Discussion of "Modeling credit contagion via the updating of fragile beliefs"

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The usual disclaimer applies.

This is a great paper (two, actually).

- equilibrium asset pricing model for defaultable bonds in the presence of contagion risk
- explicit channel for spillovers: agents update fragile beliefs about uncertain states of the world.
- Provides a much better fit to euro area CDS spreads during 2004-10 than a reasonable benchmark from the affine class.

What I will do

- A look at data & contagion.
- five comments/questions.

Five-year CDS for euro area member states

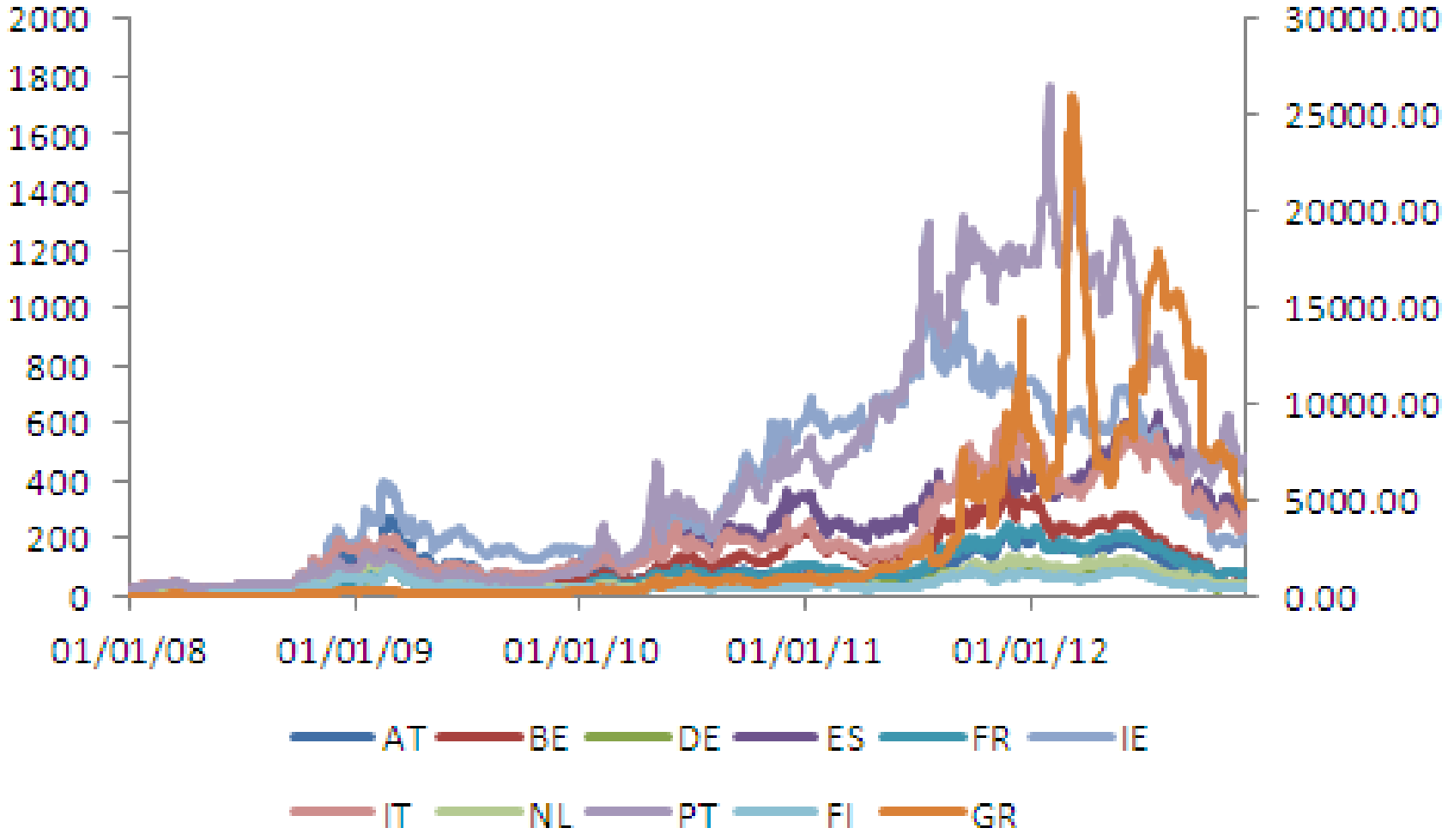
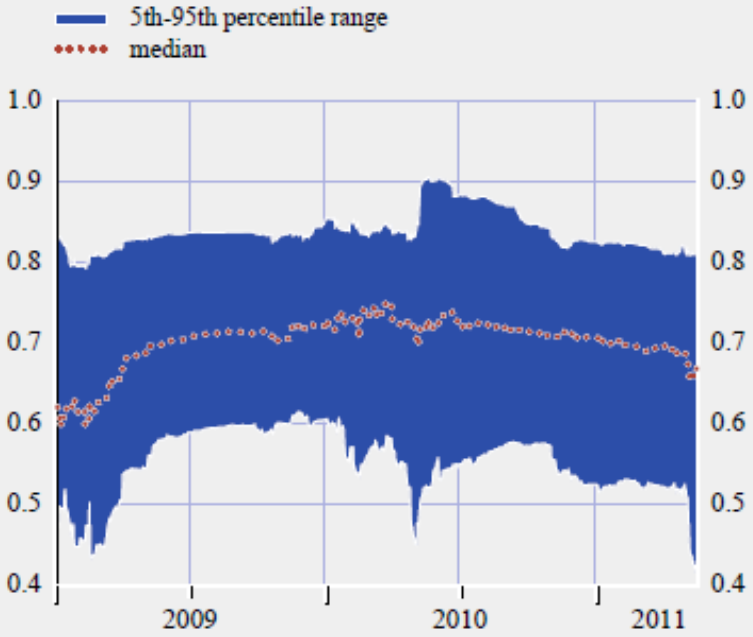


Chart A Time-varying correlation between pairs of euro area sovereign CDS premia

(Jan. 2009 – May 2011; senior debt; five-year maturity)

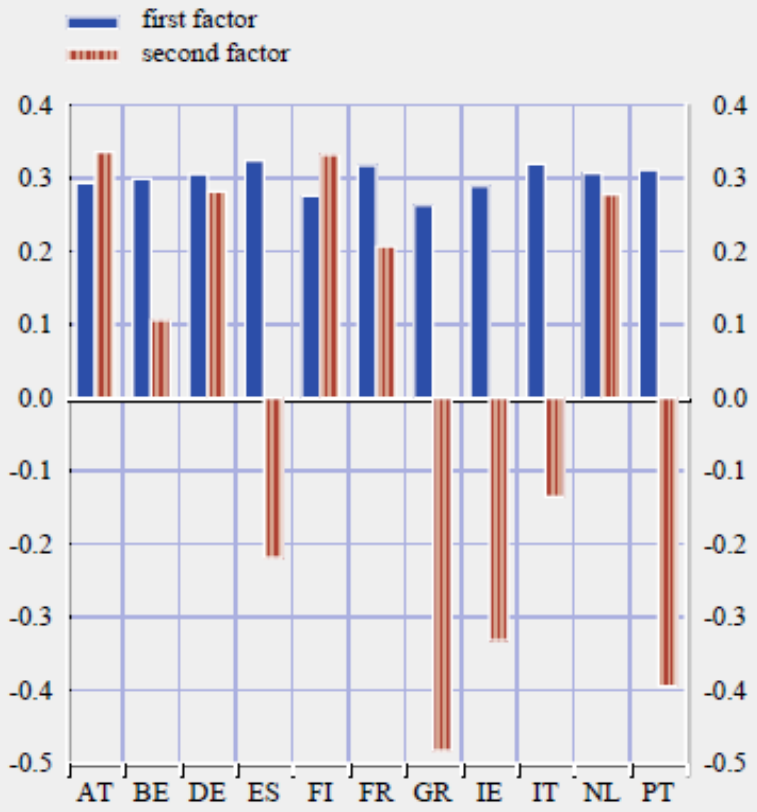


Sources: Thomson Reuters and ECB calculations.
Notes: For eleven euro area countries, all 55 pair-wise correlations between daily changes of sovereign CDS premia are computed over moving windows of 260 business days.

ECB Financial Stability Report, June 2011, Box. 5

Chart B Coefficients in regressions of euro area sovereign CDSs on first two principal components

(Apr. 2010 – May 2011)



Sources: Thomson Reuters and ECB calculations.
Notes: For eleven euro area countries, the first two principal components are drawn from the time series of standardised daily changes in sovereign CDS premia. The bars depict the loadings (regression coefficients) of the standardised CDS premia on the two principal components.

ECB Financial Stability Report, June 2011, Box. 5

Much comovement. Contagion?

The term contagion means different things to different economists.

For example, usage in central bank board member speeches vs. Forbes and Rigobon (JF, 2002), Forbes (2012).

In this paper, contagion arises because agents with fragile beliefs are uncertain about the 'state of the euro area' and the state probabilities; comovement in spreads is due to robust updating of beliefs.

Contagion and the euro area debt crisis

"How much is the cost of sovereign debt refinancing higher in Italy because there is the possibility of a (second) credit event in Greece?".

Little intuition about this from this paper.

Uncertainty about a common hidden state is *one possible* way to capture the cross-sectional dependence in the data.

An alternative is contagion through counterparty credit risk (Jorion and Zhang (JF, 2009)). A possible motivation to delay a default (Greece).

Financial links are priced in CDS contracts (Kallestrup, Lando, Murgoci (2012)).

Interpretation of the state

In the euro area debt crisis, the interpretation of the two states is less clear:

- political uncertainty in healthy countries regarding a Greek bail-out?
- breakup of the euro area and/or redenomination risk?
- confidence in European policy makers?

The interpretation of the states, and the number of states, are determined outside of the model.

Perhaps, the paper's contagion channel is most intuitive in a corporate/frailty factor setting. Think Enron/Worldcom in 2001/02. Also CDGH: "Is credit event risk priced? Modeling contagion via the updating of beliefs", 2010.

Empirical implementation

There are no defaults in the sample (2004-2010). Thus no updating of beliefs from actual defaults.

Theory: Agents receive "continuous signals that provide information about the hidden state", eqn (6)-(8).

Signals come a bit out of nowhere. Fundamental shocks to the economy, but default is modelled in reduced form.

Empirical implementation: $K = 1$. Must be related to the innovation term that drives the $\pi_s(t)$ in the empirical implementation

Is the empirical benchmark a strawman?

[No:] The magnitude of the pricing errors from in-sample OLS regressions are the lowest that a linear affine term structure model can achieve.

[Yes:] One principal component can capture the level shift, but not at the same time capture the wedge between core and peripheral countries. For the latter, at least two principal components are required.

Conclusion

Great paper.

To my knowledge, first rigorous general equilibrium asset pricing model that allows for an explicit contagion risk channel – and provides a good empirical fit to a panel of sovereign CDSs during the European debt crisis.