

# Global Financial Systems

## Chapter 13

### Financial Regulations

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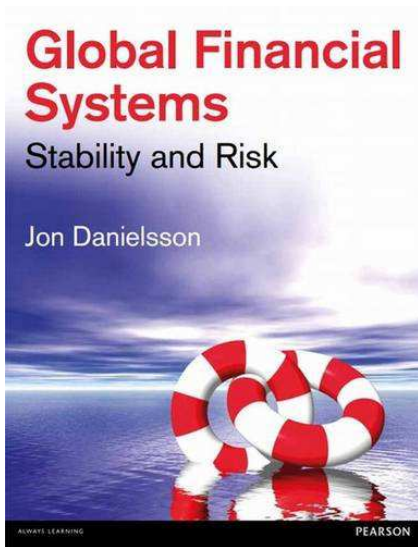
To accompany

*Global Financial Systems: Stability and Risk*

<http://www.globalfinancialsystems.org/>

Published by Pearson 2013

# Book and slides



- The tables and graphs are the same as in the book
- See the book for references to original data sources
- Updated versions of the slides can be downloaded from the book web page [www.globalfinancialsystems.org](http://www.globalfinancialsystems.org)

# Banking Regulations

# Why regulate the financial system?

- Market power
- Externalities
- Information asymmetry

# The conflict

- We want the banks to take risk
  - That is the only way to grow an economy
  - Countries with heavily regulated finance generally stagnate
- However, with risk comes the chance of failure
- We cannot have a vibrant banking system without the occasional failure

# Regulations and supervision

**Regulations** the legal environment

**Supervision** the enforcement

# The focus of regulations

- *Macro-prudential regulation* — The failure of a single financial institution can bring down the financial system (systemic crisis)
- *Micro-prudential regulation* (investor/consumer protection)

Note these often conflict

# Laissez-faire

- Banks should prosper and fail like any other enterprise
- Often prevailing policy but is not credible
- Externalities
  - when large losses, authorities have no choice but to act
  - political pressure unbearable
  - 1866, 1907, Argentina
- Deciding not to regulate the financial sector is not a credible option for the authorities
- Being forced to intervene in times of crisis without adequate preparation is a worst case outcome
- Better to be prepared



# Early regulatory efforts

## specific to individual countries

- Lender of last resort (LOLR)
- Capital — buffer
- Deposit insurance (DI)
- Activity restrictions
  - e.g. narrow banking, US Glass-Steagall

# Challenges

# Endogenous risk

- Should the focus financial regulations be to contain day-to-day risk-taking — Smoothing the road
- may perversely increase risk
  1. risk is very hard to measure
  2. risk forecasts input into complicated models — incentive to under-report risk
  3. if the road is smooth, and risk perceived as low, it creates incentives to take more risk
  4. from a statistical point of view, it is impossible to detect such a hidden build-up of risk
  5. recall Crockett's words
- Smoothing the road is procyclical

# Incentives of supervisors

- Supervisors don't get credit when things go well and everybody complains about excessive regulation
- After a failure, head of agency called to parliament — pilloried in the press
- The supervisors had all the information about the bank but did not act
- Incentives of supervisors are to prevent failure at all costs — become too risk-averse
- Incentive problem of the supervisor is *inverse* to bankers

- Need mechanisms in place to prevent excessive supervisory risk aversion
- Cost–benefit analysis on regulations?
- Very hard
- Pro–cyclicality
  - during upswings, regulations become increasingly lax, amplifying the boom
  - after a crisis, they become excessively strict, magnifying the downturn
- There are clear signs of this in the current cycle

# Tick the box and legal approaches

- After its 2008 failure, the Icelandic supervisor said the purpose of the supervisor is “to ensure the banks don’t break the law”
- That is not correct, the purpose of the supervisor is to prevent harm to society and help economic development
- Danger of excessively legalistic or formulaic approach to banking regulations, often referred to as *tick-the-box regulations*
- Principle-based regulations vs. tick-the-box based regulations
- Latter is much easier to implement, and often ends up being the default approach
- SEC

# Transfer of responsibility to government

- Supervisors get confidential information
- If banks fail, the authorities are partly to blame
- Banks of course fully know this, and are therefore incentivized to behave in a way that internalizes the possibility of burden-sharing with the government
- Secondary impact of regulations
- It is not enough to identify a particular problem, and remedy that with regulations
- Secondary consequences, such as how the proposed regulations change bank behavior and the impact on the relationship between the government and the banking system, need to be considered

# Perverse consequences of regulation

## The circle of financial innovation and regulation

- E.g. Reg Q → money market account
- Restricted dollar lending to foreigners → Eurodollar markets

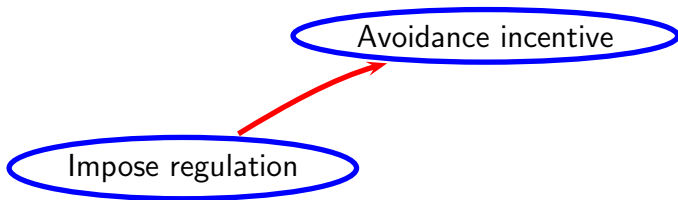
Impose regulation



# Perverse consequences of regulation

## The circle of financial innovation and regulation

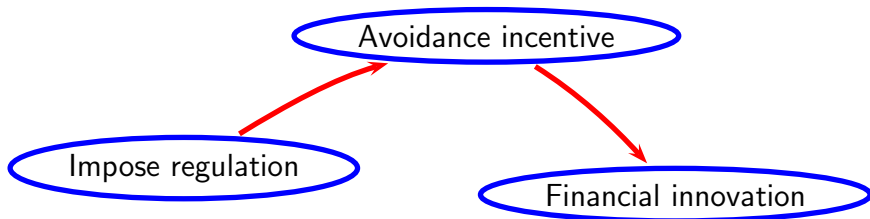
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# Perverse consequences of regulation

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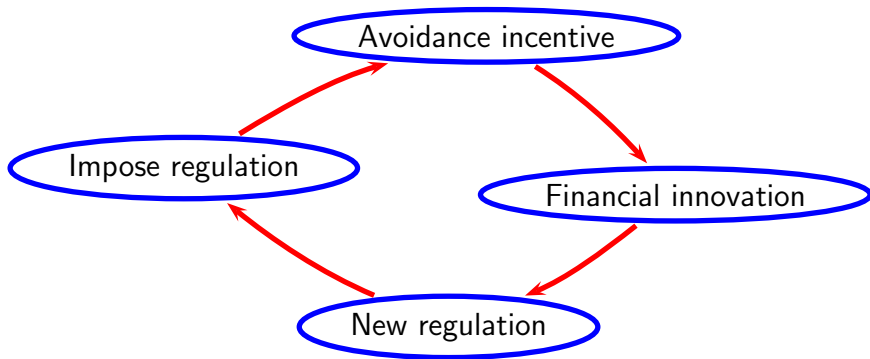
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# Perverse consequences of regulation

## The circle of financial innovation and regulation

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# Regulatory capture

- Many reasons for why the government chooses to regulate the banking system
  - unprofitable banking services to disadvantaged sectors of society
  - national champions
  - bank lobbying is also quite strong and aims at creating banking regulations that favor the incumbents, discouraging entry into the banking system, providing protection for banks' profits and even the odd bailout
- Supervisory agency no longer works for society, instead it in effect works in the interest of the banks
  - banks recruit staff out of supervisory agencies
  - banks go directly to the politicians
- Can be hard to verify. SEC? S&L?

# Resource problems

- Government pays much less than the banks
- With fewer staff members
- Seriously outgunned when dealing with the banks

# Capital

# The balance sheet of a firm

Assets	Liabilities
Assets	Equity Liabilities

$$\text{Assets} - \text{Liabilities} = \text{Equity}$$

# Equity

- A bank started five years ago
- Assuming the original stock price was 1000, and there are no dividends or taxes
- Profits in year 1, 2, 3, 5 were 100 respectively, while the loss in year 4 was 250
- In this case, the shareholders' equity is

$$1000 + 100 + 100 + 100 + 100 - 250.$$



# Capital

$$\text{Capital} \geq \text{Assets} - \text{Liabilities}$$

Riskless asset,  $A_1$  and risky  $A_2$ . Capital is  $C$

Assets	Liabilities
Low risk assets ( $A_1$ )	Capital ( $C$ )
High risk assets ( $A_2$ )	Non-capital liabilities

The ratio of capital to assets CAR

$$\text{CAR} = \frac{C}{A} \geq \alpha$$

In many cases, the capital ratio is risk sensitive, so that low-risk assets contribute less to the denominator than high-risk assets

$$\text{CAR} = \frac{C}{w_1 A_1 + w_2 A_2} \geq \alpha, \quad w_1 < w_2,$$

where  $w_1$  and  $w_2$  are risk weights

- *Reserves* against unexpected losses (buffer)
- *Limit to leverage* — or credit expansion

# Procyclicality

- Bank lending is inherently pro-cyclical
- Chasing increasingly marginal credits in upturns — asset price bubble
- Bubble bursts and everything goes into reverse but at a much faster pace
- Risk-sensitive capital exacerbates the problem
- Criticism:
  1. no limit to credit expansion during boom
  2. too little attention on incentives and sanctions
- Banks behavior more homogeneous → Danger of endogenous risk

## Example

- Equity=\$12 and assets=\$100.  $\alpha = 8\%$

$$\frac{\$12}{\$100} = 12\% > \alpha$$

- Leverage of

$$\frac{\$100}{\$12} = 8.3$$

- Bank loses of 3% of its assets

$$\frac{\$12 - \$3}{\$100 - \$3} = 9.3\% > \alpha$$

- Before the shock the risk weight is 1, so  $w = 1$

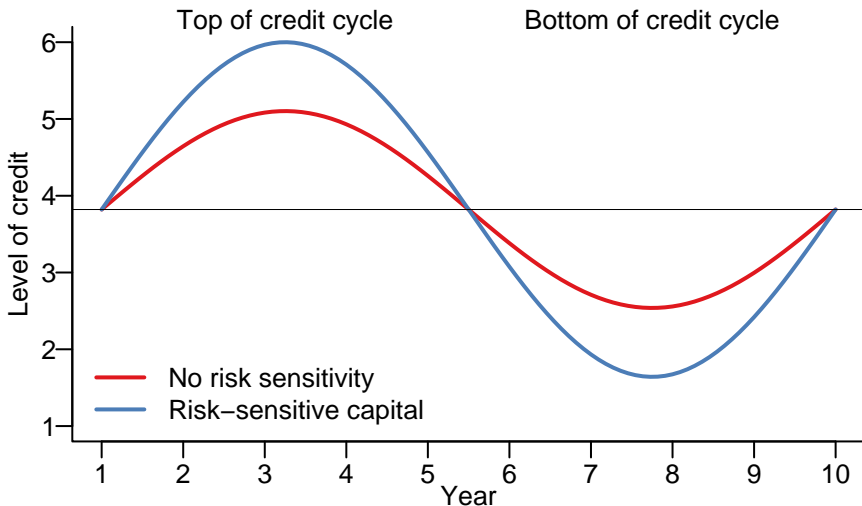
$$\frac{\$12}{w \times \$100} = \frac{\$12}{\$100} = 12\% > \alpha$$

Because of the shock, the risk weight increases to  $w = 1.5$ , and

$$\frac{\$12 - \$3}{w(\$100 - \$3)} = \frac{\$12 - \$3}{1.5(\$100 - \$3)} = 6.1\% < \alpha$$

CAR fell further, and the bank is no longer meeting its regulatory constraint, either causing it to be shut down by the authorities or to receive a bailout

# Procyclicality and risk sensitivity



# An example of cliff effects

- If CAR falls below  $\alpha$ , bank shut down
- Before that, increasing unwanted scrutiny from the authorities
- Banks prefer to keep a significant buffer above the minimum, generally around 12% – 13% before 2007



- Ratio falling: increase capital by selling equity
- Happens only in times of difficulty, costly, even impossible
- Can also reduce the amount/riskiness of assets—  
*deleveraging*
- In a crisis, firesale
- Bank may also refuse to provide new loans and roll over existing loans — credit crunch
- SMEs
- Exacerbate the crisis —endogenous risk

# Goodhart's metaphor

What is the purpose of capital that cannot be used?

A weary traveler arrives by train to an unknown town late at night. Seeing one taxi outside the train station, the traveler asks the driver to take her to her hotel. The driver responds that he cannot do so, and points to a sign on the wall saying “local regulations require that at least one taxi be outside the station at all times”

# Basel Committee for Banking Supervision (BCBS)

Basel I  
Basel II

# Domestic to international regulation

- National regulations up until '70s
- Bankhaus Herstatt 1974 — settlement risk
- Banco Ambrosiano 1982 — international regulation avoidance
- BCCI
- Calls for international regulation — Basel

# Basel Committee

- Founded by governors of the G-10 (at the time) central banks + Luxembourg
- Hosted by Bank for International Settlement (BIS)
- Provides a forum for regular cooperation on banking supervisory matters
- Objectives
  - enhance understanding of key supervisory issues
  - improve the quality of banking supervision worldwide

# What it does

- *The Concordat '75* — Principles for the supervision of banks' foreign establishments
  - close gaps in international supervisory coverage
  - established '75 (Herstatt); major review '83 (Ambrosiano)
- *Core principles for effective banking supervision '97*
  - benchmark for assessing the quality of the supervisory systems and for identifying future work to be done to achieve a baseline level of sound supervisory practices.
- *Basel Accords '88*
  - international standards on capital adequacy

# The 1988 Basel Accord (Basel I)

- Early 80's global recession put competitive pressure on capital
- Efforts to secure international convergence of supervisory regulations governing the capital adequacy of international banks.
  - halt the erosion of capital standards
  - achieve greater convergence in the measurement of capital adequacy
- Enforced in member countries in 1992

Focused on credit risk and corresponding capital requirements

# Critical evaluation of Basel I

- Broadly successful in achieving its designated purposes
  - defining types of eligible capital
  - setting capital ratio at 8% of risk-adjusted assets
- Limitations
  - ignores risks other than credit risks, e.g. market risk
  - risk-adjustments of assets do not fully reflect riskiness, e.g. AAA vs OECD government bonds
  - distorts incentives and can impede effective supervision
  - incentives for financial engineering in capital structure arbitrage



# The 1996 Amendment and VaR

- Incorporates market risk
- Value-at-Risk (VaR) approach to measure market risks
- Requires banks to report daily their 10-day 99% VaR
- Using *internal risk models* audited and permitted by regulators

There is a 1% probability that the portfolio will fall in value by more than the VaR over a 10-day period

# From Basel I to Basel II

the long journey 1999–2007

- Fundamental objective:  
*“to develop a framework that would further strengthen the soundness and stability of the international banking system while maintaining sufficient consistency that capital adequacy regulation will not be a significant source of competitive inequality among internationally active banks.”*
- Enhance Basel I in a three-pillar framework

# The three pillars of Basel II

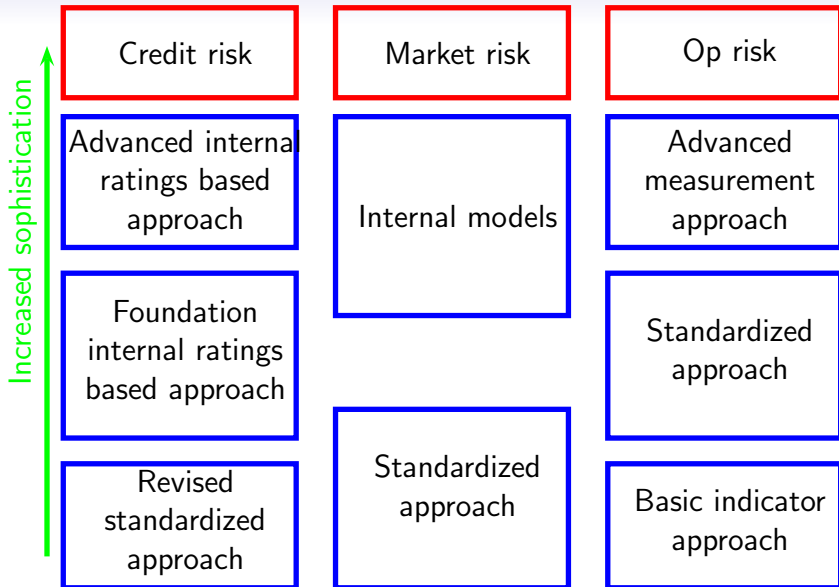
**Minimum capital requirement** is based on the notion that a bank is able to communicate its overall risk level via one number to the supervisors

**Supervisory review process** is designed to ensure that this risk number is generated in a satisfactory manner

**Market discipline depends** on the communication of key statistics to the community at large

# Menu of approaches

- Institutions can choose sophisticated or basic methods for calculating risk
- Depends on the development of the institution and the underlying country
- Approved by the supervisors
- See the menu on the next slide



# Criticism of Basel II

- Procyclicality
- Makes banks' approach to risk more homogeneous — increases endogenous risk
- Hybrid instruments did not provide protection
- Market focuses on equity

# Capital under BCBS

## simplified bank balance sheet

<b>Assets</b>	<b>Liabilities</b>
Assets	

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# Capital under BCBS

## simplified bank balance sheet

### Assets

### Liabilities

Assets

Riskless ( $A_1$ )

Risky ( $A_2$ )



# Capital under BCBS

## simplified bank balance sheet

Assets		Liabilities	
Assets		Liabilities ( $L$ )	
Riskless ( $A_1$ )			
Risky ( $A_2$ )			

# Capital under BCBS

## simplified bank balance sheet

Assets	Liabilities
Assets	
Riskless ( $A_1$ )	Liabilities ( $L$ )
Risky ( $A_2$ )	Capital

# Capital under BCBS

## simplified bank balance sheet

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Assets	
Riskless ( $A_1$ )	Liabilities ( $L$ )
Risky ( $A_2$ )	Capital ( $C = T_1 + T_2$ )

# Capital under BCBS

## simplified bank balance sheet

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- Under Basel, capital has two components, tier 1 and 2

# Capital under BCBS

## simplified bank balance sheet

Assets	Liabilities
Assets	
Riskless ( $A_1$ )	Liabilities ( $L$ )
Risky ( $A_2$ )	Capital ( $C = T_1 + T_2$ )

- Under Basel, capital has two components, tier 1 and 2
- Risk-weighted capital ratio  $\geq 8\%$

$$\text{Capital ratio} = \frac{C = T_1 + T_2}{0 \times A_1 + w \times A_2} \geq 8\%$$

# Capital instruments

## General criteria

- Loss absorption
- Permanency
- Flexibility and the ability to defer payment
- Default performance and freedom of action

The most common form of capital is equity.  
The more equity-like an instrument is, the better protection it provides.

# Tier 1 capital

the better type (slightly simplified)

- *Disclosed reserves*
- *Shareholders equity*

# Tier 2 capital

the poor cousin — now the black sheep

Undisclosed reserves, general provisions, revaluation reserves,  
and

- *Subordinated term debt*
  - Unable to absorb losses except in a liquidation
- *Hybrid debt capital instruments*
  - Possess both equity and debt characteristics,
  - e.g. preferred shares, perpetual debt, etc.



# Leverage ratio

$$\text{LR} = \text{leverage ratio} = \frac{\text{equity}}{\text{assets}}$$

- The US has traditionally had the leverage ratio
- It is now being introduced in Basel III
- There is considerable opposition in some European countries
- It should not be the only requirement, but complements the Basel II ratio