

# Banking in Theory and Practice

*Jin Cao*

*(Norges Bank Research, Oslo & CESifo, München)*

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# Outline

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  - What are banks?
  - Why are banks needed?
- 2 The of World of Banking in a Nutshell
  - Inside banks: numbers and jargons
  - Facts, trends, and myths
- 3 Economics of Banking
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# Disclaimer

*(If they care about what I say,) the views expressed in this manuscript are those of the author's and should not be attributed to Norges Bank.*

# What is a bank?

“An institution whose current operation consists in granting loans and receiving deposits from the public” (Freixas & Rochet, 2008)

- “*Current operation*”: must be its main business;
- “Granting loans *and* receiving deposits”: it is an intermediary doing *banking activities*, although nowadays “loans” and “deposits” shall be interpreted in a broader way;
- Banks are highly *regulated*, much more than other financial intermediaries;
- Banks usually have the access to central bank’s operational facilities.

## Bank as financial intermediary

*Financial intermediary “specializes in the activities of buying and selling financial claims”* (Freixas & Rochet, 2008), including (not mutually exclusive)

- **Brokers** who buy and sell securities *on behalf of investors*;
- **Dealers** who trade securities *for its own account*;
- **Collective investment entities** who *pool* money from many (small) investors by issuing securities which are representative of a bundle of marketable securities they purchase;
- **Banks.** Since banks may contain the other three, in the rest of this course, “financial intermediary” and “bank” are interchangeable unless specified otherwise.

## Banks' many faces: entities

- Even by narrowest definition, banks differ from each other very much by their *customers*, *business models*, *services* and *roles* in financial intermediation.

<b>USA</b>	Commercial banks	S&L	Credit unions	
<b>UK</b>	Commercial banks	Building societies		
<b>France</b>	Commercial banks	Mutual and co-op	Saving banks	
<b>Germany</b>	Commercial banks	Co-op	Saving banks	
<b>Japan</b>	Ordinary banks	Co-op		Trust banks
<b>Norway</b>	Commercial banks		Saving banks	

## Banks' many faces: services

By different business models, *banking services* can be roughly divided into (again, they do not mutually exclude)

- **Retail banking** providing services of accepting deposits and issuing loans to *individuals* and *small businesses*;
- **Wholesale banking** providing large funding services between (mainly) *financial institutions*. Banks may cooperate as *syndicate* for very large loans
  - More international, more in foreign currencies;
  - Often involved in trading assets such as securities via off-balance-sheet activities;
  - Interbank market is the most important part of *money market* (financial instruments with *short* maturity, comparing to *capital market* where maturity is longer).

## Banks' many faces: services (cont'd)

- **Universal banking** providing whole range of financial services, deposits, loans, insurance, security services... e.g., single entity like Deutsche Bank AG or banking holding company with many subsidiaries like Citigroup;
- **Shadow banking** providing banking services in non-bank, non-licensed financial institutions. It involves most large banks, gets too big to be neglected, yet is still much under-regulated and poorly understood
  - In 2013, shadow banking accounted for *one-fourth* of global financial intermediation, 50% of total bank assets, 81% in USA, Euro Area and UK;
  - Including *hedge funds*, *special purpose vehicles* (SPV), *money market mutual funds* (MMMF), etc.



## Why are banks so special?

- From the perspective of funding (*liability side*)
  - Bank deposits are repayable on demand at their face value, are used as immediate *substitute for money*;
  - By collecting deposits from a large number of investors, banks diversify risk of deposit withdrawal and may invest in long term (*illiquid*) assets;
- From the perspective of investment (*asset side*)
  - Bank loans are *non-marketable* assets with a great content of *private information*;
  - By *screening* and financing those loans with demand deposits, banks have incentives (and exclusive information) to act as *information producer* and *delegated monitor*.

# A stylized bank's balance sheet

<b>Assets</b>	<i>Euro</i>	<b>Liabilities</b>	<i>Euro</i>
Cash	100	On call deposits	3000
<i>Reserve deposited in the central bank</i>		<i>Can be withdrawn anytime</i>	
Liquid assets	1000	Time deposits	2500
<i>Safe, e.g. government securities</i>		<i>"Certificate of deposit", term deposits</i>	
Loans	6000	Bonds	1000
<i>Risky, e.g. corporate loans, mortgages</i>		<i>Borrowing from financial market</i>	
Fixed assets	200	Equity	800
<i>"Tangible", properties, plants, etc.</i>		<i>Shareholders' claim of ownership</i>	
<b>Total</b>	<b>7300</b>		<b>7300</b>

## Stylized profit and loss (income) account

Here is the stylized bank's financial statement from its profit and loss income account

	<i>Euro</i>
Interest income	700
+ Non-interest (fee) income	600
Less interest expenses (funding cost)	600
Less operating expenses	500
= <i>Gross profit</i>	<i>200</i>

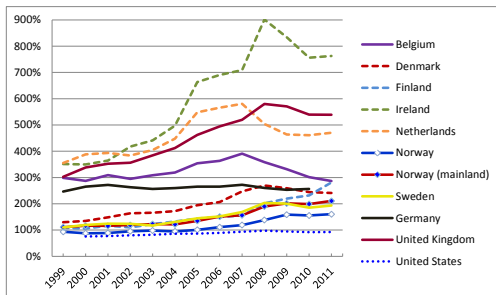
## The key indicators

Here are some key indicators reflecting the bank's profitability

Return on assets (ROA)	$= \frac{200}{7300} \times 100\% = 2.7\%$
Return on equity (ROE)	$= \frac{200}{800} \times 100\% = 25\%$
Net interest margin (NIM)	$= \frac{700-600}{7000} \times 100\% = 1.4\%$
	<i>(only for interest-earning assets)</i>
Leverage ratio (LEV)	$= \frac{7300}{800} = 9.1$
Operating expense (OE) ratio	$= \frac{500}{7300} \times 100\% = 6.8\%$

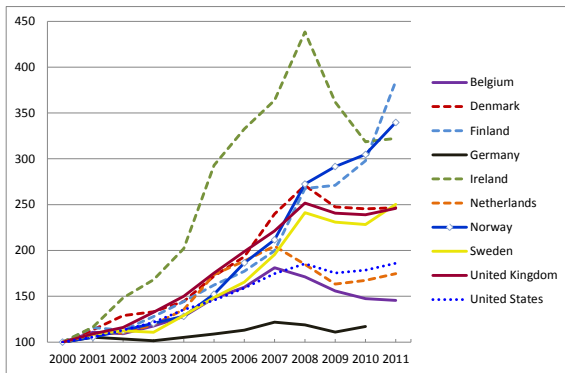
## Total bank assets versus GDP

- But... how different are banks in reality, comparing with those we have in mind and learn from classes? Let's have a look at the real world facts, trends, and mysteries.
- First: Why should we care about banking sector at all? Because it's tooooooo *big!* (*Total bank assets / GDP ratio*. Source: OECD, Federal Reserve Bank, ECB, Norges Bank, Deutsche Bundesbank)



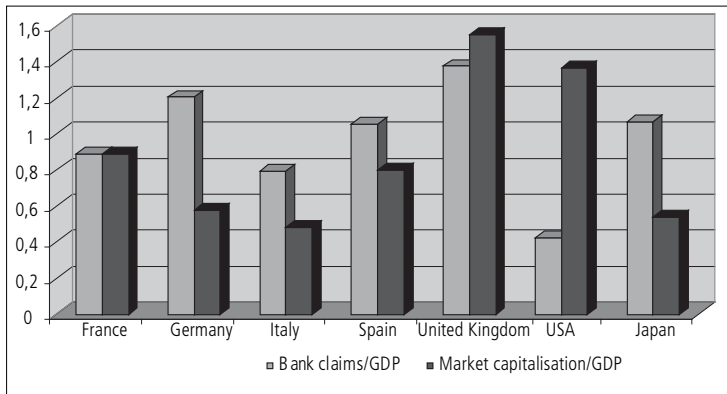
## Growth in bank assets

- ...and *growing* extremely fast! (Growth in **total** bank assets, with year 2000=100. Source: OECD, Federal Reserve Bank, ECB, Norges Bank, Deutsche Bundesbank)



## Domestic financing: bank versus market

- ...and is the *engine* for the real economy. (*Total domestic financing through banking sector versus financial market. Source: OECD*)



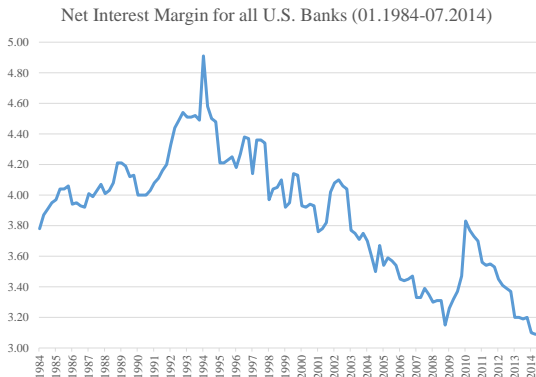
## Domestic financing: bank versus market (cont'd)

- ...while the cross-country differences are still very much distinguished
  - In countries with *market-based* financial system, such as USA on one extreme, equity market is a much more important source of funding, comparing with bank lending;
  - In countries with *bank-based* financial system, such as Germany on the other extreme, equity market is a much less important source of funding, comparing with bank lending;
  - In countries with *hybrid* financial system, such as UK, equity market and bank lending are almost equally important financing sources for the economy;
- ...and financial systems are *evolving* over time, too.



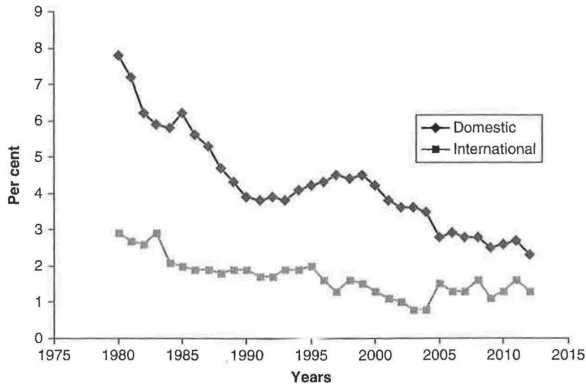
# Profitability in banking

- You might think it leads to higher market power and price markup, but... (Source: Federal Reserve Bank)



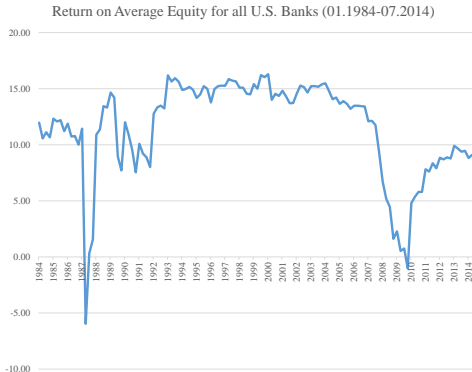
## Profitability in banking (cont'd)

- ...Another example from UK, NIM of Barclays Group 1979-2012 (*Domestic banking versus international banking. Source: British Bankers Association*)



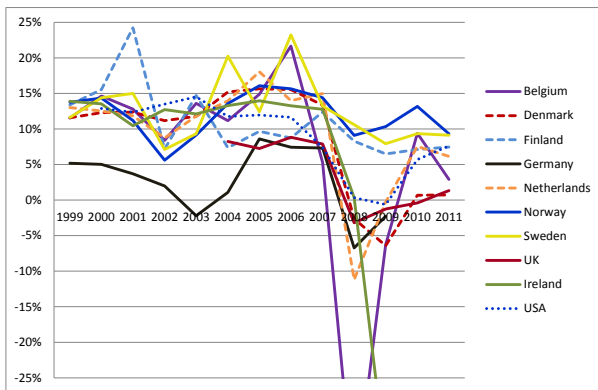
## Profitability in banking (cont'd)

- ...However, return to shareholders is quite stable, except some really lean years. Where does the profit come from?  
(Source: *Federal Reserve Bank*)



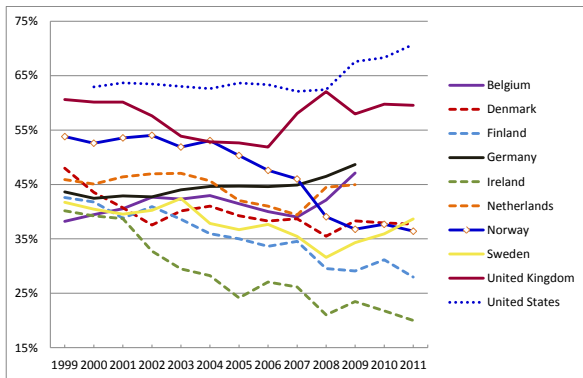
## Profitability in banking (cont'd)

- International comparison (*Return of average equity across countries.*  
*Source: OECD, Federal Reserve Bank, ECB, Norges Bank, Deutsche Bundesbank*)



## Funding resources: deposit versus others

- You might think banks are just deposit institutions... no longer true. Where does the rest of money come from?  
(Share of deposits in bank liabilities. Source: OECD, Federal Reserve Bank, ECB, Norges Bank, Deutsche Bundesbank)



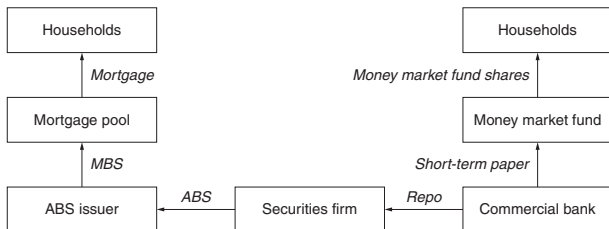
## Intermediation structure

- You might think lending to / borrowing from banks is as simple as this
  - Households with cash surplus lend to banks, given that they may withdraw when needed (*demand deposits*);
  - Those who need cash borrow from banks, and banks make sure that they repay as scheduled;
  - And banks profit from the spread between borrowing and lending rates (*interest margin*).



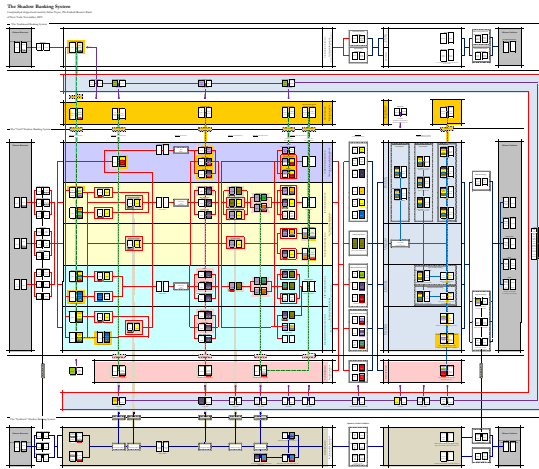
## Intermediation structure (cont'd)

- ...However, in reality the process goes through a lengthy chain, involving institutions you may have never seen or heard about: why such a fuss?
- In fact, banks sell your mortgage loans *before* they originate. If they cannot sell, they wouldn't even issue!



# Intermediation structure (cont'd)

- ...Actually in reality the procedure looks like this!





# Microeconomics of banking

- The role of financial intermediation: Why is financial intermediation needed? – Economics of banking as a field of *incomplete market* and *market failure*;
- Banks' balance sheet choices
  - Theories of bank capital;
  - Theories of bank debts, funding resources and liquidity risk;
  - Lender-borrower relationship, screening and monitoring, credit risks;
- Bank competition, market structure and banks' risk taking incentives.

# Analytical tools and related fields

- *Game theory, contract theory and corporate finance*
  - Important to understand banks' strategic behavior, e.g., in competition, risk taking, response to regulation;
  - *Second best* solution under market (especially informational) frictions;
  - Mechanism design for contracts under which banks behave as desired;
- *Industrial organization (IO)* to better understand bank competition
  - The evolution of market structure and market power; while
  - More focus on *stability* than efficiency.

# Macroeconomics of banking

- The linkage of macro economy and banking is central bank's *monetary policy*, or, central banking
  - How does central bank conduct monetary policy? *Targets and instruments?*
  - What's the *optimal* monetary policy? How to implement?
- The next question is about *transmission mechanism*
  - How do banks react to monetary policy by adjusting balance sheets?
  - What does this imply to aggregate credit supply to firms? Impact on the real economy?
- Banking and the real economy
  - How is business cycle amplified by the banking sector?
  - The role of financial intermediation in growth and volatility?

# Banking regulation in theory and practice

- Financial intermediation corrects market failure and incompleteness, while it creates new failures;
- Comparing with other industry, banking regulation is very special
  - Besides competition structure, banking regulation focuses more on *financial stability*;
  - Needs to look at both the risks inside individual banks and those in the system level (*systemic risk*);
  - Macro-finance linkage implies banking regulation has huge impact on *macro stability*;
  - Unfortunately, existing regulatory rules are seldom well founded, and issues are poorly understood;
  - *Crisis resolution* needs to be taken into account, ex ante and ex post.