## Week 5 – Introduction to Markets

**Functions of financial markets**

- Arrange the flow of funds
  Financial markets provide a channel for direct financing through issuing securities. This enables deficit units to raise funds from surplus units.
  **Underwriting** refers to the process of arranging the issue of securities that guarantees they are issued. It is usually arranged by investment banks (contract details etc.) for a fee. The main suppliers of underwriting in Australia are
    1) The Big Four
    2) Macquarie Bank
    3) Leading international investment banks
    4) Certain money market corporations
- Perform price discovery
  The market judges the value of the traded securities. Financial markets allow for the determination of price of the traded financial assets through the interaction of buyers and sellers.
- Transfer and manage risk
  It allows ADIs to manage their liquidity and funding risks by selling securities.
- Provide ways of dealing with information asymmetry

**Primary market processes**

**Primary market** – the part of the financial market that deals with issuing of new securities.
There are two common approaches to arranging the issue of securities:

- Best efforts/best endeavours
  This is the most common approach in Australia. It is a contractual basis for issuing securities where the investment bank undertakes to issue the securities. It can be performed through a competitive tenders (where bids are sought for the securities) and invitations to investors to purchase securities. The method of payment to the arranger is generally in the form of a commission (fee based on actual sales and so it motivates the arranger's best efforts to issue the securities). Issuers can also enter into a **standby underwriting** agreement (in addition to the best efforts contract) with the arranger of the issue to guarantee all of the securities are sold, at an extra fee. Under this contract the underwriter is required to buy the unsold securities at the issue price.
- Bought deal
  A bought deal is a securities offering where an investment bank commits to buy the entire offering from the client company. The investment bank then attempts to sell them for a higher price. A bought deal eliminates the financing risk for the company, which is able to ensure that it raises the intended amount of funds from the securities offering; however, the client firm will likely get a lower price by taking this approach. A bought deal is riskier for the investment bank, because it must then try to sell the securities to other investors. The investment bank takes all of the risk that the securities may not be able to be sold, or more commonly, that they may lose value before they can be sold, resulting in a net loss. To offset this risk, the investment bank often negotiates a significant discount when buying the offering from the client. If the deal is large, an investment bank may team up with other banks and form a syndicate so that each firm bears only a portion of the risk. It can also mitigate this risk through **book building** – which is the process by which an underwriter attempts to determine at what price to offer an IPO based on demand from institutional investor, so they can get an idea of whether or not they can make a profit.

There are five common selling practices:

- Open outcry
  Open outcry is a vanishing method of communicating on a stock, commodity or futures exchange that involves verbal bids and offers as well as hand signals to convey trading information in the trading pits.
- Tender
  Tender is a sealed-bid process where potential buyers are invited to submit bids (price and quantity) and the issue manager chooses the most favourable bids. Bids are not disclosed to other buyers, unlike in open outcry. It is more common than open outcry nowadays and is used in the issue of government securities.
- Public offering
  Public offering involves securities being sold by announcing their price (fixed) and seeking applications from the public. Having a fixed price can, however, be problematic should new information change the fair price of securities through the issue process. In some cases, the price is not determined until the closing date of the issue.

**Bond pricing**

The price of a fixed-interest bond is the sum of the present value of each of its remaining payments given the current interest rate in the bond market, this being the appropriate discount rate.

In other words, the price is the discounted value of coupons plus the bond's face value:

$$P = C\underbrace{\left[\frac{1-\left(1+\frac{r}{2}\right)^{-n}}{\frac{r}{2}}\right]}_{\text{Present value of future coupon payments}} + \underbrace{\frac{F}{(1+\frac{r}{2})^{n}}}_{\text{Present value of the face value}}$$

Where:

- $P$ is the price (i.e. present value) of the bond
- $F$ is the face value
- $C$ is the coupon amount (in dollars) payable each **half year**
- $n$ is the number of complete coupon periods
- $r$ is the market yield at which the bond is purchased

Relationship between bond prices and movements in yields

Changes in the yield in the bond market will cause bond prices to move in the opposite direction.

For example, a *fall* in the yield would cause bond prices to *rise*. This is because a lower yield will generate a larger present amount for the bond's specified future payments.

Similarly, discounting the bond's future payments at a *higher* yield will result in a *lower* present value (i.e. price)

**Determinants of movements in long-term yields**

Bond yields move up and down in response to changes in the demand and supply of bonds, which are determined by:

- Changes in liquidity – investors naturally prefer securities that are highly liquid – i.e. easily converted into cash. Therefore, should the liquidity in the bond market fall, demand for bonds should decrease and therefore so does the price of the bonds.
- Changes in the expected inflation rate – formed on the basis of economic news concerning the factors that influence the inflation rate, including the impact of monetary policy. When the inflation rate is expected to rise over the long-term, demand for bonds weakens as the real value of a bond's payments is expected to decrease. This will reduce the price of bonds (increase the yields in the bond market). The higher yields will compensate investors for the expected lower purchasing power of the bonds' cash payments. Similarly, when new information is interpreted to suggest that the inflation rate over the long term will decline, demand for bonds will increase and their yield will fall until the expected real value of the bonds' payments are restored.
  **The Fisher effect** – the finding that changes in bond yields are associated with changes in the inflation rate. It is represented by the following formula:

$$r \approx r_{real} + p_e$$

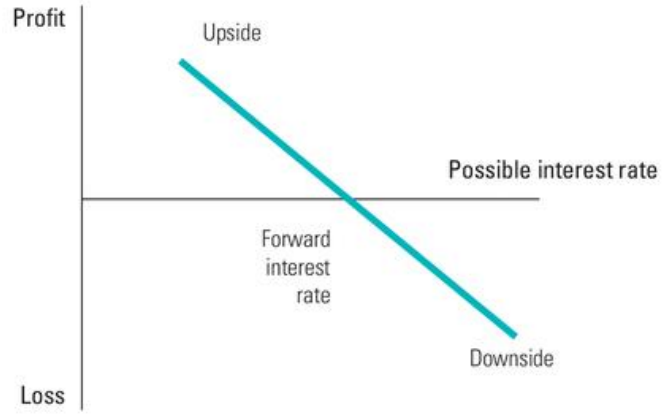
  Where:

  - $r$ is the market yield for long-term bonds
  - $r_{real}$ is the real interest rate for that term
  - $p_e$ is the expected inflation rate (average rate over the term of the bond)

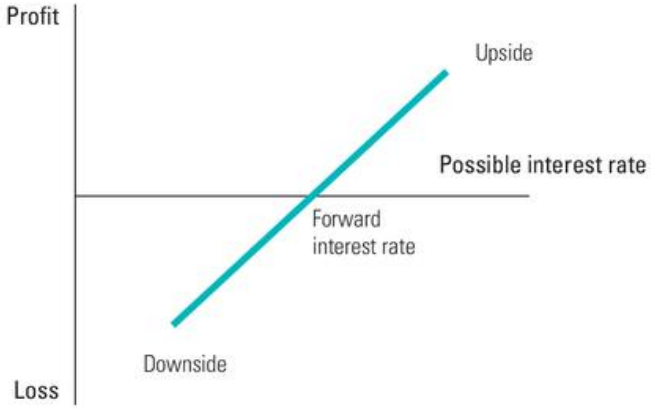
  It suggests that if the real interest rate is stable, changes in yields are due to changes in the expected inflation rate.

**Hedging interest rate risk**

Forward rates reflect the market's expectation of future spot rates. However, although forward short-term interest rates have a good forecasting record there is no assurance that they will always be correct. Consequently, floating-rate borrowers face the risk of future spot rates being higher than expected (i.e. higher than forward rates) and floating-rate lenders face the risk that future spot rates will be lower than forward rates.




The risk exposure of a borrower




The risk exposure of a lender

As the graph shows, the borrower's risk is represented by the downside potential of future movements in interest rates (i.e. where interest rates are higher than expected), whereas 'upside' is the possible benefit should future interest rates be lower than expected.

The lender's risk exposure is to the possibility that interest rates will be lower than expected when they make their loan and the lender's upside arises from the interest rates being higher than expected (when they make their loan). Borrowers and lenders may prefer to 'lock-in' a forward rate rather than face the uncertainty that causes interest rate risk.

The main method for managing interest rate risk, known as **hedging**, is to use **derivative contracts** that enable forward rates to be established. Since these are an agreed rate when the derivative contracts are entered into, they replace the unknown future spot rates that are the cause of interest rate risk. For the borrower, the effect of the derivative is to remove the risk of having to pay a higher interest rate (than the forward rate) and for the lender it removes the risk of earning a lower interest rate (than the forward rate).

**Forward rate agreements (FRAs)**

An FRA is an over-the-counter contract with a bank that serves to establish a forward interest rate for a specified future date on a minimal amount for a set period. FRAs serve the hedging needs of borrowers and lenders. A borrower 'buys' an FRA to protect itself against the possibility of a future interest rate rise. Conversely, a lender 'sells' an FRA to protect itself against the possibility of a fall in future interest rates.

An FRA is completed with the payment of a cash settlement, calculated as the difference between the future spot rate and the agreed rate at that future settlement date. The FRA settlement formula is:

$$Settlement = V_{Market} - V_{Agreed}$$
$$= \frac{F}{1+(r_{Market} \times t)} - \frac{F}{1+(r_{Agreed} \times t)}$$

Where,

- the 'market' rate is the reference rate on the settlement date,
- the 'agreed' rate is the forward rate,
- $V$ is the present value of the two amounts ($V_{Agreed}$ is the hedged amount; $V_{Market}$ is equal to the bill's proceeds from the money market)

If the result is a positive number (i.e. the agreed rate exceeds the market rate), a payment to the lender is needed. When the market rate exceeds the agreed rate, the FRA's cash settlement equation generates a negative payment and that makes it a payment to the borrower.