

AFIN8003 Week 9 - Liability and Liquidity Management

Banking and Financial Intermediation

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1 Liability and Liquidity Management

1.1 Cold open: 14 September 2007

! Newcastle, Friday morning

Customers queued around the block outside Northern Rock branches. The first run on a British bank since *Overend, Gurney & Co.* in 1866, a gap of 141 years.

The mortgage book was **performing**. What failed was the *funding mix*:

- ~75% of funding came from wholesale markets: securitisation, interbank lines, mortgage-backed securities.
- ~25% from retail deposits.

When the ABCP market seized in August 2007, the bank could not roll its debt. The Bank of England announced emergency liquidity on the evening of 13 September, the news leaked, and the queues formed the next morning.

1.2 Roadmap

A bank's *liability mix* is a liquidity-risk decision. Week 8 asked what liquidity risk *is*; this week is the toolkit for managing it.

1. Asset-side toolkit: what counts as a liquid asset, and what it costs to hold.
2. Reserves: the top of the liquidity hierarchy, and the RBA that controls their supply and price.
3. Liability-side toolkit: the deposit and wholesale ladder.
4. The economics of a deposit: implicit and explicit interest.
5. Other FIs and the 2025 regulatory update.

Throughout, every choice trades off *cost* against *withdrawal risk*. There is no free liquidity.

1.3 Recap: two ways to plug a drain

Week 8 did this on a balance sheet. Carrying it forward:

	Stored	Purchased
Action	Sell or pledge liquid assets held	Borrow new funds wholesale
Cost	Yield foregone	Spread above the cash rate
Stress risk	Fire-sale prices	Lenders vanish, cannot roll
Balance sheet	Shrinks	Same size, new liability
Leaned on by	Smaller banks	Larger banks, and Northern Rock too far

The mix is the strategy. Choosing it is the rest of this lecture.

2 Asset-side toolkit

2.1 Liquidity, by example

How fast can this become cash, and at what discount?

Asset	Sell A\$500m by	Discount
Reserves at the RBA	instantly	none, it <i>is</i> cash
10-year Commonwealth bond	this afternoon	near screen price
Investment-grade corporate bond	a few days	a point or two
One residential mortgage	never	there is no market

Liquidity is not a property of the asset. It is a property of **the market the asset trades in**: a **deep** market is one where even large trades barely move the price. And it is worth least on the day you need it most.

2.2 The cost of holding liquidity

Every dollar of liquid assets is a dollar not lent.

	Yield
Mortgage	6%
Commonwealth bond	4%
Cost of holding the bond instead	~2% p.a.

On a A\$20bn buffer that is roughly **A\$400m a year** of forgone margin.

Banks do not hold “lots of liquidity to be safe”. They hold the least the regulator and their own risk appetite allow, which is exactly why the LCR is a *minimum*.

3 Reserves and the RBA

3.1 Reserves: the top of the hierarchy

Level 1 HQLA opens with *cash and central bank reserves*.

- **Already cash.** No sale, no haircut, no market required.
- **Quantity set by policy, not markets.** Banks trade reserves all day; the aggregate never moves. Only the RBA moves it.

So the RBA sets three things a treasurer cannot:

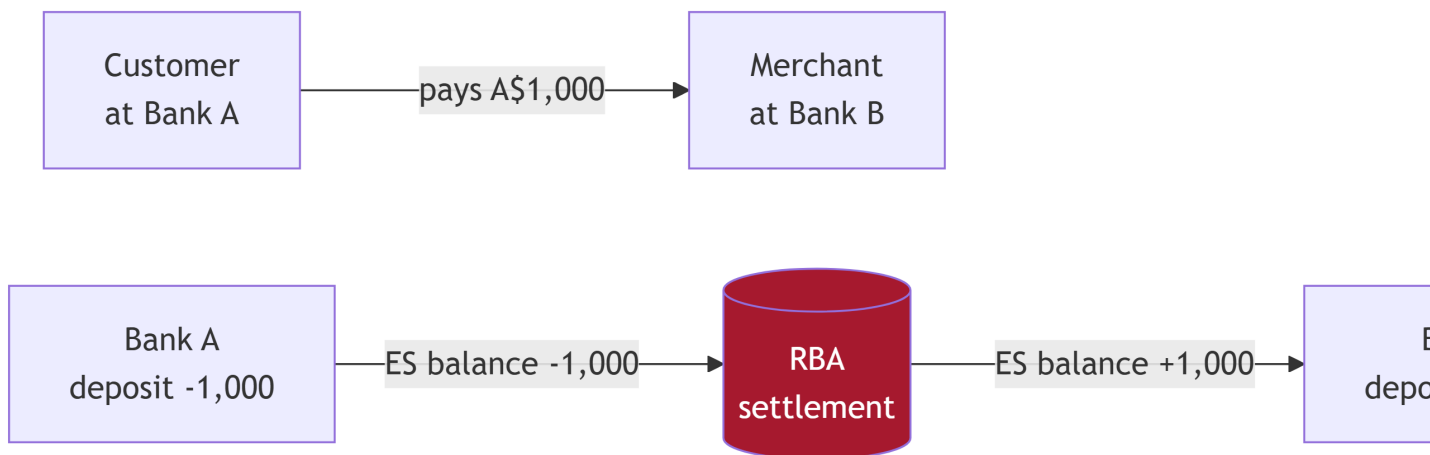
How much liquidity exists	A\$28bn, then A\$468bn, now heading to A\$70–100bn
What it costs	The corridor around the cash rate
What counts as liquid	The CLF: invented 2015, abolished 2023

Your liquidity position is not entirely yours to manage.

3.2 The Exchange Settlement Account

One account per bank at the RBA. Its balance is the bank's **ES balance**; in aggregate, the system's **reserves**.

A customer of Bank A pays a merchant banked at Bank B:



The deposit moves between banks; the **reserves move with it**. Bank A must find A\$1,000 of ES balance to settle, which is the mechanical reason a deposit outflow is a liquidity event.

Reserves earn the cash rate target *less 10 bp*, the floor under every funding rate in this lecture.

3.3 The cash market

Where banks lend and borrow ES balances, overnight.

- **Price:** the **cash rate**.
- **Quantity:** total ES balances at the RBA.

The **cash rate target** is the RBA's headline policy rate. Mortgage, business and deposit rates all anchor to it.

The Board sets the *target*. Supply and demand set the *actual* rate. Closing that gap is the rest of this section.

3.4 Repos: the RBA's supply lever

A *repurchase agreement* is a sale today plus an agreement to buy back tomorrow.

1. Bank A sells a bond to the RBA for \$100 today.
2. Bank A buys it back for \$100.012 tomorrow.

Bank A has **borrowed \$100 overnight** against collateral. Cost $0.012/100 = 0.012\%$ a day, or $\approx 4.4\%$ annualised, near the 4.35% target.

! This is the supply lever

The RBA cannot vote reserves into existence. It **creates** them by buying securities under repo, and **drains** them when those repos mature.

Every reserves figure in the next three slides moves through this one instrument.

Repos dominate short-term funding generally, because collateral makes them cheaper than unsecured lending.

3.5 Before March 2020: scarce reserves

Aggregate ES balances sat at about **A\$28 billion** and barely moved for years.

- Most of that was tied up meeting daily settlement needs.
- The *surplus* the RBA actually managed was only **A\$2 to 3 billion**.
- It adjusted that margin every day through repos. A few hundred million moved the cash rate.

A tiny surplus, actively rationed. That is what *scarce reserves* means, and it is why small daily operations could steer the price.

3.6 ES balances, live from the RBA

```
import io
import urllib.request
import pandas as pd
import matplotlib.pyplot as plt

URL = "https://www.rba.gov.au/statistics/tables/csv/a1-data.csv"

raw = urllib.request.urlopen(URL, timeout=60).read().decode("utf-8-sig")
df = pd.read_csv(io.StringIO(raw), skiprows=10) # row 10 holds the series IDs
df = df.rename(columns={df.columns[0]: "date"})
df["date"] = pd.to_datetime(df["date"], format="%d-%b-%Y", errors="coerce")

es = (df.dropna(subset=["date"])
      .assign(bn=lambda d: pd.to_numeric(d["ARBALESBW"], errors="coerce") / 1000)
      .dropna(subset=["bn"])
      .set_index("date")["bn"]
      .loc["2018":]
      .resample("MS").mean())

peak_d, peak_v = es.idxmax(), es.max()
last_d, last_v = es.index[-1], es.iloc[-1]

fig, ax = plt.subplots(figsize=(10, 4.0))
ax.plot(es.index, es.values, color="#A6192E", linewidth=1.8)
ax.axvspan(pd.Timestamp("2020-03-01"), pd.Timestamp("2021-11-01"),
           alpha=0.07, color="tab:blue")
ax.axvspan(pd.Timestamp("2023-03-01"), pd.Timestamp("2024-07-01"),
           alpha=0.07, color="tab:orange")
ax.annotate("TFF + bond purchases", xy=(pd.Timestamp("2020-04-01"), peak_v * 0.30),
           fontsize=9, color="tab:blue")
ax.annotate("TFF repayments", xy=(pd.Timestamp("2023-04-01"), peak_v * 0.20),
           fontsize=9, color="tab:orange")
ax.annotate(f"peak A${peak_v:,.0f}bn\n{peak_d:%b %Y}", xy=(peak_d, peak_v),
           xytext=(pd.Timestamp("2020-09-01"), peak_v * 0.95), fontsize=9,
           arrowprops=dict(arrowstyle="->", color="#666", lw=0.9))
ax.annotate(f"A${last_v:,.0f}bn\n{last_d:%b %Y}", xy=(last_d, last_v),
           xytext=(last_d - pd.Timedelta(days=700), last_v * 0.45), fontsize=9,
           arrowprops=dict(arrowstyle="->", color="#666", lw=0.9))
ax.set_ylabel("A$ billion")
ax.set_ylim(0, peak_v * 1.12)
ax.grid(True, alpha=0.3)
plt.tight_layout()
```

```
plt.show()
```

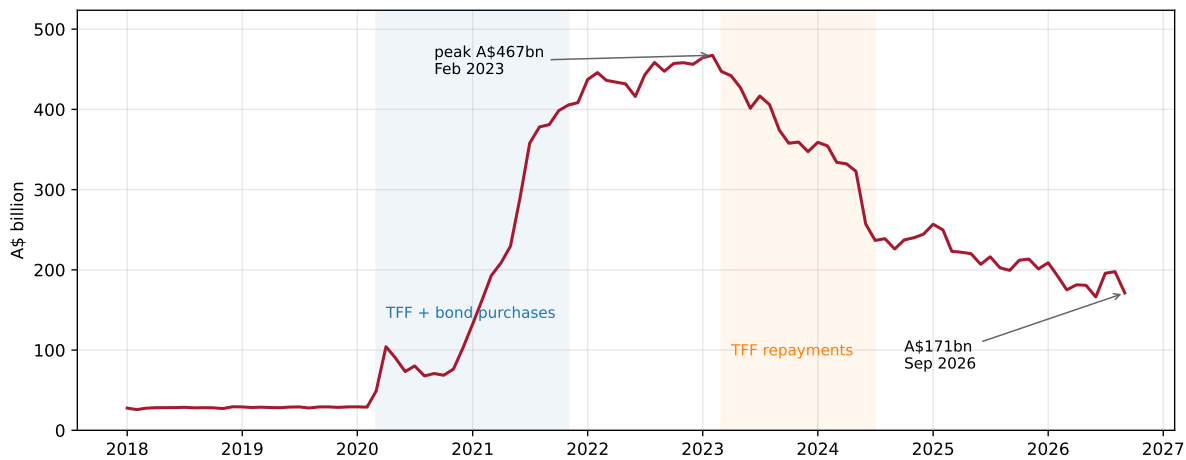


Figure 1: Aggregate Exchange Settlement balances, monthly average of weekly data. Pulled at render time from RBA Statistical Table A1 (series ARBALESBW).

Pre-COVID it sat near A\$28bn for years. Everything after March 2020 is the TFF and the bond purchase program arriving, then leaving.

3.7 Ample reserves

Announced April 2024:

- Weekly **full-allotment** repo auction.
- Banks bid for what they want. Every bid filled.
- Price: target **plus 10 bp** (raised from 5 in April 2025).

The RBA no longer sets the *quantity*. Banks do. The RBA sets the *price*.

⚠ Not there yet

Reserves are still falling as pandemic assets mature: **A\$170bn** in September 2026. Banks now expect the system to settle at **A\$70–100bn**, down from the A\$100–200bn expected in 2024. RBA, August 2026: “*it could be some years away.*”

i Open repo retires in early 2027

Announced 25 August 2026. Use had fallen below A\$5 billion: banks now take what they need from the full-allotment OMO.

3.8 Two facilities that disappeared

i Term Funding Facility (TFF), 2020 to 2024

COVID-19 crisis tool. Banks could borrow up to *3 years* at the cash rate target.

- Drawdown window closed *30 June 2021*.
- Banks drew **\$188 billion** at the peak, about 6% of all credit outstanding.
- All TFF funding *fully matured by 30 June 2024*.

! Committed Liquidity Facility (CLF), 2015 to 2023

A uniquely Australian fix. Basel III's LCR requires HQLA. The Australian Government simply doesn't issue enough debt for ADIs to hold sufficient Level 1 securities. The CLF was a paid line of credit from the RBA that *counted as HQLA*.

The post-COVID surge in Commonwealth bond issuance solved the underlying problem. APRA reduced the aggregate CLF from \$140bn (Sep 2021) to **zero on 1 January 2023**.

4 Liability-side toolkit

4.1 The cost vs. withdrawal-risk frontier

The goal of liability management:

Construct a portfolio of liabilities that is **low cost** and has **low withdrawal risk**.

The problem:

- Cheap funding tends to be flighty (demand deposits).
- Sticky funding tends to be expensive (term deposits, long bonds).

There is no free quadrant. Northern Rock learned this the hard way.

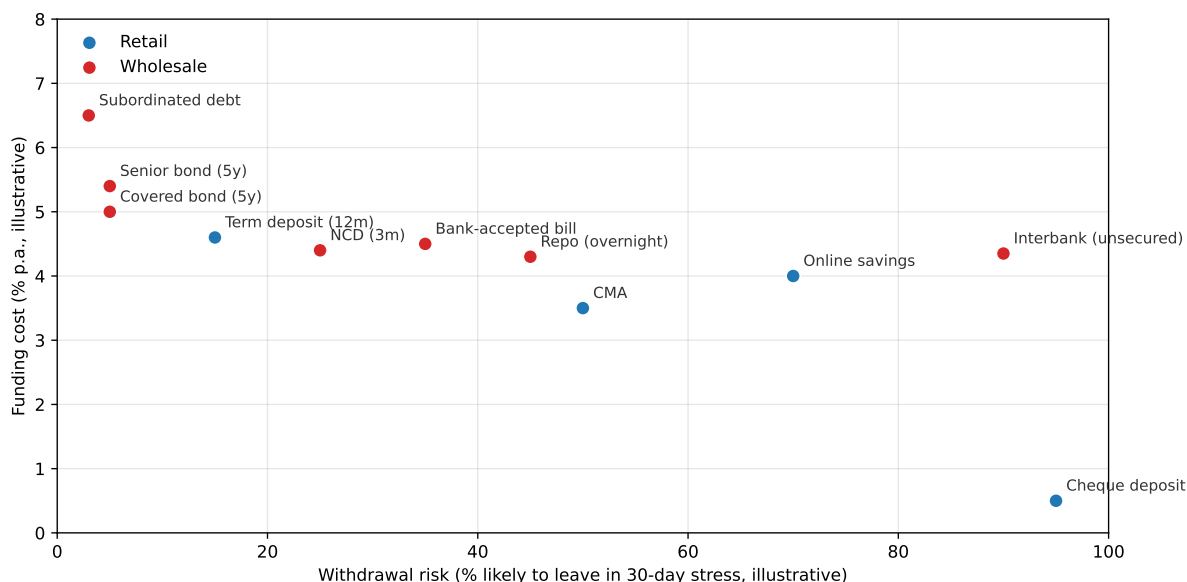


Figure 2: Stylised funding instruments plotted by withdrawal risk and funding cost. Illustrative; numbers will change with the cycle.

Cheap *and* sticky doesn't exist. Banks pick a point on the frontier.

4.2 Build a funding mix

Interactive in the online slides: sliders for the share of each funding source, showing the blended cost and blended withdrawal risk of the resulting mix against the frontier above.

Shares normalise to 100%: the mix matters, not the levels.

Northern Rock sat near **75% wholesale**. Drag there and read both numbers.

i Two things to try

1. **All cheque deposits.** Cost collapses, withdrawal risk maxes out. Funded entirely by money that can leave tomorrow.
2. **All term and bonds.** Withdrawal risk near zero, cost the highest on the board, paid every year whether or not a run comes.

Neither corner is a business.

5 Deposit liabilities

We walk the ladder in three groups: deposits, then wholesale, then everything else.

5.1 Demand deposits

The cheque account, the everyday transaction account.

- Withdrawal risk: *very high*. Payable on demand, no notice.
- Cost (explicit interest): *very low or zero*.
- Used by households and businesses for transactions.

Why are these so cheap for the bank? And are they really as cheap as they look?

5.2 The Regulation Q backstory

US demand deposits paid **zero** interest from 1933 to 2011.

i Regulation Q (1933 Banking Act)

Regulators blamed deposit competition for pre-1933 risk-taking, and banned interest on demand deposits outright. It lasted **78 years**, until Dodd-Frank s.627 repealed it on 21 July 2011. Banks may now pay. Most still don't.

Australia never had the ban. Hence an Australian online saver at 4–5% in 2026 against a US checking account at ~0.01%.

5.3 Demand deposits aren't really free

Even when explicit interest is zero, the deposit costs the bank *real money*:

- Branch staff, ATMs, online banking, fraud monitoring, 24/7 call centres.
- Cheque clearing.
- Card scheme fees.

Competition forces banks to *partially absorb* these costs and offer subsidised services. The depositor receives **implicit interest**: interest paid in services rather than cash.

5.4 The implicit interest rate

Define the *implicit interest rate* (IIR) on a demand-deposit account as

$$\text{IIR} = \frac{C - F}{B}$$

where, per account per year, C is the bank's management cost, F the fees it earns, and B the average balance.

If $C > F$ the bank is *subsidising* the depositor and implicit interest is positive. If $C < F$ it is *taking* them, and implicit interest is negative.

Move C , F , and B . The IIR updates live.

Interactive in the online slides: sliders for C , F and B that recompute the implicit interest rate live.

The textbook example: $C = \$150$, $F = \$100$, $B = \$1,200$. IIR 4.17%. The depositor "earns" 4.17% per year in subsidised services, even though the cash interest rate on the account is zero.

5.5 Gross interest = explicit + implicit

If the account also pays *explicit* interest above a minimum balance, the depositor's total return is

$$G = \underbrace{r \cdot B \cdot \mathbb{1}\{B \geq M\}}_{\text{explicit}} + \underbrace{(c - f) \cdot n \cdot 12}_{\text{implicit}}$$

with r the explicit rate, B the average balance, M the threshold to earn it, c the bank's unit cost per transaction, f the fee per transaction and n transactions per month.

The indicator is 1 when the balance clears the threshold and 0 otherwise.

Interactive in the online slides: sliders for B , r , M , c , f and n that split gross interest into its explicit and implicit parts.

Two things to try:

- Drop B below M and explicit interest collapses to zero.
- Drop f below c and implicit interest goes positive.

5.6 Savings accounts and CMAs

Two close cousins of the demand deposit, both with *lower* withdrawal risk.

Savings account

- Restrictions: limited monthly withdrawals, sometimes a notice period.
- Held for accumulation, not transactions.
- Pays explicit interest.
- Lower withdrawal risk than a cheque account.

Cash management account (CMA)

- High minimum balance (typically A\$10,000+).
- Funds available on call; supports cheques, debit cards, transfers.
- Modest implicit interest, mitigated by transaction fees.
- Aimed at investors and treasurers parking cash between trades.

5.7 Term deposits, retail and wholesale

Term deposit (retail)

Fixed maturity, fixed rate, early withdrawal penalty.

- Withdrawal risk: *very low*. The penalty is the discipline.
- Cost: *high*, a locked-in maturity premium.

Negotiable CD (wholesale)

Face value typically above ~A\$100,000, days to years.

- Withdrawal risk: *low*. The holder sells rather than redeems.
- Cost: *moderate*, market-driven.

Negotiable is the whole point: the holder's liquidity comes from the secondary market, not from the bank.

6 Non-deposit (wholesale) liabilities

6.1 Interbank funds

Short-term *unsecured* loans between banks, usually overnight.

- The price is the *cash rate*.
- Withdrawal risk for the borrowing bank: *very high*. The lender can refuse to roll over the next day.
- Cost: *low to moderate*, close to the cash rate.

This is the cheapest unsecured funding a bank can get. It's also the first to disappear in a crisis.

6.2 Repurchase agreements (repos)

We met repos earlier as an RBA tool. Banks also use them with each other.

- The transaction is *collateralised* by securities.
- Cheaper than unsecured interbank lending, because the lender bears almost no credit risk.
- Highly flexible: overnight, term, or open-ended.

i Why secured beats unsecured

The repo lender holds your collateral. If you default, they sell it. So they don't need to charge a credit risk premium.

In stress, secured markets often stay open while unsecured markets close. This is why every bank treasurer has a stack of repo-eligible collateral ready to go.

6.3 Bank-accepted bills and commercial paper

Two short-dated wholesale instruments.

Bank-accepted bill (BAB)

- A short-term bill of exchange that a bank guarantees ("accepts").
- Sold to investors at a discount.
- Once the benchmark for the Australian short-rate (BBSW).
- Largely supplanted by NCDs and repos.

Commercial paper (CP)

- Short-term unsecured promissory notes.
- Issued by both banks and large corporates.
- Heavily used in U.S. money markets.

- *September 2019 episode*: U.S. repo rates spiked from ~2% to ~10% in a day when reserves drained. Even “deep” wholesale markets can seize.

6.4 Covered bonds

A bond issued by the bank, *backed by a ring-fenced pool of assets* that stays on the bank’s balance sheet.

💡 Why covered bonds are special

Bondholders have a *dual claim*:

1. On the issuing bank, like any senior bond.
2. On the *cover pool* (typically high-quality mortgages), if the bank fails.

Hence covered bonds are often rated *AAA* even when the issuer is rated *AA-*.

In Australia:

- Legalised by the *Banking Amendment (Covered Bonds) Act 2011*.
- Capped at *8% of the ADI’s domestic assets* under APS 121.
- All Big 4 banks run active covered-bond programmes.

6.5 Subordinated debt and long-term borrowings

The bottom of the funding stack: long-dated, often callable, subordinated to depositors and senior creditors.

- *Subordinated debt (Tier 2)*: counts toward regulatory capital. Expensive but stable.
- *Medium-term notes (MTNs)*: a flexible programme for issuing bonds in various tenors and currencies.
- *Senior unsecured bonds, long-term loans*: the workhorse of long-term wholesale funding.

The most stable funding a bank can have, short of equity. Also the most expensive.

7 Other FIs and regulation

7.1 Liquidity management at non-DI FIs

The same trade-off, different instruments:

FI type	Main funding	Distinct liquidity issue
Life insurer	Premiums, policy reserves	Mass policy surrenders
P–C insurer	Premiums, claims reserves	Catastrophe spike forces asset sales
Securities firm / IB	Repos, bank loans, short positions	Inventory financing during stress
Finance company	Commercial paper, long-term debt	CP rollover stress

The unifying theme: short-term liabilities funding less-liquid assets, with rollover risk in the middle.

7.2 APRA’s regime, and the 2025 change

	LCR ADI	MLH ADI
Who	Big 4, larger banks	Smaller ADIs
Test	LCR and NSFR $\geq 100\%$	Liquid assets $\geq 9\%$ of liabilities

Depositors: the **Financial Claims Scheme** covers A\$250,000 per account-holder per ADI, unchanged since February 2012.

Effective 1 July 2025, after the March 2023 turmoil:

- MLH liquid assets valued at **mark-to-market**, not amortised cost.
- All ADIs operationally ready to request **Exceptional Liquidity Assistance**.
- The 9% minimum itself is unchanged.

An MLH cushion will now visibly shrink when yields rise, instead of hiding behind book value.

8 Wrap-up

8.1 Key takeaways

1. Two sources of liquidity: *stored* (sell what you own) and *purchased* (borrow new). Banks use both.
2. The cash market is a *price* (the cash rate) and a *quantity* (ES balances). The RBA's 2024 pivot to ample reserves changes how the quantity is set.
3. The CLF is gone. LCR ADIs now meet HQLA requirements with Commonwealth and semi-government bonds plus ES balances.
4. Liabilities sit on a frontier between *cost* and *withdrawal risk*. There is no point that is both cheap and sticky.
5. Implicit interest is real interest. A subsidised “free” account is genuinely paying you in services.
6. APS 210 changes (1 July 2025) bring mark-to-market into the small-bank liquidity regime.

8.2 Suggested readings

- [How RBA implements monetary policy](#)
- [RBA Exchange Settlement Account Policy](#)
- [RBA, The Future System for Monetary Policy Implementation \(April 2024\)](#)
- [RBA, The Committed Liquidity Facility: 2015–2022](#)
- [APRA, APS 210 Liquidity \(Prudential Handbook\)](#)
- [APRA, Targeted changes to ADI liquidity and capital standards \(2024–2025\)](#)
- [Covered bonds in Australia \(RBA Bulletin\)](#)

8.3 References