

International Money and Banking:

1. Banks and Financial Intermediation

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Part I

Banks and their Financial Statements

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 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.
- And sometimes, you see large banks getting in trouble in “normal” times, like when Credit Suisse and Silicon Valley Bank (SVB) failed in 2023.
- 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 issues related to banking regulation.

Some History: Early Banking

- Though it is a fascinating topic, we will not have time to cover the history of coins and paper money being accepted as 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.

Settling Payments via a “Central” Bank

- Suppose Bank A’s depositors ask to have their accounts credited by €10 million by presenting cheques from Bank B’s depositors.
- At the same time, Bank B’s depositors ask to be credited €9 million from Bank A depositors.
- How do we settle these demands?
 - ▶ 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 clearing house orders the transfer of €1 million from B’s vaults to A’s.
 - ▶ Actually, the clearing house could mingle all the cash together and just deduct €1 million from the ledger entry for Bank B’s account and add it to Bank A’s.
- These clearing houses were the forerunners of today’s central banks. Today, all commercial banks in a country maintain an account with their country’s central bank.
- Note again that lots of transactions are happening without any cash being withdrawn.

Fractional-Reserve Banking

- Most of the time (and most here is a very important qualifier!) only a small fraction of a bank's total deposits will be withdrawn 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.
- At some point, there was a “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, **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 banks only keep a fraction of the money people have 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:

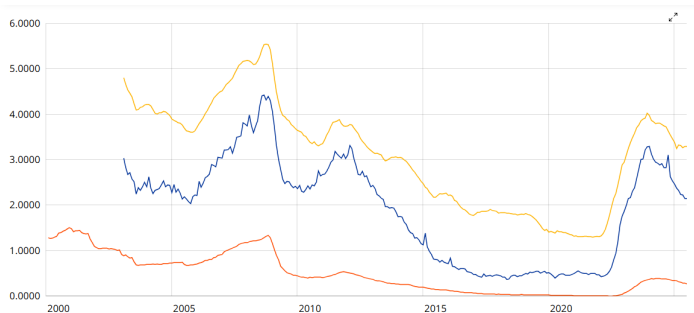
Assets (Uses of Funds)		Liabilities and Equity (Sources of Funds)	
Cash and Reserves	€15	Deposits	€100
Loans	€95	Equity Capital	€10
Total	€110	Total	€110

- 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 made €95 in loans and kept €15 in cash and reserves (deposits with the central bank). This €15 is kept in case some of the depositors come looking for money.
- Note that **the bank's deposits are liabilities**. If depositors want their money back, the bank has to give it to them.

Net Interest Margins and Bank Profits

- Banks earn profits mainly from the gap between interest received on assets and interest paid on liabilities.
- This difference is the **net interest**; expressed as a rate gap it is the **net interest margin**.
- See the data on the next page for Euro area banks. It shows households pay higher rates to borrow than they receive on deposits.
- **Overnight deposits**—funds available to withdraw anytime—pay lower rates than time deposits (where you agree to wait one year or more to take your money out.)
- The low rate on overnight deposits reflects a **convenience yield**: People accept low interest rates on these deposits to get immediate access and payment ability.
- 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.

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:

Revenues		Costs	
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. Notice that means it increases the bank's equity 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 2023 (the first column) comparing each entry with the figures for the previous two years.
- The page afterwards shows Bank of Ireland's income statement.
- Profits were about the same in 2024 as in 2023 but had greatly increased from previous years because of higher net interest income earned on loans and from money they have on deposit with the central bank.

Bank of Ireland Balance Sheet: Assets

	Note	2024 €m	2023 €m
Assets			
Cash and balances at central banks	47	32,436	31,843
Items in the course of collection from other banks		114	126
Trading securities		166	72
Derivative financial instruments	20	3,477	4,341
Fair value changes due to interest rate risk of the hedged items in portfolio hedges		118	(124)
Other financial assets at FVTPL	21	24,000	20,899
Loans and advances to banks	22	1,738	1,907
Debt securities at amortised cost	23	6,387	5,715
Financial assets at FVOCI	24	3,384	3,968
Loans and advances to customers	25	82,538	79,729
Interest in associates	28	133	108
Interest in joint ventures	28	80	79
Intangible assets and goodwill	29	1,500	1,408
Investment properties	30	771	793
Property, plant and equipment	31	811	800
Current tax assets		37	3
Deferred tax assets	32	546	808
Other assets	33	1,127	1,127
Reinsurance contract assets	19	1,453	1,414
Retirement benefit assets	42	997	692
Total assets		161,813	155,708

Bank of Ireland Balance Sheet: Liabilities and Equity

Equity and liabilities

Deposits from banks	34	1,805	3,095
Customer accounts	35	103,069	100,183
Items in the course of transmission to other banks		218	322
Derivative financial instruments	20	3,675	4,490
Fair value changes due to interest rate risk of the hedged items in portfolio hedges		(365)	(1,115)
Debt securities in issue	36	9,130	8,670
Liabilities to customers under investment contracts		9,203	7,692
Insurance contract liabilities	19	16,685	15,113
Other liabilities	37	2,760	2,480
Leasing liabilities	38	366	404
Current tax liabilities		29	23
Provisions	39	235	58
Loss allowance provision on loan commitments and financial guarantees	41	80	61
Deferred tax liabilities	32	58	61
Retirement benefit obligations	42	3	10
Subordinated liabilities	43	1,853	1,600
Total liabilities		148,804	143,147

	Note	2024 €m	2023 €m
Equity			
Share capital	44	1,003	1,057
Share premium account		456	456
Retained earnings		10,473	10,285
Other reserves		22	(199)
Own shares held for the benefit of life assurance policyholders		(7)	(7)
Shareholders' equity		11,947	11,592
Other equity instruments - Additional tier 1	45	1,059	966
Total equity excluding non-controlling interests		13,006	12,558
Non-controlling interests	46	3	3
Total equity		13,009	12,561
Total equity and liabilities		161,813	155,708

Bank of Ireland Income Statement

	Note	2024 €m	2023 €m
Interest income calculated using the effective interest method	4	5,792	5,413
Other interest income	4	950	916
Interest income		6,742	6,329
Interest expense	5	(3,141)	(2,622)
Net interest income		3,601	3,707
Insurance service result	19	35	51
<i>Insurance revenue</i>		536	518
<i>Insurance service expense</i>		(476)	(428)
<i>Net expense from reinsurance contracts held</i>		(25)	(39)
Insurance investment and finance result	19	26	110
<i>Total investment gains</i>		1,526	1,198
<i>Finance expense from insurance contracts issued</i>		(1,536)	(1,182)
<i>Finance income from reinsurance contracts held</i>		36	94
Fee and commission income	6	729	673
Fee and commission expense	6	(212)	(219)
Net trading income	7	105	65
Other leasing income	8	109	92
Other leasing expense	8	(87)	(63)
Gain on derecognition of financial assets	9	33	-
Other operating income	10	74	44
Total operating income		4,413	4,460
Operating expenses	11	(2,435)	(2,094)
Cost of restructuring programme	12	(57)	(20)
Operating profit before impairment losses on financial instruments		1,921	2,346
Net impairment losses on financial instruments	14	(107)	(425)
Operating profit		1,814	1,921
Share of results of associates and joint ventures (after tax)	15	34	25
Gain / (loss) on disposal / liquidation of business activities	16	7	(8)
Profit before tax		1,855	1,938
Taxation charge	17	(324)	(337)
Profit for the year		1,531	1,601
Attributable to shareholders		1,531	1,595
Attributable to non-controlling interests	46	-	6
Profit for the year		1,531	1,601

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. They take money from some people and lend it out to others. This financial intermediation function is a crucial element of the modern economy.

Why Do We Need Banks to Be 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.

Part II

Some Bogus Debunking

Debunking Some Debunking About Banks

- Show some people the previous slides and they'll say "*Aha! He's lying to you – banks are not actually financial intermediaries.*"
- This is often dressed up as a conspiracy, with references to a mysterious Bank of England paper that supposedly "let the secret out."
- There is a second leg to the conspiracy, something about economists not telling you about loans creating deposits, even though economists have been teaching this in Macro 101 for decades. More on that later.
- This is all nonsense. There's no conspiracy. I'm not on the take from Big Bank (quite the opposite as you'll find out).
- And banks really are financial intermediaries.
- So what's this all about?
- It relates to a specific detail of how banks sometimes issue loans.

The Moment a Loan is Created

- Suppose our bank makes a loan for €10 to Lucy. In some cases, the bank opens a special deposit account with their own bank and tells Lucy they can get their €10 from it.
- The bank's balance sheet changes from

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

to

Assets (Uses of Funds)		Liabilities and Equity (Sources of Funds)	
Cash	€15	Deposits	€110
Loans	€105	Equity Capital	€10
Total	€120	Total	€120

- Loans have gone up by €10 (Lucy owes €10 to the bank) but so have deposits (Lucy's new €10 bank account).

What Happens Next?

- The bank has made a loan to Lucy without sourcing additional money from someone else. Does that mean it's not an intermediary?
- If you want to freeze everything at that moment in time or are angling to win a purely rhetorical argument, then ok, this looks like banks are not financial intermediaries.
- But what happens next? Why did Lucy get the loan? Not to admire it sitting in her new deposit account, earning less interest than she is paying on the loan.
- Lucy took out the loan to buy something, let's say a car.
- Lucy buys the car from Evil Elmo dealership whose bank account is with X Bank.
- Evil Elmo requests payment—this requires Lucy to ask her bank to transfer money to X Bank.
- X Bank then credits Evil Elmo's account and the car is paid for.

The Bank's Balance Sheet After Lucy Buys the Car

- Where does Lucy's bank get the money from to transfer to X Bank? Usually, from their reserves with the central bank. Money goes from their reserve account to X Bank's reserve account.
- Their balance sheet now looks like this

Assets (Uses of Funds)		Liabilities and Equity (Sources of Funds)	
Cash and Reserves	€5	Deposits	€100
Loans	€105	Equity Capital	€10
Total	€110	Total	€110

- The bank is back with deposits of €100 and its cash and reserves have fallen from €15 to €5 because they transferred the loan proceeds to X Bank.
- The bank needs deposits from customers to be able to make loans: **Banks are financial intermediaries.**
- They also need sufficient cash or reserves to honour the use of loans for purchases.
- They also need to carefully monitor their supply of cash (or reserves on deposit with the central bank).

Further Debunking

- 1 **Not How Large Loans Work:** The “give Lucy a deposit account” story is correct for small personal loans but it’s not how most loans work. With mortgage loans, the money is usually sent to a lawyer who then ensures the seller obtains the funds and that the buyer obtains the legal deeds for the property. Car loan funds are commonly issued directly to dealerships selling the cars with the bank obtaining a title deed for the car.
- 2 **Bond Borrowing:** If banks can expand their lending without having to source funds, why do they bother borrowing money in the form of interest-bearing bonds to obtain funding for their activities?
- 3 **Borrowing from Money Markets or the Central Bank?**
 - ▶ The debunkers have a response to the idea that banks need to have reserves to make loans: No, they can just borrow from other banks or from central banks. As much as they want! Banks can make as many loans as they want.
 - ▶ This is utter nonsense, contradicting both basic banking regulations, the role central banks play when loaning money to banks and many of the lessons from the global financial crisis.

But What About the Bank of England?

- But what about the Bank of England? Didn't they let the secret out?
- Nope. They just released a poorly written paper in 2014 that has misled many people: *Money creation in the modern economy*
- It's not wrong per se, just written in a way the misled people into thinking they were learning something new and exciting.
- The introduction contains the interesting sounding "*banks do not act simply as intermediaries, lending out deposits that savers place with them*"
- They say "*When a bank makes a loan, for example to someone taking out a mortgage to buy a house, it does not typically do so by giving them thousands of pounds worth of banknotes. Instead, it credits their bank account with a bank deposit of the size of the mortgage.*" Ok, not true for mortgages actually, but ok.
- But then they admit "*if a given bank financed all of its new loans in this way, it would soon run out of reserves*" and "*the bank would need to make sure it was attracting and retaining some kind of funds in order to keep expanding lending.*" Yep, just like a financial intermediary.

Part III

Instability

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 than 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 that had demand deposits only made shorter loans. However, these restrictions have generally been lifted over the years.