Untangling F9 terminology

Welcome!

This is not a textbook and we are certainly not trying to replace yours! However, we do know that some students find some of the terminology used in F9 difficult to understand.

To pass F9, you must learn and understand the terms included within the syllabus as well as learn how to apply that knowledge in exam questions, but we thought we would give you a helping hand. So, we have put together this short guide to cover a selection of terms connected with financial markets that regularly occur in ACCA exam questions. We explain these terms one by one, as simply as possible, and then we look at them in the context of a recent exam question to help you see how they are applied in the real world.

We hope you find this a useful additional resource when you are preparing for your F9 exam.

Interest rates and interest rate risk

Interest rates

When an investor deposits money into a financial institution, the investor expects the financial institution to pay for being able to use the investor's funds for its own purposes for the period it holds the funds. Payments the financial institution makes for use of the investor's funds are called **interest** payments**.**

Interest is also paid by customers when they borrow money from financial institutions.

*The **interest rate** expresses in % terms the income the investor receives compared with the amount that the investor has invested. The income figure used is most often the annual income that the investor receives and so most interest rates you'll see are annual rates.*

*The **commercial interest rate** is the interest rate that an investor will expect to receive from major financial institutions on the funds invested, or the rate borrowers will expect to pay to financial institutions. Different institutions will offer different terms, so the commercial rates given in exam questions will be average rates**.***

The commercial interest rates for borrowing from financial institutions will be higher than the commercial rates from depositing with financial institutions. Different rates are offered in order to ensure that financial institutions make a profit.

A **real return** is calculated by adjusting the income in cash that investors receive to take account of the inflation rate. Inflation results in a fixed amount of interest income becoming less valuable to the investor, as the investor can buy less goods or services with that income. Therefore as inflation rates increase, investors will want interest rates to increase as well, so that the level of real return stays the same and the investor can buy the same quantity of goods or services.

Yield curve

The period for which investors are prepared to invest significantly influences the level of interest rates. The **yield curve** is a comparison of:

- Return on an investment (which may be called the interest rate or the yield) with the
- Remaining period for which funds are invested (the investment's term to maturity).
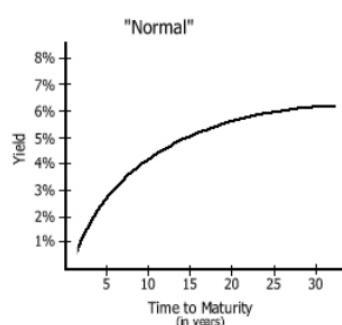
*The yield curve may be upward sloping, when interest rates will be **higher**, the **longer** the term to maturity.*

The yield curve will be upward sloping when:

- Investors want a higher return for investing their funds for a longer period of time
- Investors believe that there is a higher level of risk with the income they receive from a longer-term investment than a shorter-term investment
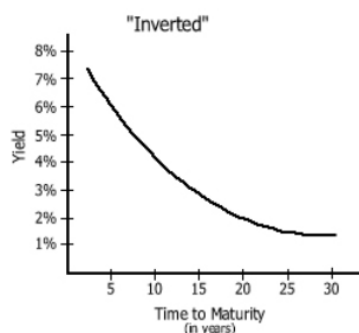
*The yield curve may however be downward sloping, when interest rates will be **higher**, the **shorter** the term to maturity.*

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The yield curve may be downward sloping when:

- Interest rates are expected to fall over the short-term. If the investor invests funds for a longer-term at a fixed interest rate, it will become a more valuable investment if other interest rates then fall. Therefore financial institutions will not want to commit to paying high interest rates to investors over a long period of time.
- The government may want to keep interest rates high for some time. Again the expectation will be that rates will eventually fall.

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***Market segmentation theory** is the theory that investors do not all have the same concerns with investments or the same level of influence over the interest rates that they receive.*

- Financial institutions may be more interested in short-term investments; individuals saving for their retirement may be interested in longer-term investments.
- Large financial institutions will have more influence over the level of return they receive on their investments than individuals will because of their size.

The preferences and relative power of different investors can mean the yield curve slopes upwards or downwards. It can also mean that the yield curve isn't a smooth curve (is kinked). The yield curve is an average reflecting the whole market, and it will have kinks where one type of investor becomes more significant than another.

Let's look at the June 2015 exam where in Section A we examined interest rates, market segmentation and yield curves.

June 2015 Section A Question 2

2 **Which of the following statements are correct?**

(1) The general level of interest rates is affected by investors' desire for a real return
(2) Market segmentation theory can explain kinks (discontinuities) in the yield curve
(3) When interest rates are expected to fall, the yield curve could be sloping downwards

A 1 and 2 only
B 1 and 3 only
C 2 and 3 only
D 1, 2 and 3

√ (1) The general level of interest rates is affected by investors' desire for a real return

This statement is correct as investors want to maintain the value of the interest income they receive, which implies maintaining the real return. If the statement had said nominal or money return, it would have been incorrect.

√ (2) Market segmentation theory can explain kinks (discontinuities) in the yield curve

This is correct as the yield curve is certain to be a smooth line only when there is one market segment.

√ (3) When interest rates are expected to fall, the yield curve could be sloping downwards

This is correct as investors will want to receive higher interest, in return for having a shorter period where their interest is fixed and they then have to re-invest funds and then have lower interest rates available.

A 1 and 2 only

B 1 and 3 only

C 2 and 3 only

D 1, 2 and 3

All statements are correct.

Interest rate risk

*A **forward rate agreement** (FRA) fixes the amount of interest a company pays in the future or fixes the interest a company receives in the future. Mostly in exam questions a company that is borrowing money is worried that interest rates will increase over time and its interest payments will rise (interest rate risk).*
*A company generally enters into an FRA with a bank. An FRA is an agreement about an interest rate however, **not** an agreement to borrow funds.*

The FRA interest charge is calculated as the interest on an imaginary sum to be borrowed on a date in the future. This imaginary sum will generally be the amount the company expects to borrow on this future date. However the actual amount borrowed may differ from the imaginary sum.

There are two issues relating to timing:

- The date in the future when the FRA starts
- The period for which the FRA lasts

The interest is only calculated for the period for which the FRA lasts. If an FRA begins in four months' time and lasts for six months after that date, interest is calculated for those six months (months 4-10).

At the start of the period of the FRA (in four months' time), the bank will compare:

- Interest payable under the FRA
- Interest that would be payable on the imaginary sum if the charge was based on actual (market) interest rates

Two possibilities arise:
• If the interest under the FRA is greater than the interest payable based on actual rates, the **company pays the bank** the difference
• If the interest under the FRA is less than the interest payable based on actual rates, the **bank pays the company** the difference

If then interest rates rise and a company's interest cost increases, it can set off against its actual interest cost the receipt from the bank under the FRA, effectively fixing its net interest cost. The higher the actual interest rates that the company has to pay, the higher the amount that it will receive in compensation from the bank.

We will now take a look at a Section B question from June 2015 which examined the FRA.

June 2015 Section B Question 1(b)

> (b) Briefly explain the nature of a forward rate agreement and discuss how a company can use a forward rate agreement to manage interest rate risk. (5 marks)

This question tests your ability to explain what an FRA is and what it does. The question is for 5 marks so a one-line definition won't be enough.

A forward rate agreement (FRA) can fix the borrowing rate on a sum of money for an agreed period starting on an agreed future date.

The definition in the first line contains the most important elements – the interest rate is fixed, the starting date and time period.

A company can use an FRA to manage interest rate risk because the FRA fixes the future borrowing rate for an agreed period, and hence fixes the company's future borrowing cost.

This expands the definition by stating the purpose of the FRA.

If the future interest rate paid by the company turns out to be higher than the borrowing rate in the FRA, the bank will compensate the company with the difference between the two rates applied to the agreed sum for the agreed period. If the future interest rate paid by the company turns out to be less than the borrowing rate in the FRA, the opposite occurs and the company compensates the bank. The net effect is that the company is locked into the borrowing rate specified in the FRA.

This answers the second part of the requirement; you need to give details about how the FRA works.

Because the company is locked into the FRA borrowing rate, the FRA does not allow the company to benefit from favourable interest rate movements.

The answer mentions this as a key feature of an FRA – the company is committed to a rate. This may be a drawback if the market rate falls.

The bank which is a party to the FRA does not need to be the same bank which offers the funds to be borrower.
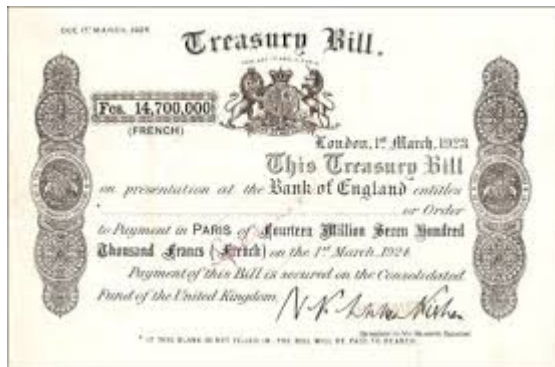
This is less important, but emphasises that the actual borrowing and FRA are separate arrangements.

Money markets

Money markets are markets where short-term:

• Borrowing
• Lending
• Trading

takes place.

Money market instruments are financial 'products' that are traded on the money markets.

Money market deposits relate to lending/borrowing. They are short-term loans between banks and other institutions.

*A **certificate of deposit** is a certificate that states that money has been deposited with a bank for a specified period of time. This period is short, perhaps a few months. The holder of the certificate has a right to receive interest from the bank.*
Some certificates of deposit can be sold on the certificate of deposit market. In return for a cash sum, the first holder of the certificate transfers it to a new owner. The new owner then has the right to receive interest and the amount originally deposited at the end of the period.

*Governments can borrow money by issuing **treasury bills** to investors. The price that the buyer of the treasury bill pays to the government is effectively the sum of money that the buyer is lending to the government. In return the buyer has the right to receive the amount stated on the bill at the end of its life.*

Amount stated on bill > Purchase price

The amount stated on the bill will be greater than the amount the buyer pays to the government. The buyer will receive the difference between these two amounts if the buyer holds the treasury bill throughout its life. This difference is the buyer's income from the bill.

As with certificates of deposit, a buyer doesn't have to hold on to a treasury bill throughout its life. The bill can be traded. The amount shown on the bill will again be greater than the selling price on the Treasury bill market.

In the next section we look at how some of these terms were examined in Section A of the June 2015 exam.

June 2015 Section A Question 12

12 Which of the following statements are correct?

(1) A certificate of deposit is an example of a money market instrument
(2) Money market deposits are short-term loans between organisations such as banks
(3) Treasury bills are bought and sold on a discount basis

A 1 and 2 only
B 1 and 3 only
C 2 and 3 only
D 1, 2 and 3

√ (1) A certificate of deposit is an example of a money market instrument

> *This is true because:*
>
> - *Certificates of deposit can be traded (are negotiable)*
> - *The certificate of deposit market is a money market as certificates of deposit have short lives*

√ (2) Money market deposits are short-term loans between organisations such as banks

> *This is true because money markets cover the short-term. It is also true as money markets provide opportunities for lending or borrowing as well as trading*

√ (3) Treasury bills are bought and sold on a discount basis

> *This is true as treasury bills can be traded – the original purchaser does not have to hold the bill through all its life.*
>
> *'.. on a discount basis' means that the trading price is less than the amount shown on the bill, which is true*

A 1 and 2 only

B 1 and 3 only

C 2 and 3 only

D 1, 2 and 3

> *All statements are correct.*

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Company valuation

Earnings and dividends

Earnings is another name for profit after tax.

The **post-tax earnings/profits** figure is the amount of earnings after costs and tax have been deducted.

Earnings yield compares earnings with the market value of shares. It is earnings expressed as a % of market value.

Dividends are cash amounts paid to shareholders by companies out of earnings.

Dividend payout ratio is the % of earnings that is paid to shareholders as dividends.

Value of shares

Nominal value of a share is the value shown on the share certificate. Nominal value should only be used to value shares if other information, such as assets, earnings or cash flows, is not available.

Market capitalisation (stock market value) relates to companies whose shares are listed on a stock exchange.

Market capitalisation = Market price per share x Number of ordinary shares

Equity market value is what the stock market value would be if it was determined by an accepted method of share valuation. However the actual market value of shares may not be the same as the value calculated by any of the generally accepted methods of share valuation, due to the stock market taking other factors into account.
Cost of equity is a measure in % of the minimum return that shareholders expect the company to make.

Valuation methods

The **earnings yield method** involves using the other information in an earnings yield calculation to calculate what the equity market value should be. You need to know:

- Earnings yield
- Earnings

There are two ways you can be given information about earnings:

- The earnings figure is stated in the question
- You have to calculate Earnings as Earnings per share x Number of shares

Equity market value = Earnings/Earnings yield

The **dividend growth method** uses the amount that a company expects to pay as dividends in the future as the basis of valuing its shares, on the grounds shareholders value shares because they generate dividend income.

Equity market value = Total dividends for this year x (1 + Dividend growth rate)/(Cost of equity – Dividend growth rate)

Or

$D_0 (1 + g)/(k_e – g)$

The figure on top of the equation represents next year's expected dividends. If you are given that figure, you don't need to know what this year's dividends are.

The question may give you

- The dividend growth rate
- Information about dividends over the last few years and ask you to calculate the growth rate on the basis that the most recent growth rate will continue

The higher the growth rate, the higher the figure on top of the valuation and the lower the figure on the bottom, both of which will mean that the equity market value is higher.

You will be given the cost of equity. Using the cost of equity relates the valuation to the return required by shareholders.

Section B in June 2015 examined this area of the syllabus in some detail – let's take a look at this next.

June 2015 Section B Question 2

Chad Co is a stock-market-listed company which has managed to increase earnings over the last year. As a result, the board of directors has increased the dividend payout ratio from 40·0% for the year to March 2014 to 41·4% for the year to March 2015. Chad Co has a cost of equity of 12·5%. The following information is also available:

Year to March	2014	2015
	$000	$000
Earnings	13,200	13,840
Ordinary shares	8,000	8,000

Ordinary shares – assume this is the nominal value – you'll be told if they're not

The nominal value of the ordinary shares of Chad Co is $0·50 per share. Listed companies similar to Chad Co have an earnings yield of 8·2%.

You're not told the number of shares but you can use the total nominal value and the nominal value per share to calculate the total number of shares if you need to.

Required:
(a) Calculate the equity market value of Chad Co using the dividend growth model. (3 marks)

You need to know what the dividends are for 2014 and 2015 to calculate the dividend growth rate. As you're not told them, you'll need to use the dividend payout ratio and earnings figures to calculate them.

(b) Calculate the equity market value of Chad Co using the earnings yield method. (2 marks)

You're given an earnings yield figure in the question, although it is for similar listed companies, not for Chad Co.

(c) Discuss the relative merits of the dividend growth model and the earnings yield method as a way of valuing Chad Co. (5 marks)

(10 marks)

This phase implies that you will need to make a point-by-point comparison of the two methods rather than talking about one method and then talking about the other.

Answer

(a)As the payout ratio has increased from 40·0% in the year to March 2014 to 41·4% in the year to March 2015, the total dividend has increased from $5,280,000 (13,200,000 x 0·4) for the year to March 2014 to $5,729,760 (13,840,000 x 0·414) for the year to March 2015.

The first stage is to find out the dividends for 2014 and 2015. Dividends = Earnings x Dividend payout ratio

This represents dividend growth of 8·52% (5,729,760/5,280,000).

Then find the growth rate by comparing the 2014 and 2015 dividends.

Provided the future dividend growth rate is expected to be similar to the historic dividend growth rate, the calculated dividend growth rate of 8·52% can be used in the dividend growth model.

You have to assume it is, as we only have dividend information for the last two years

The equity market value using the dividend growth model is therefore:

You can now use the dividend growth equation as you have:

This year's dividend d_0 $5,729,760

(5,729,760 x 1·0852)/(0·125 – 0·0852)

= $156,229,537 or $156·2 million.

 (b) Equity market value using the earnings yield approach:

Rearranging the Earnings yield equation Market value = Earnings/Earnings yield

You have Earnings $13,200,000

Earnings/earnings yield = 13,840,000/0·082 = $168,780,488 or $168·8 million

(c) Cash-flow valuation models tend to be preferred to profit-based valuation models and so the dividend growth model (DGM) could be preferred to the earnings yield method (EYM), as the DGM uses cash, while the EYM uses profit.

The requirement suggests that you should focus on the differences between the two methods. One difference is the base figures used: dividends, a cash amount, vs earnings, a profit figure.

The DGM has used information specific to Chad Co, whereas the earnings yield method has used an average earnings yield relating to companies which are similar to Chad Co. The DGM valuation is therefore likely to be more relevant to Chad Co than the EYM valuation, as Chad Co is likely to be different from the average company in its business area.

You know the dividends figures are relevant to Chad, whereas the other companies' earnings yield figure is an average. Chad may differ from the average.

The two valuation methods relate to different valuation purposes in an acquisition context. The dividend growth model values a minority shareholding in a target company, while the earnings yield valuation gives a value from the perspective of the acquirer, provided the earnings yield used is appropriate.

The dividend valuation model is used for small shareholdings because dividends are what small shareholders receive and small shareholders have no power over earnings. However an acquirer will take control of a company and be able to decide for its own purposes how much earnings to pay out as dividends.

Both the DGM and the EYM assume that relevant valuation variables, such as the dividend growth rate, the cost of equity and the earnings yield, will remain constant in the future in perpetuity. This is very unlikely to be true and reduces the usefulness of the two valuation methods.

It's fine to include something that is relevant to both methods, that historical data may not be a reliable guide to the future.

Exchange rates

Spot exchange rate is the rate at which you exchange one currency for another. If you are going abroad, you will need to make payments in the currency of the country where you are going. If you are coming back from a foreign country, you will have foreign currency that you want to exchange for your home currency.

Exchange rates are quoted as X units of one currency to one unit of the other currency. If you possess a currency (p) and you want another currency (w), to find out how much of the currency you want you will obtain:

- If the rate is quoted as w1 = pX, **divide** the amount of currency p that you have by X to see how much of currency w you will obtain
- If the rate is quoted as p1 = wX, **multiply** the amount of currency p that you have by X to see how much of currency w you will obtain

Forward rate is the exchange rate available **today** that is guaranteed for an exchange of currencies that takes place **in the future.** A financial institution will offer a three-month forward rate today that fixes the rate at which currencies are exchanged in an exchange of currencies in three months' time.

- *Exchange rate risk* is the risk that future exchange rate changes will affect the value in your own currency of amounts that you receive or pay in a foreign currency. For example, assume that the foreign currency is the F$ and the home currency is the H£:
- *If the current spot exchange rate is F$2 = H£1 and you have a receipt today of F$100,000, the value in home currency = F$100,000/2 = H£50,000*
- *If you have the same receipt from another customer in six months' time and the exchange rate is F$2.5 = H£1, the value in home currency = F$100,000/2.5 = H£40,000*

Forward market hedge means making an agreement to exchange different currencies in X months' time at the X months' forward rate that is available today. Knowing that this rate is certain means that the company knows for certain how much of its own currency it will receive or pay, so it removes exchange rate risk.

Money market hedge is investing or borrowing in the money markets in order to create a hedge that is equivalent to the forward market hedge. The two methods have very similar outcomes because the forward rates that are used in forward market hedges are determined by the interest rates available in the money markets.

The method of money market hedging that you use depends on whether you are hedging a foreign currency receipt or a foreign currency payment.

If you are hedging a foreign currency payment, you will need to have that amount of foreign currency available.

- **Invest foreign currency** now to ensure that you will have enough available to meet the payment. The amount you invest will be less than the payment, because you will add the interest you will receive for the period of investment
- You therefore need funds now to make the foreign currency investment
- **Borrow home currency** now to give you the funds to make the foreign currency investment. Convert the home currency you've borrowed to the foreign currency at today's spot exchange rate
- The equivalent payment in the home currency = Home currency borrowed + Interest on borrowing. You assume you repay the borrowing when the foreign currency payment is made

If you are hedging a foreign currency receipt, you will have that foreign currency available at a future date

- **Borrow foreign currency** now, as you will have the foreign currency receipt available in future to repay the borrowing. The amount you borrow will be less than the receipt, because you will take into account the interest you will pay for the period of borrowing.
- You therefore have surplus foreign currency now.
- Convert the foreign currency to home currency at today's spot rate and **invest home currency**.
- The equivalent receipt in the home currency = Home currency invested + Interest on the investment. You assume the investment finishes when the foreign currency receipt is received.

Money market and forward market hedges were examined in June 2015 – we will look at the specific question next.

June 2015 Section B Question 1(a)

Rose Co expects to receive€750,000 from a credit customer in the European Union	*Foreign currency € receipt, so € borrowing which € receipt will repay, translated into Home currency $ investment.*

in six months' time.	*For money market hedge, need to adjust for six months interest.*

The spot exchange rate is €2·349 per $1 and the six-month forward rate is €2·412 per $1. The following commercial interest rates are available to Rose Co:	*Need this to calculate the forward market hedge*

	Deposit rate	Borrow rate
Euros	4% per year	8.0% per year
Dollars	2% per year	3.5% per year

You're normally told the deposit and borrow rate in both currencies and have to choose the right ones, here € borrow and $ deposit.

Rose Co does not have any surplus cash to use in hedging the future euro receipt.	*So it will have to borrow €.*

Required:

Evaluate whether a money market hedge or a forward market hedge would be preferred on financial grounds by Rose Co. (5 marks)

Answer

Forward market hedge: The dollar value of a forward market hedge in six months' time can be calculated:

Future value = €750,000/2·412 = $310,945

You will have €, want $, rate is €2.412 = $1, therefore divide € by 2.412 to obtain $ that you want.

Money market hedge: Rose Co is expecting a euro receipt in six months' time and it can hedge this receipt in the money markets by borrowing euros to create a euro liability.

These euros can be converted into dollars at spot and then placed on deposit for six months.

Need to explain briefly how hedge will work.

Euro borrowing rate for 6 months = 8·0/2 = 4%

Dollar deposit rate for 6 months = 2·0/2 = 1%

> *Divide rate per year by 2 to obtain 6 months' rate.*

Euros to be borrowed now = €750,000/1·04 = €721,154

> *Amount borrowed = Future receipt/(1 + interest rate), less than future receipt, because you have to pay interest on amount borrowed. Growth rate g 8.52%*
>
> *Cost of equity 12.5%*

Dollar value of these euros at spot = €721,154/2·349 = $307,005

> *Spot exchange rate given in question. Have €, want $, rate is €2.349 = $1, therefore divide € by 2.349 to obtain $ that you want.   Earnings yield 8.2%*

Future value of dollar deposit = $307,005 x 1·01 = $310,075

> *Future value = $ receipt today x (1 + interest rate)*

The forward market hedge would be better by 310,945 − 310,075 = $870 and would therefore be preferred on financial grounds by Rose Co.

> *Purely financial comparison is fine here. Difference will not be large.*