

Global Financial Systems

Chapter 1

Systemic Risk

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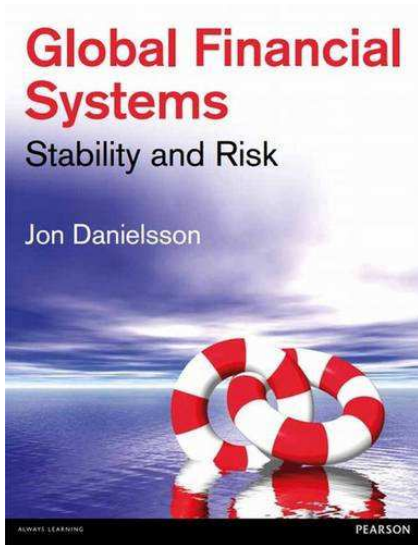
To accompany

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

1914

1914 is perhaps the closest we ever got to a systemic crisis

- Globalism was at its peak in 1914
- The world's financial system was highly integrated
- The assassination of Archduke Franz Ferdinand on June 28 changed all of that
- The important observation is that the financial crisis did not happen *because* of World War I But *in anticipation* of it
- In other words, *confidence*, and hence *liquidity*, disappeared
- It is the *mechanism* that matters

Mechanism

- Expectations of war built up
- Cross-border creditors repatriated
 - sterling and franc appreciated, rouble and dollar depreciated — gold standard unravels
- Expectation of crisis in London — run on gold at the Bank of England (BoE)
- Stock markets around the world *closed for months*
- Gold standard destabilizing. Some central banks (e.g. BoE) raised interest rates in trying to hold on to it
- Doubts about adequacy of gold reserves

Reaction in London

- Widespread bankruptcies in City
- Suspension of fixed relationship between gold and money
- Quantitative easing (literally massively printing money)
- Market closures
- Moratoria on debt
- Bailouts
- Authorities went much farther than in previous and subsequent crises
- May have prevented extreme firesales (*firesale externalities*, see below)

Systemic Risk

Systemic vs. systematic

Systematic risk relates to non-diversifiable risk factors that affect everybody, perhaps the stock market

Systemic risk relates to the danger of the entire financial system collapsing

What is systemic risk?

IMF, BIS and FSB (2009)

“the disruption to the flow of financial services that is (i) caused by an impairment of all or parts of the financial system; and (ii) has the potential to have serious negative consequences for the real economy.”

My definition

The risk that the entire financial system may fail causing significant economic distress.

Systemic risk arises from the interlinkages present in the financial system, where the failure of an individual institution may cause spillovers and even cascading failures, amplified by the inherent pro-cyclicality of banking and regulations.

The conditions for systemic risk tend to be created when all outward signs point to stability and low risk.

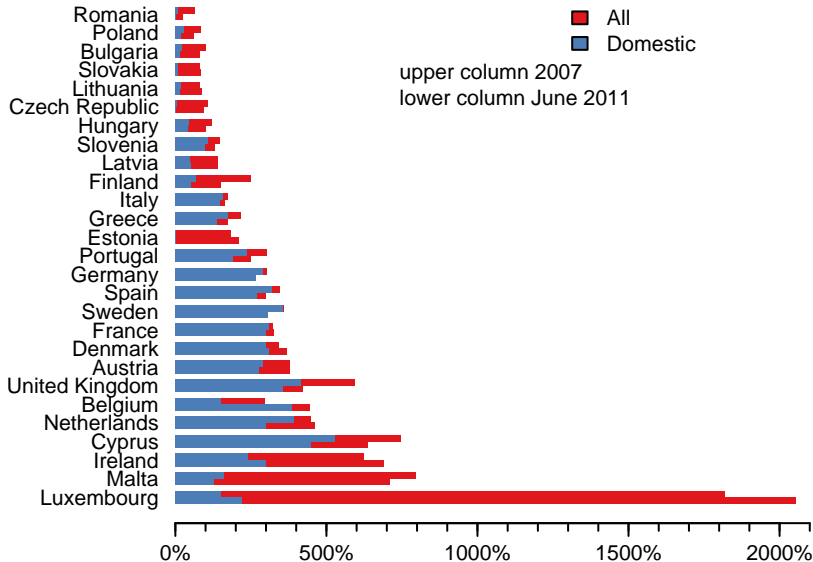
Differing views on systemic risk

- Some look at extreme events, those that never happen
- Others call bad crises systemic events
- Policy response depends on one's notion of systemic risk

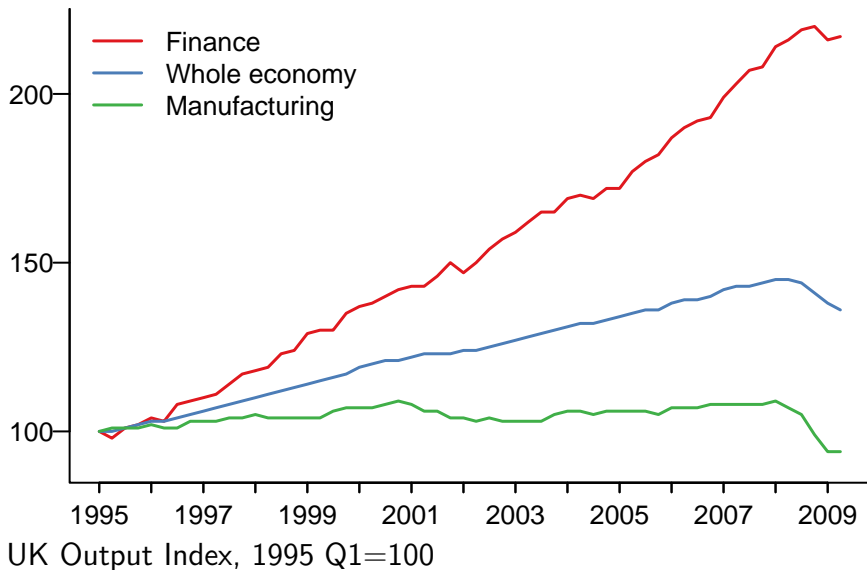
Worries about systemic risk

- Depends on size of financial system
- And how well a country is insulated
- See next slide which shows the EU banking–system, total assets/GDP before the crisis in 2007, and then in 2011
 - Note distinction between domestic and all assets

EU banking system



Importance of financial system to the UK



Banks, bank size and politics

- Structure of financial sector matters
- Two countries have same sized banking systems
 - first has one bank
 - second has 10 equally sized banks
- First country is much more vulnerable
 - failure of the single bank more damaging than a few, but not all, of the 10
 - the single large bank is likely to have more political power than the 10 smaller banks combined

Should we eliminate systemic risk?

- Extreme measures are needed to fully eliminate systemic risk
- It would come at too high a cost
- We want banks to take risk
 - lending to risky small and medium size enterprises (SMEs) and the like
- With risk comes occasional failure
- So only way to eliminate systemic risk is to eliminate the financial system
- And that will severely hold back growth
- Instead, it is better to try to develop policies that mitigate the frequency and severity of systemic crises

Who creates systemic risk?

When systemic risk is created

Former head of the BIS, Andrew Crockett in 2000:

“The received wisdom is that risk increases in recessions and falls in booms. In contrast, it may be more helpful to think of risk as increasing during upswings, as financial imbalances build up, and materialising in recessions.”

Role of the market

- Profit-maximizing behavior can cause financial institutions to take on considerable risk.
- Former Yale professor Hyman Minsky (1992) argued that economies have either stable or unstable financial regimes. Even if the economy starts out stable, continued prosperity paves the way for an unstable system
- *Stability is destabilizing* because financial institutions have a tendency to extrapolate stability into infinity, investing in ever more risky debt structures, followed by an abrupt correction
- Like the crises from 2007, where all were blind to the hidden risk during the “great moderation”

Role of the government

- Systemic risk can be greatly increased by some government policies adopted in the name of preventing such systemic risk
- *Analogy*: Governments provide flood insurance and hence encourage home owners to build in flood plains
- Is the EU creating systemic risk?

Fisher Black (1995)

Fisher Black had even a stronger view in 1995:

When you hear the government talking about systemic risk,
hold on to your wallet!

It means that they want you to pay more taxes for more
regulations, which are likely to create systemic risk by
interfering with private contracting ...

In sum, when you think about systemic risks, you'll be close to
the truth if you think of the government as causing them
rather than protecting us from them.

Fundamental Origins of Systemic Risk

Monetary aggregates

- M0** Monetary base, this is sum of currency in circulation and reserves
 - M1** Narrow money, monetary base plus checkable accounts
 - M2** M1 plus saving accounts
 - M3** Broadest measure of money. M2 + large time deposits, institutional money market funds, short term repurchase and other larger liquid assets
- M2 and M3 are a good indication of inflation and credit expansion.
 - They increase in booms and fall in recessions

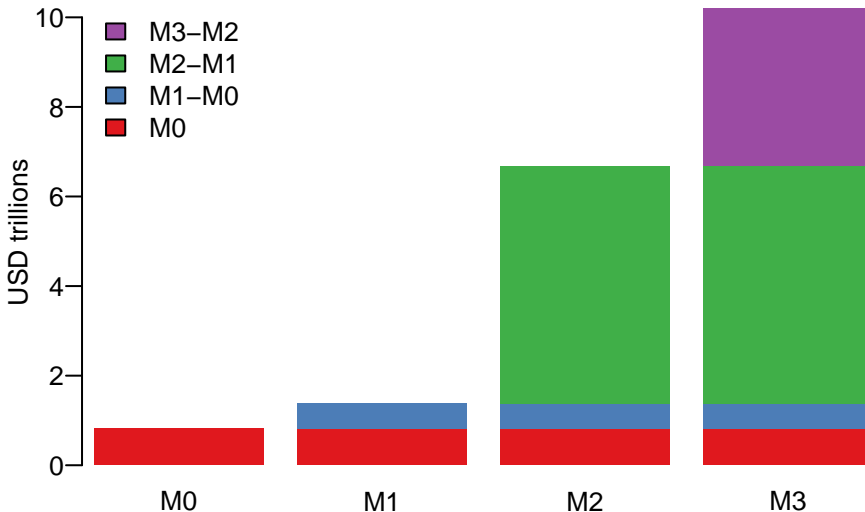
David Hume's price–specie flow model — Fisher equation

- *Quantity theory of money*

$$M \times V = P \times Q$$

- M is the total amount of money in circulation
- V is the velocity of money, i.e., how often money changes hands
- P is the price level
- Q is an index of the real value of expenditures

2005 US money supply



Fractional reserve banking

1. Person X deposits \$100 (M_0) into bank A
2. Bank A keeps 10% (δ) which is the *reserve requirement*
3. Lends \$90 to Person Y who deposits \$90 at bank B
4. Which keeps δ and lends out \$81 and so on

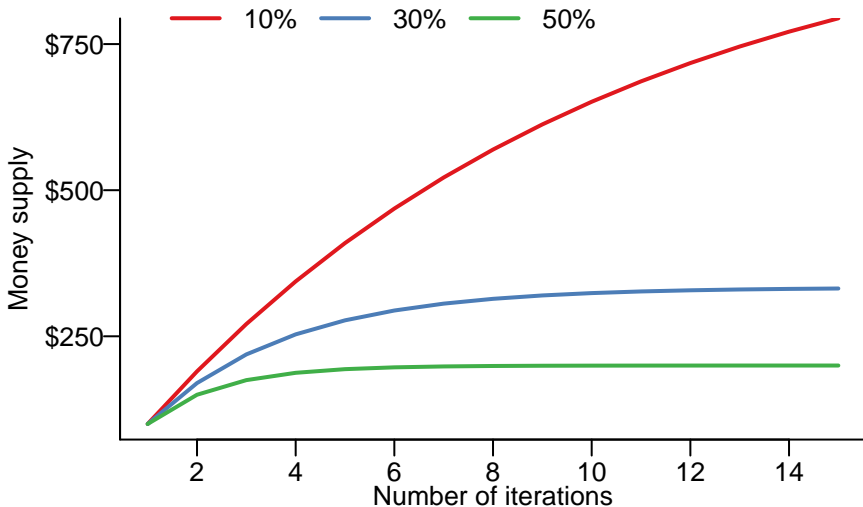
$$\text{In the limit, } M_1 = 100 + 90 + 81 + \dots = \frac{100}{\delta} = 1000$$

$$M_1 = \gamma \times M_0$$

5. Hence δ can be used to control credit — As in China

Credit expansion of \$100

for various reserve requirements



Fragilities of the fractional reserve banking system

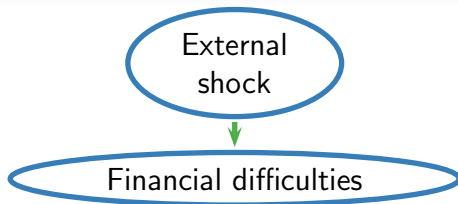
- A Bank lends deposits out at *long maturities*
- But deposits are payable *on demand*
- If a sufficient number of depositors want money, the bank can't pay — *bank run*
- Bank runs are contagious

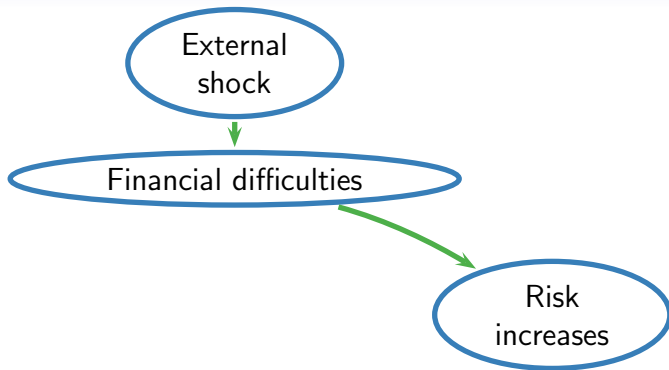
Procyclicality

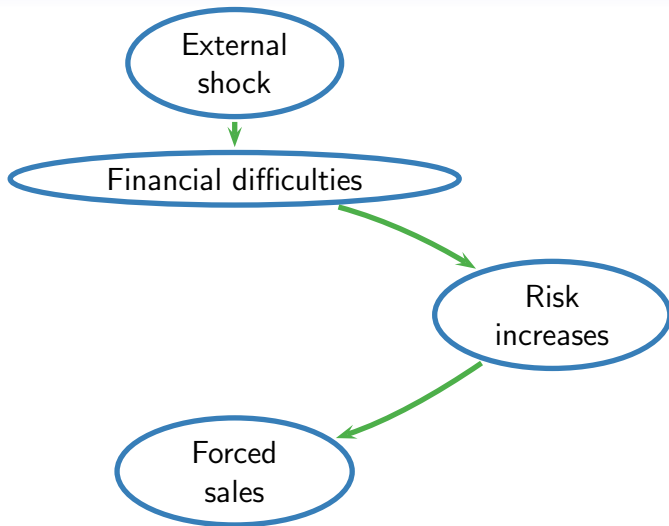
- A process that is positively correlated with economic cycle is said to be *procyclical*
- Banking is inherently procyclical
 - banks have surplus capital when things are good and lend too much to increasingly low quality borrowers
 - banks have too little capital and are too conservative in busts
- A key problem is *amplification mechanisms*

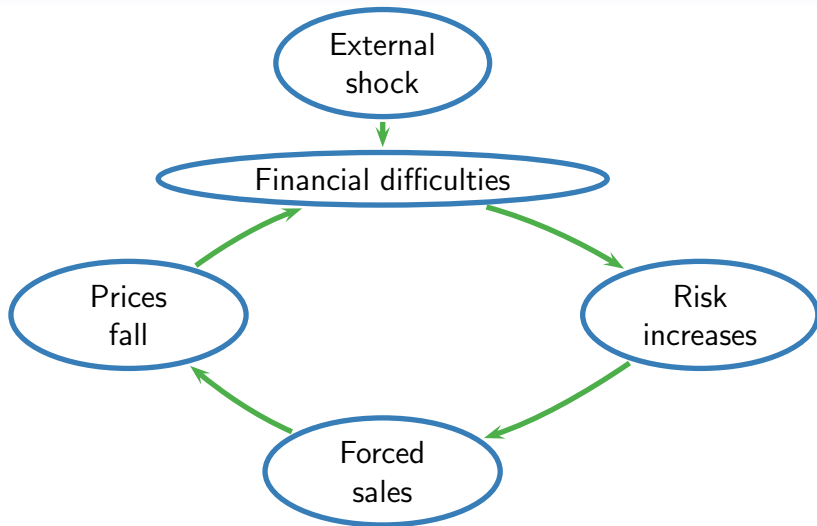
Fire-sale externalities

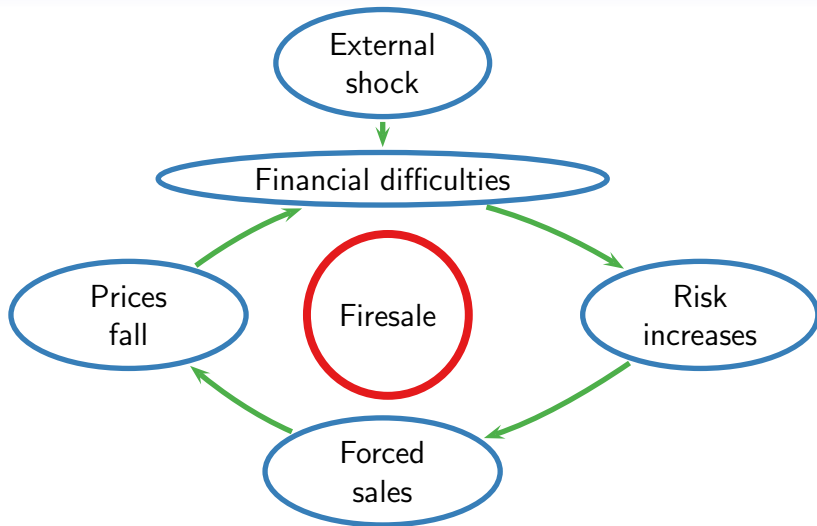
- Externality is the cost or benefit incurred by someone not agreeing to the action causing the cost or benefit
- The financial system is full of externalities
- *Firesale externalities* are where the sale of assets during crisis is forced — when prices are already low and falling — causing prices to fall even more
- *Vicious feedback*











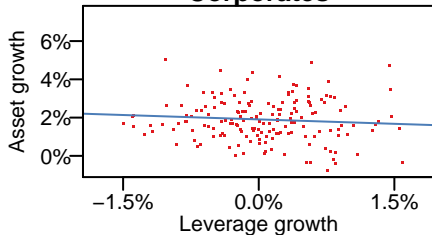
Leverage and deleverage

- When we invest with borrowed money, we amplify the profits and losses
- Financial institutions often use high leverage to boost profits in boom times
- This means during crises their losses can be spectacular
- We return to this frequently later in the course
- One example is via bank balance sheets and capital regulations

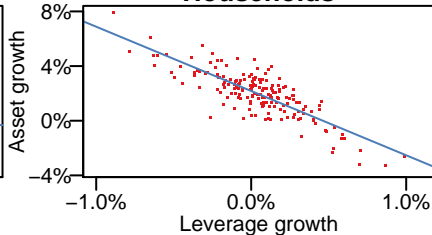
Leverage and growth

Adrian and Shin (2011)

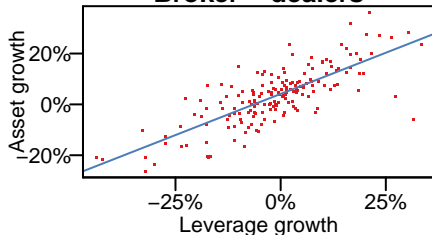
Corporates



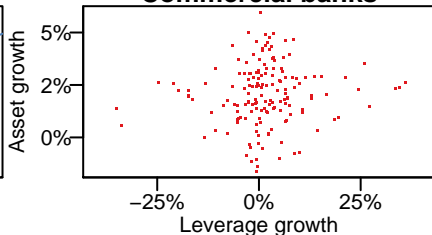
Households



Broker--dealers



Commercial banks



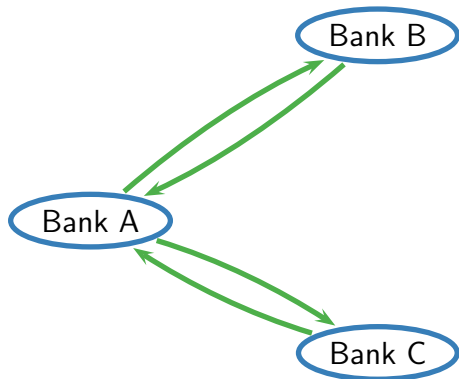
Information asymmetry

- Financial institutions only have limited information about the counterparties
- It hard to get an idea of the net value of certain over-the-counter instruments (like CDSs)
- Crisis of confidence
- See slide after next

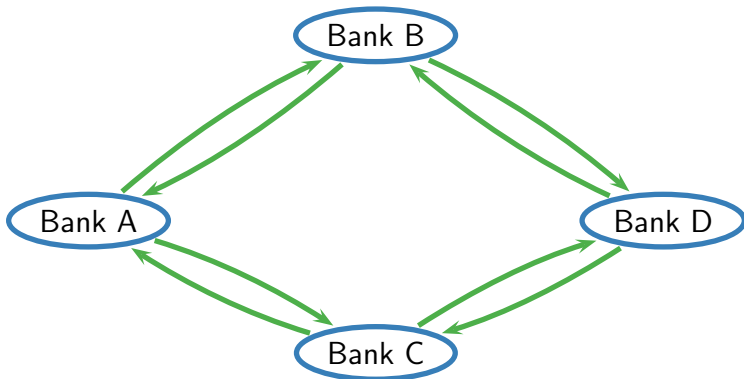
Interdependence

- Financial system is a network of interwoven obligations
- See next slide
- Institutions can have direct and indirect connections
- Gives rise to potential for domino-style failure

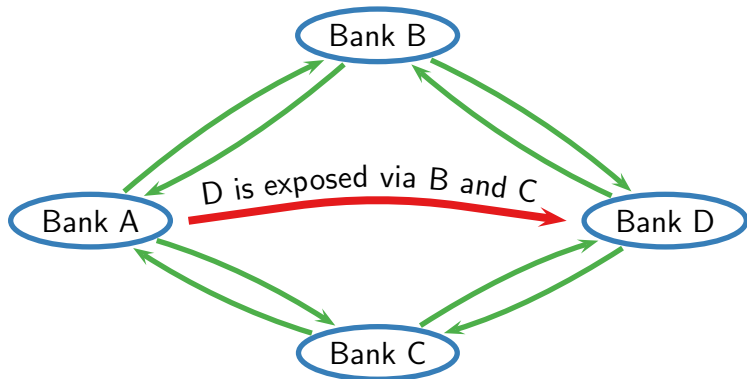
A, B and C are exposed to each other



D is exposed to B and C



D is indirectly exposed to A via B and C



Perverse incentives

- Some have an incentive to *increase* distress
- Lenders who have hedged through CDSs can often make higher returns from CDS payouts
- A predatory approach would be to purchase lots of debt in conjunction with a large number of CDS contracts
- This could render bankruptcy more attractive than solvency

Six Flags, an American theme-park operator filed for bankruptcy protection on 13th June 2009, as a result of their bondholders refusing to aid the debt restructuring effort. The apparent culprit was a Fidelity mutual fund turning down an offer that would have granted creditors an 85% equity stake.

More on the causes of systemic risk

- We will discuss many more causes later in the course
- For example endogenous risk
- As well as how we cope with systemic risk
- And to what extent regulations protect us and can even cause harm