

# **Discussion of “Risk Assessment for Banking Systems” by H. Elsinger, A. Lehar, M. Summer**

**Til Schuermann\***  
**Federal Reserve Bank of New York**

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\* Any views expressed represent those of the author only and not necessarily those of the Federal Reserve Bank of New York or the Federal Reserve System.

*“Europe simulates financial meltdown”*

*(Headline in FT, April 10, 2006, p.2)*

## Two channels for systemic risk

- DeBandt and Hartmann (2002)
  - Narrow contagion
  - Broad simultaneous shock
- Narrow: may result in downstream defaults (“domino effect”)
- Broad: big shock resulting in widespread direct defaults
- Which one matters more?
  - Frequency
  - Severity
- Can it be prevented, and at what cost?

## All 3 papers address “joint risk” issue

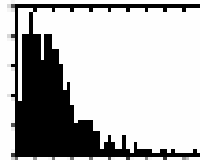
- Especially at the systemic level, hard to separate market and credit risk
- Requires joint treatment
  - Common factors (bottom-up)
  - Aggregation with inter-risk correlation (top-down)
  - “Joint risk instrument” (direct)
- Elsinger, Lehar & Summer plus Barnhill & Souto examples of bottom-up
- Avesani, Pascual & Li example of common (credit default swaps)

# Risk management + network analysis

- Elsinger, Lehar & Summer combine modern risk management tools with network analysis
  - Joint treatment of market & credit risk
  - Address question at the system level (for them, Austria)
  - Bank are connected to each other (network)
  - Network is “open”
- Take advantage of detailed “systemic balance sheet” information
- This is a new approach with great promise
  - Explicit “system level” analysis
  - Combines both channels of systemic risk
  - Technical innovation: allow for uncertainty in Eisenberg & Noe (2001) model

## Credit Risk

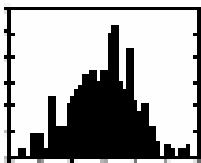
Distribution of mean default rate  
(common factor)



Scenario

## Market Risk

Joint Distribution of  
FX, interest rate, and  
stock market changes



Scenario

exposure  
Bank 1

exposure  
Bank 2

Inter bank loans  
exposure is  
credit risk

## Operational Risk

Distribution of  
operational losses

Scenario

## What matters?

- Broad is more important than narrow
  - But, contagion, while rare, can “wipe out major parts of the banking system”
- Bankruptcy costs / failed bank resolution drive contagion effect
  - Effect nonlinear: past some point, contagion spreads rapidly
- It's cheap to avoid major contagion
  - For 99.9% confidence level, just 0.12% of banking system assets

## Some surprises & questions

- Authors treat market & credit risk, not ops risk
  - Ops risk said to have very little impact on results
- Market risk seems very important
  - 0.5% tail of market risk-only distribution is 1.62% of total bank assets
  - 0.5% tail of credit risk-only distribution is 0.77% of total bank assets
  - But what is the 0.5% tail of the joint distribution?
- Kuritzkes, Schuermann & Weiner (2005) report 0.1% tail of loss distribution for US banking system is 0.7% - 2% of total (US) bank assets



## Some surprises & questions (cont'd)

- Split between market & credit is different from industry benchmarks
  - Kuritzkes, Schuermann and Weiner (2003) report 20% market (includes ALM), 55% credit and 25% operational (includes “business risk”)
  - Rosenberg & Schuermann (2006) find 8.5% market (w/out ALM), 53% credit and 38.5% operational (w/out “business”)
- Suggest that operational risk may be quite important
  - Basel 2 is “targeting” about 12% of total

## Guide for policy makers

- First-order worry: broad channel, direct effects
  - Promote good risk measurement & management at the bank level
  - Allows for more “decentralized” supervision
- Worry less about the harder-to-spot contagion
  - Detailed knowledge about inter-bank exposures not so important
  - Liquidity injection & efficient failed bank resolution as systemic crisis medicine
- Don't worry about ops risk??

## Some comments on Barnhill & Souto

- Explicit joint treatment of market & credit risk
- Treasuries (domestic) significant part of bank balance sheets in Brazil
  - Typically more than half, sometimes 80%!
  - In US, US Treasuries made up 0.5% of total bank assets in 2005Q4
- Point out importance of accounting for bank-level risk heterogeneity
  - Bad idea to “lump”
  - If you must, do it by creditworthiness
  - Consistent with theoretical & empirical results of Hanson, Pesaran & Schuermann (2006)
  - Supports idea of “decentralized” supervision

## Some questions for Barnhill & Souto

- Treatment of GOB awkward
  - 1-factor model tied to Bovespa
  - Should we think of the Bovespa as the appropriate filtering of GOB-default relevant information?
  - Cart leading the horse?
  - Why not a yield spread to “risk-free”?
  
- How is operational risk treated?
  - Is it captured by “idiosyncratic” component?
    - By bank
    - For GOB

## Some comments on Avesani, Pascual & Li

- Clever use of modern credit derivative instruments to link market & credit risk
- Innovative way to think about financial sector monitoring (“centralized” supervision)
- Recognize importance of bank heterogeneity

## Some questions for Avesani, Pascual & Li

- Why latent (unobserved) instead of observable risk factors?
  - Hard to do specific policy what-ifs on latent
  - Factor dynamics? Forecasting?
- How close to conditional independence is the model?
  - Without constraint of working with observable factors, should be very close
- Is the model identified?
  - How is it possible to independently vary bank return correlation  $\rho$  and bank PD  $\pi$ ?
  - Is there a distinction between conditional & unconditional PDs?

**Thank You!**

**<http://nyfedeconomists.org/schuermann/>**