

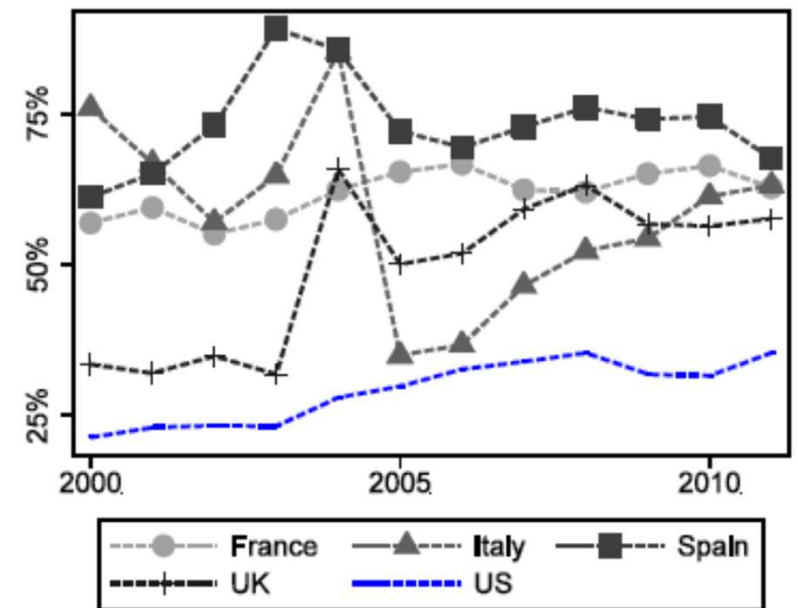
## **1.1.6. Concentration**

# Concentration

- The European banking system became not only larger, but also more concentrated, even though systemic risk triggered by too-big-to-fail (TBTF) banks was one of the GFC drivers.

European Systemic Risk Board (2014), “Is Europe overbanked?”, Reports of the Advisory Scientific Committee, No 4, June 2014

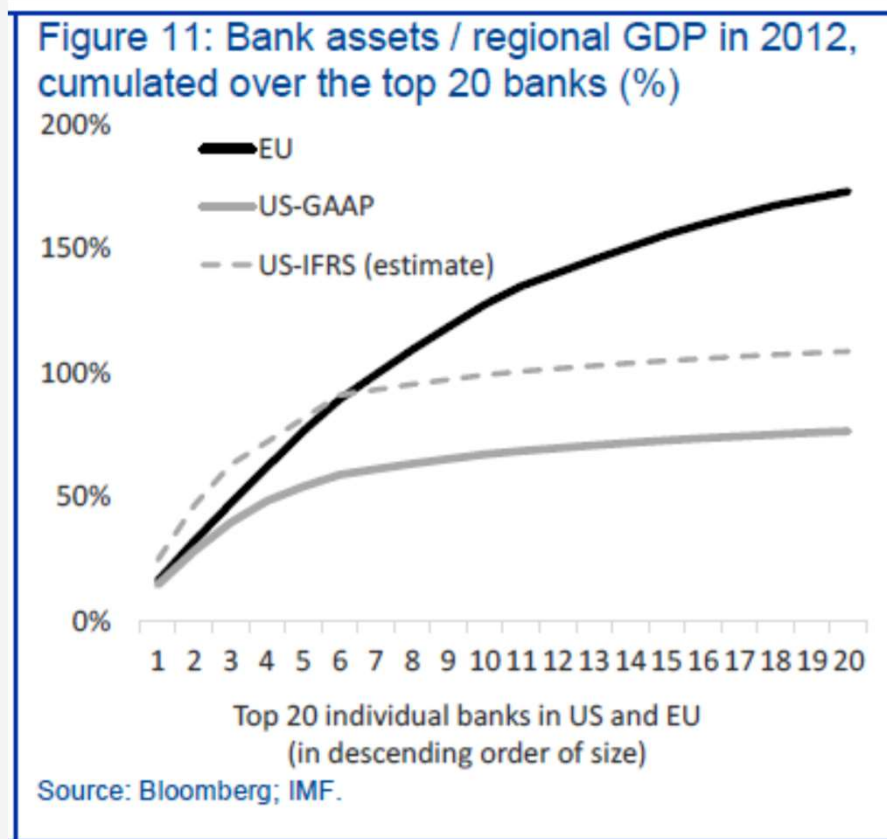
Figure 10: Top three bank assets as % of total bank assets by country



Source: Bankscope; World Bank Financial Development and Structure Dataset.

# Concentration

- Beyond the largest banks, the gap between the level of concentration in the EU and US widened substantially.



European Systemic Risk Board (2014), “Is Europe overbanked?”, Reports of the Advisory Scientific Committee, No 4, June 2014

# Mergers

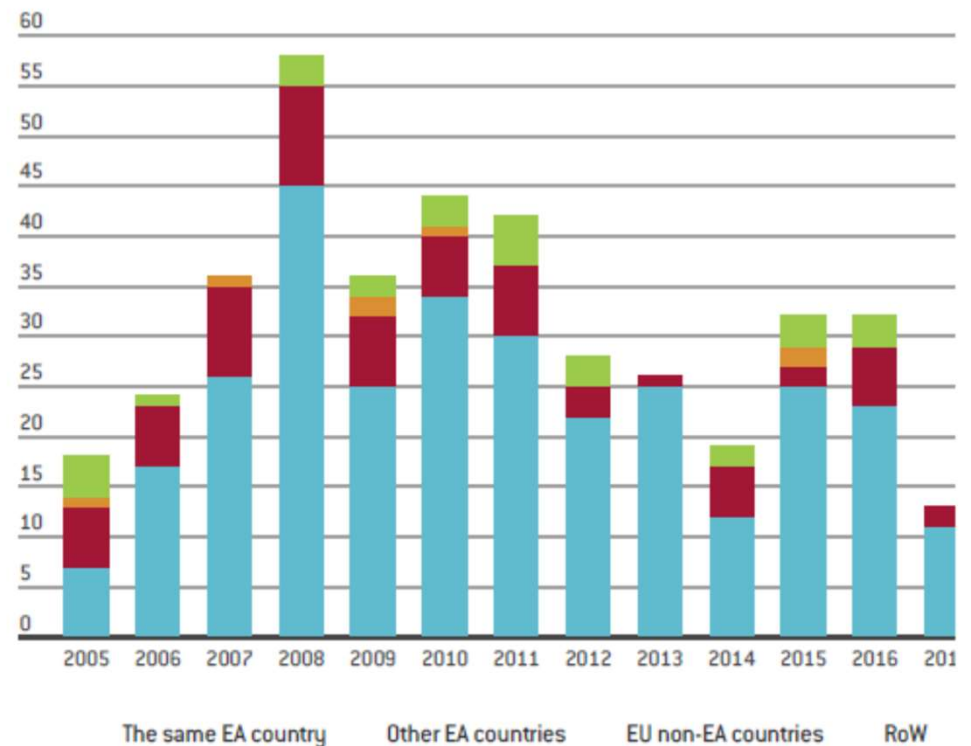
- Stricter regulation, higher capital requirements and the impact of the pandemic may motivate a new surge of mergers.
- Nonetheless, mergers usually face difficulties and uncertainties, specially cross-borders.
- Actually, according to Raposo and Wolff (2017) (“How has banking union changed mergers and acquisitions?”, Blog post, Brueghel), “little has changed in M&A activity since the banking union was launched. In fact, we seem to be witnessing a slight re-nationalisation of banking consolidation”.

# Mergers

- Therefore, the great majority of M&A over the past decade have been domestic, and there is no clear evidence of a trend over time.

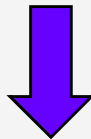
Source: Raposo, Inês and Wolff, Guntram (2017), “How has banking union changed mergers and acquisitions?”, Blog post, Brueghel.

Figure 1. Number of EA-19 banks acquired by other banks, by buyer's region



## **1.1.7.      Relevance of Debt**

# Debt vs Equity

- The relevance of FIs is in a large extent related to the importance of debt in the economy.
  - In a “perfect” economy, **economic agents should be indifferent in the choice between capital and debt** (Modigliani and Miller theorem (1958)).
  - Debt stems from markets’ and contracts’ imperfections, as well as from taxation.
- 
- There are incentives to issue debt instead of raising capital.
  - Debt issuance can be considered as transferring the company’s control from the shareholders to the debtholders, with the former keeping a call-option on the market value of the company’s assets, being the nominal value of the debt the strike price (Merton(1974)).

# Excessive Debt

- Debt is socially useful => excessive debt is economic pollution



- More financial activity is not always beneficial



- Debt pollution must be constrained by public policy



- Build a less credit-intensive economy, to reduce systemic risk



# Excessive Debt

- **Drivers of increasing debt:**

- (i) **Increasing importance of real estate in modern economies**

- real estate accounts for more than 50% of all wealth and the vast majority of lending in advanced economies.

- (ii) **Increasing inequality**

- poorer people tend to spend a higher proportion of their income and to borrow relatively more (e.g. subprime crisis).

- (iii) **Current-account imbalances**

- have to be matched by the accumulation of debt.

# Excessive Debt

- We need to understand:
  - (i) what is systemic risk
  - (ii) how to build a less credit-intensive economy; and
  - (iii) how can excessive credit be understood as pollution.

## **1.1.8. Systemic Risk**

# Systemic Risk

- **Systemic risk - risk of collapse of the entire financial system**, i.e. the disruption to the flow of financial services, with potentially severe consequences for the economy.
  - originated by the links between FIs and markets; and
  - amplified by the **procyclicality of banking activity and regulation** (see e.g. Deghi, Andrea, Peter Welz and Dawid Żochowski (2018), "A new Financial Stability Risk Index (FSRI) to predict near term risks of recessions", in ECB (2018), Financial Stability Review, May):
- **2 broad phases:**
  - (i) **build-up** - increasing financial imbalances, leverage and exuberance, with asset price misalignments, **during periods when the economy is growing and stability seems to be ensured.**
  - (ii) **materialisation** - shock transmitted due to the connections between FIs (e.g. fire sales and liquidity spirals - Brunnermeier 2009; Brunnermeier and Pedersen 2009; Krishnamurthy 2010).

# Systemic Risk

- **Procyclicality of banking activity:**
  - (i) economic expansions: banks have capital surpluses => higher lending
  - (ii) economic recessions: capital becomes scarce => lower lending
- **Systemic crises tend to happen once in a lifetime** (1929 crash, the subprime crisis in 2007/2008) => **they use to be understated.**
- **Governments and regulators often play a role behind increases in systemic risk:**
  - (i) US banks were encouraged since mid-70s to increase mortgage loans, benefiting from lower capital requirements.
  - (ii) Governments often support national champions (SIFIs) and policies to increase (riskier) loans to SMEs.

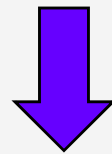
# Systemic Risk

## ■ Key features of financial stress under crisis conditions:

- (i) increase in uncertainty (e.g., concerning asset valuations and the behaviour of other investors);
- (ii) increase in disagreement (differences of opinion) among investors;
- (iii) increase in the asymmetry of information between borrowers and lenders (intensifying problems of adverse selection and moral hazard);
- (iv) reduced preference for holding risky assets (flight-to-quality) and/or illiquid assets (flight-to-liquidity), which may result from stronger risk aversion (Caballero and Krishnamurthy, 2008).

# Systemic Risk

- **One of the major reasons for systemic risk are the sudden stops in credit supply**, hampering the debt rollover and the funding of new projects.
- Debt markets may suddenly move from risk appetite to risk-aversion.



- **Depressed confidence leads to asset price falls**, due to the pressure to sell assets in order to reduce leverage.

# Systemic Risk

- **Observable symptoms of financial stress:**

- (i) higher asset price volatility
- (ii) large asset valuation losses
- (iii) wider default and liquidity risk premia.

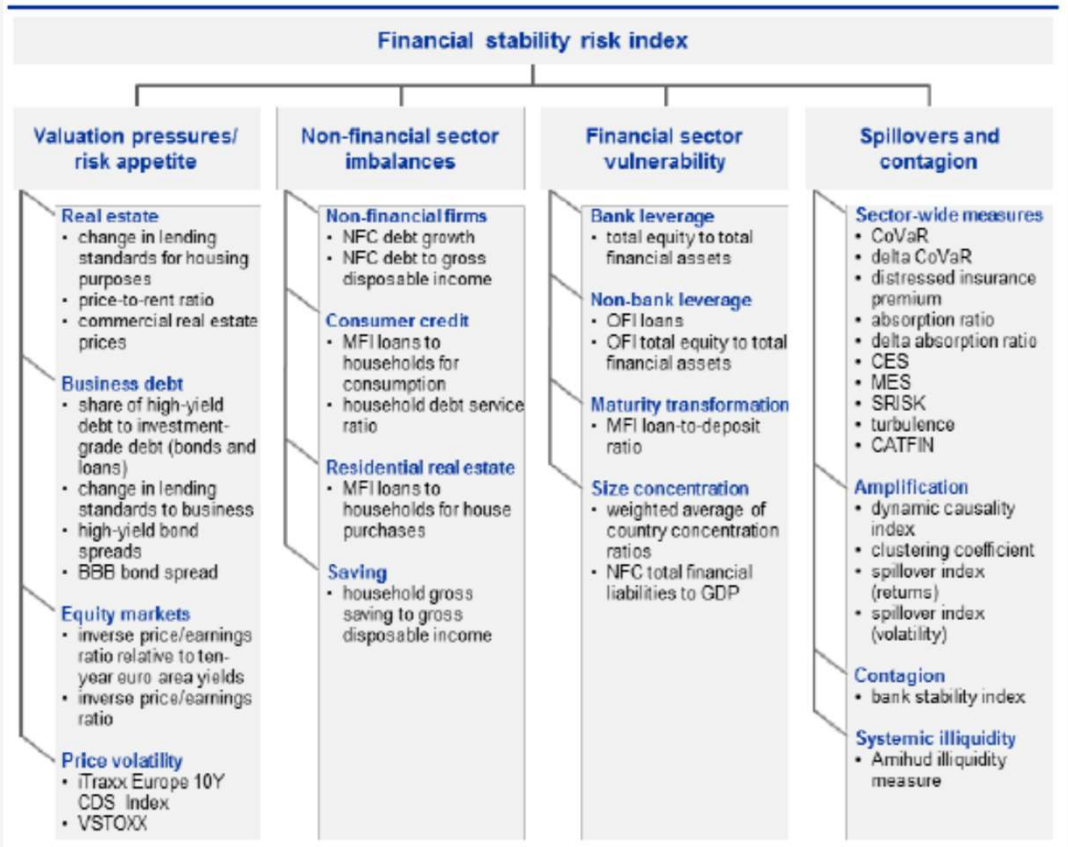
- Systemic risk is very difficult to measure and to forecast, having been the focus of abundant recent literature about and being currently one of the priorities of regulators and supervisors to reduce the frequency and severity of systemic crises.



# Systemic Risk

- The measurement of systemic risk typically involves a large set of financial and macroeconomic indicators, even though some indicators alone already provide very relevant information.
- For instance, ESRB identified more than 2 dozen variables (as in UK and US), including:
  - (i) Deviations in credit-to-GDP ratios
  - (ii) Change in price trends
  - (iii) Change in credit spreads
  - (iv) Credit risk

Taxonomy of macro-financial indicators for financial stability analysis



Source: ECB (2018), "Financial Stability Review", May.

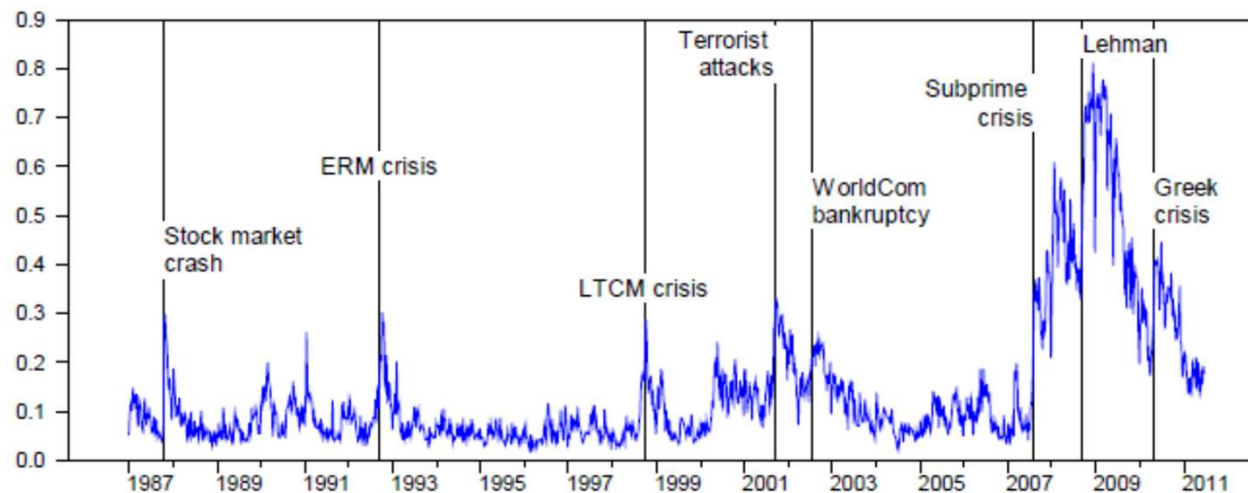
# Systemic Risk

- **One of the indicators of systemic risk developed by the ECB is CISS** – Composite Index of Systemic Stress (see Holló, Dániel, Manfred Kremer and Marco Lo Duca (2012), “CISS – A Composite Indicator of Systemic Stress in the Financial System”, WP No. 1426, March).
- It is based on the aggregation of 15 mostly market-based financial stress measures (standard financial market indicators, e.g. volatilities, risk spreads and cumulative valuation losses) equally split into the 5 most important segments of an economy’s financial system:
  - (i) Banks
  - (ii) Non-bank financial intermediaries
  - (iii) Money markets
  - (iv) Securities (equities and bonds) markets
  - (v) Foreign exchange markets.

# Systemic Risk

- These indicators are readily available for many countries at a daily frequency in general and with relatively long data histories, allowing the indicator update in real time and its calculation for a relatively broad set of countries.
- **Problem: ability to anticipate events**, as they mostly react to financial stress events.

Figure 8. CISS and major financial stress events



Source: Holló *et al.* (2012).

## **1.1.9. Building a less credit-intensive economy**

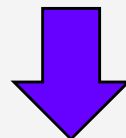
# Main tools

- (i) Monetary policy
- (ii) Microprudential rules
- (iii) Macroprudential policies
- (iv) Holistic policies

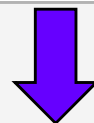
# Monetary Policy

## (i) Monetary policy:

- **interest rate increases by central banks to tackle excessive credit growth**, even before inflation is increasing – inflation measures only consider consumer prices and bubbles usually develop in real estate or stock markets, whose effects on consumer prices are not immediate;
- **reserve requirements to limit banks' money creation ability;**
- **revision of the role of monetary policy and credit in money creation:**
  - Reinforced **mechanisms to channel liquidity to targeted economic activities** (e.g. targeted liquidity injections as in UK during the current decade).
  - Better balance between public and private money creation – **printing more money (public money creation), under strict rules, may be better than excessive credit growth (private money creation).**



# Monetary Policy



## Successes in stimulating economic growth through money printing:

- (i) US Union Government in the American Civil War
- (ii) Japan in the 30's

## Failures in stimulating economic growth through money printing:

- (i) US Confederate States in the American Civil War
- (ii) Weimar Germany
- (iii) Zimbabwe

# Prudential rules

## (ii) Microprudential rules:

- Higher capital requirements for banks, namely during economic growth stages;

## (iii) Macroprudential policies:

### - limits on LTV or DTI:

- $LTV = \text{Loan-to-Value} = \text{Loan} / \text{Value of the property used as collateral}$ :  $LTV^+ \Rightarrow PD^+$  and  $LGD^+$
- $DTI = \text{Debt-to-Income} = \text{Debt (or Installments)} / \text{Income}$



# Prudential rules

- improvements on LTV and DTI definitions:
  - (i) Installments amount to be redefined - stressed and steady-state debt service definitions required (instead of the initial installment);
  - (ii) Income definition - more comprehensive and harmonized definitions are required, considering the expected permanent income (also after retirement, if the maturity exceeds the expected retirement date) and all debt obligations, living expenses, taxes and any anticipated expenditures (e.g. tuition for education);
- publication of financial stability reports.

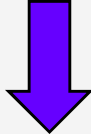
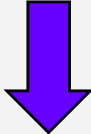
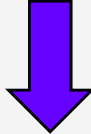
# Holistic Policies

## (iv) Develop more holistic policies:

- Better rules on urban development - to mitigate excessive growth of real estate;
- Policies to reduce inequality;
- Taxation - to reduce the bias in favor of debt and against equity.

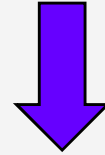
## **1.1.10. Pollution Control**

# Optimal amount of pollution

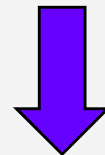
- Debt may be seen as pollution.
- Debt and pollution are unavoidable for the economy.
- The problem is excess debt.
- We need to identify the optimal amount of debt:
- Marginal social benefits of pollution-control = marginal private costs of control.

# Optimal amount of pollution

- With no uncertainty about costs or benefits, **policymakers should be indifferent between taxation and restrictions/prohibitions (e.g. on scope of activities, scale of credit growth).**



- **However, in the real world, there is uncertainty about both costs and benefits.**



- **There is usually a preference for restrictions/prohibitions**

# Restrictions on Quantities

## (i) Size

- Quantitative Limits on credit?
- Higher minimum capital requirements to operate?
- Higher capital requirements on certain classes of assets?

## (ii) Scope

- Forbid retail banks to get involved in investment banking activities (Glass-Steagall Act, Dodd-Frank Act)?
- Segmented financial intermediation, instead of universal banking?

## (iii) Macroprudential policies

- Impose limits to control quantities and risk – LTV, DTI, maximum maturities.

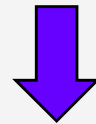
# Measures to reduce systemic risk

- (1) Modularity
- (2) Robustness
- (3) Incentives.

# Modularity

## (1) Modularity

- Modularity in organisational structures - highly decentralised networks are less exposed to the TBTF problem.



if any cell is incapacitated, the likelihood of undermining the system is severely reduced.



# Modularity

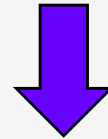
- **Several examples of modular structures that enhanced systemic resilience:**
  - (i) Terrorism - Al'Qaeda
  - (ii) Computer manufacturing - computers were highly integrated systems in the 1960s, having evolved into the modular system of today, with distinct modules (CPU, hard disk, keyboard), replaceable if they failed without endangering the system as a whole.
  - (iii) Computer industry structure - in 1969, IBM had a market share of over 70%. In 2000, the market share of the largest hardware firm was below 25%;
  - (iv) Management of forest fires - introduction of firebreaks to control the spread of fire;

# Modularity

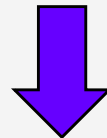
- (v) Management of utility services (e.g. water, gas and electricity) - latencies and restrictions built in the network to avoid overload and contagion
- (vi) Management of infectious diseases - restrictions on travel
- (vii) Control of computer viruses across the internet - firewalls restricting access to domains;
- (viii) Attempts on the world domino toppling record - involve arranging the dominos in discrete blocks to minimise the risk of premature cascades.

# Modularity

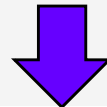
- **Banking** – larger size and scope may increase systemic risks, but also tend to increase the diversification benefits.



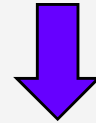
- A very diversified bank may mitigate idiosyncratic risk, retaining basically the systematic risk.
- But if all banks are fully diversified and hold the market portfolio => they are all holding the same portfolio => All are subject to the same systematic risk factors => the system as a whole lacks diversity => Homogeneity breeds fragility.



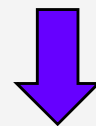
- **Conclusion:** Building larger or more diversified banks do not necessarily smooth income volatility.



# Modularity



- **There is no strong relationship between size or diversity on one hand and income volatility in banking on the other hand.**
- **There is even evidence from econometric studies of banking conglomerates that larger banks exhibit greater risk due to higher volatility assets and activities.**

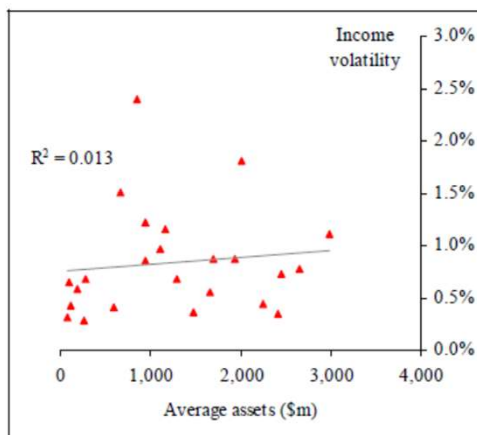


# Modularity

- Actually the relationship between size and diversity, on one hand, and income variability, on the other, is positively sloped.

## Pre-crisis

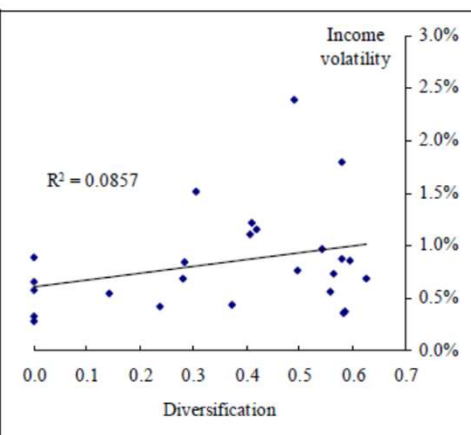
Chart 4: Bank size and volatility



Notes: Average assets are calculated for 24 banks between 2006 and 2008. Income volatility is measured as the standard deviation of operating income (per asset) over the period 1997-2008.

Source: Bankscope, published accounts and Bank calculations.

Chart 5: Bank diversification and volatility

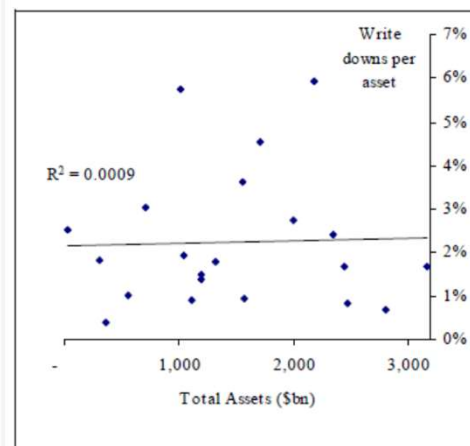


Notes: Pre-crisis diversification and income volatility for a sample of 25 banks. Diversification index based on revenue concentration, as described in the main text.

Source: Bankscope, published accounts and Bank calculations.

## During the crisis

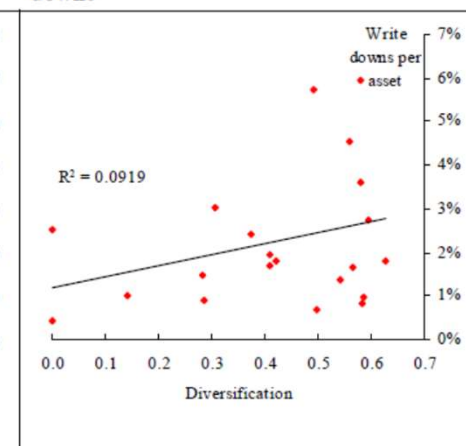
Chart 6: Bank size and write downs



Notes: Total assets for a sample of 21 banks for 2007. Cumulative write downs over the course of the crisis are shown (from 2007 Q4 to 2009 Q3).

Source: Bankscope, published accounts and Bank calculations.

Chart 7: Bank diversification and write downs



Notes: Sample of 21 banks. Cumulative write downs over the course of the crisis are shown (from 2007 Q4 to 2009 Q3).

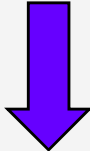
Source: Bankscope, published accounts and Bank calculations.

Source: Haldane, A. (2010), ““What is the contribution of the financial sector: Miracle or mirage?”, LSE

Note: Diversification is measured by the Herfindahl-Hirschman (HH) index of revenue concentration ( $HH = 1 \Leftrightarrow$  revenue concentrated solely on one activity). Revenue concentration is calculated across 3 buckets for the last pre crisis year (2006) - Retail and commercial banking; Corporate and investment banking; Asset and wealth management.

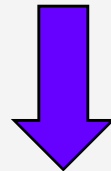
# Robustness

## (2) Robustness

- In complex dynamic systems, such as the banking system, the distribution of risk may be irregular and subject to discontinuities  $\Rightarrow$  **the distribution of outcomes for the financial system as a whole may be incalculable.**
  - Frank Knight (1921) – risk vs uncertainty:
    - (i) risk - frequencies can be used to calculate probabilities;
    - (ii) **uncertainty - there is no objective basis on which to derive probabilities.**
- 
- **The financial system operates in an environment of uncertainty, in the Knightian sense.**

# Robustness

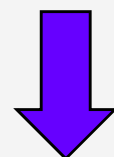
- How to **regulate financial systems to ensure robustness and stability**:
  - (i) **keep it simple** - **Complex control of a complex system is a recipe for confusion at best, catastrophe at worst**:
    - The US constitution is 4 pages long.
    - Dodd-Frank Act (on US financial sector reform after the subprime crisis) is 1,336 pages long.



# Robustness

## (2) Robustness

- (ii) **choose the “minimax” strategy** - a strategy which avoids the extreme tails of the distribution, minimising the likelihood of the worst outcome.



- mechanism design - acting on the organisational form of the system, rather than through the participants => **regulate the structure, more than the behaviour of individual market participants => macroprudential above microprudential supervision.**



# Robustness

## ■ Glass-Steagall Act vs Basel II:

(i) GS was simple in its objectives and execution:

- only 17 pages long
- goals shaped by an extreme tail event (the Great Depression) and explicitly minimax (to avoid a repetition).
- acted directly on the structure of the financial system, separating commercial bank and brokering activities through red-line regulation.
- Conclusion: GS satisfied all robustness criteria => lasted more than half a century without a significant systemic event in the US.

# Robustness

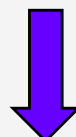
## (ii) Basel II :

- thousands of pages, taking 15 years to deliver.
- calibrated largely to data from the Great Moderation, a period where tail events were absent;
- complex menu of capital risk weights.
- **Conclusion: Basel II satisfied few of the robustness criteria => it was overwhelmed by the recent crisis scarcely after its introduction.**

# Incentives

## (3) Incentives

- More important than setting the right figure for a given regulatory restriction, regulation can change behaviors.
- Restrictions may provide the right incentives for banks to enhance financial stability.
- There is no magic number for regulatory ratios sufficient to insure against tail risk in all states of the world.
- Calibrating a capital ratio for all seasons is pointless – whatever today's optimal regulatory point, risk incentives mean that tomorrow will surely be different.
- However, by imposing minimum capital requirements (and prohibiting banks to operate below these), banks have to increase their capital ratios => banks are safer => cost of capital and funding may be reduced.



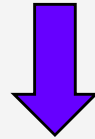
# Costs of Controls

- Imposing controls may also have costs:
  - (1) Economies of scale
  - (2) Economies of scope

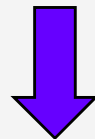
# Economies of Scale

## (1) Economies of scale

- Imposing restrictions on the excessive growth of banks may impact on the ability of banks to reach a minimum optimal size.



- However, that doesn't seem to be a big issue, as economies of scale appear to exist in banks with relatively small size (assets much lower than 100 B\$).



# Economies of Scale

## (1) Economies of scale

- According to studies in the mid-1990s, **economies of scale in banking are exhausted at relatively modest levels of assets, between 5-10 B\$.\***
- A more recent 2004 survey of studies in both the US and Europe finds evidence of a similar asset threshold.\*\*
- Besides, above that threshold, literature suggests that there are diseconomies of scale.
- **Bank mergers - no strong evidence of increased bank efficiency after a merger or acquisition.**

\* Saunders, A (1996), "Financial Institutions Management: A Modern Perspective", Irwin Professional Publishing and Berger, A N and L J Mester (1997), "Inside the Black Box: What Explains Differences in the Efficiencies of Financial Institutions?", *Journal of Banking & Finance*, vol. 21(7), p.895-947.

\*\* Amel, D, Barnes, C, Panetta, F and C Salleo (2004), "Consolidation and Efficiency in the Financial Sector: A Review of the International Evidence", *Journal of Banking & Finance*, vol. 28(10).

# Economies of Scope

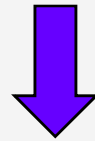
## (2) Economies of scope

- Evidence from US bank holding companies suggests that **diversification gains from multiple business lines may be more than counter-balanced by heightened exposures to volatile income generating activities, such as trading.\***

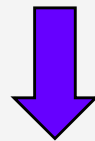
\* Stiroh, K and A Rumble (2006), “The Dark Side of Diversification: the Case of US Financial Holding Companies”, *Journal of Banking and Finance*, Vol.80, p.2131-2161.

# Fractional vs Reserve Banks

- Deep-rooted discussion about fractional vs reserve banks.



- Fractional reserve banks (vs reserve banks) - banks that keep only a small fraction of their liabilities in central bank reserves.
- After the great recession in the 20's and 30's, even very strong free-market supporter economists like Irving Fisher and Milton Friedman concluded that fractional reserve banks were so dangerous that they should be abolished.



- Banks should hold reserves = 100% of their deposits and play no role in credit, being simply custodians of savings and providers of payment services. (Friedman, M.

(1948), "A Monetary and Fiscal Framework for Economic Stability", American Economic Review, 38 (3), pp. 245-264).



# Fractional vs Reserve Banks

- As after previous crises, in 2010, John Kay in UK and Laurence Kotlikoff in the US have produced narrow bank‘ or limited purpose bank‘ proposals.\*
- However this is not an answer, as banking activity is inherently fragile and a narrower scope for banks would always move this fragility somewhere else, impeding banks to be profitable.

\* Kotlikoff, L (2010), “*Jimmy Stewart is Dead: Ending the World’s Ongoing Financial Plague with Limited Purpose Banking*”, Wiley;  
Kay, J. (2009), “*Narrow Banking, The Reform of Banking Regulation*”, Centre for the Study of Financial Innovation.

# Restrictions in US

## ■ Restrictions imposed in US after the great recession in the 20's and 30's:

### (i) **Bank size** - McFadden (1927)

- allowed a national bank to operate branches, but only to the extent permitted by state governments for state banks in each state (though different states had different rules about branch banking), as most States only allowed “**unit banks**” (banks with no branches) => thousands of small banks in segmented markets.
- motivated by the lobbying of small banks under threat from larger competitors, but also by an economic goal of avoiding excessive concentration (TBTF).
- prohibition on national banks opening new branches across state lines.

### (ii) **Bank scope** - Glass-Steagall (1933) Act.

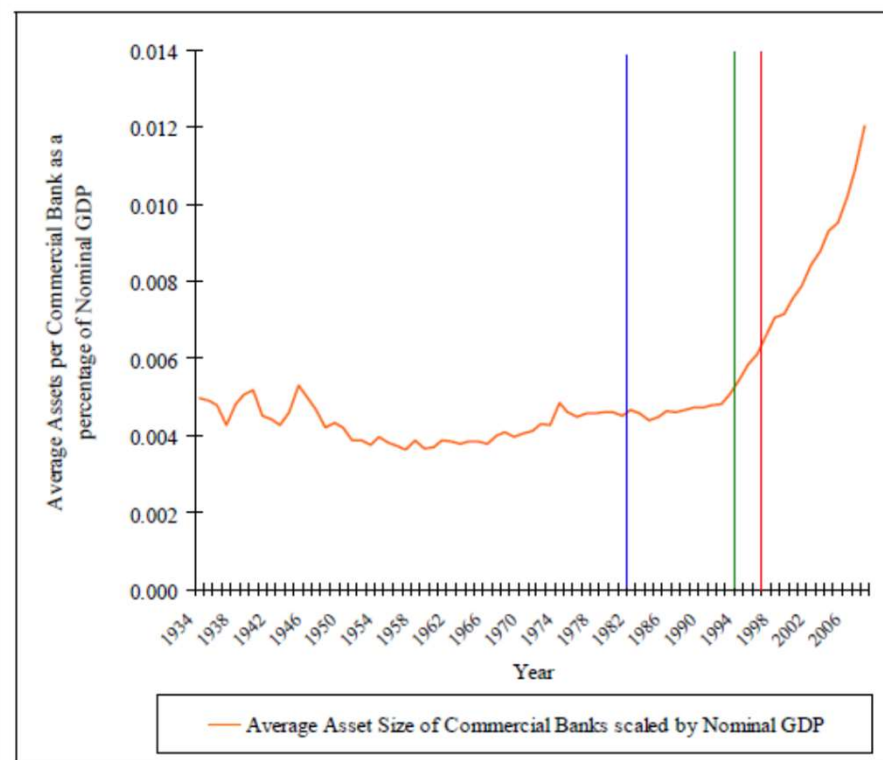
- separation between retail and investment banking

# Restrictions in US

## ■ McFadden Act:

- (i) **very effective in limiting the size of US banks between the 1930s and mid-1970s** ⇔ average asset size of US banks/nominal GDP roughly flat.

Chart 1: Average assets relative to GDP of US commercial banks<sup>(a)</sup>

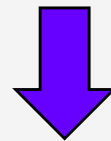


(a) Blue vertical line represents the 1982 Garn-St Germain Act, green vertical line represents the 1994 Riegle-Neal Act, red vertical line represents the Riegle-Neal Act coming into effect in 1997.  
Source: FDIC and [www.measuringworth.org](http://www.measuringworth.org)

Source: Haldane, A. (2010), “What is the contribution of the financial sector: Miracle or mirage?”, LSE

# Restrictions in US

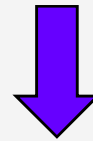
- **In the 1980s, interstate branching restrictions were progressively lifted:**
  - (a) States began to open their borders to out-of-state Bank Holding Companies (BHCs).
  - (b) Garn-St Germain Act (1982) - allowed any BHC to acquire failed banks and thrifts, regardless of the state law.
  - (c) Riegle-Neal Act (1994), implemented in 1997, lifted most restrictions on interstate branching for domestic and foreign banks, leading to an intense period of consolidation in US.



- **JPMorgan Chase was created from the merger of 37 banks, becoming a megabank with more than 220,000 employees and \$2 T of assets in 2011.**
- **The Bank of America, which was originally a California bank, merged with or acquired more than 50 other banks.**

# Restrictions in US

- **The rationale for this change was a mirror-image of the 1920s:**



- Large banks convinced politicians of the high private costs of restrictions, which inhibited the efficiency of their offering to the public  $\Leftrightarrow$  private costs overcome social benefits.
- Dramatic effects of the removal of interstate restrictions  $\Rightarrow$  **average size of US banks relative to GDP has risen roughly 3x over the past 20 years**  $\Rightarrow$  the rebirth of too-big-to-fail banks.

# Restrictions in US

## ■ Glass-Steagall Act:

### (i) key functions of commercial and investment banks were effectively separated:

- commercial banks were prevented from conducting most types of securities business, including principal trading, underwriting and securities lending.
- investment banks were banned from taking deposits.

### (ii) motivated by stability concerns following the Great Depression:

- stock market boom of the 1920s fuelled by cheap credit from banks =>
- ⇒ 1929 crash brought massive losses on securities and also loans =>
- ⇒ impact on the real economy through a collapse in lending (whose stock halved between 1929 and 1933).

# Restrictions in US

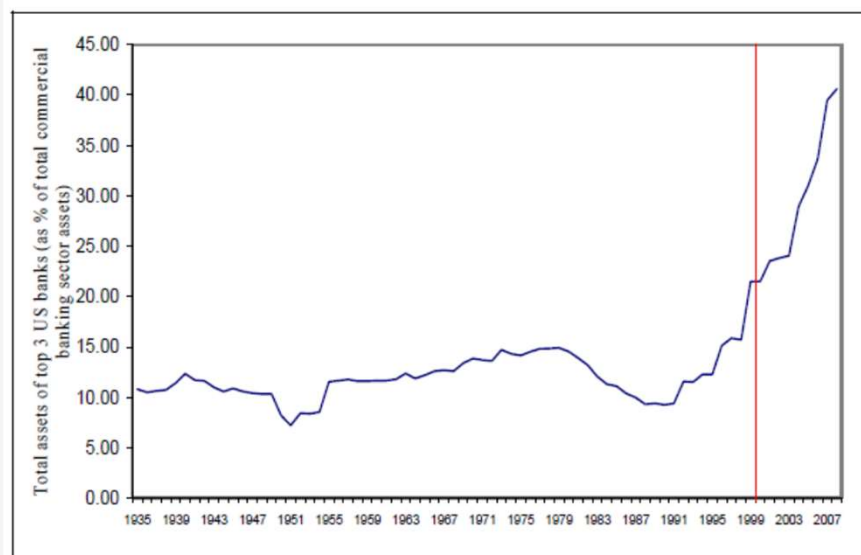
- Glass-Steagall was effective from the 1930s until the end-1980s =>

=> Measures of concentration in the US banking system remained broadly flat during that period.

- But competitive pressures building since the late 1970s from alternative lending vehicles (e.g. mutual funds and commercial paper markets) and overseas banks => the private costs of restrictions were rising. =>

=> in 1999, the Gramm-Leach-Bliley Act revoked Glass-Steagall => share of the top 3 largest US banks in total assets rose 4x, from 10% to 40%.

Chart 2: Concentration of the US banking system<sup>(b)</sup>



- (a) Red line represents the Gramm-Leach-Bliley Act (1999) which revoked restrictions of Glass-Steagall
  - (b) Top 3 banks by total assets as a % of total banking sector assets
  - (c) Data includes only the insured depository subsidiaries of banks to ensure consistency over time - for example, non-deposit subsidiaries are not included.
- Source: FDIC

Source: Haldane, A. (2010), ““What is the contribution of the financial sector: Miracle or mirage?””, LSE

# Restrictions in US

- After the revocation of Glass-Steagall Act, most banks became universal FIs:

**TABLE 2-1A** Products Sold by the U.S. Financial Services Industry, 1950

Institution	Function							
	Payment Services	Savings Products	Fiduciary Services	Lending		Underwriting Issuance of		Insurance and Risk Management Products
				Business	Consumer	Equity	Debt	
Depository institutions	X	X	X	X	X			
Insurance companies		X		*				X
Finance companies				*	X			
Securities firms		X	X			X	X	
Pension funds		X						
Mutual funds		X						

**TABLE 2-1B** Products Sold by the U.S. Financial Services Industry, 2007

Institution	Function							
	Payment Services	Savings Products	Fiduciary Services	Lending		Underwriting Issuance of		Insurance and Risk Management Products
				Business	Consumer	Equity	Debt	
Depository institutions	X	X	X	X	X	X	X	X
Insurance companies	X	X	X	X	X	X	X	X
Finance companies	X	X	X	X	X	+	+	X
Securities firms	X	X	X	X	X	X	X	X
Pension funds		X	X	X				X
Mutual funds	X	X	X					X

Source: Saunders, Anthony and Marcia Millon Cornett (2006), "Financial Institutions Management – A Risk Management Approach", 5th Edition, McGraw-Hill International.



# Higher Capital Requirements

- Higher capital requirements may be considered as beneficial, as they improve the prospects of financial stability, limiting credit expansion.
- Capital requirements are set to keep the system safe, by simply trying to make sure that individual banks are safe.
- But they can also impact adversely on the access to funding by debtors and consequently on the overall economic performance, as higher capital requirements for banks increase the cost of equity => higher cost of bank loans.

# Higher Capital Requirements

- Additionally, banks can behave in a way that collectively undermines the system.

e.g., selling an asset when risks increase is a prudent response from the perspective of a single bank. But if many banks act in this way, the asset price will collapse, forcing institutions to take yet further steps to rectify the situation. Such responses by banks lead to generalised declines in asset prices.

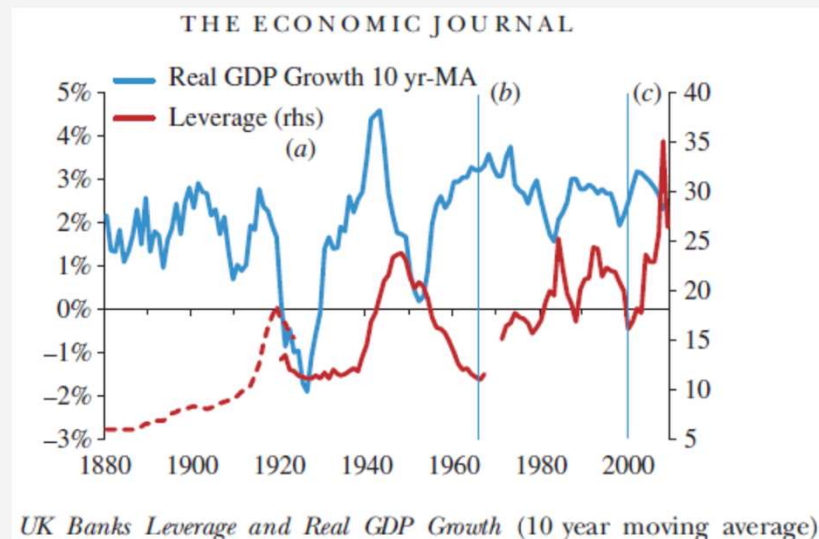
- Constrains on mortgage loans e.g. caps on loan-to-value (LTV) and Debt-to-Income (DTI) ratios play an important role => macroprudential above microprudential concerns.

# Higher Capital Requirements

- However, according to Miles *et al.* (2012), even large increases in bank capital are likely to result in a small long-run impact on the borrowing costs faced by **bank customers**: e.g., if the amount of bank capital doubles, the average cost of bank funding will increase by only around 10–40 basis points (bps).
- Moreover, **there are severe shortcomings of a shortage of banks' capital**:
  - (i) undercapitalized banks are less able to supply credit to healthy borrowers;
  - (ii) weak banks are prone to evergreen loans to zombie firms, adding unpaid interest to a loan's principal and further undermining their already weak capital position to avoid the realization of losses.
  - (iii) the system as a whole becomes more vulnerable to contagion and panic.

# Higher Capital Requirements

- **Small negative impact of higher capital requirements on economic activity** - In the UK and US economic performance was not worse, and spreads between reference rates of interest and the rates charged on bank loans were not significantly higher, when banks increased equity funding:
  - There is little evidence that investment or the average/potential growth rate of the economy picked up as leverage moved sharply higher in recent decades.

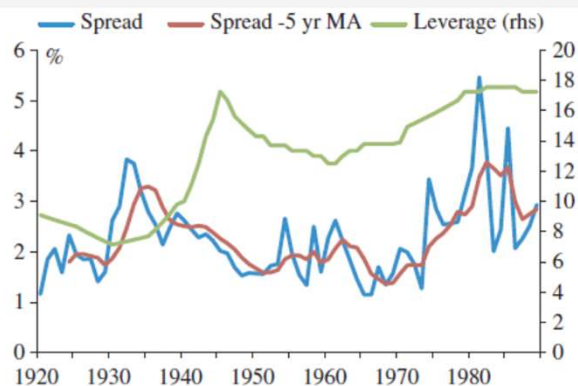


Miles, David, Jing Yang and Gilberto Marcheggiano (2012), “Optimal bank capital”, *The Economic Journal*.

# Higher Capital Requirements

(ii) spreads on bank lending are not necessarily higher when banks have higher capital levels (see e.g. Hanson *et al.* (2011):

- **Modigliani–Miller (1958)** – more equity capital => volatility of the return on equity falls and **safety of debt rises** => required rate of return on both sources of funding falls => **weighted average cost of finance is unchanged**, contrary to the common wisdom that higher capital increases the cost of funding, because capital is more expensive.
- **Kashyap et al. (2010)** – **modest long-run steady-state impact on bank loan rates from increases in external equity finance** (25–45 bp for a 10 pp increase in the ratio of capital to bank assets, which would roughly halve leverage).



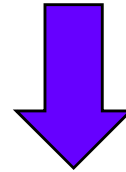
→ **No clear relationship between leverage and credit spreads**

Miles, David, Jing Yang and Gilberto Marcheggiano (2011),  
“Optimal bank capital”, *The Economic Journal*.

*Leverage and Spreads of Average Business Loan Rates Charged by US Commercial Banks Over 3-month Treasury Bills*

# Entry Barriers

- Entry barriers impose constraints on debt growth.
- 2 types:
  - (i) Legal - key role performed by banking activity in the economy has motivated special concerns from the authorities



Legal entry barriers have been imposed, e.g. by higher minimum capital levels or by a more active and costly supervision

- (ii) **Economic** - e.g. minimum optimal size.

## **1.1.11. Supervision**

# Purposes

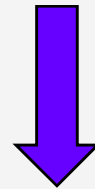
- **Definition: enforcement of the legal environment - the regulation**
  
- **3 main purposes:\***
  1. Competition - to constrain the use of monopoly power and the prevention of serious distortions to competition and the maintenance of market integrity;
  2. Micro/Macro prudential - to prevent situations where the social costs of market failure exceed both the private costs of failure and the extra costs of regulation.
  3. Behavioural supervision - to protect the essential needs of consumers when information is hard or costly to obtain and mistakes could devastate welfare.

\* See Brunnermeier, Markus, Andrew Crocket, Charles Goodhart, Avinash D. Persaud and Hyun Shin (2009), “The Fundamental Principles of Financial Regulation”.



# Competition

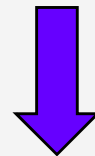
- The effect of the recent crisis has been to reduce **competition in the banking industry**.



Concerns about reductions in competition are marginalized, in the rush to shore up the system.

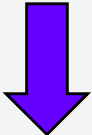


The result is an oligopolistic system, dominated by TBTF (and, in smaller countries, too large to save) banks, wielding great influence and power.



Competition authorities must reinforce their surveillance on potential anti-competitive practices and prudential failures by the larger banks.

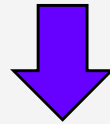
# Prudential Regulation

- Historically, **financial systems with unregulated markets and FI** (e.g. US in late XIX century), **often experienced financial crises** => regulators and supervisors created to reduce the frequency of crises and to mitigate their consequences.
  - Conversely, the Bank of England played an especially important role in financial stability in the XVIII and XIX centuries in UK.
  - Even though Alexander Hamilton had been impressed by the example of the Bank of England and created the First Bank of the US and subsequently the Second Bank of the US, the renewal of the Second Bank's charter was vetoed and the **US ceased to have any form of central bank in 1836.**
- 
- Only after several financial crises the Federal Reserve System was eventually established in 1914.

# Prudential Regulation

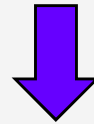
- Banks differ from other companies due to the dependence between their activity and the sector's credibility and reputation.

→ illustrated by the several bank runs in several countries along time (amplification mechanisms).



- **Banks are significantly exposed to systemic and contagion risks.**
- While a bank failure weakens the other banks and financial markets, the failure of a non-financial company tends to strengthen the remaining companies in the same sector, by removing a competitor.

# Negative Externalities

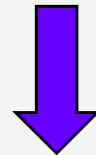


- There are, at least, 4 reasons for negative externalities:
  - (i) **informational contagion**
    - Bank A fails => more doubts on the solvency of bank B, if B is perceived as being of the same type as A => loss of confidence of bank B's depositors and lenders => liquidity withdraw => sudden liquidity problem for B => higher interest rates for B => higher solvency difficulties for B.
    - Lower risk of direct contagion - if a problem is perceived as being an outlier (e.g. BCCI in UK) or if the cause of loss is particular to that bank and not applicable to its close competitors (e.g. frauds in Barings and Soc.Gen, involving Nick Leeson and Jerome Kerviel, respectively).

# Negative Externalities

(ii) **loss of access to future funding for the failed bank's customers:**

- a client of failed bank A can try to transfer its funding to surviving bank B, but bank B will have less direct information on this client and is likely, especially under fear and panic, to provide replacement credit facilities only on much tougher terms.



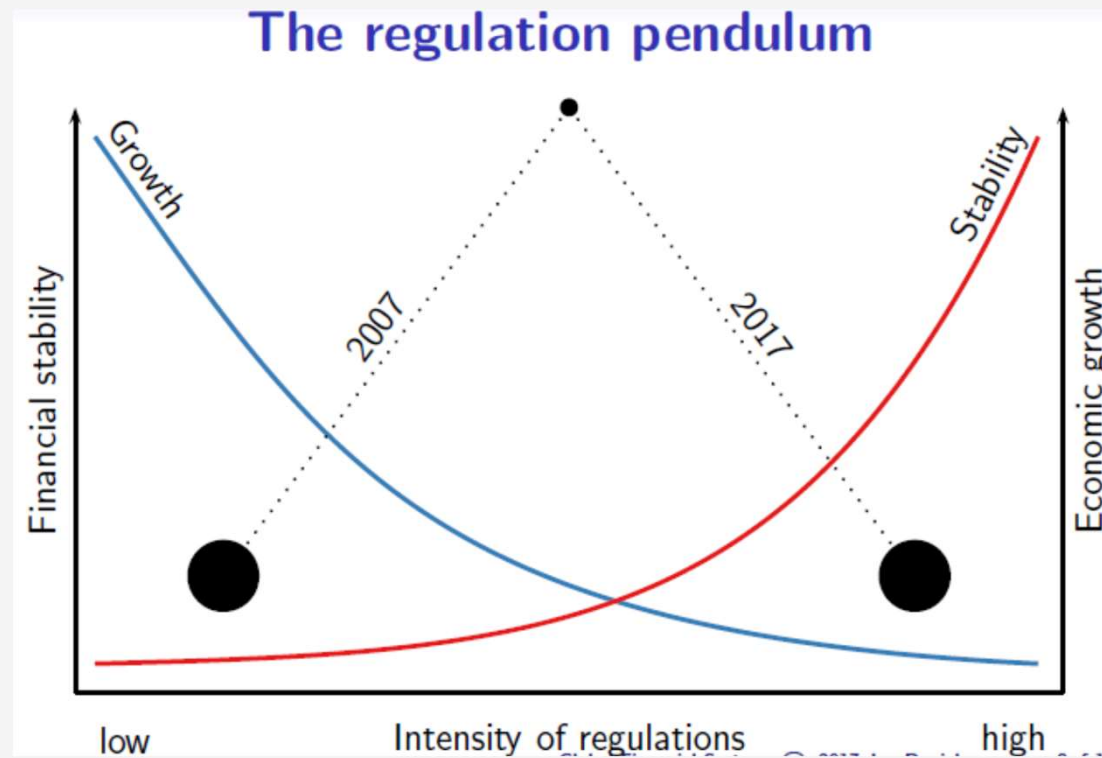
- a bank failure causes an externality due to the loss of specific information.

# Negative Externalities

- (iii) **Solvency is not exogenous to liquidity** - generalised liquidity problems => declines in asset values => **solvency problem**, even when none existed before => **liquidity spirals**.
- (iv) Instead of selling financial assets to regain liquidity and improve capital ratios, a FI may seek to **restrict new credit extension**, e.g. by rationing via higher margins/haircuts or by raising interest rates => deceleration of the economy => increase PD of other borrowers.

# Regulation vs Growth

- In the short-run, a trade-off between the level of regulation and economic growth may be observed:



Source: Danielsson, Jon (2017), "Global Financial Systems".

# Supervision Domains

- (i) **Behavioral** – focus on eliminating information asymmetries between banks and its customers, in order to protect the customers;
- (ii) **Microprudential** – aims at ensuring the solvency of FIs by rules on the main activity risks (e.g. large exposures, liquidity and market risks) and on capital adequacy, considering the set of main risks faced (namely credit, market and operational risks).
- (iii) **Macroprudential** – focus on the stability of the whole financial system, avoiding generalized asset shrinkage: credit-crunch and fire-sale.



# Supervision in Portugal

- In Portugal, macroprudential supervision is performed by the Bank of Portugal, as in most EU countries, due to the central bank role in liquidity provision.
  
- Conversely, behavioral and microprudential supervision is performed on a sector basis, by:
  - (i) the Bank of Portugal – credit institutions and financial companies
  - (ii) the Pension Funds and Insurance Authority (ASF) – insurance sector
  - (iii) the Securities and Exchange Commission (CMVM) – securities markets

# Supervision in the Euro Area

- The Bank of Portugal integrates the **Single Supervisory Mechanism (SSM)**, since its inception in Nov2014.
- In EU, the SSM is headed by the ECB, which is directly in charge of the supervision of the largest FIs in Euro Area.
- The **European Systemic Risk Board (ESRB)** oversees macroprudential policies in EU and the prevention and mitigation of systemic risk, monitoring these risks and issuing warnings and recommendations, if necessary.
- ESRB covers a large set of FIs and markets - banks, insurers, asset managers, shadow banks, financial market infrastructures and other financial institutions and markets.

# Regulators in EU

- **European Banking Authority (EBA)** - responsible for ensuring harmonised prudential rules for FIs in EU (Single Rulebook) and the convergence of supervisory practices, as well as the assessment of risks and vulnerabilities in the EU banking sector through regular risk assessment reports and pan-European stress tests.
- **European Insurance and Occupational Pensions Authority (EIOPA)** – similar to EBA, for the insurance sector, including the protection of policyholders, pension scheme members and beneficiaries.
- **European Securities and Markets Authority (ESMA)** – focused on the protection of investors and promoting stable and orderly financial markets.