Global Financial Systems
Chapter 1
Systemic Risk

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To accompany

Global Financial Systems: Stability and Risk

www.globalfinancialsystems.org/

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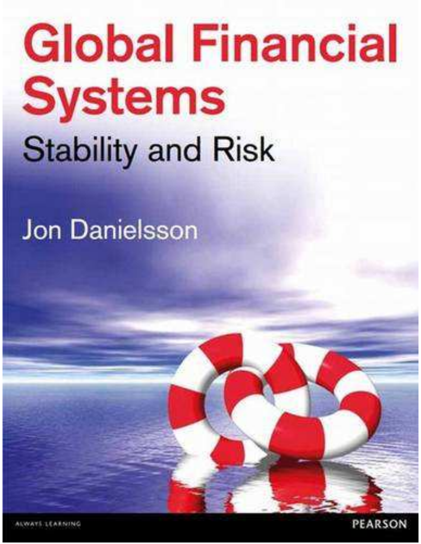
Book and slides



- Updated versions of the slides can be downloaded from the book web page `www.globalfinancialsystems.org`

The financial system

- The role of the financial system is to allocate resources efficiently
  1. make productive investments
  2. allow us to save
- The financial system affects most aspects of society, including economic growth, economic opportunities, inequality and poverty
- Historically has been the most regulated part of the economy
  1. crises
  2. ensure it efficiently does what it is supposed to, and nothing more
  3. financing the sovereign (government)

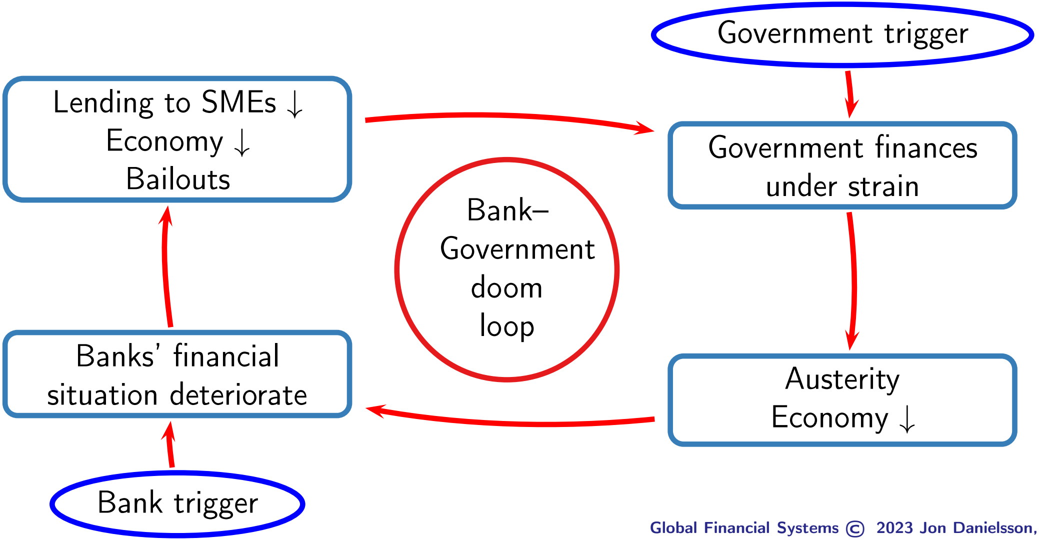
Good, bad, evil?

what do the various constituencies say?

A. Financial markets are only casinos for the rich
   - they don't much affect savings, investments and innovation
   - regulate them very heavily

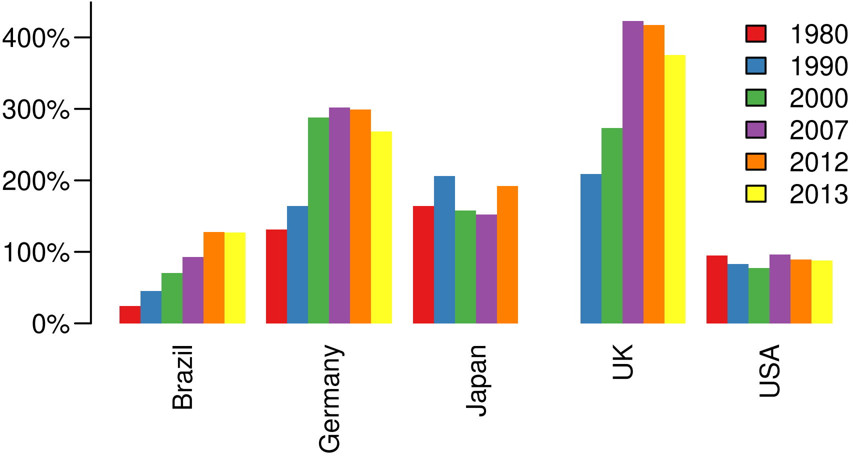
B. The financial system plays an important role in the efficient allocation of resources
   - "The banker authorizes the entrepreneur in the name of society to innovate." Schumpeter (1912)
   - regulate with a view to reduce damage (crises, abuse)
   - but don't get too much in the way of how the system functions

Bank–Government doom loop



Bank assets to GDP

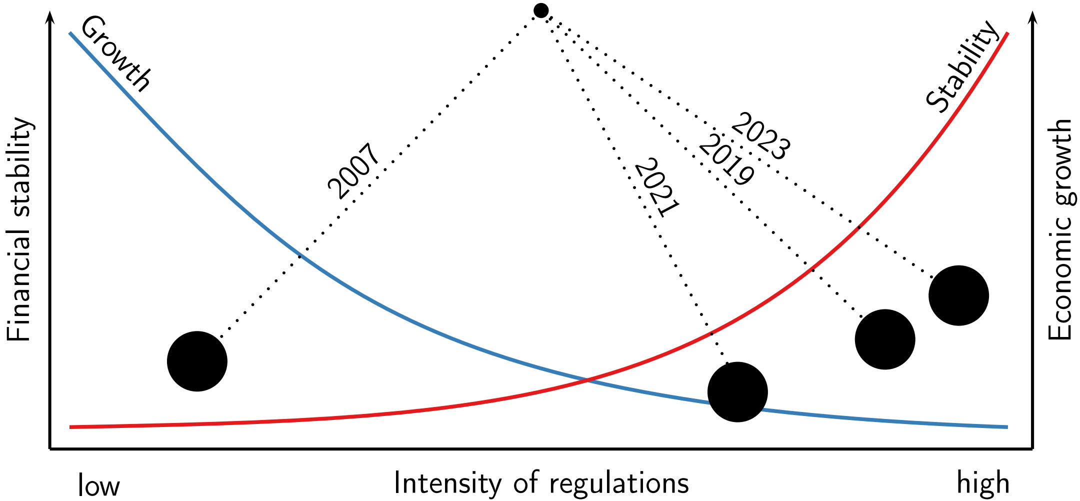
the US should surprise you



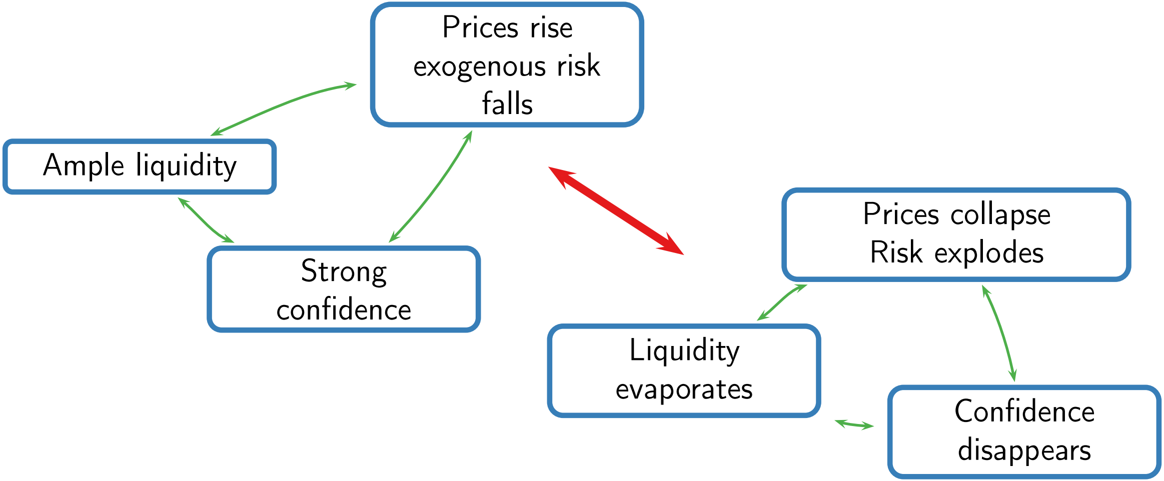
Why is the US so low?

- In every country, except US, almost all financial intermediation is via banks
  - 84% in UK, 92% in Germany, 96% in Spain. Same in Asia and Latin America
- In the US it is 34%
- Where there are a number of alternative ways to do financial intermediation
- Makes the US much more resilient and is a key reason why it recovered so well from 2008
- It now has much stronger banks than Europe

The regulation pendulum



Optimism to pessimism and back



Politics and the economy

- Does the economy drive politics or do politics drive the economy?
- Bill Clinton in 1992 "it's the economy stupid"
- 2023 "it's the politics stupid"
- Political risk (or should say political uncertainty) the most important factor
  - Ukraine-Russia, China-US, Turkey, Venezuela, ...

Today

- What is the biggest systemic risk today?
- Is it rising inflation, the Ukraine–Russia war, European fragmentation, Italy, China-Taiwan, North Korea, US political instability, Chinese debt?
- Or is it something completely different, a risk factor that is rapidly growing but nobody can see?

The unknown-unknown. Extreme instability/crises have the annoying habit of emerging where no one is looking. So how can we think about it?

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
- *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*
- Scramble for safety — Not good for the economy

Reaction in London and elsewhere

- Widespread bankruptcies in the City
- Suspension of fixed relationship between gold and money
- Quantitative easing (literally massively printing money)
- Market closures from end of June to January
- Moratoria on debt
- Bailouts
- Authorities went much farther than in previous and subsequent crises
- May have prevented *firesales*

The point is

- The financial system is based on trust
- We instantaneously switch from believing the best to believing the worst
- The laudable and logical desire for safety drives the worst outcomes
- We don't need anything real to cause a crisis
- *Anticipation is sufficient*
- We can cause a crisis by well placed, but incorrect, roumour — Beware of fake news

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."

- Arises from *interlinkages* as 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

SRC video

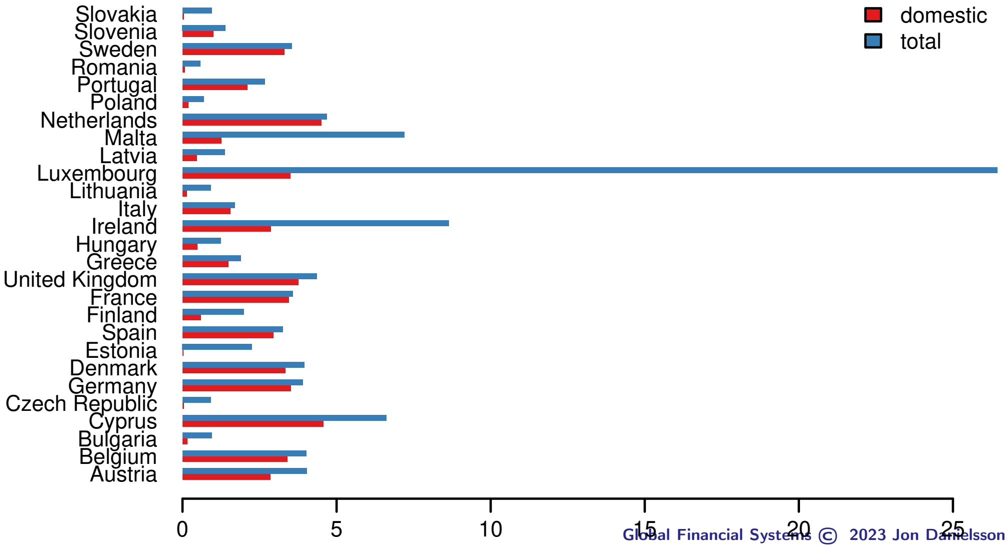
Differing views on systemic risk

- The same word or phrase can have very different meaning depending on who says it. You will see many examples in this course
- That certainly applies to 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
- We will discuss the policy response to Covid-19 later where a key question will be whether the Covid-19 crisis was a systemic crisis

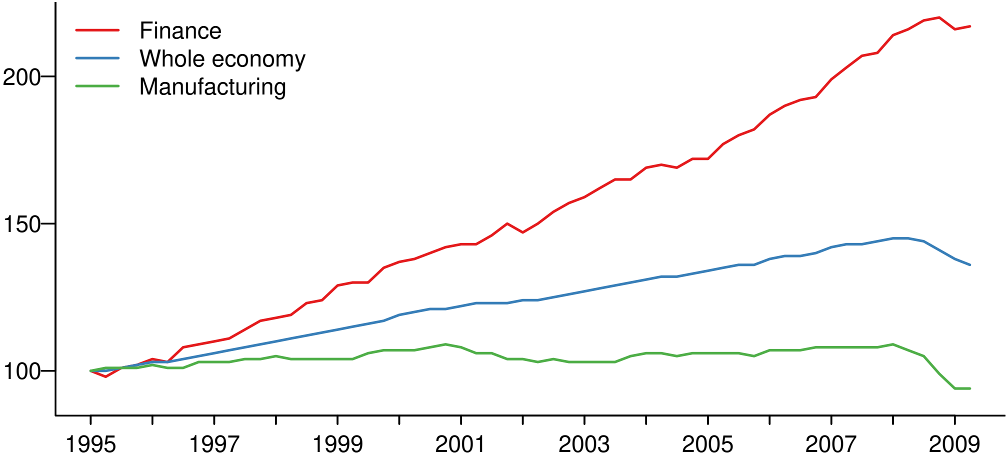
Worries about systemic risk

- Depends on size of financial system
- And how well a country is insulated

EU banking system (2015)



Importance of financial system to the UK



UK Output Index, 1995 Q1=100

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

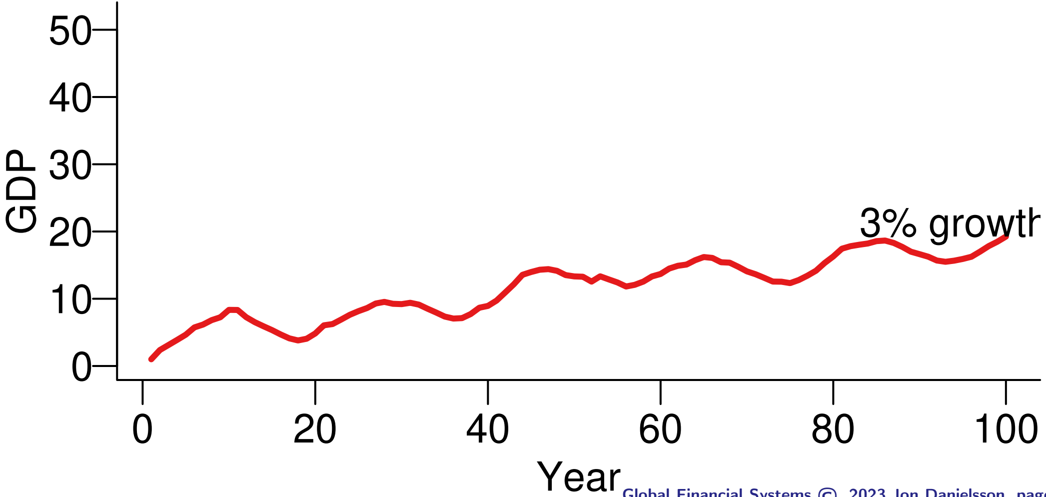
Should we eliminate systemic risk?

depends on how extreme the event is

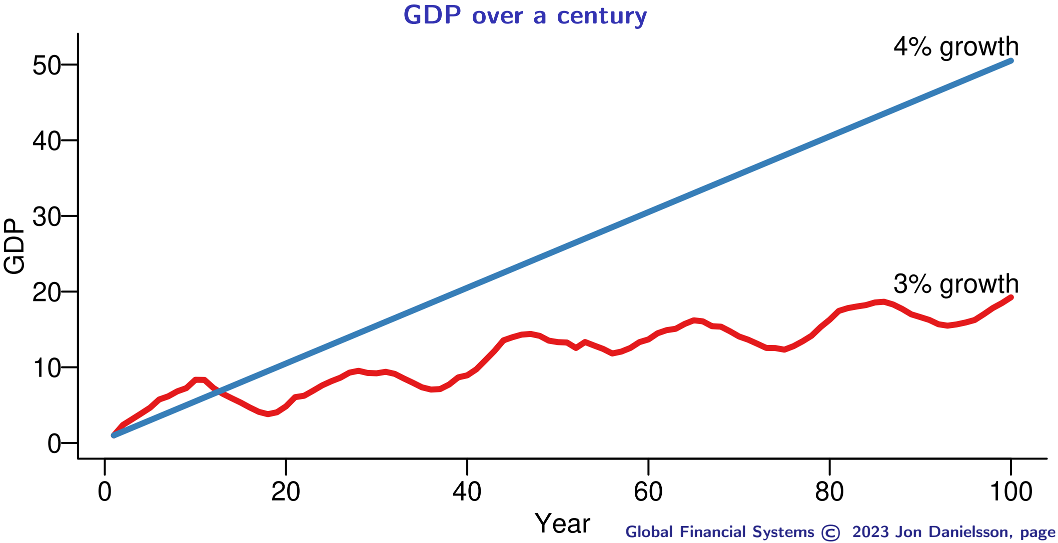
- Extreme measures are needed to fully eliminate it
  - North Korea, Cuba, ...
- It would come at too high a cost
- We want banks to take risk
  - lending to risky small and medium size enterprises (SMEs) and the like
- With risk comes occasional failure
- So only way to eliminate systemic risk is to eliminate the financial system
- And that will severely hold back growth

Which is the most likely?

GDP over a century



Which is the most likely?



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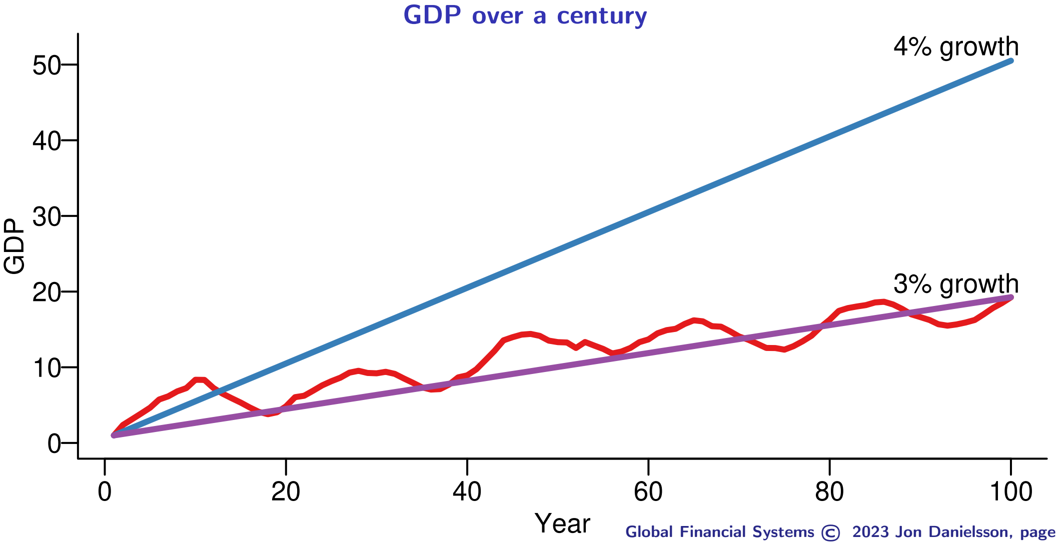
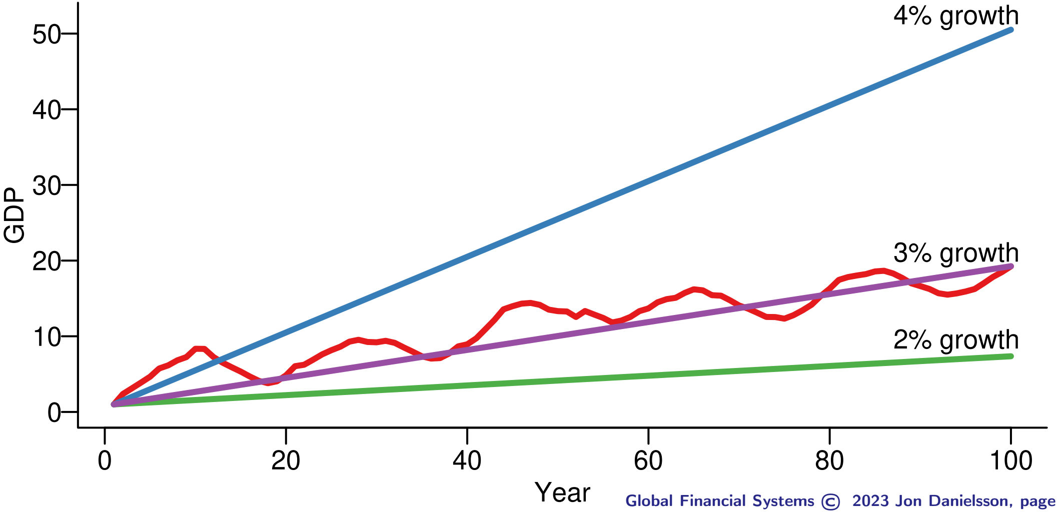


Which is the most likely?

GDP over a century



Instead

- Understand the fragilities of the financial system
- The danger it poses to society
- And the benefits it brings
- Best to try to develop policies that mitigate the frequency and severity of systemic crises

How often do systemic crises happen?

- The IMF/WB database implies a systemic crisis every 43 years on average
    - (you can download the data to take a look)
- So twice in a lifetime?
- This is an overestimate, as the database includes innocuous events
- Perhaps once–in–a–lifetime for the worst crises, and once in a professional lifetime for the more innocuous

The lifecycle of crises

- The person who was 20-year-old in 1929, retired in 1970
- End of Bretton Woods, start of Washington consensus
- Deregulation and liberalization
- Eventually culminating in a crisis in 2007
- Those who experienced it are one of the most pro-regulation and anti free market since the Great Depression generation
- And when the people born in 1997 retire, the seeds of the next crisis are laid

Dams

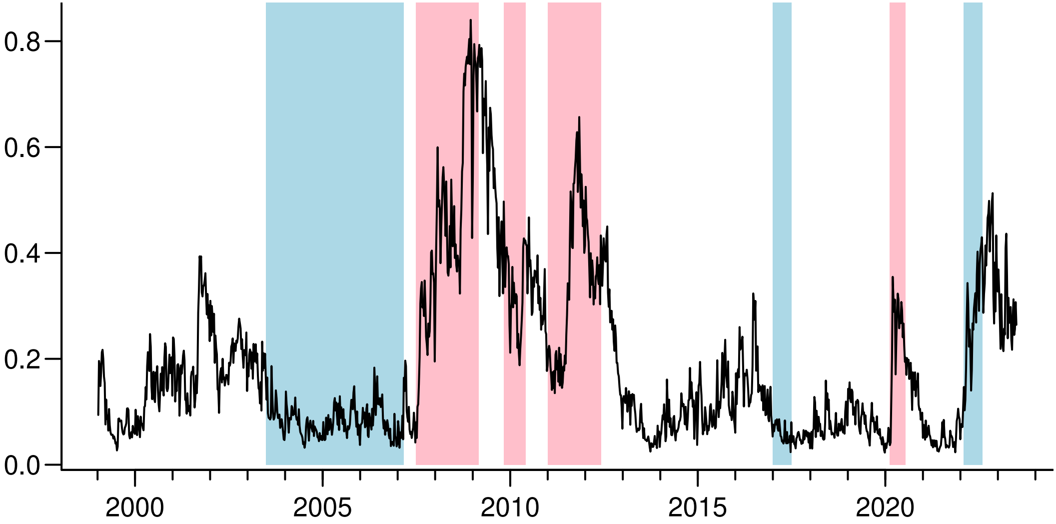
The measurement problem

- Suppose you measure the risk of flooding by the volume of water below a damn
- The risk will be very low right until the dam bursts
- And after that the risk will be high
- But it is false because the risk is high before the dam bursts
- And since the dam can't burst twice the risk is gone after
- Connect to *actual risk* and *perceived risk* in Chapter 3 (endogenous risk)

Can we measure systemic risk?

- The next slide shows the ECB's Composite Indicator of Systemic Stress
- Is it predictive or reactive?
- Did it tell us in 2003 that systemic risk was building up?
- It is very hard to measure systemic risk
- Because it is usually created out of sight
- So we end up measuring the wrong thing

ECB Composite Indicator of Systemic Stress



Prediction versus identification

- The higher systemic risk is, the more likely a systemic crisis becomes
- However, that does not mean low measured systemic risk means systemic risk is high, or vice versa
- Are we measuring the likelihood of future crises or are we identifying a stress scenario or crisis is already underway?
- The ECB CISS is of the second type
- As are almost all other indicators

Can it beat the FT?


FINANCIAL TIMES

Thursday September 18 2008 | £1.50

Global banks in crisis

Full coverage of market turbulence: NEWS **Pages 2-6** COMMENT **Pages 15-17** LEX **Page 20** MARKETS **Pages 42-44** ONLINE **www.ft.com/crisis**

Panic grips credit markets

HBOS takeover Government brokers £12bn deal for Lloyds TSB to buy lender

Turmoil worsens Volatility sparks biggest flight to safety since second world war


The Financial Times

Incorporating The Financier and Bullionist.

LARGEST CIRCULATION OF ANY FINANCIAL JOURNAL IN THE EMPIRE.

An excellent remedy APENTA NATURAL APERIENT WATER For Liver troubles and Constipation The Apollinaris Co., Ltd., London, W.1.

LONDON, Wednesday, 30th October, 1929. [Twopence.]

THE STOCK MARKETS.

DEPRESSION ACCENTUATED BY AMERICAN AND CONTINENTAL WEAKNESS.

BRITISH FUNDS LOWER—ANOTHER DECLINE IN HOME AND FOREIGN RAILS.

To-day's Summary.

PRINCIPAL MARKET MOVEMENTS.

INDUSTRIAL MARKET.

FURTHER FALL IN LEADING INTERNATIONALS.

MARGARINES AND MOLASSES WEAK—MATCH ISSUES LOWER—METROPOLITAN ELECTRIC ADVANCE.

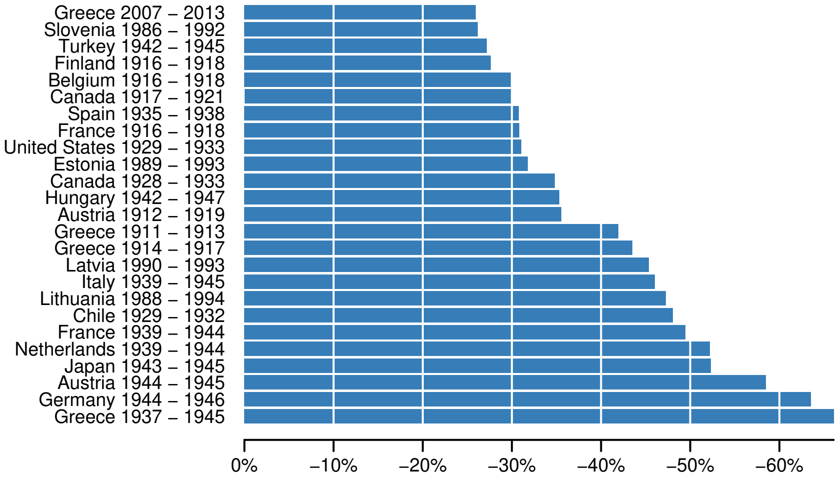
Swedish Issues Down.

Round the Markets.

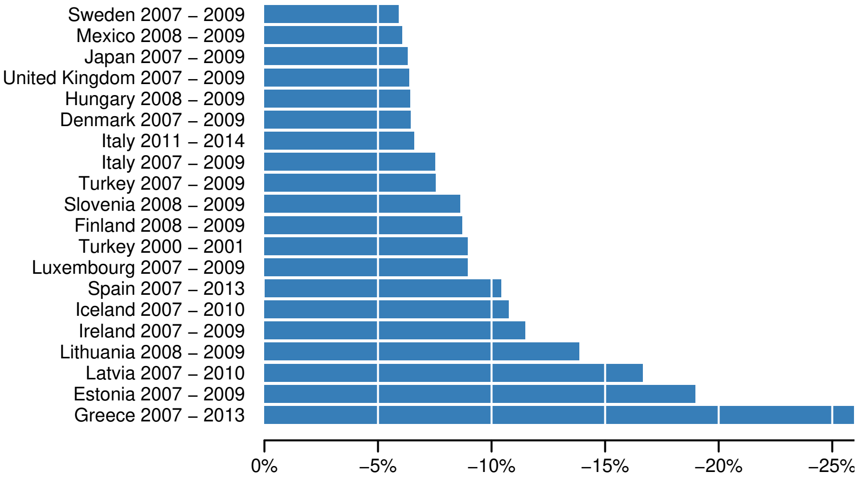
MOST COMFORTABLE SLUMP.

LONDON LOSSES SMALL.

GDP cost of crises. OECD. from 1870



GDP cost of crises. OECD. from 2000



Who creates systemic risk?

illusionofcontrol.org

Role of the market

- Profit–maximizing behavior
- Hyman Minsky (1992) *Stability is destabilizing*
- Like the crises from 2007, where all were blind to the hidden risk during the "great moderation"
- So is it all the fault of capricious, short-termist bankers?
  - subprime mortgage originators and securitizers
  - banks that borrow short and lend long
  - excessive risk taking
  - maximizing private wealth at expense of society

Role of the government

- Systemic risk can be greatly increased by some government policies adopted in the name of preventing such systemic risk
- The US government has encouraged homeownership since mid-1970s
  - led to subprime mortgages and the overlooking of dangers
- Most governments like to have national champions (SIFI banks)
- Many governments see a large financial system as beneficial
- And all would like banks to make more risky loans (to SMEs)

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.

Systemically Important Financial Institutions

SIFIs

Global Systemically Important Banks

G-SIBs

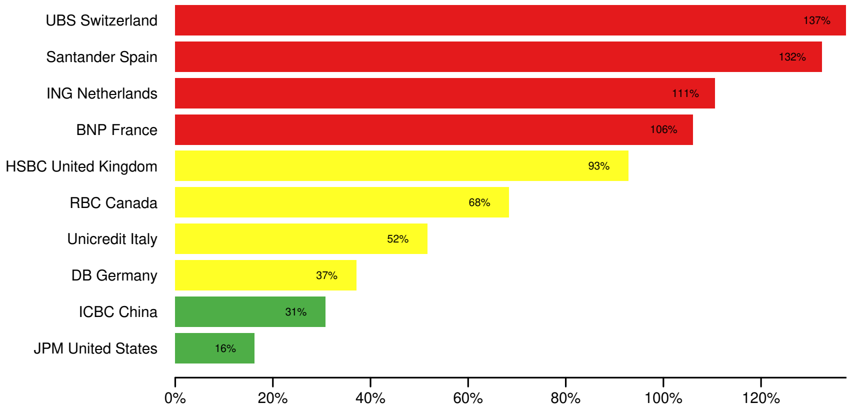
Should banks be large or small?

- It is sometimes argued that bank should be large because they can then help companies with complex operations in many different regions and countries
- Kilian Huber "Are bigger banks better? Firm level evidence from Germany" JPE (2021) finds that firms do not benefit when banks become higher because they are worse after processing soft information and take more risk. Large banks get more media attention and pay higher salaries

What are SIFIs?

- Financial institutions whose failure might cause a systemic crisis
- Not considered very problematic before 2007
- Highly diversified institutions
- Losses in one domain were assumed to be offset by profits in other domains
- Therefore, very large banks *were* considered safer than smaller banks

Total Assets/GDP for largest SIFI in each country (end of 2022)



Why should we care about SIFIs?

- Banks have incentive to become big, interconnected, dangerous and even badly run
- It is beneficial to become a SIFI/G-SIB
  - lowers funding costs
  - and provides comfort to counterparties
  - they know that they would receive public aid in case of difficulties (moral hazard)

Politics

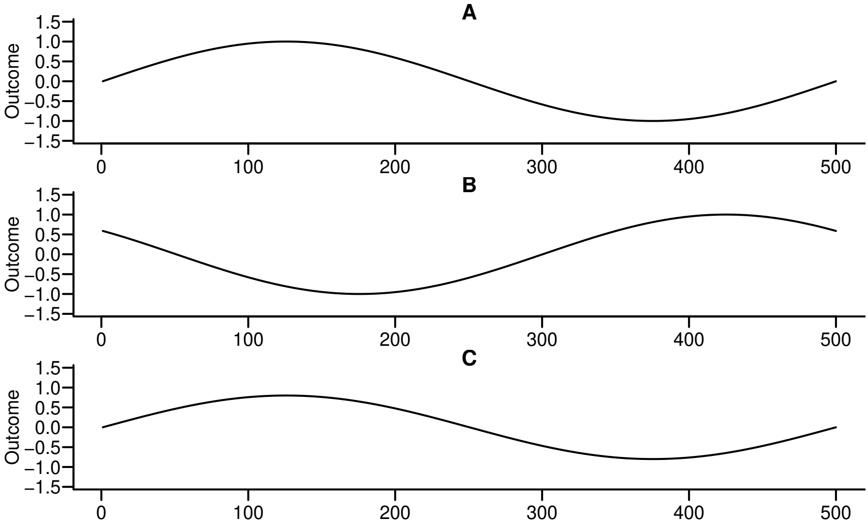
- Governments like national champions
- They might say: "What is good for the national champion is good for finance and the country"
- National banking champions are G-SIB/SIFIs

How to identify SIFIs?

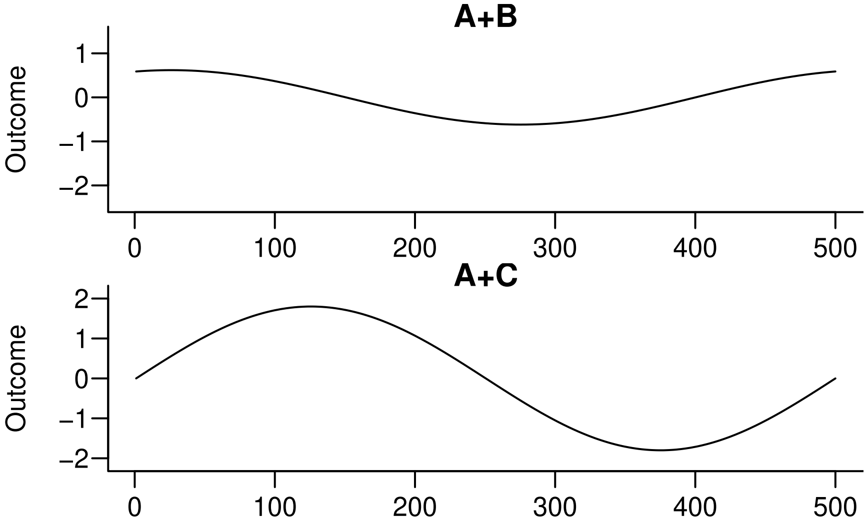
- No compromise on how to identify them
- But one should consider:
    1. extent of leverage and off-balance sheet exposure
    2. interconnectedness
    3. impact of its distress on real economy
    4. possibility of triggering firesales in the entire system
- Relatively clear classification for banks, less so for asset managers, insurance companies and sovereign wealth funds

Fundamental Origins of Systemic Risk

Procyclicality



Procyclicality



Procyclicality

- Processes that are positively *correlated* and *amplifying* each other are *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
- We need causality between both sides
- Temperature and saving cost of heating is not pro-cyclical as there is causality
- Consumption and growth are, they feed on each other

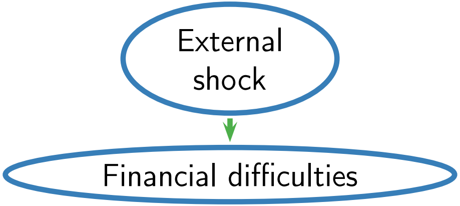
More detail

- If process A impacts on process B, but not vice versa, we do not observe procyclicality, we simply have causality from A to B
- If the impact of A on B and vice versa is to *reduce* the amplitude of the cycles, we say they are *countercyclical*

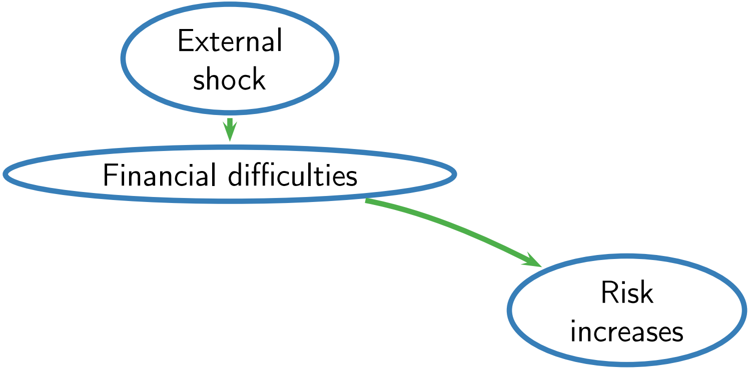
Fire–sale externalities

- 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*

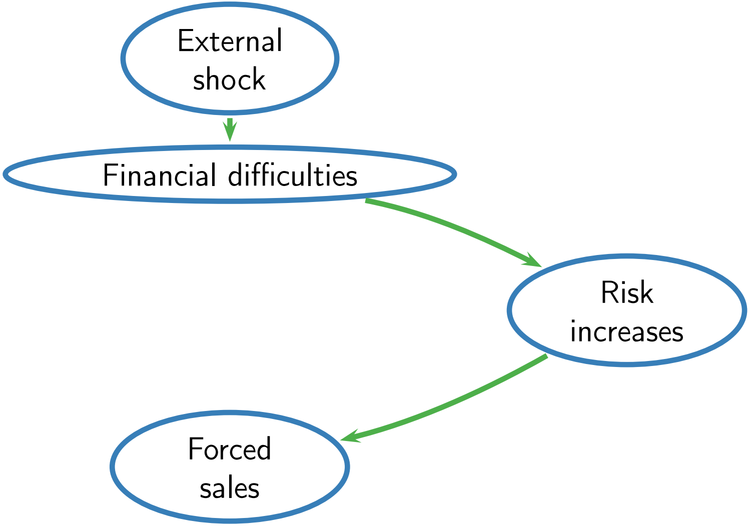
Fire–sale



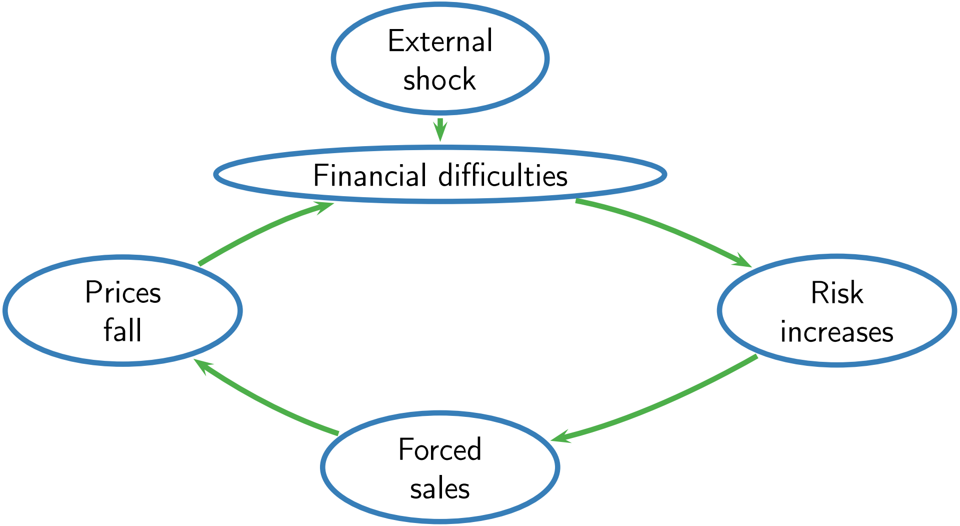
Fire–sale



Fire–sale


External shock
Financial difficulties
Risk increases
Forced sales

Fire–sale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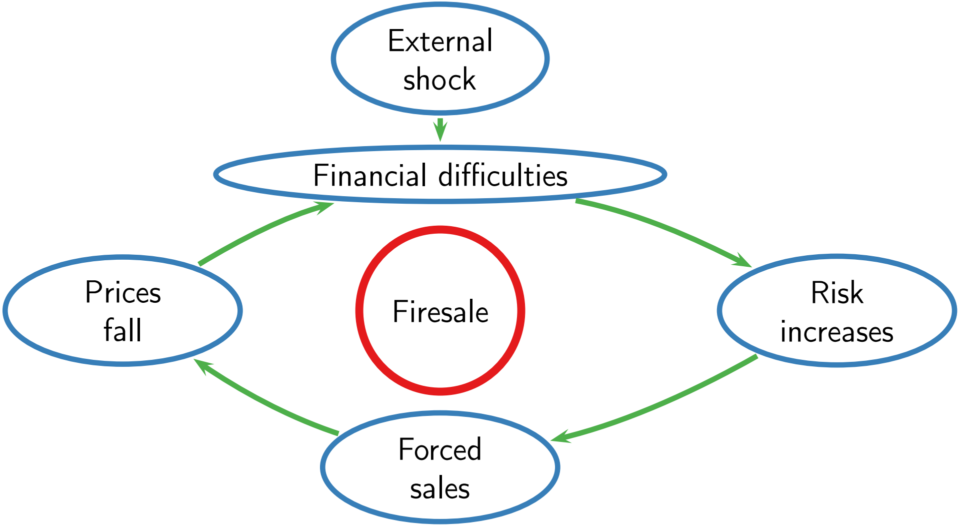

External shock
Financial difficulties
Risk increases
Forced sales
Prices fall
Firesale

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

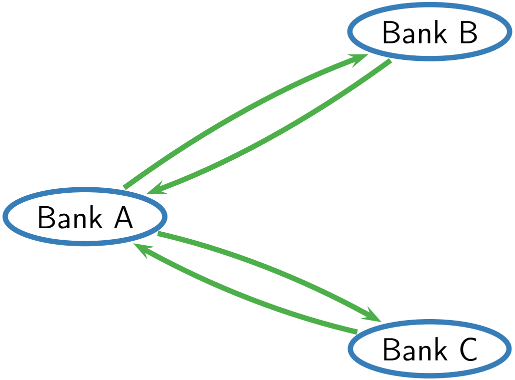
Information asymmetry

- 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

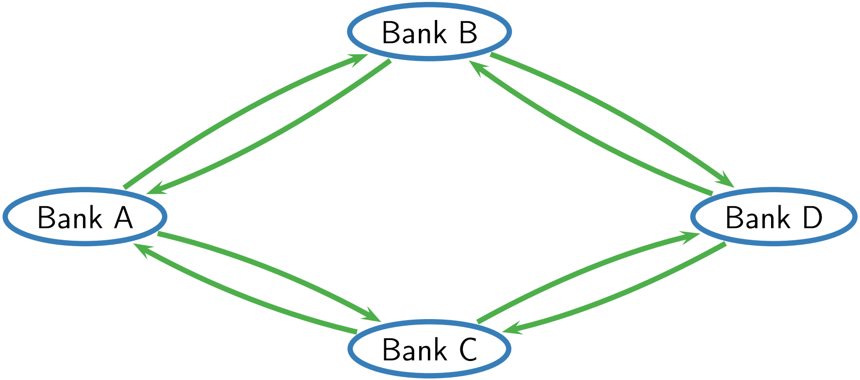
Interdependence

- 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

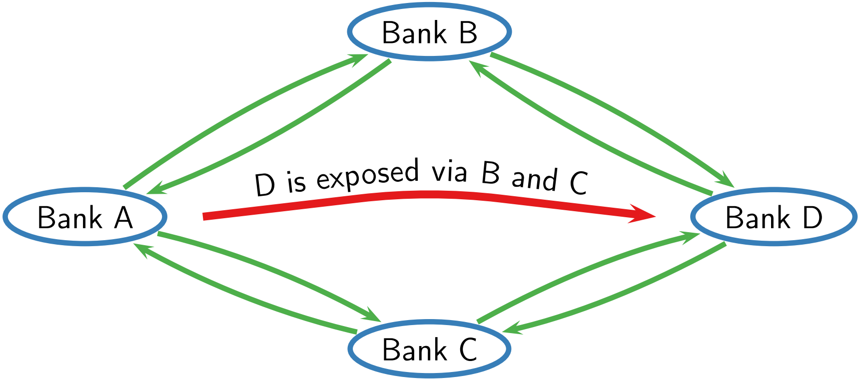
A, B and C are exposed to each other



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* (discussed later) 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 13$^{\text{th}}$ 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.

Blackstone: Exploiting CDSs

www.ft.com/content/5e23e516-5cdc-11e8-ad91-e01af256df68,
www.economist.com/finance-and-economics/2019/02/02/conflicts-in-the-credit-derivatives-marke
www.wsj.com/articles/how-regulators-averted-a-debacle-in-credit-default-swaps-1531047600
www.ft.com/content/5e23e516-5cdc-11e8-ad91-e01af256df68

- Blackstone's GSO buys a CDS contract on a struggling company
- GSO offers company and offers it very attractive financing
- But it has to default in a way that trigger's a CDS payout

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

Structure of the financial system

The three parts

1. Service providers
2. Governments
3. Others

Service providers — Banks

- The traditional (and always wrong) view of a bank is an institution that simply takes deposits and makes loans
- Banks also borrow elsewhere (e.g. bonds and interbank market)
- Some are also broker-dealers
- Some engage in proprietary trading
- Most larger banks own a number of banks (bank holding firms)
- When international can have subsidiaries or branches
    - This distinction becomes important for financial stability and regulations

Service providers — Investors

- Hedge funds (partly regulated)
- Pension funds
- Sovereign wealth funds
- Asset managers
- Insurance companies

Service providers — ~~Shadow~~ parallel banking

- Sometimes called *non-bank banks*
- Financial institutions that provide banking type services but are not banks, e.g.
  1. Some structured credit
  2. Fintech
     - 2.1 Credit, deposit and capital-raising services
     - 2.2 Payments, clearing and settlement services
     - 2.3 Investment and investment-management services
     - 2.4 Other, like credit-reference firms, comparison services and various kinds of compliance activity
  3. We return to this

Government

- Central and and local government
- Government agencies — especially various regulators
- Politicians

Others

- Journalists
- Lobbyists
- Pundits
- NGOs

What sort of crisis was Covid-19?

- It is on exogenous and not endogenous shock (we discuss the distinction in a later chapter)
- It is mostly a demand shock — reduced demand for certain types of services, like restaurants, theater, arts and sports
- By and large has not affected manufacturing
- And the economic impact is severe but targeted
- The Covid crisis is not a financial crisis
- And therefore not a systemic crisis either

The war between Russia and Ukraine

- At the time of writing, July 2023, there is no threat to financial stability arising from the war
    1. Russia is relatively small and quite isolated already since Crimea in 2014
    2. Ukraine is small and poor and not well connected to the global economy
    3. The disruption is confined to certain commodities
    4. But has not spread to the financial markets

Inflation

- At the time of writing, July 2023, inflation in major economies is around 7% to 10% and the big policy question is whether it is permanent or transitory
- It increases systemic risk
- We will discuss the inflation in much more detail later

Other causes

- Remember systemic risk is not about the likely but instead are very disastrous and very unlikely event. And here are three scenarios (one for each of the three largest economies in the world)
    - European fragmentation, some economies doing quite well, others quite poorly which puts considerable strain on the European Union — monetary policy — fiscal policy — transfers — reforms
    - The United States becoming increasingly polarized, and politically unable to respond sensibly to challenges and plan for the future
    - Public and private debt in China is very high, so when GDP growth slows, it can cause escalating defaults. The levels are unknown so the lack of transparency can cause a self-fulfilling prophecy

Policy Terminology

Financial and economic cycles

- The *economic cycle* is the fluctuation of the economy between periods of expansion (growth) and contraction (recession)
- The *financial cycle* captures fluctuations in the credit, housing and equities markets — US dominated
- They tend to be longer than the economic cycle, and are often much more dramatic
- Financial cycles in each country tend to be closely related to the financial cycles in the rest of the world, becoming stronger over time
- The economic cycles are much less related across countries

Financial and economic policy

- The governments have various policy objectives that both overlap and conflict with each other
  1. Fiscal
  2. Monetary
  3. Financial stability