

Understanding and Managing Interest Rate Risk

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Introduction

This guide provides an overview of the issues associated with understanding and managing interest rate risk. It is intended to familiarise users with the key concepts. This may necessitate users making further enquiries to more fully understand these issues. The guide is supported by two appendices – one outlines key terminology and the other provides a description of the key financial instruments which are associated with interest rate risk management. Users of the guide will find other useful literature relevant to the subject at the CPA Australia website cpaaustralia.com.au

Understanding and Managing Interest Rate Risk

1. Definition – what is interest rate risk?

Interest rate risk should be managed where fluctuations in interest rate impact on the organisation's profitability. In an organisation where the core operations are something other than financial services, such financial risk should be appropriately managed, so that the focus of the organisation is on providing the core goods or services without exposing the business to financial risks.

An adverse movement in interest rate risk may potentially:

- increase borrowing costs for borrowers;
- reduce returns for investors
- reduce profitability of financial services providers such as banks; and
- reduce the net present value (NPV) of organisations due to the effect of changes in the discount rate (interest rate) on the value of financial instruments, hedges and the return on projects.

2. Sources of interest rate risk

Interest rate risk can arise from a number of sources:

- where interest costs fluctuate according to interest rate movements during the life of the loan;
- resetting of interest rates on an entity's loans from banks or other lenders;
- resetting of interest rates on short-term investments such as bank deposits, commercial paper, bank bills and so on;
- the impact of interest rate changes on the value of long-term financial assets and liabilities. For example, the value of a bond will fall as interest rates increase – so investors in such instruments will initially benefit from a decrease in interest rates and similarly borrowers of long-term funds may initially suffer an economic loss as rates fall because their liabilities will increase. These economic gains and losses will only be realised if the investment or liability is realised prior to maturity otherwise the economic gain or loss represents an opportunity gain or a loss at the time that interest rates changed;
- derivatives e.g. interest rate swaps – the value of these instruments will change as interest rates change, representing either an opportunity gain or a loss (or real gain or loss where the transaction is finalised prior to maturity);
- early payment discount – offered and received. For example, discount rates offered for early payment by debtors may be higher than the organisation's cost of funds;
- forward foreign exchange rates are affected by the differential between domestic interest rates and foreign rates. For example, as Australian interest rates increase relative to offshore rates, then the cost of hedging imports will increase and the cost of hedging exports will fall;
- financial institutions are concerned about the interest rates on assets and liabilities resetting at different times. This is known as mismatch risk or repricing risk. For example, if the interest rates on its assets increase more than its liabilities then the organisation's profit will increase, and vice-versa.

3. Impact of adverse movements in interest rates on organisations

- Borrowers – in general concerned about rising rates

Increased cost of funds =

- ↓ profitability = ↓ market value
- ↓ ability to undertake capital expenditure
- ↓ ability to pay dividends
- ↑ chance of a breach of borrowing covenants
- ↑ borrowing margins due to deterioration in financial ratios
- ↑ (initially) NPV (net worth) due to a higher discount rate being applied to fixed interest loans and associated hedges (the opposite applies where rates fall)

- Investors – in general concerned about falling rates

Reduced cost of funds =

- ↓ profitability = ↓ market value
- ↓ ability to pay returns to stakeholders e.g. unit holders in a trust
- ↓ competitive returns = ↓ ability to attract investors
- ↑ (initially) NPV (net worth/unit prices) due to the lower discount rate being applied to investments and associated hedges (the opposite applies when rates increase)
- ↓ ability to meet future outgoings e.g. superannuation.

4. Methods to measure interest rate risk

There are many ways to measure interest rate risk which can range from very simple measures to very sophisticated measures which are mathematically complex and require significant computing power. This guide provides some examples of the simpler measures which can be applied and understood by most organisations.

- **Sensitivity analysis**

- Simple analysis – measurement of the impact of small changes of interest rates on the accounting income or economic value. For example, if interest rates increase by 1 per cent now, what will be the impact on the accounting income? Usually calculated on spreadsheets
- Advanced – measurement of the impact of multiple changes in interest rates and other related variables on the entity's financial health. For example, if the entity is 50 per cent hedged and interest rates increase by 1 per cent and earnings before interest, tax, depreciation and amortisation (EBITDA) fall by 10 per cent, what will be the impact on the entity's interest cover ratio? This information may be presented in a tabular form.
- Stress test – modelling the impact of a large change in interest rates on borrowings or investments in accounting terms or risk outcomes. This type of measurement is frequently used by financial institutions.

- **Repricing profiles** (graphical representation of the interest reset of assets and liabilities over time)

- For entities this may be a graphical representation of the interest repricing of assets or liabilities over time.

5. Methods to manage interest rate risk

Before using financial instruments to manage interest rate risk, the organisation should develop a policy after determining the risk appetite of key stakeholders such as directors. Guidance in this regard can be found in the CPA publication, *Understanding and Managing Financial Risk*.

There are many ways that interest rate risk can be managed.

- A simple method is when the borrower requests its lender to fix the interest rate of its loan for the period of the loan.
- Where a borrower has a floating rate cost of funds, it can protect itself from rising interest rates through an interest rate cap or option. Essentially this is like insuring against rising rates. If the rates rise, the borrower is protected. If rates fall, the borrower retains the benefit of the clearance in interest rates. As a borrower you pay a premium for this protection from rising interest rates.
- An alternative product for a borrower on floating rates would be to consider using an interest rate swap. This product allows the borrower to lock in its floating rates for one to five years with its own bank, or another bank if it has the credit limits. Though you do not pay an upfront fee, if the rate falls below the fixed swap rate you have to pay the counterparty the difference.
- Similarly borrowers can convert a fixed rate loan back to a floating loan using a derivative, such as an interest rate swap.
- Investors can invest in fixed rate assets or alternatively invest in floating rate assets and fix the rate using an interest swap. Fixed rate assets may offer investors a better rate of return. However, investors should be aware that they may experience significant losses on fixed rate assets should interest rates increase and they terminate the investment prior to its maturity.

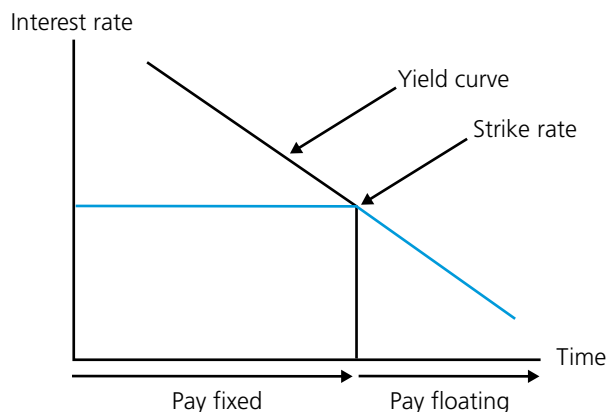
Appendix 1 Terminology (key terms which may be used)

- **Floating rate** – typically this means the interest rate on a borrowing, investment or hedge resets (reprices) *in less than 12 months*.
- **Fixed rate** – typically this means the interest rate on a borrowing, investment or hedge resets (reprices) *in more than 12 months or the life of the loan or investment*.
- **Yield curve** – a graphical representation of expected interest rates by the financial market over time. Where rates increase over time, then the yield curve is said to be positive or normal. Where rates decrease over time, then the yield curve is said to be inverse. An inverse yield curve implies that financial markets expect interest rates to fall.
- **Outright interest rate risk** – the impact of a change in the overall level of interest rate risk. For example, if an investor holds a fixed interest bond and interest rates generally increase, then the investor will experience a loss.
- **Basis risk** – the change in the interest rate of one instrument relative to another. For hedges to work perfectly, the value of the hedge must change exactly in line with the financial instrument being hedged as interest rates change. If they don't then there is 'basis risk'.
- **Yield curve risk** – Financial institutions may be reliant, for their hedges to be effective, on interest rates changing evenly across the yield curve. If this does not happen, then the institution will experience 'yield curve risk'.
- **Repricing and repayment risk** – interest rate repricing may not be the same as the contractual repayment term of the financial instrument. For example, a floating rate note may be repayable in five years (which is its repayment risk) but have an interest rate reset (interest rate repricing) of 90 days. Therefore, the repayment profile of a floating rate note is different from its repricing profile.
- **Interest cover covenants** – Banks typically require borrowings to have covenants. One covenant relates the amount of cash (typically measured by earnings before interest, tax, depreciation and amortisation (EBITDA)) to interest expense. If interest rates increase, and the organisation has not fixed its borrowing rate, then the ratio of cash to interest cost may fall below the ratio (covenant) agreed by the bank. If this happens, the loan may become immediately payable or the bank may impose a penalty rate of interest.
- **Indexes** – Loan agreements and derivatives may have a floating rate which periodically needs to be reset. To ensure fairness, often the rate setting is done by reference to a floating rate index such as BBSW (the bank bill swap rate) or BBSY (the bank bill swap bid rate) (which are both shown as pages on the Reuters information services).

Appendix 2 Typical financial instruments and hedges

- **Interest ratio swaps (IRSs)** – IRSs allow borrowers or investors to convert a floating rate borrowing or investment into a fixed rate borrowing or investment for a pre-agreed time, typically three or five years. The IRS is a separate instrument to the borrowing or investment instrument. It is overlayed on the borrowing or instrument. For example the borrower will receive a floating rate (e.g. 'BBSW') of funds from the IRS counterparty and pay (BBSW) this through to the loan counterparty (who ideally has arranged the loan to be paid at the BBSW rate). In return the borrower will pay the swap counterparty the fixed rate (effectively this will now be the cost of funds). Swaps can be used for any international interest rate exposure.
- **Options** – Options are similar to an insurance contract. For a premium, a borrower can insure against the cost of funds in all or some of its borrowings exceeding a pre-agreed rate. Similarly an investor can insure against the rate falling below a pre-agreed rate.

An example of the application of an option: A borrower pays a premium for the option to participate if the interest rate falls during the term of the option. For example, the borrower borrows one million dollars for three years and has new interest rate sets every three months. Rather than fixing the interest rate over the next three years, he may believe that the interest rate will fall over this time. An option is then transacted with a strike rate which is triggered when the interest rate reaches this strike rate (interest rate). If interest rates reach the strike rate during the life of the option transaction, then the borrower will pay the lesser interest rate from this time until maturity of the transaction.



- **Bank bills/short-term borrowings/investments** – Bank bills and commercial paper are short-term instruments, issued at a discount. This means the issuer (borrower) receives less than the face value at issue and pays the full amount (face value) at maturity. The difference between the two is known as interest expense. Bank bills differ from commercial paper in that the issuer of bank bills has entered into an agreement with a bank to guarantee payment should the issuer default. This makes bank bills attractive to investors. With commercial paper, the investor must rely on the credit worthiness of the issuer alone.
- **Bonds** – Bonds are instruments issued by borrowers to investors. The bond typically has a face value, maturity date and rate of interest. The interest payable may be fixed (i.e. a coupon) or be periodically reset at a margin above or below an index rate. The former are known as fixed interest bonds. The latter are known as floating rate bonds.
- **Forward rate agreements (FRAs)** – FRAs allow a borrower or investor to lock in a borrowing or investment rate for a future period. FRAs are similar to IRSs but only cover a single period. For example, a borrower may wish to lock in some of its borrowing cost starting in three months for six months. The borrower could use a 3 v 6 FRA for this purpose which would lock in the rate at the beginning of the six-month period. FRAs are usually to manage short-term rates up to 18 months and can be used for any major currency.

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