



**Economic and Financial Linkages in the Western Hemisphere
Seminar organized by the Western Hemisphere Department
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Discussion by

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Discussion of:
“Factor Model for Stress-Testing
with a Contingent Claims Model
of the Chilean Banking System”

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Some (Financial) Surveillance Objectives

- Macro-Financial Linkages
- Vulnerabilities
- Forward Looking Indicators

Advantages of: Contingent Claims Analysis

- Market-based, forward looking
- Focus on risks, not returns/levels
- “Prices” default, which is otherwise hard to model
- Quantitative

Disadvantages of Contingent Claims Analysis

- Derived data based on “model” with various assumptions
 - Normality of return distribution
 - Simplistic notions of liabilities (short-term deposits + $\frac{1}{2}$ long-term deposits & debt)
- → Additional variation in “data” used in next stage; variables measured with error requires special econometrics

Disadvantages of Contingent Claims Analysis

- Market data not necessarily more “correct” than accounting data, depends on market structures (e.g. liquidity and investors)
- Equity market prices can “overshoot” and this is more likely during stressful periods when distress barriers of more interest

Advantages of Principle Components Analysis

- Multiple variables concentrated on more manageable number of “factors”
- Provides orthogonal factors that, by construction, satisfy statistical criteria for OLS regression frameworks
- Easy to implement

Disadvantages of Principle Components Analysis

- Can't connect “factors” with real life macro variables
- Arbitrary cut-off point for choosing the number of factors
- “Rotations” are not unique

Issues for Contemplation

- Combined derived data (implied assets) from CCA with “factors” from PCA means VAR and IRF are using manufactured data from two different methods. What are the statistical properties? (e.g. standard errors)

Deep Issues for Contemplation

- Applied to multiple banks in Chile
 - Each bank examined individually, but the existence of an inter-bank market (at the very least) suggests that derived measures of (and actual) defaults are correlated across banks.
 - Ideally would like to tie a “stress test” to a particular macro variable or event—use of PCA does not allow this.
 - Diversity across banks makes conclusions difficult—types of banks, types of assets, types of clients all subsumed by equity prices and simple structures of liabilities. (Would it have picked up a Northern Rock?)

Deep Issues for Contemplation

- Does this approach get at the probability of a banking system having difficulty? (e.g. systemic risks?)
- Can cross-border risks be identified?
- Will actual defaults (or close calls) look like the results from the analysis? (What are Type I and Type II errors?)
- Macro to financial addressed, but what about the reverse--financial to macro?

Conclusions

- Approach has some good qualities and moves in the direction of more dependence on market based information (forward looking), probably better than that based on non-market information.
- Like any “model” has lots of moving parts that interact in ways that need further exploration.