AFIN8003 Week 2 - Risks and Regulation

Banking and Financial Intermediation

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Table of contents

1 Introduction **2**
1.1 Banks need regulation . . . 2
1.2 Banking regulations . . . 2
1.3 An example: entry and chartering regulation . . . 2
1.4 The GFC and the new banking regulatory landscape . . . 3
1.5 The new banking regulatory landscape . . . 4

2 Risks of DIs **4**
2.1 Banking and trading books . . . 4
2.2 What risks do banks face? . . . 4
2.3 Risks on the assets side . . . 5
2.4 Risks on the assets side - loans . . . 5
2.5 Risks on the assets side - other assets . . . 5
2.6 Risks on the liabilities and equity side . . . 6
2.7 Risks on the liabilities and equity side - deposits . . . 6
2.8 Risks on the liabilities and equity side - debts . . . 7
2.9 Risks on the liabilities and equity side - equity . . . 7
2.10 Risks beyond balance sheet . . . 8
2.11 Bank failure . . . 8
2.12 Silicon Valley Bank (SVB) failure . . . 8
2.13 Bank risks - our approach . . . 9

3 Regulations of DIs **9**
3.1 Regulations of banks . . . 9

4 Prudential regulations **9**
4.1 Microprudential regulations . . . 9
4.2 Macroprudential regulations . . . 9

5 Regulatory authorities **10**
5.1 International banking regulatory framework . . . 10
5.2 Banking regulators in Australia . . . 10
5.3 Banking regulators in Australia - RBA . . . 11
5.4 Banking regulators in Australia - RBA . . . 11
5.5 Banking regulators in Australia - APRA . . . 11
5.6 Banking regulators in Australia - ASIC . . . 12
5.7 Banking regulators in Australia - Treasury . . . 12
5.8 Banking regulators in the U.S. . . . 12
5.9 Banking regulators in China . . . 12
5.10 Banking regulators in Europe . . . 12

6 Finally... 13
6.1 Suggested readings 13
References 13

1 Introduction

1.1 Banks need regulation

DIs (banks, interchangeably) are financial institutions chartered to take deposits from the public and grant loans simultaneously. They are necessary in an economy achieving efficient allocation of financial resources.

However, we also note that

- the banking structure itself could cause financial fragility (Diamond and Dybvig 1983).
- the collapse of bank credit contributes to economic crisis (Bernanke 1983).

Therefore, bank failures have significant *negative externality*. As a result, banks are heavily regulated.

1.2 Banking regulations

What types of regulations are needed or in place for banks?

- entry and chartering
- safety and soundness
- credit allocation
- consumer and investor protection
- …

1.3 An example: entry and chartering regulation

Economic theories generally view competition as improving social welfare. But it is not necessarily true for the banking sector.

- Consider the location model of Salop (1979).
- Free entry leads to too many banks that is sub-optimal.
- Increasing bank costs (e.g., higher reserve requirements) does not limit bank numbers.
- Charters (business license) could help.
- Chartering also helps with other regulations.

1.4 The GFC and the new banking regulatory landscape

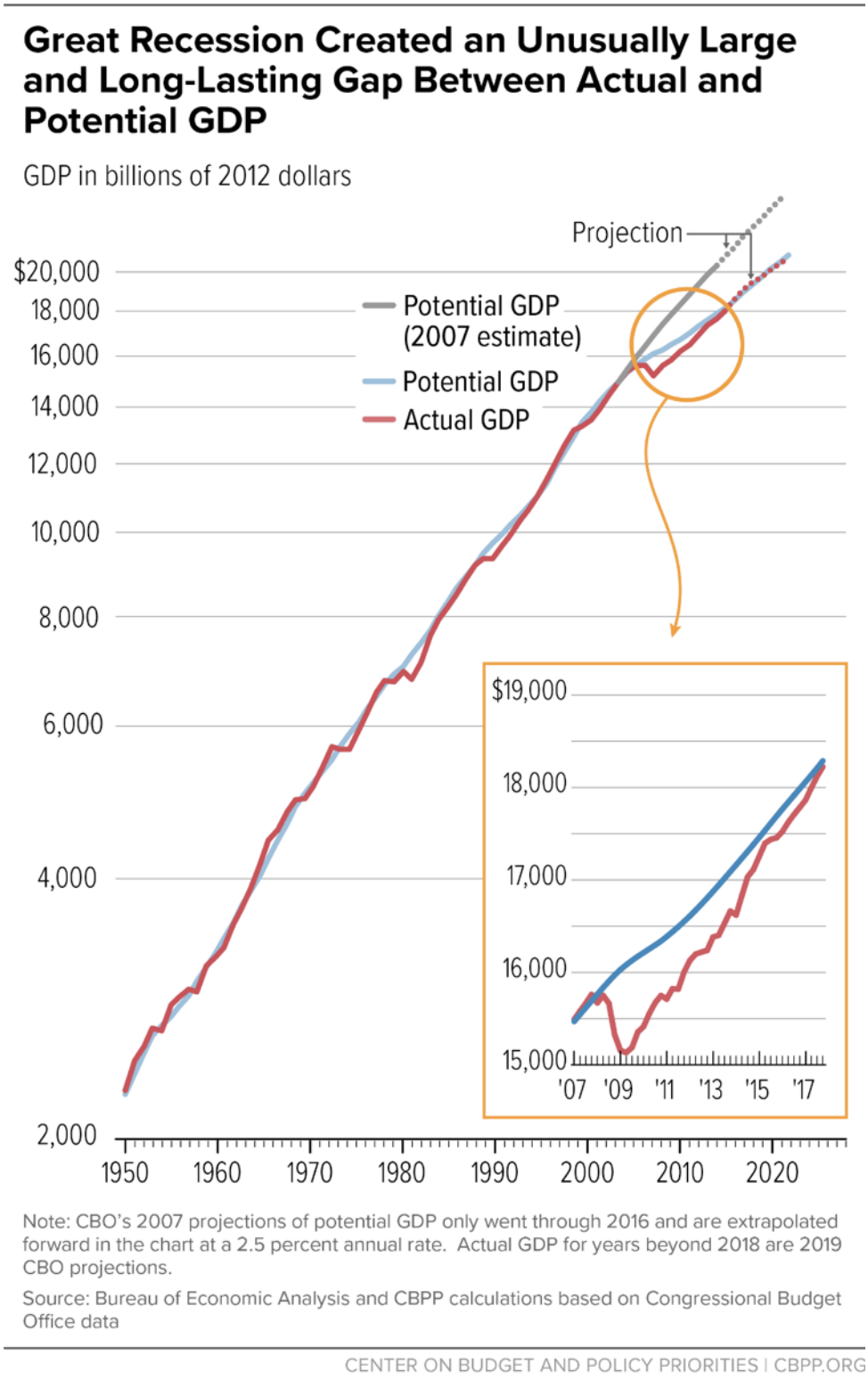

Figure 1: Impact of the Great Recession on GDP

- The Global Financial Crisis (2007-2009) caused the Great Recession that persistently undermines the economy.
- The regulations were unable to prevent the collapse of the banking sector.
- New regulatory framework, Basel III, established in response.

1.5 The new banking regulatory landscape

Before GFC, the banking regulations primarily focused on prudential regulations concerning the risks of individual banks.

- **Capital adequacy**: sufficient capital to cover potential losses.
- **Risk management**: ability to manage various risks such as credit, market, and operational risks.
- **Liquidity management**: enough liquid resources to meet immediate obligations.

Post-GFC, the banking regulations have *expanded* to include macroprudential regulations.

- **Systemic focus**: greater emphasis on understanding and mitigating systemic risks that could destabilize the entire financial system.
- **Countercyclical policies**: measures introduced to mitigate the procyclical effects of previous regulatory approaches.
- **Stress testing**: system-wide tests to assess the resilience of the financial system to shocks.

2 Risks of DIs

2.1 Banking and trading books

A bank has a **banking book** and a **trading book**, two different ways to categorize financial assets and liabilities, each governed by different management strategies and regulatory standards.[1]

- **Banking book**
  - Assets and liabilities that the bank intends to hold for the long term.
  - Primarily used for traditional banking activities, e.g., lending and taking deposits.
- **Trading book**
  - Assets and liabilities that the bank intends to trade actively.
  - The value and income from these assets are driven by market conditions and short-term price movements.

2.2 What risks do banks face?

The most simplified balance sheet of a bank:

Table 1: Typical balance sheet of a DI

Assets	Liabilities and Equity
Loans	Deposits
Other assets	Other liabilities
	Equity

- Risks on the assets side.
- Risks on the liabilities and equity side.
- Other risks beyond the balance sheet.

[1] See suggested readings for the boundary between banking and trading books.

2.3 Risks on the assets side

- **Loans**
- **Other assets** (bonds, investment securities, derivatives)

	Note	Group 30 Jun 23 $M	Group 30 Jun 22 $M	Bank 30 Jun 23 $M	Bank 30 Jun 22 $M
Assets					
Cash and liquid assets	5.1	**116,619**	161,154	**108,367**	150,974
Receivables from financial institutions	5.2	**6,079**	6,845	**5,422**	6,071
Assets at fair value through Income Statement	5.3	**67,627**	25,315	**67,641**	25,249
Derivative assets	5.4	**23,945**	35,736	**25,585**	37,774
Investment securities:					
At amortised cost	5.5	**2,032**	3,217	**2,032**	3,217
At fair value through Other Comprehensive Income	5.5	**84,072**	79,086	**77,232**	72,191
Assets held for sale	11.3	**5**	1,322	**5**	28
Loans and other receivables	3.1	**926,082**	878,854	**816,140**	773,042
Shares in and loans to controlled entities	11.2	**–**	–	**54,636**	56,719
Property, plant and equipment	6.1	**4,950**	4,887	**3,549**	3,627
Investments in associates and joint ventures	11.1	**2,848**	2,801	**1,430**	1,407
Intangible assets	6.2	**7,393**	6,899	**4,340**	3,883
Deferred tax assets	2.5	**3,811**	3,173	**3,640**	3,069
Other assets	6.3	**7,382**	5,971	**6,799**	5,387
Total assets		**1,252,845**	1,215,260	**1,176,818**	1,142,638

Figure 2: Excerpt of CBA's 2023 balance sheet - assets

2.4 Risks on the assets side - loans

Loans are often in the banking book and reported based on amortised book value.

Major risks due to uncertainties in:

- Borrower's creditworthiness, **credit risk**
- Interest rate when rolling over / repricing the loans, **interest rate risk**
- Exchange rate if loans are denominated in foreign currencies, **foreign exchange risk**
- Ability to liquidate the loans, **liquidity risk**
- ...

2.5 Risks on the assets side - other assets

Bonds, derivatives, investment securities, ...

For example, a bond's price is given by

$$P = \sum_{t=1}^{T} \frac{C}{(1+r)^t} + \frac{F}{(1+r)^T} \tag{1}$$

where C is coupon payment, F face value, T maturity, and r interest rate.

Risks due to uncertainties in:

- C and F, **credit risk**
- r, **interest rate risk**

Many are on the trading book.

- **Market risk**

- **Liquidity risk**

2.6 Risks on the liabilities and equity side

- **Deposits**
- **Other liabilities** (primarily debts)

Liabilities					
Deposits and other public borrowings	4.1	**864,995**	857,586	**786,267**	783,701
Payables to financial institutions	5.2	**21,910**	26,052	**21,266**	25,321
Liabilities at fair value through Income Statement	4.2	**40,103**	7,271	**39,148**	6,097
Derivative liabilities	5.4	**25,347**	33,899	**26,728**	35,002
Due to controlled entities		**–**	–	**42,586**	41,433
Current tax liabilities		**671**	263	**442**	75
Deferred tax liabilities	2.5	**138**	150	**64**	82
Liabilities held for sale	11.3	**–**	1,183	**–**	–
Provisions	7.1	**3,013**	3,636	**2,818**	3,370
Term funding from central banks	4.4	**54,220**	54,807	**49,637**	51,137
Debt issues	4.3	**122,267**	116,902	**95,893**	89,940
Bills payable and other liabilities	7.2	**15,578**	12,656	**14,932**	12,347
		1,148,242	1,114,405	**1,079,781**	1,048,505
Loan capital	8.2	**32,598**	28,017	**32,587**	28,009
Total liabilities		**1,180,840**	1,142,422	**1,112,368**	1,076,514

Figure 3: Excerpt of CBA's 2023 balance sheet - liabilities

2.7 Risks on the liabilities and equity side - deposits

Deposits are the most important funding source of banks - 60% for Australian banks.

- Non-interest bearing deposits.[2]
- On-demand and short-term deposits.
- Term deposits.
- Certificates of deposits.

Risks involved:

- **Interest rate risk**
- **Liquidity risk**
- If foreign currencies, **foreign exchange risk**

[2] Check if your everyday transaction accounts earn you interest!

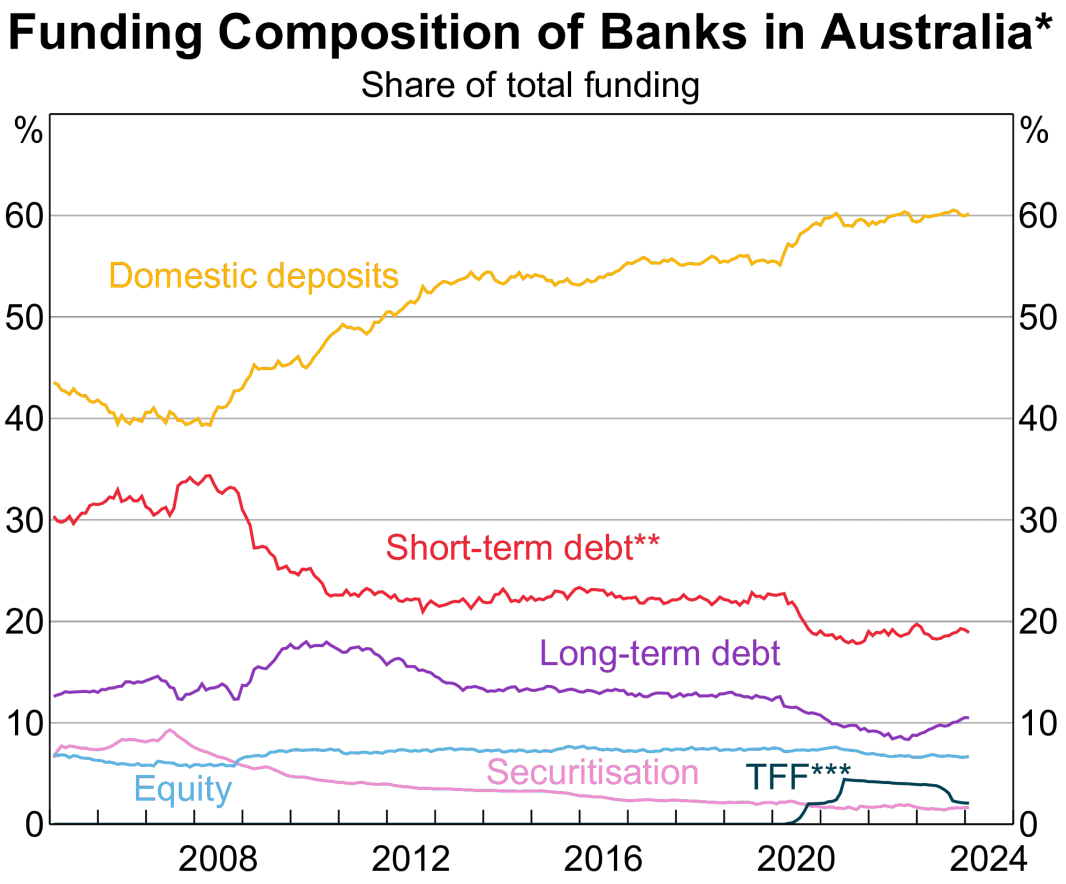

Figure 4: Funding composition of banks in Australia

2.8 Risks on the liabilities and equity side - debts

Debts are also an important funding source of banks.

- Account for about 30% of bank funding in Australia.

Risks involved:

- **Interest rate risk**
- **Liquidity risk**
- If foreign currencies, **foreign exchange risk**

2.9 Risks on the liabilities and equity side - equity

Equity, assets value minus liabilities.

- **Insolvency risk**
- Manifestation of many other risks - a focus of banking regulations

- **Interest rate risk**: changing interest rates cause disproportionate changes in assets value and liabilities value.
- **Market risk**: losses from adverse changes in market conditions, such as interest rate fluctuations or stock market declines.
- **Credit risk**: high default rates on loans and other credit products can erode asset values.
- **Liquidity risk**: inability to convert assets into cash quickly without significant losses.
- **Operational risk**: losses stemming from failed internal processes, systems, human errors, or external events.
- **Concentration risk**: overexposure to a specific borrower, industry, or geographic region.

2.10 Risks beyond balance sheet

Many other risks:

- **ESG risk**
- **Cybersecurity risk**
  - UniSuper[3] week-long service outage in May 2024.
- ...

> **Note**
>
> See how NAB discusses risk factors, p89 of its annual report 2023.

2.11 Bank failure

Bank failure occurs when a bank is unable to meet its obligations to its depositors or other creditors and either goes bankrupt or must be taken over by a financial regulatory body to avoid bankruptcy.

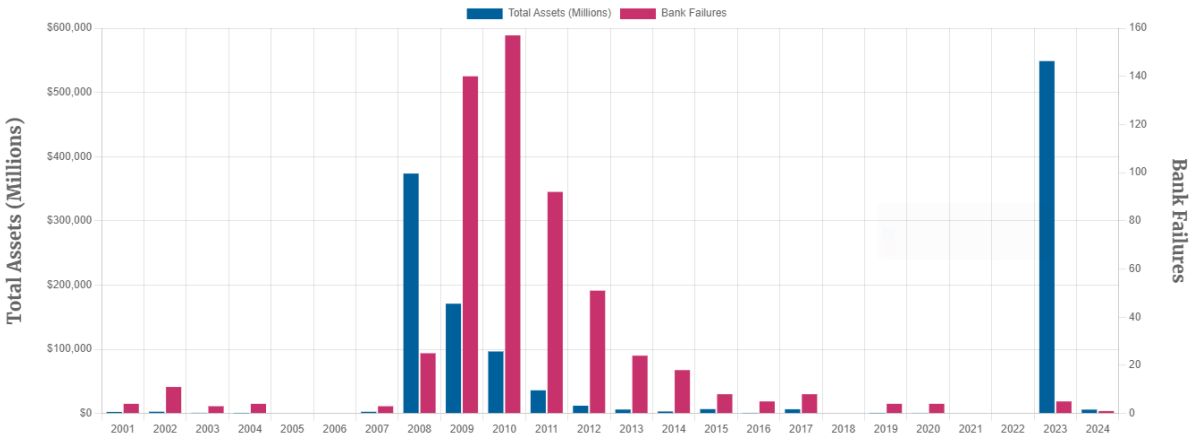

Figure 5: Bank failures in the US

2.12 Silicon Valley Bank (SVB) failure

SVB's failure in March 2023 is the largest failure since GFC.

- **Concentration risk**: highly concentrated client base primarily in the tech and VC sectors
- **Interest rate risk**: a large amount of long-duration assets, like U.S. Treasury bonds and mortgage-backed securities, which decreased in value as interest rates rose sharply.

[3] Albeit not a DI.

- **Liquidity risk**: rising interest rates led to a mismatch in the liquidity profile as SVB's assets (long-term bonds) lost value while liabilities (deposits) demanded immediate liquidity.
- **Market risk**: capital raising through asset sales and stock offerings poorly received by the market.
- **Bank run**: news of the bank's difficulties led to a rapid and large-scale withdrawal of deposits by clients, creating a classic bank run.

2.13 Bank risks - our approach

In this course, we will examine bank risks one by one in a three-step framework:

1. **Identify**: definition, source and nature
2. **Measure**: ways to gauge the exposure
3. **Manage**: strategies to mitigate

3 Regulations of DIs

3.1 Regulations of banks

Failure of banks has significant negative externality.

- Loss of deposits for savers
- No credit supply for borrowers
- Impact on real economy
- Global Financial Crisis (GFC) 2007-2009

Broadly, banking regulations can be classified into two aspects:

- **Microprudential regulations**: safety and soundness of individual institutions
- **Macroprudential regulations**: stability of the financial system

The two aspects are not mutually exclusive, but complementary.

4 Prudential regulations

4.1 Microprudential regulations

- **Focus**:
  - Targets the safety and soundness of individual financial institutions.
- **Objectives**:
  - Prevent the failure of banks and other financial entities.
  - Protect consumers' deposits and maintain confidence in the financial system.
- **Methods**:
  - Setting capital adequacy requirements.
  - Enforcing liquidity requirements to manage short-term obligations.
  - Implementing risk management standards and supervisory review processes.
  - Conducting regular inspections and audits of individual institutions.

4.2 Macroprudential regulations

- **Focus**:
  - Aims at the stability of the financial system as a whole.
- **Objectives**:
  - Prevent systemic risks and financial crises that affect the entire economy.
  - Reduce financial system vulnerabilities from interconnectedness and procyclical tendencies.
- **Methods**:
  - Implementing caps on overall credit growth and sector-specific loan concentrations.
  - Using stress tests that simulate adverse economic scenarios to gauge system-wide resilience.

  - Applying countercyclical capital buffers that increase during economic booms and decrease during downturns.

5 Regulatory authorities

5.1 International banking regulatory framework

The Bank for International Settlements (BIS) established in 1930 is the principal centre for international central bank cooperation.

- WW2 to 1970s: implementing and defending the Bretton Woods system.
- 1970s to 80s: managing cross-border capital flows following oil crises and the international debt crisis.
- 1988 Basel Capital Accord and Basel II revision of 2001 to 2006: establishing and revising international standards for capital adequacy.
- Post-GFC: **Basel III**, a set of reforms designed to improve the regulation, supervision, and risk management of banks.
- Now: development of Basel IV (Basel 3.1).

5.2 Banking regulators in Australia

The Council of Financial Regulators (CFR) coordinates main financial regulatory agencies in Australia, including:[4]

- Reserve Bank of Australia (RBA), chairs the Council
- Australian Prudential Regulation Authority (APRA)
- Australian Securities & Investments Commission (ASIC)
- Department of Treasury (the Treasury)

[4] CFR is non-statutory and has no regulatory functions.

5.3 Banking regulators in Australia - RBA

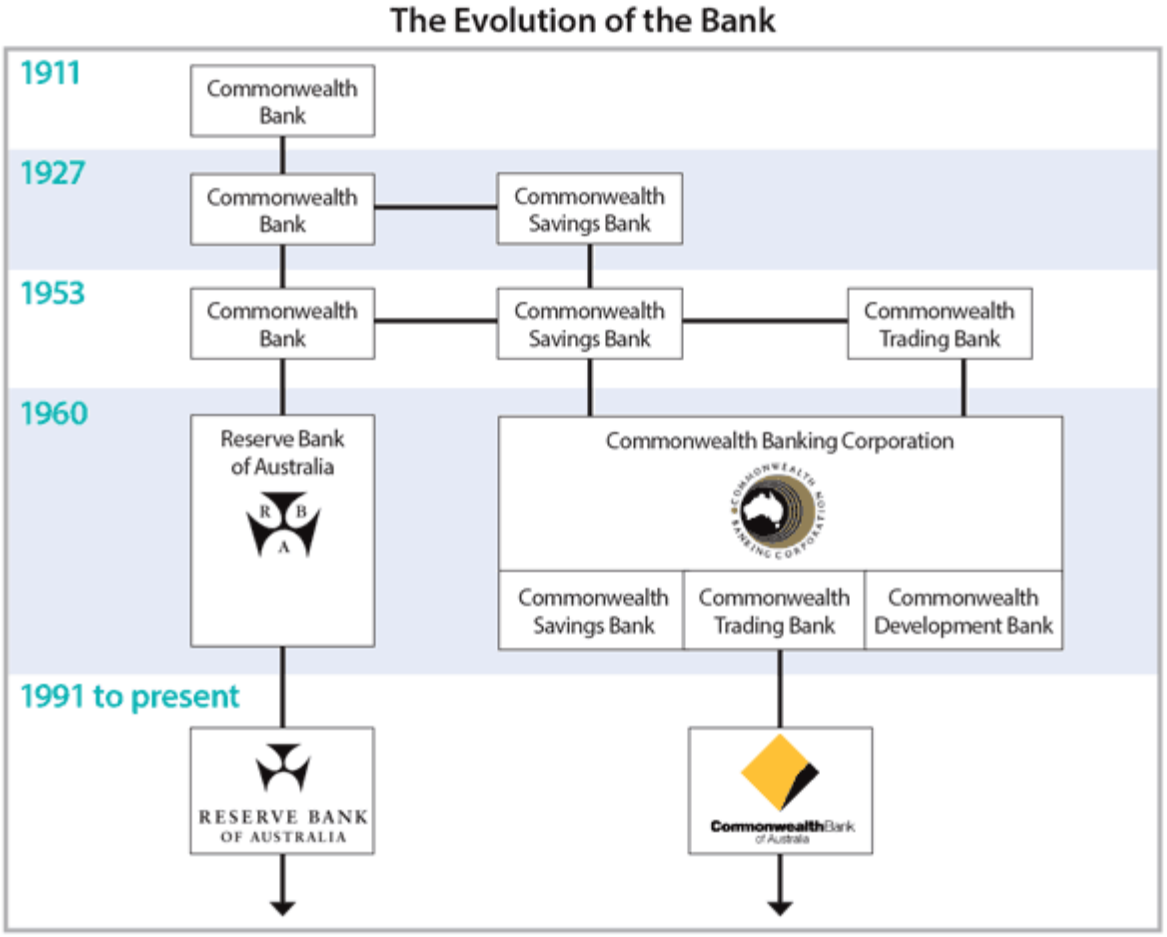

Figure 6: Evolution of the RBA

5.4 Banking regulators in Australia - RBA

RBA is the **central bank** of Australia.

- Its duty is to contribute to the stability of the currency, full employment, and the economic prosperity and welfare of the Australian people.
- It does this by conducting monetary policy to meet an agreed inflation target, working to maintain a strong financial system and efficient payments system, and issuing the nation's banknotes.

The role and functions of the RBA explained by the Governor Michele Bullock [Video].

5.5 Banking regulators in Australia - APRA

APRA, established in 1998, is an independent statutory authority that supervises institutions across banking, insurance and superannuation, and is accountable to the Australian Parliament.

APRA's primary functions and objectives include:

- **Prudential Supervision**: APRA sets prudential standards and practices for financial institutions to maintain stability and prevent systemic failures. This includes regulations on capital adequacy, risk management, and governance.

- **Financial Stability**: APRA contributes to the overall stability of the financial system by monitoring and mitigating risks that could lead to financial crises.
- **Protection of Depositors, Policyholders, and Superannuation Fund Members**: APRA ensures that institutions meet their financial promises to customers, protecting their interests and enhancing confidence in the financial system.

5.6 Banking regulators in Australia - ASIC

ASIC is Australia's corporate, markets, and financial services regulator.

- Responsible for market integrity and consumer protection across the financial system.
- Sets standards for financial market behaviour with the aim to protect investor and consumer confidence.
- Administers the Corporations Law to promote honesty and fairness in companies and markets.

5.7 Banking regulators in Australia - Treasury

The Department of the Treasury (Treasury) also plays a role in the formulation and implementation of banking regulations in Australia.

- **Policy Development**: Treasury works closely with regulatory bodies like the Reserve Bank of Australia (RBA), Australian Prudential Regulation Authority (APRA), and Australian Securities & Investments Commission (ASIC) to develop policies that ensure the stability and integrity of the banking system.
- **Legislative Framework**: It is involved in drafting and implementing legislation related to banking regulation, such as the Banking Act and financial sector reforms.

5.8 Banking regulators in the U.S.

Some important ones include:

- Federal Reserve System (The Fed): central bank of the United States.
- Office of the Comptroller of the Currency (OCC): charters, regulates, and supervises all national banks and federal savings associations.
- Federal Deposit Insurance Corporation (FDIC): insures deposits at banks and thrift institutions, supervises financial institutions, and manages receiverships of failed banks.

5.9 Banking regulators in China

Some important ones include:

- People's Bank of China (PBOC): central bank of China.
- National Administration of Financial Regulation (NAFR): established in May 2023, replaced the former China Banking and Insurance Regulatory Commission (CBIRC).

5.10 Banking regulators in Europe

Some important ones include:

- European Central Bank (ECB): oversees monetary policy for the Eurozone and supervises significant banks within member states to ensure financial stability.
- European Banking Authority (EBA): develops regulatory standards and guidelines to maintain the stability and integrity of the EU's banking sector, coordinating efforts among national regulators.
- European Systemic Risk Board (ESRB): monitors and assesses systemic risks.

6 Finally...

6.1 Suggested readings

- History of BIS
- Origins of the Reserve Bank of Australia
- Basel Framework - Risk-based Capital Requirements (RBC), RBC25 Boundary between the banking book and the trading book
- Banks' funding costs and lending rates
- FDIC bank failures
- About APRA
- ASIC website
- MoU between the Treasury and the APRA

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