Supervisory Perspective on Corporate Credit Rating Systems and Quantification

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Disclaimer

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Outline

- Basel II key dates
- Supervisory guidance as roadmap
  - Expectations for rating systems
  - Issues with parameter quantification
    - PD
    - LGD
    - EAD
- Validation

Basel II key dates

Then and now…

- August 2003
  - Advance Notice of Proposed Rulemaking (ANPR)
  - draft supervisory guidance for **corporate credit** and operational risk
- June 2004
  - Basel Committee released the revised framework
- October 2004
  - QIS4 released
  - Retail guidance expected

Basel II key dates

Now and then…

- October 2004
  - QIS4 released
  - Retail guidance expected

- January 2005
  - QIS4 data to be submitted

- 2005 – 2007
  - work, work, work (for banks and supervisors)

- January 2007
  - parallel run for advanced approaches

Corporate Supervisory Guidance

Supervisory guidance serves as template

- Interdependent components
  - Rating Systems
  - Quantification
  - Data
  - Control Mechanisms

Focus of this presentation

- IRB standards reflect supervisory expectations

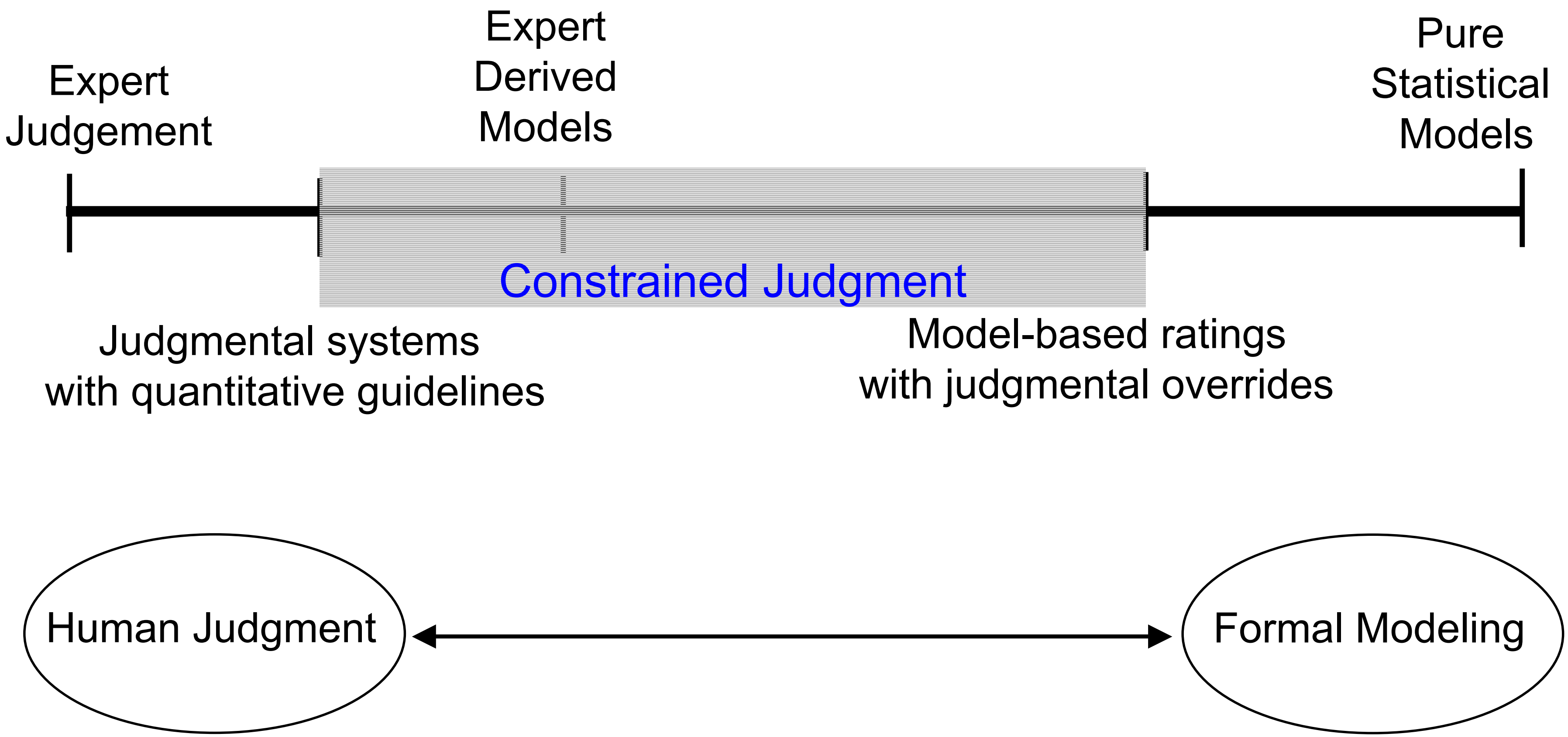
Corporate Credit Rating Systems

Ratings, the "R" in IRB

- Requirement for two-dimensional systems
  - Obligor vs loss severity
- Consider <u>obligor</u> ratings
  - Mechanism to assess riskiness of borrower (likelihood that the borrower will default)

Rating Assignment Techniques

Spectrum of Techniques



Rating Assignment Techniques

- Various techniques are used across banks and for different portfolios within a particular bank

- Nothing inherently better about being on one end of the spectrum or the other

  – Expectation is not for all systems to be pure statistical models
  – All systems present challenges
  – Support and documentation are imperative
  – You won't really know how good a system is until you collect the data (simple assertions don't cut it)

Ratings Philosophy

- You might see reference to “Point in Time” or “Through the Cycle” philosophy
  - Meant to reflect endpoints on philosophy spectrum
  - Terms lack a consistent definition
  - Banks aren’t generally at either end of spectrum
- Banks must adopt a philosophy
  - How much migration is expected when economic conditions change?
- Capital management must be consistent with philosophy (avoid shortfalls during downturns)
  - How will capital needs be impacted by ratings changes?

Rating System Observations and Expectations

What we've seen

- Every bank has been surprised (a 6 wasn't always a 6)
- Documentation often lacking or not reflective of reality
- Leading banks use their data in efforts to continuously improve systems
- Leading banks learn from more seasoned portfolios, and from mistakes

Rating System Observations and Expectations

What we still need to see

- Articulation of ratings philosophy
- Formal linkage of philosophy to capital planning
- Improved stress testing
- More validation work

Parameter Quantification – Selected Topics

Continue use of supervisory guidance as backdrop

- Four-stage framework for parameter quantification
  - Data
  - Estimation
  - Mapping
  - Application

- We'll highlight some specific issues

Parameter Quantification – PD

<u>Issue: Probability of Default (PD) Mapping</u>

- Mapping is the process of establishing a correspondence between reference data and the current portfolio

- Two broad approaches

  - <u>Obligor mapping</u> – each obligor mapped to reference data based on individual characteristics

  Example – direct application of a Merton style default model

  - <u>Grade mapping</u> – "typical" obligor for a grade is established; that entity is mapped to the reference data

Parameter Quantification – PD

What we've seen

Example – economic capital

- "Our "5" rating is equivalent to S&P BBB. We'll apply the published default rate to all 5-rated credits."

- "Our grade 5 is like Moody's Baa. But we also have individual default estimates for some obligors. We'll average all those individual estimates. The default rate we apply to grade 5 credits is the average of the Moody's rate and the average of individual estimates."

Parameter Quantification – PD

Shortcomings we've seen…

- Insufficient attention was paid to this very important process
- External mappings were asserted; little or no formal support
- For banks using some internal default data, no consideration given to concept of internal mapping

Parameter Quantification – PD

Expectations for IRB

- Robust comparison of data elements for obligors in the portfolio to the reference data
- Consideration of impact of different mapping approaches
- Mappings to historical internal data are necessary
- Mappings need to be updated and reviewed

Parameter Quantification – LGD

<u>Issue: Loss Given Default (LGD) Data</u>

Shortcomings we've seen

- Insufficient data histories
- Insufficient sample size
- Inconsistent default definitions
- Difficulty tracking facilities "cradle to grave"

Example – fully cash collateralized obligations
- Realized LGDs of 35%
- Why? What is the best estimate?

Parameter Quantification – LGD

Expectations for IRB

- Use of IRB default definition for quantification of PD, LGD and EAD

- Minimum of seven years of data

- Data must include information to calculate expected loss (eg. market prices or cash flows, timing and discount rate)

- Data must include facility characteristics (eg. seniority, security, industry, etc.)

Parameter Quantification – LGD

Expectations, continued

Hot Topic

- Reference data must include periods of high credit losses

The Good News

- Banks have been collecting more and better data
- References are available
  - Rating agency and academic research
  - Some vended models coming on line

Parameter Quantification – EAD

Issue: Exposure at Default (EAD) Estimation

Shortcomings we've seen

- Very limited internal estimation
- Heavy reliance on limited publicly available info
- Same data issues as LGD have impaired thoughtful estimation

Parameter Quantification – EAD

Expectations for IRB

- More:
  - Internal data collected
  - Analysis of potential drivers of exposure
  - Consideration of bank culture (eg. monitoring and workout)
  - Research of estimation methods
    - Cohort method
    - Fixed horizon method

Validation

A few thoughts on validation

- Validation is the application of various tools to assess the performance of the IRB system
- Validation covers both rating assignment and rating quantification
- A comprehensive validation process includes a **timetable** for activities, the **tests and analyses** to be performed and **actions** to be taken in response to findings

Key Point

- Validation is more than back-testing

Validation

Supervisory guidance presents a broad approach to validation:

Developmental Evidence

- Logic of the approach, conceptual soundness
- Statistical testing done prior to use

Ongoing Monitoring

- Process: check that methods are applied as intended
- Benchmarking: compare to relevant alternatives

Outcomes Analysis

- Back-testing and similar types of evaluation

Takeaways

- The bar has been raised
- Support and documentation are imperative
- Rating philosophies must be articulated and explicitly linked with capital planning
- Think about validation broadly
- Collect the data… and analyze it!