



CARIBBEAN ACTUARIAL ASSOCIATION



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Stress Testing Regional & Canadian Perspectives

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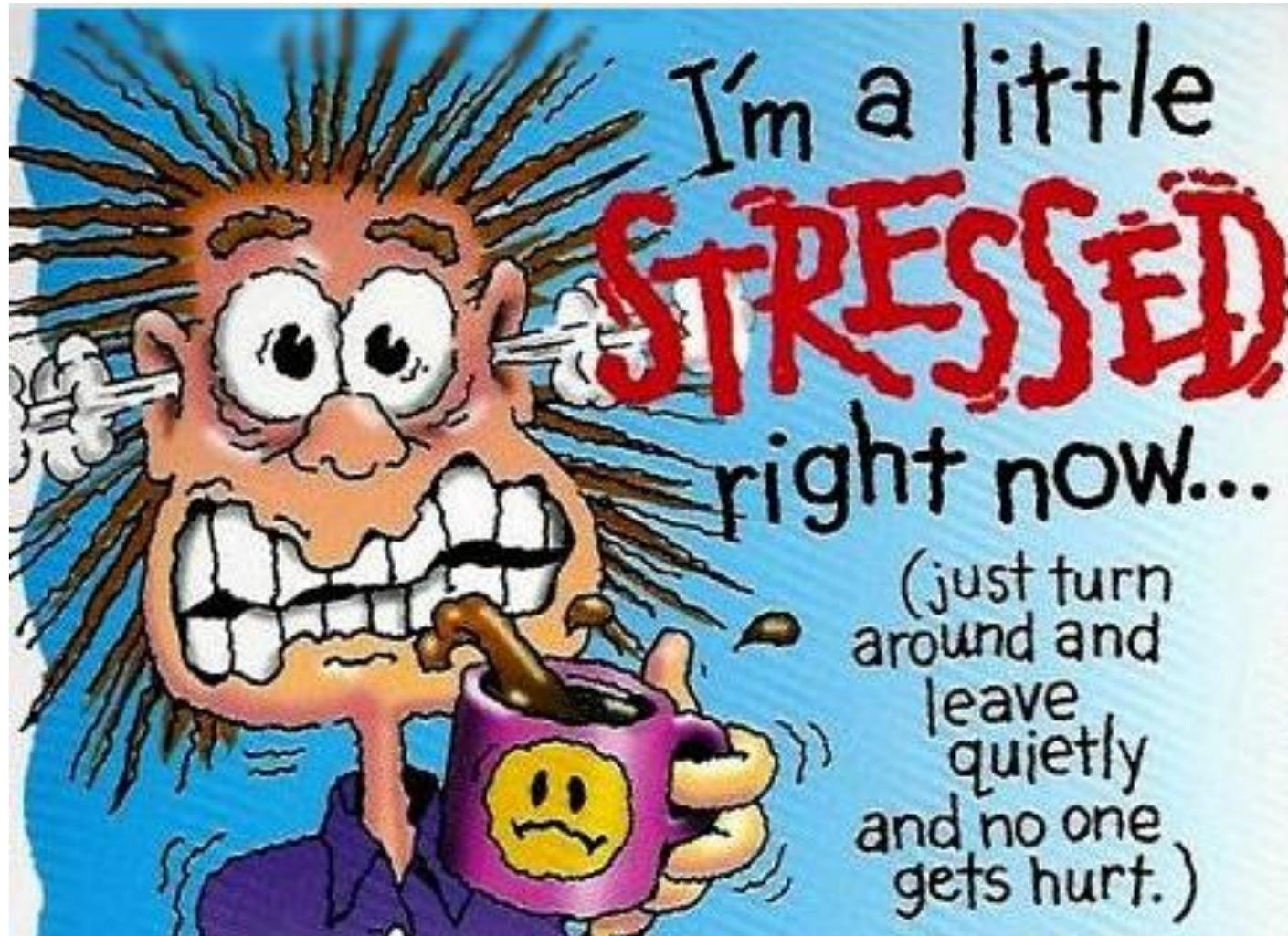
November 16th, 2012

Agenda

Stress Testing – Regional & Canadian Perspectives

- Why is Stress Testing Important
- Purpose of Stress Testing
- Regional Overview
- Canadian Perspective – Our Experience
- Conclusion

Stress Testing – Why is it Important?



Stress Testing – Why is it Important?

Insurance companies are operating in an economic environment that is more dynamic, volatile and interconnected than in the past (OSFI's Life Insurance Regulatory Framework – Sept 2012)

- Global economic crisis
- Volatile equity market returns
- Very low interest rates
- Competitive pressures
- Ongoing regulatory and accounting developments

Stress Testing – Why is it Important?

- The new economic environment has increased the focus on risk and capital management
 - By the Board of Directors
 - By the regulators
 - By the rating agencies (S&P, A.M. Best)
- Global shift towards a more dynamic, forward-looking and comprehensive regulatory framework
- The current trend will continue and accelerate over the coming years

Stress Testing – Purpose

- An effective stress testing program should serve the following main objectives:
 - Identification of possible threats to the financial condition of an insurer
 - Defining appropriate risk management actions to address those threats
 - Providing a complementary risk perspective to other risk management tools
 - Supporting capital management
 - Improving liquidity management

Stress Testing – Purpose

- Stress testing contributes to enhance an insurer's risk management practice
 - Measures the impact of extreme situations where the assumptions used in our models break down
 - Complement other risk quantification methodologies that are based on quantitative models using historical data
- An important tool for the Board and senior management for strategic planning, risk management and capital management decisions

Stress Testing – Regional Overview

The Bahamas

- Insurance Commission of The Bahamas (“ICB”) introduced stress testing guidelines in February 2012
- Insurance companies were required to submit the results of their stress tests by June 2012
- Subsequent to 2012, stress tests should be submitted with the Actuary’s Report on an annual basis
- Stress test the financial condition of the insurer

Stress Testing – Regional Overview

The Bahamas

- Forecast period is 5 years for long-term business and 2 years for short term business
- Base scenario including new business projections
- Exhaustive list of stress test scenarios (15)
 - Interest rate risk (2)
 - Expenses & Inflation risk (2)
 - Asset price risk (2)
 - Lapse risk (2)
 - Insurance risk (5)
 - New business risk (2)

Stress Testing – Regional Overview

Trinidad & Tobago

- Section 182 of the draft Insurance Bill requires insurers to perform an annual investigation of their financial condition
- CBTT issued draft Financial Condition Report (“FCR”) Regulations for Life Insurers (March 2011)
 - Very similar to DCAT requirements in Canada
- First Quantitative Impact Study on FCR in December 2011
- Second Quantitative Impact Study to be submitted by December 2012

Stress Testing – Regional Overview

Trinidad & Tobago

- Stress test the insurer’s regulatory capital requirement ratio as per the Insurance (Capital Adequacy) Regulations
- Minimum projection period of 4 years
- Base scenario consistent with the insurer’s business plan
- Adverse scenarios selected by the Appointed Actuary
 - CBTT may required additional “specified scenarios”
- Reporting to the Board
- Report includes an opinion

Stress Testing – Regional Overview

Trinidad & Tobago

- Seven “specified scenarios” for long term insurers:
 - Additional 2% inflation on maintenance expenses
 - New money rates decrease by 1% per year for 3 years
 - New sales to grow at twice the growth rate
 - A 40% downward shock in real estate and equity value
 - A 40% depreciation / revaluation in the value of the TT\$
 - Worsening mortality / morbidity (at least 50% excess)
 - Improvement in mortality (6% decrease in base rates)

Stress Testing – Regional Overview

Bermuda

- The Bermuda Monetary Authority (“BMA”) introduced a new capital and solvency framework in 2012
- Part of requirements to ensure Solvency II equivalence
- Statutory capital requirement calculated using the Bermuda Solvency Capital Requirement (“BSCR”) model or an approved internal capital model
- Specific stress tests are define in Schedule V(c) – Schedule of Risk Management – Stress / Scenario tests

Stress Testing – Regional Overview

Bermuda

- Commercial Insurer’s Solvency Self Assessment (“CISSA”)
 - Similar to ORSA concept in Europe
 - Amount of capital required to achieve the company’s strategic goals

Stress Testing – Regional Overview

Bermuda

- Economic scenarios
 - 40% downward shock in equity value
 - Widening of credit spreads at 95th percentile
 - Widening of credit spreads at 99th percentile
 - Foreign currency shock
 - Escalation of European sovereign risk
- Other scenarios
 - Three underwriting scenarios

Stress Testing – Canadian Perspective

- Life insurance companies have been doing stress testing for more than 20 years
 - Dynamic Capital Adequacy Testing (“DCAT”)
 - DCAT is one example of stress testing
- Over the last 2-3 years, OSFI has increased its focus on stress testing
 - OSFI’s Guideline E-18 – Stress Testing (Dec. 2009)
 - OSFI’s Standardized Scenario Test

Stress Testing – Canadian Perspective

Dynamic Capital Adequacy Testing (“DCAT”)

- Introduced in the *Insurance Companies Act* in 1992
 - Require the actuary to perform an annual DCAT investigation and to report to the Board and senior management
- Section 2500 of the CIA’s Standards of Practices
- CIA’s Educational Note on DCAT
 - Provides guidance and support to the actuary in performing DCAT (Last updated in Nov. 2007)

Stress Testing – Canadian Perspective

Dynamic Capital Adequacy Testing (“DCAT”)

- DCAT process includes the following key elements:
 - Development of a base scenario
 - Should be consistent with the business plan
 - Forecast period is 5 years for life insurers and 3 years for P&C insurers
 - Includes new business projections

Stress Testing – Canadian Perspective

Dynamic Capital Adequacy Testing (“DCAT”)

- DCAT process includes the following key elements:
 - Analysis of the impact of adverse scenarios
 - Adverse scenarios are selected by the AA
 - Minimum of three plausible adverse scenarios
 - An adverse scenario is considered plausible if it reflects the 95th to 99th percentile of outcomes
 - Should include the “ripple” effects
 - Should present results with and without management’s actions

Stress Testing – Canadian Perspective

Dynamic Capital Adequacy Testing (“DCAT”)

- DCAT process includes the following key elements:
 - A report on the results of the analysis and recommendations to the Board and senior management
 - An opinion signed by the actuary to report on the financial condition of the insurer
 - Meet minimum regulatory capital requirement under the base scenario (MCCSR ratio > 120% and Tier-1 ratio > 60%)
 - Meet all future obligations under the base scenario and all plausible adverse scenarios

Stress Testing – Canadian Perspective

Dynamic Capital Adequacy Testing (“DCAT”)

- Our experience – Benefits:
 - Dynamic and forward-looking view of a company’s financial condition
 - Most insurers use it as a risk management tool as part of their ERM process
 - DCAT scenarios have evolved from single risk to fully integrated economic scenarios including multiple risks
 - DCAT modeling tools were leveraged for other business purposes (business plan, EV, stress testing, etc...)

Stress Testing – Canadian Perspective

Dynamic Capital Adequacy Testing (“DCAT”)

- Our experience – Challenges:
 - DCAT process is resource and time intensive
 - Modeling is getting more and more complex
 - DCAT not always part of the risk management unit
 - Some insurers see DCAT as a regulatory compliance exercise
 - Wide range of practice across the industry

Stress Testing – Canadian Perspective

OSFI's Guideline E-18 – Stress Testing

- In December 2009, OSFI published Guideline E-18 to provide guidance in the area of stress testing
- Guideline E-18 is applicable to all Canadian financial institutions regulated by OSFI
- **Definition**: “*Stress testing is a risk management technique used to evaluate the potential effects on an institution's financial condition, of a set of specified changes in risk factors, corresponding to exceptional but plausible events*”

Stress Testing – Canadian Perspective

OSFI's Guideline E-18 – Stress Testing

- Stress testing the company's financial condition based on regulatory capital (Canada → MCCSR)
- Stress test scenarios are intended to be more severe than typical DCAT scenarios (Higher than 99th percentile)
- Stress testing includes scenario testing and sensitivity testing
 - **Scenario testing** uses a hypothetical future state of the world to define changes in risk factors affecting an institution's operations
 - **Sensitivity testing** involves an incremental change in a risk factor or a limited number of risk factors

Stress Testing – Canadian Perspective

OSFI's Guideline E-18 – Stress Testing

- The guideline focuses on the importance of stress testing as a tool for making business strategy, risk management and capital management decisions
- Insurance companies are required to have written policies and procedures governing their stress testing program
- OSFI's expectation is that insurance companies perform stress testing on a regular and timely basis

Stress Testing – Canadian Perspective

OSFI's Standardized Stress Testing

- Guideline E-18 stipulates that OSFI may ask “selected” institutions “from time to time” to carry out standardized stress tests
- Not expected that insurers employ the same level of resources and rigour used to carry out the DCAT work
- The standardized stress test scenarios are intended to be more severe than typical DCAT scenarios
 - In excess of the DCAT plausible range of 95th to 99th percentile

Stress Testing – Canadian Perspective

OSFI's Standardized Stress Testing

- Results of the standardized stress tests should be discussed with the Board and senior management
- Results of the standardized stress tests should be presented with and without anticipated management actions
- Three sets of standardized stress tests requested by OSFI since Guideline E-18 was published (April 2010, March 2011 and April 2012)

Stress Testing – Canadian Perspective

OSFI's Standardized Stress Testing

- Key objectives:
 - Have insurers quickly quantify on short notice the impact of a simulated crisis
 - Have the Board and senior management think through the plausibility and effectiveness of management actions
 - Compare the industry across standard scenarios
- Both quantitative results and qualitative issues are important

Stress Testing – Canadian Perspective

OSFI's Standardized Stress Testing - 2012

- Background: a severe and prolonged global economic slowdown
- Stress Testing Assumptions:
 - Downward and permanent shock to interest rates
(3-mth T-bill = 0.10% and long-term bond = 1.70%)
 - Downward shocks and volatile equity market return
(-35% / +15% / -10% and level thereafter)
 - Higher credit default risk (Bond rating downgrade)
 - Adverse policyholder behaviour

Stress Testing – Canadian Perspective

Stress Testing Implementation - Key Success Factors

- Board and senior management involvement is essential
 - Convey meaningful information in a manner that is understandable to the Board and senior management
- Find the right trade-off between “precision” and “approximation”
 - Do not need to be as accurate as DCAT modeling
 - Clearly define the materiality level used
 - Approximations must be validated

Stress Testing – Canadian Perspective

Stress Testing Implementation - Key Success Factors

- Be able to accommodate short production time and high frequency testing
- Focus on the material and plausible risks
- Does it pass the “smell” test?
 - Reasonability check
 - Validation against historical data

Stress Testing – Conclusion

- Stress testing is a very important risk management tool
- Stress testing should be embedded in the company's internal risk management processes
- Capitalize on the stress testing process and make it more than just a “regulatory” requirement

Stress Testing – Conclusion

Thank You