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Achieving Superior Returns and Diversification Benefits through Investments in Extreme Mortality

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The Client Base…and Possible Developments

- **Reinsurers** have been to date by far the largest buyers of protection of cat mortality transactions

- **Primary insurers**
  - Have approached the cat mortality market with AXA being the first to close a transaction
  - Are the key providers of Regulation XXX risk to banks which can sell of the catastrophic mortality component

- **Other buyers?**
  - Airlines or other transportation companies for reduction of passengers?
  - Banks against possible defaults on unsecured debt?
  - Shopping malls?
  - Cinemas?

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The Structure

- Legal structure largely similar to non-life ILS when in securitized form
  - Vita IV updated the collateral structure as per other 2009 ILS structures
  - Earlier structures had the traditional TRS structure and Libor based
  - All trades are based on official statistics rather than being based on an indemnity trigger

- Catastrophic mortality is available in swap form as well:
  - Transactions with risk profile similar to traded ILS, but with leverage provided by the swap counterparty
    - Collateralisation provisions require particular attention as pricing reflects the availability of leverage
  - Other risk can come in indemnity form, mainly coming out of Regulation XXX positions taken by banks
    - Full underwriting of underlying life insurer, spread of its business on the territory, pricing and structural elements require careful underwriting
    - Relatively small number of deaths can trigger (although unlikely)

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The Index

- Key questions are:
  - Geographical spread:
    - Number of countries and whether pandemic is truly global or heavily concentrated in one area
  - Measurement period
    - Vita 1 was based on one year mortality observation
    - Other transactions average two years to avoid resetting the calculation in the middle of a pandemic (more likely to occur in winter times across two years)
  - Age weighting
    - Some transactions have very limited exposure to very old and very young (i.e. those who have been affected by recent pandemics)
  - Gender weighting

- Triggers:
  - Mortality increase of 5% can attach and 10% can exhaust one of the most junior layer currently in issue in ILS Form
    - Attachment probability is 0.72%, exhaustion probability is 0.32% and EL is 0.46%; rating in BB range
  - Mortality increase of 25% can attach and 45% can exhaust one of the most senior layer currently in issue in ILS Form
    - Attachment probability is 0.036%, exhaustion probability is 0.027% and EL is 0.031%; rating of underlying risk in AA range

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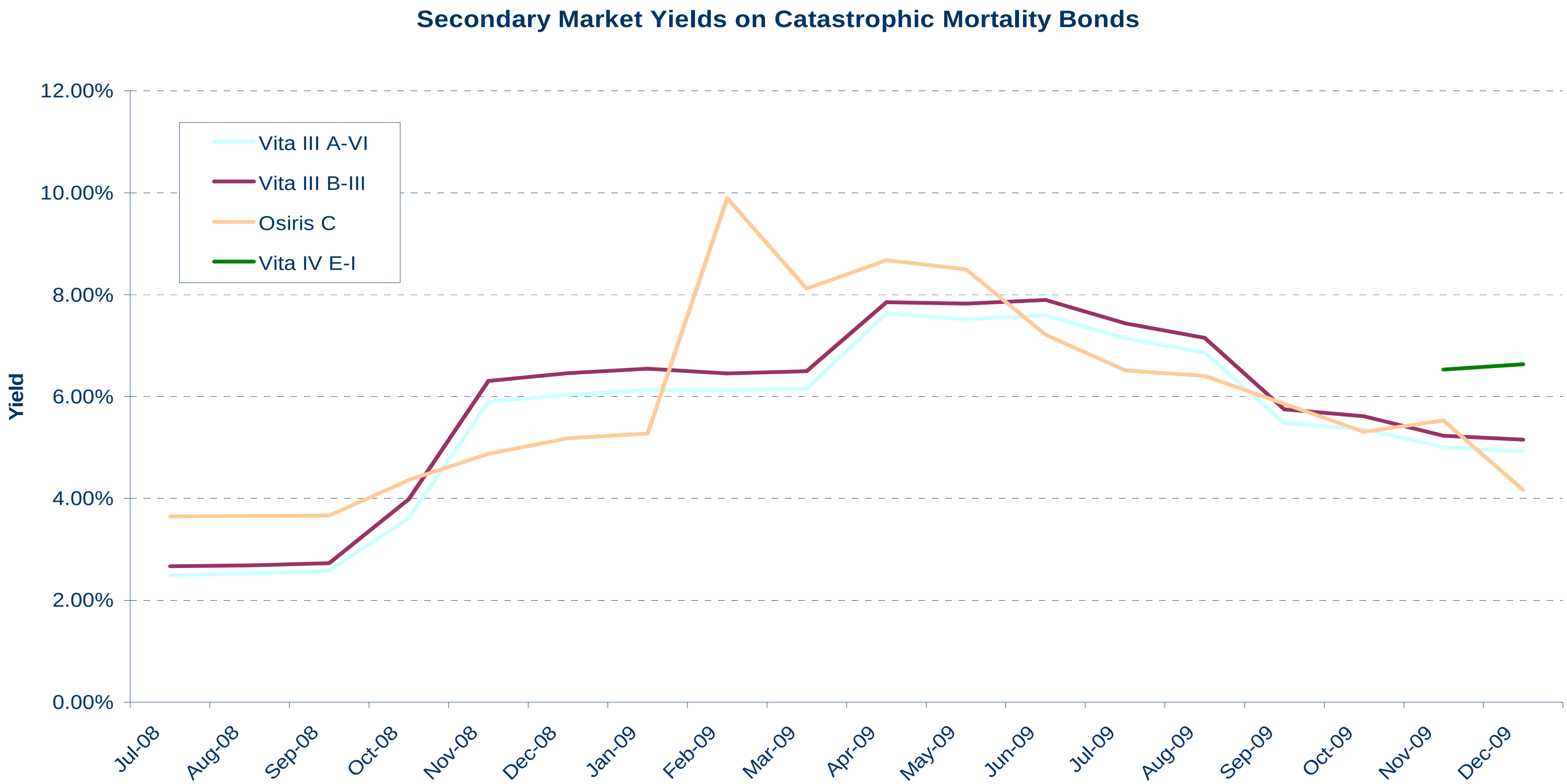
Lehman…and Swine Flu



Diversification

- **Depends on the investor**
  - **ILS Funds** with non life exposure can get some diversification benefits with assets of a similar structure and maturity profile
    - Links between nat cat events and mortality to be analysed
  - **Pension Funds** could look at investments as a imperfect and partial hedge to their longevity risk, at an attractive price and risk profile
    - Analysis of location of liabilities and areas covered by cat mortality transactions
    - Very old could be affected more by a cat mortality event, so a pandemic which could trigger a note could create a greater mortality experience in age buckets which are in receipt of pension benefits
  - **Other Institutional Investors** could gain diversification benefits BUT being careful of the following:
    - Pandemics triggering cat mortality transactions are severe
    - Some industries would be greatly affected as people would cut unnecessary travel and other activities in contact with others (whilst for example e-commerce is expected to benefit)
    - Affected families could lose their possibilities to repay debt with impact on securitised unsecured debt and value of real estate
    - Business interruption and key man risk would emerge