CLRS panel on Capital Markets Convergence

Continuing Innovation in Reinsurance Risk Transfer

James Doona
Managing Director, Munich Re Capital Markets
jdoona@munichre.com

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What is Alternative Risk Transfer?
What are insurance-linked securities (aka “ILS”)?

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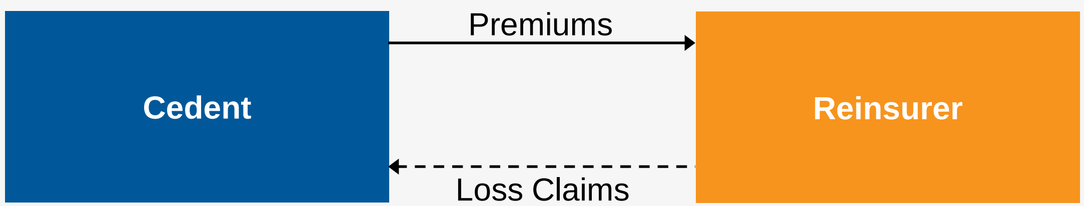
Reinsurance



Cat Bonds (illustrated with non-indemnity trigger) - Act Like “Synthetic” Reinsurance

We’ve illustrated the case where the agreement is a derivative (ISDA swap) but, in fact, the SPE can be an SPR - a Special Purpose Reinsurer - and the agreement with the Cedent would then be a reinsurance agreement

Benefits of ILS

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- **Issuer Benefits**
  - Complement to traditional reinsurance program
  - Expands risk transfer capacity
  - Provides for longer-term coverage at fixed price (most reinsurance is renewable annually)
  - Collateralized cover mitigates or eliminates counterparty credit risk
  - Diversification of traditional reinsurance program on a permanent basis is viewed favorably by rating agencies as part of enterprise risk management analysis
  - Cedent seeks capital management and rating agency management (generally not looking for real risk transfer)

- **Investor Benefits**
  - Uncorrelated with other investments (low beta)
  - Yield pick-up vs. other similarly-rated investments (high alpha)
  - Tradeable security

Cat bonds provide collateralized, multi-year reinsurance protection and rating agency capital relief

Cat bond market grows as low-yield environment continues to attract substantial investment capital

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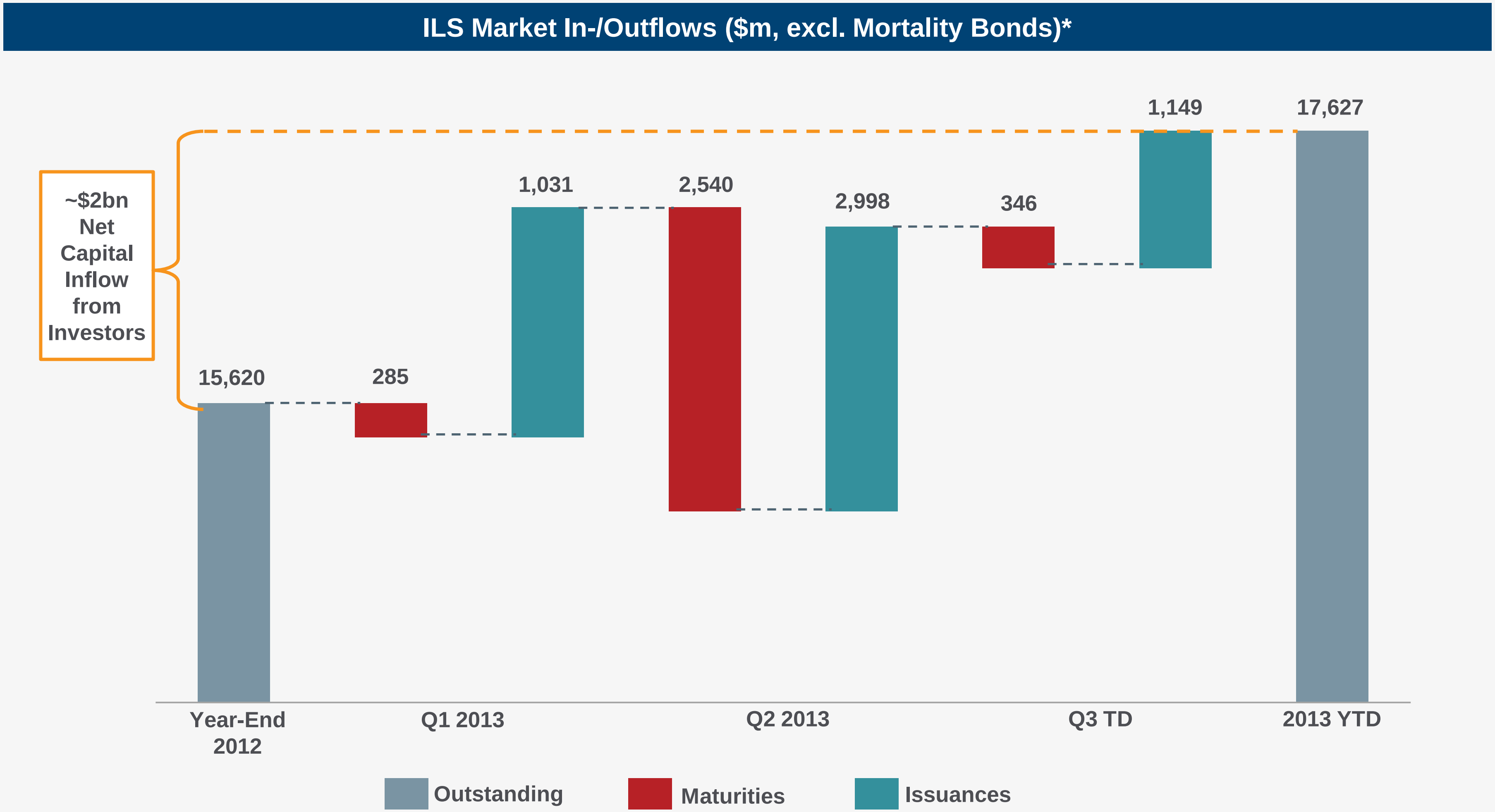

• Cat bonds with Euro-denomination were converted into $-amounts using the exchange rate on the respective day of issuance
** As of August 20, 2013

ILS issued 2013 YTD priced substantially below initial price guidance, as the market is flooded with liquidity

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Volume and Pricing of Q2/Q3 2013 Issuances

Events that have tested the ART markets

Income events, not capital losses to the cat bond market

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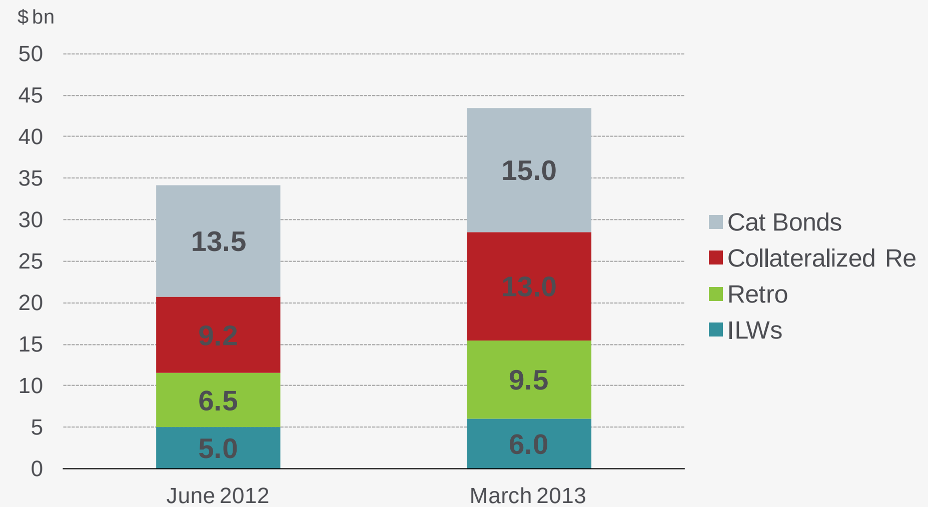
- **Northeast US Winter (2000-2001)** - $45 million Kelvin Limited cat bond for Koch Energy; first event temperature notes triggered by excess cold; **loss of $5 million**
- **9/11 (2001)** – $45 million George Town Re; after a series of events, including Hurricane Floyd and Windstorms Anatol, Lothar and Martin (all 1999) and the 2000 UK Floods, the WTC bombing pushed George Town Re into a partial **loss of less than $1 million**
- **Katrina (2005)** – caused **losses of $144 million** for the $190 million KAMP Re cat bond, issued for Zurich; damage at Murphy Oil in Louisiana also contributed to losses for Oil Casualty's Avalon Re cat bond program
- **Katrina (2005) / Buncefield fuel depot explosion (2005) / Lexington Ave, NYC, steampipe explosion and street collapse** – these three events contributed to total **losses of $13 million** on the lowest layer of the $405 million Avalon Re cat bond program for Oil Casualty (OCIL)
- **Hurricane Ike (2008)** – $68 million Nelson Re cat bond for Glacier Re; Glacier went into run-off in 2010; the bond went to arbitration over $32 million in claims paid by Glacier and investors successfully voided losses
- **Lehman bankruptcy (2008)** – **total related losses of about $116 million** – collateral protection on four bonds with total limit of $585 million (or 4.4% of total outstanding) is proved to be ineffective when Lehman collapses and Ambac follows: **loss of $72 million** on the $100 million Ajax for Aspen; **loss of $31 million** on the $51 million Carillon for Munich Re; **loss of $4 million** on the $150 million Newton Re for Catlin; **ultimate loss of less than $10 million** on $250 million Willow Re for Allstate).
- **Tohoku (2011)** – **full limit loss on $300 million Muteki Ltd.**, a bond that Munich Re had structured for Zenkyoren, which was just 10 weeks from its five-year maturity; also caused **$16 million in losses** to Vega Capital, a small bond issued by Swiss Re
- **Tornadoes in Kansas; Joplin, MO; etc. (2011)** – total limit **loss of $200 million** to AmFam's Mariah Re bonds
- **Sandy (2012)** – some losses on a few small program bonds issued by Swiss Re – **$7 million loss** on the $107 million Vega Capital and **expected loss of $15 million** looming for $80 million Successor X V-F4 bonds

State of the ART market: accelerating growth

- One snapshot of the markets estimated that ART makes up 14% of global property cat limit
  - $268 billion traditional (86%)
  - $ 15 billion cat bonds (5%)
  - $ 13 billion collateralized re (4%)
  - $ 10 billion retro (3%)
  - $ 6 billion ILWs (2%)
- $10 billion increase from previous year
- Tremendous inflows of liquidity, especially from various pension funds



Source: Guy Carpenter, Trading Risk

- Expectation that these funds are not “hot money” but are likely to remain committed for years
  - Advice of Towers Watson, Mercer, KPMG, et al.
  - Several “dedicated funds” have sub-funds in the $multi-billion, dedicated to advisees of these firms, targeting “4% to 6% over the risk-free rate”

ART encompasses a wide range of investments

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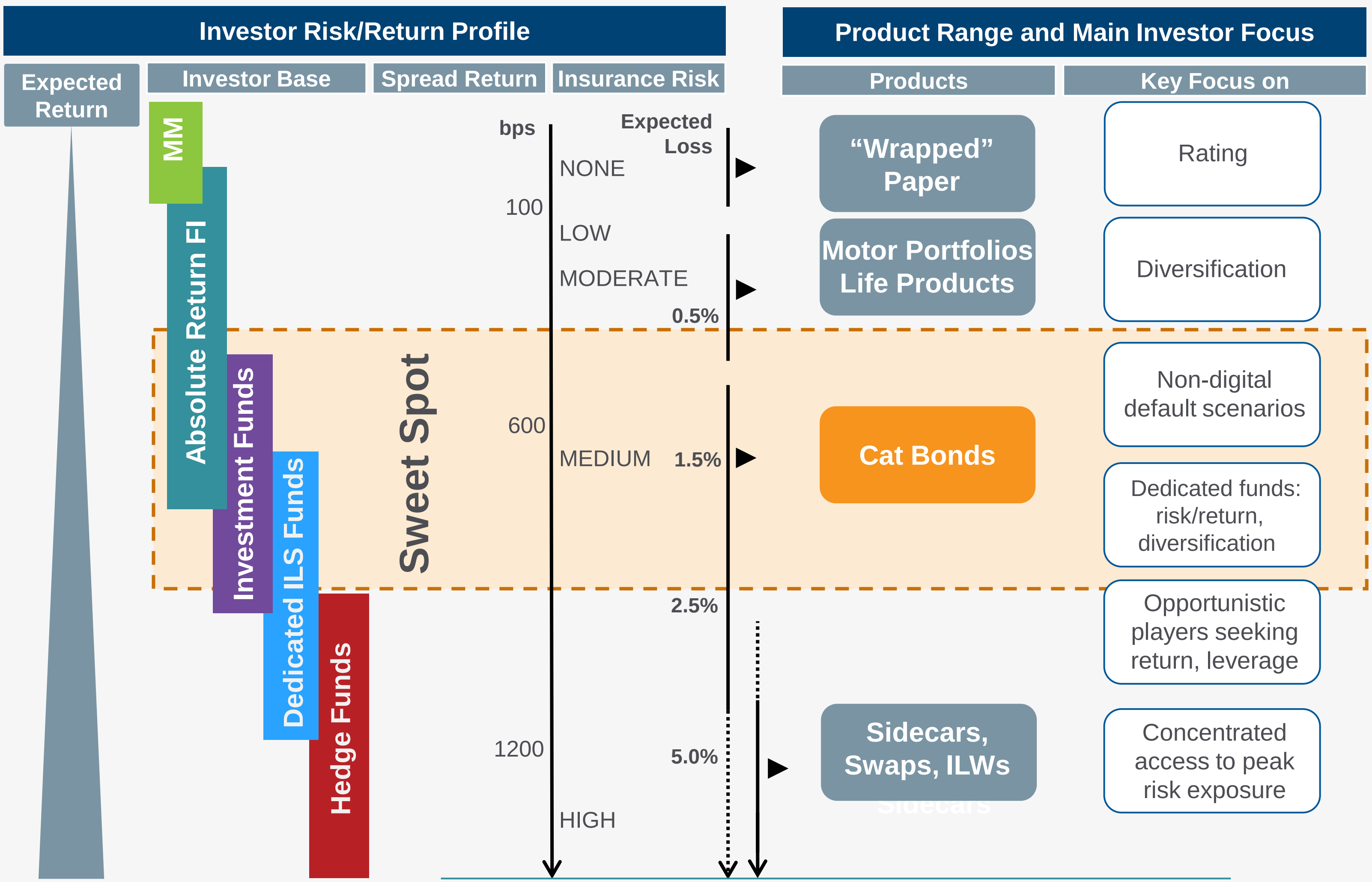

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