# Topic 2 The bank’s balance sheet

## Learning objectives

In this topic we shall cover:

* the components that make up the balance sheet of a typical bank;
* the different categories of assets a bank holds;
* the regulatory constraints on banks’ balance sheets;
* how a bank funds its assets;
* equity – why a bank needs capital.

This workbook uses examples based on the fictional DemoBank, which has a traditional retail and corporate banking business and presents its accounts in US dollars.

## 2.1 Let’s start a bank

**Capital**

“The financial resources a bank has that act as a cushion or shock-absorber against unexpected losses” (eg if someone fails to repay a loan) (Bank of England, 2021). It consists of resources that a bank can use to ensure that it can continue to operate under adverse conditions. The resources included in capital are:

* **equity** – shareholder capital invested in the bank in return for shares;
* **debt** – specific types of long-term debt; and
* **retained profits** – amounts earned but not paid to shareholders.

Imagine you want to start your own bank: DemoBank. The first thing you need is some capital, usually in the form of cash, invested in the form of new shares sold to your founder shareholders. DemoBank has invested some of the capital in property, plant and equipment (PP&E), which includes items such as branch premises and equipment, computer systems and a head office. These generate no income directly.

**Assets**

What the bank **owns** and what it is owed from other parties.

For example, **a loan to a customer is an asset** from a bank’s perspective. A loan earns income for the bank, in the form of interest, and the loan amount is repayable to the bank.

**Liabilities**

What the bank **owes** other parties.

For example, **a customer deposit is a liability** from a bank’s perspective because the bank pays the customer interest for the right to hold the deposit and the bank must repay some or all of the money on request.

**Assets** are financed through **liabilities** (eg customer deposits) and **equity** (shareholder capital). So, as you can see in Figure 2.1, for the balance sheet to balance, **assets must equal total liabilities plus equity**.(Note: the PP&E that DemoBank invested in falls under Other assets in the figure.)

**Figure 2.1 Simple bank balance sheet**



DemoBank then opens its doors for business and starts to take deposits from customers, paying them interest below the central bank rate. Retail deposits are generally considered a good source of funding for banks as they cost less to obtain than other sources of funding, with banks often paying less than the central bank rate and sometimes not paying any interest at all. The cash DemoBank receives via retail deposits is deposited with its central bank and earns interest at the central bank rate.

It is important from start-up that the bank can turn a profit by generating a **net interest margin (NIM)**, which is the difference between what the bank pays to borrow and what it receives when it lends divided by average interest-earning assets.

**Net interest income *v* net interest margin**

**Activity: calculating DemoBank’s net interest income**

Assume DemoBank has equity of 10, deposit liabilities of 90 and PP&E of 5.

The central bank pays 2.0% on DemoBank’s deposits, and DemoBank pays central bank rate less 0.125% for deposits it takes. How much net interest income (interest received minus interest paid) will DemoBank earn?

Fill in the numbers in the sentences and equations below to find the answer.

As assets must equal liabilities plus equity, our bank must have total assets of \_\_\_\_.

Our assets include 5 of PP&E, so our deposits with other banks must be \_\_\_\_.

The bank earns 2.0% on its central bank deposits of \_\_\_\_.

(Note: round answer to four decimal points)

The bank pays out 1.875% on the deposits it holds: \_\_\_\_.

(Note: round answer to four decimal points)

Therefore, the bank’s net interest income would be:

### 2.1.1 Generating profit

As it stands, DemoBank’s deposits are earning 0.125% more than it is paying on its liabilities, which is not enough to earn enough profit to cover its operating costs, such as staff salaries. As the bank grows, it will look to:

* broaden its business;
* provide services to a wide range of customers; and
* diversify its operations.

The growth should allow the bank to generate enough profit to cover its operating costs and deliver a return to shareholders. It should also allow the bank to operate and succeed under a wide range of financial conditions. The idea being that an economic shock bringing turmoil in financial markets may be bad for retail products as households struggle to repay loans, but will provide trading opportunities in the capital markets.

Figure 2.2 expands on the basic parts of a bank’s balance sheet that we saw in Figure 2.1, illustrating the different elements that are likely to make up the assets and liabilities on a mature bank’s balance sheet.

**Figure 2.2 Assets and liabilities on a mature bank’s balance sheet**



## 2.2 Assets

Building on Figure 2.2, in this section we will look at each element on the asset side of the balance sheet.

Table 2.1 illustrates what the asset side of DemoBank’s balance sheet might look like when the bank is fully established.

**Table 2.1 DemoBank’s assets**

|  |  |
| --- | --- |
| **Assets** | **$m** |
|  |  |
| Cash and balances at central banks | 148 |
| Loans and advances | 362 |
| Secured lending | 25 |
| Trading assets | 45 |
| Derivative assets | 85 |
| Other assets | 20 |
| **Total assets** | **685** |
|  |  |

### Cash and balances at central banks

Balances with the central bank will appear on every bank’s balance sheet as it is a regulatory requirement that every bank keeps a certain amount with the central bank. Central bank balances are considered one of the safest assets in the economy (Clews et al., 2010).

### Loans and advances

**Table 2.2 Categories of loans and advances**

|  |  |
| --- | --- |
| **Loans and advances** | **$m** |
| Home loans | 168 |
| Credit cards, unsecured loans and other retail lending | 40 |
| Wholesale loans | 83 |
| Corporate loans | 85 |
| Allowance for impairment | (14) |
| **Total loans and advances** | **362** |

As shown in Table 2.2, loans and advances are typically divided into types of borrowers (eg corporate and retail) and into secured and unsecured (ie with or without collateral). This provides useful information to users of the accounts as to the riskiness of the lending.

### Home loans

Although home loans are secured lending, we will consider them here as part of a bank’s retail lending and look at secured lending from a non-retail perspective later in the section.

Residential mortgages are a low-risk form of lending because the bank has security over the residential property that is being funded. It can take possession of the property and sell it if the borrower fails to keep up their payments of principal and interest.

### Credit cards, unsecured loans and other retail lending

Unsecured personal financing, such as personal loans or credit cards, are riskier and will earn a higher margin. The bank will assess the credit risk of the borrower in deciding if the loan should be approved and what the interest rate will be.

### Wholesale loans

Loans to other banks are common, as every bank will have some activity in the interbank money markets where banks borrow and lend short-term funds with other banks.

### Corporate loans

There are many types of corporate loans that can be made to all types and sizes of companies, each with their own level of riskiness, and the margin will be set to reflect the individual company’s level of risk and the type of loan. We will discuss credit assessment in a later topic.

### Allowance for impairment

The gross loans total includes a line for ‘Allowance for impairment’. This number shows how much the bank has provided against non-performing loans, ie loans that are overdue for payment of interest and/or principal.

### Secured lending

There are numerous secured financing and collateralised lending products available in the market. Repurchase contracts, known as **repos**, are one of the most common and many of the other products operate in similar ways.

Repos are collateralised loans using debt or equity securities as the collateral. For banks, the repo market provides a way to invest funds on a very low-risk collateralised basis or to fund bond holdings at a very low cost. If a bank enters into a reverse repo trade, it is an asset – the bank has received collateral and is owed money by the repo counterparty.

**Figure 2.3 Reverse repo transaction**

Securities

Cash

Cash

The opening trade sees the repo counterparty deliver securities to the reverse repo counterparty who, in return, delivers cash to the repo counterparty. At the end of the repo the flows are reversed, and the reverse repo counterparty returns the securities and receives back the cash they lent.

### Trading assets

**Table 2.3 Categories of trading assets**

|  |  |
| --- | --- |
| **Trading assets** | **$m** |
| Debt securities | 40 |
| Equity securities | 5 |
| **Total trading assets** | **45** |

Trading assets are typically equities, bonds and loans, which can be:

* traded;
* bought or sold as part of the bank’s services to clients; or
* used as collateral in secured financing.

Securities may be held for investment or liquidity purposes or for diversification of risk.

### Derivative assets

**Table 2.4 Categories of derivative assets**

|  |  |
| --- | --- |
| **Derivative assets** | **$m** |
| Foreign exchange | 42 |
| Interest rate | 25 |
| Credit derivatives | 11 |
| Equity and commodity derivatives  | 7 |
| **Total derivative assets** | **85** |

Derivative assets are contracts whose value is derived from one or more underlying financial instrument or index defined in the contract. They include swaps, forward-rate agreements, futures, options and combinations of these instruments.

The underlying item can be one of many things, but is typically one of the following:

* foreign exchange rates;
* interest rates;
* credit derivatives;
* equities;
* bonds; or
* commodities.

Derivatives can be used for trading, sold to customers for risk management, or used as hedges against the bank’s exposure to the underlying asset. For example, the bank may have assets in US dollars, but its funding is in euros, so it will use derivatives to manage the currency risk.

Derivatives can be:

* **over the counter (OTC)** – these make up the majority of the market and have no standardisation in size or maturity; or
* **exchange-traded** – traded on an exchange, such as the Chicago Mercantile Exchange (CME), the Intercontinental Exchange ([ICE](https://www.investopedia.com/terms/i/intercontinentalexchange.asp)), or the [LIFFE](https://www.investopedia.com/terms/l/liffe.asp) exchange in London. These are traded in standard sizes and maturities, and cleared centrally through the exchange, reducing counterparty risk.

The difference between derivative assets and derivative liabilities (see section 2.3) arises in the fair value. For assets, the fair value is positive, while for liabilities the fair value is negative.

### Other assets

**Table 2.5 Categories of other assets**

|  |  |
| --- | --- |
| **Other assets** | **$m** |
| PP&E | 17 |
| Goodwill and intangible assets | 2 |
| Other assets | 1 |
| **Total other assets** | **20** |

### Property, plant and equipment

These are the operating assets used in the day-to-day business. PP&E covers branch premises (if owned), head office buildings and other facilities such as data centres. All the furniture, fittings and IT equipment owned by the bank are also captured here.

### Goodwill and intangible assets

Goodwill can include things like customer loyalty and reputation, while intangible assets are assets that may not have a physical presence but are recognisable as assets (eg licences, trademarks, copyrights, etc).

### Other assets

This is a catch-all category that will contain items such as accrued receivables and prepayments.

**Activity: asset categories**

Match the item to the correct asset category it would be listed under on the balance sheet.

**Goodwill**

**Foreign exchange derivatives**

**Reverse repos**

**Debt securities**

**Credit cards**

**Reserves**

## 2.3 Liabilities

Banks borrow to lend, paying less interest on their borrowing than they charge on their lending. Some liability accounts in a bank’s balance sheet will relate to other activities, such as hedging and trading, and will not be providing funding.

**Table 2.6 DemoBank’s liabilities**

|  |  |
| --- | --- |
| **Liabilities** | **$m** |
| Deposits | 425 |
| Secured borrowings | 23 |
| Debt securities issued | 67 |
| Trading liabilities | 34 |
| Derivative liabilities | 84 |
| Other liabilities | 7 |
| **Total liabilities** | **640** |

### Deposits

**Table 2.7 Categories of deposits**

|  |  |
| --- | --- |
| **Deposits** | **$m** |
| Retail current accounts | 255 |
| Retail savings accounts | 56 |
| Wholesale deposits | 85 |
| Customer deposits | 29 |
| **Total deposits** | **425** |

### Retail current accounts

Current accounts held by retail customers are a good source of funding for banks. They generally pay low or zero interest, and the balances can be used to finance loans to other customers who will pay the bank interest. Some current accounts also charge fees for specific types of transactions or services or an annual fee for maintaining the account. The cost of retail current accounts is in the infrastructure needed to support them (eg computer systems, branch network and staff).

In most cases, banks take in more retail deposits than they lend out as retail loans. The difference is used to fund commercial banking business; corporate clients generally borrow more money than they hold in deposits.

### Retail savings accounts

These will generally be interest-bearing, although not at a high rate, providing another source of funds for the bank. Accounts with notice-period restrictions will usually bear more interest than an instant-access account, but provide more stable funding for the bank as there are typically fewer withdrawals.

### Wholesale deposits

These will include the interbank market, where short-term funding is borrowed for cash-flow purposes. Banks will maintain interbank relationships with a pool of other banks to establish a source of short-term liquidity should it be needed unexpectedly.

### Customer deposits

Corporate and public sector deposits may be call deposits or time deposits. Corporate customers will use a number of services offered by the bank, such as cash management, which will leave funds deposited with the bank.

### Secured borrowing

This liability arises where the bank is a repo counterparty and has borrowed cash and loaned securities (think back to Figure 2.3). If a bank enters into a repo trade, it creates a liability – the bank has borrowed money against collateral of securities, which it must repay at the end of the transaction.

This is a useful source of short-term funding and is a method used by central banks for lower-risk lending to the banking sector. For example, the European Central Bank (ECB) uses a long-term refinancing operation (known as an LTRO) to offer three-month to three-year funding secured by the borrowing bank placing high-quality collateral with the ECB.

### Debt securities issued

This liability is the funding raised by the bank to support its operations. The funding can vary in maturity from three months to ten years or more and will be in different instruments and currencies. It is interest-bearing, but it is secure funding for the bank as it will have fixed repayment dates and the principal amount will only be repaid at maturity.

For the highest-quality borrowers, the bond markets will accept debt with maturities up to, or even beyond, 50 years.

### Trading liabilities

These will comprise short positions in debt and equity securities. A short position arises when a bank sells a security that it does not own, for example if a bank borrows securities using a repo agreement and then sells the borrowed security. The bank will then need to buy back the security to return it to the repo counterparty but will hope to do so at a lower price.

### Derivative liabilities

**Table 2.8 Categories of derivative liabilities**

|  |  |
| --- | --- |
| **Derivative liabilities** | **$m** |
| Foreign exchange | 44 |
| Interest rate | 26 |
| Credit derivatives | 6 |
| Equity and commodity derivatives  | 8 |
| **Total derivative liabilities** | **84** |

These are the same products as discussed in section 2.2, although here the liability arises when the fair value of the derivative contract is negative (ie the bank will need to pay out to close the contract).

### Other liabilities

**Table 2.9 Categories of other liabilities**

|  |  |
| --- | --- |
| **Other liabilities** | **$m** |
| Accruals and deferred income | 6 |
| Other liabilities  | 1 |
| **Total other liabilities** | **7** |

This is a catch-all category that will include accrued interest payable, accrued payables (eg on leases) and provisions not related to balance sheet assets (eg legal provisions).

**Accrued**

An amount (eg of interest) that accumulates over a period but is not settled until the end of the period.

## 2.4 Equity and retained earnings

This section of the balance sheet represents the amount of capital that the bank holds to support its business.

**Table 2.10 Categories of equity**

|  |  |
| --- | --- |
| **Equity and reserves** | **$m** |
| Equity shares  | 18 |
| Retained earnings | 10 |
| Non-controlling interests | 3 |
| Subordinated debt | 12 |
| Other reserves | 2 |
| **Total equity and reserves** | **45** |

### Equity shares

These are the shares that a bank may list on a stock exchange.

The bank may periodically issue new shares (ie increase share capital) to expand its capital base (eg to fund an acquisition). Equity shares are expensive compared to debt as investors expect a return on equity in the form of **dividends**.

Banks may also reduce share capital by buying back shares in the market, which increases the value of each of the remaining shares in issue, therefore rewarding shareholders without paying dividends.

**Dividends**

A percentage of an organisation’s profits paid out to shareholders.

### Retained earnings

These are the amounts of profit earned in the past but not paid out to shareholders as dividends; instead, they are held within the bank to support the business.

### Non-controlling interests

These include hybrid debt instruments such as **preference shares**, which pay fixed dividends during their lifetime and, at specific dates, can be transferred into equity shares. Owners of preference shares cannot vote on the activities of the company

**Preference shares**

Also called **preferred stock**, these are shares that receive dividends before other shares and are repaid before equity shareholders in the event of liquidation.

### Subordinated debt

Subordinated debt is debt issued that ranks below senior debt but above equity. To compensate for the risk that this debt will not be repaid, it normally attracts a higher interest rate than debt that ranks above it.

**Watch (8 mins 38 secs)**

In the event of insolvency, debt is issued a ranking as to the order in which it should be paid off with funds from liquidation of assets. Watch the following video, which explains how this works and where subordinated debt sits in the rankings.

CFI – [Types of debt](https://www.youtube.com/watch?v=yONRO4llSo8)

### Other reserves

There are other reserves that arise from the accounting treatment required of certain assets, and those reserves are recorded here.

**Activity: assets, liabilities and equity**

Match the item to the category – asset, liability or equity – it would be listed under on the balance sheet.

**Wholesale deposits**

**Subordinated debt**

**Customer deposits**

**Customer loans**

**Balances with central banks**

**Debt securities in issue**

**Retained earnings**

**Secured lending**

**Reverse repos**

## 2.5 Asset and liability management

In deciding upon and managing its asset and liability mix and risk and maturity profiles, a bank will need to consider several regulations and policies that will direct its decisions.

The setting of these policies will usually be the responsibility of a specialist team, which is often called asset and liability management (ALM), that may sit within the treasury department of a bank. Dedicated business units within the bank will oversee the day-to-day management and measurement of these requirements. The treasury department will form part of the head office functions of a bank and will be independent of the revenue-earning parts of the bank.

### Liquidity requirement

A bank must be able to generate enough cash to meet its obligations (ie contractual cash outflows) when they become due. To ensure that this requirement is met, the bank may hold high-quality liquid assets such as balances with central banks or government bonds, which can be sold or used as loan collateral more easily than other assets in a crisis. The bank will closely manage its daily future cash inflows and outflows and adjust funding to ensure that cash outflows can always be met.

### Funding requirement

The bank will look ahead at maturing funding and its business plans in different markets and will aim to raise funds to meet those plans. The funding will reflect the currency and maturity profiles of the business and will be a mix of:

* customer deposits;
* short-term money market activity;
* medium-term note issuance; and
* long-term bond issuance.

The bank’s treasurer will want to raise funding from sources that, together, strike a balance between stability (ie unlikely to be withdrawn without notice) and low cost. This tends to include retail deposits, which are both cheap and generally stable, but also creates an important role for long-dated debt raised in the markets.

### Capital requirement

All banks are subject to a capital requirement, which compares their assets (eg loans and mortgages) to their equity and reserves. Different risk weightings will be applied to assets depending on the creditworthiness, collateral and maturity of the assets. This can limit the amount of lending that a bank can undertake, especially if credit conditions deteriorate. Should the bank incur losses, it will be able to absorb them with its capital and reserves and continue to trade.

### Hedging and market risk

A bank will need to look at the risks it faces, such as interest rate risk and foreign exchange risk, and manage those risks by matching assets and liabilities by currency and by fixed and floating interest rates. These matches can be obtained using balance sheet products, such as loans and deposits, or by using derivatives.

### Risk appetite

The bank’s board will set the bank’s **risk appetite**, which is the amount and type of risk that a bank is prepared to accept in pursuit of its business objectives. The day-to-day management of each type of risk will sit between the front office and specialist risk departments.

As with most businesses, banks need to strike a balance between risk and reward. The higher the risk, the higher the reward, but also the higher the chance of a substantial loss if things don’t go to plan.

You will learn more about specific types of risk in Topic 3.

### Balance sheet size

Banks may be subject to limits on the size of their balance sheets (ie their total assets).

Regulators often limit the types of activities that banks can undertake, as well as how they manage their portfolios. This can ultimately limit the amount of revenue a bank can generate.

**Activity: considering risks**

1. When the bank is proposing to engage in an activity, which risks should it consider?
2. Liquidity, funding and capital requirements.
3. Hedging and market risk.
4. Risk appetite.
5. All of the above.

## 2.6 Profit and loss account

**Table 2.11 Summary income statement**

|  |  |
| --- | --- |
| **Summary income statement** | **$m** |
| Net interest income | 9 |
| Net fee, commission and other income | 14 |
| **Total income** | **23** |
| Credit impairment charges | -2 |
| **Net operating income** | **21** |
| Operating costs | -14 |
| **Profit before tax** | **7** |
| Tax charges | -2 |
| **Profit after tax** | **5** |
| Non-controlling interests | -1 |
| **Attributable profit** | **4** |

The **profit and loss (P&L)** account for a bank shows a bank’s profitability over a period of time by comparing income and expenditure. It is similar to those of other entities, except banks do not disclose a ‘turnover’ figure and include net interest as a main source of income.

### Net interest income

This includes interest received on cash and balances with central banks and retail banking products, such as home loans, credit cards and overdrafts. Interest paid on deposits, debt securities issued and subordinated debt is deducted from the interest received. Net interest income is very important to banks as it is seen as the most stable part of a bank’s income.

**FACTFIND**

In 2020, the impact of Covid-19 was felt in economies and industries around the world. Read the following article to find out how the pandemic affected the formerly reliable net interest income and net interest margin.

Nasdaq – [Banks suffered a record drop in net interest income in Q3](https://www.nasdaq.com/articles/banks-suffered-a-record-drop-in-net-interest-income-in-q3-2020-12-03)

### Net fee, commission and other income

This is a net figure, so it includes both income and expenses for:

* fees and commissions;
* trading P&L; and
* investment income.

### Fees and commissions

Fees arise from a number of sources and will be categorised in the notes to the accounts in accordance with the business of the bank. Some types of fees are as follows.

* **Transactional** – these are normally associated with retail and corporate banking and include service charges on deposit accounts, cash management services and processing fees. These include interchange- and merchant-fee income generated from credit and bank card usage, and fees for cash machine usage.
* **Advisory** – fees generated from wealth-management services and investment banking advisory services related to mergers, acquisitions and financial restructurings.
* **Brokerage and execution** – fees earned for executing client transactions with various exchanges and OTC markets and assisting clients in clearing transactions.
* **Underwriting and syndication** – fees earned for the distribution of client equity or debt securities and the arrangement and administration of a loan syndication, including commitment fees for providing loan financing.

### Net trading income

This covers the net income from traded assets and liabilities and derivative positions. Interest received on secured lending (ie reverse repos) and paid on repos is also included in this category.

Income arises from both the sale and purchase of trading positions, margins achieved through market making and customer business.

Trading positions are marked to market and the resulting gains and losses are included in trading income, together with interest, dividends and funding costs relating to trading activities.

Marking to market (ie valued at prevailing market levels) means that changes in market value caused by movements in interest and exchange rates, equity prices and other market variables are accounted for and the value of the traded position is updated.

### Investment net income

This relates to income and expenses for activities that are not core to the bank.

### Credit impairment charges

Banks are required to recognise expected credit losses based on unbiased, forward-looking information for:

* loans;
* lease receivables;
* investment debt securities;
* loan commitments; and
* financial guarantee contracts.

### Operating costs

These are the costs that you would expect any company to incur, such as costs related to:

* property and equipment – including depreciation and amortisation, lease payments and impairment charges, such as for retail branches that have been closed but not yet sold; and
* administrative expenses – such as staff costs, technology costs, entertainment and marketing costs, and legal and professional fees.

### Tax charges

The amount of tax a bank has to pay will depend on the jurisdictions where profits are earned and the tax rates in those jurisdictions.

### Non-controlling interests

This is the amount of profit that is payable to owners of non-controlling interests, such as holders of certain debt and part owners of companies in the bank group.

### Attributable profit

These are the profits attributable to the shareholders of the bank. They may be paid out in the form of dividends or retained within the bank to be invested to make future returns for the shareholders.

**Activity: income types**

If your bank has a purely retail business, which **income types** would appear in its P&L account? Select all that apply.

1. Credit impairment charges.
2. Net interest income.
3. Tax charges.
4. Fee and commission income.

## Test your knowledge

1. The main types of capital for a bank are:
2. equity, retained earnings and derivatives.
3. equity, derivatives and debt.
4. debt, retained earnings and working capital.
5. equity, retained earnings and debt.
6. Repo transactions involve the repo counterparty borrowing \_\_\_\_\_\_\_ and lending \_\_\_\_\_\_\_, while the reverse repo counterparty borrows \_\_\_\_\_\_\_ and lends \_\_\_\_\_\_\_.
	1. cash, securities; securities, cash
	2. securities, cash; cash, securities
	3. securities, cash; securities, cash
	4. cash, cash; securities, securities
7. Subordinated debt has priority over senior debt in the event of insolvency.
	1. True.
	2. False.
8. Equity falls under the \_\_\_\_\_\_\_\_ section of the balance sheet.
	1. asset
	2. liabilities
9. The difference between derivative assets and derivative liabilities is whether which of the following is positive or negative?
	1. Nominal value.
	2. Retained value.
	3. Fair value.
	4. Retail value.

## References

Bank of England (2021) *What is capital?* [online]. Available at: <https://www.bankofengland.co.uk/knowledgebank/what-is-capital>.

Clews, R., Salmon, C. and Weeken, O. (2010) The Bank’s money market framework. *Bank of England Quarterly Bulletin*, 13 December, 50(4).

## Videos

CFI (2018) *Types of debt* [video]. Available at: <https://www.youtube.com/watch?v=yONRO4llSo8>.