The Fundamental Principles of Financial Regulation

Brunnermeier et al. (2009)

Introduction

- There is a widespread view that the Credit Crunch of 2007-9 was, in part, a result of insufficient reach of regulation and that a solution is to take existing regulation and spread it more comprehensively across more institutions and jurisdictions
- That would be an incorrect diagnosis
- The crisis has involved a regulatory failure as much as anything else

Introduction

- The current regulatory approach assumes that we can make the system safe by simple trying to make sure that individual banks are safe
- In practice, it represents a fallacy of composition
- ***Micro-prudential regulation*** concerns itself with the stability of each individual institution
- ***Macro-prudential regulation*** concerns itself with the stability of the financial system as a whole
- The current micro-prudential regulation should be supplemented by macro-prudential regulation

Who should be regulated (by whom)?

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- Since any effective regulation forces firms to deviate from their preferred option, they always have an incentive to move their business outside the boundary of regulation
- Commercial banks setting up Special Investment Vehicles and hedge funds in the last credit bubble is a vivid reminder of the “boundary problem”

Classification of Financial Institutions based on Objective Risk-Spillover Measures

- The classification of financial institutions should be based on objective risk measures that capture the risk-spillovers from one institution to the next
- Any financial institution that is subject to ***systemic risk*** (possibility that an event at the company level could trigger severe instability or collapse of entire industry or economy) should be covered by regulation
- CoVaR seems to be a suitable measure for the classification of financial institutions under regulation

Classification of Financial Institutions based on Objective Risk-Spillover Measures (cont.)

- ***CoVaR*** is a technique for capturing a financial institution's contribution to systemic risk based on market data and the value-at-risk (VaR) methodology
- Bank X's CoVaR is the conditional Value-at-Risk (VaR) of bank X's counterparty or the whole financial sector after conditioning that bank X is in difficulty
- Systemic Risk is measured by the VaR of the financial system (or a subset of it)

Classification of Financial Institutions based on Objective Risk-Spillover Measures (cont.)

- ***Value at Risk (VaR)*** is a statistic that measures and quantifies the level of financial risk within a firm, portfolio or position over a specific time frame
- The q-percent VaR is the “minimum large loss” that occurs only q% of the time, or the loss that is not exceeded (1- q%) of the time

Classification of Financial Institutions based on Objective Risk-Spillover Measures (cont.)

- For some random variable X, we can define the q-percent VaR, denoted VaR_q, as the number that satisfies

$$\Pr(X \leq VaR_q) = q$$

  where X can be the institution's market value of assets (MVA) or a function of MVA
- When MVA falls below the value of liabilities, the institution is insolvent

Classification of Financial Institutions based on Objective Risk-Spillover Measures (cont.)

- Let $CoVaR_q^{j|i}$ denote the VaR of institution (or set of institutions) j, conditional on some event occurring to institution I
- The conditioning event is usually chosen to be that institution i is under stress, so that $X^i = VaR_q^i$
- $CoVaR_q^{j|i}$ is a number such that

$$\Pr(X^j \leq CoVaR_q^{j|i} \mid X^i = VaR_q^i) = q$$

Classification of Financial Institutions based on Objective Risk-Spillover Measures (cont.)

- Example: What is Citibank's 5% VaR when JP Morgan Chase is at its 5% VaR?
- We need to compare the CoVaR measure to another "reference" measure in order to see the change in the boundary caused by institution i's financial stress
- One way to measure the contribution to systemic risk is to show what happens when an institution changes from "normal" to "stressed", called ΔCoVaR

Classification of Financial Institutions based on Objective Risk-Spillover Measures (cont.)

- When j is a financial system, ΔCoVaR gives an estimate of institution i's contribution to systemic risk (how much the system's large loss increases because of firm i's stress)
- The risk-spillover of a financial player can be high if
  - (i) it *causes* financial difficulties at other institutions
  - (ii) it is simply *correlated* with financial difficulties amongst other financial institutions

Classification of Financial Institutions based on Objective Risk-Spillover Measures (cont.)

- Financial institutions can be grouped as:
  - Individually systemic
    - Cause risk spillovers
    - So large and so interconnected (to fail)
    - Macro + Micro prudential regulations
  - Systemic as part of a herd (e.g. highly levered hedge funds)
    - Small, and insignificant, for their individual condition
    - But move together as part of a larger group
    - Some macro-prudential regulation, but limited micro-prudential regulation

Classification of Financial Institutions based on Objective Risk-Spillover Measures (cont.)

- Financial institutions can be grouped as:
  - Non-systemic large (e.g. insurance companies and pension funds)
    - Not highly levered
    - Full micro prudential regulation, but no macro-prudential regulation
  - Tinies, especially if they are unlevered
    - Small and not interconnected
    - Minimal regulation

Counter-cyclical Regulation

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Counter-cyclical regulation

- The current regulation is pro-cyclical:
  - VaR
  - Mark-to-market accounting
- Three main principles
  - The main objective of counter-cyclical regulation should be to reduce the systemic risk from one institution on the rest
  - Tough during a credit boom, relaxed during a crisis
  - Should be independent of political pressures

Counter-cyclical regulation (cont.)

- Institutions that cause more negative externalities (risk spillovers) should face higher charges and using predictive analysis ensures a countercyclical regulation
- Countercyclical regulation should be most constraining during the height of a bubble (or lean against the wind)
- The regulation should base on variables that predict future circumstances, even if the bubble cannot be identified for certain

Counter-cyclical regulation (cont.)

- Capital requirements should be changed
  - The new regulation should combine the risk-weighted assets (RWAs) approach (Basel II) with measures of maturity mismatch, market and funding liquidity, and other variables that predict future systemic risk exposure
  - Having several measures has advantage of preventing gaming

Counter-cyclical regulation (cont.)

- Specifically, multiplying the basic capital adequacy ratio (CAR) under Basel II by factor(s) relating to systemic risk
  - When there is increasing systemic risk, with increasing leverage, maturity mismatch, credit expansion, and asset price increases, the multiplication factor should be greater than one, while it is less than one during periods of deleveraging

Counter-cyclical regulation (cont.)

- When a financial institution violates the capital requirements, a prompt and laddered response would be applied, for example
  - 1% below target, supervision could be enhanced
  - 2% below target, dividend payouts could be forbidden
  - 3% below target, bonus payments to CEO and other board members could be disallowed
  - 4% below target, recapitalization or closure