



Banking and Insurance

Jorge Barros Luís ©
Sep.20

1. Financial Sector Framework

1.1. Financial Intermediation

1.1.1. Players

Players

- 3 types:

- (i) **Service providers** – FI typically perform a set of activities in order to channel funds from savers to debtors.
- (ii) **Public Entities** – Governments, Regulators and Central Banks – settle and enforce regulation, as well as the macro conditions for financial intermediation (e.g. interest rates and the quantity of liquidity available).
- (iii) **Public opinion** – pressure on FIs and Governments/Regulators on micro and macroprudential issues, e.g. commercial practices and financial stability.

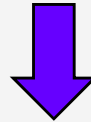
Players

■ 3 reasons for government involvement:

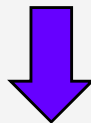
- (i) protecting investors – while competition can discipline firms to act with integrity, in the case of finance there is broad agreement that the majority of individuals have neither the necessary information nor the knowledge to do the sophisticated analysis this would require;
- (ii) shielding consumers from monopolistic exploitation – there is always a tendency for small firms to merge, reducing competition and decreasing efficiency; and
- (iii) safeguarding financial stability – liquidity risk + information asymmetries makes the system unstable.

Early banks

- Banks evolved from the activity of **money changers** in Europe and the first loans were overdraft facilities provided to depositors.

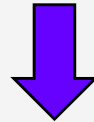


- **Depositors were natural candidates for loans**, as public information about the merchants was scarce at that time and money changers could obtain very relevant information from the merchant's current account.

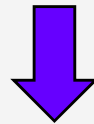


Early banks

- Early banks failed often, mostly due to sovereign risk, which had the highest credit risk, due to their absolute powers.



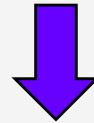
- This was facilitated by the high reserve requirements, barring banks from investing significant portions of their liquidity in private projects.



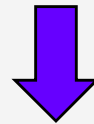
- When the reserve requirements were lower, banks had an incentive to invest all liquidity available in private projects, in order to avoid being forced to lend to Sovereigns.

Early banks

- Banks in the Middle Ages that faced 100% reserve requirements were not deemed as safe.



- They had to keep the deposits, instead of investing them, facing the risk of being forced by the Government to grant loans from the liquidity available.



- By fully utilizing reserves through overdrafts, the money changer could protect depositors better against misappropriation by the sovereign.
- Moreover, he created a larger number of stakeholders who would help him against the sovereign => the money changer aggregated both the financial and political power of the depositors.

Bank Business Models

- **4 categories:**

- (i) 2 models of commercial banking;

- retail-funded - greater weight of deposits vs debt

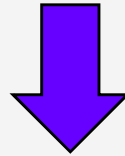
- wholesale funded – greater weight of debt vs deposits

- (ii) 1 trading model – small loan book ; and

- (iii) 1 universal model - a hybrid version of the other 3, with a loan book, portfolio activity, a deposit base and an active role in the interbank market, as both borrower and lender.

Regulation

- Due to their central role in the economy, banks have been subject to regulation for a very long time.



- In the US, the National Banking Act of 1864 created the Office of the Comptroller of the Currency, which required reporting and began regular examination of nationally chartered banks.
- Additionally, banks were required to finance a portion of their assets with capital, with the amount dependent on the size of the city in which they operated.

Regulation

- Moreover, until the early 1930s, bank owners faced double liability, i.e. they could be liable not only for their paid-in capital, but for an additional equal amount.
- Following the dramatic financial collapse during the Great Depression in the early 1930s, **US authorities introduced a safety net** composed by the central bank as lender of last resort and deposit insurance.
- **The safety net creates moral hazard**, encouraging bank managers to take risk
=> **regulation and supervision.**

Non-regulated players

- **Service providers include regulated and non-regulated players** (e.g. shadow banking, fintechs).
- Usually, regulated FIs are able to perform a set of different financial activities and services, with banks being usually the players with the broadest scope of activities and the most relevant and largest financial intermediaries.
- Conversely, **non-regulated entities are focused on specific niches of the financial industry** and are not able to receive deposits.

Non-regulated players

■ Main types:

- (i) Investment banking “boutiques” – focused on credit structuring and financial market deals, not involving funding;
- (ii) Fintechs:
 - (1) Credit/Investment platforms
 - (2) Payment Services
 - (3) Comparison services
 - (4) RegTechs
- (iii) BigTechs – companies offering digital financial services, along with other digital services, usually related to large e-commerce trading platforms or social networks.

Non-regulated players

- FinTech activity has gained a significant share in specific market segments:
 - online lenders (e.g. Quicken Loans) - now represent 8-12% of new mortgage loan originations in the US
 - FinTech credit platforms - accounted for 36% of the flow of personal unsecured loans in the US in 2017
- **Bigtech usually start by providing payment services, but are already moving to other financial services.**

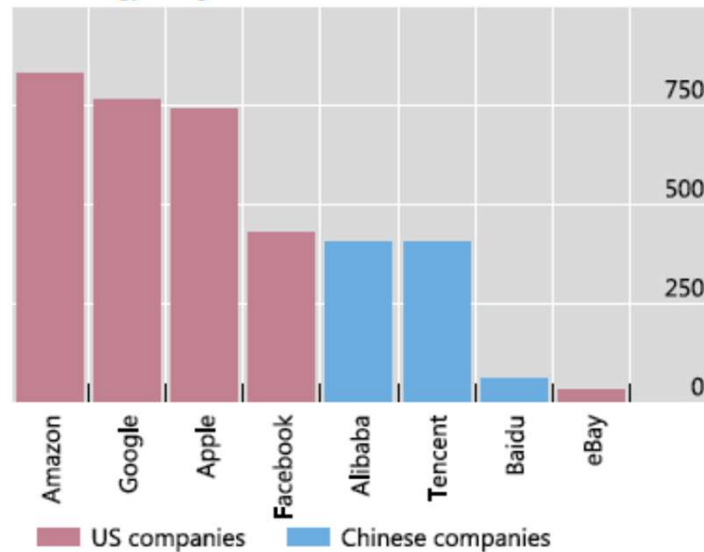
Non-regulated players

- BigTechs are already much larger than banks.

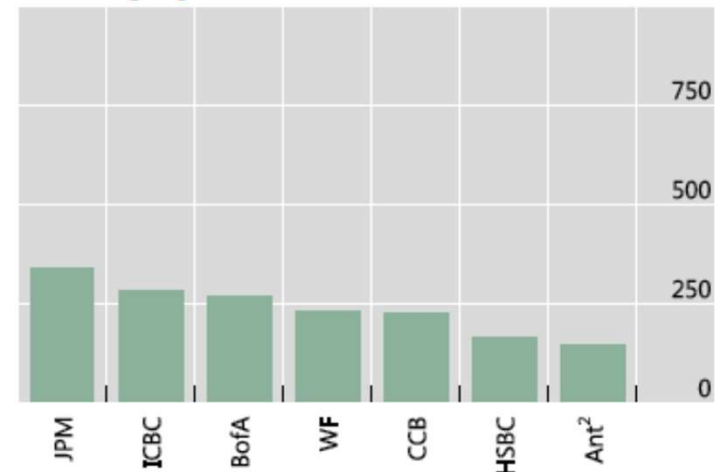
Figure 1. Market capitalisation of major financial groups and BigTech firms

In billions of US dollars

Technology companies



Financial groups



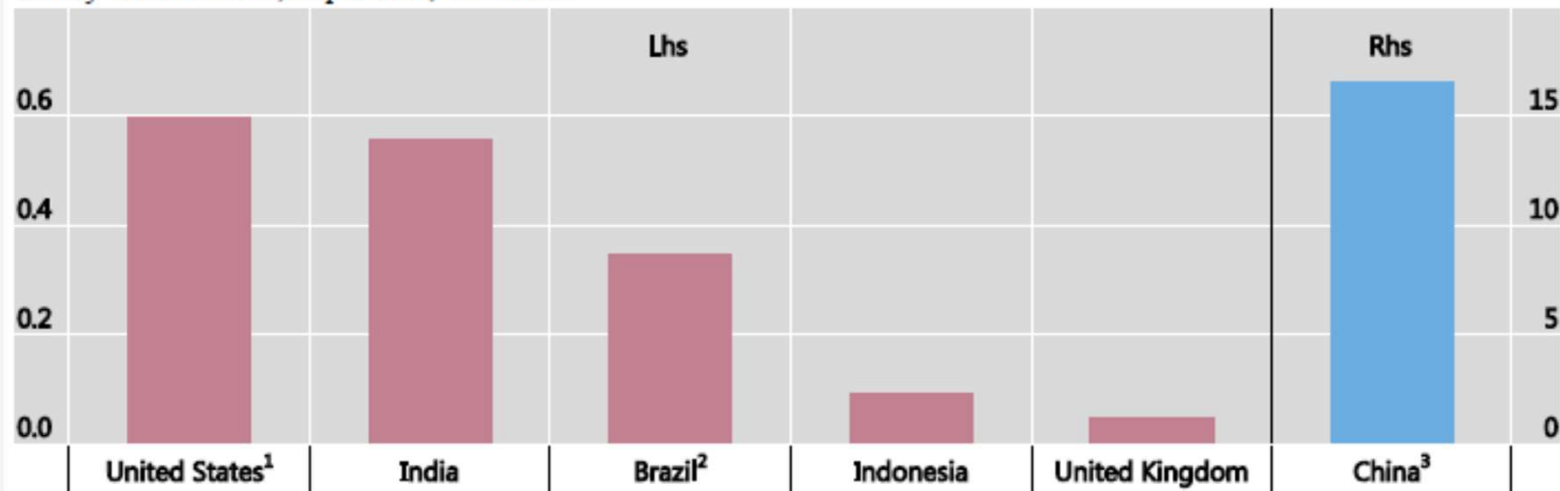
Source: Frost, J., L. Gambacorta, Y. Huang, H. S. Shin and P. Zbinden (2019), “BigTech and the changing structure of financial intermediation”,

Non-regulated players

- China is the largest market for digital payments offered by BigTech companies, with BigTech mobile payments for consumption reaching 16% of GDP (RMB 14.5 T) in 2017, while US, India, and Brazil represent only 0.3-0.6%.

Figure 2. BigTech mobile payment services around the world

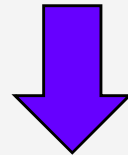
Yearly volume/GDP, in per cent; 2017 data



Source: Frost, J., L. Gambacorta, Y. Huang, H. S. Shin and P. Zbinden (2019), “BigTech and the changing structure of financial intermediation”,

Non-regulated players

- In countries where the incumbent bank-based payment infrastructure is dominant (e.g. US, Europe, and Korea), the use of existing payments infrastructure (e.g., credit or debit cards) prevails over building a separate payments infrastructure.

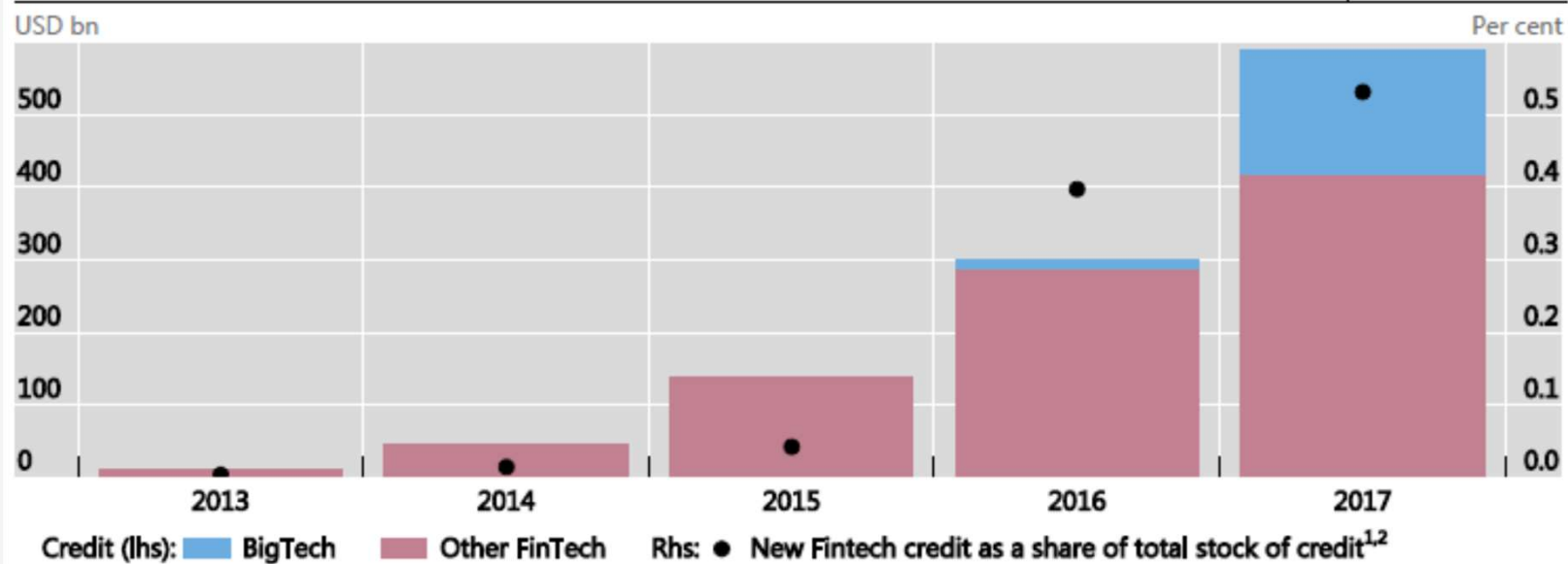


- **Innovations in payment services like Google Pay, Amazon Pay, Apple Pay, Samsung Pay, and payments on Facebook messenger all rely on existing payment systems.**
- By contrast, in countries like China or Argentina, separate payments infrastructures were developed, with BigTechs benefiting from lower fees offered, as they manage to operate with lower margins.

Non-regulated players

- Even though **credit granted by Fintechs** is rapidly growing, at the global level **it remains very limited**, representing only 0.5% of total stock of private sector credit at the global level.

Figure 3. Global volume of new FinTech credit



Source: Frost, J., L. Gambacorta, Y. Huang, H. S. Shin and P. Zbinden (2019), “BigTech and the changing structure of financial intermediation”,

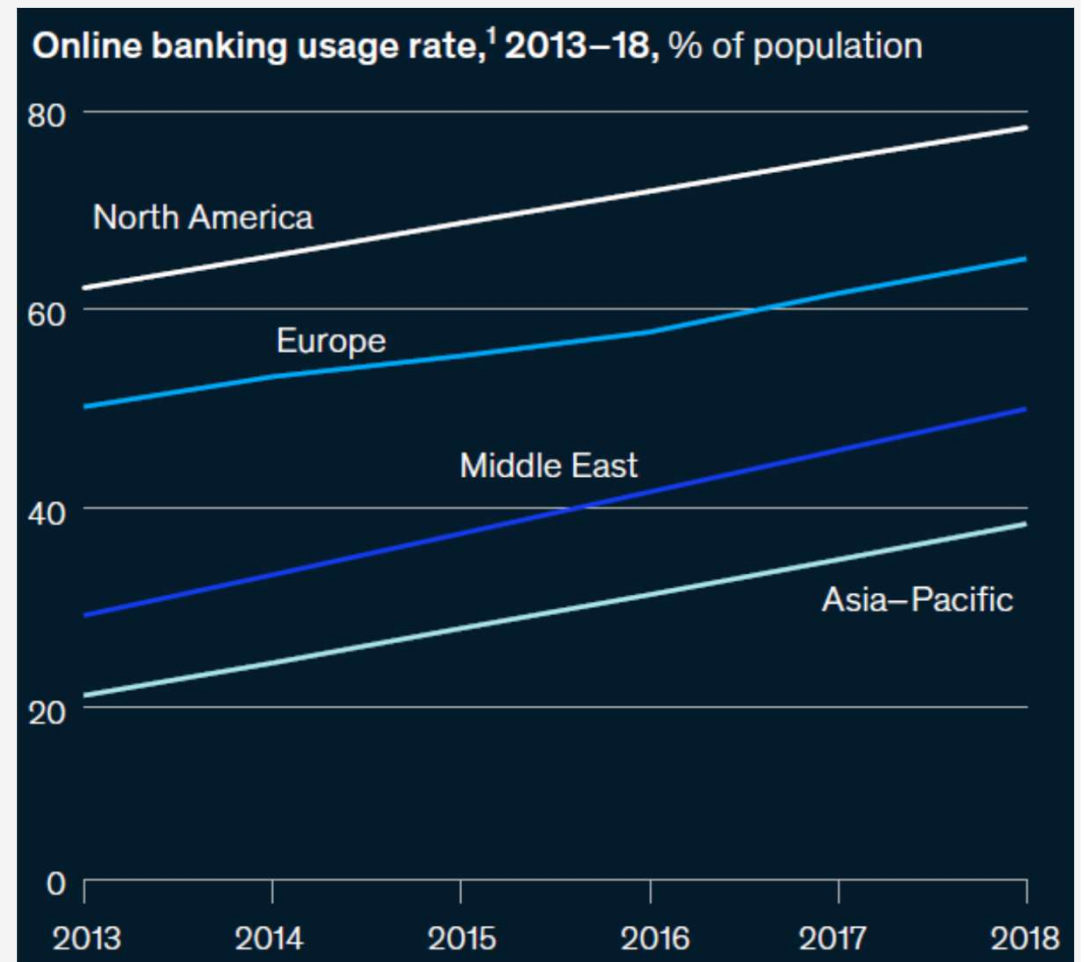
Non-regulated players

■ Drivers of BigTech in finance:

- demand side:

- (1) Unmet customer demand
- (2) Consumer preferences – even in banking the preference for digital channels has been increasing dramatically

Source: McKinsey (2019), “The last pit stop? Time for bold late-cycle moves”, McKinsey Global Banking Annual Review 2019



Non-regulated players

- supply side:

- (1) Access to data
- (2) Technological advantage
- (3) Access to funding
- (4) Lack of regulation
- (5) Lack of competition

Non-regulated players

■ There are pros and cons for incumbent banks:

Banks versus big techs – competitive advantages (+) and disadvantages (-) Table III.2

	Large banks	Big techs
Data	<p>+ Verified/reliable customer data with a long history; “soft” information from personal interactions with customers; high importance of data privacy to support customer trust.</p> <p>- Small number of customers and limited range of non-financial activities to collect data from; transactional data often “one-sided” (eg counterparty of transactions with another bank); legacy technology limits data processing capabilities.</p>	<p>- Mixture of verifiable and potentially less reliable data; shorter history of customer data; lower priority placed on data privacy and protection.</p> <p>+ Data on a very large number of customers; technology and business model built to collect and merge data; network of customer interactions is a key data dimension.</p>
Network	<p>+ Large number of financial activities and services already provided.</p> <p>- Strict regulatory limits on activities and use of data; higher marginal costs of serving additional customers.</p>	<p>- Need to reach a large customer base to exploit network externalities.</p> <p>+ Significant network externalities due to wide range of non-financial activities; captive ecosystem with potential high exit costs.</p>
Activities	<p>+ Advantages in high margin and complex products requiring personal interaction (eg corporate finance, investment banking); wider range of financial services; access to large and relatively cheap funding sources; experience in risk management.</p> <p>- Legacy IT systems are a barrier to using existing data to offer new services (low economies of scope); activities limited to financial services.</p>	<p>- Thus far limited or no footprint in key financial services (eg mortgages, loans to medium and large firms, insurance); funding limitations; lack of regulatory and risk management experience and expertise.</p> <p>+ Commoditisable services can be provided at near zero marginal costs; pre-existing commercial activities yield data that can be used to support new services (high economies of scope).</p>

Source: (2019a), “BigTech in finance: opportunities and risks”, *Annual Economic Report*, Chapter III, June.

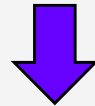
1.1.2. Reasons for Intermediation

Reasons for Intermediation

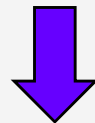
- (i) **Asymmetric information on investment projects** => Information intermediation
- (ii) **Incomplete markets and contracts** => FIs are required to intermediate between parties with conflicting interest, as specialized and large-scale operators:
 - **external incompleteness** – when it is too costly to use the legal system to ensure the outcome of the contracts;
 - **intrinsic incompleteness** – as it is also very hard to anticipate all the factors that will affect a borrower's credit worthiness, it may be very hard for a lender and borrower to contract on all eventualities => contracts may not anticipate all the states of the nature (e.g. consequences of loan defaults);
 - **deliberate incompleteness** – contracts are not written in all the detail possible simply because doing so would lead to worse outcomes than leaving contracts incomplete.

Reasons for Intermediation

- **“Incomplete-contract“ approach** to banking: Boot, Greenbaum, and Thakor (1993); Diamond and Rajan (1997); Kiyotaki and Moore (1996); and Myers and Rajan (1997) - commercial banks emerged at a time when contracts were very incomplete and property rights insecure.



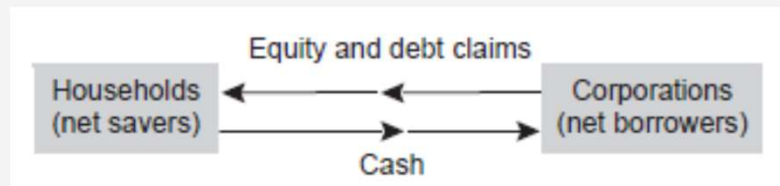
- **Alternative approach:** the **distinguishing feature of the bank** may be not just the contracts written with depositors and borrowers, but instead its investment in:
 - **reputation** – Book, Greenbaum, and Thakor (1993)
 - **relationships with clients** - Diamond and Rajan (1997)



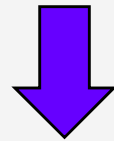
- **These institutional abilities cannot be replicated instantaneously in the market.**

Reasons for Intermediation

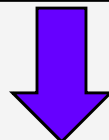
- **World with no banks:**



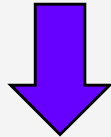
Saunders, Anthony and Marcia Millon Cornett (2006), *Financial Institutions Management – A Risk Management Approach*, 5th Edition, McGraw-Hill International.



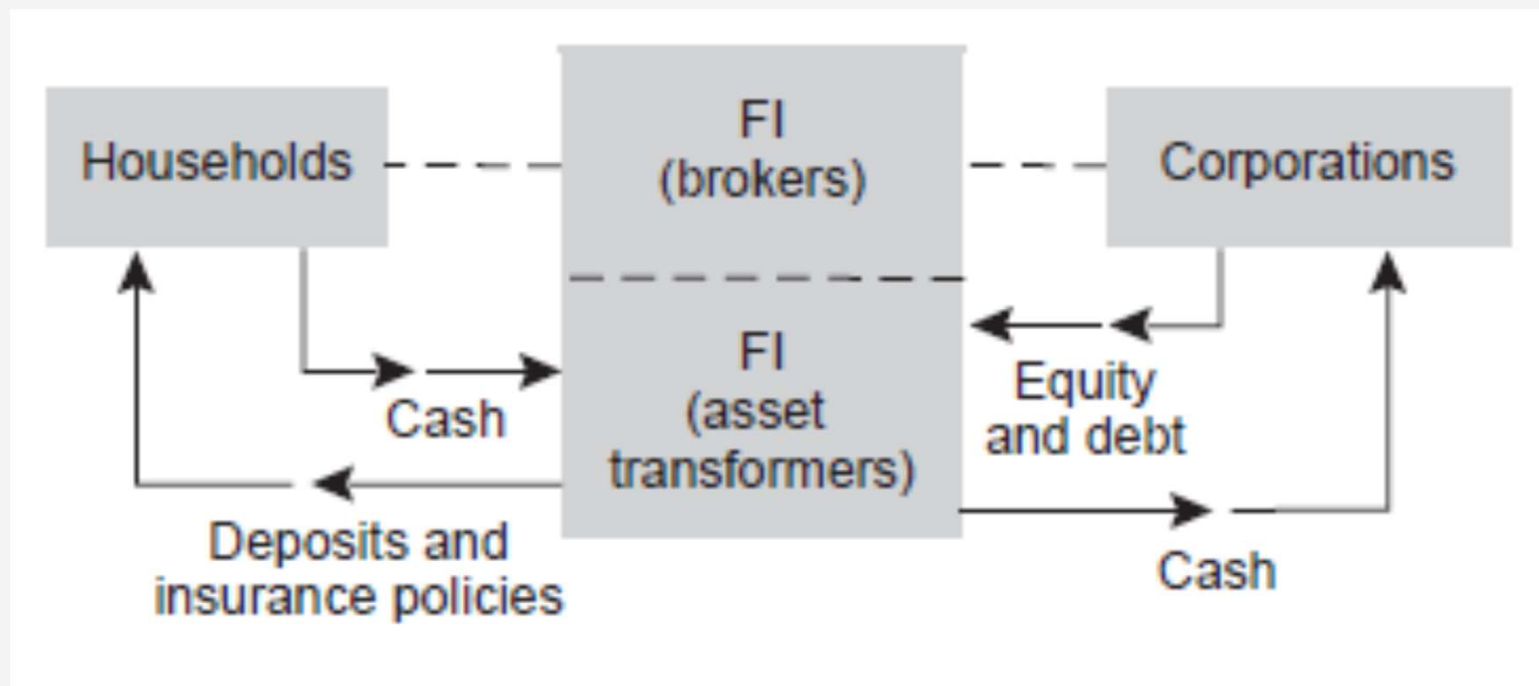
- Households would have to monitor the behavior of companies, which is very costly, probably ending up in little or no monitoring and a low flow of funds.
- Even with financial markets in place, to ensure liquidity to these securities, transaction costs would be very large without financial intermediaries.



Reasons for Intermediation



- World with banks, allowing for economies of scale and scope:



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

1.1.3. Financial Roles

Financial Roles

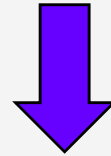
- (i) **Liquidity Intermediation** – channeling savings to investment projects, by maturity transformation.
- (ii) **Risk Intermediation** – risk taking (e.g. credit, interest rate, currency) and reselling to final investors/savers.
- (iii) **Information Intermediation** – FIs are **delegated monitors (Diamond (1984))** of economic agents, optimally processing the information available. FI average size allows the collection of information at a lower average cost (economies of scale).
- (iv) **Transmission of monetary policy effects** – monetary aggregates are linked to macroeconomic variables (namely prices) and correspond to banks' liabilities.
- (v) **Intergenerational wealth transfer**
- (vi) **Payment system**

Liquidity Intermediation

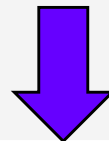
- **Banking activity conciliates opponent goals of consumers and investors:**
 - **Consumers** – maximize their utility in a short term horizon. They are averse to volatility, preferring stable consumption patterns along time. Consequently, they opt for short term banking investments. The liquidity insurance is reflected on the lower interest rates paid.
 - **Entrepreneurs** – evidence a higher risk appetite, looking for long term investments: “The banker authorizes the entrepreneur in the name of society to innovate” (Schumpeter (1912)).

Liquidity Intermediation

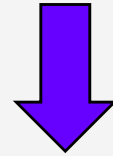
- On the asset side of their balance sheet, banks make long-term illiquid investments, while on the liability side they issue short-term liabilities, demand deposit accounts and money-like short-term securities.



- **Value is created in 2 ways:**
 - (i) By mutualizing the liquidity risks of individual investors and borrowers, banks are able to manage liquidity reserves more efficiently than individual investors and borrowers on a standalone basis;
 - (ii) By collecting information, monitoring borrowers, and being continuously present in financial markets, FIs are able to make better and more informed investments.



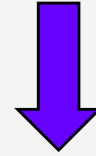
Liquidity Intermediation



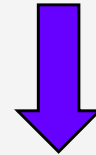
- According to Diamond and Dybvig (1983), a bank is essentially an ex-ante insurance contract providing liquidity to customers.
 - FI provide claims with higher liquidity than most securities issued by investors, e.g. deposits than can be immediately fully redeemed.
- **But liquidity is created at the cost of financial fragility**, as banks hold less than 100% of deposits in reserves => risk of bank run => fire sales of assets

Liquidity Intermediation

- **Regulators can require banks to hold a higher fraction of reserves** or can limit their short-term liabilities by raising the required fraction of equity capital and long-term debt.



- This would provide a ‘bigger cushion’ to absorb losses and postpone the moment when the bank must engage in fire sales, but **it would not completely eliminate the risk of a run.**



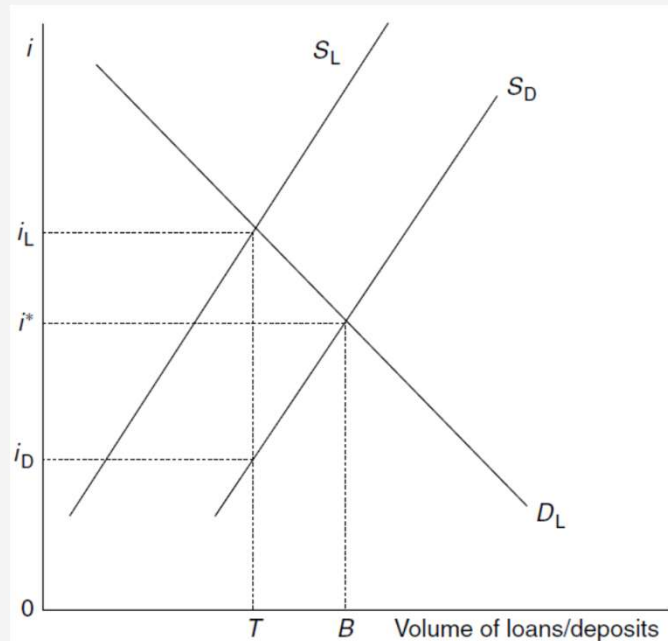
- **Only a narrow bank with 100% reserves could perfectly avoid a run**, but this solution would force all the liquidity transformation to migrate outside the regulated banking sector and would make almost impossible to get profits.

Liquidity Intermediation

- **A usual solution is the implementation of Deposit Insurances**, with a limit set to avoid moral hazard (informed economic agents taking more risk, while being aware of a bank's difficulties), but high enough to disincentive most people to withdraw their balances.
- Additionally, **the implementation of the Lender of Last Resort role avoids a solvent institution to turn illiquid**, as the interbank market is unable to resolve the issue under dire circumstances.
↓
- **Walter Bagehot's (1873) rule: central bank must lend without limit to solvent banks**, against good collateral (valued at pre-crisis levels), and at penalty rates (i.e. higher than those prevailing under normal market conditions).

Liquidity Intermediation

- Banks charge a spread in the liquidity intermediation provided, due to its costs and the risk of loans.
- Due to adverse selection risk, banks may decide to stop granting loans for too high interest rates, making the loan supply curve discontinuous.



$i_L - i_D$: bank interest differential between the loan rate (i_L) and the deposit rate (i_D) which covers the cost of the bank's intermediation

S_D : supply of deposits curve

S_L : supply of loans curve

D_L : demand for loans curve

OT : volume of loans supplied by customers

i^* : market interest rate in the absence of intermediation costs

Source: Heffernan, Shelagh (2005), "Modern Banking", Wiley.

Liquidity Intermediation

- Several studies show that **internal finance (i.e. liquidity generated by companies themselves)** is the most important source of funding for non-financial companies globally.
- Among external sources of funding, bank finance tends to be more relevant, with the major exception of US, where bonds markets take this leading role.

Unweighted Average Gross Financing of Nonfinancial Enterprises 1970-1989 (% of total)

	<i>US</i>	<i>UK</i>	<i>Japan</i>	<i>France</i>	<i>Germany</i>
Internal	91.3	97.3	69.3	60.6	80.6
Bank Finance	16.6	19.5	30.5	40.6	11
Bonds	17.1	3.5	4.7	1.3	-0.6
New Equity	-8.8	-10.4	3.7	6	0.9
Trade Credit	-3.7	-1.4	-8.1	-2.8	-1.9
Capital Transfers	-	2.5	-	1.9	8.5
Other	-3.8	-2.9	-0.1	-6.5	1.5
Statistical Adjustment	-8.7	-8	0	2.5	0

Allen, Franklin and Douglas Gale (2001), "Comparative Financial Systems: A Survey".

Risk Intermediation

- Risk intermediation is performed not only by financial entities, but also by markets and even by governments, e.g. in the provision of unemployment and disability insurances, healthcare and education, being taxes also a risk sharing vehicle.
- Interest rate and currency risk management has been developed through the derivatives market, with banks offering these services to their customers, but also allowing economic agents to use capital markets.
- By intermediating risk, banks originate claims on companies and issue liabilities to savers, performing also a role as asset transformers.

Information Intermediation

- **Main topics:**

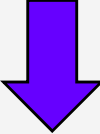
- (i) **Minimizing information costs**

- (ii) **Improving corporate governance**

- (iii) **Asymmetric information (agency theory)**

Information Intermediation

(i) Minimizing information costs

- **Even with very liquid and efficient capital markets, there is a minimum optimal size to perform information intermediation**, in order to minimize the costs of information management.
- 
- **Banks are generally in a better position to assess the credit risk of economic agents**, namely those with lower size, for whom the information available is more limited and less robust.
 - **FI intermediaries may reduce the costs of acquiring and processing information (agency costs), consequently improving resource allocation** [Boyd and Prescott (1986)].
 - As financial intermediaries and firms develop long-run relationships, this can further reduce information acquisition costs.

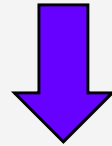
Information Intermediation

(ii) Improving corporate governance

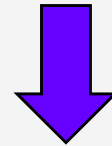
- By being a “delegated monitor”, FIs monitor risks for all investors, **eliminating the free-rider problem among the several shareholders** (e.g. Bencivenga and Smith (1993), Sussman (1993), Harrison, Sussman and Zeira (1999) and De la Fuente and Marin (1996),
- Some literature concludes that **debt contracts may also improve corporate governance and economic growth, reducing the costs of monitoring firm insiders** [e.g., Townsend (1979), Gale and Hellwig (1985), Boyd and Smith (1994), quoted in Levine (2005)].

Information Intermediation

- Aghion, Dewatripont and Rey (1999) - **debt instruments reduce the amount of free cash available to firms, shortening the managerial slack and accelerating the rate at which managers adopt new technologies.**



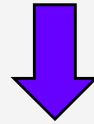
- FIs may (help to) identify the best production technologies, increasing the rate of technological innovation [e.g. King and Levine (1993), and Acemoglu, Aghion and Zilibotti (2003), quoted in Levine (2005)].



- **Schumpeter (1912) view of finance in the process of economic development:**
“The banker, therefore, is not so much primarily a middleman . . . **He authorizes people in the name of society . . . (to innovate)**”.

Information Intermediation

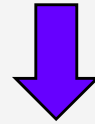
- **With low information costs, diffuse and small shareholders may exert effective corporate governance directly by voting on crucial issues**, e.g. M&A and other strategic issues.



- **Large owners have greater incentives to acquire information and monitor managers and greater power to limit managerial discretion** [see e.g. Grossman and Hart (1980, 1986); Shleifer and Vishny (1996); and Stulz (1988), quoted in Levine (2005)].
- Additionally, **the board of directors may not represent the interests of minority shareholders**, as management may capture the board into acting in the best interests of the managers, not the shareholders.

Information Intermediation

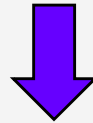
- Furthermore, in many countries legal codes do not adequately protect the rights of small shareholders and legal systems frequently do not enforce the legal codes concerning diffuse shareholder rights.



- Additionally, the controlling owner may expropriate resources from the firm, or deal with related parties in a manner that hurts the firm and society.
- Morck, Wolfenzon and Yeung (2005):
 - controlling owners are frequently powerful families that use pyramidal structures, cross-holdings, and super voting rights to magnify their control over many corporations and banks
 - these controlling families frequently translate their corporate power into political influence to shape public policies, protecting them from competition and subsidizing their ventures.

Information Intermediation

- **Monitoring firms and exerting corporate governance can also be performed through financial markets**, including rating agencies, that are typically used by larger size companies.

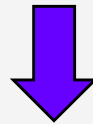


- According to a large set of literature (see e.g. Jensen and Meckling (1976), quoted in Levine (2005), **well functioning stock markets also improve corporate governance:**
 - (i) **public trading of shares allows owners to link managerial compensation to stock prices**, helping to align the interests of managers with those of owners [Diamond and Verrecchia (1982) and Jensen and Murphy (1990), quoted in Levine (2005)].
 - (ii) **better stock markets can improve corporate control by easing takeovers of poorly managed firms =>** the threat of a takeover will help align managerial incentives with those of the owners [Scharfstein (1988) and Stein (1988), quoted in Levine (2005)].

Information Intermediation

(iii) Asymmetric information (agency theory).

- **The manager or entrepreneur has privileged information on the project to finance and its management vis-à-vis the FI or the shareholders.**

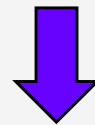


- Relevance of collaterals in loans.

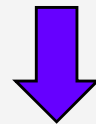
Information Intermediation

- 2 risks of **asymmetric information**:

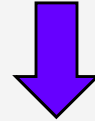
- **Adverse selection (before the transaction)** – due to the lack of information, investors may be unable to select the best projects. Fixing the same interest rate for all projects, banks may crowd-out the best projects, attracting only those whose entrepreneurs know in advance they will not redeem the loans (consequently being available to accept higher interest rates);
- **Moral hazard (after the transaction)** – if an investor cannot monitor the entrepreneur, the latter may manage the project sub-optimally, hampering the company growth and its ability to redeem the loan.



Principal-agent problem

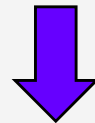


Information Intermediation



- **This problem is mitigated by debt contracts, vis-à-vis equity:**

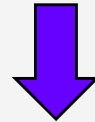
- (i) debt imposes a regular set of payments => payments are negatively impacted by moral hazard behavior only under extreme scenarios, when debtors become incapacitated to ensure payments.
- (ii) debt reduces the monitoring effort vs equity, as creditors must only be concerned about the debtor's ability to make the regular payments imposed contractually, instead of facing risk towards all debtor's cash-flows.



Debt is the type of financial contract that limits moral hazard to extreme scenarios, reducing monitoring costs.

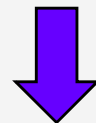
Information Intermediation

- **Nonetheless, debt contracts still face moral hazard**, as they allow debtors to capture all cash-flows beyond the debt costs.



Incentive for debtors to take riskier projects

- **Creditors can mitigate moral hazard** imposing more “skin in the game” by debtors, either by increasing equity or by demanding collaterals



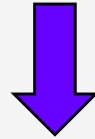
Make debt contracts “incentive compatible”, aligning the incentives of debtors and creditors

Information Intermediation

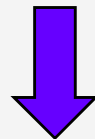
- Debt contracts often include **restrictive covenants** - agreements imposing and/or ruling out a given set of behaviors by the debtor:
 1. Covenants to discourage undesirable behavior or to encourage desirable behavior – e.g. impose a set of uses for the funding provided and/or prohibit others.
 2. Covenants to keep collateral valuable – e.g. insurance requirements.
 3. Covenants to provide information – e.g. requirements on the provision of periodic information.

Information Intermediation

- Even with these restrictive covenants, moral hazard still exists, as debtors may find ways to circumvent them.
- Moreover, the monitoring and enforcement efforts may be inadequate, namely when bondholders free-ride on their monitoring efforts.



- Bank loans mitigate the problems of free-riding in monitoring, as there is a single creditor, but moral hazard becomes dependent on the sole monitoring ability of the bank.



- If the bank's monitoring processes are poor, bank loans may still not be an efficient way to mitigate moral hazard.

Information Intermediation

Moral hazard behaviors:

- Actions motivated by private benefits
- Utilization of company resources for private goals
- Limited effort
- Drop-out pressure
- Overinvestment to maximize the entrepreneur's utility
- Opposition to the project's abandonment, when such decision is optimal
- Postponement of the disposal of NPLs
- Too big to fail (in some cases, too big to bail)

Transmission of Monetary Policy Effects

- **3 players in money supply process:**

- (i) Central Bank

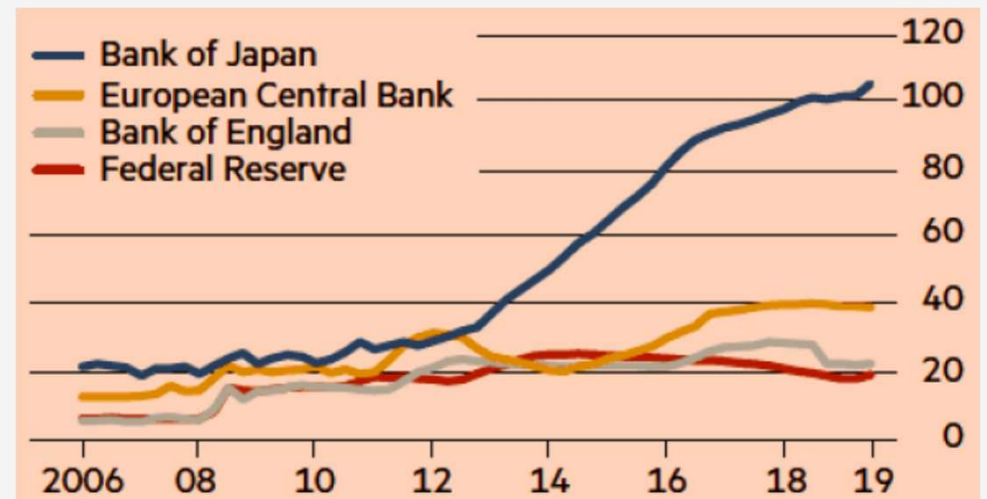
- (ii) Banks

- (iii) Depositors

Transmission of Monetary Policy Effects

- The balance sheets of main Central Banks increased significantly between the subprime crisis and 2019:
 - Bank of Japan – from 20% of the GDP to 100%
 - ECB (Eurosystem) - from 15% of the GDP to 40%
 - Fed – from 5% to 20%.

Central Banks' Assets (as a % of GDP)



Source: FT

Transmission of Monetary Policy Effects

- Following the liquidity injections approved by Central Banks to fight the pandemic effects, these balance sheets are increasing even further, beyond 50% of the GDP in the case of the ECB and the Fed.
- In the Euro Area, the Eurosystem balance sheet represents already around 53% of the GDP, corresponding to 6,3 T€.

Transmission of Monetary Policy Effects

■ Balance Sheet of the Central Bank:

Assets	Liabilities
Securities	Currency in circulation
Loans to financial institutions	Reserves

Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”

■ Liabilities = Monetary Base (MB) or high-powered money

$$MB = C + R$$

■ Reserves = Required reserves + Excess reserves



■ Central Bank has a significant power over the MB by deciding on the Circulation amount and setting required reserves.

Transmission of Monetary Policy Effects

- **Assets: sources of liquidity provision to banks by the central bank:**
 - (i) **Securities** – central banks buys (sells) securities from banks, pumping (absorbing) liquidity into (from) the banking system – open market operations;
 - (ii) **Loans to FI** – liquidity provided directly (and temporarily) to banks, whose interest rate influences interest rates charged by banks in loans to costumers.

Transmission of Monetary Policy Effects

- **Notwithstanding the role of the central bank in money creation, the role of banks is even more important, as circulation is less than 10% of the money supply** (measured by M3 in Euro Area):

- M3 = 14 T€

- Circulation = 1,3 T€

- In general, banks' liabilities are considered in the definition of monetary aggregates (i.e. money supply).

- In the less comprehensive monetary aggregate, we have:

$$M = C + \text{Deposits}$$

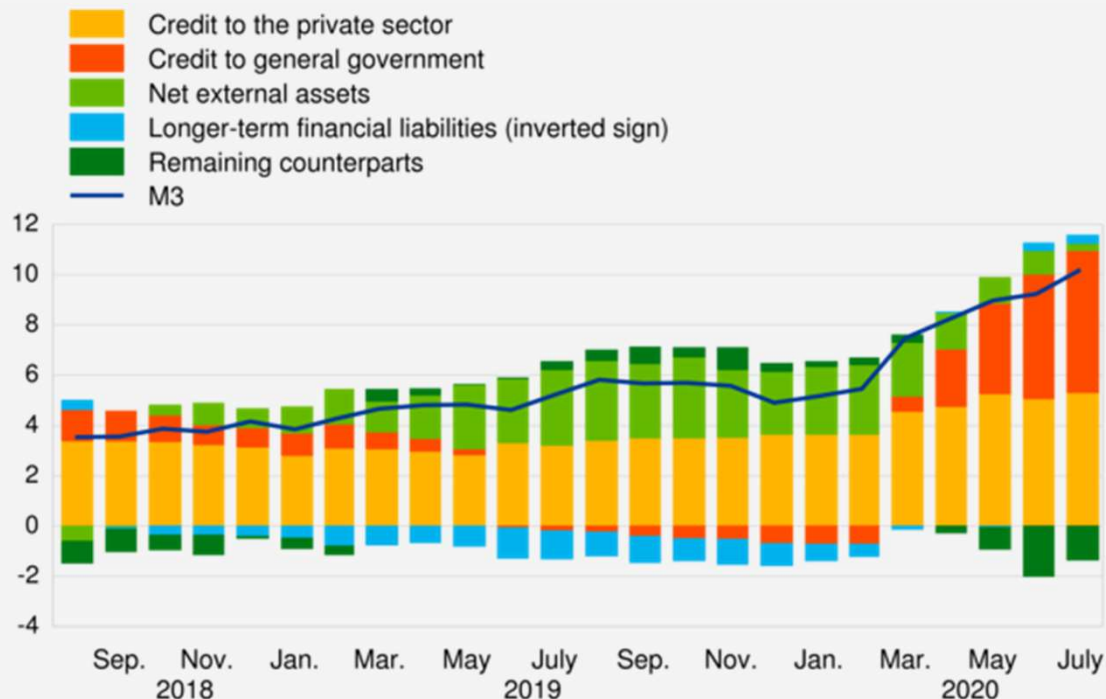
Transmission of Monetary Policy Effects

- In more comprehensive definitions, additional banks' liabilities are included:
 - short-term bonds
 - deposit certificates
 - repos
- **The transmission of Monetary Policy effects is ensured by the involvement of banks in the money market, where they obtain or invest liquidity.**
- **Central banks**, by setting the level of interest rates in liquidity providing and absorption facilities through the money market, exert influence on the general level of interest rates (though at a lesser degree on long term interest rates) and on the liquidity available.
- **Banks act like a franchise of the central bank in money creation.**

Transmission of Monetary Policy Effects

- **Money supply is mostly driven by bank's decisions in providing credit to the private sector and to Governments:**

Contribution of the M3 counterparts to the annual growth rate of M3



Source: ECB

Transmission of Monetary Policy Effects

- Injection of \$100M to the banking system reserves (and MB, consequently) through open market purchase of securities by the central bank:

Banking System	
Assets	Liabilities
Securities	−\$100 m
Reserves	+\$100 m

Federal Reserve System	
Assets	Liabilities
Securities	Reserves
+\$100 m	+\$100 m

Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Transmission of Monetary Policy Effects

- Lending of \$100M by the central bank to banks:

Banking System				Federal Reserve System			
Assets		Liabilities		Assets		Liabilities	
Reserves	+\$100 m	Loans (borrowings from the Fed)	+\$100 m	Loans (borrowings from the Fed)	+\$100 m	Reserves	+\$100 m

Banking System				Federal Reserve System			
Assets		Liabilities		Assets		Liabilities	
Reserves	-\$100 m	Loans (borrowings from the Fed)	-\$100 m	Loans (borrowings from the Fed)	-\$100 m	Reserves	-\$100 m

Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Transmission of Monetary Policy Effects

- Deposit creation via a loan equal to the reserves increase after the open market operation, granted by a single bank (First National Bank):

First National Bank			
Assets		Liabilities	
Securities	−\$100 m	Checkable deposits	+\$100 m
Reserves	+\$100 m		
Loans	+\$100 m		

- The loan amount is initially kept in the deposit account of the debtor:

First National Bank			
Assets		Liabilities	
Securities	−\$100 m	Checkable deposits	+\$100 m
Reserves	+\$100 m		
Loans	+\$100 m		

Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Transmission of Monetary Policy Effects

- After the loan amount is fully used by borrower, the bank will have to use its reserves to pay for the deposits used and its balance sheet becomes:

First National Bank	
Assets	Liabilities
Securities	-\$100 m
Loans	+\$100 m

- However, this money is used to make payments to other entities and will be deposited at other banks in the financial systems:

Bank A	
Assets	Liabilities
Reserves	+\$100 m
	Checkable deposits
	+\$100 m

Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Transmission of Monetary Policy Effects

- If Bank A faces a reserve requirement of 10% over its deposits and decides to grant a loan using the total amount of excess reserves (\$90m), assuming that this amount will be deposited at bank B:

Bank A			
Assets		Liabilities	
Reserves	+\$10 m	Checkable deposits	+\$100 m
Loans	+\$90 m		

Bank B			
Assets		Liabilities	
Reserves	+\$90 m	Checkable deposits	+\$90 m

Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Transmission of Monetary Policy Effects

- With the same reserve requirement of 10%, Bank B also decides to grant a loan using the total amount of excess reserves, which will be 90% of Bank A total excess reserves (\$81m):

Bank B			
Assets		Liabilities	
Reserves	+\$ 9 m	Checkable deposits	+\$90 m
Loans	+\$81 m		

Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Transmission of Monetary Policy Effects

- If the loan amount keeps being deposited at a different bank:

TABLE 1 Creation of Deposits (assuming 10% reserve requirement and a \$100 million increase in reserves)

Bank	Increase in Deposits (\$)	Increase in Loans (\$)	Increase in Reserves (\$)
First National	0.00	100.00 m	0.00
A	100.00 m	90.00 m	10.00 m
B	90.00 m	81.00 m	9.00 m
C	81.00 m	72.90 m	8.10 m
D	72.90 m	65.61 m	7.29 m
E	65.61 m	59.05 m	6.56 m
F	59.05 m	53.14 m	5.91 m
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
Total for all banks	1,000.00 m	1,000.00 m	100.00 m

Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Transmission of Monetary Policy Effects

- The variation in deposits can be expressed as a function of reserve requirements:

$$\Delta D = \frac{1}{rr} \times \Delta R$$

being $1/rr =$ **Simple Deposit Multiplier**

- In our example, this multiplier is equal to 10: $1/rr = 1/0,1 = 10$:

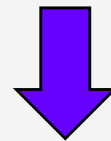
- $\Delta R = 100$

$$\Delta D = \frac{1}{rr} \times \Delta R = 1/0,1 \times 100 = 1000$$

Transmission of Monetary Policy Effects

- Drawbacks:

- (i) Some of the amounts will be kept as cash and will not be deposited at the banking system
- (ii) Banks may decide to keep some excess reserves (ER) in addition to required reserves



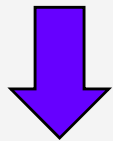
$$MB = R + C = (rr \times D) + ER + C$$

Transmission of Monetary Policy Effects

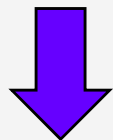
- Defining

$$c = \{C/D\}$$

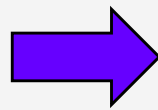
$$e = \{ER/D\}$$



$$MB = (rr \times D) + (e \times D) + (c \times D) = (rr + e + c) \times D$$



$$D = \frac{1}{rr + e + c} \times MB$$



Deposits Multiplier (similar to the Simple Multiplier ($1/rr$), but adding ER and C to the denominator)

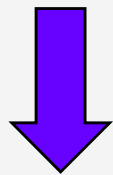
Transmission of Monetary Policy Effects

- Defining the money simply as $M = D + C$

$$M = D + (c \times D) = (1 + c) \times D$$

- Using the 2 last equations (replacing D in the last equation by the expression from the previous equation):

$$M = \frac{1 + c}{rr + e + c} \times MB$$

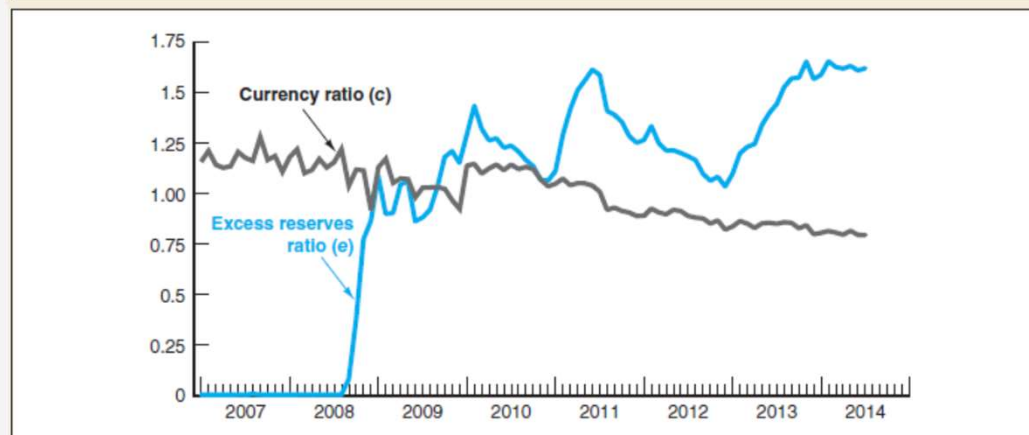
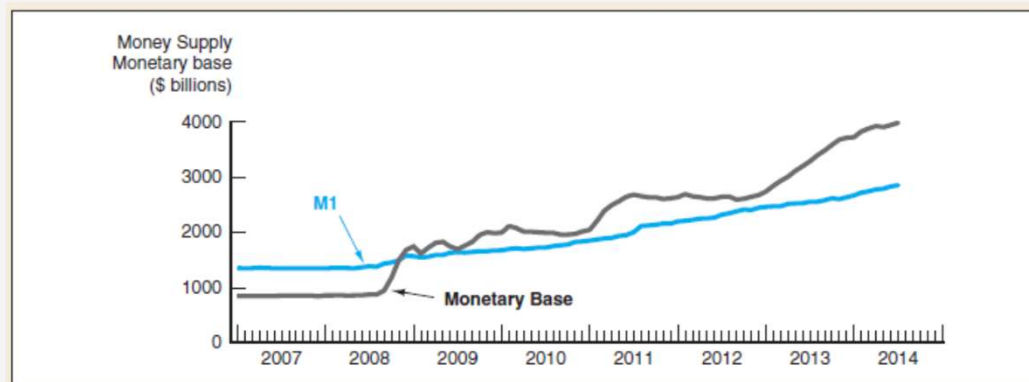


- **Money Multiplier** gives the magnitude of a change in total money supply due to a given change in MB , which is a decreasing function of rr , e and c :

$$m = \frac{1 + c}{rr + e + c}$$

Transmission of Monetary Policy Effects

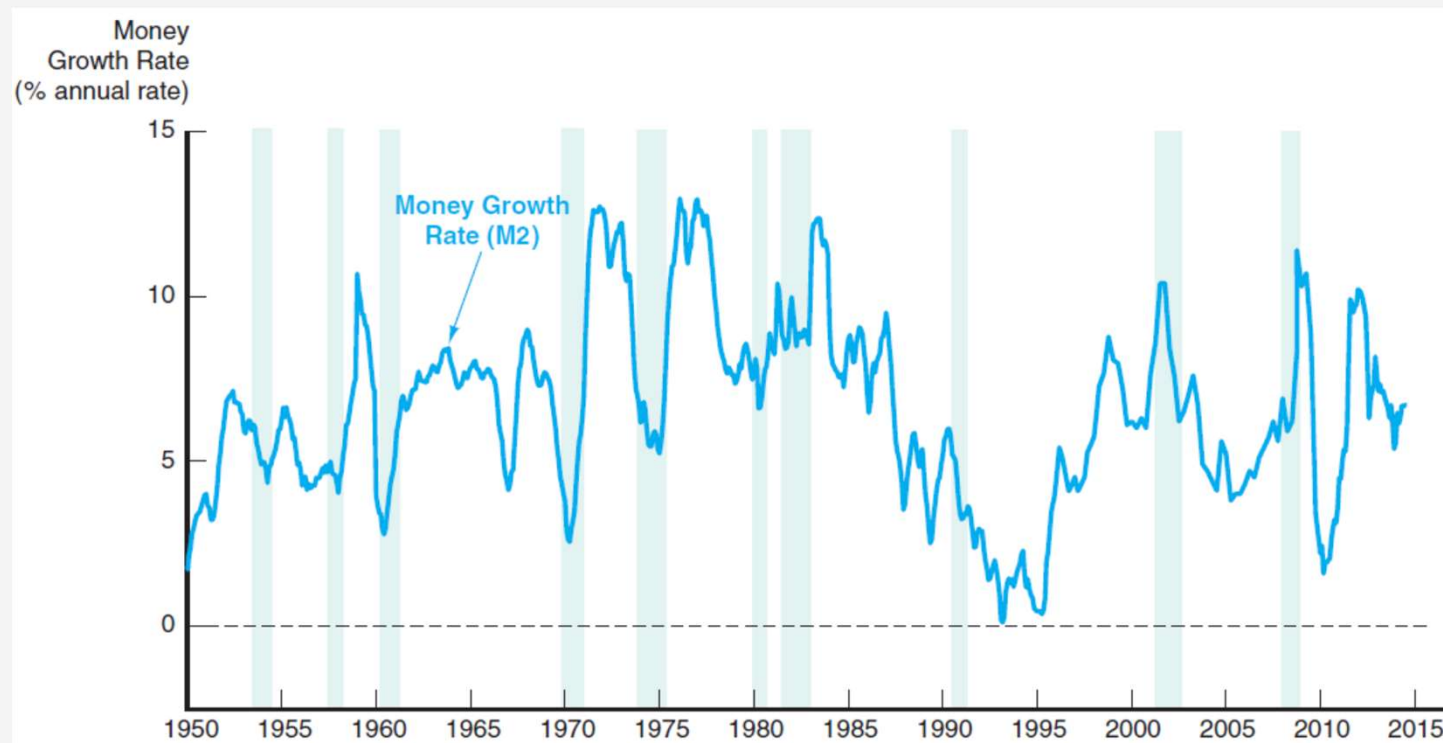
- Sometimes the coefficients in the money multiplier change dramatically, as in the US during the subprime crisis, when MB increased much more than M:



Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Transmission of Monetary Policy Effects

- Typically, business cycle downturns are preceded by declines in money growth, even though not all declines in money growth lead to downturns.

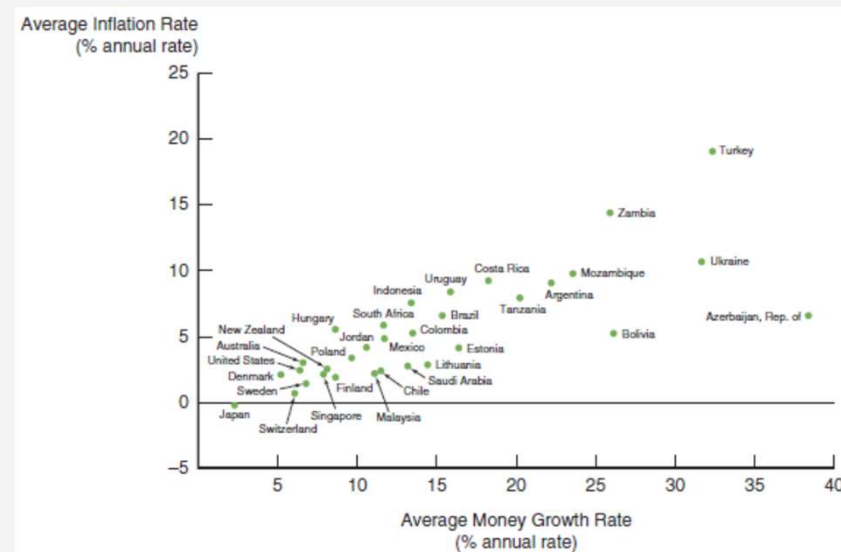
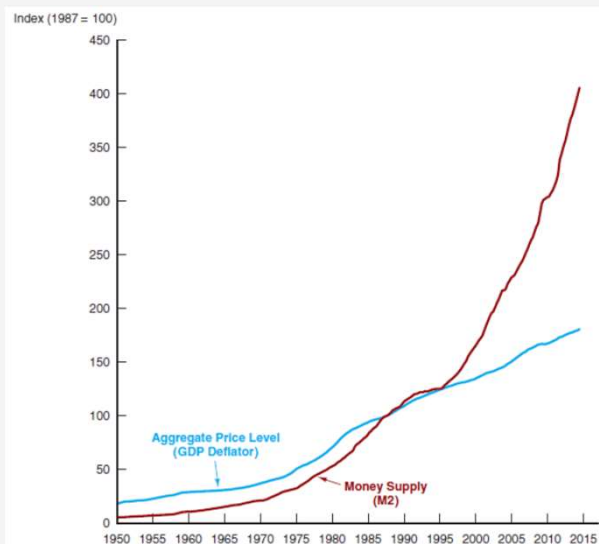


Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Note: Shaded areas represent recessions

Transmission of Monetary Policy Effects


- Money growth is also related to inflation, even though there has been a noticeable decoupling since the end of the XXth century, after the massive monetary injections by the Fed, to tackle the effects of the several financial crises since then (Asian crisis, Nasdaq bubble and subprime crisis):



Source: Mishkin (2019), “The Economics of Money, Banking, and Financial Markets”.

Note: Left-hand chart: US - 1950-2014; Right-hand chart: 2003-2013.

Intergenerational Wealth Transfer

- Ensured by long term saving instruments offered by FIs.
 - These instruments may be originated by insurance or pension fund management companies, frequently with a tight connection to banks.
 - The weight of financial intermediation in private wealth has been increasing.
- 
- Households ownership of corporate equities in US decreased from 90% to less than 40%, between 1950 and 2000, while non-bank intermediaries, namely pension funds and mutual funds, held over 40%.

Holdings of Corporate Equities in the U.S. (in percent)

Sector	1950	1970	1990	2000
Private Pension funds	0.8	8.0	16.8	12.9
State & local pension funds	0.0	1.2	7.6	10.3
Life insurance companies	1.5	1.7	2.3	5.4
Other insurance companies	1.8	1.6	2.3	1.1
Mutual funds	2.0	4.7	6.6	19.0
Closed-end funds	1.1	0.5	0.5	0.3
Bank personal trusts	0.0	10.4	5.4	1.9
Foreign sector	2.0	3.2	6.9	8.9
Household sector	90.2	68.0	51.0	39.1
Other	0.6	0.6	0.7	1.2
Total equities outstanding	142.7	841.4	3,542.6	19,047.1

(billions of dollars)

Allen, Franklin and Douglas Gale (2001), "Comparative Financial Systems: A Survey", April.

Payment System

- Ensured by the payment mechanisms implemented and managed by banks, e.g.:
 - banking transfers;
 - ATM;
 - correspondent banks;
 - credit cards.
- Hoggarth et al. (2001): “the payments system will not work if customers do not have confidence to leave funds on deposit at banks or, crucially, banks lose confidence in each other. A complete breakdown in the payments system would bring severe costs since trade would be impaired (see Freixas et al (2000))”.
- “As the heart of the payments system, banks are like electric companies – they are public utilities, whose failure would lead the entire economy to grind to a halt”. (in Bolton et al. (2019)).

1.1.4. Relevance of the Financial Sector

Relevance of the financial sector

- **Topics:**

- (i) Relevance of Finance for Economic Growth
- (ii) Sector Revenues vs Contribution to Society
- (iii) Bank-based vs market-based financing

Relevance of Finance for Economic Growth

- According to Levine (2005), “Economists disagree sharply about the role of the financial sector in economic growth”:

(1) Irrelevance of Finance:

- “Finance is not even discussed in a collection of essays by the “pioneers of development economics” [Meier and Seers (1984)], including 3 Nobel Prize winners.
- Joan Robinson (1952, p. 86) argued that “where enterprise leads finance follows” => finance does not cause growth; finance just responds to changing demands from the “real sector”.

Relevance of Finance for Economic Growth

(2) **Key Role of Finance:**

- Merton Miller (1998, p. 14) - “[the idea] that financial markets contribute to economic growth is a proposition too obvious for serious discussion”.
- Bagehot (1873) and Schumpeter (1911) – ignoring the finance-growth nexus impairs our understanding of economic growth.
- Several other studies, mostly since the early 1990s (e.g. King and Levine(1993), Levine and Zervos (1998), Levine (2005), McKinnon (1973) and Rajan and Zingales (1998)), concluded that there is a strong explanatory power of financial development indicators on economic growth.

Relevance of Finance for Economic Growth

(3) Variable Role of Finance:

- Some papers (e.g. Boyd and Smith (1996,1998)) question the robustness of the finance-growth nexus, concluding that banks are important at low levels of development while markets become more important as income rises.
- Easterly et al. (2000):
 - empirically show that there is a convex and **non-monotone relationship between financial depth and the volatility of output growth**;
 - **output volatility starts increasing when credit to the private sector reaches 100% of GDP.**

Relevance of Finance for Economic Growth

- Tobin (1984):
 - besides increasing volatility, a large financial sector may also lead to a suboptimal allocation of talents, as it may deviate talents from the productive sectors of the economy and therefore be inefficient from the society's point of view".
- Arcand, J.L. et al. (2015) - **finance starts having a negative effect on output growth when credit to private sector/GDP reaches 100%.**

Relevance of Finance for Economic Growth

- **It is also problematic when financial systems provide too few credit:**
 - High-income countries: credit/GDP = 87%
 - Low-income countries: credit/GDP = 11%

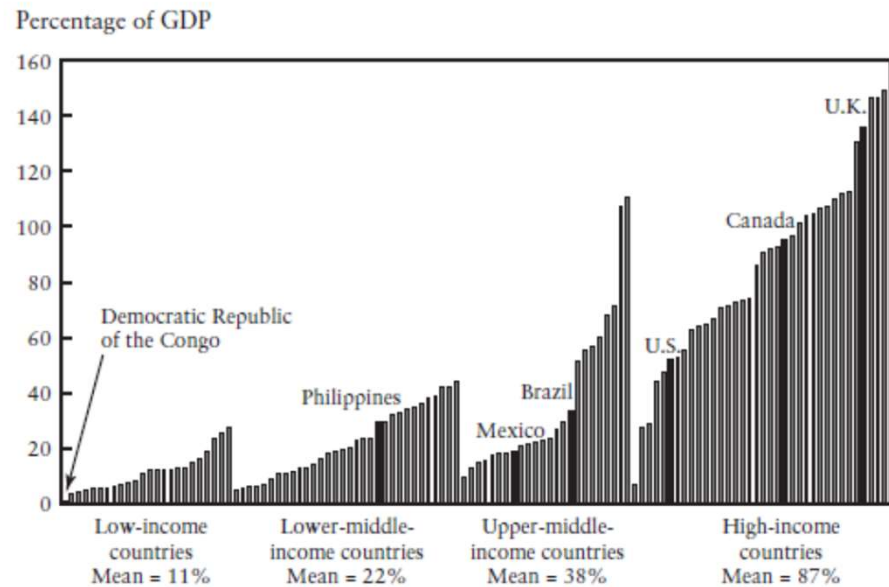


FIGURE 1.1 Average private credit from deposit money banks as a percentage of GDP, 1990-2010, by World Bank income classifications.

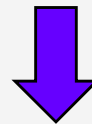
Calomiris, Charles W. and Stephen H. Haber (2014), "Fragile by Design – The Political Origins of Banking Crisis & Scarce Credit", Princeton University Press

Relevance of Finance for Economic Growth

- Cecchetti, S. and Kharroubi, E. (2012) - “at low levels, a larger financial system goes hand in hand with higher productivity growth. But **there comes a point – one that many advanced economies passed long ago – where more banking and more credit are associated with lower growth.**”
- Gambacorta et al. (2014) - “Up to a point, banks and markets both foster economic growth. **Beyond that limit, expanded bank lending or market-based financing no longer adds to real growth**”.

Relevance of Finance for Economic Growth

- According to Mishkin (2019), financial systems of developing and transition countries usually face several difficulties that keep them from operating efficiently, namely regarding the efficiency of tools used to mitigate adverse selection and moral hazard problems in credit markets – collateral and restrictive covenants.
- In developing countries, the system of property rights (the rule of law and constraints on government expropriation) is poor, making adverse selection problems worse as the lender will need even more information about the quality of the borrower in order to distinguish between a good and a bad loan.

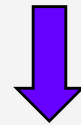


- It is harder for lenders to channel funds to the borrowers with the most productive investment opportunities, leading to less productive investment and a slower-growing economy.

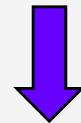
Relevance of Finance for Economic Growth

(4) **Negative Role of Finance:**

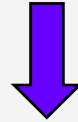
- The Global Financial Crisis (GFC) raised concerns that **some countries may have financial systems which are “too large” compared to the size of the domestic economy.**



- Minsky(1974) and Kindleberger (1978) - **more finance => macroeconomic volatility.**



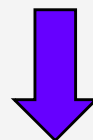
Relevance of Finance for Economic Growth



- Nonetheless, higher macroeconomic volatility may be compensated by higher economic growth:
 - “Although there seem to be a contradiction between the empirical literature that finds a positive effect of financial depth on economic development and the literature that has shown that credit growth is a predictor of banking and currency crises (e.g. Kaminsky and Reinhart,1999), the fact that a large financial sector may increase volatility does not necessarily mean that large financial systems are bad. It is possible that countries with large financial sectors pay a price in terms of volatility but are rewarded in terms of higher growth (Rancièrè, Tornell and Westermann, 2008)”.

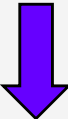
Sector Revenues vs Contribution to Society

- According to some literature, **there is a gap between the sector revenues and its contribution to society:**



- (1) the implicit insurance that the financial sector gets - **financial service providers do not pay for the “moral hazard” they create.**
- (2) if the sector is imperfectly competitive, the price will exceed the social marginal cost;
- (3) negative spillovers - **services provided by FIs may be useful to a client, but not to society as a whole**, e.g. structure a firm’s financing in a way that the firm pays less taxes.

Bank-based vs Market based Financing

- Finance literature has long debated the merits of **bank-based vs market-based financing**, regarding its effects on economic growth and allocation of risk (Allen and Gale, 2000).
 - **The main financial systems exhibit different characteristics regarding the relative weight of the banking systems vis-à-vis capital markets.**
- 
- According to Allen and Gale (2001), **the US ratio of equity market capitalization to GDP is 3 times the German ratio.**

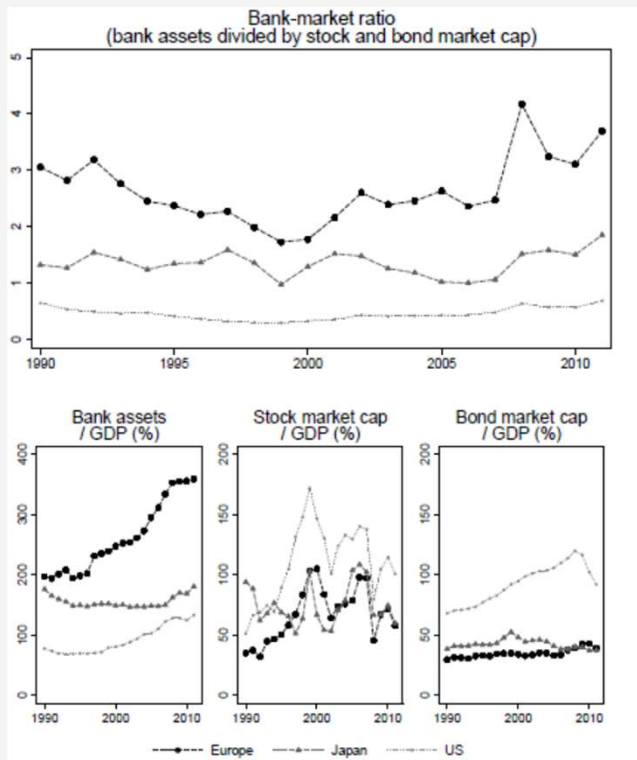
Bank-based vs Market based Financing

- In the cases of Japan and UK, banks and markets are both relevant, while in France, banks are important and markets less so =>

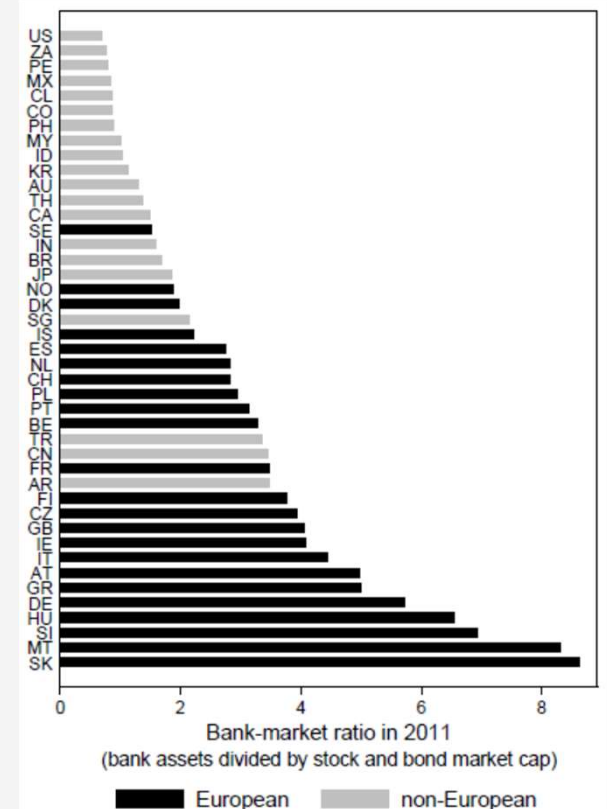
- **US and UK - market-based systems**
- Germany, Japan and France - bank-based systems => long-lived relationships between large companies and banks are usual.

Bank-based vs Market based Financing

- Given the growth of bank credit, Europe's financial structure became much more bank-based in comparison not only with the US, but also with other developed economies such as Japan, Canada and Australia.



Source: Langfield, S. and M. Pagano (2016), 'Bank bias in Europe: effects on systemic risk and growth', *Economic Policy*.

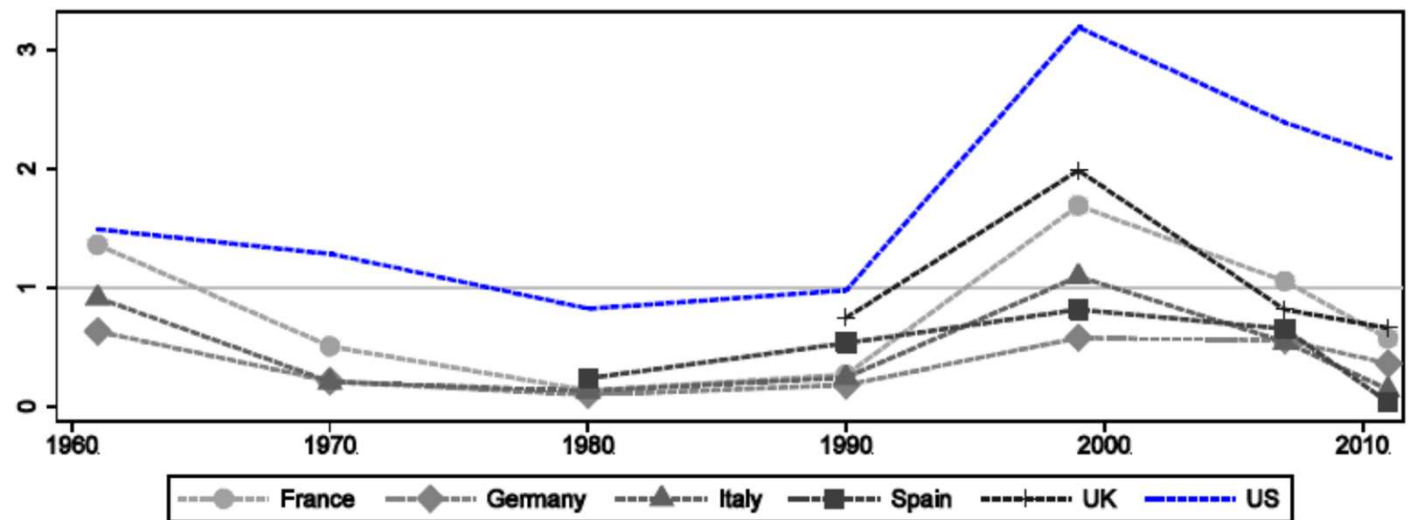


Bank-based vs Market based Financing

- Actually, even though all countries became more market-based through the 1990s, and subsequently more bank-based over the 2000s, **the shift to banks was stronger in Europe over the 2000s** => the difference in financial structure between EU and US is now much more pronounced.

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

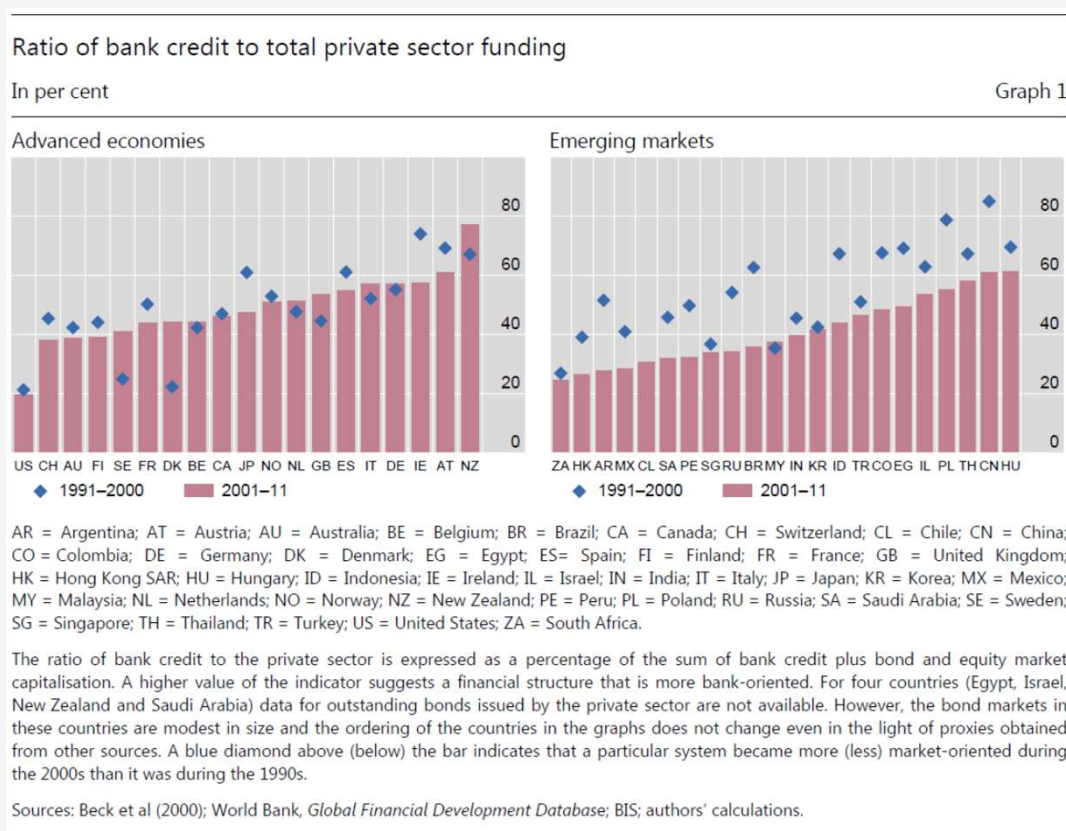
Figure 9: Financial structure (measured as the ratio of stock market capitalisation to bank credit to the private sector)



Sources: Rajan and Zingales (2003); Schularick and Taylor (2012); and the World Bank. Notes: Financial structure is measured as the ratio of stock market capitalisation to bank credit (to the private sector). Special thanks to Luigi Zingales for sharing data.

Relevance of the financial sector

- Therefore, **the weight of bank credit on private sector funding is also much higher in EU.**



Source: Gambacorta, L., Yang, J. and Tsatsaronis, K. (2014), “Financial structure and growth”, *BIS Quarterly Review*, March 2014.

1.1.5. Increasing weight of the Financial Sector

Increasing weight of the financial sector

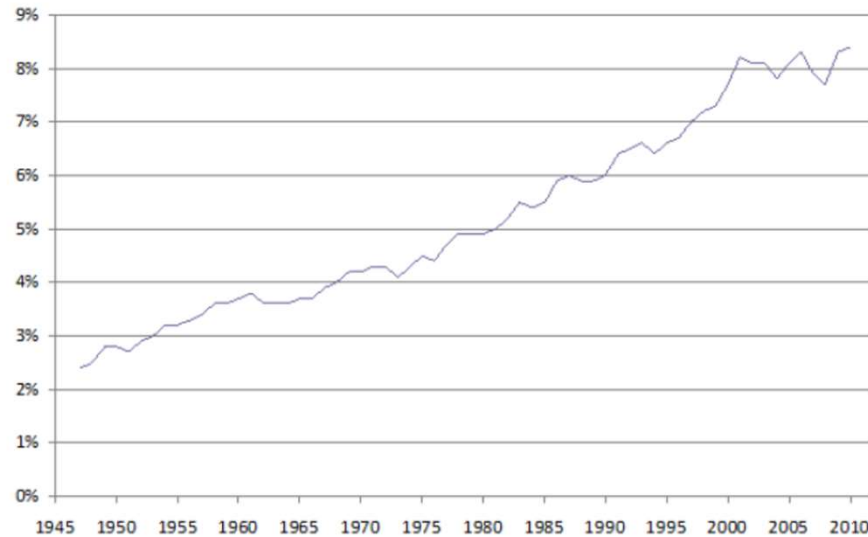
■ Topics:

- (i) Weight on GDP
- (ii) Weight on Profits
- (iii) Riskier Strategies
- (iv) Irrelevance for Central Banks

Weight on GDP

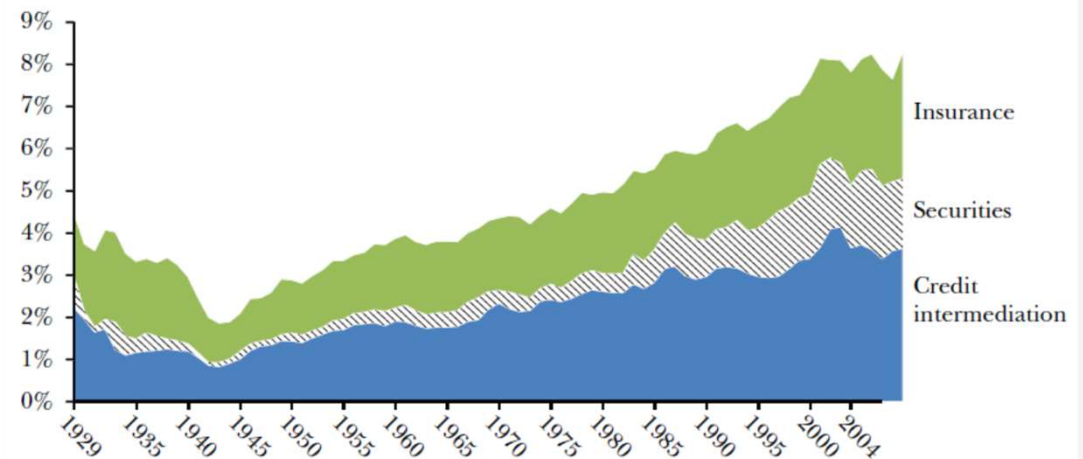
- US - weight of value added of financial and insurance sector on GDP increased 4x (from 2% to 8%) since WWII, mostly due to credit and securities activity.

Figure 1. Value added of the finance and insurance sectors in the US (% of GDP)



Source: Den Haan, Wouter (2011), "Why do we need a financial sector?", VOX CEPR's Policy Portal, 24 October.

Figure 1
The Growth of Financial Services
(value added share of GDP)

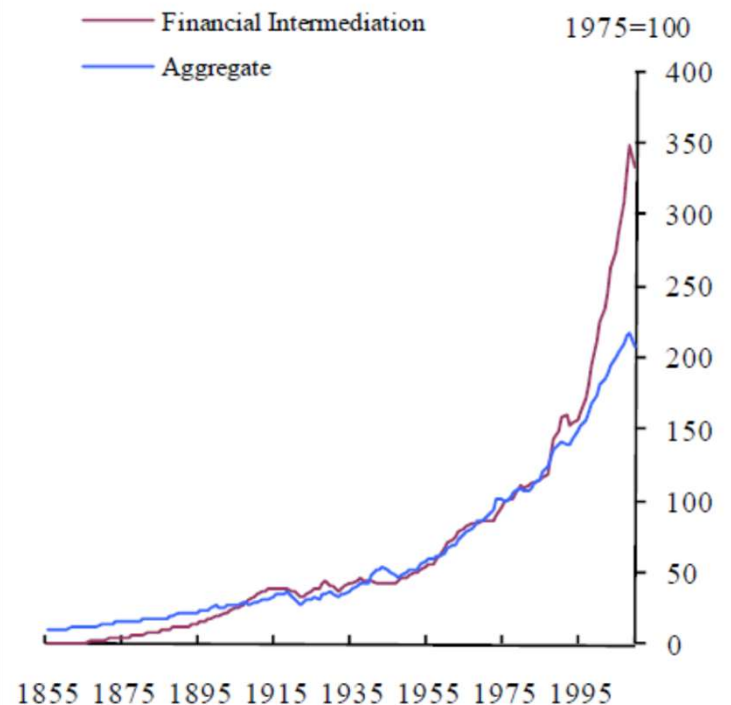


Source: Greenwood, Robin and David Scharfstein (2013), "The Growth of Finance", Journal of Economic Perspectives.

Weight on GDP

- UK - weight on GDP of the value added generated by the financial sector almost doubled between 1970 and 2008, having increased from 5% to 9%.
- In the past 160 years, growth in financial intermediation has outstripped overall economic growth by over 2 p.p./year. =>
 - Growth in value added by the financial sector has roughly doubled that of the economy as a whole since 1850, mostly since the 80's.

Chart 1 UK financial intermediation and aggregate real GVA



Sources: Feinstein (1972), Mitchell (1988), ONS and Bank calculations.

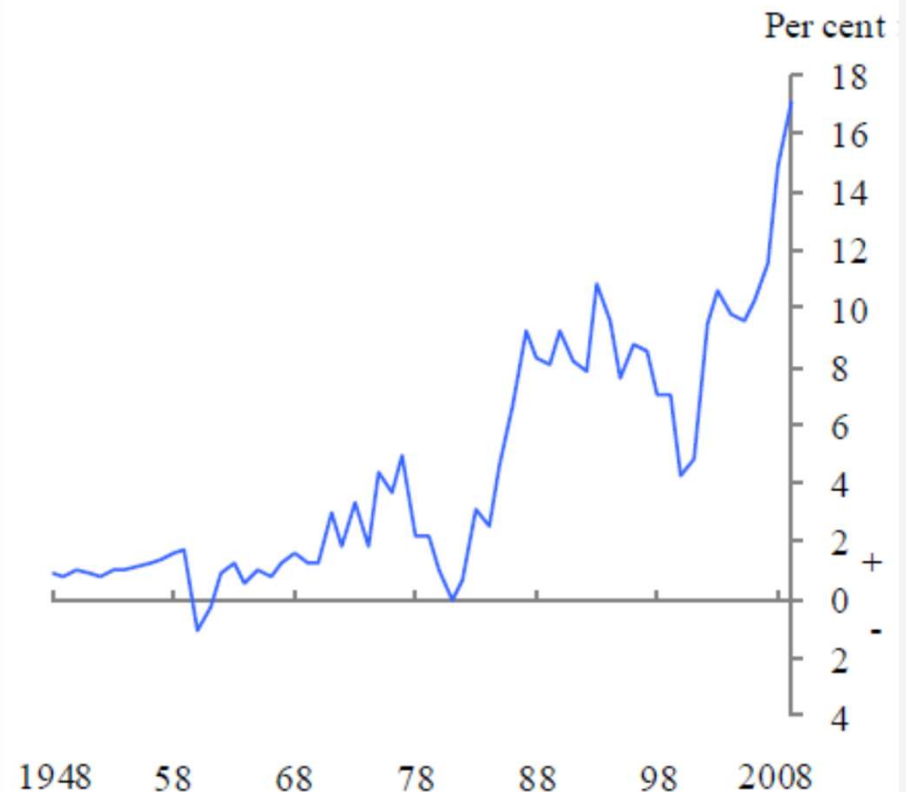
Source: Source: Haldane, Andrew (2010), "What is the contribution of the financial sector: Miracle or mirage?", in The Future of finance and the theory that underpins it, LSE.

Weight on Profits

- UK - weight of the financial sector in total profits increased from 1.5% to 15%, between the 60's and the subprime crisis.

Source: Haldane, Andrew (2010), "What is the contribution of the financial sector: Miracle or mirage?", in The Future of finance and the theory that underpins it, LSE.

Chart 2 Gross operating surplus of UK private financial corporations (% of total)



Weight on Profits

- Until 1950s - gross profitability of the financial sector relative to capital employed roughly in line with the economy.
- After the 50s - returns on equity have overcome by far those at an overall level.

Chart 16 Net operating surplus over net capital stock in UK financial intermediation and the whole economy^(a)

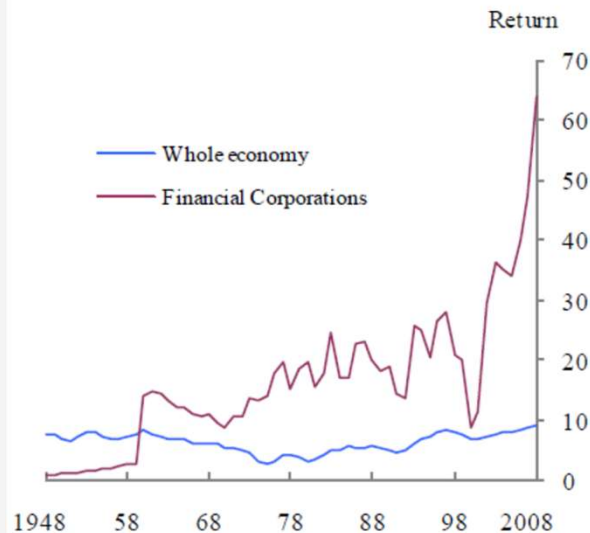
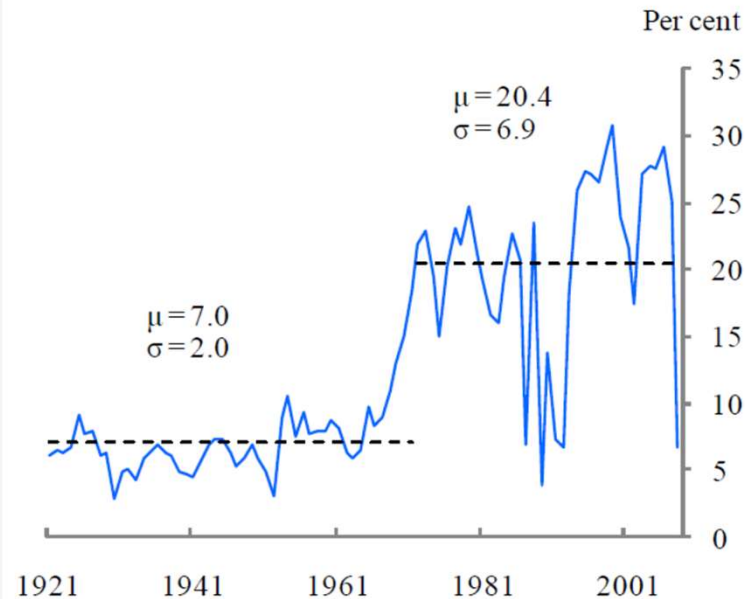


Chart 17 Return on equity in UK finance^(a)



Source: Haldane, Andrew (2010), "What is the contribution of the financial sector: Miracle or mirage?", in *The Future of finance and the theory that underpins it*, LSE.

Riskier Strategies

- According to Haldane (2010), the increasing weight of the financial sector was motivated by the high returns obtained, driven by **higher risk strategies**:
 - (1) **increased leverage**, on and off-balance sheet;
 - (2) **increased share of assets held at fair value (higher exposure to capital markets)**; and
 - (3) **writing deep out-of-the-money options**.

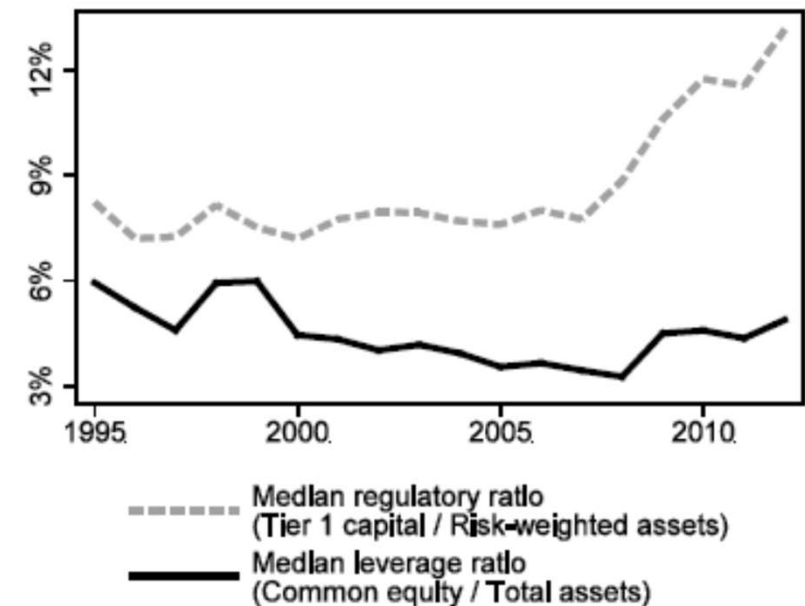
- **This increase in risk was facilitated by the opacity of accounting disclosures or the complexity of the products involved => while reported ROEs rose, risk-adjusted ROEs did not.**

Riskier Strategies

(1) increased leverage

- The leverage ratio of EU banks reached the bottom in 2008, close to 3%.
- In the late 1990s, only a few of the 20 largest listed EU banks leverage ratios were < 4%.
- 10 years later, a minority was > 4%.
- Banks that in 2003 had leverage ratios > 8% (as HSBC and BBVA) had reduced their leverage ratios by around half in 2008.
- The 2 banks that reached leverage ratios < 3% (Commerzbank and Dexia) ended-up being bailed-out by taxpayers.

Figure 14: Book leverage ratio versus regulatory capital ratio (median of top 20 banks)

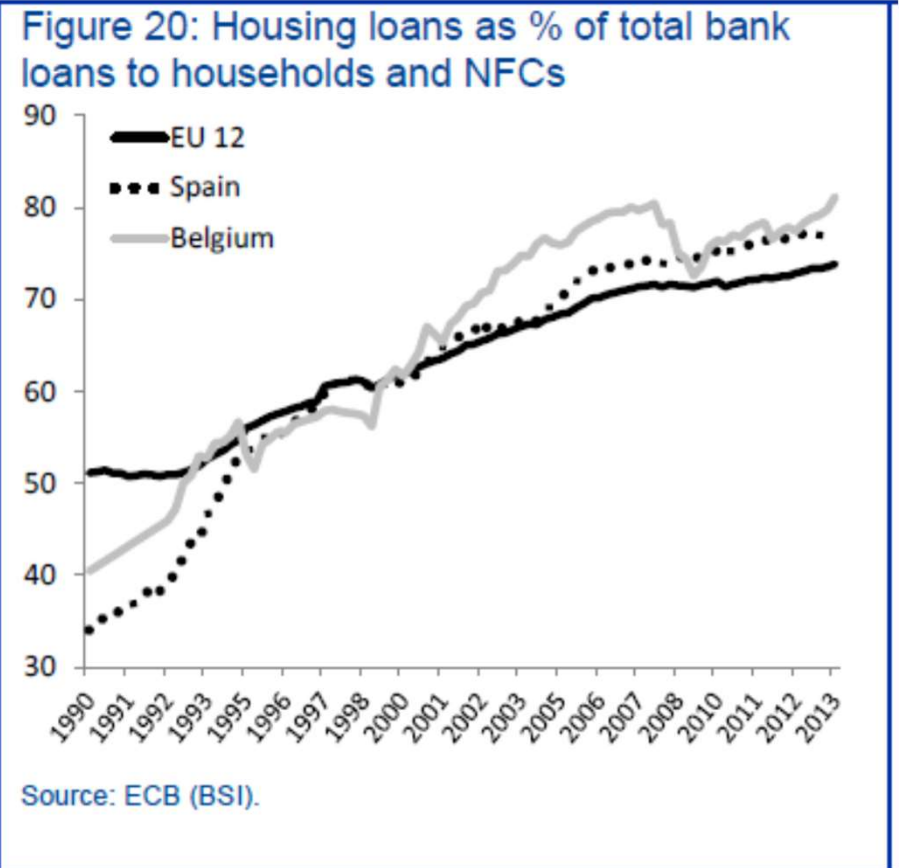


Source: Bloomberg. Note: The plotted lines show the median regulatory ratio and median leverage ratio in a balanced sample of the largest 20 EU banks.

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

Riskier Strategies

- The higher leverage (lower leverage ratios) was very much motivated by the **expansion in mortgage loans**, whose weight on total loans increased from levels in [30%,50%] to [70%,80%].



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

Riskier Strategies

- US - banks' assets increased from around 20% to over 100% of GDP since the end of the 19th century
- UK - after a century around 50% of GDP, since the early 1970s, banks' assets have risen 10x to over 500% of GDP.

Chart 19 Size of the UK banking system^(a)

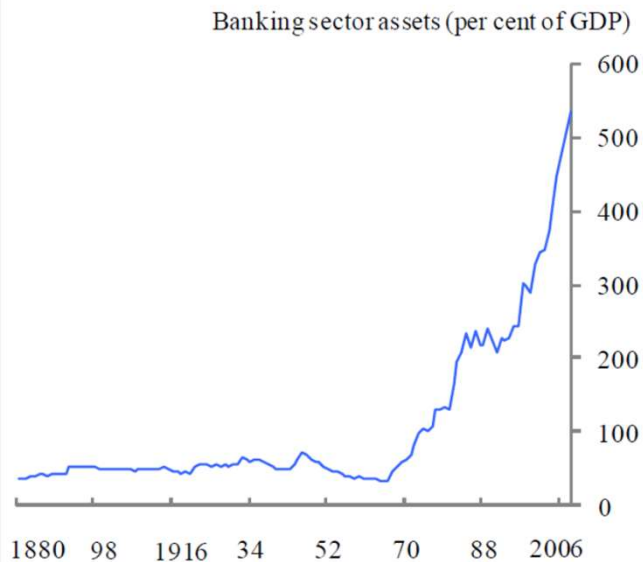
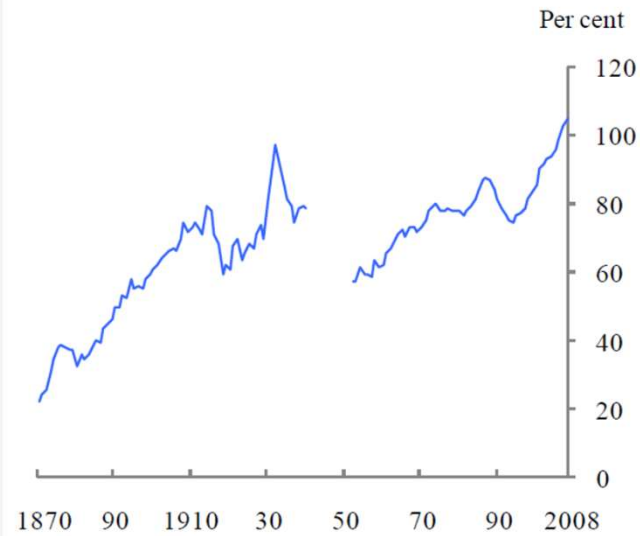


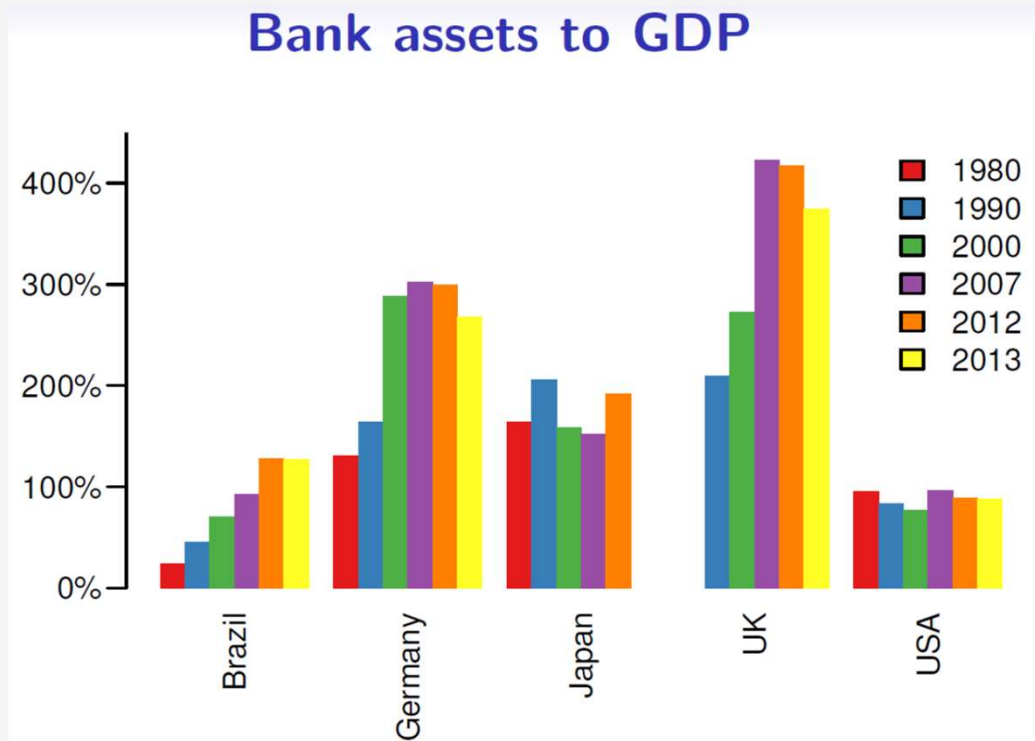
Chart 20 Size of the US banking system relative to GDP, 1870-2008



Source: Haldane, Andrew (2010), "What is the contribution of the financial sector: Miracle or mirage?", in *The Future of finance and the theory that underpins it*, LSE.

Riskier Strategies

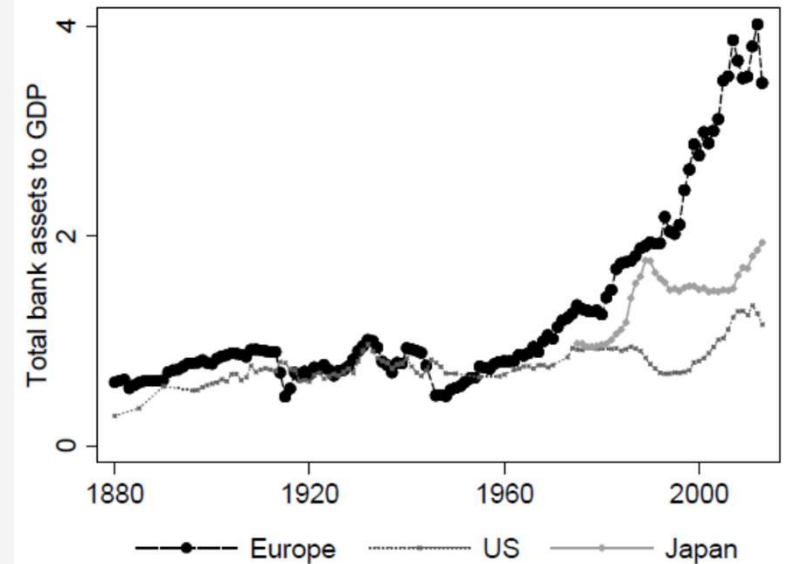
- This increase in bank assets' was observed worldwide (curiously, less in the US, due to the higher relevance of financial markets in the corporate funding):



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

Riskier Strategies

- **Europe has the world's largest banking system comparing to GDP** - total banking assets = 334% of GDP in 2013 (€42T)
- Japan - 196% (€8T)
- US - 88% (€11T)
- Banking assets have fluctuated around 70% of GDP until 1960 in the US and other major western European countries, increasing in the late 80s to about 180%.
- **Only since 1990 has Europe's banking system grown much larger than its peers.**



Source: Langfield, S. and M. Pagano (2016), 'Bank bias in Europe: effects on systemic risk and growth', *Economic Policy*, 31(85): 51-106.

Riskier Strategies

- **21st century has seen an intensification of this growth - the balance sheets of the world's largest 1000 banks increased by around 150% between 2001 and 2009, dwarfing other sectors.**

Chart 21 Total assets of the world's 1000 largest banks

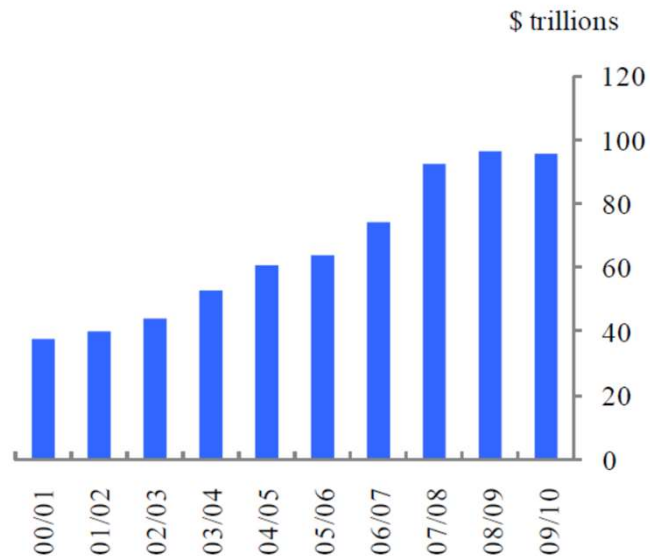
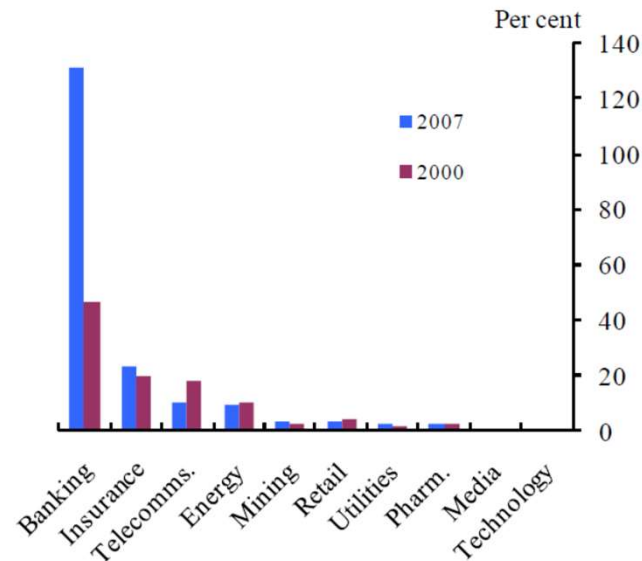


Chart 22 Largest companies' assets in each sector relative to annual GDP in the UK

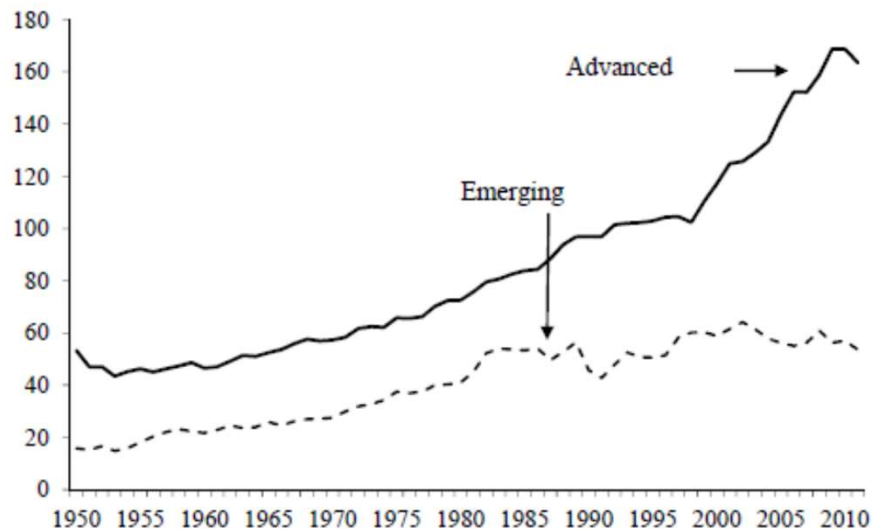


Source: Haldane, Andrew (2010), "What is the contribution of the financial sector: Miracle or mirage?", in *The Future of finance and the theory that underpins it*, LSE.

Riskier Strategies

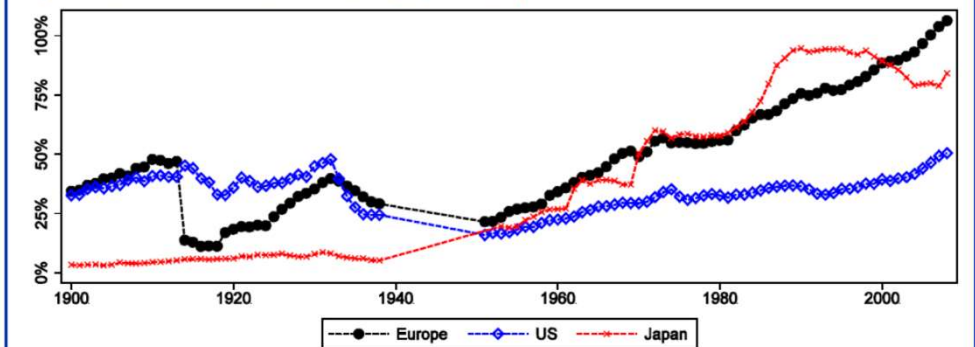
- The most important contribution for the growth in banks' balance sheets was **private domestic credit**: in advanced economies, it increased from around 50% to 160% of the GDP between 1950 and 2011, mostly in Europe.

Figure 4. Private Domestic Credit as a Percentage of GDP, 1950–2011
(22 Advanced and 28 Emerging Market Economies)



Source: Reinhart, Carmen M. and Kenneth S. Rogoff (2013), “Financial and Sovereign Debt Crises: Some Lessons Learned and Those Forgotten”, IMF WP/13/266.

Figure 1: Bank loans to GDP in US, Japan, and Europe

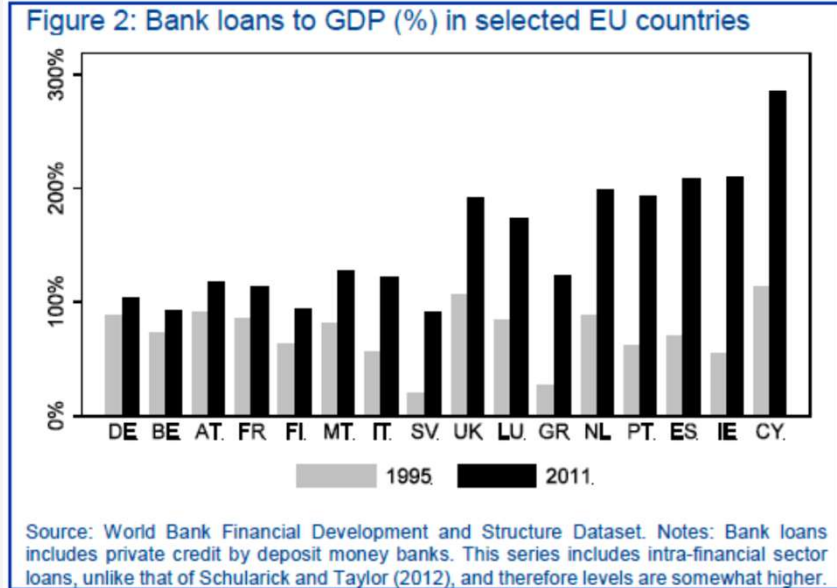


Source: Schularick and Taylor (2012). Notes: Bank loans refers to resident banks' loans to the domestic private sector (households and non-financial corporations). The data therefore exclude foreign (and foreign currency) loans, and loans to the financial and public sectors. Europe represents an average (weighted by GDP) of DK, DE, ES, FR, IT, NL, SE and the UK.

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

Riskier Strategies

- According to ESRB (2014), “**Bank credit-to-GDP has increased everywhere in Europe, but the extent of the increase varies (...).** Four EU countries (Finland, Germany, France and Austria) experienced only modest increases in credit to GDP over 1991-2011. Elsewhere, bank credit grew very substantially relative to GDP: **in 9 countries, the ratio more than doubled.** Five countries where bank credit grew most substantially – Cyprus, Ireland, Spain, Portugal and Greece – received various forms of EU assistance over 2010-14.”



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

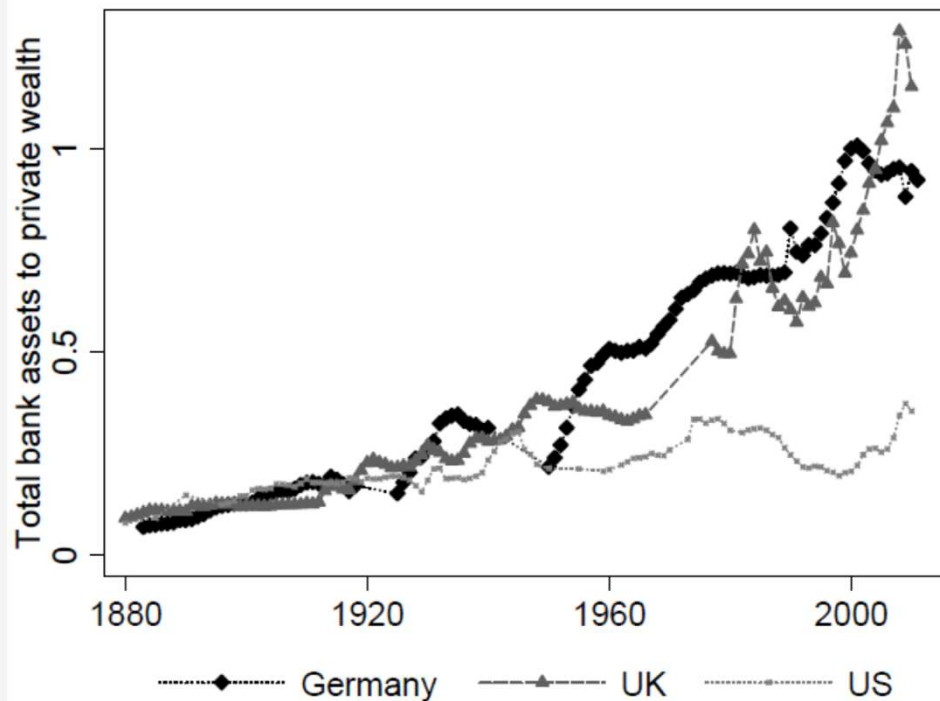
Riskier Strategies

- Economic factors for the growth of Europe's banking system:

- (1) public support for banks;
- (2) inadequate prudential supervision;
- (3) political support for banks, encouraging them to over-expand;
- (4) technological innovations and increased competition in the banking sector;
- (5) rise in wealth

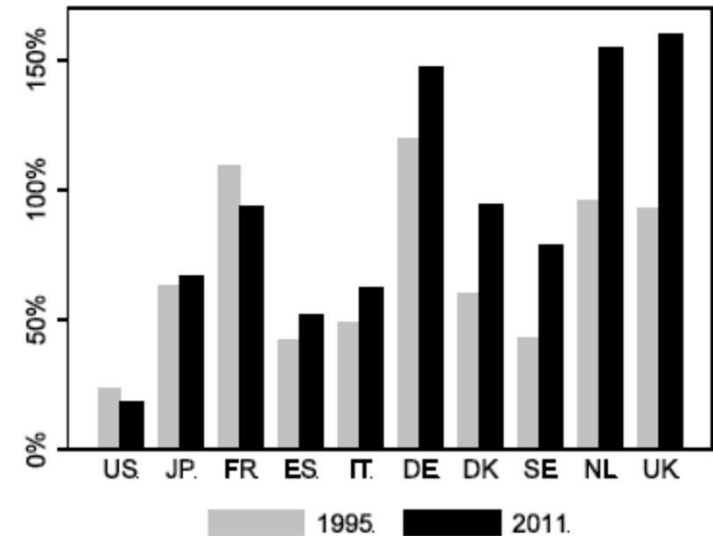
Riskier Strategies

- The rise in European banks' assets has far outpaced the rise in private wealth, namely in Northern Europe.



Source: Langfield, S. and M. Pagano (2016), 'Bank bias in Europe: effects on systemic risk and growth', *Economic Policy*, 31(85): 51-106).

Figure 8: Resident banks' assets as a percentage of net household wealth



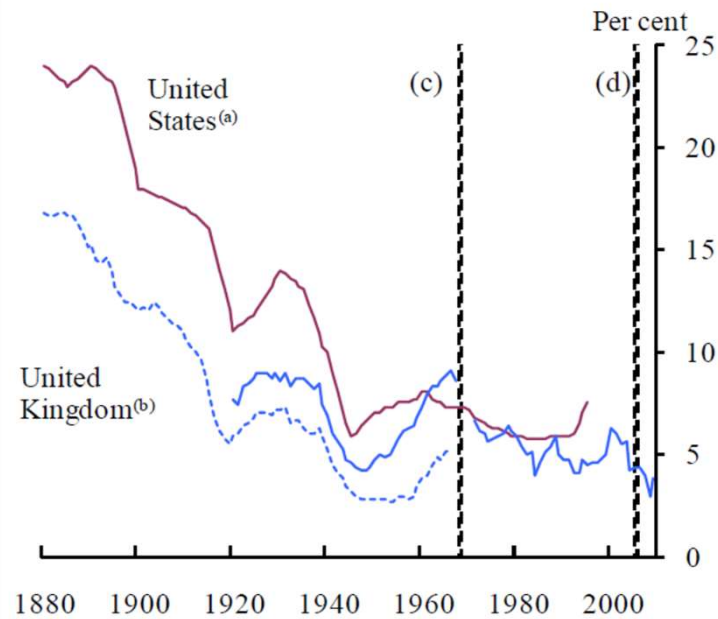
Sources: OECD; national central banks; Roine and Waldenström (2014); Helgi Library. Household wealth is the sum of financial and non-financial wealth (including housing) held by households, net of debt liabilities. Wealth data for Sweden are preliminary.

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

Riskier Strategies

- Asset growth was not followed by equity => **capital ratios decreased significantly since the end of the 19th century:**

Chart 23 Long-run capital ratios for UK and US banks



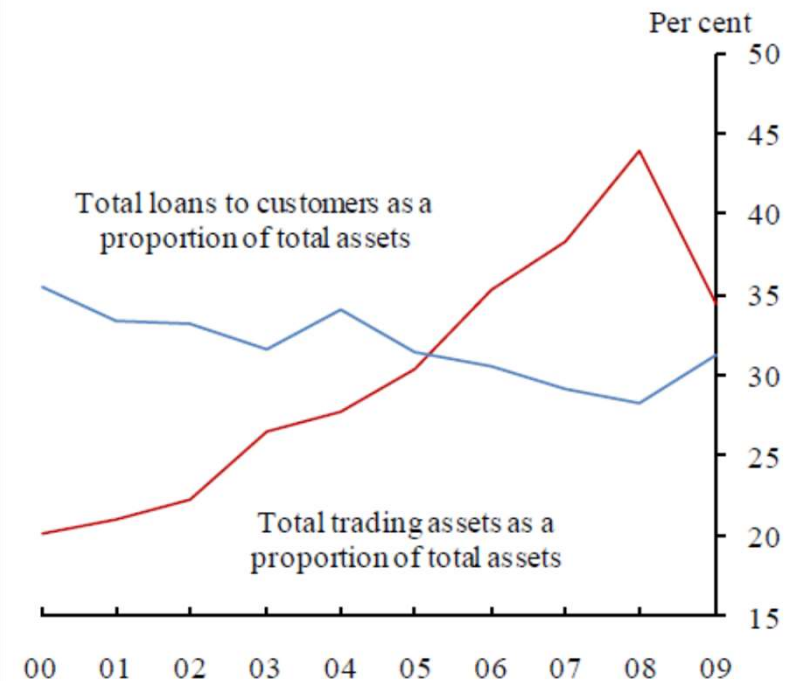
Source: Haldane, Andrew (2010), "What is the contribution of the financial sector: Miracle or mirage?", in *The Future of finance and the theory that underpins it*, LSE.

Riskier Strategies

(2) increased share of assets held at fair value

- Among the major global banks, between 2000 and 2007 the **share of loans to customers in total assets fell from around 35% to 29% by 2007**, while shares in the **trading book almost doubled from 20% to almost 40%**.
- **Regulatory arbitrage** may have been a significant factor - **trading book assets tended to have more favourable risk weights** => it was capital-efficient for banks to bundle loans into tradable structured credit products for onward sale.

Chart 29 LCFIs' trading assets and loans to customers as a proportion of total assets^(a)



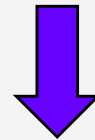
Source: Haldane, Andrew (2010), "What is the contribution of the financial sector: Miracle or mirage?", in *The Future of finance and the theory that underpins it*, LSE.

Note: LCFI – Large Complex Financial Institutions.

Riskier Strategies

(3) writing deep out-of-the-money options.

- Investing in senior tranches of sub-prime loan securitisations or selling CDS is equivalent to selling deep-out-of-the-money options: **high returns except in those tail states of the world when borrowers default massively.**



- Banks have assumed significant exposures to extreme risks, that only materialize under very severe and unlikely circumstances.

Irrelevance for Central Banks

- The increasing weight of the financial system didn't lead to a stronger role in monetary policy and central bank thinking, as stressed in Turner (2015):

“Most financial experts and policy makers thus treated more finance as positively beneficial. But in one area of policymaking – **in central banks – financial system developments were primarily viewed as neither positive nor negative, but simply neutral**”.*

- in Turner, Adair (2015), *Between Debt and the Devil: Money, Credit, and Fixing Global Finance*, October, Princeton University Press.

Irrelevance for Central Banks

- Central banks historically started their mandate with the preservation of financial stability as a central concern.
- This was the case with the establishment of the Federal Reserve in 1913 as a response to the instability of banking in the 19th century and, in particular, the panic of 1907.
- This central concern gave way the narrow mandate of controlling inflation, which was supposedly validated by the period of the Great Moderation.
- This period ended abruptly with the financial crisis in 2007 and the general perception now is that central banks should also worry again about financial stability.

Irrelevance for Central Banks

“Earlier economists who experienced the financial and economic upheavals of the 1920s and 1930s – such as Friedrich Hayek, Irving Fisher or John Maynard Keynes – believed that the operation of the financial system, and in particular of the banking system, carried vital implications for overall macroeconomic stability. But increasingly from the 1970s on, their insights were rejected or ignored”.

“Instead modern macroeconomics and central bank practice gravitated to the assumption that the monetary workings of the economy could be captured by models from which the banking system was entirely absent, and that provided central banks manipulated interest rates successfully to achieve low and stable inflation, stable macroeconomic performance would follow. Finance was described as a mere “veil””.