Advanced Financial Management
Bachelors of Business (Specialized in Finance) – Study Notes & Tutorial Questions
Chapter 3: Cost of Capital
INTRODUCTION

Cost of capital is an integral part of investment decision as it is used to measure the worth of investment proposal provided by the business concern. It is used as a discount rate in determining the present value of future cash flows associated with capital projects. Cost of capital is also called as cut-off rate, target rate, hurdle rate and required rate of return.

When the firms are using different sources of finance, the finance manager must take careful decision with regard to the cost of capital; because it is closely associated with the value of the firm and the earning capacity of the firm.

Meaning of Cost of Capital

Cost of capital is the rate of return that a firm must earn on its project investments to maintain its market value and attract funds. Cost of capital is the required rate of return on its investments which belongs to equity, debt and retained earnings. If a firm fails to earn return at the expected rate, the market value of the shares will fall and it will result in the reduction of overall wealth of the shareholders.

Definitions

The following important definitions are commonly used to understand the meaning and concept of the cost of capital.

According to the definition of John J. Hampton “Cost of capital is the rate of return the firm required from investment in order to increase the value of the firm in the market place”.

According to the definition of Solomon Ezra, “Cost of capital is the minimum required rate of earnings or the cut-off rate of capital expenditure”.

According to the definition of James C. Van Horne, Cost of capital is “A cut-off rate for the allocation of capital to investment of projects. It is the rate of return on a project that will leave unchanged the market price of the stock”.


According to the definition of William and Donaldson, “Cost of capital may be defined as the rate that must be earned on the net proceeds to provide the cost elements of the burden at the time they are due”.

Cost of capital is the minimum rate of return that must be obtained by the company from its investments. It is for the purpose of guaranteeing the required rate of return for the bond holders and the shareholders of the company. In other words, cost of capital holds the role as the main liaison between the decisions of long-term investment by the company with maximising the shareholders' wealth. It is very important to ascertain whether the investment proposal will increase or decrease the share price or the value of the company. If the risk is constant, a project with a higher rate of return than the cost of capital will increase the value of the company while a project with a lower rate of return than the cost of capital will decrease the value of the company.

The rate of return required by investors is defined as the minimum rate of return required to attract the interest of investors to buy or hold a security. The rate of return is the return from the investment that pays the cost of capital and is also an incentive to attract investors.

There are two factors that differentiate between the rate of return with the cost of capital, which are taxation and the types of transactions involved. When a company borrows funds for the purpose of buying assets, the interest expenses is deducted from the earnings before tax. This means that the cost of debt of the company will reduce. The second factor that differentiates the cost of capital with the required rate of return is the cost of transaction involved when the company increases its funds by issuing securities. The cost of this transaction is known as the floatation cost and this cost increases the company overall costs.
Financing Policy and Cost of Capital

The financing policy of a company refers to the policy that has been specified by the management in the financing of investments. In this topic, we will assume that the company has a preset financial policy. The combination of financing that is often used comprised of debts and equity.

The cost of capital, which is the combined cost of all the company's financing resources (debt and equity) is known as the weighted average cost of capital. It is the average cost after tax for each capital resources that is used by the company to finance its project. Weight refers to the percentage of usage for each resource from the total overall financing. Most companies will make an effort to maintain the optimal financing combination of debt and equity or better known as the target capital structure.

Assumption of Cost of Capital

Cost of capital is based on certain assumptions which are closely associated while calculating and measuring the cost of capital. It is to be considered that there are three basic concepts:

1. It is not a cost as such. It is merely a hurdle rate.
2. It is the minimum rate of return.
3. It consists of three important risks such as zero risk level, business risk and financial risk.

Cost of capital can be measured with the help of the following equation.

\[ K = r_j + b + f. \]

Where,

- **K** = Cost of capital.
- **r_j** = The riskless cost of the particular type of finance.
- **b** = The business risk premium.
- **f** = The financial risk premium.
CLASSIFICATION OF COST OF CAPITAL

Cost of capital may be classified into the following types on the basis of nature and usage:

- Explicit and Implicit Cost.
- Average and Marginal Cost.
- Historical and Future Cost.
- Specific and Combined Cost.

Explicit and Implicit Cost

The cost of capital may be explicit or implicit cost on the basis of the computation of cost of capital. Explicit cost is the rate that the firm pays to procure financing. This may be calculated with the help of the following equation;

\[
Cl_o = \frac{\sum_{i=1}^{n} CO_i}{\sum_{i=1}^{n} (t + C)^i}
\]

Where,
- \(Cl_o\) = initial cash inflow
- \(C\) = outflow in the period concerned
- \(N\) = duration for which the funds are provided
- \(T\) = tax rate

Implicit cost is the rate of return associated with the best investment opportunity for the firm and its shareholders that will be forgone if the projects presently under consideration by the firm were accepted.

Average and Marginal Cost

Average cost of capital is the weighted average cost of each component of capital employed by the company. It considers weighted average cost of all kinds of financing such as equity, debt, retained earnings etc.

Marginal cost is the weighted average cost of new finance raised by the company. It is the additional cost of capital when the company goes for further rising of finance.
Chapter 3: Cost of Capital

Historical and Future Cost

Historical cost is the cost which has already been incurred for financing a particular project. It is based on the actual cost incurred in the previous project.

Future cost is the expected cost of financing in the proposed project. Expected cost is calculated on the basis of previous experience.

Specific and Combine Cost

The cost of each sources of capital such as equity, debt, retained earnings and loans is called as specific cost of capital. It is very useful to determine the each and every specific source of capital.

The composite or combined cost of capital is the combination of all sources of capital. It is also called as overall cost of capital. It is used to understand the total cost associated with the total finance of the firm.

IMPORTANCE OF COST OF CAPITAL

Computation of cost of capital is a very important part of the financial management to decide the capital structure of the business concern.

Importance to Capital Budgeting Decision

Capital budget decision largely depends on the cost of capital of each source. According to net present value method, present value of cash inflow must be more than the present value of cash outflow. Hence, cost of capital is used to capital budgeting decision.

Importance to Structure Decision

Capital structure is the mix or proportion of the different kinds of long term securities. A firm uses particular type of sources if the cost of capital is suitable. Hence, cost of capital helps to take decision regarding structure.
Importance to Evolution of Financial Performance

Cost of capital is one of the important determining which affects the capital budgeting, capital structure and value of the firm. Hence, it helps to evaluate the financial performance of the firm.

Importance to Other Financial Decisions

Apart from the above points, cost of capital is also used in some other areas such as, market value of share, earning capacity of securities etc. hence; it plays a major part in the financial management.

VALUATION

Valuation on an asset is a subjective matter. Every individual have different perceptions on the value of specific asset. The valuation term is also used in different contexts. There are individuals that value assets by referring to the company’s balance sheet. The value obtained with this method is known as book value. However, if valuation is made based on the price of the same asset found in the market, then the value obtained by this method is known as market value.

When a business is in the process of liquidation and most of the assets will be auctioned by offering a lower price to ensure that it can be sold, and then this sales price will be known as liquidation value. Assets can also be valued based on the benefit that can be obtained from the assets. This value is called the intrinsic value or economic value.

Definition of Value

There are several definitions of value that is used in different contexts.

(a) Book Value

Book value is the value of an asset as stated in the balance sheet of the company. It is also known as historical value. For example, you purchase a business premise two years ago at a price of MVR 100,000. The book value is the actual value that was paid for the asset at the time it was bought, that is MVR 100,000. This value may not be the same with the current market value.
Assets such as machines and vehicles will have depreciation in value and the book value is the price of the asset at the time it was purchased minus its accumulated depreciation.

(b) Liquidation Value

Liquidation value is the value that will be obtained when an asset is sold separately and not as part of going concern. For example, if the company no longer operates and needs to be liquidated, then, the assets will be sold separately and the sales price is the asset’s liquidation value.

(c) Market Value

Market value is the value of assets available in the market as determined by forces of demand and supply in the market. For example, the market value of ordinary shares that is found in Bursa Malaysia is the sale and purchase value that is agreed among the investors through an intermediary such as brokers.

(d) Intrinsic Value

Intrinsic value is also known as economic value and is the sum of all the potential cash flows that will be obtained from the asset after discounting at the rate of return required by the investors. The amount obtained is regarded as the fair value based on the amount, time and risk level of all the expected cash flow. This value is normally compared with the market value. If the intrinsic value is higher than market value, then in the opinion of the investors, the asset was undervalued. However, if the intrinsic value is lower than market value, it will be regarded as overvalued. If the market is efficient, the intrinsic value and the market value will be the same as the value of the securities traded will always depict all general information available.

Valuation Process

The valuation process is a process to determine the value of an asset at a specific period by using the technique of time value of money. As has been stated, the intrinsic value of an asset is sum of expected cash flows that discounted at a rate of return required by the investors. There are three main factors that influence the value of an asset, these are:
(a) Total Cash Flow (Return)

The value of an asset depends on the total cash flow that is expected. To obtain this return value it does not only involve a yearly cash flow but also a single cash flow for a specific period. For example, you as an investor, expect that you will obtain a dividend of MVR 0.30 per share every year for a period of five years if you invest in the shares of Antah Company.

(b) Timing

To estimate cash flow, you must know the timing for each cash flow. For example, you will make an investment after you expect that you will obtain MVR 2,000 in year 1, MVR 4,000 in year 2 and MVR 5,000 in year 3.

(c) Required Rate of Return

The risk level can have direct effect on the value. Generally the higher the risk of the cash flows, the lower the value. According to the CAPM model, the higher the risk that is measured by beta (β), the bigger the return (k). The higher the risk means the bigger the rate of return and the lower the risk means the smaller the rate of return. The determination of the rate of return required by investors take into consideration the investors’ attitude towards risk and the investors’ perception on the level of risk for the asset.

<table>
<thead>
<tr>
<th>Characteristics of Assets</th>
<th>Investor's Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cash flow amount expected</td>
<td>• Investors' valuation of the risk on cash flows of the asset</td>
</tr>
<tr>
<td>• Timing of cash flow expected</td>
<td>• The willingness of investors to accept risks</td>
</tr>
<tr>
<td>• Risk of cash flow expected</td>
<td></td>
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</tbody>
</table>

Rate of return required by investors

Asset Value = Present value of expected cash flows

Diagram: Basic factors in determining the value of assets
**General rules on cash flow and valuation:**

- From the aspect of amount - the higher the amount of cash flow, the better.
- From the aspect of timing - the sooner it is received, the better.
- From the aspect of risk - the lower the level of risk, the better.

**Basic Model of Valuation**

The valuation process is the process in giving value to an asset by calculating the present value of all the expected cash flows from the asset. It uses the rate of return required by the investors as the discount rate.

There are three basic steps in the valuation process:

(a) Estimating the amount and timing of cash flows that would be received (CF_t).

(b) Determining the rate of return required by investors (k).

(c) Calculating the intrinsic value of the assets that is, the present value of all the cash flows that will be obtained from asset (V).

In the earlier topic you have learnt, that the present value is obtained from the following formula:

\[
P_{n-1} = \frac{F_n}{(1+i)^n}
\]

by replacing:

- \(P_{n-1}\) to \(V_{n-1}\);
- \(F_n\) to \(CF_t\) and
- \(i\) to \(k\);

we obtain this formula:

\[
V_{t=1} = \frac{CF_t}{(1+k)^t}
\]

If the valuation period is more than a year (\(t > 1\)), the formula above can be expanded as follows:
Formula measures the present value for future cash flow and it is the basis for the valuation process. It is very important as all the formulas in this unit are based on this equation.

**BONDS**

Bonds are long-term guarantee notes issued by borrowers. The bond holders will receive interest at a fixed rate for a period that has been determined. On the maturity date, the bond holder will receive the interest and principal amount.

The payment of fixed interest on each period is the basic concept of annuity that you have learned in financial management module.

Below figure shows the concept of bonds in graphics. Based on the example in below, these bonds have a maturity period of 5 years. It pays interest of MVR 100 each year and has a face value of MVR 1,000.

![Concept of bond in graphics](image-url)
Characteristics of Bonds

Bonds are fixed claims on the company and failure to fulfil this claim by issuers can lead to firm’s bankruptcy.

(a) Claims on Assets and Earnings

Bondholders have priority in claims on the earnings and company’s assets compared to preference shareholders and ordinary shareholders. If the company fails to settle the interest, the bondholders can classify the issuing company as insolvent or incapable of paying debts and force the company into bankruptcy.

(b) Par Value

Par value or face value is the value stated on the bond document. It is the amount that will be paid back to the bondholders on maturity date. Usually, the bond’s par value in the United States of America is USD1,000 per unit.

(c) Coupon Rate

Coupon rate refers to the percentage of par value that will be paid to the bondholders (investors) as interest based on the frequency that has been specified. This rate is fixed throughout the lifespan of the bond and the amount of interest payable is the same for each period.

(d) Indenture

Indenture is a legal contract between the trustees who represents the bond holders with the company that issued the bond. Indenture specifies the terms and conditions related to the issuance of the bonds.

Rating of Bonds

The issuance of bonds is given rating based on the potential risks that are related to the said bonds. Ratings are valuation or grading done by specific agencies to determine the quality of the bond in the aspect of default. If the rating of a bond is high, this means that the possibility of default is low.
Ratings are done via the financial ratio analysis and cash flow analysis by looking at the capability of the company to fulfil its specific obligations in bonds. Besides that, other factors will also provide positive effects on the ratings of bonds. For example, the level of funding with equity, operations that are profitable, low level of variables in previous returns and the size of the company.

Valuation given on a bond will influence the returns required by the investors. The lower the ratings of the bond, the higher the rate of return that is required for the bond and vice versa. Therefore, the finance manager must be aware of the ratings given as it will have an effect on the rate of return that must be paid to the investors.

**Types of Bonds**

Bond is the general term for debt security. It is issued in various types with different characteristics. Therefore, there are several names for bonds. Among them are:

(a) *Mortgage Bonds*

Mortgage bond is a secured bond backed by tangible assets such as buildings and land. Normally, the secured value imposed is higher than the value of the bond issued. If the company that issued the bond is unable to repay its loan on the maturity date, the secured assets will be sold to repay the loan to the investors via a trust fund.

(b) *Debentures*

Debentures refer to the long-term loans that are not secured with assets but depend on the ability of the company that issued the bonds to obtain earnings. This type of bond has a higher risk to the investors compared to secured bonds. Therefore, the rate of return that is required by the investors is also higher. This type of bond provides an advantage to the issuing company as no property is charged. This enables the company that issued the bonds to maintain its opportunity to borrow additional loans in the future.
(c) **High Yield Bonds**

High yield bonds refer to the bonds that pay interest only if the issuing company has surplus earnings. It is normally issued via the restructuring of a company that fails to repay its debts. Upon the date of maturity, the issuers still have to pay the face value of the said bonds.

(d) **Convertible Bonds**

Convertible bonds refer to the bonds that can be converted by its holders to ordinary shares at the price and conversion ratio that has been determined by the issuing company when the bonds were issued. With this, the investors are given the right to convert its status from creditor to owner when the right of conversion is exercised.

(e) **Zero Coupon Bonds**

Zero coupon bonds are bonds that do not pay interest and were issued at a price lower than the par value. The bond holders will receive returns as a result of the price differences during purchase compared to its face value that will be paid at the date of maturity.

(f) **Euro Bonds**

Euro bonds are bonds that were initially issued in the European countries using the currency of the United States of America (USD) by foreign companies. Now, any bonds that are issued in a country using a currency different from its own are known as euro bonds. For example, bonds issued in Europe or Asia by American companies but the interest and principal are payable in the value of the American dollar.

(g) **Foreign Currency Bonds**

Unlike euro bonds, foreign currency bonds are issued in the financial market of a country using its own country’s currency by debtors or issuing company of a foreign country.
**VALUATION OF BONDS**

Valuation Process, we had discussed the three main factors that influence the value of assets, which are the total cash flow, timing and required rate of return. In the valuation of bonds, three important elements that influence the valuation are:

(a) *Amount and Timing of Cash Flow that Will be Received by Investors*

This refers to the payment of annual interest and face value or principal amount.

(b) *Maturity Date of Bond*

This refers to the date that the bond issuer must pay the face value of the bond to the bondholders.

(c) *Rate of Return Required by Investors*

This rate of return takes into consideration the valuation of risk levels on cash flow and the investors’ attitude toward risks taking. This is also a form of return to the investors due to the opportunity cost faced by the investors.

![Diagram of bond valuation timeline]

**Basic Valuation of Bonds**

Bond value is the total present value of payments that must be paid by the issuer to the bondholders from now until maturity period. Basic Model of Valuation, we had learned that the basic formula for valuation of assets is:
We also know that bond has a maturity date and it also pays interest at a rate that is constant for a fixed period. Therefore, the formula for valuation of bonds is obtained by modifying the formula above to be as follows:

\[
V_b = \frac{\text{CF}_1}{(1 + k)^1} + \frac{\text{CF}_2}{(1 + k)^2} + ... + \frac{\text{CF}_n}{(1 + k)^n} \\
= \sum_{t=1}^{n} \frac{\text{CF}_t}{(1 + k)^t}
\]

As bond pays interest at a fixed rate for a fixed period, we can also use the schedule for present value interest factor of annuity (PVIFA) to calculate the value of bonds. The formula for valuation of bonds using the PVIFA schedule is obtained by modifying the basic formula of present value annuity. The following is the formula for valuation of bonds using the PVIFA schedule.

\[
V_b = \frac{i}{(1 + k_b)^1} + \frac{i}{(1 + k_b)^2} + ... + \frac{i}{(1 + k_b)^n} + \frac{M}{(1 + k_b)^n} \\
\text{Or} \\
V_b = \sum_{t=1}^{n} \frac{I}{(1 + k_b)^t} + \frac{M}{(1 + k_b)^n}
\]

\[
V_b = I \times (\text{PVIFA}_{k_b,n}) + M \times (\text{PVIF}_{k_b,n})
\]

Where:
- \(V_b\) = Intrinsic value or present price of bond
- \(I\) = Coupon payment
- \(n\) = Period of bond till maturity
- \(k_b\) = Rate of return required for the bond
- \(M\) = Par value or face value of bond
- \(\text{PVIF}\) = Interest factor of present value
- \(\text{PVIFA}\) = Interest factor of present value annuity

**Value of Bonds and Required Rate of Return**

When the required rate of return is different from the bond’s coupon rate, the value of the bond will be different from the par value. The changes to the required returns are caused by:
✓ Changes in the economic situation that causes the cost of long-term funds to change as well; or
✓ Changes in company’s risks.

The increase in the long-term funds’ cost or risk will increase the required rate of return. Instead, the decrease in long-term funds’ cost or risk will reduce the required rate of return. There are three different situations that can be used to show the relationship between the required rate of return and the value of the bond.

**Payment of Interest Twice a Year**

The valuation process of bonds that pay interest twice a year is the same with the concept of calculating interest that is compounded more than once a year. The discussion on interest compounded more than once a year. The formula for interest compounded more than once a year is as follows:

\[
P_V = \frac{F_V}{(1+i/m)^{mn}}
\]

In the formula:
- \( P_V \) = Present value
- \( F_V \) = Future value
- \( i \) = Interest rate
- \( m \) = Frequency of compounding or discounting
- \( n \) = Period

To calculate the value of bonds that pay interest twice a year,
- Change the annual interest (\( i \)) to interest twice a year by dividing (\( i \)) with 2;
- Change the number of maturity period, \( n \), to every 6 months by multiplying \( n \) with \( 2 (n \times 2) \); and
- Change annual required rate of return, \( k_o \), to each half yearly by dividing \( k_o \) into 2 (\( k_o / 2 \)).

Therefore, the valuation formula for bonds with coupon payments of twice a year is:
YIELD TO MATURITY

Every individual that invest has a minimum expected rate of return from each investment. This is known as the required rate of return and is different for every investor. The finance manager will only be attracted to high rates of return. This is because the present price of bonds reflects the rate of return that is expected to be received by investors.

Yield to maturity or YTM is the rate or return that will be obtained by the investors if the bond is hold until maturity. This expected rate of return is also known as yield to maturity if the investors hold the bonds until its maturity period. Therefore, when we refer to bonds, the terms expected rate of return and yield to maturity are used interchangeably.

Yield to maturity is the discount rate that equals the present value for all interest payments and principal payment of bond with the present value of bond. It can be calculated using the basic formula for valuation of bonds

\[
V_b = \sum_{i=1}^{2n} \frac{I/2}{(1+k_b/2)^i} + \frac{M}{(1+k_b/2)^{2n}}
\]

or

\[
V_b = I \left( PVIFA_{k_b/2, 2n} \right) + M \left( PVIF_{k_b/2, 2n} \right)
\]

Where:

- \( I \) = Coupon rate x par value
- \( n \) = Period
- \( k_b \) = Required rate of return

This discount rate can also be calculated using the PVIF schedule by a method of trial and error. Through this trial and error method, different discount rates, \( k \), will be applied in the formula for valuation of bonds until the present value of the bond cash flow is similar to market value. If this rate is located between the rates found in the schedule, the interpolation method will be used to obtain the exact value.
Besides the interpolation method, you can also use the estimation method to calculate the rate of yield to maturity by using the following formula:

\[
YTM = \frac{i + \left( \frac{M - P_0}{n} \right)}{\frac{M + P_0}{2}}
\]

Where:
- \(i\) = Coupon rate
- \(M\) = Par value
- \(P_0\) = Market value of bond
- \(n\) = Number of years for bond until maturity

**RELATIONSHIP BETWEEN VALUE AND YIELD TO MATURITY**

When the required rate of return is different from the coupon interest rate, and it is assumed constant until the maturity period, the market value of bond will approach the par value when it is closer to the maturity period.

Figure below shows the movement of the bond value based on the calculation from Table. The required rates of return of 12%, 10% and 8% are assumed constant throughout the 10 years for bond maturity and the par value is assumed the same that is MVR 1,000.

- When the required rate of return is the same as the coupon rate of the bond, that is 10%, the value of bond and is remain constant or maturity period, that is MVR 1,000.
- When the required rate of return is 12%, value of the bond increases from MVR 887 to MVR 1,000 when time passes and approaches the maturity period.
- Finally, when the required rate of return is 8%, the premium value of the bond decreases from MVR 1,134.21 to MVR 1,000 on maturity period.

This shows that when the required rate of return is assumed constant until maturity, the value of the bond will reach par value of MVR 1,000 on maturity date.
Changes to Required Returns

As shown in Figure 4.5, the value of bonds has an inverse relationship with the changes to the required rate of return of an investor. Generally, the increase in the interest rate will cause a decrease in the value of bond. Instead, a decrease in the interest rate will cause an increase in the value of the bond. This shows that, the higher the rate of return required by an investor, the lower the value of the bond.

This is because the increase in interest rate will cause the bond holders to experience loss in market value, the bond investors will be exposed to the risk of interest rate.

Therefore, the bond holders are always aware of the increase in interest rate. The shorter the maturity period of the bond, the lower the response of market value on the changes to the required rate of return. In summary, a shorter maturity period will have lower interest rate risk compared to long-term bonds with the assumption that the coupon rate, par value and frequency of interest payment are the same.

Table 4.3 shows the value of the bond with different required rate of return and different maturity period (summary of examples 4.2 and 4.3).

- When the required rate of return decreased from 10% to 8%, the value of bond with a maturity period of 10 years will increase by MVR 134.21, meanwhile the value of bond with a period of maturity of 5 years will only increase by MVR 79.87.
• When the required rate of return increase from 10% to 12%, the value of the bond with a period of maturity of 10 years will decrease by MVR 113 meanwhile the value of the bond for 5 years will decrease by MVR 72.18.

<table>
<thead>
<tr>
<th>Required Rate of Return (%)</th>
<th>Value of Bond 10 Years (RM)</th>
<th>Value of Bond 5 Years (RM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1,134.21</td>
<td>1,079.87</td>
</tr>
<tr>
<td>10</td>
<td>1,000.00</td>
<td>1,000.00</td>
</tr>
<tr>
<td>12</td>
<td>887.00</td>
<td>927.82</td>
</tr>
</tbody>
</table>

Based on the table and explanation above, it is clear that the changes to interest rate has a bigger effect on the bonds with a longer maturity period compared to bonds that have shorter maturity period.

**ORDINARY SHARES**

Ordinary shares are securities that represent ownership in the company. Bond holders can be portrayed as the creditors, while ordinary shareholders are the actual owners of the company. The more ordinary shares held by an investor, the bigger its portion of ownership in the company. Ordinary shareholders are also known as equity owners.

Ordinary shares do not have maturity period; it will remain forever as long as the company is still in operation. It is the same from the aspect of dividend payment, it is unlimited. Before dividends are paid, it must be announced earlier by the company’s board of directors. If the company bankrupts, the ordinary shareholders, who are the owners of the company, cannot make any claims on the assets before the claims by the creditors (including bondholders) and preference shareholders are fulfilled.
Characteristics of Ordinary Shares

Before making valuation on ordinary shares, it is necessary for us to understand first the characteristics of ordinary shares.

(a) Claim on Earnings

As owners of the company, ordinary shareholders have rights on surplus earnings, after the interest for bondholders and dividends for preference shareholders have been paid. The earnings received, whether directly, which is in the form of cash dividends or indirectly, which is in the form of retained earnings. Retained earnings are the indirect earnings because the earnings obtained are not distributed to the ordinary shareholders but are used for reinvestment with the hope of increasing the value of the company.

Receiving surplus earnings has advantages and disadvantages to the ordinary shareholders. The advantage is that there is no limit to the earnings receivable. The disadvantage of receiving surplus earnings is that shareholders might not receive anything if all the earnings were used to fulfil the claims of creditors and preference shareholders. When the company experiences deterioration in earnings, the ordinary shareholders will have to bear the effects.

(b) Claims on Earnings and Assets

If liquidation occurs, the ordinary shareholders will be the last to claim the earnings and assets of the company after the claims of bond holders and preference shareholders.

(c) Voting Rights

Ordinary shareholders have rights to choose the board of directors of the company. Ordinary shares are the only securities that grant the rights to vote and the right to approve changes to the memorandum of incorporation to its holders. Voting is conducted at the company’s annual meeting. It can be done individually or via a proxy. Most voting is done by proxy. Proxy means giving the right to a third party to vote on behalf of the party who is unable to attend the annual general meeting of the company.
The voting procedures involve two methods, which are the majority voting and collective voting. Majority voting is the voting where each share owned grants one right to vote to the shareholder and each position in the board of directors will be voted separately. Therefore, the majority shareholders have the opportunity to select all the members of the board of directors.

Through collective voting, each share grants a voting right equivalent to the number of positions contested. Shareholders can choose to use all their rights to vote a particular candidate or divide it among several selected candidates. This method gives a chance to the minority shareholders to appoint members of the board of directors who will represent them.

**(d) Pre-emptive Rights**

Pre-emptive rights allows the shareholder to maintain the ownership in hand if the company intends to issue new shares. Certificates will be sent to the existing shareholders to purchase a predetermined number of shares at a specific price and time period. Shareholders have the choice to exercise those rights, leave it until the end of the period or sell them in the open market.

**(e) Limited Liability**

If liquidation of the company occurs, the liability of the ordinary shareholders is only limited to the total investments in the company.

“Say what is true, although it may be bitter and displeasing to people.”

- Prophet Muhammad (PBUH)
VALUATION OF ORDINARY SHARES

The same as how bonds are valued, the value of ordinary shares is also equivalent to the present value of all cash flow that will be received by shareholders. However, ordinary shareholders are not promised with fixed income or specific payment upon maturity period such as bonds and preference shares. Ordinary shareholders will receive returns in two forms, which are:

   a) dividends - profits that are distributed to shareholders; or
   b) capital gain - the difference between the selling price and the purchase price of shares.

Dividends receivable depend on the profit of the company and the decision of management to pay dividends or to retain earnings for the purpose of reinvestment. The amount of dividend receivable is also not the same; it depends on the company’s profit and the rate of growth.

In general, the growth of the company has direct implication on the dividends payable and the value of shares. The growth of the company can be achieved through various ways. For example, through loans, issuance of new shares or by merger with companies that are bigger and more solid. Normally, a company will experience growth by the using new funding such as the issuance of bonds and ordinary shares.

The growth of the company can also be achieved by internal growth; by retaining a portion or all of the company’s profit for the purpose of reinvestment. Retaining profit is a form of investment by the existing ordinary shareholders. To illustrate more clearly on the internal growth, assume that the return on equity of Meru Company is 18%. If the management decides to pay all the profits as dividends to the shareholders, this means that there will be no internal growth for the company. If the company retains all its profits, then the shareholders’ investments in the company will grow in the same amount of profit retained, which is 18%. If the company only retains 50% of its profits for investment purposes, then the growth of the company will also be half that is 9%. In general, this relationship can be concluded as follows:
Valuation of Ordinary Shares – One Holding

**Period**

In the previous topic, we had been informed that the value of ordinary shares is the same with the present value of all cash flows that will be received by the shareholders. For investors who hold ordinary shares for one period, for example one year, the value of the share is equivalent to the present value of the dividends receivable in the period of one year (D1) and the selling price of the shares at the end of the period (P1). This is because both the cash flows occur at the same time that is at the end of the period.

The process of valuation ordinary shares involves three steps:

- **Step 1**: Assume the cash flow that is expected to be received in the future, which is the amount of dividend and the selling price of the shares at the end of the period;
- **Step 2**: Estimate the cash flow required by investors by taking into consideration the risk of expected cash flow; and
- **Step 3**: Discount the dividend that is expected to be received and the price of shares at the end of the period at the present value with the rate of return required by the investors.
Valuation of Ordinary Shares – Multiple Holding

**Periods**

Ordinary shares do not have maturity period and is usually held for several years. Therefore, its valuation is more complex from what we have discussed in the previous topic. The expected cash flows will be different throughout the holding period. Dividends received throughout the holding period are also not fixed. This means that the cash flows are discounted for an uncertain period or until infinity.

If the holding period is more than one or infinity, a little modification to formula 4.2, the valuation model of ordinary share is as follows:

\[
V_{cs} = \frac{D_1}{(1 + k_{cs})} + \frac{D_2}{(1 + k_{cs})^2} + \ldots + \frac{D_n}{(1 + k_{cs})^n} + \frac{D_{\infty}}{(1 + k_{cs})^\infty} = \sum_{i=1}^{\infty} \frac{D_i}{(1 + k_{cs})^i}
\]

Dividends are a part of the company’s earnings. When the earnings of a company fluctuate throughout its period of operations, the risk will increase and this will then influence the price of the company’s shares. To reduce the risk assumed by investors, the company normally pays dividends based on the long-term growth of the company. The valuation model for ordinary shares above can be applied in three levels of growth, which are:
(a) Zero Growth

Zero growth means that dividends are not expected to experience any growth but at the rate of \( g = 0 \). This means that the dividends receivable in the future is the same with the dividends that were received the previous year that is \( D_1=D_2=\ldots=D_n \). Therefore, the value of ordinary shares experiencing zero growth can be stated as follows:

\[
V_{cs} = \frac{D_1}{1+k_o} + \frac{D_2}{(1+k_o)^2} + \ldots + \frac{D_n}{(1+k_o)^n}
\]

When \( D_1 = D_2 = \ldots = D_n \), this shows that the cash flow is perpetuity as the cash flow obtained is the same amount for an uncertain period.

With zero growth, the value of ordinary shares is the same with the present value of perpetuity for \( D_1 \). By using the basic formula of perpetuity as a guide, can be summarised as follows:

\[
V_{cs} = \frac{D_1}{k_o}
\]

(b) Constant Growth Rate

Although the model of zero growth can be applied to several companies, most of the companies will experience an increase in earnings and dividends from time to time. Some will expect to experience growth with fixed dividends or constant dividends. If the growth is constant, dividends that will be receivable in the following year (\( D_t \)) is equivalent to:

\[
D_t = D_{t-1} (1+g) \quad \text{or} \quad D_t = D_0 (1+g)^t
\]

Where:
- \( D_t \) = Dividend for period \( t \)
- \( D_{t-1} \) = Dividend that was paid in the previous year
- \( g \) = Dividend’s rate of growth

We can find the dividend for any given year.

\[
\begin{align*}
D_1 &= D_0 (1+g) \\
D_2 &= D_1 (1+g) \\
&= D_0 (1+g)(1+g) \\
&= D_0 (1+g)^2 \\
D_3 &= D_2 (1+g) \\
&= D_0 (1+g)^2 (1+g) \\
&= D_0 (1+g)^3 \\
D_4 &= D_3 (1+g) \\
&= D_0 (1+g)^3 (1+g) \\
&= D_0 (1+g)^4
\end{align*}
\]
By using the basic method to estimate the dividends in the future, we can obtain the present value of the shares \( V_{cs} \) by using formula 4.6.

Step 1: Find the cash flow that is expected to be received in the future (dividend);
Step 2: Calculate the present value for all dividend payments; and present value of dividends that are expected to be received in the future.

As the growth \( g \) is constant, equation 4.6 can be modified as follows:

\[
V_{cs} = \frac{D_0(1+g)}{(1+k_{cs})} + \frac{D_0(1+g)^2}{(1+k_{cs})^2} + \cdots + \frac{D_0(1+g)^t}{(1+k_{cs})^t}
\]

Subsequently, the equation above can be simplified to the following equation if the holding period is infinity:

\[
V_{cs} = \frac{D_1}{k_{cs} - g}
\]

Formula 4.12 is better known as the Gordon Model, named after Myron J. Gordon, the person who created and popularised the formula. Formula 4.12 is used to find the present value of ordinary shares that experience a constant rate of growth. In theory, the required rate of return \( k_{cs} \) must be bigger than the value of the rate of dividend growth \( g \). If the required rate of return is lower than the rate of dividend growth, you will obtain a negative dividend and the value of the shares cannot be determined. In a real situation, if the investor expects the dividend will increase at a higher rate, then the required rate of return will also be higher than the rate of dividend growth.

\( c \) Differential Dividend Growth

Companies expand according to the product lifecycle that is being transacted. Sometimes there are companies that will experience faster growth in the beginning compared to the overall economic situation. Then there is a possibility that it will grow parallel with the economic growth and finally, its growth will be slower than the economic growth.
Companies facing this kind of situation are known as companies with inconstant growth or fluctuating growth. Figure 4.6 shows the illustration of inconstant growth compared with constant growth and zero growth.

![Diagram showing inconstant growth](image)

Figure 4.6 shows the dividend for a company that experiences inconstant growth. Dividends are expected to increase by 25% for the first three years, after which, the growth rate is expected to fall to 6% a year for a rather long period. The value of shares for this company is the same with the present value of the dividends that are expected in the future, as shown in equation 4.6. It also involves three steps:

(i) Calculate the present value of dividends for the entire period of inconstant growth;

(ii) Calculate the share price at the end of the inconstant period of growth, which is at the point it changes to constant growth, next discount this price at present value; and

(iii) Add the present value obtained from step 1 and step 2 to obtain the intrinsic value, Vcs.

**Required Rate of Return for Ordinary Shares**

As explained, the expected rate of return for bonds is the return that is expected to be received by the bondholders on the investments. The expected rate of return for ordinary shares is the rate of return expected by ordinary shareholders on their investment. Finance managers use the expected rate of return for ordinary shares to evaluate the effect of ordinary shares towards the company’s new funding costs.
Chapter 3: Cost of Capital

The rate of return is calculated based on the value or price of shares and dividends that are received. The equation of share valuation can still be used to estimate the expected rate of return for ordinary shares. However, this equation must be modified as the value required is the required rate of return or the rate of return used to discount cash flow.

The expected rate of return is also shown for the three aspects of growth:

(a) Zero Growth

To find the expected rate of return for dividends that experience no growth, we can use the following formula.

\[ V_{cs} = \frac{D}{k_{cs}} \]

As we are looking for the value for the rate of return, the formula above can be modified as follows:

\[ k_{cs} = \frac{D}{V_{cs}} \]

(b) Constant Growth Rate

To find the expected rate of return for dividends at a constant growth rate, we can use the following formula.

\[ V_{cs} = \frac{D_1}{k_{cs} - g} \]

As we are looking for the value for the required rate of return, the formula above can be modified as follows:

\[ k_{cs} = \frac{D_1}{V_{cs}} + g \]

From the equation above, the required rate of return for ordinary shareholders is equivalent to the rate of return for dividend added with the growth factor. Even though the rate of growth \((g)\) is applied to the rate of growth for dividend of the company, assume that the value of shares is also expected to increase at the same rate. This is because \((g)\) represents the percentage of annual rate
of growth for the value of shares. In other words, the rate of return required by investors is determined by dividends received including capital gain, as reflected by the expected percentage rate of growth in the share price.

**PREFERENCE SHARES**

Preference shares are also known as hybrid securities as it has characteristics of bonds and ordinary shares. Table 4.4 lists down the similarities and differences between preference shares with ordinary shares and bonds.

**Table 4.4: Similarities and Differences of Preference Shares with Bonds and Ordinary Shares**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Bond</th>
<th>Preference Shares</th>
<th>Ordinary Shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividend</td>
<td>Bond holders receive interest at a fixed rate and period.</td>
<td>Payment of dividend is at a fixed rate and period.</td>
<td>Payment of dividend is unlimited but must be declared first by the board of directors of the company.</td>
</tr>
<tr>
<td>Claims on earnings and assets</td>
<td>Has priority claims on the earnings and assets compared to preference shares and ordinary shares.</td>
<td>Has priority claims on the earnings and assets compared to ordinary shares, but only after the claims of bonds had been settled.</td>
<td>If liquidation occurs, the ordinary share holders have the last claim on the earnings and assets after bond holders and preference shares.</td>
</tr>
<tr>
<td>Maturity period</td>
<td>Bonds have maturity period.</td>
<td>Preference shares do not have maturity period. Ownership remains as long as the company is in operation.</td>
<td>Ordinary shares do not have maturity period. Ownership remains as long as the company is in operation.</td>
</tr>
<tr>
<td>Voting rights</td>
<td>Bond holders do not have the right to vote the members of the board of directors.</td>
<td>Preference shareholders have voting rights to protect their interest.</td>
<td>Ordinary shareholders have voting rights as owners of the company.</td>
</tr>
</tbody>
</table>

**Characteristics of Preference Shares**

Before we discuss how preference shares are valuated, we must first understand the characteristics of preference shares.

*(a) Issuance of Several Classes of Preference Shares*
Normally, a company will issue several classes of preference shares that have different characteristics and different degree of priority in the aspect of assets claim if liquidation occurs.

(b) Claims on Assets and Earnings

Preference shares have priority in the aspect of claims on assets and earnings compared to ordinary shares. For companies that issue several classes of preference shares, priority of claims will be specified based on the characteristics of preference shares. Therefore, in the aspect of risks, the risk of preference shares are lower compared to the risks of ordinary shares but higher compared to the risks of bonds.

(c) Cumulative Dividends

If there are dividends in arrears, the company must pay those dividends first before the payment of dividends for ordinary shares are declared. This characteristic is to protect the interest of preference shareholders.

(d) Provision for Protection

The provision for protection is a provision that is normally included in the issuing conditions of preference shares. It is for the purpose of protecting the interest of preference shareholders. For example, provide voting rights and if there is failure in paying dividends or by barring the dividend payment of ordinary shares if the payment for sinking funds is not made.

(e) Convertible Preference Shares

Convertible preference shareholders have the option to change their existing preference shares to several units’ of ordinary shares according to the ratio prescribed when the shares were issued. This is an attraction to investors and can also reduce the cost to the issuer of preference shares.

(f) Redeemable Preference Shares

Companies that issue preference shares would normally provide a method for the purpose of redeeming the preference shares issued. If there is no redemption method, the company will not benefit from the reduction of interest rates. When interest rates decrease, the company will
redeem the preference shares that are currently available and issue new preference shares at a lower rate.

There are two methods for the redemption of preference shares that are normally used, these are:

(i) Provision for Call Option

This method enables the issuing company to buy back the preference shares at a price that had been specified and within a period that had been specified.

(ii) Provision for Sinking Funds

This method requires the issuing company to separate a sum of money periodically for the purpose of redeeming preference shares. The amount that has been accumulated will be used to buy back the preference shares by using the call option or any other cheaper methods.

**VALUATION OF PREFERENCE SHARES**

As explained, the owners of preference shares generally receive fixed dividends from its investment at each period. It does not have maturity period or in other words, it is perpetuity. Just like the valuation of ordinary shares, the valuation process of preference shares also involves three steps. These steps are as follows:

a) Assume the amount and timing of the cash flow that will be received from the investment of the preference shares;

b) Calculate the risk level of cash flow that is expected to be received and then determine the rate of return required by the investors; and

c) Calculate the intrinsic value of preference shares by discounting all the cash flow that is expected to be received by using the required rate of return.

As preference shares do not have maturity period, the dividends are expected to be received continuously until infinity. Therefore, the formula to calculate the value of preference shares is as below:
Expected Rate of Return for Preference Shares

The purpose of finding the expected rate of return for preference shares is the same with the purpose of finding the expected rate of return for ordinary shares and bonds, which is to evaluate the effect of preference shares on the new funding costs for the company. To calculate the expected rate of return for preference shareholders needs to be modified as follows:

\[ k_{ps} = \frac{D}{V_{ps}} \]

**DETERMINING THE COST OF CAPITAL FOR EACH COMPONENT OF CAPITAL RESOURCES**

A company has various financial instruments or securities to attract new investments. A company can increase its capital by borrowing (issuing bonds to investors) or issuing ordinary shares or preference shares. The entire total of a company's capital depends on the returns that are required by the investors. To determine the total cost of capital, a company must determine the three capital resources, which are debts, preference shares and ordinary shares. The cost of capital for each financing resource is obtained by getting the required rate of return for investors by taking into account the floatation cost and taxation impacts.

**Cost of Debt**

The cost of capital for debts is obtained by getting the rate of return for debt by taking into account the floatation cost and taxation impacts. You have learned that the rate of return required by investors is the minimum returns anticipated by the investors in an investment.

There are 3 important steps in the calculation for cost of debt, which are:

Step 1: Calculate the net value of debt (NPb) by taking into account the floatation cost.
Step 2: Calculate the rate of return for debt that is required by investors. The rate of debt return can be obtained by using the trial and error method or the estimation method.

By using the trial and error method, the different rates of discount $K_b$, will be applied in the following formula:

$$NP_b = I \cdot (PVIFA_{kb,n}) + M \cdot (PVIF_{kb,n})$$

The formula to calculate the rate of return by using the estimation method is as follows:

$$k_b = \frac{i + \left( \frac{M \cdot NP_b}{n} \right)}{2}$$

Step 3: Calculate the cost of capital by taking into account the effect of taxation.

$$\text{Cost after tax} = \text{Cost of return (kb)} - \text{Tax savings (kb T)}$$

$$= k_b - k_b \cdot T$$

$$= k_b \cdot (1 - T)$$

**Cost of Preference Shares**

Preference shares have the rights to receive fixed dividends before earnings are distributed to the ordinary shareholders. As preference shares are in the form of ownership, therefore the net profit from sales is expected to be held for an unlimited period of time. The dividends for preference shares are normally in the form of amounts (MVR) per year such as MVR 4 per year. There are also dividends in the form of annual percentage rate where it is represented by a percentage based on the par value of shares. For example, the dividend for preference shares is 8% of the par value of MVR 5.00, which is MVR 0.40.

The cost of preference shares ($k_{ps}$) is the rate of return for preference shares, which is the ratio of dividends for preference shares ($D_{ps}$) compared to the net earnings from sales of preference shares ($N_{ps}$). Net earnings are the selling price of preference shares minus the floatation cost.

To obtain the cost of preference shares ($k_{ps}$), we can use the formula:
As the dividends of preference shares are paid from the cash flow after tax, therefore the adjustment on tax is not required.

**Cost of Ordinary Shares**

The cost of ordinary shares is the rate of return that is required by investors for ordinary shares. The determination for the cost of ordinary shares is unique due to two factors, which are:

- First, it is difficult to estimate as the returns to ordinary shareholders are a surplus after the payment of interest for bonds and dividends for preference shares.
- Second, there are two sources of financing for ordinary shares, which are the retained earnings and the issuance of new ordinary shares. Both these sources are different from the aspect of floatation cost. The use of retained earnings does not involve floatation cost while the sale of new ordinary shares involves floatation cost.

There are two methods that you can use to determine the cost of retained earnings or the rate of return that is required by ordinary shareholders, which are:

**(a) Constant Growth Valuation Model or the 'Gordon Model'**

The cost of ordinary shares is the returns required by the existing shareholders on their investments. Valuation of Shares, the valuation model for constant growth or better known as the Gordon Model assumes that the value of shares (P0) is equal to the present value of all dividends in the future (D1). Therefore, the value of ordinary shares is obtained by using the formula as follows:

\[
P_0 = \frac{D_1}{k_{cs} - g}
\]

Where:

- \(P_0\) = Value of ordinary shares
- \(D_1\) = Current dividends
- \(k_{cs}\) = Required rate of return
- \(g\) = Rate of dividend growth

To find the cost of ordinary shares or the rate of return for ordinary shares, the formula above can be modified as follows:

\[
k_{cs} = \frac{D_1}{P_0} + g
\]
As the dividends of ordinary shares are paid from earnings after tax, therefore there is no adjustment on tax.

**(b) Use of Capital Asset Pricing Model (CAPM)**

The CAPM Model shows the relationship between the returns required or the cost of ordinary shares \( (k_{cs}) \) with the systematic risk that is measured by beta \( (\beta) \).

The CAPM equation is as follows:

\[
k_{cs} = k_{rf} + (k_{m} - k_{rf}) \beta_j
\]

Where:

- \( k_{cs} \) = Cost of ordinary shares for security j
- \( k_{rf} \) = Risk-free rate
- \( k_{m} \) = Rate of market returns
- \( \beta_j \) = Beta of security j

Based on the equation above, we can estimate the use cost for retained earnings as one of the components of capital

**(c) Cost of Issuing New Ordinary Shares**

The cost of issuing new ordinary shares \( (k_{cs}) \) is obtained by taking into account the effect of floatation cost or sales cost. Normally, new ordinary shares are sold at a price that is lower than the current market price.

Therefore, the net value of the new shares after sale will be lower. The cost of ordinary shares \( (k_{cs}) \) is calculated by using the valuation model for constant growth, but at net price \( (NPs) \). Net price is obtained by deducting the floatation cost from the selling price. Therefore, the formula to obtain the cost of issuing new ordinary shares is as follows:

\[
k_{c} = \frac{D}{NPs} + g
\]

The cost of issuing new ordinary shares is usually higher than the cost of existing shares and is usually higher than any other types of long term financing cost. As the dividend is paid from the cash flow after tax, there will be no adjustment for tax.
WEIGHTED AVERAGE COST OF CAPITAL

After the cost for each capital resource had been determined, the next step is to calculate the overall cost of capital for the company. The overall cost of capital takes into account all individual costs of financing resources used. It is better known as the weighted average cost of capital (WACC).

There are three main steps in determining WACC, which are:

a) Calculate the cost for each capital resource (cost of debt, cost of preference shares and cost of ordinary shares);

b) Calculate the combined financing or capital structure that is the weight of each resource that is used from the overall total financing of the company (the capital structure is usually predetermined by the company); and

c) Calculate the WACC.

Therefore, the calculation for weighted average cost of capital (WACC) is as follows:

\[
WACC = (w_b \times k_b) + (w_{ps} \times k_{ps}) + (w_{cs} \times k_{cs})
\]

(Note: \(w_b + w_{ps} + w_{cs} = 1\))

Where:

- \(W_b\) = Weightage of debt
- \(K_b\) = Cost of debt after tax
- \(W_{ps}\) = Weightage of preference shares
- \(K_{ps}\) = Cost of preference shares
- \(W_{cs}\) = Weightage of ordinary shares
- \(K_{cs}\) = Cost of ordinary shares

...................... END......................

Technology is just a tool. In terms of getting the kids working together and motivating them, the teacher is the most important.

Bill Gates
Chapter 3: Cost of Capital

Practice Questions

Question 1

Explain the difference between book value, liquidated value, market value and intrinsic value.

Question 2

If you intend to buy land in Male’, what is the value that you will use? Why do you use that value?

Question 3

a) What is meant by valuation and why is it important for a finance manager to understand this valuation process?
b) What are the three main elements in the valuation process of assets?

Question 4

List the types of bonds and its characteristics.

Question 5

What are the three important elements that influence the valuation process of bonds?

Question 6

Bond A has 10 years maturity period. The coupon rate is 10% per year and the interest is paid every year. The par value of bond is MVR 1,000. The returns required for the bond is 8% per year. What is the value of this bond?

Question 7

Bond A has a maturity period of 10 years with the coupon interest rate of 10% per year and interest payable every year. The face value is MVR 1,000. The required return for this bond is 12% per year.
Question 8

Bond A has a maturity period of 10 years with the coupon interest rate of 10% per year and interest payable every year. The face value is RM1,000. The required return for this bond is 8% per year.

Question 9

Bond A has a maturity period of 10 years with the coupon interest rate of 10% per year and interest payable every year. The face value is MVR 1,000. The required return for this bond is 10% per year.

Question 10

Maya Enterprise Company had issued bonds that have a maturity period of 8 years with coupon rate of 8% that is payable every 6 months. The par value of the bond is MVR 1,000. If the required rate of return is 10%, what is the value of the bond?

Question 11

Do not invest your money until you have fully understood all the information related to investment. Give your opinion.

Question 12

Calculate the value of bond that has a maturity period of 12 years with a face value of MVR 1,000. The coupon rate is 8% and the required rate of return is 13%.

Question 13

Calculate the value of bond that has a maturity period of 8 years with a par value of MVR 1,000. The coupon rate of 12% is payable twice a year and the required rate of return is 10%.

Question 14

How do coupon payments of more than once a year affect the value of the bond?
Question 15

Bond A has a par value of MVR 1,000 and pays interest of MVR 82 per year. The maturity period for Bond A is 5 years and the present market price is MVR 720. How much is the yield to maturity for Bond A? Use the trial and error method as well as the estimation method to obtain the yield to maturity.

Question 16

How much is the value of a bond with a par value of MVR 1,000, pays interest of MVR 80 per year and matures in a period of 11 years? Assume that the required rate of return is 12%.

Question 17

Ali Limited issued bonds that will mature in a period of 10 years. These bonds pay interest twice a year at a rate of 8% and the par value of the bond is MVR 1,000. The yearly required rate of return each year by investors is 6%, what is the present market value of the said bond?

Question 18

Bonds with a par value of MVR 1,000 were issued by Nazwan Company and have another 15 years before reaching the maturity period. The coupon rate promised is 5% per year, paid twice a year. The market interest rate of bonds with similar risk level with this company’s bond is 6%. What is the present market value of this bond?

Question 19

Ms. Nadia bought bonds with a par value of MVR 1,000 at a price of MVR 950 per share. These bonds pay a coupon rate of 9% per year, paid yearly and will mature in another two years period. Calculate the yield to maturity for this bond.

Question 20

Company X has issued bonds with a par value of MVR 1,000 and a maturity period of three years. The yearly coupon rate offered is 10%. Rating Agency has given a rating of AAA to the bonds of Company X.
Chapter 3: Cost of Capital 2015

(a) If the required rate of return is 13%, what is the market value of this bond?

(b) If the bonds were sold at the price of MVR 975.98, what is its yield to maturity (YTM)?

**Question 21**

What is meant by the yield to maturity of bonds?

**Question 22**

As a risk averse investor, would you choose, the long-term bonds or short-term bonds to protect the effect of interest rate on bonds?

**Question 23**

Assume an investor plans to buy shares in Meru Company. It expects that the dividend payable will be MVR 0.15 at the end of the year. It believes that the shares can be sold at the price of MVR 2.40 after one year of holding. What is the value of Meru's shares if the required rate of return is 12%?

**Question 24**

Didi Company is a company that has been operating for a long time in the fast food industry. Lately, the company had paid dividends of MVR 0.20 per share to its ordinary shareholders. Based on the sales and current earnings of the company, the management expects the dividends to maintain in the future. If the required rate of return is 12%, what is the value of shares for Didi Company?

**Question 25**

Alifulhu Company paid dividends of MVR 0.20 at the end of last year and is expected to pay cash dividends every year starting from now until forever. The rate of growth for each year is 10% while the rate of return is 15%.
Question 26

Zidna Company has just sold its ordinary shares at the price of MVR 2.30 per share. Last year, the company paid dividends of MVR 0.25. Based on the economic situation and the current developments in the company, the management expects that the company will not experience growth for a long period of time. What is the expected rate of return for the shares of Zidna Company?

Question 27

The ordinary shares for Shabana Company were recently sold at the price of MVR 3.38. The company has just paid dividends of MVR 0.30 per share and is expected to experience constant growth of 8.5%. If you purchase these shares in the market, what are the returns that you would expect to receive?

Question 28

What are the two forms of returns that will be obtained by ordinary shareholders on their investments?

Question 29

Shahumulla Sajid Company is expected to pay dividends of MVR 0.18 to its company’s ordinary shareholders next year and the growth rate is fixed, that is at 5% per year. The market price of shares is the estimated to value at MVR 4.25 at the end of next year. If the required rate of return is 11%, what is the present value of the share? If you own shares in Shahumulla Sajid Company, will you sell the shares? Why?

Question 30

Nashwa Company has just paid dividends of MVR 0.50 to its shareholders. The company expects dividends to experience a remarkable growth rate of 15% for the period of 3 years from now and subsequently will experience a constant growth rate of 4%. The rate of return required by investors is 12%. What is the price of Nashwa Company’s shares?
Chapter 3: Cost of Capital

Question 31

What do you understand by the rate of return expected by investors?

Question 32

Ordinary shares of Sarah Company had just been sold at the price of MVR 2.30 per share. The company expects to experience a constant growth rate of 10.5% and the dividend at the end of the year is expected to be MVR 0.25.

a) What is the expected rate of return for the shares of Sarah Company?

b) If the required rate of return is 17%, will you buy those shares?

Question 33

Try to think why preference shares are less popular compared to ordinary shares.

Question 34

Dividend of preference shares must be paid before the dividend of ordinary shares at the amount and period specified. In your opinion, should this dividend be categorised as a liability to the company such as debts? Why?

Question 35

Preference shares enable its holders to receive fixed dividends. How are fixed dividends paid?

Question 36

The annual dividend that is expected to be received is MVR 0.36 per share. The rate of return required by investors is 7%. Calculate the value of these preference shares.

Question 37

Fazla Company sold its preference shares at the price of MVR 5.50 and pays dividends of MVR 0.25 per share. What is the expected rate of return if you purchase at market price?
Chapter 3: Cost of Capital

Question 38

There are several types of investments such as shares, real estate, bonds, equities and unit trust. Which is more suitable for you or are you the type of person who will only create savings in the banks?

Question 39

Why is preference share stated as hybrid security?

Question 40

What is the value of preference shares if the dividend rate is 16% of its par value of MVR 10? The required rate of return is 12%.

Question 41

You own 150 units of preference shares of Shareef Company. These shares had just been sold at the price of MVR 3.85 per share and the annual dividend is MVR 0.35.

a) What is the expected rate of return?

b) If the required rate of return is 18%, will you sell or buy these shares?

Question 42

Najeeb Company had just paid dividends of MVR 1.32. If the growth rate is expected at 7% perpetually and the rate of return required by investors is 11%, what is the price of Najeeb Company’s shares?

Question 43

Naseem company had just paid dividends for ordinary shares of MVR 1.15. For the next two years period, the company is expected to experience high growth as high as 15% and 13% for the third year and consequently with a fixed rate of 6%. The required rate of return for the company’s shares is 12%. Calculate the value of shares for Naseem Company.
Question 44

Recently, Mina Company had just issued its ordinary shares at the price of MVR 4.05 per share. Dividend of MVR 0.24 per share is expected to be paid at the end of this year and is expected to experience a fixed growth rate of 7% per year. What is the required rate of return for these shares?

Question 45

Last year, Hashfa Company paid dividend of for MVR 0.40, and this year the dividend is expected to experience a growth rate of 10%. The company had just paid dividend of MVR 0.44. Through a new technique in producing their products, Hashfa expects to obtain high achievement in the short term that is, at 25% per year for the first three years. After this, the growth is expected to return to normal for a long period, that is 10% perpetually. If investors required 15% rate of return, what is the price of the company's shares today?

Question 46

If Shareefa Company pays dividends as much as MVR 1.00 per year for its preference shares and the required rate of return is 12%, what is the value of these preference shares?

Question 47

What is the rate of return required for preference shares if the dividends payable every year is MVR 0.15 with a par value of MVR 4.00? These shares had just been sold at the price of MVR 5.00.

Question 48

What is the role for cost of capital in the operations of a company?

Question 49

‘To maintain the market value of a company, the required rate of return must be the same with the cost of capital’. How far do you agree with the statement above?
Question 50

How do you think total cost of capital for the company is computed?

Question 51

Nasrulla Company has sold bonds that have a maturity period of 20 years with a coupon rate of 9%. The par value is MVR 1,000. The bond is sold at the price of MVR 980 with a floatation cost of 2% based on the par value (2% x 1,000). What is the cost of debt for Nasrulla Company?

Question 52

Shafeenaz Company plans to issue bonds that have a maturity period of 10 years with the par value of MVR 1,000 and pays an interest of MVR 55 every 6 months. These bonds are sold at the net amount of MVR 840.68 after taking into account the additional cost involved. If the rate of corporate tax is 25%, what is the cost of debt after tax?

Question 53

Calculate the cost of preference shares for Indah Company based on the information below:

- Selling price: MVR 8.70 value per share
- Cost of issuance and sale of shares: MVR 0.50 per share
- Annual dividends: MVR 0.87

Question 54

Faisal Financial Company has preference shares in its capital structure that pays dividend of MVR 0.35 and is sold at the price of MVR 2.50. The cost of issuing and selling the preference shares is MVR 0.60 per share. If the rate of corporate tax is 34%, what is the cost of preference shares after tax?

Question 55

Assume that the risk-free rate of Indah Company is 7%, the rate of market return is 11% and the ordinary shares for the company have a beta of 1.5. What is the cost of retained earnings?
Chapter 3: Cost of Capital

**Question 56**

Based on the financial information of Ziyad Company below, calculate the cost of issuing new ordinary shares.

<table>
<thead>
<tr>
<th>Expected dividends (D1)</th>
<th>MVR 0.40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current market price (P0)</td>
<td>MVR 5.00</td>
</tr>
<tr>
<td>Floatation cost</td>
<td>MVR 0.25 per share</td>
</tr>
<tr>
<td>Rate of dividend growth</td>
<td>5%</td>
</tr>
<tr>
<td>Sale of new ordinary shares</td>
<td>MVR 4.70</td>
</tr>
</tbody>
</table>

**Question 57**

Why must we calculate all the costs for capital resources before calculating the overall cost of capital?

**Question 58**

Ordinary shares of Ihlaas Company were recently sold at the price of MVR 5. The dividend for next year is MVR 0.18 per share. Investors expect the dividend to increase at the rate of 9% per year in the future.

a) What is the internal cost of equity of the company?

b) The sale of new ordinary shares is expected to involve an issuing cost of MVR 0.50 per share. What is the cost of the new ordinary shares?

“Feed the hungry and visit a sick person, and free the captive, if he be unjustly confined. Assist any person oppressed, whether Muslim or non-Muslim.”

- Prophet Muhammad (PBUH)
Question 59

Based on the financial information of Indah Company, calculate the WACC.

Cost of debt \( (k_d) \) = 6.25%
Cost of preference shares \( (k_{ps}) \) = 10.6%
Cost of retained earnings \( (k_{es}) \) = 13%
Cost of new ordinary shares \( (k_{os}) \) = 14%

<table>
<thead>
<tr>
<th>Capital resources</th>
<th>Ratio/Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long term loans</td>
<td>40%</td>
</tr>
<tr>
<td>Preference shares</td>
<td>10%</td>
</tr>
<tr>
<td>Ordinary shares</td>
<td>50% 100%</td>
</tr>
</tbody>
</table>

Question 60

Mujthaba Company is determining the optimal capital structure based on the information below:

<table>
<thead>
<tr>
<th>Capital Resource</th>
<th>Percentage of Financing (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long term debt</td>
<td>35</td>
</tr>
<tr>
<td>Preference shares</td>
<td>10</td>
</tr>
<tr>
<td>Ordinary shares</td>
<td>55</td>
</tr>
</tbody>
</table>

The company can issue bonds that have a maturity period of 20 years with a face value of MVR 1,000. The coupon rate for the bonds is 9% and is sold at the price of MVR 980. The cost of issuing the bonds is 2% from the face value of the bonds.

*Preference Shares:*

The company found that it can issue preference shares at the price of MVR 6.50 per share with the annual dividend payment of MVR 0.80. The cost involved in issuing and selling shares is MVR 0.30 per share.

*Ordinary Shares:*

The ordinary shares of the company are sold at the present price of MVR 4 per share. The dividend that is expected to be paid at the end of next year is MVR 0.50. The growth rate of dividends is constant, that is at 8% every year. The company must pay the floatation cost of MVR 0.10 per share.
Corporate tax is 40%

a) Calculate the cost for each of the capital resources.

b) Calculate the weighted average cost of capital (WACC).

**Question 61**

The information below is the total financing for each capital resource of Jati Company.

<table>
<thead>
<tr>
<th>Capital Resources</th>
<th>Total Financing (RM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term debt</td>
<td>40,000</td>
</tr>
<tr>
<td>Preference shares</td>
<td>20,000</td>
</tr>
<tr>
<td>Ordinary shares</td>
<td>40,000</td>
</tr>
</tbody>
</table>

The cost of debt before tax is 9.37%, the cost of preference shares is 10%, the cost of ordinary shares is 13% and the marginal cost of tax is 34%. What is the weighted average cost of capital (WACC) for the company?

**Question 62**

How does the tax rate of the company affect the cost of capital?

**Question 63**

What is the effect of floatation cost on the issuance of a security?

**Question 64**

A company issues 10,000 equity shares of MVR 100 each at a premium of 10%. The company has been paying 25% dividend to equity shareholders for the past five years and expects to maintain the same in the future also. Compute the cost of equity capital. Will it make any difference if the market price of equity share is MVR 175?

**Question 65**

a) A company plans to issue 10000 new shares of MVR 100 each at a par. The floatation costs are expected to be 4% of the share price. The company pays a dividend of MVR 12
per share initially and growth in dividends is expected to be 5%. Compute the cost of new issue of equity shares.

b) If the current market price of an equity share is MVR 120. Calculate the cost of existing equity share capital

**Question 66**

The current market price of the shares of Kaasim Ltd. is MVR 95. The floatation costs are MVR 5 per share amounts to MVR 4.50 and is expected to grow at a rate of 7%. You are required to calculate the cost of equity share capital.

**Question 67**

A firm is considering an expenditure of MVR 75 lakhs for expanding its operations. The relevant information is as follows:

- Number of existing equity shares: 10 lakhs
- Market value of existing share: MVR 100
- Net earnings: MVR 100 lakhs

Compute the cost of existing equity share capital and of new equity capital assuming that new shares will be issued at a price of MVR 92 per share and the costs of new issue will be MVR 2 per share.

**Question 68**

a) A Ltd. issues MVR 10,00,000, 8% debentures at par. The tax rate applicable to the company is 50%. Compute the cost of debt capital.

b) B Ltd. issues MVR 1,00,000, 8% debentures at a premium of 10%. The tax rate applicable to the company is 60%. Compute the cost of debt capital.

c) A Ltd. issues MVR 1,00,000, 8% debentures at a discount of 5%. The tax rate is 60%, compute the cost of debt capital.

d) B Ltd. issues MVR 10,00,000, 9% debentures at a premium of 10%. The costs of floatation are 2%. The tax rate applicable is 50%. Compute the cost of debt-capital.
In all cases, we have computed the after-tax cost of debt as the firm saves on account of tax by using debt as a source of finance.

**Question 69**

Nuha Ltd. issues 20,000, 8% preference shares of MVR 100 each. Cost of issue is MVR 2 per share. Calculate cost of preference share capital if these shares are issued (a) at par, (b) at a premium of 10% and (c) of a debentures of 6%.

**Question 70**

Furugan Ltd. issues 20,000, 8% preference shares of MVR 100 each. Redeemable after 8 years at a premium of 10%. The cost of issue is MVR 2 per share. Calculate the cost of preference share capital.

**Question 71**

Suha Ltd. issues 20,000, 8% preference shares of MVR 100 each at a premium of 5% redeemable after 8 years at par. The cost of issue is MVR 2 per share. Calculate the cost of preference share capital.

**Question 72**

A firm’s Ke (return available to shareholders) is 10%, the average tax rate of shareholders is 30% and it is expected that 2% is brokerage cost that shareholders will have to pay while investing their dividends in alternative securities. What is the cost of retained earnings?

“Character is a journey, not a destination.”

~Bill Clinton
Chapter 3: Cost of Capital

**Question 73**

A company has on its books the following amounts and specific costs of each type of capital.

<table>
<thead>
<tr>
<th>Type of Capital</th>
<th>Book Value Rs.</th>
<th>Market Value Rs.</th>
<th>Specific Costs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt</td>
<td>4,00,000</td>
<td>3,80,000</td>
<td>5</td>
</tr>
<tr>
<td>Preference</td>
<td>1,00,000</td>
<td>1,10,000</td>
<td>8</td>
</tr>
<tr>
<td>Equity</td>
<td>6,00,000</td>
<td>9,00,000</td>
<td>15</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>2,00,000</td>
<td>3,00,000</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13,00,000</strong></td>
<td><strong>16,90,000</strong></td>
<td></td>
</tr>
</tbody>
</table>

Determine the weighted average cost of capital using:
(a) Book value weights, and
(b) Market value weights.

How are they different? Can you think of a situation where the weighted average cost of capital would be the same using either of the weights?  

(MBA – P.U. Nov. 2005)

**Question 74**

ABC Ltd. has the following capital structure.

<table>
<thead>
<tr>
<th></th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity (expected dividend 12%)</td>
<td>10,00,000</td>
</tr>
<tr>
<td>10% preference</td>
<td>5,00,000</td>
</tr>
<tr>
<td>8% loan</td>
<td>15,00,000</td>
</tr>
</tbody>
</table>

You are required to calculate the weighted average cost of capital, assuming 50% as the rate of income-tax, before and after tax.

**Question 75**

Alifulhubey Company issues 120000 10% debentures of MVR 10 each at a premium of 10%. The costs of floatation are 4%. The rate of tax applicable to the company is 55%. Complete the cost of debt capital.
Question 76

Bagir Ltd., issues 8000 8% debentures for MVR 100 each at a discount of 5%. The commission payable to underwriters and brokers is MVR 40000. The debentures are redeemable after 5 years. Compute the after tax cost of debt assuming a tax rate of 60%.

Question 77

Nabeel Ltd., issues 4000 12% preference shares of MVR 100 each at a discount of 5%. Costs of raising capital are MVR 8000. Compute the cost of preference capital.

Question 78

Your company share is quoted in the market at MVR 40 currently. The company pays a dividend of MVR 5 per share and the investors market expects a growth rate of 7.5% per year:

i. Compute the company’s equity cost of capital.

ii. If the anticipated growth rate is 10% p.a. Calculate the indicated market price per share.

iii. If the company’s cost of capital is 15% and the anticipated growth rate is 10% p.a. Calculate the indicated market price if the dividend of MVR 5 per share is to be maintained.

Question 79

Mr. Naseer is a shareholder in Alpha Company Ltd. Although earnings for the Alpha Company have varied considerably, Subramanian has determined that long turn average dividends for the firm have been Rs. 5 per share. He expects a similar pattern to prevail in the future. Given the volatility of the Alpha’s minimum rate of 40%, should it be earned on a share, what price would Mr. Naseer be willing to pay for the Alpha is shares?

Question 80

How does a bond issuer decide on the appropriate coupon rate to set on its bonds? Explain the difference between the coupon rate and the required return on a bond.
Chapter 3: Cost of Capital

Question 81

Why does the value of a share of stock depend on dividends?

Question 82

Suppose a company has a preferred stock issue and a common stock issue. Both have just paid a MVR 2 dividend. Which do you think will have a higher price, a share of the preferred or a share of the common?

Question 83

In the context of the dividend growth model, is it true that the growth rate in dividends and the growth rate in the price of the stock are identical?

Question 84

Valuing Bonds

What is the price of a 10-year, pure discount bond paying $1,000 at maturity if the YTM is

a. 5 percent?
b. 10 percent?
c. 15 percent?

Question 85

Valuing Bonds

Microhard has issued a bond with the following characteristics:

Par: $1,000
Time to maturity: 20 years
Coupon rate: 8 percent
Semiannual payments

Calculate the price of this bond if the YTM is

a. 8 percent.
b. 10 percent.
c. 6 percent.
Chapter 3: Cost of Capital

Question 86

**Bond Yields** Raines Umbrella Corp. issued 12-year bonds 2 years ago at a coupon rate of 8.6 percent. The bonds make semiannual payments. If these bonds currently sell for 97 percent of par value, what is the YTM?

Question 87

**Stock Values** The Brennan Co. just paid a dividend of $1.40 per share on its stock. The dividends are expected to grow at a constant rate of 6 percent per year indefinitely. If investors require a 12 percent return on the Brennan Co. stock, what is the current price? What will the price be in three years? In 15 years?

Question 88

**Stock Values** The next dividend payment by MUG, Inc., will be $3.10 per share. The dividends are anticipated to maintain a 5 percent growth rate forever. If MUG stock currently sells for $48.00 per share, what is the required return?

Question 89

**Stock Values** Warren Corporation will pay a $3.60 per share dividend next year. The company pledges to increase its dividend by 4.5 percent per year indefinitely. If you require a 13 percent return on your investment, how much will you pay for the company’s stock today?

Question 90

**Stock Valuation** Suppose you know that a company’s stock currently sells for $70 per share and the required return on the stock is 12 percent. You also know that the total return on the stock is evenly divided between a capital gains yield and a dividend yield. If it’s the company’s policy to always maintain a constant growth rate in its dividends, what is the current dividend per share?

Question 91

**Stock Valuation** Gruber Corp. pays a constant $12 dividend on its stock. The company will maintain this dividend for the next eight years and will then cease paying dividends forever. If the required return on this stock is 10 percent, what is the current share price?
**Question 92**

**Growth Rate** The newspaper reported last week that Bradley Enterprises earned $20 million this year. The report also stated that the firm’s return on equity is 14 percent. Bradley retains 60 percent of its earnings. What is the firm’s earnings growth rate? What will next year’s earnings be?

**Question 93**

Mr. Adheeb Corporation has a premium bond making semiannual payments. The bond pays an 8 percent coupon, has a YTM of 6 percent, and has 13 years to maturity. The Naani Company has a discount bond making semiannual payments. This bond pays a 6 percent coupon, has a YTM of 8 percent, and also has 13 years to maturity. If interest rates remain unchanged, what do you expect the price of these bonds to be 1 year from now? In 3 years? In 8 years? In 12 years? In 13 years? What’s going on here? Illustrate your answers by graphing bond prices versus time to maturity.

**Question 94**

Najla Wheel Software has 8.4 percent coupon bonds on the market with nine years to maturity. The bonds make semiannual payments and currently sell for 104 percent of par. What is the current yield on the bonds? The YTM? The effective annual yield?

**Question 95**

Musthafa Co. wants to issue new 20-year bonds for some much-needed expansion projects. The company currently has 8 percent coupon bonds on the market that sell for MVR 1,095, make semiannual payments, and mature in 20 years. What coupon rate should the company set on its new bonds if it wants them to sell at par?

**Question 96**

Mohamed Inc., just paid a dividend of MVR 3.00 on its stock. The growth rate in dividends is expected to be a constant 5 percent per year indefinitely. Investors require a 16 percent return on the stock for the first three years, a 14 percent return for the next three years, and then an 11 percent return thereafter. What is the current share price for Mohamed Inc stock?
Question 97

Zoona Inc., is a young start-up company. No dividends will be paid on the stock over the next nine years because the firm needs to plow back its earnings to fuel growth. The company will pay an MVR 8 per share dividend in 10 years and will increase the dividend by 6 percent per year thereafter. If the required return on this stock is 13 percent, what is the current share price?

Question 98

Jailam Inc., has an odd dividend policy. The company has just paid a dividend of MVR 9 per share and has announced that it will increase the dividend by MVR 3 per share for each of the next four years, and then never pay another dividend. If you require an 11 percent return on the company’s stock, how much will you pay for a share today?

Question 99

Ibrahim Corp. is experiencing rapid growth. Dividends are expected to grow at 30 percent per year during the next three years, 18 percent over the following year, and then 8 percent per year indefinitely. The required return on this stock is 14 percent, and the stock currently sells for MVR 70.00 per share. What is the projected dividend for the coming year?

Question 100

Shafeenaaz Corporation stock currently sells for MVR 50 per share. The market requires a 14 percent return on the firm’s stock. If the company maintains a constant 8 percent growth rate in dividends, what was the most recent dividend per share paid on the stock?

Question 101

Zahir In. just issued some new preferred stock. The issue will pay a MVR 9 annual dividend in perpetuity, beginning six years from now. If the market requires a 7 percent return on this investment, how much does a share of preferred stock cost today?
Question 102

Yaamin Company’s iron ore reserves are being depleted, and its costs of recovering a declining quantity of ore are rising each year. As a result, the company’s earnings are declining at a rate of 10 percent per year. If the dividend per share to be paid tomorrow is MVR 5 and the required rate of return is 14 percent, what is the value of the firm’s stock? Assume that the dividend payments are based on a fixed percentage of the firm’s earnings.

Question 103

MWSC will pay a quarterly dividend per share of MVR 1 at the end of each of the next 12 quarters. Thereafter the dividend will grow at a quarterly rate of 0.5 percent forever. The appropriate rate of return on the stock is 10 percent, compounded quarterly. What is the current stock price?

Question 104

To buy back its own shares, Ali Waheed Co. has decided to suspend its dividends for the next two years. It will resume its annual cash dividend of MVR 2.00 in year 3 and year 4. Thereafter its dividend payments will grow at an annual growth rate of 6 percent forever. The required rate of return on Ali Waheed’s stock is 16 percent. According to the discounted dividend model, what should Ali Waheed’s current share price be?

Question 105

Rifau Inc., is expected to pay equal dividends at the end of each of the next two years. Thereafter, the dividend will grow at a constant annual rate of 4 percent forever. The current stock price is MVR 30. What is next year’s dividend payment if the required rate of return is 12 percent?
**Question 106**

Four years ago, Yashau Inc., paid a dividend of MVR 0.90 per share. Bling paid a dividend of MVR 1.66 per share yesterday. Dividends will grow over the next five years at the same rate they grew over the last four years. Thereafter dividends will grow at 8 percent per year. The required return on the stock is 18 percent. What will Yashau’s cash dividend be in seven years?

**Question 107**

The Hussain Corporation currently has earnings per share of MVR 7.00. The company has no growth and pays out all earnings as dividends. It has a new project that will require an investment of MVR 1.75 per share in one year. The project will only last two years and will increase earnings in the two years following the investment by MVR 1.90 and MVR 2.10, respectively. Investors require a 12 percent return on Hussain stock.

a) What is the value per share of the company’s stock assuming the firm does not undertake the investment opportunity?

b) If the company does undertake the investment, what is the value per share now?

c) Again assume the company undertakes the investment. What will the price per share be four years from today?

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*Sometimes life hits you in the head with a brick.*

*Don't lose faith.*

*Steve Jobs*
Question 108

Moosa Enterprises sells toothpicks. Gross revenues last year were MVR 3 million, and total costs were MVR 1.5 million. Rite Bite has 1 million shares of common stock outstanding. Gross revenues and costs are expected to grow at 5 percent per year. Moosa Enterprises pays no income taxes. All earnings are paid out as dividends.

a) If the appropriate discount rate is 15 percent and all cash flows are received at year’s end, what is the price per share of Moosa Enterprises stock?

b) Moosa Enterprises has decided to produce toothbrushes. The project requires an immediate outlay of MVR 15 million. In one year, another outlay of MVR 5 million will be needed. The year after that, earnings will increase by MVR 6 million. That profit level will be maintained in perpetuity. What effect will undertaking this project have on the price per share of the stock?

Question 109

Athif Inc., expects to earn MVR 110 million per year in perpetuity if it does not undertake any new projects. The firm has an opportunity to invest MVR 12 million today and MVR 7 million in one year in real estate. The new investment will generate annual earnings of MVR 10 million in perpetuity, beginning two years from today. The firm has 20 million shares of common stock outstanding, and the required rate of return on the stock is 15 percent. Land investments are not depreciable. Ignore taxes.

a) What is the price of a share of stock if the firm does not undertake the new investment?

b) What is the value of the investment?

c) What is the per-share stock price if the firm undertakes the investment?
Chapter 3: Cost of Capital

**Question 110**

Bond P is a premium bond with a 10 percent coupon. Bond D is a 6 percent coupon bond currently selling at a discount. Both bonds make annual payments, have a YTM of 8 percent, and have five years to maturity. What is the current yield for Bond P? For Bond D? If interest rates remain unchanged, what is the expected capital gains yield over the next year for Bond P? For Bond D? Explain your answers and the interrelationship among the various types of yields.

**Question 111**

The Thooma Corporation has two different bonds currently outstanding. Bond M has a face value of MVR 20,000 and matures in 20 years. The bond makes no payments for the first six years, then pays MVR 1,200 every six months over the subsequent eight years, and finally pays MVR 1,500 every six months over the last six years. Bond N also has a face value of MVR 20,000 and a maturity of 20 years; it makes no coupon payments over the life of the bond. If the required return on both these bonds is 10 percent compounded semiannually, what is the current price of Bond M? Of Bond N?

**Question 112**

Stock Valuation Most corporations pay quarterly rather than annual dividends on their common stock. Barring any unusual circumstances during the year, the board raises, lowers, or maintains the current dividend once a year and then pays this dividend out in equal quarterly installments to its shareholders.

a) Suppose a company currently pays a MVR 3.00 annual dividend on its common stock in a single annual installment, and management plans on raising this dividend by 6 percent per year indefinitely. If the required return on this stock is 14 percent, what is the current share price?

b) Now suppose that the company in (a) actually pays its annual dividend in equal quarterly installments; thus this company has just paid a MVR 0.75 dividend per share, as it has for the previous three quarters. What is your value for the current share price now? (Hint: Find the equivalent annual end-of-year dividend for each year.) Comment on whether you think that this model of stock valuation is appropriate.
Chapter 3: Cost of Capital

**Question 113**

Jailam Co. just paid a dividend of MVR 3.50 per share. The company will increase its dividend by 20 percent next year and will then reduce its dividend growth rate by 5 percentage points per year until it reaches the industry average of 5 percent dividend growth, after which the company will keep a constant growth rate forever. If the required return on Jailam Co. stock is 13 percent, what will a share of stock sell for today?

**Question 114**

This one’s a little harder. Suppose the current share price for the firm in the previous problem is MVR 98.65 and all the dividend information remains the same. What required return must investors be demanding on Jailam Co stock? (Hint: Set up the valuation formula with all the relevant cash flows, and use trial and error to find the unknown rate of return.)

**Question 115**

Naseem Inc., has earnings of MVR 10 million and is projected to grow at a constant rate of 5 percent forever because of the benefits gained from the learning curve. Currently all earnings are paid out as dividends. The company plans to launch a new project two years from now that would be completely internally funded and require 20 percent of the earnings that year. The project would start generating revenues one year after the launch of the project, and the earnings from the new project in any year are estimated to be constant at MVR 5 million. The company has 10 million shares of stock outstanding. Estimate the value of Naseem Inc stock. The discount rate is 10 percent.

**Question 116**

List the three assumptions that lie behind the Modigliani–Miller theory in a world without taxes. Are these assumptions reasonable in the real world? Explain.
Question 117

In a world with no taxes, no transaction costs, and no costs of financial distress, is the following statement true, false, or uncertain? If a firm issues equity to repurchase some of its debt, the price per share of the firm’s stock will rise because the shares are less risky. Explain.

Question 118

In a world with no taxes, no transaction costs, and no costs of financial distress, is the following statement true, false, or uncertain? Moderate borrowing will not increase the required return on a firm’s equity. Explain.

Question 119

How would you answer in the following debate?

Q: Isn’t it true that the riskiness of a firm’s equity will rise if the firm increases its use of debt financing?

A: Yes, that’s the essence of MM Proposition II.

Q: And isn’t it true that, as a firm increases its use of borrowing, the likelihood of default increases, thereby increasing the risk of the firm’s debt?

A: Yes.

Q: In other words, increased borrowing increases the risk of the equity and the debt? A: That’s right.

Q: Well, given that the firm uses only debt and equity financing, and given that the risks of both are increased by increased borrowing, does it not follow that increasing debt increases the overall risk of the firm and therefore decreases the value of the firm?

A: ??
Chapter 3: Cost of Capital

**Question 120**

Is there an easily identifiable debt–equity ratio that will maximize the value of a firm? Why or why not?

**Question 121**

What is the basic goal of financial management with regard to capital structure?

**Question 122**

Tholhath Inc has a debt–equity ratio of 1.5. Its WACC is 12 percent, and its cost of debt is 12 percent. The corporate tax rate is 35 percent.

a) What is Weston’s cost of equity capital?

b) What is Weston’s unlevered cost of equity capital?

c) What would the cost of equity be if the debt–equity ratio were 2? What if it were 1.0? What if it were zero?

**Question 123**

Calculating WACC Newshad Corp. has no debt but can borrow at 8 percent. The firm’s WACC is currently 12 percent, and the tax rate is 35 percent.

a) What is Newshad’s cost of equity?

b) If the firm converts to 25 percent debt, what will its cost of equity be?

c) If the firm converts to 50 percent debt, what will its cost of equity be?

d) What is Newshad’s WACC in part (b)? In part (c)?

“We must teach our children to resolve their conflicts with words, not weapons.”

*Bill Clinton*
Question 124

Seema Inc., has equity with a market value of MVR 20 million and debt with a market value of MVR 10 million. Treasury bills that mature in one year yield 8 percent per year, and the expected return on the market portfolio over the next year is 18 percent. The beta of Acetate’s equity is 0.90. The firm pays no taxes.

a) What is Acetate’s debt–equity ratio?
b) What is the firm’s weighted average cost of capital?
c) What is the cost of capital for an otherwise identical all-equity firm?

Question 125

Bond A has 10 years maturity period. The coupon rate is 10% per year and the interest is paid every year. The par value of bond is MVR1,000. The returns required for the bond is 8% per year. What is the value of this bond?

Question 126

Calculate the value of bond that has a maturity period of 12 years with a face value of MVR1,000. The coupon rate is 8% and the required rate of return is 13%.

Question 127

Calculate the value of bond that has a maturity period of 8 years with a par value of MVR1,000. The coupon rate of 12% is payable twice a year and the required rate of return is 10%.

Question 128

Bond A has a par value of MVR1,000 and pays interest of MVR82 per year. The maturity period for Bond A is 5 years and the present market price is MVR720. How much is the yield to maturity for Bond A?

Question 129

How much is the value of a bond with a par value of MVR1,000, pays interest of MVR80 per year and matures in a period of 11 years? Assume that the required rate of return is 12%.
Chapter 3: Cost of Capital

Question 130

Baduru Company issued bonds that will mature in a period of 10 years. These bonds pay interest twice a year at a rate of 8% and the par value of the bond is MVR1,000. The yearly required rate of return each year by investors is 6%, what is the present market value of the said bond?

Question 131

Bonds with a par value of MVR 1,000 were issued by Alia Company and have another 15 years before reaching the maturity period. The coupon rate promised is 5% per year, paid twice a year. The market interest rate of bonds with similar risk level with this company’s bond is 6%. What is the present market value of this bond?

Question 132

Ms. Nadia bought bonds with a par value of MVR 1,000 at a price of MVR 950 per share. These bonds pay a coupon rate of 9% per year, paid yearly and will mature in another two years period. Calculate the yield to maturity for this bond.

Question 133

Vista Company has issued bonds with a par value of MVR 1,000 and a maturity period of three years. The yearly coupon rate offered is 10%. Rating Agency of Maldives has given a rating of AAA to the bonds of Vista Company.

(a) If the required rate of return is 13%, what is the market value of this bond?

(b) If the bonds were sold at the price of RM975.98, what is its yield to maturity (YTM)?

Question 134

Find the price of a $1,000 par value bond that matures in 10 years, if it pays interest annually, based on a 6 percent coupon rate, and if the market rate of interest is 5 percent.

Question 135

A Microgates Industries bond has a 10 percent coupon rate and a $1,000 face value. Interest is paid semiannually, and the bond has 20 years to maturity. Investors require a 12 percent yield. What is the bond’s market value?
Chapter 3: Cost of Capital

Question 136

A corporate bond with 8 years to maturity and a $1,000 face value is selling at $980 today. The bond pays semi-annual coupons at an annual rate of 6.4%. What would be the price of the bond two years from now if the yield to maturity becomes 6.5%?

Question 137

The value of a 20 year zero-coupon bond when the market required rate of return of 9% is:

Question 138

Calculate the yield to maturity (YTM) on a bond priced at $1,036 which has 2 years to maturity, a 10% coupon rate, and a face value of $1,000 at maturity.

Question 139

A zero coupon bond has 12 years to maturity, a face value of $1,000, and currently sells for $300 in the market. What is the yield to maturity on the bond?

Question 140

A bond that pays coupons annually is issued with coupon rate of 4 percent, maturity of 30 years, and a yield to maturity of 8 percent. What rate of return will be earned by an investor who purchases the bond and holds it for 1 year if the bond’s yield to maturity at the end of the year is 9 percent?

Question 141

A bond with a par value $1,000 and a coupon rate of 8% percent is selling a a price of $970. What is the current yield on the bond?
Chapter 3: Cost of Capital

**Question 142**

Calculate the real return for the following corporate bond investment: Purchased for $840 one year ago, 4% coupon rate, sold for $894. The inflation rate was 5.0% during the year.

**Question 143**

What is the price of a 10-year, zero coupon bond paying MVR 1,000 at maturity if the YTM is:
1. 5 percent?
2. 10 percent?
3. 15 percent?

**Question 144**

Reehan Inc has issued a bond with the following characteristics:
Par: MVR 1,000
Time to maturity: 25 years
Coupon rate: 7 percent
Semiannual payments
Calculate the price of this bond if the YTM is:
   A. 7 percent
   B. 9 percent
   C. 5 percent

**Question 145**

Zihunee Inc issued 12-year bonds 2 years ago at a coupon rate of 7.8 percent. The bonds make semiannual payments. If these bonds currently sell for 105 percent of par value, what is the YTM?
Chapter 3: Cost of Capital

Question 146

Suppose a Maldivian company issues a bond with a par value of MVR 1,000, 15 years to maturity, and a coupon rate of 8.4 percent paid annually. If the yield to maturity is 7.6 percent, what is the current price of the bond?

Question 147

A Maldivian company has a bond outstanding that sells for 87 percent of its MVR 100,000 par value. The bond has a coupon rate of 5.4 percent paid annually and matures in 21 years. What is the yield to maturity of this bond?

Question 148

Sheeneez Company has 7.4 percent coupon bonds on the market with 9 years to maturity. The bonds make semiannual payments and currently sell for 96 percent of par. What is the current yield on the bonds? The YTM?

Question 149

Asiyath Co. wants to issue new 20-year bonds for some much-needed expansion projects. The company currently has 10 percent coupon bonds on the market that sell for MVR 1,063, make semiannual payments, and mature in 20 years. What coupon rate should the company set on its new bonds if it wants them to sell at par?

Question 150

The Asma Hussain Corporation has two different bonds currently outstanding. Bond M has a face value of MVR 20,000 and matures in 20 years. The bond makes no payments for the first six years, then pays MVR 800 every six months over the subsequent eight years, and finally pays MVR 1,000 every six months over the last six years. Bond N also has a face value of MVR 20,000 and a maturity of 20 years; it makes no coupon payments over the life of the bond. If the required return on both these bonds is 8 percent compounded semiannually, what is the current price of Bond M? Of Bond N?
Chapter 3: Cost of Capital

Question 151

What is the price of a 20-year, zero-coupon bond with a 5.1% yield and $1,000 face value?

Question 152

What is the price of a 3-year, U.S. corporate bond with 3.4% coupon, a 3.6% yield, and a $1,000 face value? Remember that corporate bonds, just like Treasury bonds, pay semi-annual coupons.

Question 153

A bond has a coupon rate of 8.5% per annum. The next interest payment will be made in one year’s time. The bond will repay the par value of $100 when it matures in seven years’ time.

Required:

Calculate the expected current market price of the bond if yields to maturity on similar bonds are 7% per annum.

Question 154

A bond has a coupon rate of 6% per annum and will repay its face value of $100 on its maturity in four years’ time. The yield to maturity on similar bonds is 4% per annum. The annual interest has just been paid for the current year.

Required:

Calculate the expected market value of the bond at today’s date.

“The best way to predict the future is to create it.”

Abraham Lincoln
Chapter 3: Cost of Capital

**Question 155**

A bond has a coupon rate of 8% and will repay its nominal value of $100 when it matures in five years’ time.

The bond will be purchased today for $106 ex-interest and held until maturity. The next interest payment is due in one year’s time.

**Required:**

Calculate, to 0.01%, the yield to maturity for the bond based on today’s purchase price.

**Question 156**

A $100 bond has a coupon rate of 8% per annum and is due to mature in four years time. The next interest payment is due in one year’s time. Similar bonds have a yield to maturity of 10%.

**Required:**

Calculate the expected purchase price of the bond at today’s date.

**Question 157**

A $100 bond has a yield to maturity of 6% per annum and is due to mature in three years’ time. The next interest payment is due in one year’s time. Today’s market value of the bond is $108.06.

**Required:**

Calculate the coupon rate on the bond.

---

“Strength does not come from physical capacity. It comes from an indomitable will.”

Mahatma Gandhi
Chapter 3: Cost of Capital

Question 158

An investor is considering purchasing a bond with a par value of $100 and a coupon rate of 8% payable annually. The bond is redeemable at par in 6 years’ time. Bonds with the same level of risk have a yield to maturity of 7%.

Required:

Calculate the price the investor should pay for the bond if the first interest payment will be paid one year after the date of purchase.

Question 159

An unquoted bond has a coupon rate of 6% per annum and will repay its face value of $100 on its maturity in 4 years’ time. The yield to maturity on similar bonds is estimated to be 3% per annum. The annual interest has just been paid for the current year.

Calculate the current expected market value of the bond.

Question 160

A $1,000 bond has a coupon rate of 10% per annum and will repay its face value in five years time. Similar bonds have a yield to maturity of 8% per annum.

Calculate the current expected market value of the bond.

Question 161

A $1,000 bond has a coupon rate of 8% and will repay its nominal value when it matures in four years’ time.

The bond will be purchased today for $900 ex interest and held until maturity.

Calculate, to the nearest 0.01%, the yield to maturity for the bond based on today’s purchase price.
Chapter 3: Cost of Capital

Question 162

How much would an investor pay to purchase a bond today, which is redeemable in four years for its par value or face value of $100 and pays an annual coupon of 5% on the par value? The required rate of return (or yield) for a bond in this risk class is 4%.

Question 163

A bond has a face value of $1000 with a time to maturity ten years from now. The yield to maturity of the bond now is 10%.

a) What is the price of the bond today, if it pays no coupons?
b) What is the price of the bond if it pays annual coupons of 10%?
c) What is the price today if pays 8% coupon rate semi-annually?

Question 164

$$D_0 = 12c, \text{ Po (ex div) } = \$1.75, g = 5\%.$$  
What is the value of $$k_e$$?

Question 165

What is ‘Optimum Capital Structure’?

Question 166

What is meant by weighted average cost of capital? Illustrate with an example.

Question 167

Discuss the dividend-price approach, and earnings price approach to estimate cost of equity capital.
Question 168

The following is the capital structure of Simons Company Ltd. as on 31.12.2013:

<table>
<thead>
<tr>
<th></th>
<th>₹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity shares: 10,000</td>
<td>10,00,000</td>
</tr>
<tr>
<td>shares (of ₹ 100 each)</td>
<td></td>
</tr>
<tr>
<td>10% Preference Shares</td>
<td>4,00,000</td>
</tr>
<tr>
<td>(of ₹ 100 each)</td>
<td></td>
</tr>
<tr>
<td>12% Debentures</td>
<td>6,00,000</td>
</tr>
<tr>
<td></td>
<td>20,00,000</td>
</tr>
</tbody>
</table>

The market price of the company’s share is ₹ 110 and it is expected that a dividend of ₹ 10 per share would be declared for the year 2013. The dividend growth rate is 6%:

(i) If the company is in the 50% tax bracket, compute the weighted average cost of capital.

(ii) Assuming that in order to finance an expansion plan, the company intends to borrow a fund of ₹ 10 lakhs bearing 14% rate of interest, what will be the company’s received weighted average cost of capital? This financing decision is expected to increase dividend from ₹ 10 to ₹ 12 per share. However, the market price of equity share is expected to decline from ₹ 110 to ₹ 105 per share.
Question 169

JKL Ltd. has the following book-value capital structure as on March 31, 2003.

<table>
<thead>
<tr>
<th></th>
<th>₹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity share capital (2,00,000 shares)</td>
<td>40,00,000</td>
</tr>
<tr>
<td>11.5% preference shares</td>
<td>10,00,000</td>
</tr>
<tr>
<td>10% debentures</td>
<td>30,00,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>80,00,000</strong></td>
</tr>
</tbody>
</table>

The equity share of the company sells for ₹ 20. It is expected that the company will pay next year a dividend of ₹ 2 per equity share, which is expected to grow at 5% p.a. forever. Assume a 35% corporate tax rate.

Required:

(i) Compute weighted average cost of capital (WACC) of the company based on the existing capital structure.

(ii) Compute the new WACC, if the company raises an additional ₹ 20 lakhs debt by issuing 12% debentures. This would result in increasing the expected equity dividend to ₹ 2.40 and leave the growth rate unchanged, but the price of equity share will fall to ₹ 16 per share.

(iii) Comment on the use of weights in the computation of weighted average cost of capital.

Question 170

A company issues ₹ 10,00,000 12% debentures of ₹ 100 each. The debentures are redeemable after the expiry of fixed period of 7 years. The company is in 35% tax bracket.

Required:

(i) Calculate the cost of debt after tax, if debentures are issued at
   
   (a) Par
   
   (b) 10% Discount
   
   (c) 10% Premium.

(ii) If brokerage is paid at 2%, what will be the cost of debentures, if issue is at par?
Chapter 3: Cost of Capital

Question 171

You are required to determine the weighted average cost of capital of a firm using (i) book-value weights and (ii) market value weights. The following information is available for your perusal:

Present book value of the firm’s capital structure is:

<table>
<thead>
<tr>
<th></th>
<th>₹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debentures of ₹ 100 each</td>
<td>8,00,000</td>
</tr>
<tr>
<td>Preference shares of ₹ 100 each</td>
<td>2,00,000</td>
</tr>
<tr>
<td>Equity shares of ₹ 10 each</td>
<td>10,00,000</td>
</tr>
<tr>
<td></td>
<td>20,00,000</td>
</tr>
</tbody>
</table>

All these securities are traded in the capital markets. Recent prices are:

Debentures @ ₹ 110, Preference shares @ ₹ 120 and Equity shares @ ₹ 22.

Anticipated external financing opportunities are as follows:

(i) ₹ 100 per debenture redeemable at par: 20 years maturity 8% coupon rate, 4% flotation costs, sale price ₹ 100.

(ii) ₹ 100 preference share redeemable at par: 15 years maturity, 10% dividend rate, 5% flotation costs, sale price ₹ 100.

(iii) Equity shares: ₹ 2 per share flotation costs, sale price ₹ 22.

In addition, the dividend expected on the equity share at the end of the year is ₹ 2 per share; the anticipated growth rate in dividends is 5% and the firm has the practice of paying all its earnings in the form of dividend. The corporate tax rate is 50%.

A man who works regularly in a systematic fashion never feels overworked or tired. He knows his limits and is able to do in fair time, all that he undertakes. It is not hard work that kills a man, but irregularity or lack of system.

M. K. Gandhi

GWMG, Vol. 91, p. 135
Chapter 3: Cost of Capital

Question 172

The following is the capital structure of a Company:

<table>
<thead>
<tr>
<th>Source of capital</th>
<th>Book value</th>
<th>Market value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equity shares @ ₹ 100 each</strong></td>
<td>₹ 80,00,000</td>
<td>₹ 1,60,00,000</td>
</tr>
<tr>
<td>9 per cent cumulative preference shares @ ₹ 100 each</td>
<td>₹ 20,00,000</td>
<td>₹ 24,00,000</td>
</tr>
<tr>
<td>11 per cent debentures</td>
<td>₹ 60,00,000</td>
<td>₹ 66,00,000</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>₹ 40,00,000</td>
<td>₹</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>₹ 2,00,00,000</td>
<td>₹ 2,50,00,000</td>
</tr>
</tbody>
</table>

The current market price of the company’s equity share is ₹ 200. For the last year the company had paid equity dividend at 25 per cent and its dividend is likely to grow 5 per cent every year. The corporate tax rate is 30 per cent and shareholders personal income tax rate is 20 per cent.

You are required to calculate:

(i) Cost of capital for each source of capital.

(ii) Weighted average cost of capital on the basis of book value weights.

(iii) Weighted average cost of capital on the basis of market value weights.

Question 173

The capital structure of a company as on 31st March, 2009 is as follows:

<table>
<thead>
<tr>
<th>Source of capital</th>
<th>₹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity capital : 6,00,000 equity shares of ₹ 100 each</td>
<td>6 crore</td>
</tr>
<tr>
<td>Reserve and surplus</td>
<td>1.20 crore</td>
</tr>
<tr>
<td>12% debenture of ₹ 100 each</td>
<td>1.80 crore</td>
</tr>
</tbody>
</table>

For the year ended 31st March, 2009 the company has paid equity dividend @24%. Dividend is likely to grow by 5% every year. The market price of equity share is ₹ 600 per share. Income-tax rate applicable to the company is 30%.

Required:

(i) Compute the current weighted average cost of capital.
Chapter 3: Cost of Capital

**Question 174**

The capital structure of a company consists of equity shares of ₹ 50 lakhs; 10 percent preference shares of ₹ 10 lakhs and 12 percent debentures of ₹ 30 lakhs. The cost of equity capital for the company is 14.7 percent and income-tax rate for this company is 30 percent.

You are required to calculate the Weighted Average Cost of Capital (WACC).

**Question 175**

Z Ltd.’s operating income (before interest and tax) is ₹ 9,00,000. The firm’s cost of debt is 10 per cent and currently firm employs ₹ 30,00,000 of debt. The overall cost of capital of firm is 12 per cent.

Required:

Calculate cost of equity.

**Question 176**

The capital structure of MNP Ltd. is as under:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>9% Debenture</td>
<td>₹ 2,75,000</td>
</tr>
<tr>
<td>11% Preference shares</td>
<td>₹ 2,25,000</td>
</tr>
<tr>
<td>Equity shares (face value : ₹ 10 per share)</td>
<td>₹ 5,00,000</td>
</tr>
<tr>
<td></td>
<td>₹ 10,00,000</td>
</tr>
</tbody>
</table>

Additional information:

(i) ₹ 100 per debenture redeemable at par has 2% flotation cost and 10 years of maturity. The market price per debenture is ₹ 105.

(ii) ₹ 100 per preference share redeemable at par has 3% flotation cost and 10 years of maturity. The market price per preference share is ₹ 106.

(iii) Equity share has ₹ 4 flotation cost and market price per share of ₹ 24. The next year expected dividend is ₹ 2 per share with annual growth of 5%. The firm has a practice of paying all earnings in the form of dividends.

(iv) Corporate Income-tax rate is 35%.

Required:

Calculate Weighted Average Cost of Capital (WACC) using market value weights.
Question 177

SK Limited has obtained funds from the following sources, the specific cost are also given against them:

<table>
<thead>
<tr>
<th>Source of funds</th>
<th>Amount (₹)</th>
<th>Cost of Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity shares</td>
<td>30,00,000</td>
<td>15 percent</td>
</tr>
<tr>
<td>Preference shares</td>
<td>8,00,000</td>
<td>8 percent</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>12,00,000</td>
<td>11 percent</td>
</tr>
<tr>
<td>Debentures</td>
<td>10,00,000</td>
<td>9 percent (before tax)</td>
</tr>
</tbody>
</table>

You are required to calculate weighted average cost of capital. Assume that Corporate tax rate is 30 percent.

Question 178

PQR Ltd. has the following capital structure on October 31, 2010:

<table>
<thead>
<tr>
<th></th>
<th>₹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity Share Capital</td>
<td>20,00,000</td>
</tr>
<tr>
<td>(2,00,000 Shares of ₹ 10 each)</td>
<td></td>
</tr>
<tr>
<td>Reserves &amp; Surplus</td>
<td>20,00,000</td>
</tr>
<tr>
<td>12% Preference Shares</td>
<td>10,00,000</td>
</tr>
<tr>
<td>9% Debentures</td>
<td>30,00,000</td>
</tr>
<tr>
<td></td>
<td>80,00,000</td>
</tr>
</tbody>
</table>

The market price of equity share is ₹ 30. It is expected that the company will pay next year a dividend of ₹ 3 per share, which will grow at 7% forever. Assume 40% income tax rate.

You are required to compute weighted average cost of capital using market value weights.
Question 179

Beeta Ltd. has furnished the following information:

- Earning per share (ESP)  रु 4
- Dividend payout ratio  रु 25%
- Market price per share  रु 40
- Rate of tax  30%
- Growth rate of dividend  8%

The company wants to raise additional capital of रु 10 lakhs including debt of रु 4 lakhs. The cost of debt (before tax) is 10% upto रु 2 lakhs and 15% beyond that.

Compute the after tax cost of equity and debt and the weighted average cost of capital.

Question 180

A company issued 40,000, 12% Redeemable Preference Share of रु 100 each at a premium of रु 5 each, redeemable after 10 years at a premium of रु 10 each. The floatation cost of each share is रु 2.

You are required to calculate cost of preference share capital ignoring dividend tax.

Question 181

Explain in brief the assumptions of Modigliani-Miller theory.

Question 182

Discuss the concept of Debt-Equity or EBIT-EPS indifference point, while determining the capital structure of a company.

Question 183

What do you understand by Capital structure? How does it differ from Financial structure?

Question 184

Discuss financial break-even and EBIT-EPS indifference analysis.
Chapter 3: Cost of Capital

Question 185

Explain, briefly, Modigliani and Miller approach on Cost of Capital.

Question 186

Discuss the proposition made in Modigliani and Miller approach in capital structure theory.

Question 187

Discuss the major considerations in capital structure planning.

Question 188

What do you mean by capital structure? State its significance in financing decision.

Question 189

What is Over capitalisation? State its causes and consequences.

Question 190

D Ltd. is foreseeing a growth rate of 12% per annum in the next two years. The growth rate is likely to be 10% for the third and fourth year. After that the growth rate is expected to stabilise at 8% per annum. If the last dividend was ₹ 1.50 per share and the investor’s required rate of return is 16%, determine the current value of equity share of the company.

The P.V. factors at 16%

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.V. Factor</td>
<td>.862</td>
<td>.743</td>
<td>.641</td>
<td>.552</td>
</tr>
</tbody>
</table>
Question 191

X Ltd. is considering the following two alternative financing plans:

<table>
<thead>
<tr>
<th></th>
<th>Plan - I</th>
<th>Plan - II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equity shares of `10 each</strong></td>
<td>4,00,000</td>
<td>4,00,000</td>
</tr>
<tr>
<td>12% Debentures</td>
<td>2,00,000</td>
<td>-</td>
</tr>
<tr>
<td><strong>Preference Shares of `100 each</strong></td>
<td>-</td>
<td>2,00,000</td>
</tr>
<tr>
<td></td>
<td>6,00,000</td>
<td>6,00,000</td>
</tr>
</tbody>
</table>

The indifference point between the plans is ₹ 2,40,000. Corporate tax rate is 30%. Calculate the rate of dividend on preference shares.

Question 192

"Operating risk is associated with cost structure, whereas financial risk is associated with capital structure of a business concern." Critically examine this statement.
Chapter 3: Cost of Capital

Question 193

Three companies A, B & C are in the same type of business and hence have similar operating risks. However, the capital structure of each of them is different and the following are the details:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity Share capital</td>
<td>₹ 4,00,000</td>
<td>₹ 2,50,000</td>
<td>₹ 5,00,000</td>
</tr>
<tr>
<td>[Face value ₹ 10 per share]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market value per share</td>
<td>₹ 15</td>
<td>₹ 20</td>
<td>₹ 12</td>
</tr>
<tr>
<td>Dividend per share</td>
<td>₹ 2.70</td>
<td>₹ 4.00</td>
<td>₹ 2.88</td>
</tr>
<tr>
<td>Debentures</td>
<td>Nil</td>
<td>₹ 1,00,000</td>
<td>₹ 2,50,000</td>
</tr>
<tr>
<td>[Face value per debenture ₹ 100]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market value per debenture</td>
<td>—</td>
<td>₹ 125</td>
<td>₹ 80</td>
</tr>
<tr>
<td>Interest rate</td>
<td>—</td>
<td>10%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Assume that the current levels of dividends are generally expected to continue indefinitely and the income tax rate at 50%.

You are required to compute the weighted average cost of capital of each company.

Question 194

Suppose Mr. A is offered a 10% Convertible Bond (par value ₹ 1,000) which either can be redeemed after 4 years at a premium of 5% or get converted into 25 equity shares currently trading at ₹ 33.50 and expected to grow by 5% each year. You are required to determine the minimum price Mr. A shall be ready to pay for bond if his expected rate of return is 11%.

Question 195

Sulaiman Mohamed Ltd. issues MVR 50,000 8% debenture. The tax rate applicable is 50%. Compute the cost of debt capital, if debentures are issued (i) at par (ii) at Premium of 10% (iii) at discount of 10%

Question 196

A company issues MVR 10, 00,000; 10% debentures at a discount of 5%. The cost of floatation amounts to MVR 30,000. The debentures are redeemable after 5 years. Calculate before tax and after tax cost of debt assuming a tax rate of 50%.
Question 197

A 5-year MVR 100 debenture of a firm can be sold for a net price of MVR 96.50. The coupon rate of interest is 14% per annum, and the debenture will be redeemed at 5% premium on maturity. The firm’s tax rate is 40%. Compute the after tax cost of debenture.

Question 198

A company issues 1,000 7% preference shares of MVR 100 each at a premium of 10% redeemable after 5 years at par. Compute the cost of preference Capital.

Question 199

The shares of a company are selling at MVR 40 per share and it had paid a dividend of MVR 4 per share last year. The investor’s market expects a growth rate of 5% per year.

a) Compute the company’s equity cost of capital;

b) If the anticipated growth rate is 7% per annum, calculate the indicated market price per share.

Question 200

A firm has the following capital structure and after tax cost for the different sources of funds used:

<table>
<thead>
<tr>
<th>Source of funds</th>
<th>Amount (Rs.)</th>
<th>Proportion (%)</th>
<th>After tax cost (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt</td>
<td>15,00,000</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Preference capital</td>
<td>12,00,000</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Equity Capital</td>
<td>18,00,000</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>15,00,000</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60,00,000</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

You are required to compute the weighted average cost of capital.
Question 201

A company has the following capital structure and after tax costs of different sources of Capital used:

<table>
<thead>
<tr>
<th>Type of Capital</th>
<th>Book Value</th>
<th>Proportion (%)</th>
<th>After-tax cost (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt</td>
<td>Rs. 4,50,000</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>Preference</td>
<td>3,75,000</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Equity</td>
<td>6,75,000</td>
<td>45</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>15,00,000</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

a) Determine the weighted average cost of capital using book Value weights

b) The firm wishes to raise further Rs. 6,00,000 for the expansion of the project as below:

<table>
<thead>
<tr>
<th>Capital</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt</td>
<td>Rs. 3,00,000</td>
</tr>
<tr>
<td>Preference Capital</td>
<td>Rs. 1,50,000</td>
</tr>
<tr>
<td>Equity Capital</td>
<td>Rs. 1,50,000</td>
</tr>
</tbody>
</table>

Assuming that specific costs do not change, compute the weighted marginal cost of capital.

Question 202

Extracts from the most recent annual report of Dingy PLC read as follows:

<table>
<thead>
<tr>
<th>Year Ended</th>
<th>Annual Dividend Per Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>31st March 2006</td>
<td>30.26 Cents</td>
</tr>
<tr>
<td>31st March 2007</td>
<td>31.06 Cents</td>
</tr>
<tr>
<td>31st March 2008</td>
<td>34.00 Cents</td>
</tr>
</tbody>
</table>

Dingy PLC’s shares are currently trading (31/3/2009) at €6.34 cum div. The company’s Beta Co-efficient has been calculated at 0.8. The expected return on risk free securities is 10% and the expected return on the market portfolio is 15%.

Dingy PLCs cost of equity using the Dividend Growth Model is closest to:

Dingy PLCs cost of equity using the Capital Asset Pricing Model is closest to:
BBN PLC owns the Z Hotel, a four star establishment located in Portmarnock Co. Dublin. The owners of the hotel have recently spent €20,000 on market research into the potential for improving the hotel's image, customer base and profitability.

The market research concluded that if the hotel could achieve five star status then the occupancy rate would increase from 60% to 70% for each of the 350 nights that the hotel opens for per year. To achieve five star status the hotel would have to add a leisure complex to its customer offering. The estimated cost of this project is €10,000,000.

The average casual spend per room (food and beverage) is currently €50 per occupied room at a contribution margin of 50%. This is expected to increase by €20 per occupied room if five star status is achieved. This is in part due to increased prices which improve the contribution margin to 60%.

The Z Hotel has 150 bedrooms which are charged at an average nightly rate of €100. Given the difficult trading conditions this average rate is not expected to change for the next three years, at least. If five star status is achieved the average room rate per night would increase by €50 per night in the first year and settle at an average nightly rate of €200 per room for the next two years.

As a result of the hotel upgrade it is expected that the annual local council rates will increase from €60,000 per annum to €100,000 in the first year, increasing by €10,000 per annum thereafter. The pool will cost €10,000 to heat each month. The Z Hotel has agreed that this cost will remain fixed for three years.

The business plan for the new leisure facility forecasts a profile of four different users of the facility, namely:

- Hotel guests who avail of the leisure facility at no charge.
- Casual guests – paying €10 per visit.
- Family memberships – paying €1,000 per family per year.
- Single memberships – paying €500 per year.

The above are year one prices. Family memberships will be increased by €100 per year commencing in year three. Single memberships will remain at €500 for the next four years whilst the casual charge will increase by €1 per guest per year commencing in year 2.

The indicative charges and trading volumes of each type of customer has been advised by the market research company. A summary of its volume projections read as:

<table>
<thead>
<tr>
<th>Z HOTEL - GUEST PROJECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEMBERSHIP TYPE</strong></td>
</tr>
<tr>
<td>Casual Guests (per day)</td>
</tr>
<tr>
<td>Family Memberships (per annum)</td>
</tr>
<tr>
<td>Single Memberships (per annum)</td>
</tr>
<tr>
<td>Hotel Guest Visits (per day)</td>
</tr>
</tbody>
</table>

The leisure facility will incur the following annual salary costs in its first year:

- General Manager – €50,000
- Cleaner - €20,000
- Life Guards - €25,000 each. Three lifeguards will be employed to provide the necessary level of service.
All salaries will be uplifted for inflation at 5% commencing in year three of the proposal.

For the purpose of financing the proposal the company intends to raise debt finance of €10,000,000 at a rate of 10%, which attracts tax relief at 20%. The company already has the following sources of capital:

<table>
<thead>
<tr>
<th>€Ms</th>
<th>Ordinary Shares</th>
<th>20.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>€2 Preference Shares at 8%</td>
<td>7.5</td>
<td></td>
</tr>
</tbody>
</table>

The ordinary shares are presently trading at €6.38 cum div. The most recent dividend declared (but not paid thereon) was €0.88 cent. This represents an average dividend increase of 10% per annum. This increase in dividends is expected to recur into the future. The company’s preference dividends are trading at €2.50 ex dividend.

BBN PLC expects all capital investments to achieve a positive Net Present Value after three years.

**REQUIREMENT:**

(a) Calculate the Weighted Average Cost of Capital of BBN PLC before the new capital of €10 million is raised.

(b) Calculate the Net Present Value of the proposal to achieve five star status by investing in the leisure centre facilities, when discounted at the after tax cost of the specific finance used for the proposed investment.

(Ignoring Corporation Tax Payable/Refundable on proposal)

(c) Discuss four qualitative factors to be considered when determining whether or not to invest €10 million in the leisure facility. Advise, with justification, whether this investment proposal should proceed.

[Total: 25 Marks]
Question 204

A client company, J Plc, has asked for advice on a number of matters relating to its future funding and retention policy as the company wishes to invest in an overseas company at an indicative cost of €50 million, spread equally over the next five years. Extracts from J Plc’s most recent audited accounts read as follows:

J Plc
Statement of Financial Position as at 31st March 2012

<table>
<thead>
<tr>
<th>Assets</th>
<th>€ms</th>
<th>€ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Current Assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land and Buildings</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Plant and Equipment</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Fixtures and Fittings</td>
<td>9</td>
<td>260</td>
</tr>
<tr>
<td>Current Assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventories</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Trade Receivables</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Cash and Cash Equivalents</td>
<td>20</td>
<td>130</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>390</td>
<td></td>
</tr>
</tbody>
</table>

| Equity and Liabilities        |     |     |
| Ordinary shares at €4 each    | 100 |     |
| P & L Reserves                | 180 | 280 |
| **Non-Current Liabilities**   |     |     |
| 10% Debentures Redeemable 31/3/2013 | 50 |

| Current Liabilities           |     |     |
| Trade Payables                | 60  |     |
| Short-Term Borrowings         |     | 60  |
| **Total Equity and Liabilities** | 390 |     |

J Plc reported Net Operating Profit after Tax (NOPAT) of €20 million for the year ended 31st March 2012.

Your research of market prices and dividend policy has discovered the following relevant information:

(i) The company has been profitable for the last decade and has maintained a consistent dividend policy whereby 50% of NOPAT is retained within the business. Over the last ten years you have determined that the average compound rate of growth in dividends was 10%. This growth rate is expected to continue if retention policy does not change.

(ii) The retention policy for the year ended 31st March 2012 was to retain 50% of profits for the annual replenishment of plant and machinery. Dividends have been declared and will be paid on 29th April 2012.

(iii) J Plc’s ordinary shares presently trade at €6.75 cum div.

(iv) J Plc’s debentures are presently valued at 90% to par value. All interest due on debentures to 31st March 2012 has been paid in full.

(v) The prevailing corporation tax rate is 40%, while the capital gains tax rate is 25%.

(vi) The company’s management is finding it difficult to raise new funds and is considering the possibility of not paying dividends for the next five years in order to fund the proposed investment.
Chapter 3: Cost of Capital

REQUIREMENT:

(a) Calculate J Plc's Weighted Average Cost of Capital if the current retention policy is to be maintained for the foreseeable future.

(b) Discuss, in detail, any three advantages and three disadvantages of altering the company's current retention policy to fund the overseas investment.

(c) Would venture capital funding be an appropriate option for J Plc for its proposed overseas investment? Justify your answer.

[Total: 25 Marks]
Question 205

N Ltd. is a Dublin-based property company. The company’s Managing Director is Jack White, a professional musician who meandered into property during the boom years of the 1990’s.

Jack is becoming increasingly concerned about N Ltd.’s falling rental income which is threatening the company’s ability to service significant medium term debt finance. Jack and his fellow board members have agreed to look for other income stream opportunities.

N Ltd. purchased a block of 14 apartments in 2009 on Dublin’s Lime Quay for €7 million, with the intention to sell each apartment for €800,000 within a short time. Unfortunately, only two apartments were sold each at €200,000 lower than the sales price estimated. N Ltd. currently pays €400,000 annual rates on the premises.

Jack has been researching the idea of converting the apartment block into a recording studio with four apartments attached for use by visiting recording artists. Jack has contacts in the recording business who are convinced that there is great income potential for such a facility in Dublin. To facilitate the proposal N Ltd. would have to buy-back the residents at a premium price of 1.5 times their initial purchase price.

Jack’s research into the project thus far has revealed the following:

<table>
<thead>
<tr>
<th>PROPOSED PRICING SCHEDULE</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHARGES</td>
<td>€</td>
<td>€</td>
<td>€</td>
</tr>
<tr>
<td>RECORDING PER HOUR</td>
<td>500</td>
<td>500</td>
<td>600</td>
</tr>
<tr>
<td>RENTAL PER APARTMENT PER NIGHT</td>
<td>400</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>RENTAL DISCOUNT &gt; 1 WEEK STAY</td>
<td>30%</td>
<td>20%</td>
<td>10%</td>
</tr>
</tbody>
</table>

It is estimated that the studio could attract 20 recording artists during 2013, as initial interest in the industry has been encouraging. It is estimated that 6 artists will use the studio to record singles and the remainder to record albums, a 70/30 album/single split. Only artists recording albums are expected to rent the full accommodation for the duration of the recording and mixing process. Those artists recording singles are expected to stay in local hotels. The variable cost of providing the accommodation will be €50 per apartment per night, reducing by 10% in any year where rented nights exceed 500.

Based on industry norms, the estimated times booked to produce singles and albums are as follows:

<table>
<thead>
<tr>
<th>ESTIMATED UTILISATION RATES - 2013</th>
<th>SINGLE</th>
<th>ALBUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECORDING DAYS</td>
<td>6</td>
<td>33</td>
</tr>
</tbody>
</table>

For each recording day 12 hours will be billed to the artist.

It is expected that business will not increase in 2014, although the mix between album and single recording will alter to 90/10 respectively. In 2015, it is expected that the number of artists will increase by 10 and that the album/single mix will remain at 2014 levels.

N Ltd.’s Building Manager has indicated that the cost of converting the current apartment block into a recording studio would be €1,200,000.
Chapter 3: Cost of Capital

Jack's estimate of capital equipment required for the commencement of the studios is as follows:

<table>
<thead>
<tr>
<th>CAPITAL EQUIPMENT</th>
<th>Sourced</th>
<th>Cost</th>
<th>Cost</th>
<th>Cost</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>€</td>
<td>US$</td>
<td>Rupees</td>
<td>Baht</td>
</tr>
<tr>
<td>Condenser mikes</td>
<td>Germany</td>
<td>600,000</td>
<td>400,000</td>
<td>10,000,000</td>
<td>15,000,000</td>
</tr>
<tr>
<td>Mixing desk</td>
<td>San Francisco</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound proofing panels</td>
<td>India</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speakers</td>
<td>Thailand</td>
<td>800,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amplifiers</td>
<td>Los Angeles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The estimated rate of exchange when the equipment will be purchased will be:

1 Euro € = 1.5 US Dollar $

1 Euro € = 50 Indian Rupees

1 Euro € = 30 Thai Baht

N Ltd. will employ sound engineers to oversee the recording process who, in 2012, are paid on a casual rate of €100 per hour. This will rise by €20 per hour per annum thereafter.

N Ltd. will pay additional rates on the building at €225,000 in 2013, which is expected to increase by €20,000 per annum after 2013. N Ltd. will employ their current under-employed members of staff to do the repairs and maintenance of the building.

N Ltd. has a cost of capital of 8%.

N Ltd.'s Board of Directors is concerned about the nature of the proposal as the members have no music industry experience and have indicated that the project will only be authorised if it achieves both a:

- Cash payback within two years or less;
- Delivery of a Net Present Value (NPV) over three years in excess of €3,000,000.

Jack has asked for your assistance to carry out a financial appraisal of the proposal.

REQUIREMENT:
Prepare a memo for Jack in which you:

(a) Advise, based on financial grounds alone whether or not N Ltd. should invest in the recording studio proposal. (17 marks)

(b) Discuss three non-financial factors relevant to the decision to invest or otherwise in the proposal. (6 marks)
Question 206

Opera PLC, a manufacturer of jewellery has enjoyed considerable growth over the last five years. Extracts from the most recent Balance Sheet and Income Statements for the year ended 19th December 2008 read as follows:

**Opera PLC**
**Balance Sheet as at 19th December 2008**

<table>
<thead>
<tr>
<th>Non Current Assets at NBV</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property and Plant</td>
<td>751</td>
</tr>
<tr>
<td>Fixtures &amp; Fittings</td>
<td>262</td>
</tr>
<tr>
<td><strong>Total Non-Current Assets</strong></td>
<td><strong>1,013</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Assets</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories</td>
<td>68</td>
</tr>
<tr>
<td>Trade Receivables</td>
<td>32</td>
</tr>
<tr>
<td>Cash &amp; Cash Equivalents</td>
<td>179</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td><strong>279</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Assets</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,292</td>
</tr>
</tbody>
</table>

**Equity & Liabilities**

<table>
<thead>
<tr>
<th>Equity Attributable to Equity Holders</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share Capital (@ €1 each)</td>
<td>400</td>
</tr>
<tr>
<td>Retained Revenue Reserves</td>
<td>215</td>
</tr>
<tr>
<td>6% €1 Preference Shares</td>
<td>300</td>
</tr>
<tr>
<td>8% Debentures Redeemable 19/12/2010</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total Equity Attr. to Eq. Holders</strong></td>
<td><strong>1,115</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non Current Liabilities</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long term borrowings</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Liabilities</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade payables</td>
<td>39</td>
</tr>
<tr>
<td>Dividends Payable</td>
<td>138</td>
</tr>
<tr>
<td>Current portion of long term borrowings</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Current Liabilities</strong></td>
<td><strong>177</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Liabilities</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,292</td>
</tr>
</tbody>
</table>

**Opera PLC**
**Income Statement - Year Ended 19th December 2008**

<table>
<thead>
<tr>
<th>Profit Before Interest &amp; Taxation</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance Charges</td>
<td>16</td>
</tr>
<tr>
<td>Corporation Tax</td>
<td>124</td>
</tr>
<tr>
<td>Profit after Interest &amp; Taxation</td>
<td>326</td>
</tr>
<tr>
<td>Proposed Dividend</td>
<td>138</td>
</tr>
<tr>
<td><strong>Retained Profit for the year</strong></td>
<td><strong>188</strong></td>
</tr>
</tbody>
</table>
Chapter 3: Cost of Capital

Notes
1) Opera PLC recently proposed a dividend of €.30 (30 cent) per ordinary share relating to the year ended 19th December 2008.
2) The company’s equity shares are presently trading at €2.30 cum div.
3) Opera PLC’s dividend policy is to maintain growth of 10% each year.
4) The preference shares are trading at €1.66 cum div.
5) No preference or ordinary share dividends relating to the year ended 19th December 2008 have been paid as yet.
6) Debenture interest for the year ended 19th December 2008 has been paid in full.
7) Opera PLC’s debentures are currently trading at 90% of par value.
8) Opera PLC pays corporation tax at a rate of 20%.

It is expected that profits will increase by 12% over the year ended 19th December 2008.

The company’s Board of Directors is contemplating building a state of the art production facility costing €800 million. It is expected that this facility will reduce the company’s annual recurrent cost base by €164 million. The Board has been considering the options available to finance the purchase of the production facility. The short listed options are:

Option 1
Issues 6% debentures at par redeemable in 2020.

Option 2
Issue equity shares at a price of €4.00

REQUIRED:
1) Calculate Opera PLC’s Weighted Average Cost of Capital (WACC) as at 19th December 2008. (10 Marks)
Question 207

A client company S PLC has recently been approached by a significantly larger PLC about the possibility of a share for share based takeover of S PLC. The main rationale behind the proposed takeover is that the larger PLC can increase shareholder wealth by capitalising the earnings of S PLC at the larger company’s lower cost of capital.

S PLC’s management has opposed this proposal as they don’t believe that the full motivation for the takeover has been disclosed. It plans to defend the company against the takeover and persuade shareholders not to accept the proposed offer.

Extracts from the most recent audited accounts of S PLC are as follows:

S PLC
Statement of Financial Position as at 30 June 2010

<table>
<thead>
<tr>
<th>Assets</th>
<th>£Ms</th>
<th>£Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Current Assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land and Buildings</td>
<td>900</td>
<td></td>
</tr>
<tr>
<td>Plant and Equipment</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>Fixtures and Fittings</td>
<td>80</td>
<td>1,300</td>
</tr>
<tr>
<td>Current Assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventories</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Trade Receivables</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Cash and Cash Equivalents</td>
<td>250</td>
<td>550</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>1,850</td>
<td></td>
</tr>
</tbody>
</table>

| Equity and Liabilities      |     |     |
| 2 ordinary shares           | 500 |     |
| Accumulated Profits         | 400 | 900 |
| Non Current Liabilities     |     |     |
| 10% Debentures Redeemable 2012 | 500 |
| **Current Liabilities**     |     |     |
| Trade Payables              | 200 |     |
| Short Term Borrowings       | 250 | 450 |
| **Total Equity and Liabilities** | 1,850 |     |

Your investigations have revealed the following relevant information:

- The most recent dividend declared was 50 cent per ordinary share. This dividend will be paid on 20 September 2010.
- You have calculated that the average compound rate of growth in dividends over the last five years has been 20%. This growth rate is expected to continue.
- S PLC’s ordinary shares presently trade at €5.50 cum div.
- S PLC debentures are presently valued at 90% of their par value.
- All interest due on debentures to 30 June 2010 has been paid in full.
- The prevailing corporation tax rate is 40%.

REQUIRED:
(a) Calculate S PLCs Weighted Average Cost of Capital. (9 Marks)
Chapter 3: Cost of Capital

Question 208

Bank House PLC (BH) is an events management company. The company is considering tendering for the rights to host a Swiss-style Christmas market adjacent to Dublin’s IFSC. The market will have capacity to accommodate 60 stalls which will sell a mixture of crafts, foodstuffs and novelties. BH has researched similar ventures in London and Cologne and has been impressed by the quality of stall holders attracted and the popularity amongst customers. BH’s marketing manager has estimated that the following percentage sales of total stalls available for rental will be achieved for the three years commencing in 2011:

<table>
<thead>
<tr>
<th>STALL RENTALS</th>
<th>YEAR 1</th>
<th>YEAR 2</th>
<th>YEAR 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD</td>
<td>80%</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>CRAFT</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>NOVELTY</td>
<td>50%</td>
<td>75%</td>
<td>75%</td>
</tr>
</tbody>
</table>

The tender will cover a three year period. BH will be required to make an upfront payment of €1,000,000, with an annual payment of 10% of the gross rental income generated by BH, subject to a minimum weekly payment of €10,000, and a maximum weekly payment of €15,000. This payment is to be made one year in arrears.

The market will run for six weeks (42 days) from mid-November to the end of December each year. There will be capacity to house 150 stalls, 40% of which will be dedicated to food stalls, 30% to craft stalls and the remainder to novelty stalls.

The indicative rental charged per stall per week will be:
- Food €1000 (Increased by 10% per year thereafter)
- Craft €500 (Increased by 20% per year thereafter)
- Novelty €1500 (No annual increase planned)

Security will be required at a cost of €500 per day, increasing by 10% each year thereafter.

BH’s financial controller has gone on sick leave. The company’s managing director has asked you to determine the discount rate at which the proposal should be discounted for investment appraisal purposes. You have advised that the company’s Weighted Average Cost of Capital (WACC) should be used but this figure is not to hand. The capital structure of the company is:

**BH PLC - FINANCE STRUCTURE**

<table>
<thead>
<tr>
<th>SOURCE OF FINANCE</th>
<th>NOMINAL VALUE (€MS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>€2 ORDINARY SHARES</td>
<td>15</td>
</tr>
<tr>
<td>€1 122% PREFERENCE SHARES</td>
<td>5</td>
</tr>
<tr>
<td>8% IRREDEEMABLE LOAN STOCK</td>
<td>10</td>
</tr>
</tbody>
</table>

The ordinary shares are trading at €3.50 ex div; whilst the preference shares are trading at €2.42 cum div. The most recent dividend paid on ordinary shares was €0.40. An annual growth rate of 10% is expected for the foreseeable future. The irredeemable loan stock is trading at 335% of nominal value ex-interest.

BH pays corporation tax at an effective rate of 20% one year in arrears.

**REQUIRED:**

(a) Calculate Bank House PLC’s Weighted Average Cost of Capital.
Question 209

K Plc is a quoted company which operates in the oil exploration industry. Over the last year, the company has achieved a significant increase in sales while experiencing a worsening cash position. Management decided to sell plant assets to shore up the worsening cash position and now are particularly concerned about this continuing trend of cash depletion. A summary of K Plc's recent Income Statement reveals the following:

K Plc
Income Statement Extracts
Year ended 31 December 2012

€M's
Turnover 4,500
Cost of sales -2,300
Gross profit 2,200
Expenses -1,100
Taxation -200
Net profit 900

K Plc wishes to raise a further €50 million using asset-backed lending at an interest rate of 6% per annum. The company pays corporation tax at an effective rate of 10%.

A summary of the K Plc's most recent Statements of Financial Position reads as follows:

K Plc
Statements of Financial Position as at 31 December 2011/12

€M's

Non Current Assets at NBV
Property and Plant 4,600 2,800
Other Assets 100 860
Total Non-Current Assets 4,700 3,660

Current Assets
Inventories 100 250
Trade Receivables 100 390
Cash & Cash Equivalents 300 0
Total Current Assets 500 640

Total Assets 5,200 4,300

Equity & Liabilities
€4 Ordinary Shares 200 200
8% Preference Shares of €1 each. 100 100
Other Reserves 4,160 3,260
Total Equity 4,460 3,560

Non-Current Liabilities
9% Redeemable Debentures 150 0

Current Liabilities
Trade payables 260 440
Dividend payable 45 50
Short-Term Borrowings 35 150
Current portion of long term borrowings 250 100
Total Current Liabilities 590 740

Total Liabilities 5,200 4,300
Notes:
1. K Plc’s 50 million ordinary shares in issue are presently trading at €7.75 cum-div 10% growth is expected in ordinary dividend each year.
2. Preference shares have an ex-div market value of €1.15.

K Plc’s management are concerned about the company’s increasing investment in working capital. A recent discussion with management revealed the following information:

- One half of sales are cash sales; the remaining credit sales are allowed 40 days as standard settlement terms.
- K Plc purchases all supplies from creditors that offer 30 days as standard settlement terms.
- K Plc expects to turnover stock every two weeks.

REQUIREMENT:
(a) Compute K Plc’s proposed WACC (based on 31/12/2012 information) if the €50 million loan is obtained as planned. (12 marks)
**Question 210**

A client company Sunny PLC has asked you to help management better understand the cost of financing the company.

You have recently prepared the accounts for Sunny PLC. Relevant extracts from the Balance Sheet are as follows:

**Sunny PLC**  
**Balance Sheet as at 31st March 2007**

<table>
<thead>
<tr>
<th>Assets</th>
<th>€000s</th>
<th>€000s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Current Asset</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land and Buildings</td>
<td>900</td>
<td></td>
</tr>
<tr>
<td>Plant and Equipment</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>Fixtures and Fittings</td>
<td>80</td>
<td>1,300</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td><strong>1,850</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Current Assets**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories</td>
<td>120</td>
</tr>
<tr>
<td>Trade Receivables</td>
<td>180</td>
</tr>
<tr>
<td>Cash and Cash Equivalents</td>
<td>250</td>
</tr>
<tr>
<td><strong>Total Equities and Liabilities</strong></td>
<td><strong>550</strong></td>
</tr>
</tbody>
</table>

**Equity and Liabilities**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>€2 ordinary shares</td>
<td>500</td>
</tr>
<tr>
<td>Accumulated Profits</td>
<td>400</td>
</tr>
<tr>
<td><strong>Total Equity and Liabilities</strong></td>
<td><strong>900</strong></td>
</tr>
</tbody>
</table>

**Non Current Liabilities**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10% Debentures Redeemable 2009</td>
<td>500</td>
</tr>
</tbody>
</table>

**Current Liabilities**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Payables</td>
<td>200</td>
</tr>
<tr>
<td>Short Term Borrowings</td>
<td>250</td>
</tr>
<tr>
<td><strong>Total Equity and Liabilities</strong></td>
<td><strong>450</strong></td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Your investigations have revealed the following relevant information:

- The most recent dividend declared was 50 cent per share. This dividend will be paid on 20th June 2007.
- You have calculated that the average compound rate of growth in dividends over the last five years has been 20%. This growth rate is expected to continue.
- Sunny PLC’s ordinary shares presently trade at £5.50 cum div.
- Sunny PLC debentures are presently valued at 90% of their par value.
- All interest due on debentures to 31st March 2007 has been paid in full.
- The prevailing corporation tax rate is 40%.

REQUIRED:

Calculate Sunny PLC’s Weighted Average Cost of Capital.

(11 Marks)
Question 211

Extracts from your client, Big Limited’s recently audited Balance Sheet read as follows:

Big Limited
Balance Sheet as at 31st March 2009

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>€000s</td>
<td></td>
</tr>
<tr>
<td>Total Non-Current Assets</td>
<td>3,600</td>
</tr>
<tr>
<td>Total Current Assets</td>
<td>1,400</td>
</tr>
<tr>
<td>Total Assets</td>
<td>5,000</td>
</tr>
</tbody>
</table>

Equity & Liabilities

Equity Attributable to Equity Holders
- Ordinary Share Capital (@ €1 each) | 1,400
- 10% €1 Cumulative Irredeemable Preference Share Capital | 600
- Other Reserves | 800

Total Equity & Liabilities | 5,000

Non Current Liabilities
- 6% €100 Irredeemable Loan Stock | 1,000

Total Current Liabilities | 1,200

Notes:
- The ordinary shares are trading at €6.30 cum div.
- The 10% preference shares are quoted at €4.20 ex div.
- The current price of the loan stock is €110.
- For the year ended 31/3/2009, an ordinary dividend of €.30 cent per share was declared (not paid as yet).
- The preference dividend for the year ended 31/3/2009 has been paid.
- Profit before interest and tax for the year ended 31/3/2009 was €800,000.
- Big Limited pays corporation tax at 20%.
- You have calculated that the average compound rate of growth in dividends on ordinary shares over the last four years has been 2%. This growth rate is expected to continue.

Calculate Big Limited’s Weighted Average Cost of Capital and list two reasons why it is important for company’s to understand their WACC. (12 Marks)
Question 212

A client company, Patrick Limited, has sought your advice on funding and investment issues. Patrick Limited invests in shares of companies in the property development industry.

Extracts from the most recent Balance Sheet of Patrick Limited are as follows:

Patrick Limited
Extracts - Balance Sheet as at 30th April 2007

<table>
<thead>
<tr>
<th>NET ASSETS</th>
<th>€</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,000,000</td>
<td></td>
</tr>
</tbody>
</table>

FINANCED BY:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000,000 Issued Ordinary Shares @ €2 each</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Retained Reserves</td>
<td>1,100,000</td>
</tr>
<tr>
<td>20% Preference Shares @ €1 each</td>
<td>1,000,000</td>
</tr>
<tr>
<td>5% Debentures – Redeemable at par 30/4/2009</td>
<td>900,000</td>
</tr>
<tr>
<td></td>
<td>5,000,000</td>
</tr>
</tbody>
</table>

Notes

1. Ordinary shares are presently trading at €4 cum-div.
2. Preference shares have a cum-div market value of €1.60.
3. Patrick Limited’s most recent board meeting agreed a dividend for the year of €0.40c per ordinary share. This will be paid in two weeks time.
4. Patrick Limited’s Board has indicated that they expect the average annual rate of growth in dividends to continue at 10% per annum.
5. Debentures are presently trading at 82% of the value they were issued at.
6. Debenture interest is paid annually. All payments relating to the y/e 30/4/2007 have been made in full.
7. Preference dividends are paid half yearly. The dividend for the first half of the year ended 30th April 2007 has been paid.
8. Corporation tax of 30% is payable on profits in the year in which profits are reported.

REQUIREMENT:
Calculate Patrick Limited’s Weighted Average Cost of Capital (WACC) (15 Marks)
Question 213

It is 5 March 2008. Cork PLC is a company which wholesales wines and spirits throughout Ireland. Cork PLC plans to raise finance to fund a strategy to enter the U.K. market. Extracts from Cork PLC's most recent published Balance Sheet are as follows:

Cork PLC
Balance Sheet Extract
As at 29 February 2008

€000s

Equity Attributable to Equity Holders
2,000,000 Ordinary shares @ €3 each 6,000
10% Preference Shares @ €2 each 2,000
Other Reserves (Retained Revenue Reserves) 4,000

12,000

Non Current Liabilities
12% Debentures (Redeemable 28/2/2010) 5,000

Notes:
• Ordinary shares are presently trading at €6.80 cum-div.
• Preference shares have an ex-div market value of €3.20.
• A recent board meeting agreed an ordinary dividend for the year of €0.80c per share. This dividend will be paid on 14 March 2008.
• Cork PLC has announced at a recent meeting with investors that it expects that the average annual rate of growth in dividends will be 20%.
• Debentures are presently trading at 110% of the value they were issued at.
• Debenture interest is paid annually. All payments relating to the year end 29/2/2008 have been made in full.
• Preference dividends are paid annually.
• Corporation tax of 20% is payable on profits in the year in which profits are reported.

REQUIRED:
Prepare a brief report for the Board of Cork PLC which:

a) Explains the term Weighted Average Cost of Capital (WACC) and how it is calculated. (7 Marks)

b) Explains the significance of the WACC for Cork PLC as it considers the manner in which it will raise new funds. (10 Marks)

c) Calculates the company's present Weighted Average Cost of Capital. (8 Marks)
Question 214

Your client, Exe Limited, has grown organically since it was formed in 1980. Exe Limited has just reported profits of €3 Million for the most recent year ended 31st July 2009. The company wishes to embark on a strategy of acquisitive growth and has identified a takeover target with an indicative cost of €5,000,000. The company is considering raising €15,000,000 through issuing 5% debentures redeemable on 30th November 2029 to fund this proposed acquisition and other future acquisitions.

Extracts from the most recent Balance Sheet of Exe Limited are as follows:

Exe Limited
Extracts - Balance Sheet as at 31st July 2009

<table>
<thead>
<tr>
<th>NET ASSETS</th>
<th>€ Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65</td>
</tr>
<tr>
<td>FINANCED BY</td>
<td></td>
</tr>
<tr>
<td>4,000,000 Issued Ordinary Shares @ €12 each</td>
<td>48</td>
</tr>
<tr>
<td>Retained Reserves</td>
<td>7</td>
</tr>
<tr>
<td>12% Cumulative Preference Shares @ €1 each</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>65</td>
</tr>
</tbody>
</table>

Notes:
1. Ordinary shares are presently trading at €19 cum-div.
2. Preference shares have a ex-div market value of €1.60.
3. There are no arrears of preference dividends.
4. Exe Limited’s recent board meeting agreed a dividend for the year of €2 per ordinary share. This will be paid in one week’s time.
5. Exe Limited’s Board has indicated that they expect the average annual rate of growth in dividends to continue at 5% per annum.

REQUIRED:
i) Calculate Exe Limited's Weighted Average Cost of Capital (WACC). (6 Marks)
Question 215

J PLC is a quoted company that manufactures photocopier machines etc. J PLC has always maintained a policy of paying dividends to its ordinary shareholders. The dividends paid to ordinary shareholders by J PLC for the last five years are as follows:

- Year Ended 31st March 2006 = €107.82 million
- Year Ended 31st March 2007 = €115 million
- Year Ended 31st March 2008 = €161 million
- Year Ended 31st March 2009 = €165 million
- Year Ended 31st March 2010 = €190.0 million

The company’s draft Statement of Financial Position as at 31st March 2010 reads as follows:

J PLC
Statement of Financial Position as at 31st March 2010

<table>
<thead>
<tr>
<th>Assets</th>
<th>€Ms</th>
<th>€Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Current Assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land and Buildings</td>
<td>1,948</td>
<td></td>
</tr>
<tr>
<td>Plant and Equipment</td>
<td>317</td>
<td></td>
</tr>
<tr>
<td>Fixtures and Fittings</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Current Assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventories</td>
<td>251</td>
<td></td>
</tr>
<tr>
<td>Trade Receivables</td>
<td>411</td>
<td></td>
</tr>
<tr>
<td>Cash and Cash Equivalents</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Total Assets</td>
<td>2,982</td>
<td></td>
</tr>
<tr>
<td>Equity and Liabilities</td>
<td>1,140</td>
<td>1,921</td>
</tr>
<tr>
<td>€3 Ordinary shares</td>
<td>1,140</td>
<td></td>
</tr>
<tr>
<td>4% €10 Preference shares</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>Accumulated Profits</td>
<td>381</td>
<td></td>
</tr>
<tr>
<td>Non-Current Liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10% Irredeemable Debentures</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>8% Debentures (Redeemable 31/03/2012)</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Current Liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade Payables</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Short Term Borrowings</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>Total Equity and Liabilities</td>
<td>2,982</td>
<td></td>
</tr>
</tbody>
</table>
Notes:
- Irredeemable debentures have a market value of €120 million (cum. interest). The full interest on these debentures for the year ended 31st March 2010 has yet to be paid by J PLC.
- Redeemable debentures have a current market value of €450 million. Interest on these debentures for the year ended 31st March 2010 has been paid in full.
- J PLC pays Corporation tax at 20%.

No new ordinary shares have been issued since 1998. At 5pm on Wednesday 31st March 2010 J PLC’s ordinary shares are priced at €7.15 (ex dividend), and the preference shares are trading at €9.40 (cum dividend). The full preference dividend for the year ended 31st March 2010 has not yet been paid.

J PLC’s Board of Directors wish to consider a proposed expansion plan which will require an additional €500 million funding for which the company’s Financial Director has identified the following potential funding sources:
- issue €500 million 10% redeemable debentures at par (redeemable 31/3/2032).
- issue 75 million ordinary shares at market value.

REQUIRED:

(a) Determine J PLC’s Weighted Average Cost of Capital based on market values at 31st March 2010.  
(13 Marks)

(b) (i) Detail three reasons why it is essential that J PLC’s Board understand the company’s Weighted Average Cost of Capital; and

(ii) What are the implications for J PLC’s WACC arising from the funding options identified by the Finance Director?
(12 Marks)

[Total: 25 Marks]
Question 216

C PLC, a long established manufacturer of carpets is based in Adare, Co. Limerick. The company is planning to expand operations and requires an anticipated €5 million to invest in advanced manufacturing technologies. The company has spoken to local business people and has sourced expansion funds from a local entrepreneur comprising €5 million 8% irredeemable loan stock. The company's management team would like to appreciate the impact that this new source of funds would have on its cost of finance and advise on the approach to future investment appraisal. Extracts from C PLC’s most recent published Statement of Financial Position are as follows:

**C PLC**

**Statement of Financial Position Extracts**

**As at 31 July 2011**

<table>
<thead>
<tr>
<th>Equity Attributable to Equity Holders</th>
<th>€000’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000,000 Ordinary shares @ €2 each</td>
<td>6,000</td>
</tr>
<tr>
<td>6% Preference Shares @ €5 each</td>
<td>1,000</td>
</tr>
<tr>
<td>Other Reserves (Retained Revenue Reserves)</td>
<td>4,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11,000</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Current Liabilities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10% Debentures (Redeemable 31/7/2013)</td>
<td>5,000</td>
</tr>
</tbody>
</table>

- Ordinary shares are presently trading at €4.80 cum-div.
- Preference shares have an ex-div market value of €6.20.
- A recent board meeting agreed an ordinary dividend for the year of €0.40 per share. This dividend will be paid on 14 September 2011.
- C PLC’s average annual rate of growth in dividends is expected to be 20% for the foreseeable future.
- Debentures are presently trading at 90% of their par value. Debenture interest is paid annually. All payments relating to the y/e 31/7/2011 have been made in full.
- Preference dividends are paid annually.
- Corporation tax of 20% is payable on profits in the year in which profits are reported.

**REQUIRED:**
Prepare a brief report for the Board of C PLC which:

(a) Calculates the company’s present weighted average cost of capital.  

(b) Calculates the company’s revised weighted average cost of capital if the €5 million irredeemable loan stock is used to finance the proposed investment.  

(c) Advises on the cost of funds to be used to appraise the proposed investment in the advanced manufacturing technology.

[Total: 15 Marks]
Chapter 3: Cost of Capital

Question 217

The directors of Sparrow plc are considering a new project which will cost £500,000. The company is currently financed by both equity and debt. It has 3 million 50p ordinary shares in issue (current ex-dividend market price is 60p) and 10% irredeemable debentures with a face value of £200,000 (current ex-interest market price is £80).

The risk-free rate of interest is 8% and the market rate of return is 12%. The company has an equity beta of 1.50.

The rate of corporate tax is 30%. The company will use WACC to discount the expected cash flows from the new project.

Required:

(a) Using the formulae provided on pages 10 and 11, calculate the weighted average cost of capital (WACC) of Sparrow plc.

(b) Evaluate the assumptions you have to make when using WACC to discount the expected cash flows of the project.

Question 218

The New Mining Company plc currently has 1 million 25p ordinary shares in issue, which are listed on the Alternative Investment Market (AIM), where they are currently priced at 230p. £1 million 7% debentures make up the remainder of the company’s capital structure. The debentures, which are redeemable in exactly three years, are also quoted on AIM. They are currently quoted at £102 per cent. The company does not have access to a quoted beta factor for its shares but, from experience, you consider that shares in New Mining are on average about 20% more volatile than the market.

The company pays tax at the rate of 30%.

Required:

(a) Calculate New Mining’s weighted average cost of capital using market values and assuming that the current risk free rate of return and the market rate of return are 4% and 12% respectively. 
(12 marks)

(b) Describe and explain how the Dividend Valuation Model (Gordon’s Growth Model is an alternative name) can be used to estimate a company’s cost of capital. Contrast it with the Capital Asset Pricing Model and discuss why there are two models for the same purpose.
(13 marks)
(Total 25 marks)
Question 219

Washford plc has the following capital structure:

<table>
<thead>
<tr>
<th>Capital</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary shares – 8,000,000 at 25p</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Revenue reserves</td>
<td>3,000,000</td>
</tr>
<tr>
<td>6% Preference shares at £1</td>
<td>800,000</td>
</tr>
<tr>
<td>8% Debentures (2015 to 2016)</td>
<td>2,000,000</td>
</tr>
<tr>
<td>10% Loan stock</td>
<td>500,000</td>
</tr>
<tr>
<td><strong>Total funds employed</strong></td>
<td>8,300,000</td>
</tr>
</tbody>
</table>

The market price of the preference shares is 80p ex-div, the ordinary shares 330p and debentures £80 per £100 of stock. A dividend of 30p per ordinary share is due for payment and this is expected to grow by 5% per annum for the foreseeable future.

The preference shares, debentures and loan stock can be assumed to be irredeemable.

Washford plc has a marginal rate of corporation tax of 30%.

The current risk free rate of return is 6%, the market rate of return is 10% and the company has an equity beta co-efficient of 1.2.

**Required:**

(a) Using market values, calculate Washford plc’s weighted average cost of capital, using:

(i) The dividend growth model; 
(ii) The capital asset pricing model.  

(12 marks)

(b) Explain reasons for the differences between the answers to (a)(i) and (ii).  

(8 marks)

(c) Assess the value of the weighted average cost of capital to evaluate investment decisions.

(5 marks)  
(Total 25 marks)
Question 220

Highfive Plc, a company listed on the London Stock Exchange, is a major toy retailer with over 50 outlets in the UK and Europe. Highfive has the following capital structure:

<table>
<thead>
<tr>
<th></th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary shares (2,000,000) at 50p</td>
<td>1,000,000</td>
</tr>
<tr>
<td>9% preference shares at £1</td>
<td>1,000,000</td>
</tr>
<tr>
<td>6% debentures (secured)</td>
<td>700,000</td>
</tr>
<tr>
<td>8% debentures (unsecured)</td>
<td>800,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,500,000</strong></td>
</tr>
</tbody>
</table>

Notes:

1. The market price of the ordinary shares is 185p and a dividend of 20p will be paid shortly. The dividends have been growing by 6% per year.
2. The preference shares have a current market price of 75p.
3. The 6% debentures are currently priced at £75 per £100 of stock and the 8% debentures at £60 per £100 of stock.
4. The preference shares and debentures are all irredeemable.
5. Highfive pays tax at 33%.

Required:

(a) Calculate Highfive’s weighted average cost of capital (WACC), using:

   (i) Original book values  
   (ii) Market values  

   (16 marks)

(b) Briefly explain why it would be preferable for Highfive to consider only the market value WACC.  

(3 marks)

(c) Briefly discuss the main disadvantages and limitations of using the WACC you have calculated in (a) (i) and (ii).  

(6 marks)  
(Total 25 marks)

“Have a vision. It is the ability to see the invisible. If you can see the invisible, you can achieve the impossible.”

Shiv Khera
Question 221

(a) What do you understand by the following two terms:
   (i) ordinary shares  
   (ii) preference shares?  

(b) What are the main advantages and disadvantages of both ordinary shares and preference shares to the business?  

(c) What do you understand by the following two terms:
   (i) Cost of capital  
   (ii) Weighted average cost of capital (WACC)?  

(d) Your business has a capital structure as follows:

<table>
<thead>
<tr>
<th>Cost of Capital</th>
<th>Market value</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>£’m</td>
</tr>
<tr>
<td>Bank loans</td>
<td>9</td>
</tr>
<tr>
<td>Debenture loans</td>
<td>12</td>
</tr>
<tr>
<td>Ordinary shares</td>
<td>15</td>
</tr>
</tbody>
</table>

Calculate the weighted average cost of capital.  

(2 marks)  
(2 marks)  
(8 marks)  
(2 marks)  
(3 marks)
(e) Pioneer Plc is currently financed as follows:

<table>
<thead>
<tr>
<th></th>
<th>Cost %</th>
<th>Book Value £m</th>
<th>Market value £m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary shares</td>
<td>12.5</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td>Debentures</td>
<td>6</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>160</td>
<td>300</td>
</tr>
</tbody>
</table>

Pioneer wishes to expand its business, for which a further £100 million of finance is required. The following two options are being considered:

(i) a further £50m debt plus £50m equity

or

(ii) a further £80m debt plus £20m equity

It is anticipated that the cost of the new debt will match that of the existing debt. However, due to the increased financial risk it is estimated that the cost of equity will rise by 0.5% for option (i) and 2% for option (ii).

**Required:**

Calculate the effect on the weighted average cost of capital after the finance is raised under each of the two different options above.  

(6 marks)  
(Total 25 marks)
Question 222

Ullswater PLC has the following capital structure:

**Equity**  
1,000,000 £2 ordinary shares with a market price of £2.50 per share

**Preference**  
1,000,000 12% £1 preference shares with a market price of £1.20 per share

**Reserves**  
£1,500,000

**Bank loan**  
£500,000 15% bank loan

**Debentures**  
1,750,000 16% debentures with a market price of 110p

The current and expected future rate of ordinary share dividend is 20%.

Corporation tax rate is 35%.

Calculate the company's weighted average cost of capital.  

(10 marks)
Question 223

Pétain SA, a limited liability company, has the following summarised Statement of Financial Position (formerly the balance sheet) as at 1 January 2009:

<table>
<thead>
<tr>
<th>Pétain SA</th>
<th>€000s</th>
<th>€000s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statement of Financial Position at 1 January 2009</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td></td>
<td>68,000</td>
</tr>
<tr>
<td><strong>Equity and Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share capital</td>
<td>6,400</td>
<td></td>
</tr>
<tr>
<td>Nominal value €0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5% Preference shares</td>
<td>3,375</td>
<td></td>
</tr>
<tr>
<td>Nominal value €1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share premium</td>
<td>3,520</td>
<td></td>
</tr>
<tr>
<td>Retained earnings</td>
<td>20,785</td>
<td></td>
</tr>
<tr>
<td><strong>Total equity</strong></td>
<td></td>
<td>34,080</td>
</tr>
<tr>
<td><strong>Non Current Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term borrowings - 4% Loan stock</td>
<td>25,600</td>
<td></td>
</tr>
<tr>
<td><strong>Current Liabilities</strong></td>
<td></td>
<td>8,320</td>
</tr>
<tr>
<td><strong>TOTAL EQUITY AND LIABILITIES</strong></td>
<td></td>
<td>68,000</td>
</tr>
</tbody>
</table>

The ordinary shares are currently trading at €2.70 and the dividend paid was €0.54 per share. The company's recent dividend growth rate over the last few years has been 3% per annum. The preference shares are currently trading at €1.16 and the loan stock is currently trading at €90 per €100 nominal. Corporation tax is currently charged at 30%.

Required:

(a) Explain what is meant by a ‘company’s cost of capital’. (5 marks)

(b) Discuss the assumptions made in the use of the weighted average cost of capital (WACC) as the basis for the discount rate, and outline the arguments against using it for investment appraisal. (10 marks)

(c) Calculate Pétain SA's WACC. (10 marks)

(Total 25 marks)
Chapter 3: Cost of Capital

Question 224

The summarised forecast profit and loss account of Alpha plc for the year which is due to end on 31 December 2011, is as follows:

<table>
<thead>
<tr>
<th></th>
<th>£m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Profit</td>
<td>8.0</td>
</tr>
<tr>
<td>Bond Interest</td>
<td>2.0</td>
</tr>
<tr>
<td>Profit before tax</td>
<td>6.0</td>
</tr>
<tr>
<td>Corporation tax</td>
<td>1.8</td>
</tr>
<tr>
<td>Profit after tax</td>
<td>4.2</td>
</tr>
<tr>
<td>Proposed net dividend</td>
<td>1.8</td>
</tr>
<tr>
<td>Retained profit</td>
<td>2.4</td>
</tr>
</tbody>
</table>

The following information is also available:

- The bonds have a total nominal value of £20m and have a current market value of £18m.
- The ordinary shares have a total nominal value of £5m and a total market value of £20m, cum div, i.e. the value of the proposed dividend is included in the quoted market price.
- The published beta for Alpha plc is 1.5.
- The risk free rate of return is 4% gross.
- The market rate of return is 10%.
- Corporation tax is 30%.

The directors of Alpha plc are considering investing in a project which requires a single initial outlay of £1.5m, and which has a forecast internal rate of return of 20% based on forecast after tax cash flows.

It is planned to raise the £1.5m by reducing the proposed dividend for the year ending 31 December 2011.

Required:

(a) Calculate the weighted average cost of capital of Alpha plc, using whatever data you feel to be appropriate.  
(10 marks)

(b) Outline why the use of market values is preferred to book value when calculating the weighted average cost of capital.  
(4 marks)

(c) Assess the implications of reducing the dividend to fund the project, from a theoretical and practical perspective.  
(11 marks)  
(Total 25 marks)
Question 225

The summarised forecast profit and loss account of SCM plc for the year which is due to end on 31 December 2012 is as follows:

<table>
<thead>
<tr>
<th></th>
<th>£m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Profit</td>
<td>25.0</td>
</tr>
<tr>
<td>Bond Interest</td>
<td>18.0</td>
</tr>
<tr>
<td>Profit before tax</td>
<td>7.0</td>
</tr>
<tr>
<td>Corporation tax</td>
<td>2.1</td>
</tr>
<tr>
<td>Profit after tax</td>
<td>4.9</td>
</tr>
<tr>
<td>Proposed net dividend</td>
<td>4.2</td>
</tr>
<tr>
<td>Retained profit</td>
<td>0.7</td>
</tr>
</tbody>
</table>

The following information is also available:

- The bonds have a total nominal value of £360m and have a current market value of £350m.
- The ordinary shares have a total nominal value of £5m and a total market value of £120m, cum div, i.e. the value of the proposed dividend is included in the quoted market price.
- The published beta for SCM plc is 1.5.
- The risk-free rate of return is 3% gross.
- The market rate of return is 7%.
- Corporation tax is 30%.

Required:

(a) Calculate SCM's weighted average cost of capital (WACC), using market values.  
(9 marks)

If you want to make peace with your enemy, you have to work with your enemy. Then he becomes your partner.

Nelson Mandela
Chapter 3: Cost of Capital

Question 226

Oakman plc has financed its operations through issue of the following:

- Debt finance consisting of 8% £100 bonds having a total book value of £3 million. The bonds are currently trading at par.
- Six million equity shares having a market value of £2.35 per share ex-div.

The company has an equity beta of 1.1. The yield on short-term government debt is 3.6% per year and the equity risk premium is approximately 4% per year. A corporate tax of 25% applies to the company.

Required:

(a) Calculate the after-tax weighted average cost of capital of Oakman plc (round off your answer to the nearest whole number).

(8 marks)
Question 227

Jokath plc is a UK public quoted company with the following financial structure as extracted from the latest Statement of Financial Position (Balance Sheet):

**Share capital and reserves**

<table>
<thead>
<tr>
<th>Description</th>
<th>£000</th>
</tr>
</thead>
<tbody>
<tr>
<td>160,000,000 ordinary shares 25p issued and fully paid</td>
<td>40,000</td>
</tr>
<tr>
<td>20,000,000 10% cumulative irredeemable preference shares £1 fully paid</td>
<td>20,000</td>
</tr>
<tr>
<td>Reserves</td>
<td>120,000</td>
</tr>
<tr>
<td></td>
<td>180,000</td>
</tr>
</tbody>
</table>

**Loans**

<table>
<thead>
<tr>
<th>Description</th>
<th>£000</th>
</tr>
</thead>
<tbody>
<tr>
<td>£100,000,000 8% Secured Debentures repayable 2016/18</td>
<td>100,000</td>
</tr>
<tr>
<td>£60,000,000 Variable Unsecured Loans</td>
<td>60,000</td>
</tr>
<tr>
<td></td>
<td>340,000</td>
</tr>
</tbody>
</table>

The following information is available regarding financial instruments:

(i) The various shares and loans are currently priced as follows:

- 25p ordinary shares at 115p
- 10% preference shares at 105p
- 8% secured debentures at £80 per £100 of stock

(ii) The risk free rate on government stock is currently 3% and the market rate of return (the return on the all share index) is 12%. Jokath plc has a β of 1.2.

(iii) Dividend per share is 5p and dividends are expected to continue to grow at a rate of 6% each year.

(iv) The variable unsecured loan is at a rate 8% above interbank market rates. The market rate is currently 4%. The loan is bank syndicated and due for repayment in six-monthly instalments over the next three years.

(v) Corporation tax is 30%.
Chapter 3: Cost of Capital

Jokath is considering a major investment. The cost of the investment will be £20,000,000, and it will provide net annual cash inflows of £6,000,000 for the next five years. The company considers that the risk attached to the investment is similar to the average risk of the company’s current activities.

Required:

(a) Compare and contrast the features of the different financial instruments included in the capital structure of Jokath. (8 marks)

(b) Using market values and the dividend growth model for the cost of equity capital, calculate Jokath plc’s weighted average cost of capital. Using the weighted average cost of capital, appraise the investment opportunity. (12 marks)

(c) Calculate the cost of equity capital using the capital asset pricing model, and briefly explain possible reasons for differences between this answer and the cost calculated using the dividend growth model. (5 marks)

(Total 25 marks)

"The greatest glory in living lies not in never falling, but in rising every time we fall."

KEEP CALM AND STUDY FINANCE