



Session 13: Multi-Economy Modeling

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MULTI-ECONOMY MODELLING

DOUG CALDWELL, CHIEF RISK OFFICER, TRANSAMERICA
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LOOKING BACK – A FEW “WAR STORIES”

2004-2008: Early Days of Market Consistent and Economic Capital Modelling across multiple economies

- Emerging markets topics
- Risk free curves
- Market data
- Speed and auditability
- Replicating Portfolios across economies
- Illiquidity premiums
- Correlation of risks including translation risks

2012-2016: Solvency II Implementation

- Internal Capital Model Approval
- European Government Bonds
- Ultimate Forward Rates (UFR)
- Dynamic Volatility Adjuster

RISK MANAGEMENT IMPLICATIONS



- Valuing product options and guarantees consistently across economies
- Investment portfolios, illiquidity premiums, and (government) spread risk
- Nature of assets and liabilities often differ due to local financial markets
- Interest rate hedging (available instruments and UFR)
- Longevity risk across multiple economies
- Inflation
- What is risk of a strongly rated subsidiary in a lower rated country?
- Understanding diversification of risk across markets
- Hedging of dividends and/or future capital investments



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Evolving Economic Capital

Historically, most insurers have focused on single-economy

- Many companies have most, if not all, exposure in home country
- Even limited exposure may not require modeling multiple economies
 - E.g., investments in foreign equities
- Even some larger companies have focused on entity-level models
 - Can further limit impact of multi-economy relations

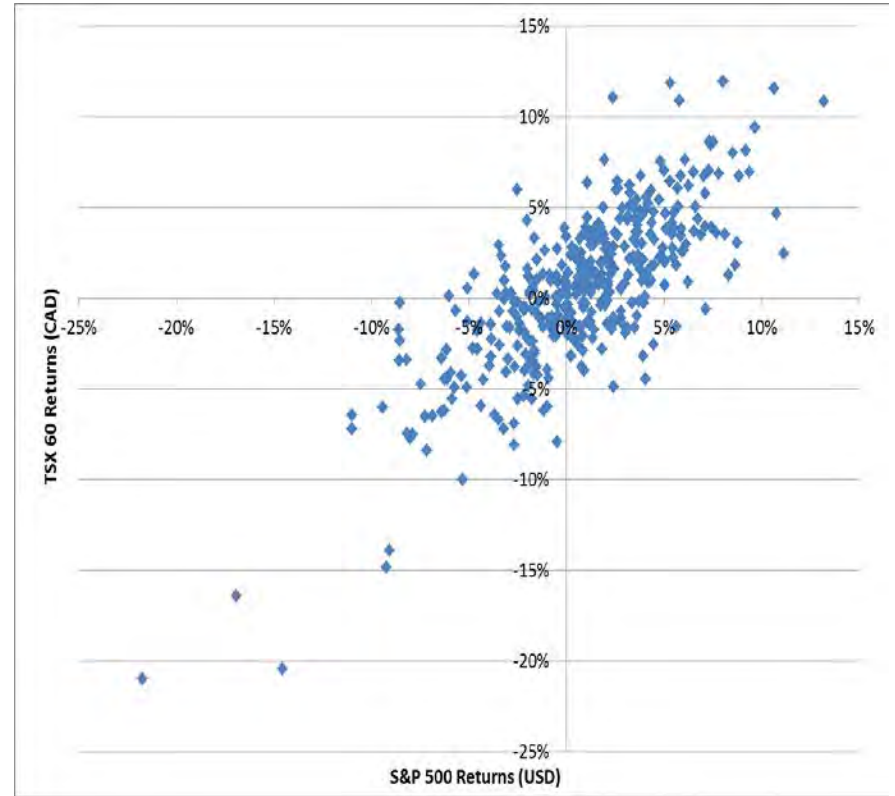
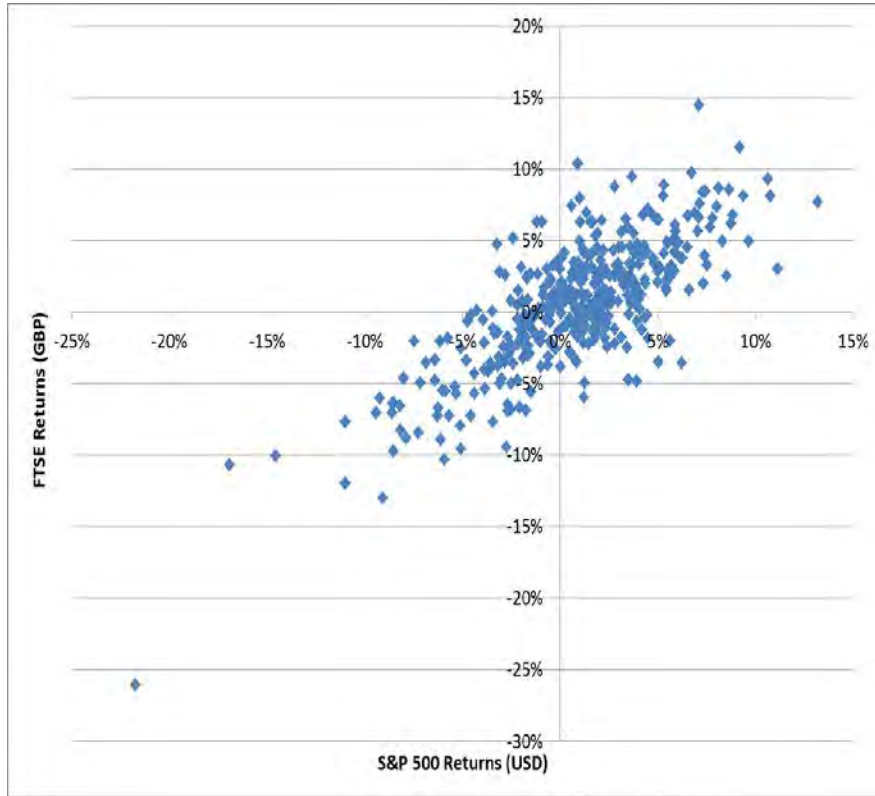
Increasingly, companies are expanding their modeling platforms

- Growth in both foreign business and investments
- Focusing on risk across the entire organization

What are the implications for calibrating the Economic Scenario Generator (ESG)?

Expanded Relationships

Adding Economies naturally expands the number of Relationships to Consider

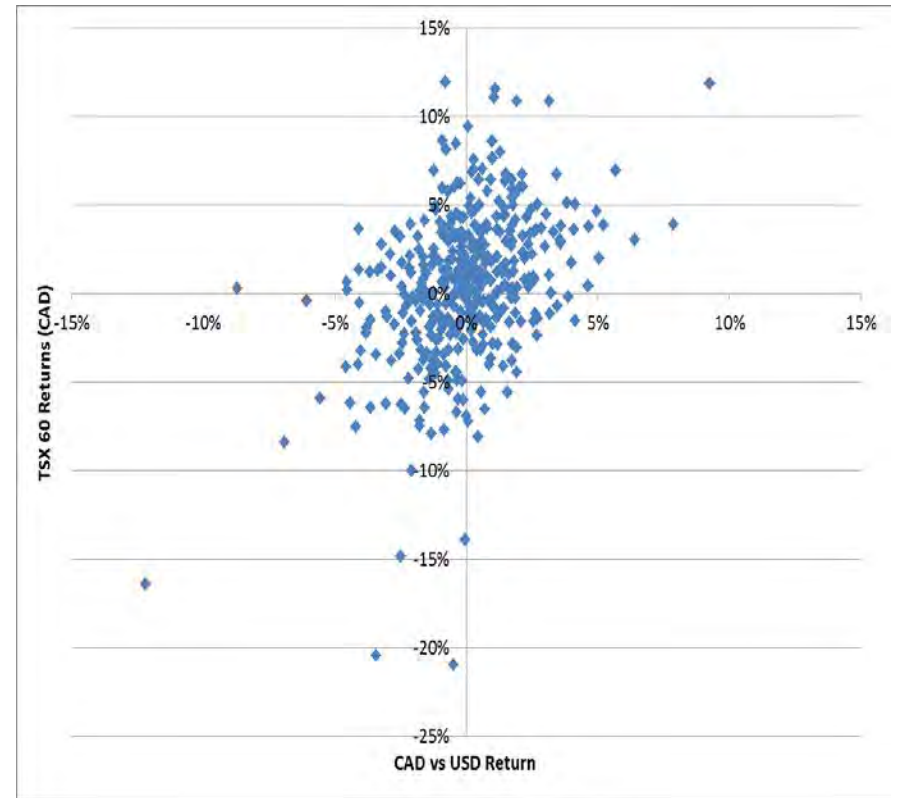
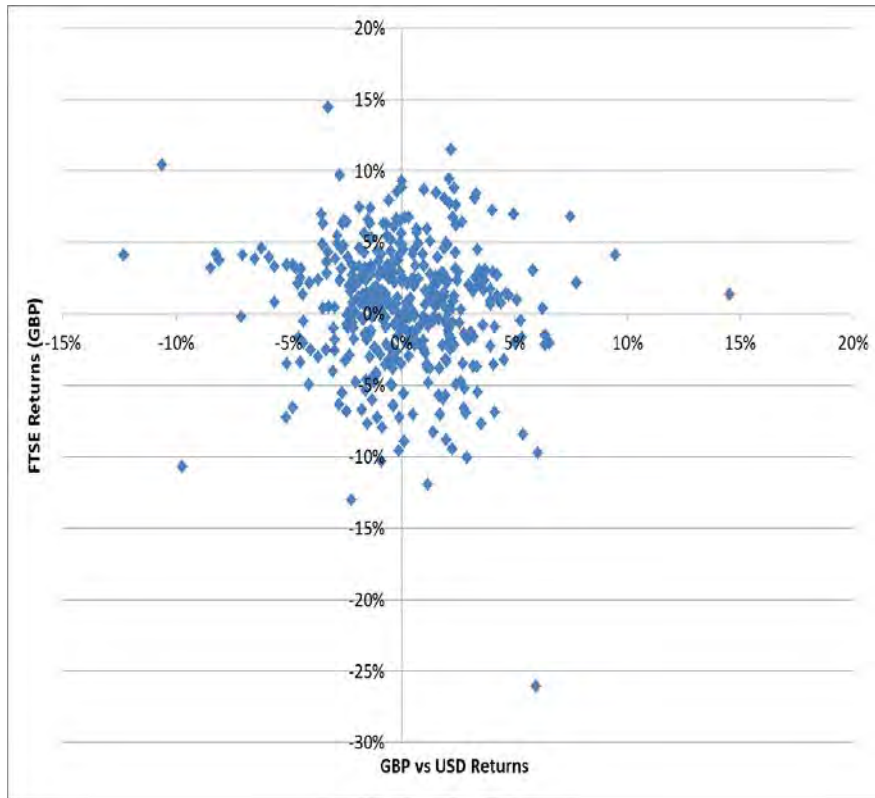


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More Complex Relationships

The Foreign Exchange (FX) Rate can be related to other variables

- Relationship may differ between economies

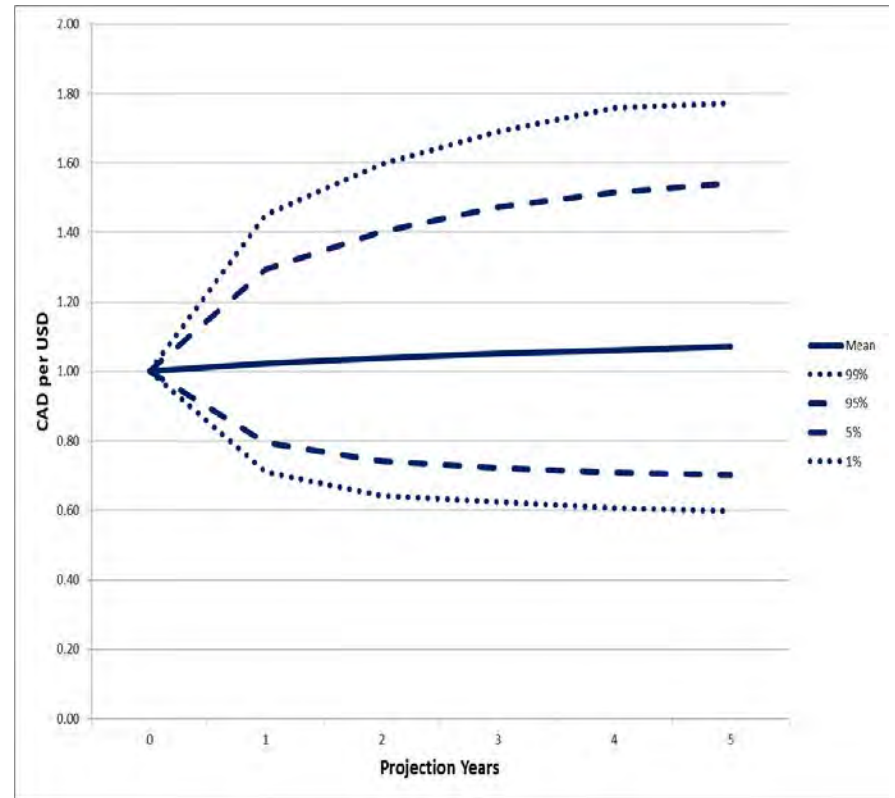
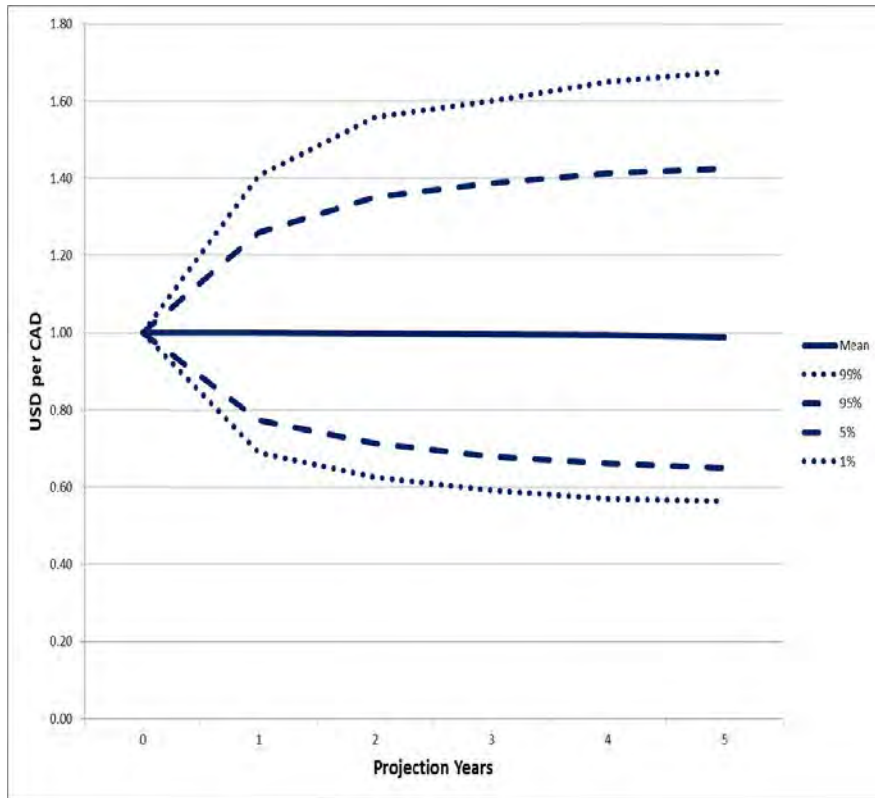


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Issues with Target Setting

Expected Levels can be a big part of setting up ESGs

- Nature of FX Rates can make standard approaches problematic



Prepared by Conning, Inc. Sources: GEMS® Economic Scenario Generator scenario.

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