Discussion of Huang/Zhou/Zhu

„Systemic Risk Contributions“

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Central issues

- **Aim:**
  Find measure to quantify systemic financial risk using market data (price of insurance against systemic financial distress)
- Calculate level of systemic risk for the banking sector and understand the sources of risks
- Measure the marginal contributions of individual banks
- Challenge: Identify key driving factors for systemic risk

- Method: Use market data (CDS Spreads, Stock market correlation) to identify systemic risk components
  Sample: Banks in US stress test; compare with other measures
- Ambiguious what we learn from that exercise
  Key result: Size effect as dominant factor

Approach

- **Distress insurance premium (DIP):**
  conditional expectation of portfolio credit losses under extreme conditions (that is: given threshold loss of the underlying portfolio).

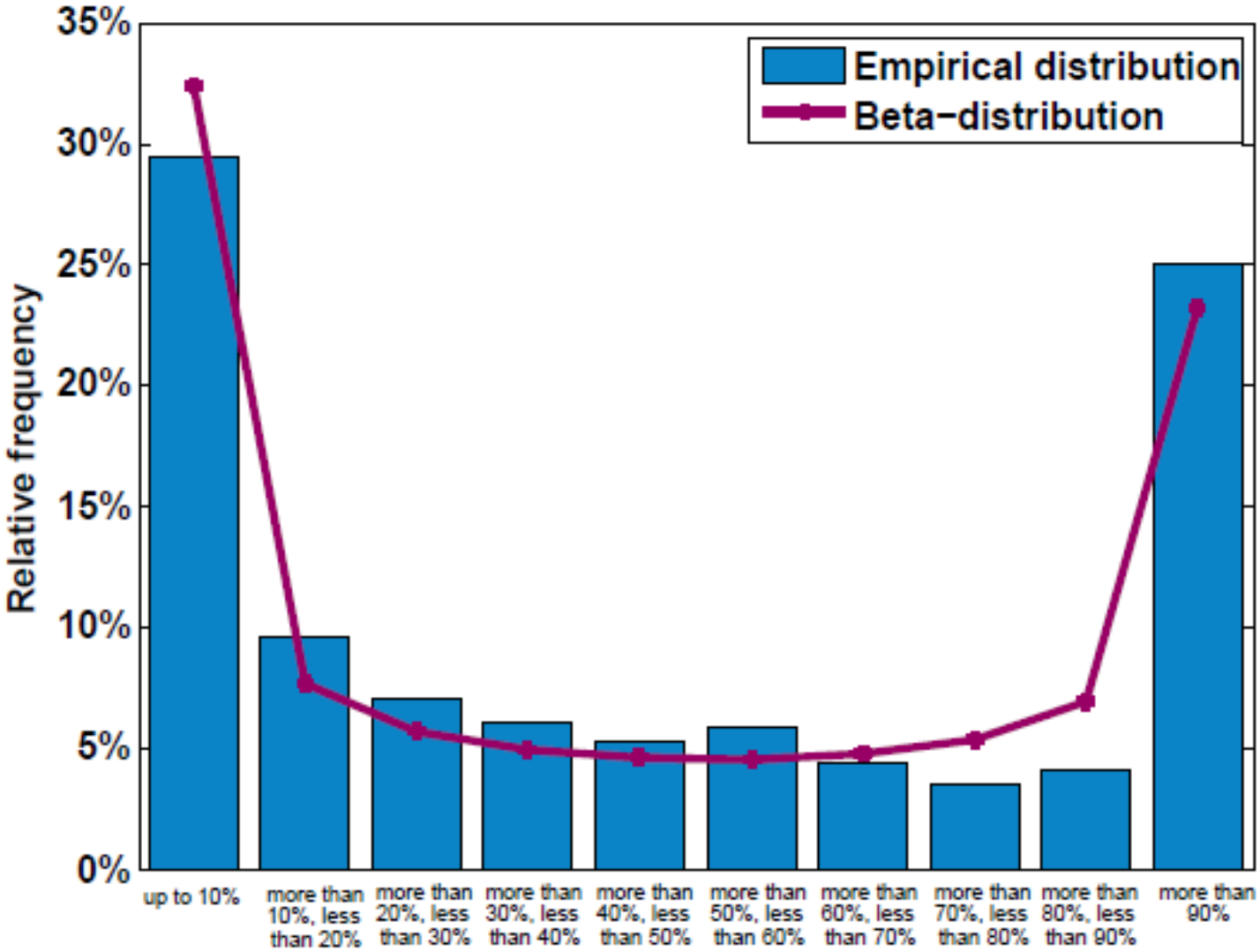
$$\mathrm{DIP} = \mathrm{E}^{Q}\left[L \middle| L \geq L_{\min}\right]$$

- Measure for marginal contributions of specific banks:
- Expected loss from each subportfolio conditional on the total loss for the full portfolio exceeding a given threshold (additive measure).

$$\frac{\partial \mathrm{DIP}}{\partial L_i} \equiv \mathrm{E}^{Q}\left[L_i \middle| L \geq L_{\min}\right]$$

- Inputs: default probabilities, bank liability size, and correlations
- Two key market based default risk factors:
- Asset return correlations among banks
  - estimated from equity price co-movements
- Probability of default (PD) of individual banks –
  derived from CDS spreads
- Average LGD assumed to be 0.55
  - LGD drawn from unimodal distribution for the simulation
  - But: LGDs on the interbank market seem to follow a u-shaped distribution (see Memmel/ Sachs/Stein (2011))

    => Robustness of the results?



Memmel/ Sachs/Stein,
Contagion in the Interbank Market with Stochastic Loss Given Default,
Deutsche Bundesbank 2011

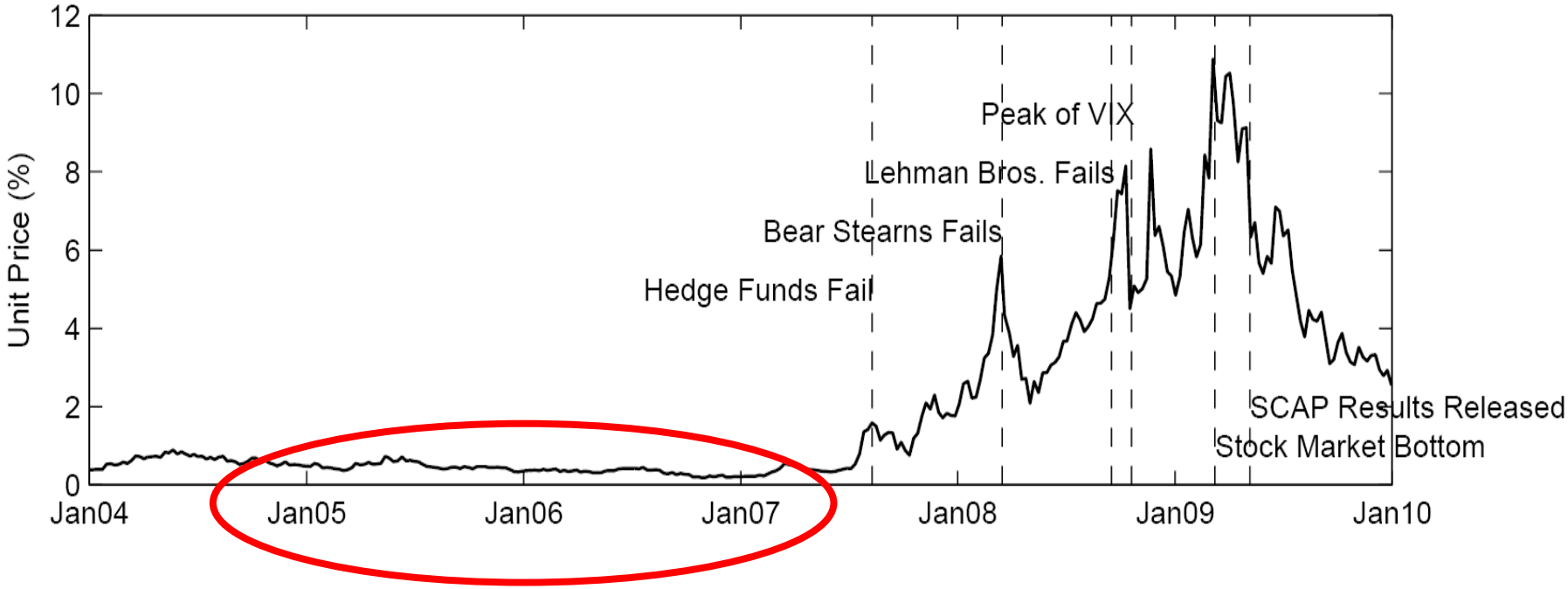
Problems

- Market data:
- + high frequency data, forward looking
- - rely on market efficiency:
  - Cannot include those systemic players with no market data
  - Behavioral finance literature (bias, herding): scepticism about reliability
  - Instability over the cycle (underestimate risk in „good“ times and overestimate risk in „bad“ times)
  - Role of implicit guarantees for systemically relevant institutions
  - Cannot properly address externalities involved

→ CDS spreads are noisy forward looking indicator of systemic risk

Results

Figure 2 Systemic Risk Indicator of US 19 SCAP Banks



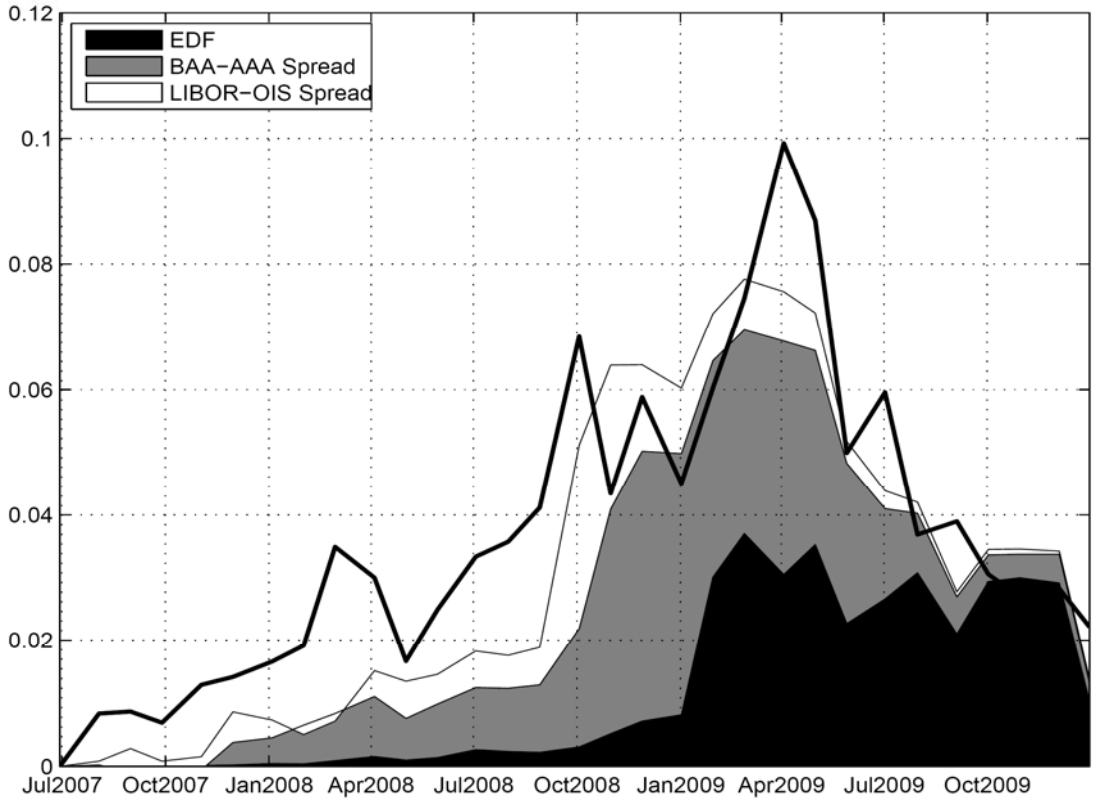
No forward looking indicator to spot build up of systemic risk

Results

- PD estimated from the CDS market include 3 components:
- (1) compensation for expected default losses;
- (2) default risk premium for bearing the default risk;
- (3) liquidity or uncertainty risk compensations.

The increase in systemic risk of the U.S. banking sector during the 2007-09 financial crisis was initially driven mainly by heightened default and liquidity risk premia and later by the deterioration in actual default risk.

Figure 3 Contributing Factors to the Systemic Risk Indicator



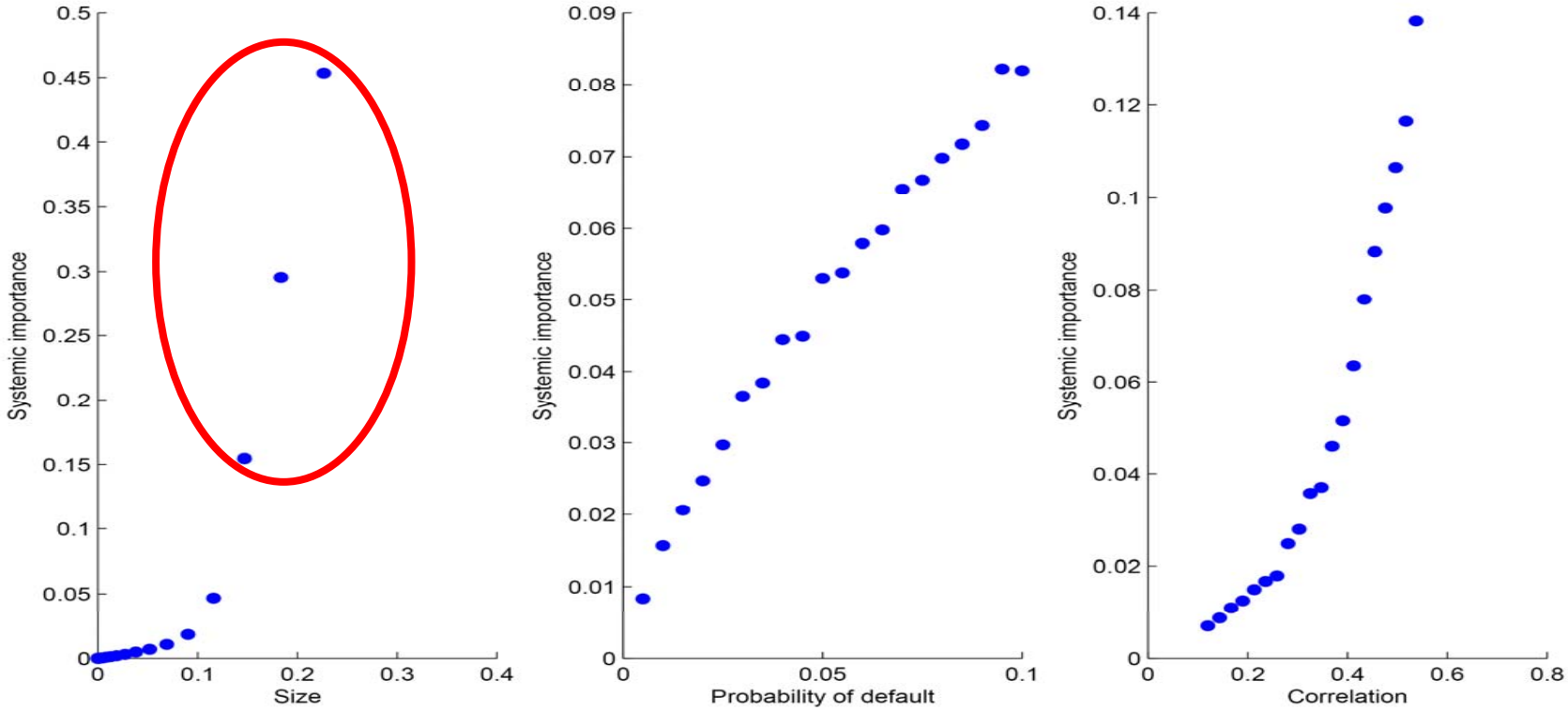
Ambigous interpretation of increase in liquidity/default risk premia:

Signal of deterioration in future actual default risk or

Signal to fight more aggressively against pure liquidity problems?

Results

- A bank's contribution to the systemic risk indicator appears to be linearly related to its default probability but highly nonlinear with respect to institution size and asset correlation.



Small number, hardly any variation in size

What do we learn? New Insights?

- Loss estimates ín line with SCAP stress test scenarios
- Can we dispense with confidental data?
- Challenge: Spot the building up of exposure to systemic risk: forward looking indicator
  CDS spreads as indicator of future vulnerability
  (5 year vs. 1 year spreads?
- But: spreads driven by volatility of risk premium ~ ambiguous information ~ Interpretation; Causality?
- Identify sources of systemic risks?
  Size effect as dominant factor (no variation).
  What about leverage?
  Identify channels of contagion!
  ~~ Derivative trading, „gambling,“ leverage, pure size?

- Superior approach to assess systemic risk:
  - Stress testing exercises based on detailed supervisory data: Take an actual matrix of interbank exposures and simulate various channels of contagion like domino effects, liquidity shortages, refinancing problems, etc.
  - Problems of data availability (especially cross-border interbank exposures) ~~ Need to collect additional data
- Be careful: Stress Tests provide public information

Conclusion

- Impressive amount of work
- Results ambigous
- Lots of additional work needs to be done
- Illusion to believe that we can rely on market data for monitoring systemic risk