Basel II OpRisk Capital Proposal Recent Developments:

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John S. Jordan
Federal Reserve Bank of Boston

Outline

- Supervisory Initiatives
  - Basel II Capital Proposal
  - OpRisk Proposal
- Emerging Practice in OpRisk Management
  - OpRisk Corporate Governance
  - OpRisk Data
  - OpRisk Quantification Techniques
- Challenges for Audit

Supervisory Initiatives

Basel II

- Motivation for New Capital Accord
  - Improved risk sensitivity
  - Ensure prudent levels of overall capital
  - Promote level playing field
  - Encourage improved risk management
  - Focus on internationally active banks
    - Required Basel II Banks: approximately 10
    - Opt-in Basel II Banks: another 10
    - Remaining 8000 banks: Basel I
    - Over time, more will migrate to Basel II

Pillar I:

Minimum Regulatory Capital Ratio =

$$\frac{\text{Capital}}{\text{Credit Risk + Operational Risk + Market Risk}}$$

- Definition of capital is unchanged
- Minimum capital ratio still = 8%

Pillar II and Pillar III

- Pillar II: The Role of Supervisors
  - Each bank should assess internal capital adequacy in light of its risk profile
  - Supervisors should review these internal assessments
  - Supervisors should expect banks to operate above regulatory minimums
  - Supervisors should intervene at an early stage if capital is inadequate
- Pillar III: Market Discipline
  - Greater transparency heightens market discipline

Operational Risk

- A definition of operational loss: “*The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events*”
  - This definition includes legal risk
  - Strategic and reputational risk are excluded
- Industry has generally accepted the Basel definition, not surprising given:
  - Framework developed with industry groups
  - Focus on objective, measurable event types
  - Banks allowed to adapt to their internal context

		Loss Event Types						
		Internal Fraud	**External Fraud**	**Employment Practices & Workplace Safety**	**Clients, Products & Business Practices**	**Damage to Physical Assets**	**Business Disruption & System Failures**	**Execution, Delivery & Process Management**
Business Lines	**Corporate Finance**							
	Trading & Sales							
	Retail Banking							
	Payment & Settlement							
	Agency Services							
	Commercial Banking							
	Asset Management							
	Retail Brokerage							

Timeline

- 1Q 2003: Basel OpRisk Sound Practices Paper
- 2Q 2003: Basel issues CP-3 for public comment
- 2Q 2003: U.S. regulators issue ANPR, with description of US implementation requirements
- 4Q 2003: U.S. regulators issue NPR
- 4Q 2003: New Basel Accord issued
- 1Q 2004: For banks adopting AMA, must be able to capture loss experience for all of 2004, 2005, 2006
- 2Q 2004: U.S. regulators issue final rules & related polices
- 1Q 2007: New Capital Accord effective

“Sound Practices” Principles

- Principle 1: Role for Board of Directors
- Principle 2: Role for Internal Audit
- Principle 3: Role for Senior Management
- Principle 4: Risk Identification and Assessment
- Principle 5: Risk Monitoring
- Principle 6: Risk Mitigation & Control
- Principle 7: Business Continuity
- Principles 8 and 9: Supervisors Role
- Principle 10: Role for Disclosure

The Basle II OpRisk Proposal

Basic Indicator	Standardized Approach	Advanced Measurement Approaches (AMA)
Firm-wide basis: Capital = alpha* Gross Income alpha = 15%	Business Line basis: Capital = Gross Income * Beta Betas = 12% - 18%	Bank defined model: Must include key elements: 1. Internal loss data 2. External loss data 3. Scenario Analysis 4. Business Environment and Control Factors

Key Elements of an AMA

1. Internal Data
2. External Data
3. Scenario Analysis
4. Internal Control and Business Environment Factors

- These key elements can potentially be combined in different ways to develop a model that quantifies the bank’s OpRisk exposure

- Supervisory Challenge: provide flexibility in the development of an AMA process, while ensuring comparability among supervised institutions.

Emerging Practice

Consistent with Proposed AMA Framework

Emerging Practice on OpRisk Framework

- OpRisk assessments are being made in 3 areas:

  1. OpRisk Corporate Governance Structure
    - Business lines “own” the risk
    - But important roles for:
      - Corporate OpRisk Management Function
      - Board of Directors
      - Internal Audit

  2. Operational Risk Data
    - Loss event databases
    - Business line risk assessments (for example: CRSE)
    - Early Warning Systems (for example: KRIs)

  3. Quantification Techniques
    - Techniques to determine exposure
    - Assessing the likelihood and impact of “tail events”

1. OpRisk Corporate Governance Structure

OpRisk Corporate Governance Structure

- Business Lines “own” OpRisk
  - Primary responsibility for the daily management of OpRisk continues to reside at the business line
  - Business lines are the ones taking on the risk
  - Business lines are in the best position to assess, monitor, and mitigate the risk
  - Traditional role unchanged, but required to meet corporate standards at a minimum

OpRisk Corporate Governance Structure (cont.)

- Emerging Practice: A role for a formal Corporate OpRisk Function
  - Corporate OpRisk Function Independent from Business Lines
  - Facilitates Reporting, Aggregation, and Monitoring of OpRisk
  - Develops corporate OpRisk policies & procedures, including definition
  - Develops key OpRisk management tools and related MIS
  - Reports pertinent information to senior management and board
  - Ensures consistent and comprehensive collection of operational loss events

OpRisk Corporate Governance Structure (cont.)

- Emerging Practice: A Role for the Board of Directors
  - Awareness of material operational risks
  - Approve and review banks’ OpRisk management framework
  - Understand relationship between Strategic Plan & OpRisk
  - Ensure relationships exist between Senior Management, Corporate OpRisk Function, Business Line OpRisk function, OpRisk Capital Allocation Team, Internal Audit, etc.

OpRisk Corporate Governance Structure (cont.)

- Emerging Practice: A Role for Internal Audit
  - Assessment and Validation of:
    - Business line OpRisk management function
    - Corporate OpRisk management function
    - OpRisk Data: Loss data, KRIs, Business Line Risk Assessments
    - OpRisk capital allocation process
  - Emerging Practice has Audit independent of OpRisk Function

2. OpRisk Data

Operational Loss Event Data

- Emerging Practice: Firm-wide consistent and comprehensive capture of operational loss events
  - How?
    - Firm-wide consistent definition
      - many are using the Basel definition of of operational loss: "The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events"
    - Focus on objective, measurable event types
    - Data tends to be captured above specified threshold
    - Develop a technology platform that crosses firm
      - many web-based
      - some linked to GL where possible
      - often "hybrid" systems
    - Training of business lines about policies and procedures
    - Align incentives for reporting
    - Auditable process

Operational Loss Event Data (cont.)

- For most business line/loss types, the "high-level" definition is sufficient to provide guidance on what constitutes an event
- However, for some types of events, banks are looking to supervisors for more guidance on OpLoss definition
  - Some banks are looking for more guidance on issues such as:
    - ⇨ When does an event become an event - the "short-lived" event
    - ⇨ When should many small events caused by a single factor be assumed to be one large event
    - ⇨ What is the appropriate threshold to capture loss events and does it vary by business line/loss type - high frequency vs. low frequency events
    - ⇨ What associated expenses should be in the cost of an event (salaries, overtime, legal fees, etc.) - major isolated expenses are easy to capture but smaller widespread expenses more difficult

Operational Loss Event Data (cont.)

Business Lines		Loss Event Types: Internal Fraud	External Fraud	Employment Practices & Workplace Safety	Clients, Products & Business Practices	Damage to Physical Assets	Business Disruption & System Failures	Execution, Delivery & Process Management
Corporate Finance	obs	<50	<10	>50	>50	>50		>50
	% of Total Obs	0.14%	0.04%	27.58%	1.21%	0.87%		6.28%
	Aggregate Loss as % of Total Loss	0.36%	0.00%	7.26%	2.30%	2.16%		2.88%
Trading & Sales	obs	<10		<10	<50	<10		<50
	% of Total Obs	0.00%		0.02%	0.08%	0.03%		0.11%
	Aggregate Loss as % of Total Loss	0.00%		0.10%	0.32%	0.08%		0.14%
Retail Banking	obs	>50	>50	>50	>50	<10		>50
	% of Total Obs	7.20%	40.47%	2.08%	1.74%	0.03%		6.39%
	Aggregate Loss as % of Total Loss	2.73%	10.90%	0.49%	11.16%	0.10%		7.44%
Commercial Banking	obs	>50	>50	<50	>50	<10		>50
	% of Total Obs	0.37%	3.18%	0.19%	0.48%	0.01%		0.24%
	Aggregate Loss as % of Total Loss	1.14%	4.31%	0.13%	7.16%	0.60%		0.97%
Payment & Settlement	obs		<50		<10			<10
	% of Total Obs		0.05%		0.00%			0.01%
	Aggregate Loss as % of Total Loss		0.01%		0.03%			0.00%
Agency Services	obs							
	% of Total Obs							
	Aggregate Loss as % of Total Loss							
Asset Management	obs	<10	>50	>50	>50	<10		<50
	% of Total Obs	0.03%	0.25%	0.20%	0.60%	0.00%		0.11%
	Aggregate Loss as % of Total Loss	0.04%	3.54%	0.06%	26.22%	1.54%		5.84%
Retail Brokerage	obs							
	% of Total Obs							
	Aggregate Loss as % of Total Loss							

Legend:	0 obs	1-10 obs	11-50 obs	> 50 obs

- Assessing adequacy of bank's data collection
  - Mapping to matrix reveals "gaps"
    - Definition gaps
    - Capture gaps
    - Tail event gaps

- Audit as a validator

Business Line Early Warning Systems

- Emerging Practice: Emerging Practice has banks creating a comprehensive and consistent firm-wide framework with summary reports receiving senior management attention
- Early Warning Systems are being used more formally
  - Traditionally, certain business lines tracked their own key performance indicators, key risk indicators, key risk drivers, etc. These systems are designed to be "real time" or "forward-looking"
  - Emerging practice have banks determining threshold levels in key risk indicators, when exceeded, alert management to areas of potential problems
  - Emerging Practice has quantitative analysis linking risk indicators to OpLoss data
- Audit as a user and validator

Business Line Risk Assessments

- Emerging Practice has banks creating a comprehensive and consistent firm-wide framework with Business Line Risk assessments summary reports receiving senior management attention

  – These assessments take on different forms across banks - including Scorecards, Self Assessments, and Audit Scores. All tend to be tailored to business line, and are designed to be “real time” and/or “forward-looking”

  – The level of coordination between business line managers, risk managers, and senior management differs across banks

  – Emerging Practice has quantitative analysis linking risk assessments to OpLoss data

- Audit as a user, originator, validator

3. Quantification Techniques

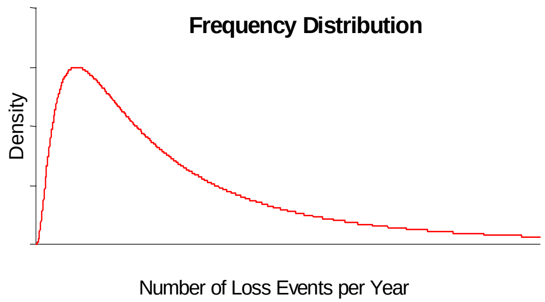
Quantification Techniques

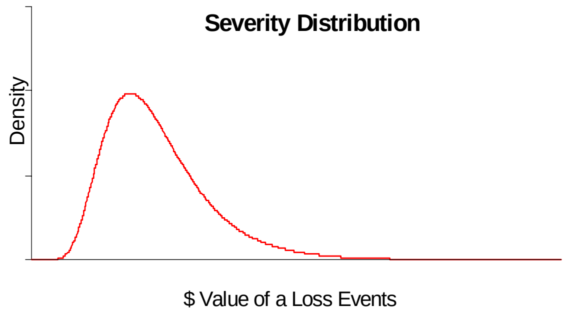
- Emerging Practice: “Bottom-up” techniques that capture specific characteristics of different business lines
  - How?
    - Techniques applied to internal data, external data, or “constructed data” (e.g., scenarios)
    - Incorporation of relevant tail events not reflected in internal loss experience (external data or scenarios)
    - Incorporation of business line assessments of inherent risks/controls
    - Capture risk mitigation/insurance
    - Recognition of correlation effects
    - Allocation of economic capital to business lines to give incentives for better risk management and controls
    - Examples of Approaches: LDA, Scorecard, Scenario, Hybrid

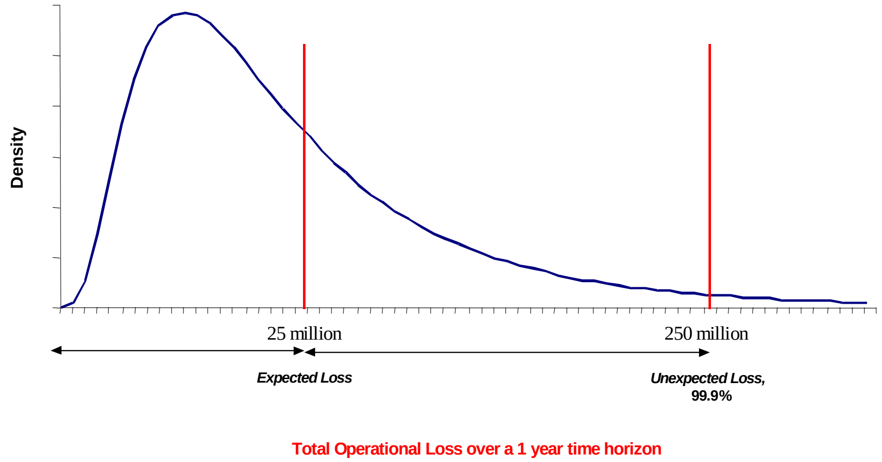
An Example of an Approach: the LDA

Generally, estimation of an operational loss distribution involves 3 steps:

1. Estimating a frequency distribution
2. Estimating a severity distribution
3. Running a statistical simulation to produce a loss distribution







Challenges for Audit

Challenges for Audit

- Audit will have a role in:
  1. Bank’s OpRisk Corporate Governance Structure
     - assessing compliance with corporate policies/procedures

  2. Bank’s OpRisk Data
     - assessing compliance with loss event data capture policies/procedures
     - assessing compliance with early warning system policies/procedures
     - assessing compliance with business line risk assessment policies/procedures

  3. Bank’s OpRisk Quantification Techniques
     - assessing “quality” of inputs, outputs, and modeling techniques

  - Emerging OpRisk Tools can prove to be quite helpful in risk-focused audit
  - Similar challenges face supervisors