BANQUE CENTRALE DU LUXEMBOURG

EUROSYSTÈME

Modelling financial turmoil through endogenous risk & risk appetite

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Summary of model

- Assumptions
  - Traders subject to constraints (VaR)
  - Fire-sale externalities
  - Rational expectations equilibrium
    perceived risk = actual risk
- Result: Endogenous Risk
  - risk-neutral traders appear to display
    time-varying risk appetite
  - Correlation although fundamentals indep.
  - Countercyclical risk-premia and volatility

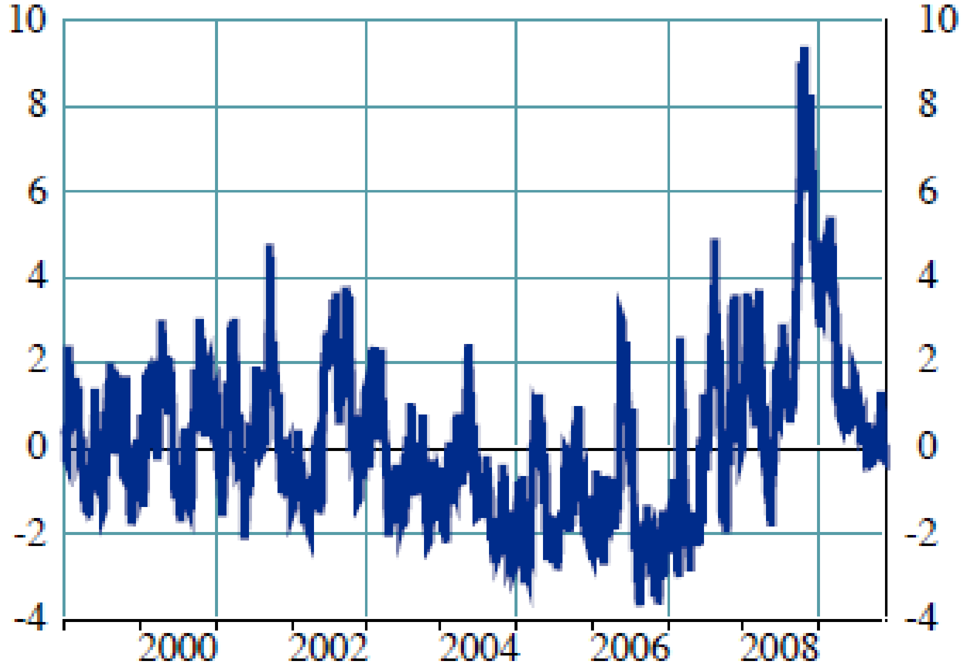
Observations by Zigrand

1. Fallacy of composition (Basel II):
   individually prudent behaviour is jointly risky
2. Social costs exceed private costs
   (liquidity/capital provider of last resort)
3. Sudden shifts in risk appetite (herding)
   individually efficient, socially inefficient
4. Leverage is pro-cyclical + capital matters
5. Risk-sensitive rules affect correlations
6. Option market consistent w/ endogenous risk

Remarks

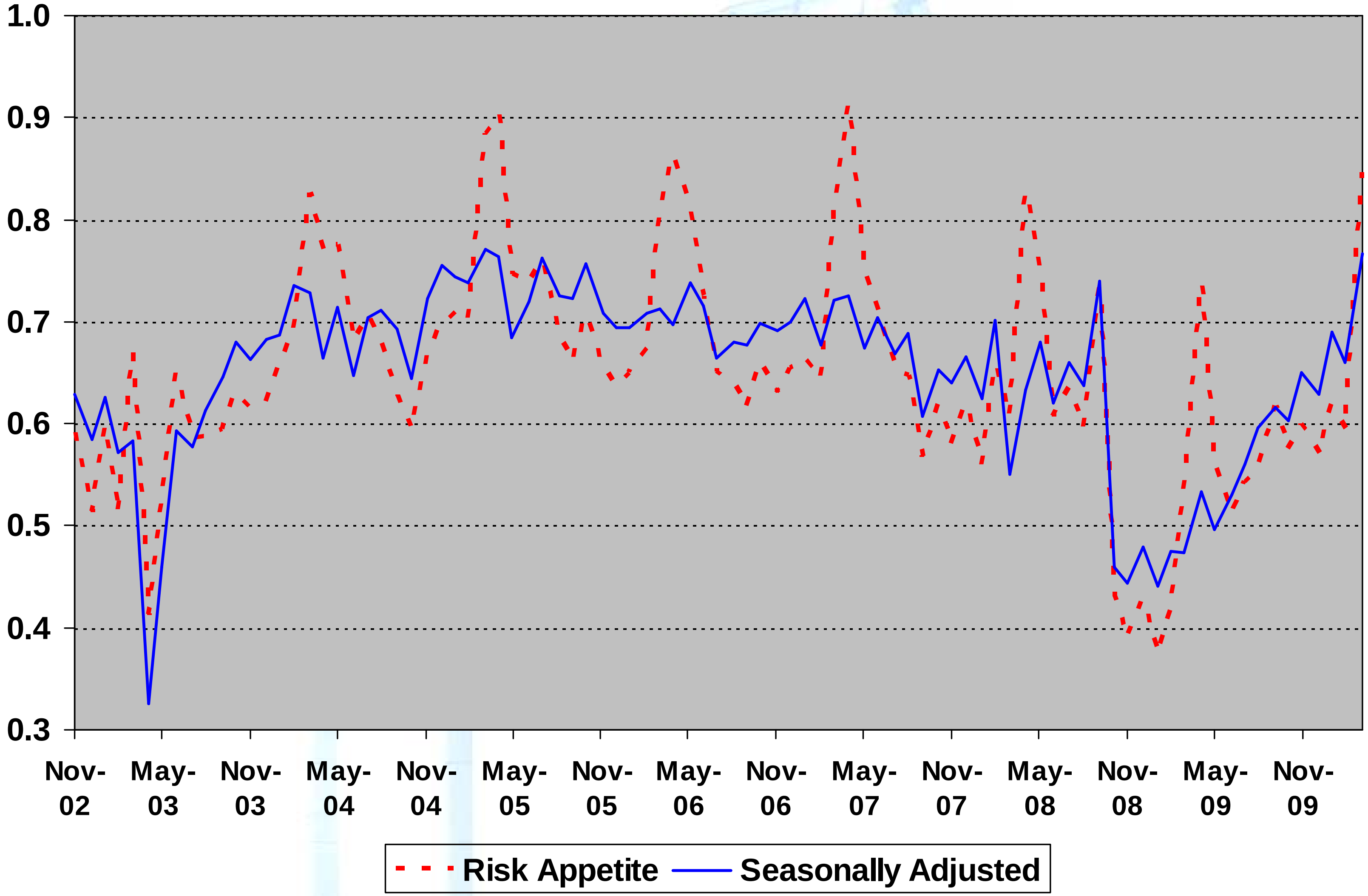
- Capital requirements
  - Variation capital buffer
  - Contingent capital bonds
  - Many other counter-cyclical measures
- Interest rate determined exogenously
- Time required for risk appetite to return
  - Early warning indicators
  - Asymmetric dynamics?

ECB risk aversion indicator (S18)



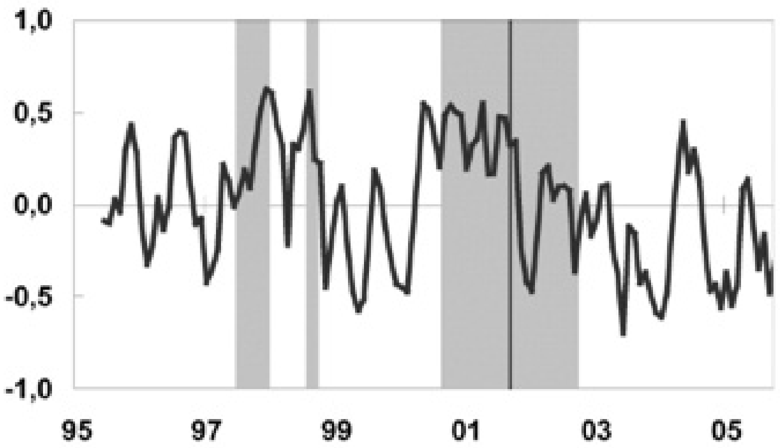
Sources: Bloomberg, Bank of America Merrill Lynch, UBS, Commerzbank and ECB calculations.
Notes: The indicator is constructed as the first principal component of six risk aversion indicators available at weekly frequency. A rise in the indicator denotes an increase of risk aversion. For further details about the methodology used, see ECB, "Measuring investors' risk appetite", *Financial Stability Review*, June 2007.

BCL Risk Appetite Index (euro area)

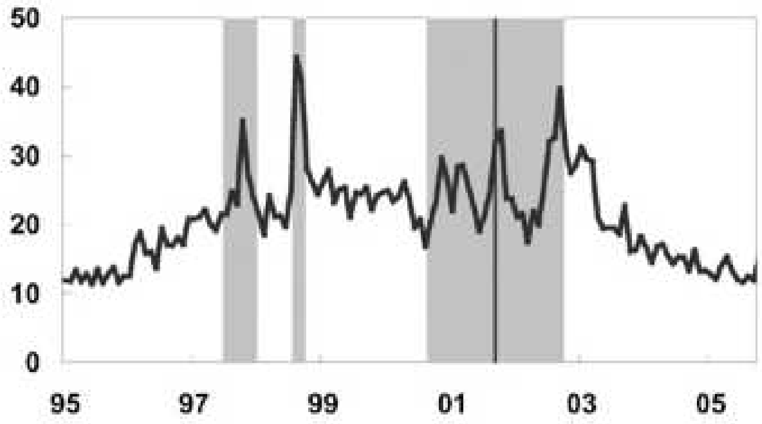


Other major risk aversion indices

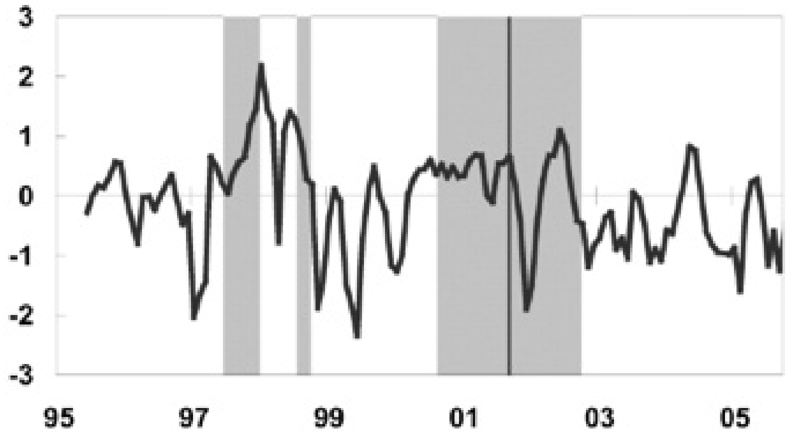
GRAI calculated on the stock market



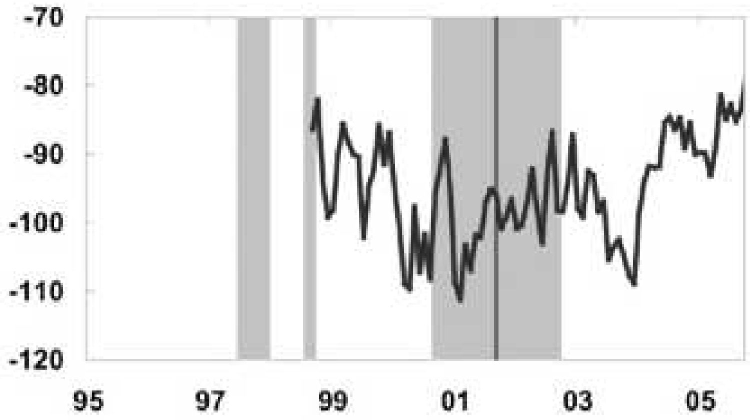
VIX



RAI calculated on the stock market



ICI



Conclusions

1. Systemic approach is necessary
2. Herding can be individually rational although socially costly
3. Counter-cyclical capital requirements are not enough.
4. Risk aversion/appetite indicators differ
5. Are we missing asymmetries?