FLORIDA STATE UNIVERSITY
COLLEGE OF BUSINESS

RISK TRANSFER: CONVERGENCE OF CAPITAL

Future of Insurance Forum

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SECTION 1

Past

ORIGINS OF INSURANCE AND REINSURANCE

- The origins of risk transfer can be traced back centuries ago to ancient shipping industry practices of spreading cargo across a number of ships and utilizing sea loans to provide protection against ship losses
- The first formal reinsurance policy was created in 1370 to transfer the risk of an insurer covering the hazardous portion of a trip from Genoa, Italy to Bruges, Belgium to another insurer, or a reinsurer
- The beginnings of the first formalized reinsurance marketplace started in 1688 in London when merchants and insurers began meeting at Edward Lloyd's coffee house, but they were soon joined by gamblers who interrupted the meetings. To separate themselves from the gamblers, a large number of merchants established a secret society known as New Lloyd's, establishing what we know today as Lloyd's of London
- The industrial Revolution required more modern insurance solutions as rapid industrialization, urbanization, and massive production created concentrations of risk and required insurance in larger amounts
- Fire insurance is believed to be responsible for the growth of reinsurance in Europe as large fires in Germany (1842) and Switzerland (1861) prompted the establishment of Cologne Re and Swiss Re, respectively

Sources: Munich Re, Swiss Re and David Holland "A Brief History of Reinsurance"

THE EARLY 20TH CENTURY

- There were several catastrophes in the early 20th century which helped solidify the insurance industry – the Great Baltimore Fire in 1904, the San Francisco earthquake and fire in 1906 (considered the costliest insured event of the 20th century as approximately one-fifth of the city was destroyed which representing some 80% of property value and 225,000 people were left homeless)
- Additionally, the sinking of the Titanic in 1912 was considered the most costly maritime insurance loss, with $4 million in life insurance and $2 million in accident insurance claims
- The post-war times were marked by improving economic conditions and a significant growth in reinsurance, particularly in the founding of new life insurance companies and companies engaged exclusively in reinsurance

Sources: Munich Re and David Holland "A Brief History of Reinsurance"

HURRICANE ANDREW

- In August 1992, Hurricane Andrew made landfall in Homestead, Florida as a Category 5 storm killing 26 people, destroying more than 25,000 homes and damaging at least 100,000 others making it the costliest disaster in U.S. history with overall damage at the time of $15.5 billion, according to the Insurance Information Institute ("I.I.I.")
- The insurance industry was not prepared to pay that amount in claims and at least 16 insurers between 1992 and 1993 went bankrupt according to I.I.I. Additionally, large national insurers made business decisions to limit their risk in the state
- As national insurers reduced their exposures in the state or left altogether, and as reinsurance markets dislocated and pricing hardened, the Florida insurance market transitioned to new investors forming Florida-based companies with less capital
- As the insurance markets collapsed, the State of Florida formed the Florida Hurricane Catastrophe Fund ("FHCF") to protect and maintain insurance industry capacity and created the predecessor entity for Citizens Property Insurance Corporation to serve as a residual market insurer
- Hurricane Andrew was also key to the development of the catastrophe modeling industry. Prior to Hurricane Andrew, catastrophe models were in the very early stages and were not widely used by the industry
- As a result of these changes, the State's property insurance market was financially and structurally more resilient and introduced new Florida-based carriers with capital structures bolstered by risk transfer

THE FLORIDA HURRICANE CATASTROPHE FUND

- As a result of Hurricane Andrew, the FHCF was created as a tax-exempt state trust fund that provides reimbursement to residential property insurers for a portion of their FLA catastrophic hurricane losses
- The FHCF is a state program that provides a "stable and ongoing" source of reimbursement to insurers and operates "exclusively for the purpose of protecting and advancing the state's interest in maintaining insurance capacity" in Florida
- While the Florida insurance market has changed and the FHCF's maximum liability has increased since its inception in 1993, the FHCF continues to fulfill its statutory mission by providing reliable, dependable, and predictable coverage that is limited to genuinely catastrophic losses, and by striving to assure that reimbursements are paid promptly and in sufficient amounts
- The FHCF has paid reimbursements to insurers for their hurricane losses from five hurricane seasons thus far: 1995, 2004, 2005, 2017, and 2018 in an aggregate amount of approximately $15 billion

Contract Year	# Participating Insurers	Exposure ($b)	Projected Year-End Fund Balance ($b)	Aggregate Retention ($b)	Maximum Obligation ($b)
1999-2000	288	798.8	3.1	3.1	11.0
2005-2006	214	1,526.9	3.1	4.7	15.0
2018-2019	165	2,275.2	13.0	7.2	17.0

THE CREATION OF A NEW MARKET: ILS

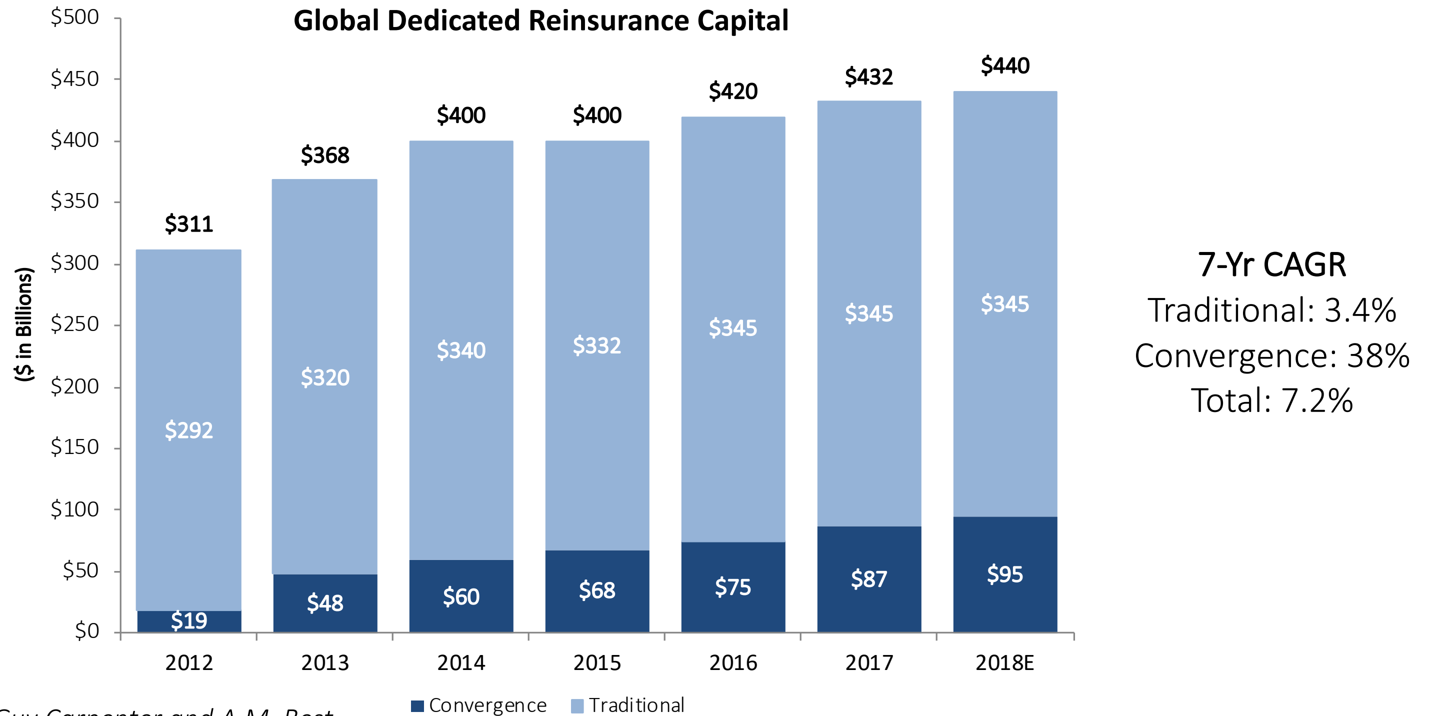
- Hurricane Andrew was followed in 1994 by the Northridge Earthquake which impacted suburban Los Angeles
- While both events only produced approximately $15 billion of insured losses at the time, together they caused a major insurance and reinsurance market disruptions
- Increased rates and a drop in re/insurance availability created an opportunity for the capital markets to provide additional capacity to support the sector, which lead to the birth of the Insurance-Linked Securities (ILS) market
- This new class of instruments offered capital market investors mechanisms to provide capital to the re/insurance market. Some of the better-known subsets of ILS include catastrophe bonds, collateralized reinsurance, side cars and Industry Loss Warranties
- While different in form, these instruments function similarly to reinsurance and are used to assist re/insurance companies with the payment of claims in the aftermath of severe insurance loss scenarios
- The first catastrophe bond was issued in 1996 to provide additional coverage for peak insurance risks by US-based insurance company St Paul Re
- The ILS market exceeded the $1 billion mark in 2001 and began to scale rapidly in 2012

SECTION 2

Present

GLOBAL REINSURANCE CAPITAL

- Global dedicated reinsurance capital stands at $440 billion (source: Guy Carpenter & A.M. Best)
- Traditional reinsurance capital has remained flat in recent years at $345 billion, while alternative or "convergence" capital has continued to grow and is set to exceed $100 billion in 2019
- For comparison: global equity markets total $70 trillion and global bond markets total over $92 trillion (source: SIFMA). Pension fund assets are over $40 trillion globally (source: OECD)



Sources: Estimates by Guy Carpenter and A.M. Best

GLOBAL CATASTROPHE LOSSES

- 2017 and 2018 were two of the worst years for global insured disasters in recent history
- In the US alone, total property insurance market losses due to 2017's Hurricanes Harvey, Irma and Maria were $70 billion… total economic losses from these storms are greater than $200 billion (source: Swiss Re)
- The cost of the uninsured portion – the "protection gap" – will fall to governments, businesses and individuals to manage

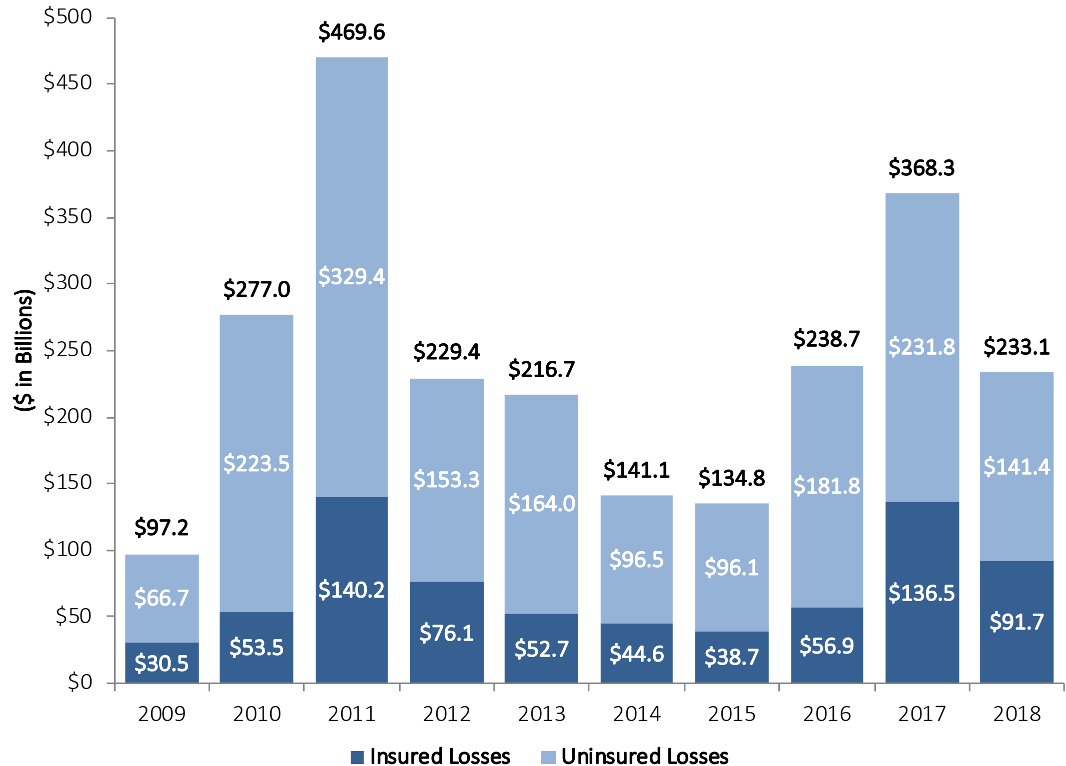
Global Insured vs Uninsured Losses (Billions)

10-Yr Total Economic Losses: $2,405

10-Yr Total Insured Losses: $721

10-Yr Total Uninsured Losses: $1,684

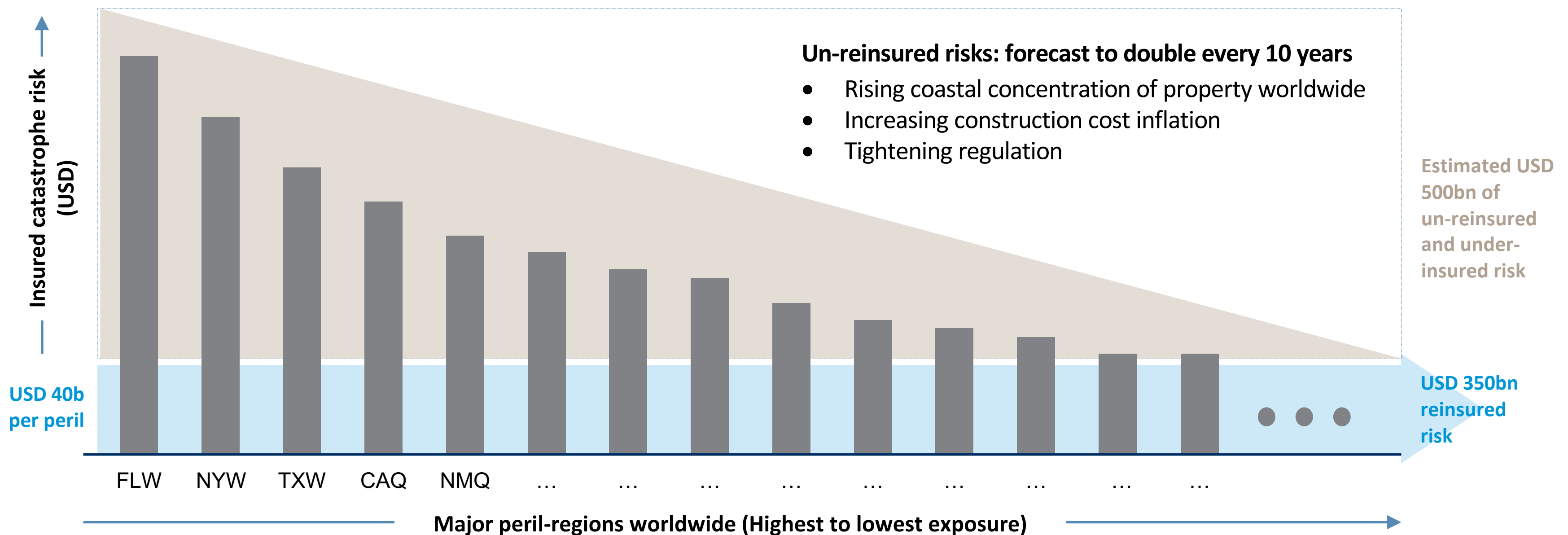
% Insured of Economic: 30%



Source: Aon Benfield "Weather Climate and Catastrophe Insight"

WHY ILS?

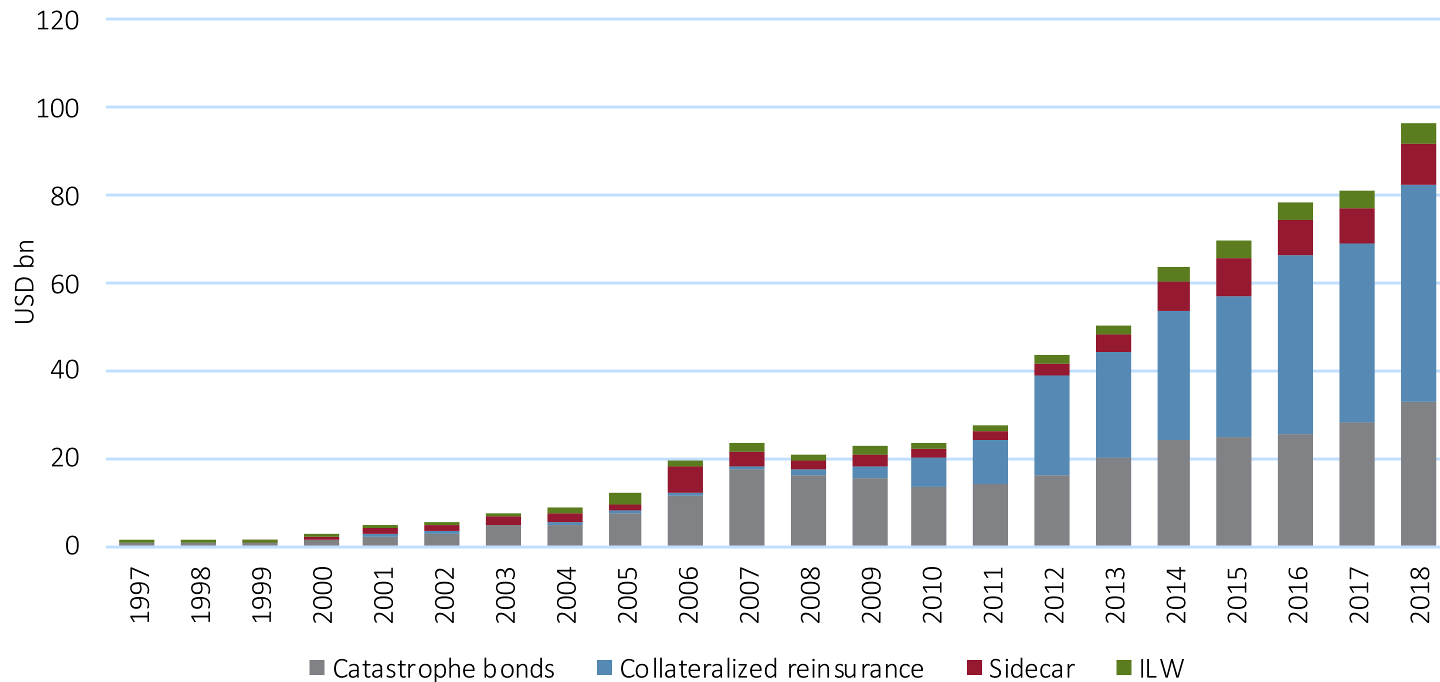
- Despite the devastation of 2017 and 2018, the situation could have been much worse – a Cat 5 hurricane hitting Miami head on could potentially lead to insured losses exceeding $200 billion in just one event
- Traditional reinsurance's $350 billion of capital is spread roughly equally across insured exposures, with only ~$40 billion at risk for any given peril
- This "disaster gap" – the difference between insured and reinsured risks – is large and growing
- ILS provide an efficient solution for re/insurers to transfer risk off their balance sheets…to the only place able to absorb it: capital markets



Source: Fermat Capital Management; diagram not to scale and for illustrative purposes only

ILS MARKET OVERVIEW

- Pre-Global Financial Crisis growth in the ILS market has resumed since 2012, with the market expanded rapidly beyond catastrophe bonds since then
- Historically ILS have been mainly issued from offshore domiciles such as Bermuda, but new UK and Singapore market ILS regulations should lead to lower deal costs and expanded deal volume



Source: Fermat Capital Management and Aon Benfield, as of October 2018

ILS INVESTORS

- The ILS asset class offers capital market investors a mechanism to provide new capital to the re/insurance sector to reduce risk on their balance while continuing to provide protection in the areas that have the most demand for insurance
- For accepting a share of risk exposures within the disaster gap, investors are rewarded with an inherently stable in the absence of a major catastrophe
- A key reason for including ILS within broadly diversified portfolios is that they have a fundamentally different set of return drivers to traditional assets
- Investors in the asset class are large institutional investors, such as pensions funds and sovereign wealth funds, and private wealth
- Specialist managers – such as Fermat – have developed the expertise to model and price ILS instruments, and to manage investment portfolios in the asset class

Manager Overview: Fermat Capital Management

- Established in 2001, currently 23 people and $6.4b of ILS AUM
- Known as the largest catastrophe bond investor, but invest across the ILS universe
- Manage assets on behalf of pension funds, sovereign wealth funds, family offices and private investors
- Use proprietary CatAPM® system to price investments and size positions in our portfolios

GLOBAL UTILIZATION OF RISK TRANSFER

- The use of risk transfer continues to spread outside of the insurance industry and has been utilized by numerous other types of entities with catastrophe risk such as corporations, sovereign countries, public entities, state-sponsored catastrophe funds, and residual market insurance companies
- With the assistance of the World Bank sovereign nations such as **Mexico**, **Columbia**, **Chile**, **Peru** and **Turkey** have utilized catastrophe bonds to transfer significant amounts of risk to the capital markets. **Caribbean**, **Pacific** and **African** countries have been using risk pooling and risk transfer to manage their catastrophic natural disaster risks
- The **National Flood Insurance Program** is the first U.S. federal-level entity to transfer risk to both the traditional reinsurance market and capital markets with its first catastrophe bond issuance in 2018
- Public entities have utilized captives to transfer their risk to natural catastrophes with traditional reinsurance and catastrophe bonds issued by the **Metropolitan Transportation Authority** and **Amtrak**
- State-sponsored catastrophe funds such as the **Florida Hurricane Catastrophe Fund** have utilized traditional reinsurance and residual market insurers such as **Citizens Property Insurance Corporation** (Florida), the **California Earthquake Authority**, the **Massachusetts Property Insurance Association**, the **North Carolina Joint/Insurance Underwriting Associatio**n, the **Texas Windstorm Insurance Association**, and **Louisiana Citizens Property Insurance Corporation** have accounted for a significant market share of the traditional reinsurance market and catastrophe bond marketplace
- Corporations have started using ILS to supplement their traditional coverage for peak risks, e.g. PG&E

SECTION 3

Future

BRIDGING THE GAPS

- While ILS currently penetrate a small fraction of the risks in the present-day disaster and protection gaps, with limited opportunities for new capital formation within the traditional reinsurance sector the dynamics are set for substantial ILS growth ahead:
- As people and productivity continue to concentrate on coastlines and in seismic zones, there will be increasing demand for reinsurance and ILS to manage risk these rapidly growing 'peak peril' risks
- As concerns about a changing climate increase – and potential new risks that emerge – the gap between re/insurance needs and available capital will amplify further…
- … which will ultimately lead to rating guidelines and regulations enforcing stricter capital requirements for the re/insurance industry, and the continued need for risk transfer to the capital markets

WHAT ELSE IS TO COME?

- Global GDP totals over $81 trillion and has increased on an annual basis of 2.4% over the past 10 years – risk will only continue to grow as the world economy develops
- Capital is going to continue to be available as global demographics change
- Economic development will lead to new and creative solutions:
  - How will Uber and Lyft insure themselves?
  - How will autonomous driving change the insurance industry?
  - How will strong building codes and resilience change the industry?
  - How will technological innovations change the industry?
  - How will forest mitigation reduce wildfire risk?
  - What and where will the new concentrations of risk be?

MORE OF WHAT'S TO COME

- Continuing innovations within the risk transfer marketplace will provide opportunities for corporations and public entities to transfer new perils and diversify their risk transfer programs
- Pooling risks will allow emerging markets and smaller entities to access the financial markets in order to transfer a portion of their risk in an efficient and cost-effective manner
- Instead of convergence, the traditional reinsurance and capital markets will be "one", similar to how we utilize industries that used to have separate businesses segments, such as brick and mortar stores and online retailers, cabs and ride sharing, etc.