

# International Money and Banking:

## 1. Banks and Financial Intermediation

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# Banks

- The vast majority of economic transactions today use money kept in bank deposits to pay for goods and services.
- Banks play a key role in the financial system and in the economy and much of the influence that central banks have on the economy via monetary policy works through the influence that it has on the banking system.
- The banking sector also played a key role in many of major historical crises, including the Great Depression, the global recession of 2008-09, Ireland's economic crisis of 2008-11 and the "euro crisis" of 2010-12.
- More recently, tensions in the banking sector in the US have been a big story this year, with large banks such as Silicon Valley Bank (SVB) closing.
- In these notes, we will start with a simple introduction to banks and their role in the economy.
- As the course goes on, we will introduce more complex topics, focusing on banking crises and their impacts as well as a detailed discussion of issues related to banking regulation.

## Some History: Early Banking

- Though it is a fascinating topic, we will not have time to cover the introduction of coins and paper money as accepted means of payment.
- However, once money became accepted as a way to conduct transactions, the question arose of where people stored their money.
- You could keep it all at home (perhaps under the mattress) but this would not be very safe.
- Banks began as safe depositories for cash: You had your own separate locker in the bank's vaults for your cash.
- And you could go to the bank when you needed to get out your cash.
- But why waste your time going yourself? Why not pay your bills with a special piece of paper (clearly identifiable as coming from you) that says the bearer is entitled to payment of cash from your account? In other words, you can write a cheque.
- Once many people had bank accounts, then they weren't taking money out of the bank after receiving a cheque. Instead, they were instructing the bank to move cash from someone else's locker to theirs.

## A “Central” Bank

- Suppose Bank A's depositors ask have their accounts credited by €10 million by presenting cheques from Bank B's depositors.
- At the same time, Bank B's depositors ask be credited €9 million from Bank A depositors.
- We could send €19 million in cash around town to the various vaults.
- But the couriers could get held up by bandits!
- A better idea was the following: Settle accounts at a “clearing house” bank. At end of the day, the clearinghouse orders the transfer of €1 million from B's vaults to A's.
- Actually, you could mingle all the cash together and the clearing house just deducts €1 million from the ledger entry for Bank B's account and adds it Bank A's.
- But all deposits are still fully backed up by cash in the vaults.
- These clearing houses were the forerunners of today's central banks.

# Fractional-Reserve Banking

- Most of the time (most being an important qualifier!) only a small fraction of a bank's total deposits will be demanded on any given day.
- And new money also gets deposited every day. Consider the example on the previous slide: Despite €10 million in total claims against it, Bank B still only needed to hand over €1 million at the end of the day.
- Eureka moment: Why do we have to keep all this cash sitting around doing nothing to back up the deposits?
- Why not loan out some of these deposits and just keep enough cash reserves on hand to deal with day-to-day demands?
- And so, the modern practice of fractional-reserve banking was born: Banks don't keep all your money in a vault anymore. They lend it out to other people.
- This is called **fractional-reserve banking** because they only keep a fraction of the money you've deposited with them "on reserve" in case people come looking for their money.

# Bank Balance Sheets

- A bank's balance sheet lists its assets and liabilities.
- The liabilities side shows the **sources** of the bank's funds (where it got them from) and the asset side shows the **uses** of funds (what they did with them).
- Here's a simple example of a balance sheet:

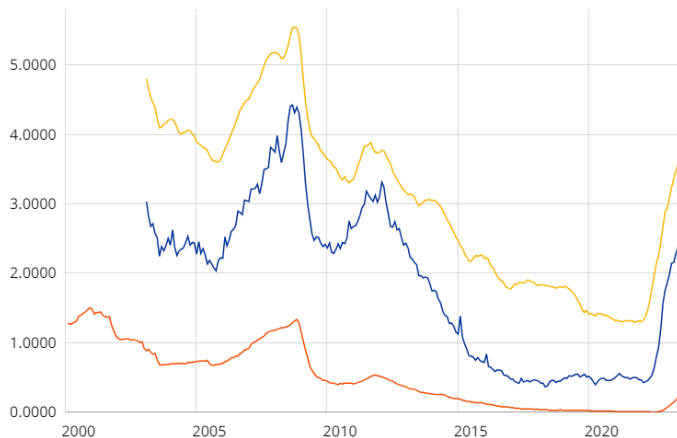
<b>Assets (Uses of Funds)</b>		<b>Liabilities and Equity (Sources of Funds)</b>	
Cash	€15	Deposits	€100
Loans	€95	Equity Capital	€10
Total	€110	Total	€110

- This bank took in €100 in deposits and added this to €10 in funds that belong to its owners (equity capital).
- It then took these €110 in funds and handed out €95 in loans and kept €15 in cash (in case some of the depositors come looking for money.)

# Net Interest Margins and Bank Profits

- The principle way that banks make profits is by earning more money in interest earned on their assets than they pay in interest on their liabilities.
- The bank's interest earned minus its interest paid is known as its **net interest** and the gap between the average interest rate earned on assets and the average interest rate paid on liabilities is known as the **net interest margin**.
- The next page shows data from the euro area: Interest rates charged to households for borrowing are higher than households can earn from keeping their money on deposits with banks.
- Interest rates on overnight deposits—money you can take out immediately—are always lower than if you agree to wait one year to take your money out.
- The low interest rate on overnight deposits is often described as a **convenience yield**. People accept low interest rates on these deposits because they be used flexible and you can make payments with them.
- You can see one way that banks could make losses: If they own a portfolio of assets that pay low interest rates and then have to start paying higher interest rates on their liabilities. This is part of the story with SVB.

## Average Interest on Household Borrowing (Yellow), On Overnight Deposits (Orange) and on Deposits with Maturity Over One Year (Blue)





# Bank Income Statements (Profit and Loss Accounts)

- A bank's income statement lists its revenues and its expenses.
- Here's a simple example of an income statement:

<b>Revenues</b>		<b>Costs</b>	
Interest Income	€2.5	Interest Paid	€0.5
Fees	€1.0	Salaries	€1.5
Trading Income	€0.5	Rent	€1
Total	€4.0	Total	€3.0

- Once a bank earns profits, they can either pay those profits to the owners in the form of dividends, or else they can retain these profits within the bank. Retaining the profits increases assets without affecting liabilities, so it increases the bank's capital.

## Real World Examples: Bank of Ireland

- The next two pages show the balance sheet of Bank of Ireland, as of the end of December 2022 (the first column) comparing each entry with the figures for December 2021 (the second column).
- The page afterwards shows Bank of Ireland's income statement.

# Bank of Ireland Balance Sheet: Assets

	Note	2022 €m	Restated <sup>1</sup> 2021 €m
<b>Assets</b>			
Cash and balances at central banks	51	36,855	31,360
Items in the course of collection from other banks		140	159
Trading securities		-	20
Derivative financial instruments	20	5,138	1,571
Fair value changes due to interest rate risk of the hedged items in portfolio hedges <sup>1</sup>	21	(738)	(76)
Other financial assets at FVTPL	22	18,553	20,078
Loans and advances to banks	23	3,044	2,750
Debt securities at amortised cost	24	4,472	6,008
Financial assets at FVOCI	25	4,254	9,457
Assets classified as held for sale		2	5
Loans and advances to customers	26	71,961	76,422
Interest in associates	29	83	59
Interest in joint ventures	30	82	57
Intangible assets and goodwill	31	1,276	852
Investment properties	32	883	992
Property, plant and equipment	33	802	820
Current tax assets		36	38
Deferred tax assets	34	989	1,044
Other assets	35	2,756	2,912
Retirement benefit assets	46	736	740
<b>Total assets</b>		<b>151,324</b>	<b>155,268</b>

# Bank of Ireland Balance Sheet: Liabilities and Equity

<b>Equity and liabilities</b>			
Deposits from banks	37	3,445	12,946
Customer accounts	38	99,200	92,774
Items in the course of transmission to other banks		232	207
Derivative financial instruments	20	6,526	2,185
Fair value changes due to interest rate risk of the hedged items in portfolio hedges <sup>1</sup>	21	(2,824)	(20)
Debt securities in issue	39	7,774	8,483
Liabilities to customers under investment contracts	40	5,870	6,671
Insurance contract liabilities	40	14,280	15,399
Other liabilities	41	2,535	2,364
Leasing liabilities	42	423	452
Current tax liabilities		8	18
Provisions	43	79	190
Allowance provision on loan commitments and financial guarantees	45	55	48
Deferred tax liabilities	34	97	90
Retirement benefit obligations	46	36	142
Subordinated liabilities	47	1,656	1,981
<b>Total liabilities</b>		<b>139,392</b>	<b>143,930</b>
<b>Equity</b>			
Share capital	48	1,070	1,079
Share premium account		456	456
Retained earnings		9,640	8,842
Other reserves		(257)	(53)
Own shares held for the benefit of life assurance policyholders		(10)	(20)
<b>Shareholders' equity</b>		<b>10,899</b>	<b>10,304</b>
Other equity instruments - Additional Tier 1	49	966	966
<b>Total equity excluding non-controlling interests</b>		<b>11,865</b>	<b>11,270</b>
Non-controlling interests	50	67	68
<b>Total equity</b>		<b>11,932</b>	<b>11,338</b>
<b>Total equity and liabilities</b>		<b>151,324</b>	<b>155,268</b>

# Bank of Ireland Income Statement

Consolidated income statement *(for the year ended 31 December 2022)*

	Note	2022 €m	2021 €m
Interest income calculated using the effective interest method	4	2,772	2,398
Other interest income	4	378	372
<b>Interest income</b>		<b>3,150</b>	<b>2,770</b>
Interest expense	5	(663)	(543)
<b>Net interest income</b>		<b>2,487</b>	<b>2,227</b>
Net insurance premium income	6	2,046	2,018
Fee and commission income	7	579	448
Fee and commission expense	7	(268)	(179)
Net trading income	8	34	111
Life assurance investment income, gains and losses	9	(1,471)	1,284
Other leasing income	10	71	63
Other leasing expense	10	(45)	(47)
Other operating income	11	176	153
<b>Total operating income</b>		<b>3,609</b>	<b>6,078</b>
Insurance contract liabilities and claims paid	12	(378)	(3,089)
<b>Total operating income, net of insurance claims</b>		<b>3,231</b>	<b>2,989</b>
Operating expenses	13	(2,012)	(1,859)
Cost of restructuring programme	14	(17)	(110)
<b>Operating profit before impairment (losses) / gains on financial instruments</b>		<b>1,202</b>	<b>1,020</b>
Net impairment (losses) / gains on financial instruments	16	(187)	194
<b>Operating profit</b>		<b>1,015</b>	<b>1,214</b>
Share of results of associates and joint ventures (after tax)	17	40	5
Gain on disposal / liquidation of business activities		1	2
<b>Profit before tax</b>		<b>1,056</b>	<b>1,221</b>
Taxation charge	18	(159)	(166)
<b>Profit for the year</b>		<b>897</b>	<b>1,055</b>

# Advantages of Fractional Reserve Banking

- Fractional-reserve banking has generated a lot of criticism over the years along the lines of “how dare these people pretend they have your money when they’ve actually given it to someone else.”
- Don’t take these criticisms too seriously. Banks don’t pretend they have your money in the vault but they will (almost always) give you your money back on request if you ask.
- But fractional-reserve banking has important advantages:
  - ① **Saves Depositors Money:** Banks can charge interest on their loans. Without this interest income, the only way a bank can make a profit is to charge fees to depositors. Interest earned can be used as an alternative source of income for banks and (assuming competition between banks) this reduces the need for fees related to safeguarding their money.
  - ② **Financial Intermediation:** It makes banks an intermediary between those that have money and those that need to borrow money. This financial intermediation function is a crucial element of the modern economy.

# Why Do We Need Financial Intermediaries?

Why can't those with savings just lend them directly to those who want to borrow? i.e why not just have peer-to-peer lending?

- 1 **Pooling Savings:** Many savers deposit small amounts. Someone looking for a big loan can get it from a bank rather than having to look for a saver with the correct amount of funds.
- 2 **Risk Diversification:** Savers lending their funds to an individual borrower face idiosyncratic risk. If that borrower fails to pay back, they lose everything. The bank can lend to many borrowers, take its cut, and pass a safe return back to the saver.
- 3 **Information Processing:** Banks can specialize in screening borrowers, processing and sharing information, and in writing sophisticated debt contracts.
- 4 **Maturity Transformation:** If I want to have my savings back when I want them, I won't lend the money for one year or more, as borrowers may want. Banks can make these long-term loans, knowing that (hopefully) each period, only some of its depositors will want their money back.

# Things Financial Intermediaries Help You Do

- There are other financial intermediaries apart from banks and insurance companies. Pension funds, mutual funds and private equity funds are three examples that play important roles in the economy.
- Financial intermediation plays a crucial role in modern economies.
  - ① **Buying a House:** Without financial intermediation, you could only obtain the money to buy a house by saving all the money over years and then eventually having enough money saved to finance the purchase.
  - ② **Starting a Business:** Most businesses take a number of years before they can turn a profit. Without financial intermediation, only those who had substantial accumulated wealth could consider starting a business. Having such wealth is still an important advantage but the financial system plays an important role in encouraging innovation by new businesses.
  - ③ **Insurance:** Sometimes bad things happen to people and they need a large amount of money (perhaps more than they have saved). Insurance companies are financial intermediaries that take from those looking to be insured and use the funds to pay out to those that need the money due to bad luck.



## An Important Disadvantage: Potential for Instability

- Having listed all the advantages of fractional-reserve banking, it turns out there is also a very important **disadvantage** associated with it.
- Banks are supposed to have assets greater than liabilities owed to non-investors (i.e. positive bank capital).
- What if the bank makes bad loans to borrowers that default?
- What if customers suspect the bank does not have assets to pay back money to depositors?
- If this happens, the earlier arguments that only some customers wanting their money back may turn out to be incorrect.
- We may have a **run on the bank**: Lots of depositors look to get their money back. Banks usually find it difficult to cope with these runs.
- For these reasons, fractional reserve banking systems are subject to occasional periods of instability.

## Maturity Transformation is Also Maturity Mismatch

- We mentioned “maturity transformation” as one of the cool features of fractional reserve banking. But when things are going badly for banks, you are more likely to hear about **maturity mismatch** i.e. the fact that the average maturity of a bank’s assets is longer the average maturity of its liabilities.
- Most banks are thus vulnerable if situations arise in which there are demands to pay back a large amount of liabilities over a short period of time.
- They have loaned out large amounts of money in the form of, for example, 30-year mortgages and they are not able to call these people up and say *“We’re in a spot of bother. We know we said you could pay back over 30 years but could you instead pay it all back now?”*
- Banks also have legally binding contracts with depositors, e.g. people with “demand deposits” have been told they can get their money out on demand.
- These two sets of legal contracts cannot always be jointly honoured.
- In the past, governments imposed regulations to limit maturity mismatch: Mortgage lenders took in longer-term savings, banks who had demand deposits only made shorter loans. However, these restrictions have generally been lifted over the years.

# Key Points

- 1 Meaning of fractional-reserve banking.
- 2 Understanding bank balance sheets: Liabilities and assets.
- 3 Meaning of “equity capital” for banks.
- 4 Net interest and net interest margins
- 5 What a bank’s income statement shows
- 6 Advantages of fractional-reserve banking.
- 7 Meaning of financial intermediation and advantages of financial intermediaries compared with peer-to-peer borrowing.
- 8 Things financial intermediaries help you do.
- 9 Maturity transformation (or mismatch).
- 10 Why banks can potentially become unstable.