

Stress Testing PRMIA Global Event Series

Jointly Sponsored by PRMIA Chicago &
the Arditti Center for Risk Management,
DePaul University

Melissa Van Hees
Paul Huck
Ketan Patel
John Dodson

May 25, 2011

There is more to risk management than risk **measurement**.

- ▶ The scenarios in the tail of our VaR models are clearly stressful scenarios, but they usually remain nameless.

Stress Tests

Giving names to a select few of our scenarios can provide us an alternate **dialogue** through narrative

- ▶ about the recent or less recent past;
- ▶ about currently fashionable fears for the future;
- ▶ about exposures we should care about today.

Each new crisis brings renewed focus on the risk **management** aspect of stress testing.

Title I of Dodd-Frank

instructs each primary financial regulatory agency to –

- (i) define the term “stress test” for purposes of this paragraph;
 - (ii) establish methodologies for the conduct of stress tests required by this paragraph that shall provide for at least 3 different sets of conditions, including baseline, adverse, and severely adverse;
 - (iii) establish the form and content of the report [...]; and
 - (iv) require companies subject to this paragraph to publish a summary of the results of the required stress tests.
- It will be interesting to contrast this with the recent RBC C-3 Phase II exercise by our life colleagues.

Federal Reserve Stress Tests

Example: Wells Fargo

Stress Testing
PRMIA Global
Event Series

Melissa Van Hees
Paul Huck
Ketan Patel
John Dodson

Banks are very complicated. To illustrate, consider the Federal Reserve's recent exercise. They asked the major banks to estimate their capital reserves under an adverse macro scenario defined in terms of –

- ▶ employment
- ▶ housing prices
- ▶ gross domestic product

Regression as Conditioning

Regressing changes in WFC's reported Tier 1 capital (adjusted for corporate actions) against ten years of quarterly data yields no significant coefficients to these factors, and

- ▶ an R^2 of just 14%.

After much consultation, concrete results were produced; but there are clearly many unspoken-for **degrees of freedom**

Breuer *et al.* Framework

Breuer T., M. Jandacka, K. Rheinberger, M. Summer
International Journal of Central Banking 5 (2009), 205-224

Stress Testing
PRMIA Global
Event Series

Melissa Van Hees
Paul Huck
Ketan Patel
John Dodson

As was presented at PRMIA Munich last spring, the authors attempt to suggest a methodology that gives a precise operational definition to what it means to find “exceptional but plausible” scenarios in macro stress testing of a portfolio.

Worst Case Search

- ▶ Contrary to the standard practice of stress testing, search systematically for those scenarios in some **domain of given plausibility** which is most harmful to the portfolio
- ▶ Worst case scenarios allow for an identification of the **key macro risk factors** which contribute most to the loss in the worst case scenario

Melissa Van Hees, CFA

Chief Risk Officer, Concordia Partners

Paul Huck

Assistant Vice President & Director of the Wholesale Credit
Risk Center, Federal Reserve Bank of Chicago

Ketan Patel

Director, OTC Risk Management, CME Group

As part of the 2011 Global Event Series on stress testing, PRMIA has produced and recorded a webinar with risk management expert Dan Rodriguez, Chief Risk Officer, Global Arbitrage Trading Group at Credit Suisse and member of the PRMIA New York chapter steering committee. The webinar is moderated by host Juan M. Licari, Senior Director at Moody's Analytics and Head of the Credit Analytics team for Europe, the Middle East and Africa. This webinar is available exclusively during the series to sustaining members and members who participate in their chapter event on stress testing.

<https://www2.gotomeeting.com/register/619616602>