

Lecture notes on risk management, public policy, and the financial system

Financial stability regulation

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Macroprudential policy

Too-Big-To-Fail

Derivatives market regulation

Macroprudential policy

Rationale of macroprudential policy

Insurance industry and macroprudential policy

Implementation of macroprudential policy

Predictors of financial stress and stability monitoring

Financial stability and monetary policy

Too-Big-To-Fail

Derivatives market regulation

Systemic risk

- Somewhat elusive term, generally used in regulatory context
- In essence, risk of financial crisis, with emphasis on
 - Interruption of credit intermediation
 - Widespread intermediary failures
 - Macroeconomic impact
 - Potential for dysfunction of payments system, “plumbing”
- Definitions vary with views on nature and causes of crises
 - Generally, emphasize endogeneity and chain-reaction transmission/contagion via trading and credit relationships
 - Less emphasis on common exogenous shocks
- Close relationship with changes to regulatory law and structure
 - And tension between lack of clear and uniform definition and new rules based on systemic risk assessments
 - **Example:** lawsuit over designation of MetLife as SIFI

Emergence of macroprudential policy

- Response to failure of regulation to prevent global financial crisis
 - Term introduced in 1979, appears in print in 1986
- Places financial stability at core of both monetary and regulatory policies
 - Regulatory policy:** take account of stability of financial system as well as soundness of individual intermediaries
 - Monetary debate:** should/can it take more than price stability and possibly employment into account
- Not entirely new, deposit insurance has run-prevention rationale

What risks does macroprudential policy address?

- Key task: identifying risks and imbalances
- **Procyclicality**
 - Mechanisms in the financial system that reinforce booms and busts
 - Market-based intermediation more procyclical than bank-based
 - Procyclical capital
- Address (→)public-sector guarantees, Too-Big-To-Fail
- Externalities
- Endogeneity
- International imbalances: macroprudential policy to inhibit domestic response to swings in capital flows
 - (→)**twin crises**: typical coincidence of banking and currency crises

Insurance and systemic risk

- Framework and scenarios for regulatory stress testing of insurers will need to take a view on what systemic risks insurers present
- Has never been clear, can argue that they present less systemic risk than banks
- Vulnerability of banks to runs: illiquid and opaque assets funded by liquid liabilities
- Insurance: more liquid assets and less liquid liabilities than banks
 - Limited participation in/reliance on wholesale funding markets
- General American Life Insurance Company (GA Life) episode 1999
 - Issued **funding agreements**, largely to money market funds
 - Ratings trigger on redemption
- AIG episode 2008
 - Cash calls on derivatives
 - Cash calls on securities lending
- Life businesses
 - Interest-rate sensitivity of annuities
 - Surrender—access to accumulated cash value—and optionality

Collateral calls: the AIG crisis of 2008

- AIG losses and public-sector emergency lending in about equal volume due to two programs
- Credit default swaps (CDS) on subprime residential mortgage bonds (RMBS)
 - Banking activity originating in Financial Products subsidiary AIGFP
 - Collateral calls driven by revaluation of CDS and accelerated in 2008 by ratings downgrades
 - AIGFP liquidity exhausted, draw on parent company
 - CDS eventually in Maiden Lane II
- High-quality securities lent short-term against cash collateral, reinvested in securities
 - Conventional asset management activity originating in insurance subsidiaries
 - Carried out on large scale, reinvestment predominantly in illiquid subprime RMBS
 - Securities borrowers demand higher rebates, lower haircuts, eventually return of cash collateral
 - Subprime RMBS eventually in Maiden Lane III

Tools of macroprudential policy

- Identification of **Systemically Important Financial Institutions** (SIFIs)
- Examples of macroprudential tools
 - Countercyclical capital buffers
 - Countercyclical haircuts
- But what tools for the downturn
- Collection and monitoring of pertinent data (→financial stability monitoring)

Stability policy institutions after the crisis

- New U.S. institutions with macroprudential orientation
 - Financial Stability Oversight Council (FSOC)**, also maintains **Office of Financial Research (OFR)**
 - Large Institution Supervision Coordinating Committee (LISCC)** coordinates Fed supervision of SIFIs
- International:
 - Financial Stability Board (FSB)** at BIS identifies **Global Systemically Important Banks (G-SIBs)**
 - Financial Stability Committee** under Bank of England
- Institutional and governance issues
 - A classic problem: should bank supervision be located within central bank?
 - Third (or fourth) mandate in addition to dual mandate (price stability and full employment)?
 - Instrument/objectives problem
 - Indicators and their pitfalls
 - Tools and targets

Predictors of financial crises

- Wide variety of economic and financial indicators
 - Have past track record of predicting crisis or stress
 - Indicate similarities between current conditions and those historically preceding crises
- Predictors tailored to particular types of crises
- Predictors based on particular types of data
 - Macroeconomic, financial aggregates
 - Asset prices
- Selection and validation:
 - Identify potentially relevant indicators
 - Identify crises and their start and end dates
 - Determine forecast horizon of each indicator
 - Determine threshold value at which indicator signals crisis
- The problem of validation: statistical techniques vs. uniqueness of historical experiences
- Many indicators coincident rather than leading

Macroeconomic predictors

- Leading indicators developed primarily for emerging markets:
 - Public finance
 - Banking system
 - International accounts
 - “10X10X10”: 10 SIFIs report 10 stress scenarios and 10 largest counterparty exposures
- Indexes of financial stress or financial conditions
 - Term and credit spreads
 - Indicators of credit availability
 - Implied volatility

Predictors based on asset prices

- But we want to look to the future, not the past
- Asset prices themselves are forward-looking
 - Views on the future embedded in today's market prices
- Cash markets:
 - Money market rates
 - Credit spreads
- The big treasure trove—derivatives markets:
 - Prices of forwards and futures
 - Option prices
 - Credit derivatives

Macprudential and monetary policy

- Regulation as countercyclical policy
- Problem: boom without inflation
- **Risk-taking channel** of monetary policy: inducement to leverage by intermediaries
- A pitfall: financial stability as additional mandate rather than intertwined with other mandates
 - Would neglect the macroeconomic nature of imbalances
 - Problems manifest themselves outside as well as inside financial system
- Post-crisis, greater influence of financial stability considerations on timing of monetary policy actions

The asset bubble controversy in central banking

- Asset bubbles hard to identify → “lean or clean” debate
 - E.g. house prices through 2006
 - Models/rational bubbles
- → “Lean or clean” debate
 - “Clean:” don’t target asset prices with monetary policy
 - Monetary policy can prevent adverse macroeconomic consequences
 - “Lean:” tighten monetary policy in response to financial imbalances
 - Imbalances are observable
 - Macroeconomic consequences far greater than estimated during the Great Moderation
- Paradox of volatility
 - Short-term stability, crash prevention leads to complacency and more risk taking
 - Low interest rates → searching for yield

Narrow banking

- Financial crises closely related to two features of modern banking
 - Fractional-reserve banking
 - Use of bank liabilities (deposits) as money
- → **Narrow banking** proposals to reform banking and money-creation systems
 - Elimination of maturity transformation by banks → impossibility of runs
- **Example:** Treasury or prime MMMFs with floating NAV
- → **Chicago Plan:**
 - Bank deposits to be backed 100% by reserves or equity
 - Bank loans to be financed by borrowed cash (uninsured deposits) or equity
 - Bank loans to be financed by borrowed cash (uninsured deposits) or equity
- Related proposal: **equity-based banking:** all commercial loans financed via equity
 - **Example:** **mutual-fund banking**, in which commercial lending funded by floating-NAV mutual-fund shares

Macroprudential policy

Too-Big-To-Fail

- Nature and origin of the Too-Big-To-Fail problem

- Exemption from automatic stay in bankruptcy

Derivatives market regulation

What is Too-Big-To-Fail?

- Definition: government faces choice between bailout or financial crisis
 - →Market expects central bank or government to protect creditors of too-big-to-fail (TBTF) firms from loss in the event of failure
 - Alternative expression for **systemically important** financial intermediaries
- Origin: Why might firms be TBTF?
 - Display large externalities s.t. failure has adverse financial stability consequences
 - Political motivations
- Impact in crisis: banks unwilling to sell illiquid assets, e.g. whole loans, below “fundamental” value→zombie bank problem

Development of implicit and explicit bailout policy

- Consequence of public-sector interventions to support failing institutions since ca. 1970:
 - **Penn Central** (1970): shutdown of the commercial paper market
 - Aggressive Fed discount window lending
 - **Continental Illinois** (1984): no uninsured depositor loss
 - Continental highly dependent on foreign wholesale money markets
 - **Long-Term Capital Management** (LTCM, 1998)
 - Rejection of Buffet, willing hold-to-maturity buyer at a discount
- Regulatory forbearance
- Explicit expression of policy in 1984
- 2008: Bear, AIG, MMMFs, Lehman shock (in dispute!)

How the TBTF subsidy works

- Lower borrowing costs
 - Borrowing costs lower than in the absence of implicit guarantee
- Preferential treatment of banks' short-term debt
 - Lower Basel risk weights as asset of banks
 - Via implicit guarantee of MMMFs, key investors in repo, financial CP
- Credibility: not sufficient to simply declare no bailouts
 - Therefore impact on pricing of liabilities, activities of firms
- Moral hazard
 - The subsidy as a put: greater risk-taking, less effective restraint by creditors on risk-taking
 - Similar to deposit insurance
- Competitive advantage
 - TBTF banks larger than economies of scale in banking alone
 - Larger firms grow faster, reinforces TBTF status

Measuring the TBTF subsidy

- Two in-principle measurable indicators of presence of TBTF subsidy:
- Lower borrowing costs for designated SIFIs, G-SIBs, or large banks
- **Ratings uplift** reported by ratings agencies
- Myriad factors influencing borrowing costs→very difficult to measure because
- Gap may be diminishing since crisis, but recent upgrades
- Lower borrowing costs may be offset by higher cost of regulatory compliance

Current policy approaches to mitigating TBTF

- Two major—and related—lines of effort
 - Additional capital requirements for TBTF or large banks generally
 - Changes to resolution mechanisms to enhance resolvability and credibility of the no-bailout commitment
- Also incorporated generally into macroprudential policies, approaches to systemic risk
- And a renunciation of power: Dodd-Frank restriction of Federal Reserve lending authority under section 13(3)
 - Intended to enhance credibility of the no-bailout commitment and address concern about Fed powers

Additional regulatory capital requirements for SIFIs

- **Countercyclical buffer:** Basel III requirement of 0–2.5 percent by 2019
- **G-SIB surcharge:** G-SIBs subject to higher loss absorbency requirements
 - Surcharge not fixed, but generally 1–2.5 percent
 - Identification of G-SIB and surcharge based on scoring system
 - Scoring indicators identify high systemic risk or reliance on short-term wholesale funding
- **Total loss-absorbing capacity (TLAC)** in addition to capital
 - G-SIBs to hold liabilities, esp. long-term debt, that can be converted to equity during resolution

U.S. capital rules for SIFIs

- U.S: more stringent minimum capital requirements than Basel/FSB
- U.S. adoption of **enhanced Supplementary Leverage Ratio** (eSLR), implementation 2018
 - Current: additional 2 percent for large banks, total 5 percent
 - Impact of SLR primarily on large banks, generally conduct large volume of SFTs through dealing subsidiaries
 - If binding, makes higher-risk assets relatively attractive
- Federal Reserve current rule (effective 01Jan2019): higher G-SIB surcharge for banks reliant on wholesale short-term funding (WSTF)
 - Basel rules do not directly consider WSTF reliance
- Stress tests may → controls over capital distributions
- Proposed rule changes 10-11Apr2018:
 - Replaces capital conservation buffer with **stress capital buffer** (SCB)
 - SCB based on stress test results and G-SIB surcharge model
 - Sets eSLR to $\frac{1}{2} \times$ G-SIB surcharge
- 2013 Brown-Vitter bill: proposed 15% minimum for banks with assets \geq \$500 bill., little support

Treatment of intermediary holding companies

Single point of entry (SPOE): resolution through holding company

- Subsidiaries continue operating
- Requires “**clean holding company**”, keep short-term debt in operating subsidiaries

Multiple points of entry: legally independent subsidiaries resolved separately

- Problematic for banks that have significant cross-border operations
- Conflict between host and parent countries: neither wants to bear cost

Total Loss Absorbing Capacity

- International standard requires G-SIBs to issue certain types of debt
 - Initial proposal by FSB 10Nov2014
- Allocation of losses: TLAC may be written down or converted to equity if new firm exits resolution
- Reduces probability of drawing on taxpayer funds, given that some liabilities cannot be bailed in (deposits, STWF, senior secured debt)
 - Difficult to measure requirement, since related to loss given default: analogous to estimation of expected shortfall

Postcrisis resolution mechanisms

- Wider scope: nonbank SIFIs, U.S. GSEs (added 2008 under →HERA)
- U.S: **Orderly Liquidation Authority** (OLA):
 - Dodd-Frank Act Title II: SPOE resolution by FDIC, authorization to use taxpayer funds if needed
 - Certain large intermediaries also to submit **living will** (plan for orderly resolution)
 - Treasury report 21Feb2018: widen use of bankruptcy, new **Chapter 14**
- EU: **Single Resolution Mechanism** (SRM)
 - Carried out by **Single Resolution Board** (SRB)
 - Faces cross-border resolution conflicts
 - **Minimal amount of equity and bail-in-able liabilities** (MREL) applies to all banks

Origins and rationale of the exemption

- **Automatic stay:** long-standing element of bankruptcy law enjoining attempts to collect debt or seize collateral once bankruptcy filed
- **Exemption from automatic stay:** legal privilege fostering derivatives and repo market growth
 - U.S.: legislative changes in 1984 (Treasury repo), 2005 (qualified additional collateral, swaps)
 - Europe: European Union directives 1998–2005
- Permits termination of contracts, but does not give higher priority to creditors/counterparties
 - Repo: seizure and sale of collateral, but any excess over loan amount remains with bankruptcy estate
 - Derivatives: **closeout** and **netting** of amounts owed
- Rationale for exemption from stay focus on systemic risk:
 - Prevent “domino effect,” default impact on counterparties’ liquidity
 - Large number and gross notional amount of bilateral contracts
 - Keep defaulting firm from “cherry-picking” in-the-money contracts
 - Federal Reserve historically a strong advocate of exemption to protect repo market liquidity, monetary policy implementation

Post-crisis changes to the exemption

- Potential systemic risk consequences of *exemption* from stay:
 - Encourages short-term borrowing, increases bail-out likelihood, dampens incentives to careful monitoring by lenders
 - Higher likelihood of fire-sales in default: e.g. MMMFs not permitted to own collateral after seizure
 - Chance of acquiring fire-sale collateral encourages short-term lending,
 - Together with rehypothecation: prevent daisy chains of delivery fails
 - Cross-border and international ramifications: Lehman fiasco
- Identified as problematic following 1998 LTCM bailout
- Stay seen as necessary for orderly resolutions under Dodd-Frank
 - Applies to **Qualified Financial Contracts** (QFCs): non-cleared derivatives, repo, sec lending in which SIFI unit a counterparty
- But stay may encourage termination *prior* to bankruptcy filing
- Regulatory and industry initiatives closely coordinated:
 - Federal Reserve Board proposed rule 03May2016: U.S. GSIBs, U.S. operations of foreign GSIBs
 - ISDA Resolution Stay Protocol (orig. 2014): stay on cross-default and early termination rights in ISDA derivatives contracts

Macroprudential policy

Too-Big-To-Fail

Derivatives market regulation

- Overview of derivatives reform efforts

- Mandatory clearing

Derivatives reform and the global financial crisis

- Crisis drew attention to OTC derivatives markets
- Held to be responsible for crisis and source of systemic risk via
 - Counterparty risk
 - Interconnection of financial firms
- Key post-crisis reforms follow international consensus enshrined in **Group of Twenty (G-20) 2009 Pittsburgh Declaration**, covering
 - Exchange or electronic trading:** to the extent possible, move trading in derivatives away from bilateral negotiation to electronic trading systems
 - Clearing mandates:** transform swaps from contracts between banks into contracts between banks and **central counterparty**
 - Reporting** of data on trades and
 - Capital and margin requirements** to be increased for remaining OTC derivative types

Types of derivatives affected by reforms

- OTC derivative types not all included in all aspects of regulations
- Primarily focused on interest-rate swaps
 - Many types of interest-rate swaps, have come under regulation one by one
- Foreign exchange forward and swap markets included in reporting requirements, but not in clearing mandate
- Credit default swaps (CDS) other than index CDS hard to standardize, have generally not been included

OTC derivatives reform under Dodd-Frank

- Certain swap types must be executed and traded on **swap execution facilities** (SEFs)
 - Similar to (and generally operated by) existing securities and futures exchanges
 - Swap initially executed with a non-financial customer subsequently laid off on SEF
 - Higher capital and margin requirements for non-cleared swaps
 - Trade and price information reporting
- **Mandatory clearing:** swaps, once executed, are brought to **central counterparties** (CCPs)
- **Proprietary trading of derivatives** by banks limited by **Volcker Rule:** insured depository institution prohibited from proprietary trading
Lincoln Provision: banks must house certain swaps operations outside insured subsidiaries (largely repealed Dec. 2014)

Reform of the credit default swap market

- Arguments for restriction or prohibition of CDS include
 - Empty creditor hypothesis:** creditor who is long protection has diminished economic interest, less incentive to find non-bankruptcy resolution
 - Insurable interest doctrine:** CDS a form of insurance, common law requires loss to insured suffer in insurable event

Purpose of and problems in central clearing

- Swap is **novated**, i.e. original swap is canceled and replaced by two new swaps with CCP
- Market exposure of each original counterparty unchanged, market exposure of CCP is zero
- CCP now bears counterparty risks of original counterparties
- CCP responsible for management of counterparty risk
- But CCPs constitute larger points of failure, TBTF problem