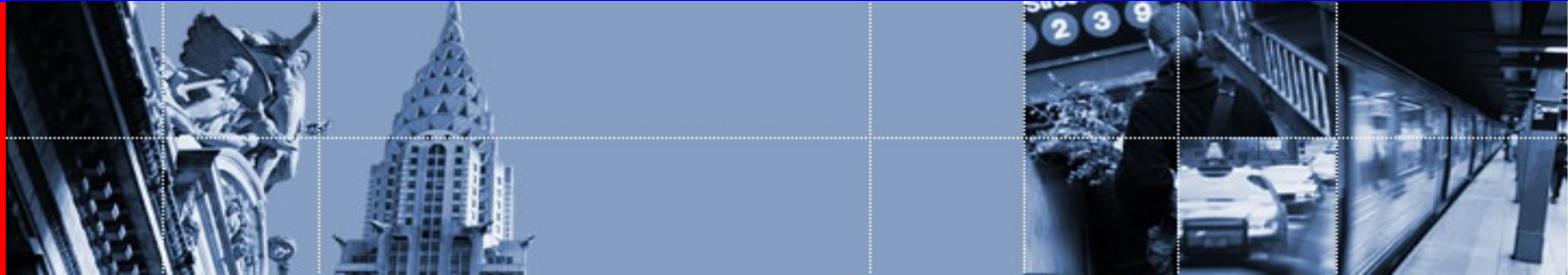


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Risk Symposium: Leading Technologies in Risk Management (NASDAQ)

SS&C/Actuarial Society of Greater New York

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Michael L. Frank

President, ASNY & Aquarius Capital



AQUARIUS
CAPITAL

Size of the Market – Global Managed Assets (US \$)

- Global Fund Management Industry - \$117.0 Trillion
- Insurance & Pension Industry - \$54.5 Trillion
 - 46.6% of Total Managed Assets

Source: TheCityUK, October 2011



Risk Related Issues in the Insurance Industry

- International Financial Reporting Standards (IFRS)
- Solvency II
- Enterprise Risk Management/Economic Capital
- Principles-Based Accounting/Reserving
- Cash Flow Testing for Regulators
- Pension Funding
- Secondary Insurance Market
- Insurance Industry Risk Considerations
- Other Risk Considerations in the Capital Markets



International Financial Reporting Standards (IFRS)

- International accounting standards stating how particular types of transactions and other events should be reported in financial statements.
- IFRS: Issued by the International Accounting Standards Board.
- Goal: IFRS to make int'l comparisons as easy as possible
 - Issues: “Convergence”/US Acceptance?
- Challenge: Managing different reporting among countries
- Impact on Investments/Products Strategy
 - Challenge on reporting and managing “long tail” business
- Website www.ifrs.org



Solvency II

- European Union insurance industry
- Review of capital adequacy
- Objective to EU-wide capital requirements and risk management standards that will replace the current solvency requirements
- Impacting many insurance companies
 - Focus on enterprise risk-based capital reporting
 - Impact on capital reporting
 - Concerns of data integrity/accuracy
 - US seeking “Equivalence”
 - *Impact on investment strategy (e.g., influence on the annuity market)*



Solvency II (Continued)

- Variables to Monitor & Track by Product Line
 - Projected Premium/Claims/Expenses
 - Investment Return
 - Reinsurance
 - Other Variables (e.g., current rates, inflation, etc.)
 - *Result: Economic Capital Calculations, Market Value of Assets/Liabilities*
- Impacts
 - Internal Decision Making & Risk Management (“Dash Board” Reporting)
 - Regulatory Reporting Requirement
 - 99.5% VaR Objective
 - ORSA – Potential for Companies to run their own models
 - *How will this impact the US marketplace (e.g., Investment Strategy)?*
- Opportunities for software companies & consulting firms



ERM/Economic Capital

- Importance of Measuring Capital to Risk
- Critical Decision Measurements
 - Company Complexity – Regulatory vs Internal Capital Models
 - No./Type of Products, Investment Strategy, Risk Profile
- Volatility of Earnings & Losses
- Strength of Risk Management & Financial Flexibility/Fortitude
- Importance of incorporating process into day-to-day management
- Analytics & Communications
 - *Internally (e.g., Capital Allocation, Investment Strategy)*
 - *Externally (e.g., Rating Agencies)*



Cash Flow Testing: Mechanics

The primary idea behind cash flow testing is to assure that the assets backing a set of liabilities are adequate to meet the liabilities over time.

Starting assets are equal to starting reserves (liabilities)

Positive net cash flows are reinvested per company guidelines

Negative net cash flows require sale of assets to meet outflows, or borrowing per the insurer's stated investment strategy

Best estimate assumptions are used (many states require "NY 7" test of interest rate scenarios)

Major product lines should be tested separately, with assets allocated appropriately



Principles-Based Reserves

- Historically
 - Stat Reserves – Formulaic; Risk-Based Capital – Factor Based
 - Simple calculations were adequate
 - Most insurers sold similar products with basic features
- Today's Impact on Insurance Carriers & Reinsurers
 - More complex products sold with varied benefits and guarantees
 - Require increasingly complicated investment strategies to match
 - Traditional reserve & capital standards have become less suitable
 - Perception of redundancy in reserves and capital for certain life insurance products
 - Result: Some companies limit production or commit scarce capital
- Principle-based regulations have been implemented gradually for RBC
 - RBC Factor C-3: Phase I in 2000; C-3 Phase II in 2005
 - Actuarial Guideline 43 in 2009
 - C-3 Phase III and VM-20 end of 2011?



Impact of Pension Funding

- How large is the pension market (*Source: Wikipedia, 11/2011*)
 - Economist: Reports \$20 trillion in assets in US \$ worldwide
 - Largest 300 pension funds - Combined \$6 trillion in assets
- Importance of Asset/Liability Matching – Pension Crisis
 - Managing longevity risk of underfunded plans
- Modeling of investment/interest rate sensitivity
- Currency volatility (e.g., importance of modeling)
- Impact of guarantees
- Spinoffs (e.g., Pension Buyouts)



Secondary Insurance Market

- Investor Owned Life Insurance
 - Owners: Private Equity, Hedge Funds & Financial Institutions
 - Products: Life Settlements, Premium Finance, Beneficial Interest Policies
- Importance of Asset/Liability Matching
- Modeling of investment/interest rate sensitivity
- Financial Impact of Mortality & Liquidity
 - Sensitivity of Medical Underwriting
 - Financial Leveraging
 - “Optimization” Strategies
 - Policy Administration/Tracking



Insurance Industry Risk Considerations

- Portfolio Management - Mergers & Acquisitions/Spinoffs
- Emerging Markets (e.g., Latin America, Asia)
- Dynamic Financial Analysis (DFA)
- Data Management - Collection/Integrity/Reporting
- Modeling Techniques - Multiple Variables/Durations
 - Approaches: Stochastic, Monte Carlo, Probabilistic
 - Modeling & Managing of “Tail Risk”
- Risk Management - Reinsurance/Retrocession Purchasing

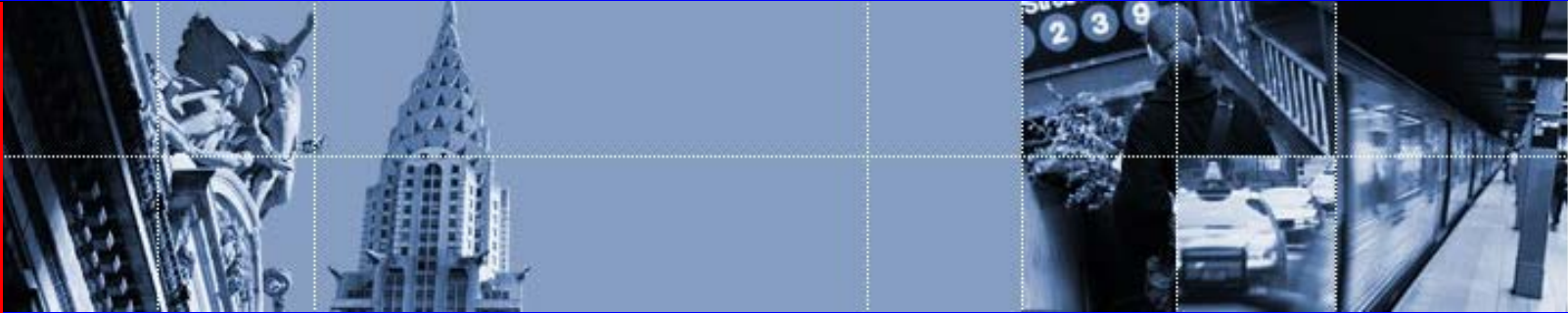


Other Risk Considerations in the Capital Markets

- Reinsurance/Retrocession Structures
 - RBC Leveraging Products
 - Cat Covers/Cat Bonds
 - Reinsurance Securitization/Sidecars
- Longevity Covers (e.g., Life Extension Risk policies)
- Options/Swaps
- Synthetics (e.g., mortality structures)
- Derivatives
- OPEB Bonds
- Other Products (e.g., Letter of Credits, Keepwells)



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Thank You!

Michael L. Frank, ASA, MAAA, FCA, MIAA
President, Actuarial Society of Greater New York

President, Aquarius Capital

Phone: (914) 933-0063

E-Mail: michael.frank@aquariuscapital.com

Website: www.aquariuscapital.com

