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"Regime switches in volatility and correlation of financial institutions" by Boudt, Danielsson, Koopman and Lucas

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Summary

- Econometric model for the volatility of bank returns and their correlation
- Two regimes: high and low interbank correlation
- The probability of switching between the low and high volatility regime depends on indicators for financial stress (like VIX, TED spread)
- Main empirical findings
  - Within each regime, correlations are constant over time
  - High correlation regime more likely when financial markets show signs of stress

Model structure

The model is in four parts:

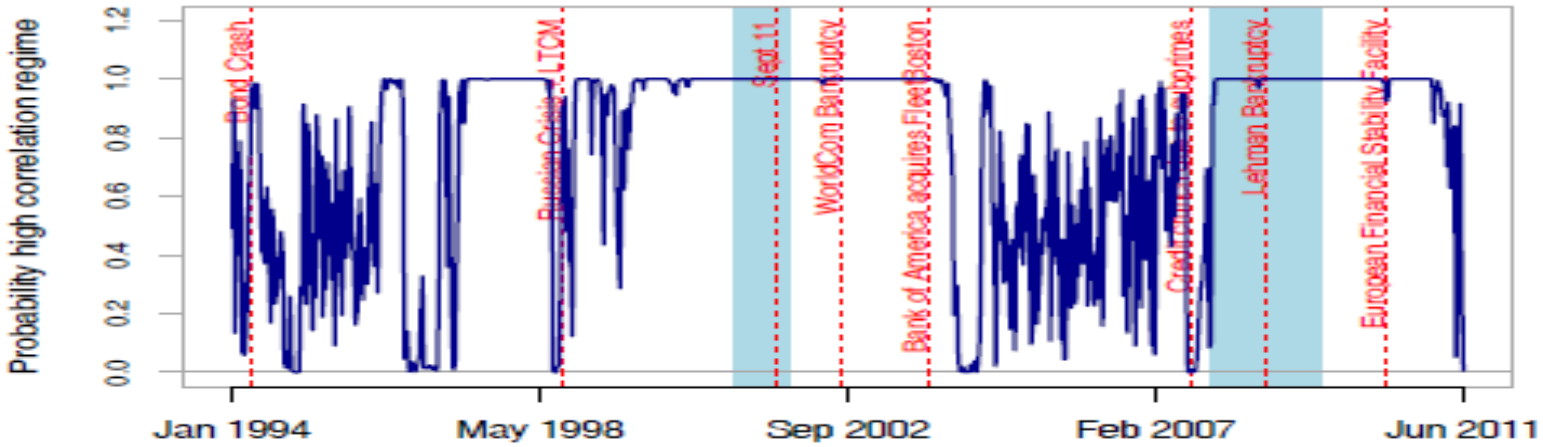
1. A model for the marginal distribution of the returns
   - This is a fairly standard GARCH type model
2. A model for the interbank return dependence
   - Here a student-t copula is used, with a correlation matrix that is regime-dependent
3. A model for the time variation of the correlations
4. A model for regime switching probabilities
   - It is a function of observable variables. Clever, no need to estimate latent variable process

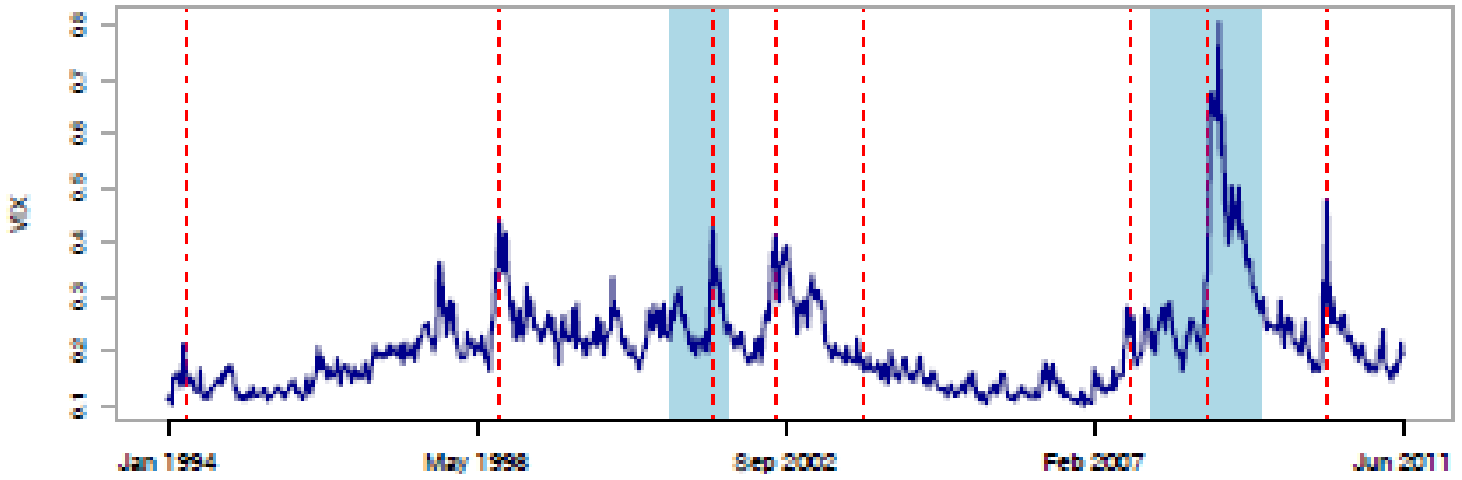
Questions and remarks on the model

- You specify a separate marginal for each bank
  - That seems unnecessary and also makes the model difficult to use for prediction, as the composition of the banks changes over time
  - Use one good, robust model here
- Does the t-copula have tail dependence?
  - That would be a desirable property
  - Does the tail dependence vary over regimes?
- The model for the dynamics of the correlations is not very insightful and turns out to be redundant
  - Maybe leave it out altogether?

Empirical results

- The estimated correlations vary over time, but from the graphs it is hard to see the relation with the financial stress indicators
  - It would be useful to show the estimates of that part of the model
- In any case, in Figure 6 there seems to be little relation between the probability of being in the high correlation regime and the economic state
  - See next slide for relation with VIX


Probability high correlation regime
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Bond Crash
Russian Crisis - LTCM
Sept 11
WorldCom Bankruptcy
Bank of America acquires FleetBoston
Credit Downgrades by Moody's
Lehman Bankruptcy
European Financial Stability Facility
Jan 1994
May 1998
Sep 2002
Feb 2007
Jun 2011


VIX
Jan 1994
May 1998
Sep 2002
Feb 2007
Jun 2011

Some concluding suggestions

- The model does not seem very specific for banks
  - The setup could in fact be used to model return dependence within any sector
- The relation between the economic motivation (section 2) and the model should be strengthened
- In the empirical section, the relation between the economic states and the volatility and correlation deserves more attention