

The Wharton Financial Institutions Center and Oliver Wyman's
Tenth Anniversary Financial Risk Roundtable 2007

Model Governance and Model Validation

Thursday May 31, 2007

**LOCATION: 8th Floor of Jon M. Huntsman Hall
3730 Walnut Street, Philadelphia**

6:30pm - 7:00pm

Cocktail reception

7:00pm - 7:30pm

Keynote address

Speaker

Jay Fishman, Chairman and CEO, The Travelers Companies, Inc.

7:30pm

Dinner

Friday June 1, 2007

**LOCATION: 1206 Steinberg Hall-Dietrich Hall
3600 Locust Walk, Philadelphia**

8:00am - 8:30am

Continental breakfast

8:30am - 10:30am

Roundtable 1: Increased Importance of Models: Disclosure, Fair Value, and Accounting

- Increased use of models to support decisions
- Complementary roles of model developers, users, owners, validators and regulators
- Marking to model and financial statements

Speakers

Mark Carey, Finance Project Manager, Federal Reserve Board

Darryll Hendricks, Managing Director, Global Head, Quantitative Risk Control, UBS Investment Bank

Thomas J. Linsmeier, Member, Financial Accounting Standards Board

Chester Spatt, Chief Economist, US Securities and Exchange Commission and Mellon Bank Professor of Finance, Carnegie Mellon University

10:30am - 11:00am

Coffee break

11:00am - 1:00pm

Roundtable 2: Challenges in Model Governance and Validation

- Model validation for Basel II in practice
- Model risk in in-sample/out of sample tests and stress scenarios
- Coping with and resolving organizational tensions

Speakers

Maarten Gelderman, Chairman, Accord Implementation Group

Michael S. Gibson, Assistant Director and Chief, Risk Analysis,
Division of Research and Statistics, Federal Reserve Board

Nick Kiritz, Director of Modeling and Analytics Oversight, Risk
Modeling Analytics Oversight, Fannie Mae

Thomas Yu, Head of Model Validation, SunTrust Banks, Inc.

1:00pm - 2:00pm

Lunch

2:00pm - 4:00pm

Roundtable 3: When Models Don't Deliver

- Blowups: Confusing alpha versus beta
- Structural change and underestimation by CAT models
- Statistics versus common sense

Speakers

Christopher C. Geczy, Assistant Professor of Finance,
Wharton School, University of Pennsylvania

Gregory S. Hayt, Chief Risk Officer, Paloma Partners

Allan Malz, Head of Risk Management, Clinton Group

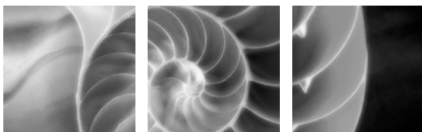
Peter Nakada, Managing Director, RMS Consulting

4:00pm

Closing remarks

4:30pm

Adjourn



Views presented in this presentation are those of the author and not necessarily those of DNB or any Basel Committee Subgroup

Challenges in Model Governance and Validation

Maarten Gelderman

Head Quantitative Risk Management

Chair AIG Validation Group



Lessons from Basel II Applications

- Pillar 1
 - » (Economic downturn) LGD
 - » Non-core portfolios/Low default portfolios
- Pillar 2
 - » Stress testing
 - » Capital planning
 - » Comprehensiveness of internal risk assessment
- General
 - » Validation (knowledgeable and independent)
 - » Governance
 - » Communication

Modelling issues

- Model consistency
 - » Trading book/banking book boundary
 - » Ratings and correlations
 - » PD, LGD, and EAD
- Combining multiple data sources
- Conservatism in parameter estimates

Governance issues

- Top management
 - » Involvement in risk management
 - » Understanding of possibilities and limitations
 - » Use of risk management outputs
- Model improvement
 - » Top management
 - » This is not Y2K
 - » Incentives
 - » Data issues
 - » Supervisory issues
- Legal vs economic structure of organizations

Disclosure, Fair Value and Accounting: The Minefield

Mark Carey
Federal Reserve Board

Disclaimer: The views expressed do not necessarily reflect the views of the Board of Governors or the Federal Reserve System.

Definitions

- “Accounts:” What’s audited. Roughly, what appears on the balance sheet, income statement, or statement of cash flows
 - About value (where’s our accounting for risk?)
- “Disclosures:” Everything else
- “Fair value:” Valuation model output (except in cases where market value is continuously observable in liquid markets)

The Dream

- Accounts and disclosures should be informative and current
- Prices (in liquid markets) are excellent aggregators of current information
 - < Now the big jump >
- So use current market prices in producing disclosures AND accounts
- Where current prices are not available, use an unbiased estimator (applies to most financial instruments): “fair value”

Reality: Trust only if verify

- Disclosure is costly to verify
- Big cost efficiency from common verification (“audit”)
 - Divide into Accounts and (unaudited) Disclosure
 - Limit scope of what is audited (cuts cost), AND
 - Standardization of audited measures
 - Cuts cost and improves information transmission
 - Disclosures provide safety valve of flexibility
 - Accounts get more weight because verified
- Transactions as a building block
 - Usually verifiable with high precision
 - Supports standardization
 - But stale

Reality: “Unbiased estimators” are unverifiable

- Any model is an opinion embodying many judgments
- Standardized pricing model \leftrightarrow deep liquid market
- Limited market implies flexibility in modeling. But without standardization of the models...
 - Cost advantage of audit, and information conveyed, much reduced
 - Who will pay for customized audits of many thousands of models at each financial institution?
- ***By the way, models do not have the information aggregation properties of prices

There is no informativeness without trust

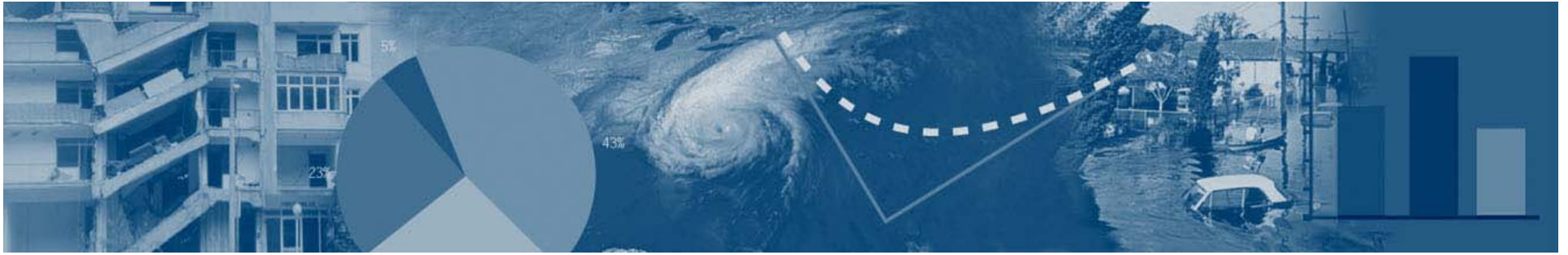
- A decline in audit quality and transparency reduces informativeness, all else equal
 - A real worry under a fair value standard
- Are the informativeness benefits of use of model-based “prices” in the *accounts* sufficient to offset the informativeness losses?
 - The *disclosures* are a different situation

Tradeoffs are no fun

- Any accounting system for financial instruments will be a changing kludge
 - The financial world changes rapidly, so the accounting system must change too.
 - Many cost-benefit tradeoffs to be weighed
 - Since it's "accounts," people care, so much conflict
- The Dream writ small: "Surely *something* can be done to make it better...."
 - Disclosure: Much less pressure-packed

A minefield of second-best

- The institutional structure of choice is key
 - Will it support internalization of the tradeoffs?
 - New mines *will* be substituted for old. OK if net benefits are positive
- Too many players
 - FASB, IASB, AICPA, SEC, PCAOB, CFTC, Fed, SIFMA, ABA, EUC, FSA...
- Everyone is well intentioned...
 - But each has a partial view colored by the assigned job



Wharton Financial Institutions Conference

When Models Fail to Deliver

May 2007

Peter Nakada

peter.nakada@rms.com

Bringing Science to the Art of Underwriting™



Hurricane Katrina was widely viewed as a “catastrophic failure of the catastrophe models”



RMS Field Recon Photo
Gulfport MS
125 – 140 mph gust



We modeled the wind damage . . .

. . . but underestimated commercial vulnerability

Inland flood was not in the model at all



Levee Break #3 - London Canal, August 30

1. Be humble but clear about the reasons

Idiosyncratic

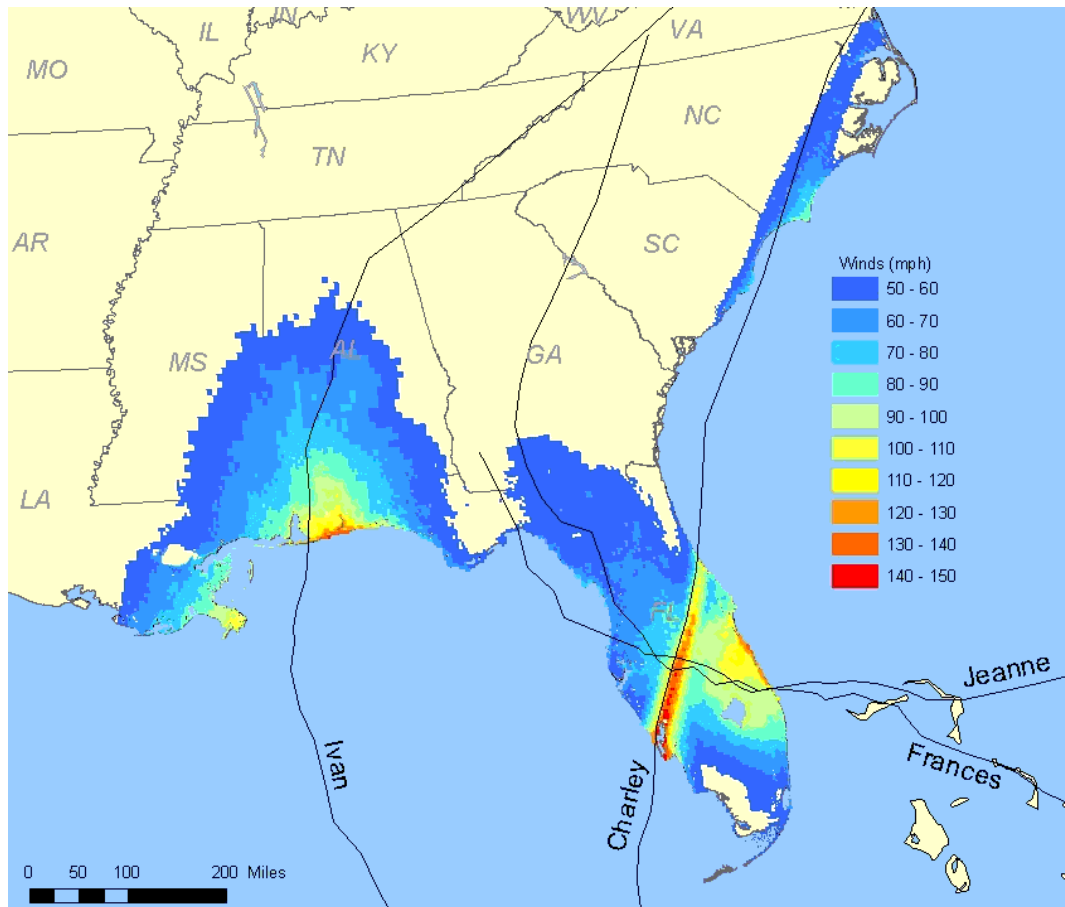


Systematic

Reasons	Action
Great New Orleans Flood -- levee failures cause catastrophic flood ("ponding") not included in model	The GNOF may be idiosyncratic, but other (analogous) SuperCat consequences may exist
Hurricane produced Cat 5 storm surge (>20 feet) with Cat 3-4 winds	If this is systematic, consider modifying model
"SuperCat" consequences amplified losses -- evacuation, business interruption, contamination	Add "loss amplification" effects to model
Poor data quality led to significant underestimation of exposure and risk	Improve data quality, especially where there is a systematic bias toward lower risk
Commercial vulnerability greater than expected	Recalibrate vulnerability in model

2. Learn quickly from the new data . . .

Severe 2004 Hurricanes



- \$13B of detailed claims data collected from 42 companies
- 60% of total industry losses
- \$500 million of Caribbean claims
- Includes on-site review of claims files
- Inspections and observations of H05 experience

. . . And changing scientific views

2005 RMS Expert Elicitation Panel



Jim Elsner
Professor
Florida State



Kerry Emanuel
Professor, MIT



Tom Knutson
GFDL, NOAA,
Princeton, NJ



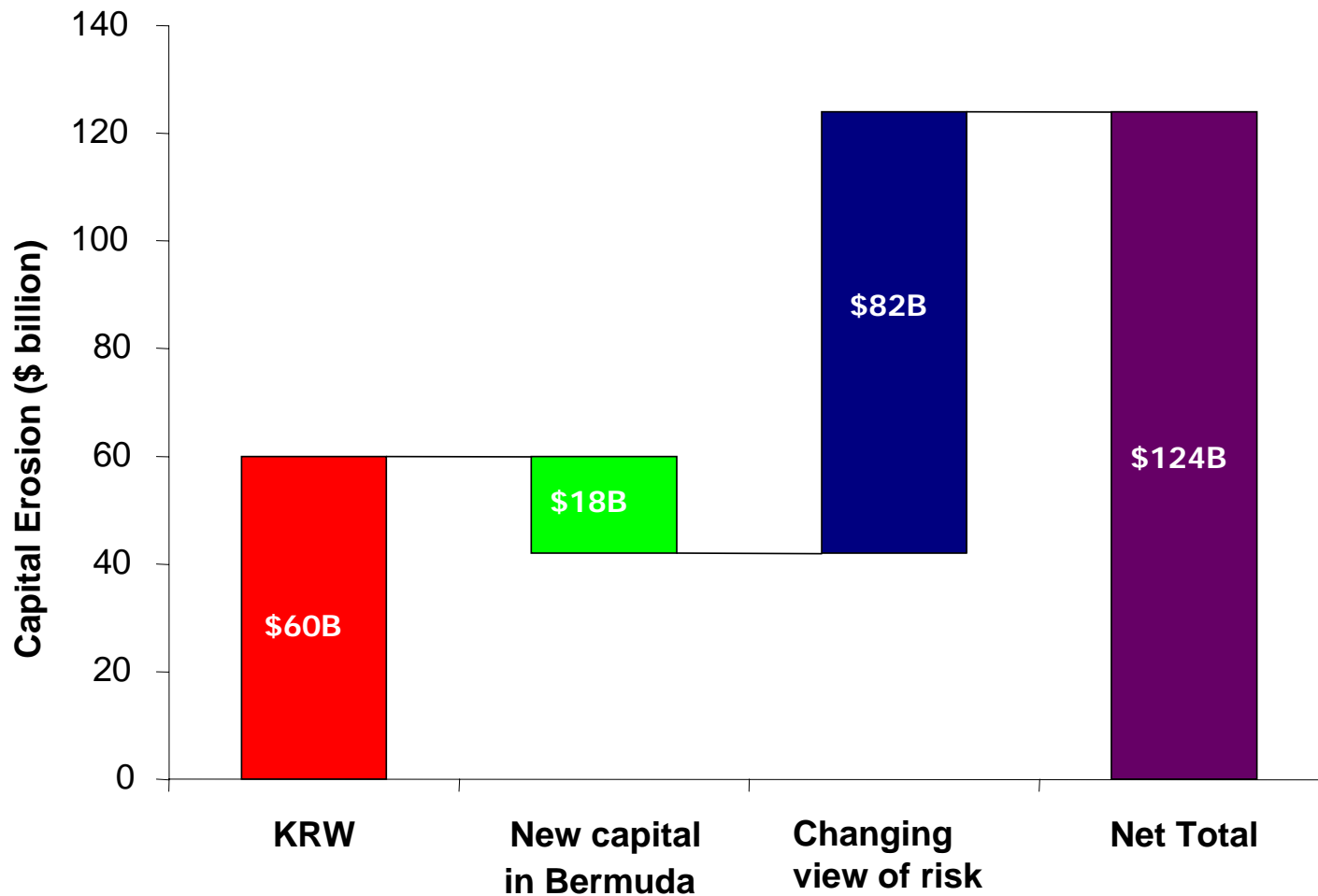
Mark Saunders
Professor,
University College
London

3. Be decisive about your new view of risk . . .

Approximate changes gross U.S. Industry results

		Rates	Vulnerability	Post-Event Loss Amplification	Combined
Personal Lines	Mean	+45%	+10%	+10%	+75%
	1%	+25%	+5%	+10%	+40%
Commercial Lines	Mean	+45%	+45%	+10%	+130%
	1%	+25%	+45%	+10%	+95%

. . . Even though the market impact may be large



4. Remind users about their responsibilities



Some of our clients had coded these floating casinos like steel frame hotels . . .

. . . We recommended coding them like mobile homes



5. Use the experience to drive home good model governance

- Models are powerful tools, but must be used appropriately
 - Know what's in the model and what's not
 - Elevate the importance of data quality
 - Have a feedback loop between experience and parameters
 - Supplement modeling with scenario analysis
 - Understand of uncertainties and implied bets
- Management practice at all levels must embrace catastrophe risk
 - (Catastrophe) risk management must be viewed as a strategic core competency
 - Require executive-level understanding and intuition around risks
 - Learn how to make decisions under deep uncertainty