MPI Collective Goods

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Systemic Risk in the Financial Sector

Why has it increased?

Lausanne, November 8, 2012

What is „systemic risk“

- A well established legal term (☺) : An EU Regulation establishes the European Systemic Risk Board
- Something to measure? Adrian – Brunnermeier - CoVar
- Something to tax? Acharya et al.

„Systemic Risk“

- Risk from the financial system to the economy? Risk of a credit crunch? Japan 1992 ff, Sweden 1992 ff, Switzerland 1990 ff (?), global economy in 2008
- Risk to the financial system from the economy due to a macro shock? US S&L‘s 1980, Sweden 1992, US, Germany 1931, US 2006/7?
- Risk to the financial system from problems at individual institutions and contagion?

What is „macroprudential“?

- A well established legal term (☺): Under the ESRB Regulation, the major field of action for the ESRB
- NOT microprudential – Crockett 2000
- NOT microprudential – Supervisors 2012
- ... what Spain did in the years after 2000!?
- ... what we should have been doing in the years before 2007
- Is what Spain should be doing now microprudential or macroprudential?

Contagion mechanisms 1

- Contractual Interconnectedness 1: dominos ex post: Lehman Brothers – Reserve Primary
- Contractual Interconnectedness 2: Disappearance of contracting opportunities: Lehman Brothers as a market maker, money market funds that are run upon

Contagion mechanisms 2

- Information Contagion: Lehman Brothers not TBTF has implications for other investment banks; Reserve Primary breaking the buck means that other mmmf‘s may not be safe
- Hysteria Contagion? Sunspots and equilibrium multiplicity, „hypersensitivity“ to information

Contagion mechanisms 3

- Asset price contagion: Fire sales depress asset prices, which leads to writedowns at banks with similar positions and possibly further fire sales by these banks...
- Credit crunch contagion: Defensive strategy of one institution leads to a reduction in lending, which forces their borrowers to become defeinsive as well

Fire Sale Effects

The strength of the fire sale effect depends on

- The financial robustness and capacities of potential purchasers
- The information of potential purchasers about the assets (lemons problem)
- Expectations of potential purchasers about future asset price developments (bubbles)

Market Illiquidity, i.e., a need for sharp price declines to accommodate sales (if at all), can arise endogenously all of a sudden

An aside on measurement 1

- We are talking about a multiplicity of effects
- ... in a highly nonlinear system
- ... which probably has multiple equilibria
- ... in which there is no transparency about the other participants‘s positions
- ... in which the different participants‘ positions are changing all the time, and credit risks are endogenous...

An aside on measurement 2

- Short data series
- For a nonstationary set of phenomena
- In which hidden correlations play a central role
- Where these correlations are changing all the time
- And are endogenous...

- Any notion of measurement is an illusion

An example of systemic risk

- Research 1992/3: Why are banks so exposed to interest rate risk? (EER 1994: Liquidity provision should not be combined with assumption of interest rate risk!)
- „Interest rate risk“? That is a market risk! Irrelevant for assets in the bank book! (Ten years after S&L Crisis !!!) Even today the regulation does not take account of interest-induced funding risks for bank loans

Continuation of Example

- „But we are not so exposed! We use asset and liability management for maturity matching! … well, almost.“ ... Using money markets.
- Example 1: Three banks, A,B,C. Each bank has 1 bn. EUR deposits and 1 bn. EUR 40-year fixed-rate mortgages. In addition, bank A has made a short-term loan X to bank B, bank B a short-term loan X to bank C, bank C a short-term loan X to bank A.
- If X is large, each bank is almost perfectly maturity-matched. The system as a whole…

Another example

- Example 2 (Swiss Journal 1995): 480 institutions 1,2,3,…
- Institution i borrows at maturity i-1 months and lends at maturity i months.
- Maturity mismatch at any institution: 1 month.
- System maturity mismatch: 40 years.
- System risk is hidden in the correlations of counterparty credit risks and underlying
- Typically neglected in risk assessments
- Also neglected in regulation

Are the examples surreal?

- Repo borrowing and lending as mechanisms for blowing up short positions
- Transactions chain:
  - Investor – money market fund – structured investment vehicle (sponsored by a bank) – special purpose vehicle 1 (creation of MBS CDO) – special purpose vehicle 2 (creation of MBS) – mortgage bank – mortgage borrower – real estate
  - Delusions about maturity transformation
  - Delusions about liquidity risks – due to neglect of systems effects
  - Delusions about credit risks – perhaps insured with AIG

Delusions about maturity transformation 1

- Sachsen LB, equity < €4bn., liquidity commitments to SIVs > €40bn.
- Supervisor did not apply large-exposure rules because commitments had maturities below 365 days.
- No attention was paid to the fact that assets held by SIVs and therefore the refinancing needs of SIVs had maturities of much more than 365 days.
- (In parentheses: Margin was 10 – 30 bp!!!)

Delusions about maturity transformation 2

- Gorton (2009): Subprime mortgage lending funded by MBS held by SPVs and banks financed by asset backed commercial paper and repo involved no maturity transformation because the subprime mortgage was effectively a short-term security.
- Contract designed in such a way that the mortgage as bound to be renegotiated after two years.
- Delusions about credit risk and its correlation with the underlying

Adjustable rates as a panacea?

- UK experience of late 1980s: Rate adjustments in response to high market rate of interest induce defaults and foreclosures
- High rates of interest also go along with low collateral values
- Bulding societies had insured credit risk with insurance companies – delusions about credit risk
- Problem: The „final“ asset is long term and its service provision is fixed

A note on methodology

- Partial versus general equilibrium.
- Need to look at the entire system of transactions and positions
- Need to take account of the multiplicity of contractual relations and possible correlations
- Need to take account of lack of data

Experience from Competition Policy

- There is no one model that is adequate in all situations.
- Need for improvisation with respect to the combination of models that are applied in a given situation
- Interplay between tying out models and collecting and assessing data.
- No robustness in moving from one case to the next.

A brief overview over the crisis

- Buildup of risks: Subprime lending and securitization
- August 2007 – Downgrades of AAA rated securities by several grades at once
- August 2007 – Breakdown of ABCB funding of conduits and SIVs (Gorton‘s „panic of 2007“ – except that it wasn‘t repo and the SIV‘s were taken into their parents‘ balance sheets)

A brief overview over the crisis 2

- August 2007 – Capital squeeze:
  - Taking SIVs into the parent‘s balance sheet implied a capital squeeze of the parent
  - ... In some cases insolvency from writedowns on the SIVs assets
- August 2007 – September 2008: Deleveraging, asset price declines, writedowns, further fire sales
  - Not a panic but a slow implosion
- Several breakdowns of interbank markets, smoothed by central banks

A brief overview over the crisis 3

- March 2008, September 2008: Funding breakdowns at Bear Stearns and Lehman Brothers, driven by repo runs on these banks, which had been exposed to the risks of subprime assets that they had been unable to sell.
- September 2008: Post Lehman: Contractual dominos, runs on money market funds, runs by money market funds, enormous asset price declines...

Liquidity versus solvency narratives

- Liquidity narrative: The crisis was due to a breakdown of confidence, final assets were not doing so badly, uncertainty as to where the problems were led to exagerations, defensive reactions etc.
- Solvency narrative: Losses on final assets were substantial. Because everybody had borrowed a lot (97% of balance sheets), many institutions were (and probably still are) insolvent. The liquidity breakdowns were a reaction to realizations that borrowers were insolvent.

Both are right

- There were extensive losses and extensive insolvencies
- The breakdown did take the form of liquidity breakdowns
- Some of the defensive reactions may seem excessive – except: in a Morris-Shin model, reactions to negative information tend to be concentrated in a small part of the range, so this may be endemic to the mechanisms involved.

Why so much systemic risk?

- Base losses from subprime probably were not much larger than base losses in Japan in the nineties.
- The difference was in global interconnectedness and in system fragility
- Interconnectedness through multiple contracts
- Interconnectedness through asset prices and fair value accounting

Why has systemic risk increased?

- Fair value accounting: Everything is laid open right away – individually beneficial (?) – collectively a source of contagion
- Risk management with a bias towards dealing with „measurable" risks: Use hedge contracts to get risks of the balance sheets – CDS on MBS
- ... neglecting the correlations
- ... encouraged by regulation –Basel II
- See UBS (2008)

Improvements in risk allocation?

- Past experience: System crises arise from common exposure to macro shocks, even without contagion
- Current experience: Contagion plays a major role
- ... Because hedges against macro shocks have shifted the macro risks into the domino effects
- ... Because interconnectedness has increased
- Is it clear that the new system, with global risk sharing/interconnectedness is an improvement?