Industry Panel and Round Table

The Use of Research in Risk Management: Perspectives from Industry Practitioners

Panelists: Elbert Pattijn (DBS), Paul Bernard, CFA (TTS), Kate Chiew (NTUC Income), Sung Cheng Chih (MOF/MAS/GIC) Chair

26 May 2014
6.15pm to 7.30pm
Industry Panel and Round Table

Mr. Elbert Pattijn
Chief Risk Officer, DBS Bank
Credit Stress Test

Structure of Credit Stress Tests: Schematic Overview

- Scenario
  - Exogenous Shock
  - Impact on The Macro Economy
  - Econometric models

- Model
  - Impact on Default Rates
  - Regressions Analysis with Time Series
  - Balance Sheet models
  - Impact on Lenders’ Earnings
  - Impact on Asset Prices
  - Asset Valuation models

- Outcome
  - Default Correlations
  - Portfolio Theory
  - Total Impact on Bank
  - EAD
  - LGD
  - Liquidity Risk
  - Underprediction of risk

Stress Test Activity
Use of Research/Models applied
Benefits/Risks

• Using the credit stress test schematic,
  – Benefits
    • Research models provide the construct for applied models to be built
    • Provide the necessary assumption to inform decisions
  – Risks
    • Financial model ‘chameleons’
    • Assumptions have been over-simplifying or unrealistic
Industry Panel and Round Table

Ms Kate Chiew
Chief Risk Officer, NTUC Income
What risk does insurers have to deal with?
Risks
– From An Insurer’s Perspective

Risk Appetite & Capital Management

Returns vs. Losses
Invested in variety of Assets
• Equity / Property Investment Risks
• Interest Rate Risk (Bond MV)
• Credit / Spread Risk
• Derivatives
• Inflation / Forex, etc...

Solvency
ALM
• Duration mismatch, i.e. long-term liabilities (20yr+) vs. short-term assets (5yr)
• Cost of guarantee, supporting minimum return to PH
• Yield gap, PH expectation vs. actual return

Ability to Pay Claims
Liability risk
• Life Insurance:
  • Mortality / Longevity / Disability
  • Lapse / Surrender
• Health Insurance:
  • Morbidity (pandemics)
  • Hospitalization
• General Insurance:
  • Motor
  • Marine/Fire/PA, etc.

Operational Risks (technology, fraud, BCM, etc.)
Risk Management – Areas of Research

1. Risk Quantification & Measurement
2. Economic Capital
   - Capital Budgeting
   - Stress Tests
   - Cost of Capital
3. Ops Risk Data & Modeling
   - Business Continuity
4. SAA & IV Strategy
   - Ins. Risk Models
   - De-risk / Hedge
   - Pricing of Guarantee

ALM

Research

Capital Mgmt

Ops Risk Mgmt
Capital Management
Mean-Variance Optimization

Optimizer: A General Concept in Research

1. Analyze Risk-Return Profile
2. Construct Efficient Frontier
3. Find Optimal Point

Efficient Frontier – various combinations of Risk Factors

Approach can be applied to more complex structure in Capital optimization
Capital Allocation based on Mean-Variance Optimization Concept

Combination of different business mix with varying capital requirement

- Capital Optimization
  → Guide Capital risk budgeting
  → Guide Business Strategy

- Mean Variance – capital allocated to combination of risk classes with varying risk reward
- Shift to more capital efficient Business
- Remove unrewarded/suboptimal risk
- Allocate to risk with higher payoff

Current Business Profile
(85%/10%/5%)

Point A (Current Position)

Point B

Point C

Projected ROC (p.a.)
Overall Volatility (p.a.)

Target ROC
X % p.a.

Mean
Variance
capital
allocated
to
combination
of
risk
classes
with
varying
risk
reward

Shift to lower capital volatility biz
Asset Liability Management (ALM)
Asset Liability Management include...

- **Long-Term Liabilities vs. Short-Term Assets**
  - Mitigate A/L mismatch to reduce capital loss
  - Ensure proper assets backing liabilities plus margins

- **Unpredictable Insurance Claims**
  - Manage liquidity to maintain claim paying ability
  - Contingency plans for catastrophe scenario

- **Embedded Guarantees and Options**
  - Price the guarantees / options embedded in insurance plans
  - Ensure costs are accounted for in the IV strategy
  - Put in place proper hedging / de-risking plans

- **Policyholders’ Expectation on Returns**
  - Develop investment strategy & SAA to meet expected long-term returns
Illustrative Example

**ALM Hedging – Rates Immunization**

Mismatched Cash Flows of Assets and Liabilities creates P&L volatility and attract regulatory capital requirement.

Hedging Reinvestment risk arising from Mismatch with use of Interest Rate Swaps.

Immunize *delta (DV01) & Convexity gap* between assets and liabilities.

Effectiveness of the Hedging – reduce volatility of P&L and Surplus.
Topics for Future Research

**Stress Tests**
Scientific design of stress scenarios which capture the correlation between key risk drivers, and produce reasonable stress events.

**Policyholder Behavior**
Modeling of policyholder behavior i.e. persistency behavior. To avoid “run on bank” scenario and liquidity risks.

**Operational Risks**
Modelling of operational risk, to formulate appropriate capital requirement. Current regulatory basis is onerous and not risk sensitive.

**Model Risk**
ERM framework relies on models. So, to what extent a company should (or shouldn't) rely on models.
Industry Panel and Round Table

Mr. Paul Bernard
Managing Director, TTS Advisors

The ABFER 2nd Annual Conference 2014
The Shangri-La Hotel, Singapore
Understanding the Links Between Real Estate and the Financial System
Why is this relevant?

• Symbiotic relationship between banks and real estate
  – Virtuous circle on the way up
  – Viscous cycle on the way down
  – Includes both traditional and shadow banks

• Real estate can be both a cause of financial crisis, as well as a transmission mechanism for them
Inextricably linked

- To financial institutions, property is
  - A large part of their loan books
  - A key source of collateral, even for non-ppty lending
  - A key source or profit growth

- Property developers, owners and investors:
  - Developers depend on leverage for their returns
  - End-buyers depend on leverage for affordability
  - Investors depend on leverage for returns
Resulting Investor Opportunities

Great opportunities for investors

• Banks are a large % of market capitalization
  – Sector allocation can add meaningful alpha

• Sector is a key domestic, non-tradable sector
  – Low correlation vs. sector elsewhere

• History can repeat itself across markets across time
US Subprime

“Yes, but it represents only 6% of all outstanding property loans....”
Regulatory Challenges

• Host of variables solving for:
  – Economic growth
  – Housing affordability
  – Wealth effects for home owning population
  – Strength of financial system

• This is where shadow banking lives
• Macro-prudential policies may/may not work
• May or may not control interest rates
Focus Areas for Directed Research

• How effective are macro-prudential policies?
• What are the critical warning signs?
• Sensitivities to/effectiveness of interest rate changes?
• How solve for dependencies between shadow and traditional banks?
Industry Panel and Round Table

The Use of Research in Risk Management: Perspectives from Industry Practitioners

Panelists: Elbert Pattijn (DBS), Paul Bernard, CFA (TTS), Kate Chiew (NTUC Income), Sung Cheng Chih (MOF/MAS/GIC) Chair

26 May 2014
6.15pm to 7.30pm