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Layout & Distribution: Valéria Kozakova

ALM Challenges

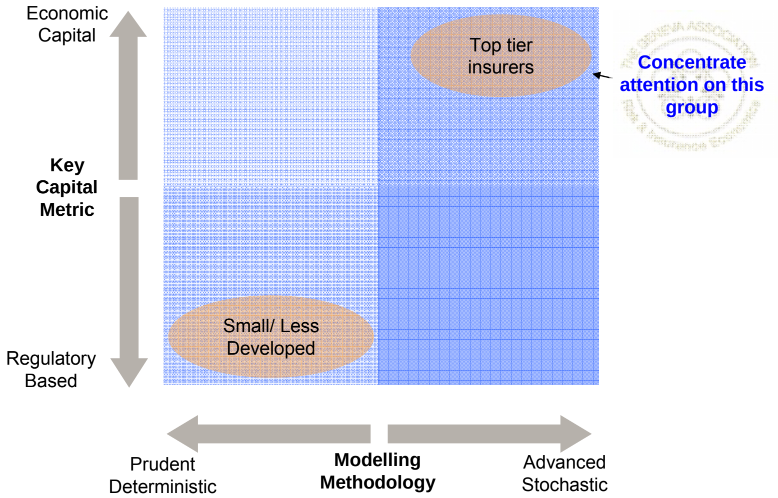
John Roe

Risk Mitigation Vs Risk Management

The chasm between the most and least advanced European insurers is wide

While many smaller insurers will struggle to comply with Solvency II, the most advanced insurers will welcome the ability to use internal models for regulatory capital calculations

Top tier insurers now see Regulation as a constraint, rather than as a "best practice" guide to capital requirements



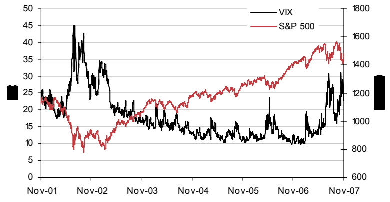
RBS 2

Examples - Implied Volatility & Credit Spreads

Insurers are generally short volatility, due to the guarantees embedded in many products

- No required stresses for volatility in QIS 3
- Impacts the cost of guarantees
- Highly correlated with equity market falls

VIX vs. S&P 500



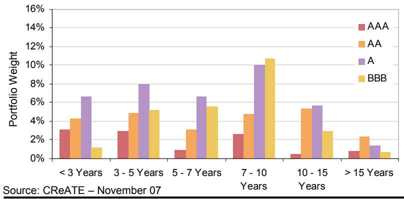
Source: Bloomberg

Optimising credit portfolios from an economic perspective will reflect that credit curves do not move in parallel shifts and that default rates are not flat by duration

- Solvency II credit stress tests are non-duration specific and the same for AAA and AA rated bonds

Rating	AAA	AA	A	BBB
Stress (bps)	25	25	103	125

Example Credit Optimisation



Source: CReATE – November 07

RBS 3

Time Horizons

Risks that emerge over the long term are built into the capital calculation by :

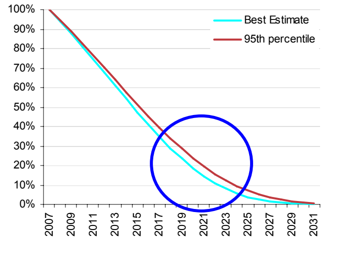
• Simulating them to maturity

• Allowing for that risk over one year

Arguably, this is not appropriate, reducing the diversification benefits of different risks emerging over different timeframes

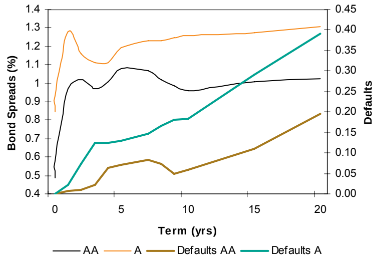
- 99.5th percentile confidence interval over one year – but is that appropriate?
- Risks
  - Long term – e.g. longevity and asbestos
  - Short term but with mean reversion – e.g. credit spreads and equities

Longevity Risk



Mortality rates for cohort born 1922 – (85 year olds p-spline)

Credit Spreads vs. Defaults



Bloomberg; Moody's Corporate Default and Recovery Rates 1920-2006

RBS 4

Extreme Events

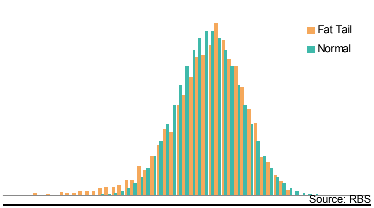
With little information on tail events, it is important not to over-rely on modelling processes

Recent credit events highlight this issue

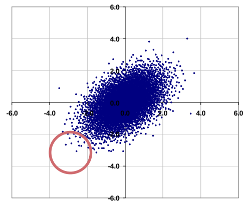
Modelling underlying risks, rather than aggregated returns and volatility will also ensure that only genuine diversification benefits of alternative assets impact the investment strategy

- Asset modelling
  - Fat tails
  - Underlying investments and risks
- Very little observable tail information
  → Qualitative reasoning and scenario testing

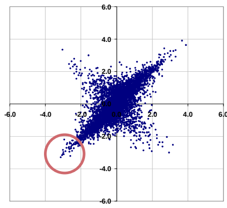
Fat Tail Distributions (Swap Spreads)



Correlation in the Tail – Gaussian Copulas



Correlation in the Tail – Student-t Copulas



RBS 5

Micro Analysis of a Macro Problem

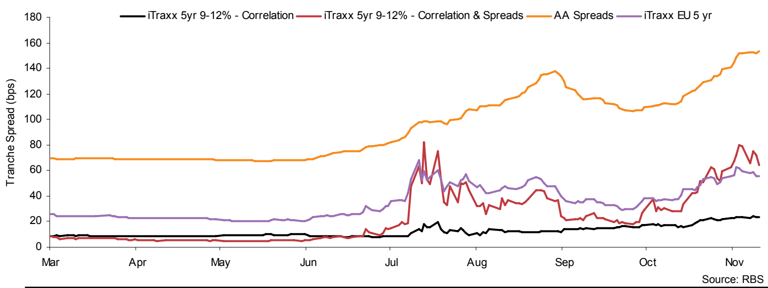
When asset hedging, regulators often concentrate on basis risk between the underlying

While this is important, it should not overshadow key offsetting impacts

Over concern with such issues delays investment decisions and reduces achievable returns and insurance market efficiency

- Insurance Regulation worldwide encourages micro-hedging

iTraxx 5yr 9-12% vs., iBoxx GBP Corporate AA and iTraxx EU 5Yr



- Basis risk impacts distribution shapes
  - In the tail, economic drivers the key
- Policyholder behaviour uncertain → spurious accuracy

RBS 6

Recent Issues Highlighted by Credit Markets

In benign environments, some issues tend to be overlooked

The conditions since July have provided examples of the issues that arise in stressed scenarios

These potential issues should feed into both regulation and investment strategy

- The recent credit market turbulence have highlighted the following:

Issue	Impact	Example
The Bid-Mid Debate	• Liquidity dried up • Bid-offer widened	• On 31/7/2007 Bid-Offer on iTraxx 9-12% was 19bps, greater that the Bid price 4 months earlier
Physical vs Synthetic	• Physical underperformed • Hedges underperformed • New issues wide	• Marks & Spencer 6.25 Dec 17 LIBOR+160bps compared with CDS at 95bps, on 1/12/2007
Sector Diversification	• Financials have underperformed in H2 2007	• 10yr iTraxx Financial subdebt vs. 10yr iTraxx Europe[1] ◦ Oct 15: 42bps vs. 47bps ◦ Nov 21: 100bps vs. 80bps

[1] 25 Financials, 100 Corporates

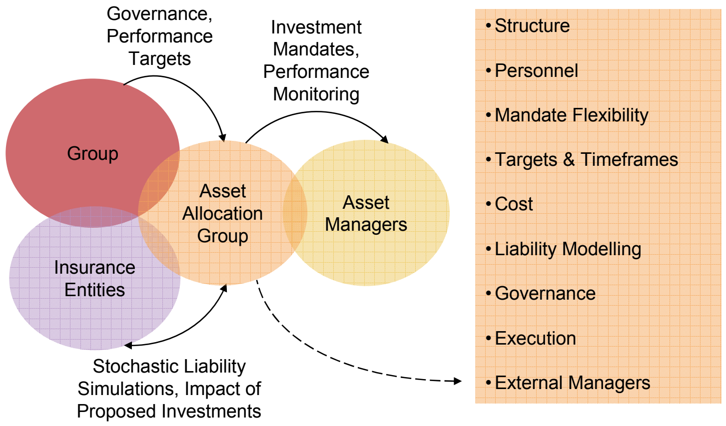
RBS 7

Maximising Stakeholder Value – Asset Allocation

Strategic and Tactical Asset Allocation can add significant value for stakeholders

Increased disclosure in recent years has highlighted business models that have performed particularly well in this area

Appropriate mandates, governance and investment process will maximise the opportunity set for asset allocation to add value



RBS 8

Asset Allocation Groups

A number of European insurers have developed well defined and effective structures

Over the last 18 months there have been a number of public indications of others following suit

Steps can include significant new hires, redesign of ALCO structures and strategic reviews of the asset allocation process

Structure	• Actual or virtual team, reporting lines
Personnel	• Head role, investment experience, actuarial and quant resources
Mandate Flexibility	• Position size, investment universe, mandate design
Targets & Timeframes	• Key performance indicators, alignment of interests
Cost	• Skill based, high AUM, potentially high reward
Liability Modelling	• Speed, materiality, replicating portfolios
Governance	• Reporting, trade rationales, asset manager mandate design, audit
Execution	• Capabilities, derivative platform, market presence
External Managers	• New asset classes, existing ones, alpha generation

RBS 9

Global Disclaimer for Presentations by Advisory Areas to Investors

RBS 10