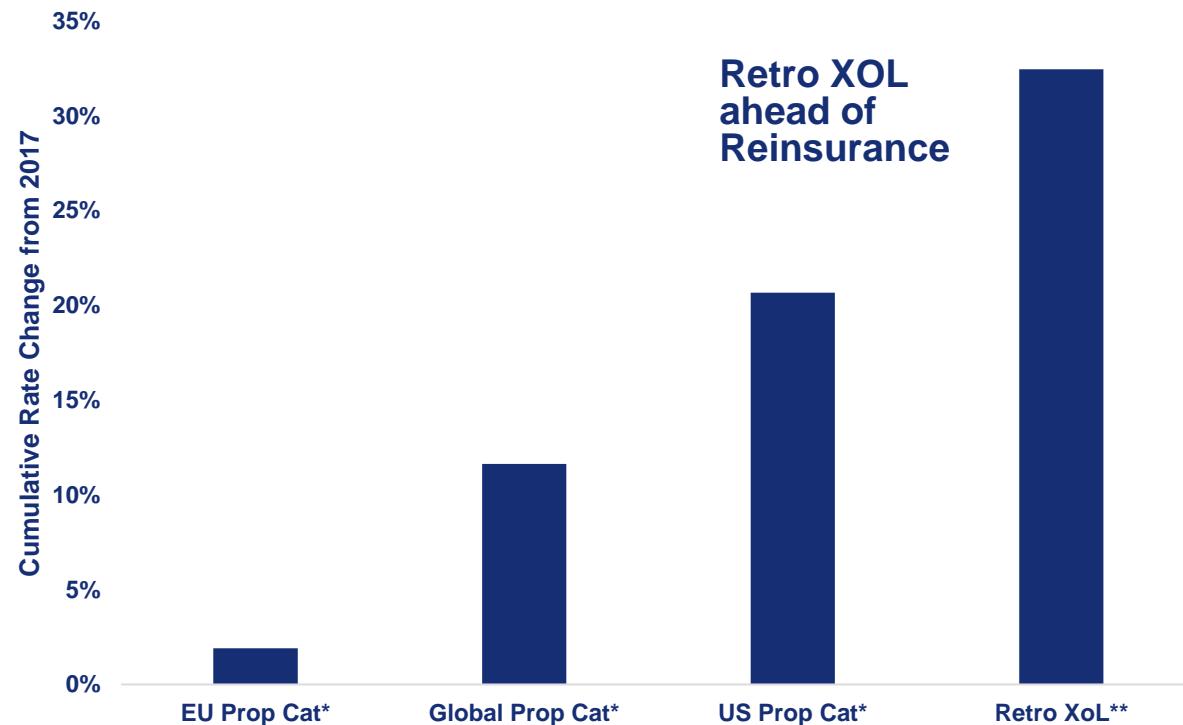
Expected industry loss



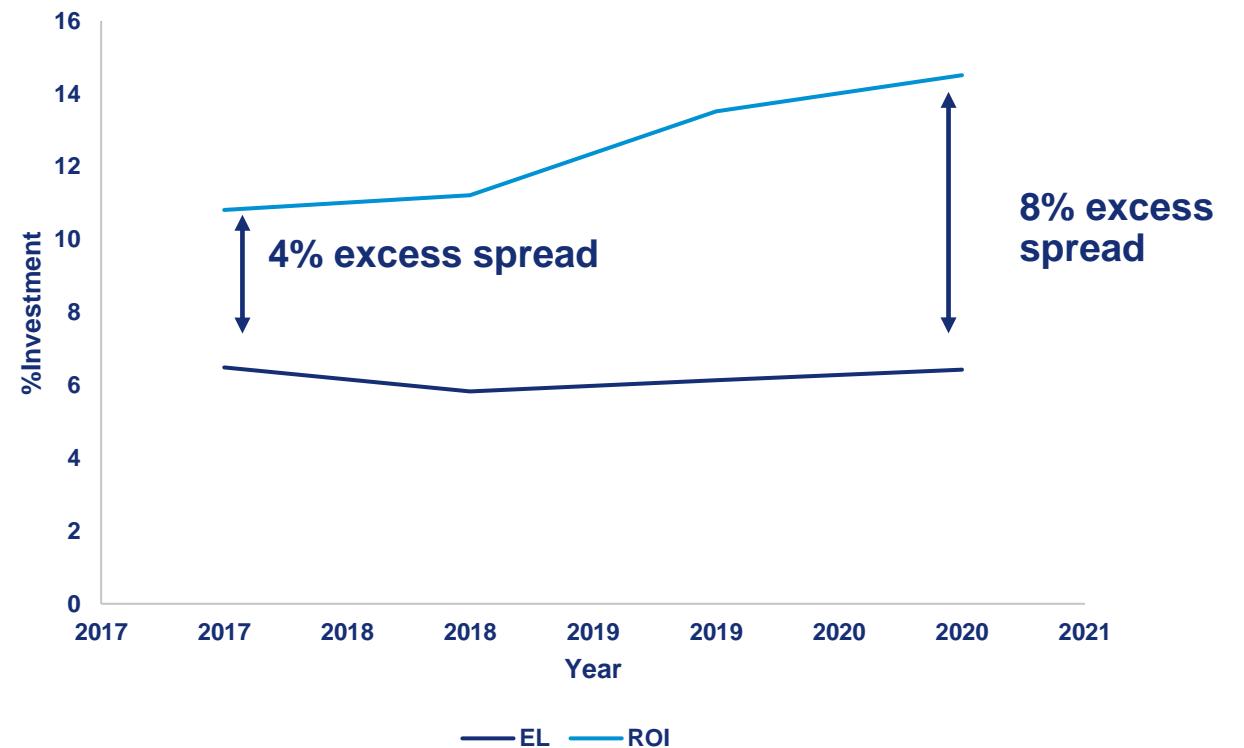
Climate Change Resilience

Risk premiums in (re) insurance are increasing

Rate change by product 2018-2020



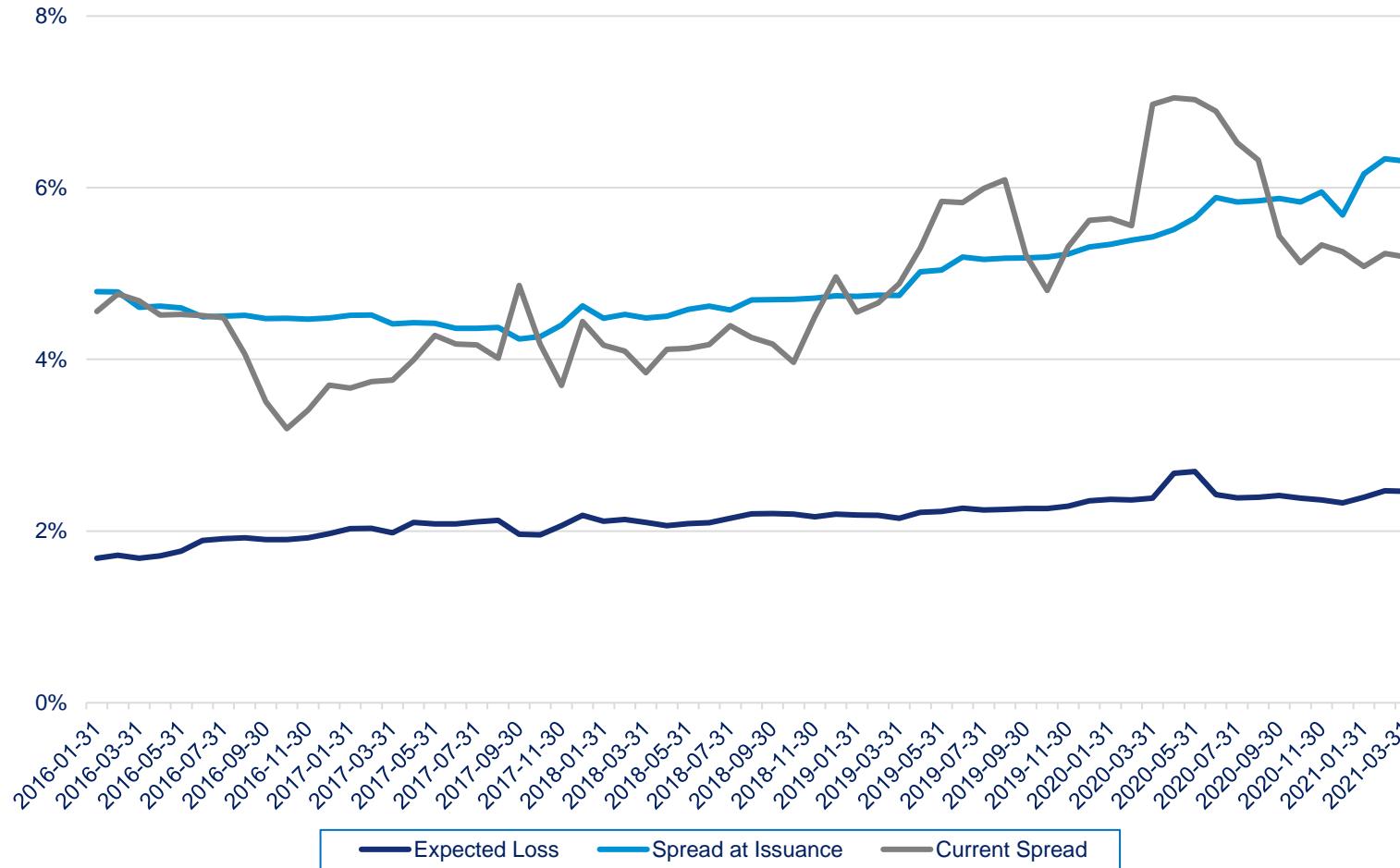
Spread widening in Retro XOL



Climate Change Resilience

Cat Bonds spreads still on a multi-year high

Cat Bond market portfolio spreads and expected loss



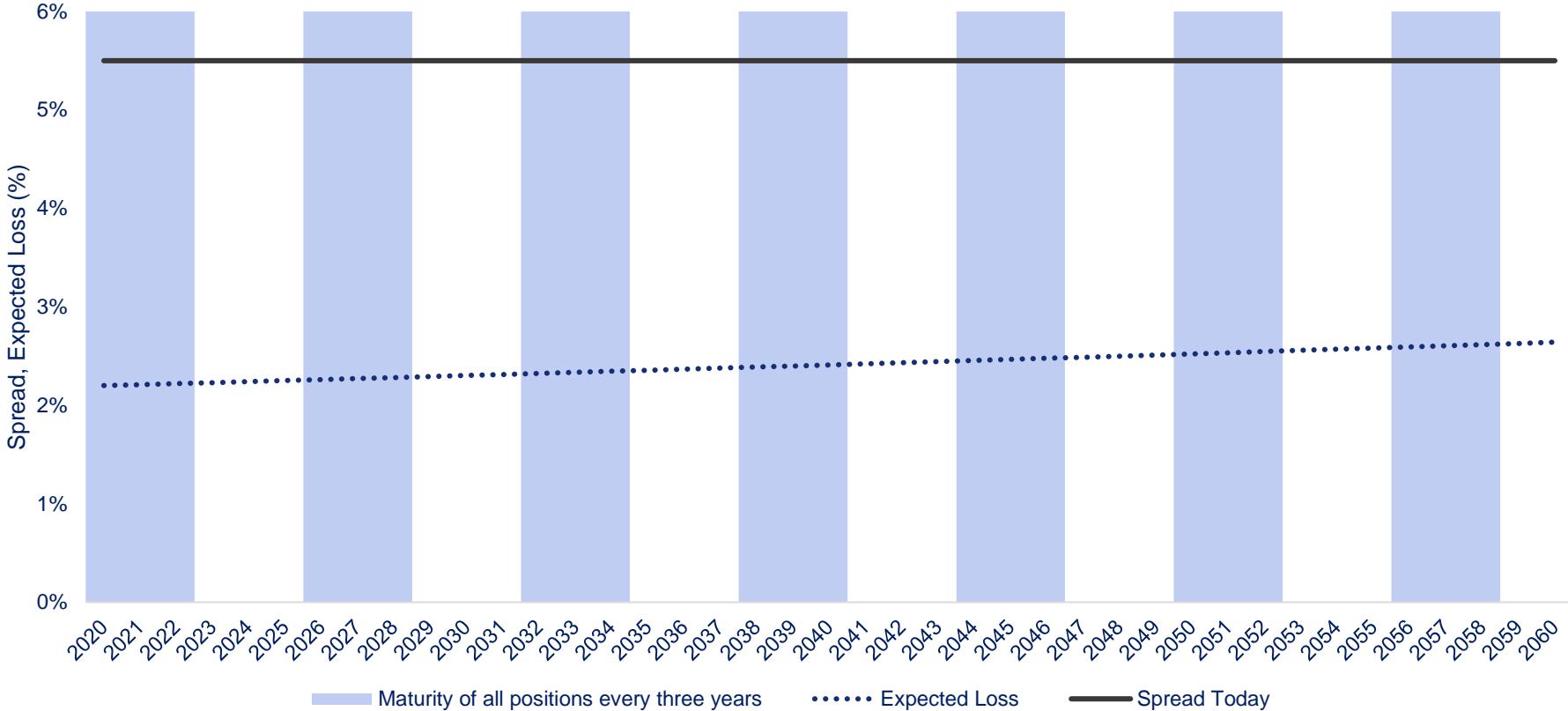
519 bps
Current Cat Bond spread

2.46%
Current expected loss

USD 4'984m
Notional issued in ILS 2021 YTD

Climate Change Resilience

Pricing of risks

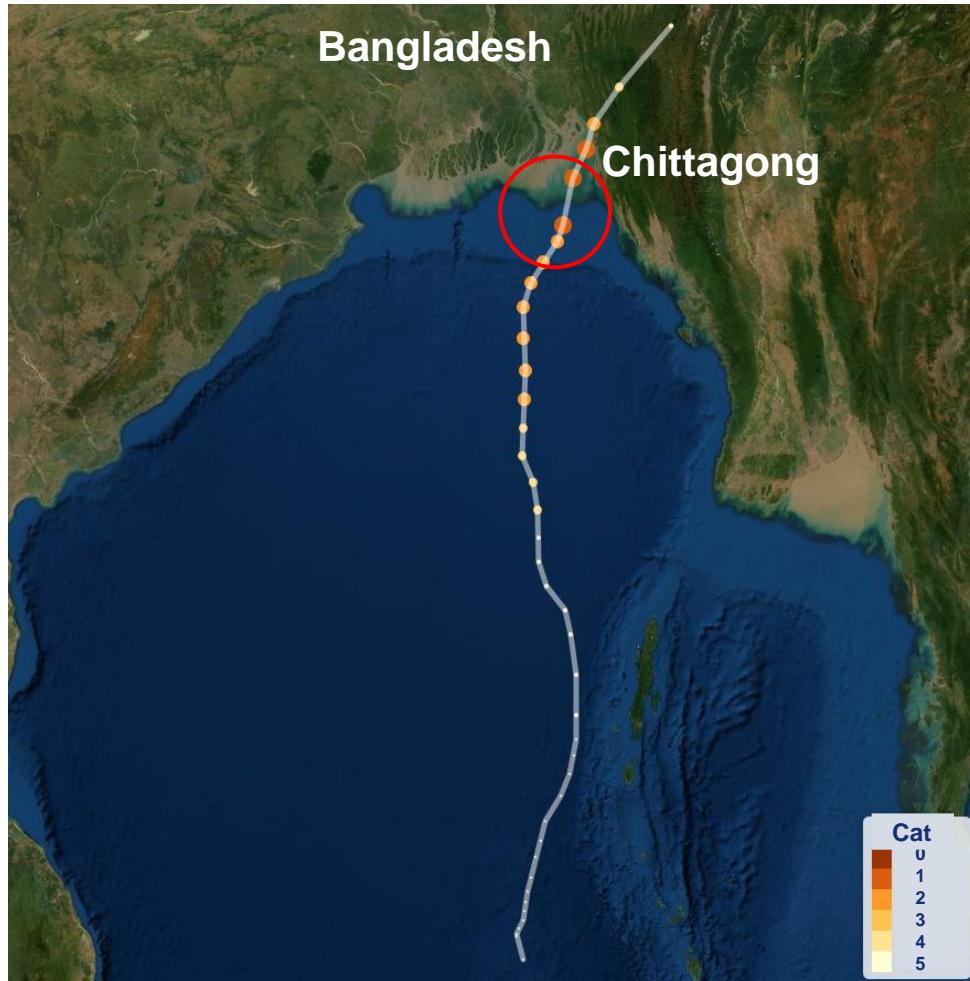


Source: Twelve Capital, Reask. As at January 2021. Current spreads can be lower in the future and therefore negatively impact performance.

Climate Change Resilience

Outlook: Building resilience in emerging markets

Bangladesh cyclone 1997



Illustrative pay-out mechanism

Define risk region and pay-out thresholds

Trigger; If any track point, as defined by an independent reporting agency, falls within or intersects, a predefined shape*

Category	Pay-out factor
0	0
1	0.1
2	0.25
3	0.5
4	0.75
5	1

Reask's technology allows Twelve Capital to design and assess multiple tropical cyclone exposed pay-out regions.

Conclusion

- Climate change is expected to have a significant impact on the value of assets in zones exposed to natural catastrophes
- Analysing and assessing the impact of climate change on natural catastrophes is key for risk-adjusted pricing for insurance protection
- Insurance-Linked Securities provide capital for protection of people in areas exposed to climate change, increasingly also for people who can not afford insurance
- At the same time Insurance-Linked Securities offer attractive low correlated risk-adjusted returns for financial investors

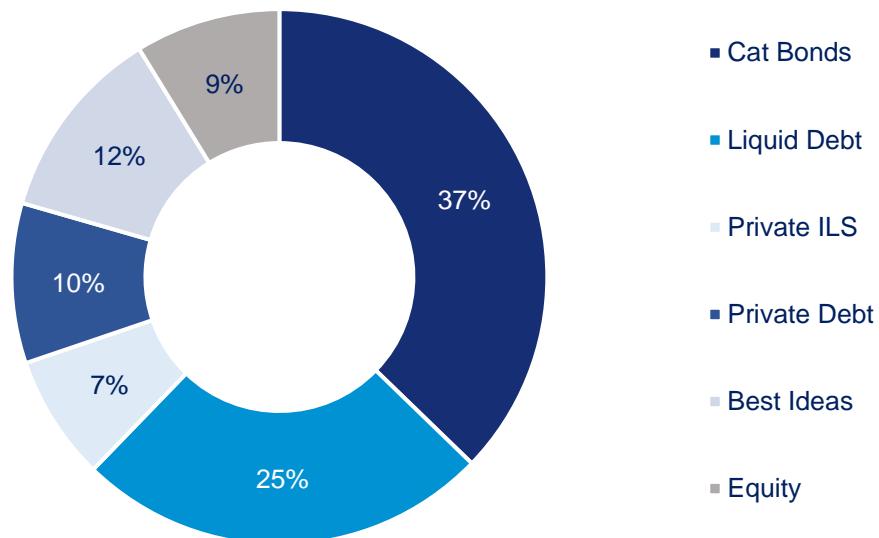
About Twelve Capital

Insurance focused investment manager

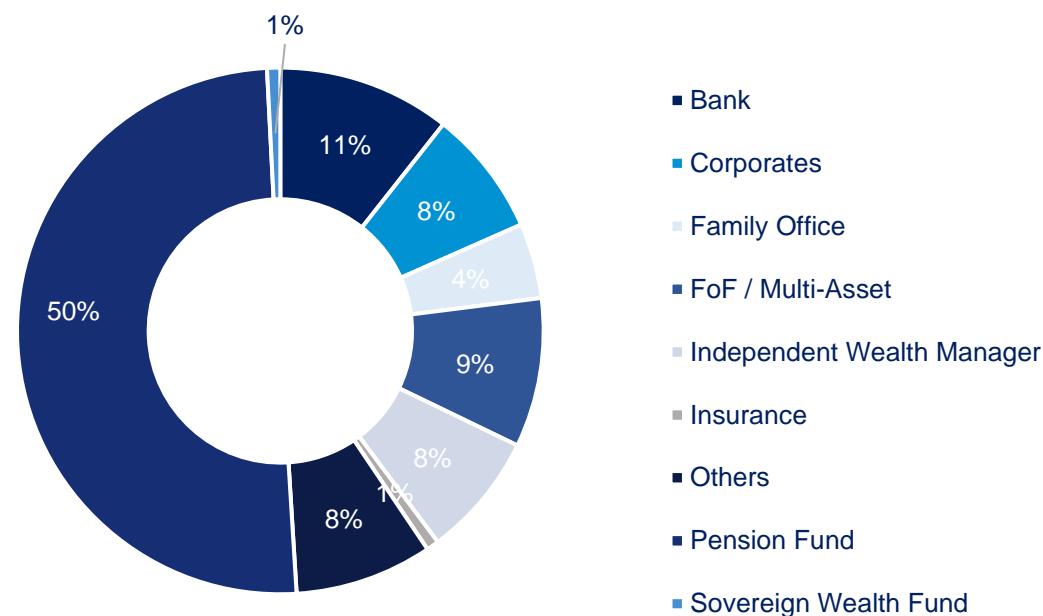
Leading global insurance focused investment manager with an AUM of ~ USD 4.5bn

- Founded in October 2010 in Switzerland, with offices in Zurich, London and Munich; regulated by FINMA, FCA, SEC/CFTC and the Chamber of Industry and Commerce (IHK) for Munich and Upper Bavaria
- More than 40 employees with multi-year track record in the insurance industry. Complementary skill sets deriving from sourcing, analytics, portfolio management, risk management and legal structuring

AUM by Strategy (in USD)



Type of investors



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