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
- Evolution 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 ($\rightarrow$)public-sector guarantees, Too-Big-To-Fail
- Externalities
- Endogeneity
- International imbalances: macroprudential policy to inhibit domestic response to swings in capital flows
  - ($\rightarrow$)**twin crises:** typical coincidence of banking and currency crises

# 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 ($\rightarrow$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

# Risk retention rules for securitization

**Rationale:** originators may shed poor credits through securitization

**Responsible parties:** sponsor of securitization, may assign responsibility to originator

**Dodd-Frank requirement:** retention of 5 percent of liabilities issued by SPV

**Forms of risk retention** include

- **Horizontal:** the first-loss tranches
- **Vertical:** 5 percent of each tranche

# Cryptocurrencies and financial stability

- Bubble concerns: bitcoin price rise and investor leverage
- Stablecoins and CBDCs:
  - TerraUSD insolvency: complex issuance algorithm instead of 100 percent USD reserves
  - Concerns banking industry will be hollowed out
  - Similarity to MMMFs: susceptible to runs?
- Current regulatory initiatives
  - US: GENIUS Act
  - EU: MiCA, "narrow version" digital €, card-only means of payment

# 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

# Macroprudential 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$\rightarrow$"lean or clean" debate
  - E.g. house prices through 2006
  - Models/rational bubbles
- $\rightarrow$"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$\rightarrow$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
- Insurance industry and macroprudential policy

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$\rightarrow$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 $\rightarrow$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

# 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

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