INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS OF RWANDA

CPA

I1.1
MANAGERIAL FINANCE

Study Manual

2nd edition February 2020,

ICPAR
Unlimited possibilities

Acknowledgement

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INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS OF RWANDA

Intermediate Level

I1.1 MANAGERIAL FINANCE

2nd Edition February 2020

This Manual has been fully revised and updated in accordance with the current syllabus/ curriculum. It has been developed in consultation with experienced tutors and lecturers.

Table Of Contents

INTRODUCTION TO THE COURSE

Stage: Intermediate Level 1
Subject Title: I1.1 Managerial Finance

AIM

The aim of this subject is to ensure that students understand the nature and scope of financial management. They should be able to assess an entity"s funding requirements, calculate the cost of the available sources of finance, and advise on the optimum financing structure for an entity. Students should be able to evaluate the role of, and apply, corporate planning and budgetary control techniques. They are also expected to demonstrate excellent written communication skills and the ability to integrate learning from the syllabi of this and other subjects.

MANAGERIAL FINANCE AS AN INTEGRAL PART OF THE SYLLABUS

Managerial Finance develops the knowledge of students with respect to the financial management of organisations and builds on the Foundation 2 level Management Accounting subject. This subject is an essential underpinning for Strategic Corporate Finance, Strategic Performance Management and Strategy, Leadership & Knowledge Management at Advanced level.

LEARNING OUTCOMES

On successful completion of this subject students should be able to:

- Interpret, and critically appraise corporate objectives (including shareholder value, stakeholder value, value creation, investment policy and long and short- term financing);
- Analyse and evaluate the main financial management decisions of a company (including capital budgeting, investment appraisal, working capital management, capital structure and dividend decisions).
- Describe and discuss the relationship between risk and return and demonstrate its application to portfolio theory and the Capital Asset Pricing Model (CAPM).
- Apply, evaluate and compare common business valuation models.
- Evaluate the role of corporate planning and budgetary control as key elements in managerial finance including the preparation and utilisation of performance measurement statements.
- Prepare and present quantitative and qualitative information for management decision-making integrating analysis, argument, and commentary in a form appropriate to the intended audience.

Study Unit 1

Objectives of Financial Management

Contents

A. Introduction

B. Agency Theory

C. Public Sector/Not-For-Profit Organisations

D. Corporate Social Responsibility (CSR)

E. Impact of Government on Activities

F. Composition of Shareholders

A. INTRODUCTION

Financial Management is a branch of economies concerned with the generation and allocation of scarce resources to the most efficient user within the economy (or the firm). The allocation of these resources is done through a market pricing system. A firm requires resources in form of funds raised from investors. The funds must be allocated within the organisation to projects that will yield the highest return.

Financial Management is a discipline concerned with the generation and allocation of scarce resources (usually funds) to the most efficient user within the firm (the competing projects) through a market pricing system (the required rate of return).

Managerial Finance is the science of managing financial resources in a firm so as to maximize the value of the firm while on the other side managing the financial risks.

SCOPE OF FINANCE FUNCTIONS

The functions of Financial Manager can broadly be divided into two: **The Routine functions and the Managerial Functions.**

Managerial Finance Functions

Require skilful planning, control and execution of financial activities. There are four important managerial finance functions. These are:

a) Investment of Long-term asset-mix decisions

These decisions (also referred to as capital budgeting decisions) relates to the allocation of funds among investment projects. They refer to the firm's decision to commit current funds to the purchase of fixed assets in expectation of future cash inflows from these projects. Investment proposals are evaluated in terms of both risk and expected return.

Investment decisions also relates to recommitting funds when an old asset becomes less productive. This is referred to as replacement decision.

b) Financing decisions

Financing decision refers to the decision on the sources of funds to finance investment projects. The finance manager must decide the proportion of equity and debt. The mix of debt and equity affects the firm's cost of financing as well as the financial risk. This will further be discussed under the risk return trade-off.

c) Division of earnings decision

The finance manager must decide whether the firm should distribute all profits to the shareholders, retain them, or distribute a portion and retain a portion. The earnings must also be distributed to other providers of funds such as preference shareholder, and debt providers of funds such as preference shareholders and debt providers. The firm's dividend policy may influence the determination of the value of the firm and therefore the finance manager must decide the optimum dividend – payout ratio so as to maximise the value of the firm.

d) Liquidity decision

The firm's liquidity refers to its ability to meet its current obligations as and when they fall due. It can also be referred to as current assets management. Investment in current assets affects the firm's liquidity, profitability and risk. The more current assets a firm has, the more liquid it is. This implies that the firm has a lower risk of becoming insolvent but since current assets are non-earning assets the profitability of the firm will be low. The converse will hold true.

The finance manager should develop sound techniques of managing current assets to ensure that neither insufficient nor unnecessary funds are invested in current assets.

Routine functions
For the effective execution of the managerial finance functions, routine functions have to be performed. These decisions concern procedures and systems and involve a lot of paper work and time. In most cases these decisions are delegated to junior staff in the organization. Some of the important routine functions are:

- Supervision of cash receipts and payments
- Safeguarding of cash balance
- Custody and safeguarding of important documents
- Record keeping and reporting

The finance manager will be involved with the managerial functions while the routine functions will be carried out by junior staff in the firm. He must however, supervise the activities of these junior staff.

THE OBJECTIVES/GOALS OF A BUSINESS
1. Profit maximization – This is a traditional and a cardinal objective of a business. This is so for the following reasons:

- To earn acceptable returns to its owners. *(i.e. Must not be less than bank rates + inflation + risk)*
- So as to survive (through plough backs)
- To meet its day to day obligations.

2. To maximize the net worth i.e. the difference between total assets and total liabilities. This is important because:

- It influences company's share prices.
- It facilitates growth (plough backs).
- It boosts the company's credit rating.
- This is what owners claim from the company.

3. To maximize welfare of employees – Happy employees will contribute to the profitability. This includes:

- Reasonable salaries
- Transport facilities
- Medical facilities for the employee and his family
- Recreation facilities (sporting facilities).

4. Interests of customers – the company has to provide quality goods at fair prices and have honest dealings with customers.
5. Welfare of the society – the company has to maintain sound industrial relations with the society:

- Avoid pollution
- Contribution to social causes e.g. Harambee contributions, building clinics etc.

6. Fair dealing with suppliers. A company must:

- Meet its obligations on time
- Avoid dishonor of obligations.

7. Duty to the government: A company should:

- Pay taxes promptly
- Go by government plans
- Operate within legal framework.

The Main objectives of a business entity are explained in detail below
Any business firm would have certain objectives, which it aims at achieving. The major goals of a firm are:

a) Profit maximization
Traditionally, this was considered to be the major goal of the firm. Profit maximization refers to achieving the highest possible profits during the year. This could be achieved by either increasing sales revenue or by reducing expenses. Note that:

Profit = Revenue – Expenses

The sales revenue can be increased by either increasing the sales volume or the selling price. It should be noted however, that maximizing sales revenue may at the same time result to increasing the firm's expenses. The pricing mechanism will however, help the firm to determine which goods and services to provide so as to maximize profits of the firm.
The profit maximization goal has been criticized because of the following:

- It ignores time value of money
- It ignores risk and uncertainties
- It is vague
- It ignores other participants in the firm rather than shareholders

b) Shareholders' wealth maximisation
Shareholders' wealth maximisation refers to maximisation of the net present value of every decision made in the firm. Net present value is equal to the difference between the present value of benefits received from a decision and the present value of the cost of the decision.
A financial action with a positive net present value will maximize the wealth of the shareholders, while a decision with a negative net present value will reduce the wealth of the shareholders. Under this goal, a firm will only take those decisions that result in a positive net present value.
Shareholder wealth maximisation helps to solve the problems with profit maximisation. This is because, the goal:

- Considers time value of money by discounting the expected future cash flows to the present.
- It recognizes risk by using a discount rate (which is a measure of risk) to discount the cash flows to the present.

c) Social responsibility
The firm must decide whether to operate strictly in their shareholders' best interests or be responsible to their employers, their customers, and the community in which they operate. The firm may be involved in activities which do not directly benefit the shareholders, but which will improve the business environment. This has a long term advantage to the firm and therefore in the long term the shareholders wealth may be maximized.

d) Business Ethics

Related to the issue of social responsibility is the question of business ethics. Ethics are defined as the "standards of conduct or moral behaviour". It can be though of as the company's attitude toward its stakeholders, that is, its employees, customers, suppliers, community in general creditors, and shareholders. High standards of ethical behaviour demand that a firm treat each of these constituents in a fair and honest manner. A firm's commitment to business ethics can be measured by the tendency of the firm and its employees to adhere to laws and regulations relating to:

- Product safety and quality
- Fair employment practices
- Fair marketing and selling practices
- The use of confidential information for personal gain
- Illegal political involvement
- Bribery or illegal payments to obtain business.

In reality, firms have multiple, and often conflicting, objectives and will seek to optimise among those. The modern corporation is a complex entity which is responsible not only to shareholders but to all ***stakeholders***.

The main stakeholders are:

- **Shareholders**
- **Loan Creditors** – seek security, repayment of loan interest and principal.
- **Employees** – seek fair wages, promotional opportunities, welfare & social facilities => improved motivation.
- **Management** - job security, fair reward, job satisfaction.
- **Trade Creditors -** payment within credit terms.
- **The Community** – sponsorship, charities, install environmental measures.
- **The Government** - payment of taxes, rates, provide employment.
- **Customers** - provision of service/goods at fair price, quality, on time etc.

The relative importance of the various groups may differ, possibly depending on company size and management style.

Management will be concerned with the value of the firm as it satisfies one of the important stakeholders (shareholders). A low valuation may increase the possibility of an unwanted takeover bid. Also, finance must be adequately rewarded and its market value maintained, so that further finance is obtainable when required.

Non-financial objectives may conflict with financial objectives – e.g. provision of staff recreational facilities; modern, safe working environment etc.

AGENCY THEORY

The managers/directors act as **agents** for the shareholders (owners) in running the company. This separation of ownership from control may lead to certain problems if managers are not monitored or constrained - e.g. management working inefficiently; adopting risk adverse policies such as „safe" short-term investments and low gearing; empire building for power/status; rewarding themselves with high salaries and fringe benefits; increased leisure time etc.

Managers" and shareholders" interests can be aligned by a number of measures - introducing profit-related remuneration for management, offering bonus shares, share option schemes,

scrutiny of performance by the board of directors and banks who provide finance etc. However, care must be taken to ensure that management does not take action to boost performance in the short-term to the detriment of the long-term wealth of the shareholders (**„short-termism"**).
An agency relationship arises where one or more parties called the principal contracts/hires another called an agent to perform on his behalf some services and then delegates decision making authority to that hired party (Agent) In the field of finance shareholders are the owners of the firm. However, they cannot manage the firm because:

- They may be too many to run a single firm.
- They may not have technical skills and expertise to run the firm
- They are geographically dispersed and may not have time.

Shareholders therefore employ managers who will act on their behalf. The managers are therefore agents while shareholders are principal.
Shareholders contribute capital which is given to the directors which they utilize and at the end of each accounting year render an explanation at the annual general meeting of how the financial resources were utilized. This is called stewardship accounting.

- In the light of the above shareholders are the principal while the management are the agents.
- Agency problem arises due to the divergence or divorce of interest between the principal and the agent. The conflict of interest between management and shareholders is called agency problem in finance.
- There are various types (Focus on first two) of agency relationship in finance exemplified as follows:

    - Shareholders and Management
    - Shareholders and Creditors
    - Shareholders and the Government
    - Shareholders and Auditors
    - Headquarter office and the Branch/subsidiary.

1. Shareholders and Management
There is near separation of ownership and management of the firm. Owners employ professionals (managers) who have technical skills. Managers might take actions, which are not in the best interest of shareholders. This is usually so when managers are not owners of the firm i.e. they don't have any shareholding. The actions of the managers will be in conflict with the interest of the owners. The actions of the managers are in conflict with the interest of shareholders will be caused by:

- **Incentive Problem**

Managers may have fixed salary and they may have no incentive to work hard and maximize shareholders wealth. This is because irrespective of the profits they make, their reward is fixed. They will therefore maximize leisure and work less which is against the interest of the shareholders.

- **Consumption of "Perquisites"**

Prerequisites refer to the high salaries and generous fringe benefits which the directors might award themselves. This will constitute directors remuneration which will reduce the dividends paid to the ordinary shareholders. Therefore the consumption of perquisites is against the interest of shareholders since it reduces their wealth.

- **Different Risk-profile**

Shareholders will usually prefer high-risk-high return investments since they are diversified i.e they have many investments and the collapse of one firm may have insignificant effects on their overall wealth.

Managers on the other hand, will prefer low risk-low return investment since they have a personal fear of losing their jobs if the projects collapse. (Human capital is not diversifiable). This difference in risk profile is a source of conflict of interest since shareholders will forego some profits when low-return projects are undertaken.

- **Different Evaluation Horizons**

Managers might undertake projects which are profitable in short-run. Shareholders on the other hand evaluate investments in long-run horizon which is consistent with the going concern aspect of the firm. The conflict will therefore occur where management pursue short-term profitability while shareholders prefer long term profitability.

- **Management Buy Out (MBO)**

The board of directors may attempt to acquire the business of the principal. This is equivalent to the agent buying the firm which belongs to the shareholders. This is inconsistent with the agency relationship and contract etween the shareholders and the managers.

- **Pursuing power and self esteem goals**

This is called "empire building" to enlarge the firm through mergers and acquisitions hence increase in the rewards of managers.

- **Creative Accounting**

This involves the use of accounting policies to report high profits e.g stock valuation methods, depreciation methods recognizing profits immediately in long term construction contracts etc.

Solutions to Shareholders and Management Conflict of Interest

Conflicts between shareholders and management may be resolved as follows:

1. Pegging/attaching managerial compensation to performance

This will involve restructuring the remuneration scheme of the firm in order to enhance the alignments/harmonization of the interest of the shareholders with those of the management e.g. managers may be given commissions, bonus etc. for superior performance of the firm.

2. Threat of firing

This is where there is a possibility of firing the entire management team by the shareholders due to poor performance. Management of companies have been fired by the shareholders who have the right to hire and fire the top executive officers e.g the entire management team of Unga Group, IBM, G.M. have been fired by shareholders.

3. The Threat of Hostile Takeover

If the shares of the firm are undervalued due to poor performance and mismanagement. Shareholders can threatened to sell their shares to competitors. In this case the management team is fired and those who stay on can loose their control and influence in the new firm. This threat is adequate to give incentive to management to avoid conflict of interest.

4. Direct Intervention by the Shareholders

Shareholders may intervene as follows:

- Insist on a more independent board of directors.
- By sponsoring a proposal to be voted at the AGM
- Making recommendations to the management on how the firm should be run.

5. Managers should have voluntary code of practice, which would guide them in the performance of their duties.

6. Executive Share Options Plans

In a share option scheme, selected employees can be given a number of share options, each of which gives the holder the right after a certain date to subscribe for shares in the company at a fixed price.

The value of an option will increase if the company is successful and its share price goes up. The theory is that this will encourage managers to pursue high NPV strategies and investments, since they as shareholders will benefit personally from the increase in the share price that results from such investments.

However, although share option schemes can contribute to the achievement of goal congruence, there are a number of reasons why the benefits may not be as great as might be expected, as follows:

Managers are protected from the downside risk that is faced by shareholders. If the share price falls, they do not have to take up the shares and will still receive their standard remuneration, while shareholders will lose money.

Many other factors as well as the quality of the company's performance influence share price movements. If the market is rising strongly, managers will still benefit from share options, even though the company may have been very successful. If the share price falls, there is a downward stock market adjustment and the managers will not be rewarded for their efforts in the way that was planned.

The scheme may encourage management to adopt 'creative accounting' methods that will distort the reported performance of the company in the service of the managers' own ends.

Note

The choice of an appropriate remuneration policy by a company will depend, among other things, on:

- Cost: the extent to which the package provides value for money
- Motivation: the extent to which the package motivates employees both to stay with the company and to work to their full potential.
- Fiscal effects: government tax incentives may promote different types of pay. At times of wage control and high taxation this can act as an incentive to make the 'perks' a more significant part of the package.
- Goal congruence: the extent to which the package encourages employees to work in such a way as to achieve the objectives of the firm – perhaps to maximize rather than to satisfy.

7. Incurring Agency Costs
Agency costs are incurred by the shareholders in order to monitor the activities of their agent. The agency costs are broadly classified into 4.

a) **The contracting cost.** These are costs incurred in devising the contract between the managers and shareholders.
The contract is drawn to ensure management act in the best interest of shareholders and the shareholders on the other hand undertake to compensate the management for their effort.
Examples of the costs are:

- Negotiation fees
- The legal costs of drawing the contracts fees.
- The costs of setting the performance standard,

b) **Monitoring Costs** This is incurred to prevent undesirable managerial actions. They are meant to ensure that both parties live to the spirit of agency contract. They ensure that management utilize the financial resources of the shareholders without undue transfer to themselves.
Examples are:

- External audit fees
- Legal compliance expenses e.g. Preparation of
- Financial statement according to international accounting standards, company law, capital market authority requirement, stock exchange regulations etc.
- Financial reporting and disclosure expenses
- Investigation fees especially where the investigation is instituted by
- the shareholders.
- Cost of instituting a tight internal control system (ICS).

c) **Opportunity Cost/Residual Loss**_This is the cost due to the failure of both parties to act optimally e.g.

- Lost opportunities due to inability to make fast decision due to tight internal control system
- Failure to undertake high risk high return projects by the manager leads to lost profits when they undertake low risk, low return projects.

d) **Restructuring Costs** – e.g. new I.C.S., business process reengineering etc.

2. SHAREHOLDERS AND CREDITORS/bond/debenture holders
Bondholders are providers or lenders of long term debt capital. They will usually give debt capital to the firm on the strength of the following factors:

- The existing asset structure of the firm
- The expected asset structure of the firm
- The existing capital structure or gearing level of the firm
- The expected capital structure of gearing after borrowing the new debt.

Note

- In raising capital, the borrowing firm will always issue the financial securities in form of debentures, ordinary shares, preference shares, bond etc.
- In case of shareholders and bondholders the agent is the shareholder who should ensure that the debt capital borrowed is effectively utilized without reduction in the wealth of the bondholders. The bondholders are the principal whose wealth is influenced by the value of the bond and the number of bonds held.
- Wealth of bondholders = Market value of bonds x No. of bonds /debentures held.
- An agency problem or conflict of interest between the bondholders (principal) and the shareholders (agents) will arise when shareholders take action which will reduce the market value of the bond and by extension, the wealth of the bondholders. These actions include:

a) Disposal of assets used as collateral for the debt in this.
In this case the bondholder is exposed to more risk because he may not recover the loan extended in case of liquidation of the firm.

b) Assets/investment substitution
In this case, the shareholders and bond holders will agree on a specific low risk project. However, this project may be substituted with a high risk project whose cash flows have high standard deviation. This exposes the bondholders because should the project collapse, they may not recover all the amount of money advanced.

c) Payment of High Dividends
Dividends may be paid from current net profit and the existing retained earnings. Retained earnings are an internal source of finance. The payment of high dividends will lead to low level of capital and investment thus reduction in the market value of the shares and the bonds.
A firm may also borrow debt capital to finance the payment of dividends from which no returns are expected. This will reduce the value of the firm and bond.

d) Under investment
This is where the firm fails to undertake a particular project or fails to invest money/capital in the entire project if there is expectation that most of the returns from the project will benefit the bondholders. This will lead to reduction in the value of the firm and subsequently the value of the bonds.

e) Borrowing more debt capital
A firm may borrow more debt using the same asset as a collateral for the new debt. The value of the old bond or debt will be reduced if the new debt takes a priority on the collateral in case the firm is liquidated. This exposes the first bondholders/lenders to more risk.

Solutions to agency problem
The bondholders might take the following actions to protect themselves from the actions of the shareholders which might dilute the value of the bond. These actions include:
1. Restrictive Bond/Debt Covenant
In this case the debenture holders will impose strict terms and conditions on the borrower. These restrictions may involve:

- No disposal of assets without the permission of the lender.
- No payment of dividends from retained earnings
- Maintenance of a given level of liquidity indicated by the amount of current assets in relation to current liabilities.

- Restrictions on mergers and organisations
- No borrowing of additional debt, before the current debt is fully serviced/paid.
- The bondholders may recommend the type of project to be undertaken in relation to the riskness of the project.

2. Callability Provisions

These provisions will provide that the borrower will have to pay the debt before the expiry of the maturity period if there is breach of terms and conditions of the bond covenant.

3. Transfer of Asset

- The bondholder or lender may demand the transfer of asset to him on giving debt or loan to the company. However the borrowing company will retain the possession of the asset and the right of utilization.
- On completion of the repayment of the loan, the asset used as a collateral will be transferred back to the borrower.

4. Representation

The lender or bondholder may demand to have a representative in the board of directors of the borrower who will oversee the utilization of the debt capital borrowed and safeguard the interests of the lender or bondholder.

5. Refuse to lend

If the borrowing company has been involved in un-ethical practices associated with the debt capital borrowed, the lender may withhold the debt capital hence the borrowing firm may not meet its investments needs without adequate capital.
The alternative to this is to charge high interest on the borrower as a deterrent mechanism.

6. Convertibility: On breach of bond covenants, the lender may have the right to convert the bonds into ordinary shares.

PUBLIC SECTOR/NOT-FOR-PROFIT ORGANISATIONS

The objectives of public sector/not-for-profit organisations are likely to be strongly influenced by the government/promoters and not primarily financial. These organisations exist to provide a service (e.g. Rwanda Partners or Public Service Commission etc.) and to ensure that social needs are satisfied and financial requirements may be seen as **constraints** and not objectives. They are not usually profit maximising, although subsidiary objectives may be concerned with earning an acceptable return on capital employed.
In the private sector the effects of investments (and associated financing and dividend decisions) on share price and shareholder wealth will be considered. As there are no share prices in not-for-profit organisations and investor wealth maximisation is not the assumed objective, some private sector investment appraisal techniques will not be appropriate. cash flow is often used.

CORPORATE SOCIAL RESPONSIBILITY

Corporate Social Responsibility is often used to describe the actions of a private, commercial organisation However, some private sector financial management techniques can be used - e.g. discounted assuming a responsible view of its wider obligations to society. Corporate Social Responsibility has been otherwise defined as:

“fulfilling a role wider than your strict economic role” or: “acting as a good corporate citizen”.

The theory of business finance is that the prime objective of management of a listed company is to maximise the wealth of its ordinary shareholders. Agency theory dictates that management, as agents of the company"s owners, must act in their best interests and, thus, strive to maximise shareholders wealth at all times. In their attempt to achieve this prime objective management will set financial objectives, including:

- Profit levels
- Sales and profit growth
- Margin improvement
- Cost releasing efficiency savings
- EPS growth

Management will also set non-financial objectives, which should complement and support the financial objectives. These may include:

- Brand awareness levels
- Research & development successes
- New product development
- New markets entered
- Customer satisfaction levels
- Employee motivation levels

Such objectives may also include the following:

- Providing for the welfare of employees and management
- Upholding responsibilities to customers and suppliers
- Provision of a service.
- Contributing to the welfare of society as a whole
- Environmental protection

Which, may be loosely described as acting in a socially responsible manner. This has led to the development of the concept of Corporate Social Responsibility Likewise, companies have been alleged to have acted in a less than socially responsible manner.

The extent to which organisations subscribe to Corporate Social Responsibility varies greatly both ideologically and in practice. Recent research in Ireland has shown that 90% of companies believed that Corporate Social Responsibility should be part of a company"s DNA, yet only 30% thereof actually did anything about it.

Many organisations view Corporate Social Responsibility as a strategic investment and consider it necessary in order to achieve the reputation that is gaining importance in attracting and retaining key staff and to winning and retaining prestigious contracts and clients. Many such companies have moved to adopt Corporate Social Responsibility formally. This has been achieved in many ways including:

- Incorporating Corporate Social Responsibility in their mission statements
- Appointing a „champion" of Corporate Social Responsibility
- Formally incorporating Corporate Social Responsibility objectives into its strategic planning process
- Dissemination of Corporate Social Responsibility targets and reporting of key performance indicators
- Retaining consultants to advise on existing performance and to recommend improvements
- Appointment of committees to implement and reviews Corporate Social Responsibility related policies.

Whilst, some organisations see social responsibility as a passing trend and are content to get by with a bit of „lip service" and tokenism, other organisations view Corporate Social Responsibility as the preserve of multinationals and government. Part of the challenge in pursuing Corporate Social Responsibility related objectives lies in the relative novelty of the concept. The critical debate is whether or not Corporate Social Responsibility detracts from the objective of maximising shareholder wealth. As with all debates there are opposing views including:

Arguments in favour of Corporate Social Responsibility include that it:

- Creates positive Public Relations for the organisation, or, as a minimum avoids bad public relations.
- Helps attract new and repeat custom
- Improves staff recruitment, motivation and retention
- Helps keep the organisation within the law,

All of which may be considered to support the drive to optimise profits.

However, there are many writers who vigorously oppose the notion that private organisations should embrace social responsibility. Some of the main arguments against Corporate Social Responsibility are:

- Market capitalism is the most equitable form of society that has ever appeared
- The ethics of doing business are not those of wider society
- Governments are responsible for the well- being of society

An organisation"s maximum requirement is to remain within the law, no more than this is required. Ultimately, they argue that business organisations are created and run in order to maximise returns for their owners and that Corporate Social Responsibility detracts from the profit maximisation

Conclusion

The broad philosophical debate on the role of companies in society is still in its early days. Depending on your viewpoint, Corporate Social Responsibility may be considered to support or detract from the objective of maximising shareholder wealth. Neither viewpoint is definitive.

As the public debate on Corporate Social Responsibility and the changing role of business in society intensifies, companies will need to determine their own view on Corporate Social Responsibility and adopt their own stance on the subject. Ultimately, they will have to make policy decisions that are in the best interests of the company and its owners, their shareholders.

IMPACT OF GOVERNMENT ON ACTIVITIES

There are a number of areas where the Government plays a role in the financial arena:

- **Taxation** - Corporate (Capital Allowances etc.) & Personal **Monetary Policy** – Rates of Inflation, Interest Rates, Exchange Rates etc.
- **Investment Incentives Offered** - Grants, Subsidies etc.
- **Legislation** – Company Law, Monopolies, Competition, Environmental etc.
- **Duties, Tariffs** etc.

COMPOSITION OF SHAREHOLDERS

Is there anything to be gained from a company knowing the composition of its shareholders?. Generally, it is useful as it may assist the company in framing its policy/approach in a number of areas e.g.

- **Dividend** Policy
- Attitude to **Risk/Gearing**
- **Unwelcome Bid** - support critical
- How **Performance** is Measured
- Recent Shareholder **Changes** => Price Movements

Study Unit 2

Source of finance

Contents

- Short term source of finance.
- Debt financing (types of debt ,loan amortization) and associated risks.
- Equity financing (the nature and importance of internally generated funds,type of share capital ,warrants ,bonus and right issues).
- The nature and role of capital markets,
- Sources of government finance including: grants, national aid schemes, tax Incentives etc.
- Venture capital financing, nature, benefits and risks.

Long-Term Sources of Finance

EQUITY FINANCE

For small companies, this is personal savings (contribution of owners to the company). For large companies equity finance is made of ordinary share capital and reserves; (both revenue and capital reserves). Equity finance is divided into the following classes:

a) **Ordinary share capital** – this is raised from the public from the sale of ordinary shares to the shareholders. This finance is available to limited companies. It is a permanent finance as the owner/shareholder cannot recall this money except under liquidation. It is thus a base on which other finances are raised.

Ordinary share capital carries a return that is variable (ordinary dividends). These shares carry voting rights and can influence the company's decision making process at the AGM.
These shares carry the highest risk in the company (high securities – documentary claim to) because of:

- Uncertainty of return
- Cannot ensure refund
- Have residual claims – claim last on profits, claim last on assets.

However this investment grows through retention.
Rights of ordinary shareholders

- Right to vote
    - elect BOD
    - Sales/purchase of assets
- Influence decisions:
    - Right to residual assets claim
    - Right to amend company's by-laws
    - Right to appoint another auditor
    - Right to approve merger acquisition
    - Right to approve payment of dividends

Reasons why ordinary share capital is attractive despite being risky

- Shares are used as securities for loans (a compromise of the market price of a share).
- Its value grows.
- They are transferable at capital gain.
- They influence the company's decisions.
- Carry variable returns – is good under high profit
- Perpetual investment – thus a perpetual return
- Such shares are used as guarantees for credibility.

Advantages of using ordinary share capital in financing.

- They facilitate projects especially long-term projects because they are permanent..
- Its cost is not a legal obligation.
- It lowers gearing level – reduces chances of receivership/liquidation.
- Used with flexibility – without preconditions.
- Such finances boost the company's credibility and credit rating.
- Owners contribute valuable ideas to the company's operations (during AGM by professionals).

b) RETAINED EARNINGS

- **Revenue Reserves**

These are undistributed earnings. Such reserves are retained for the following reasons:

- To make up for the fall in profits so as to sustain acceptable risks.
- To sustain growth through plough backs. They are cheap source of finance.
- They are used to boost the company's credit rating so they enable further finance to be obtained.
- It lowers the company's gearing ratio – reduces chances of receivership/liquidation.

- **Capital Reserves**

- It is raised by selling shares at a premium. (The difference between the market price (less floatation costs) and par value is credited to the capital reserve).
- Through revaluation of the company's assets. This leads to a fictitious entry which is of the nature of a capital reserve.
- By creation of a sinking fund.

SHARE CAPITAL

This can be effected best by way of an example:

		RWF"000	
	Average	**Poor**	**Excellent**
Profits	100	20	300
(i) Interest (200 x 10%)	20	20	20
Profit before tax	80	0	280
Corporation Tax (20%)	16	0	56
Profits After Tax	64	0	224
(ii) Preference Dividend	10	0	10
(iii) Available for Equity	54	0	214

Note:
Comparing the Average with the Excellent performance it should be noted that while Profits increase by **200%,** the amount Available [at number (iii)] to Equity increases by almost **300%.**

No matter what the level of performance, a fixed amount is paid to the Lenders and the Preference Shareholders.

Interest on borrowings is allowable for Corporation Tax. Note the ranking of the different providers of capital.
The Ordinary Shareholders (equity) are entitled to the “residue” after all others have been rewarded.

Ordinary Shares

The main features are:

- Issued to the owners of the company (equity).
- Nominal or “face” value (e.g. 1000rwf.).
- Market value moves with market"s view of the company"s performance/prospects.
- Shareholders are not liable for the company"s debts on a winding-up (limited liability).
- Carry voting rights
- Ordinary shareholders are entitled to the residue after other parties are rewarded. This applies to both annual profits and capital on a winding-up.
- Subscription privileges apply in the event of a new issue of shares (“pre-emptive rights”).
- Shareholders may be rewarded by dividends (income), or retained profits (capital gain).
- Some companies offer concessions on their products to shareholders - e.g. discounts or vouchers.
- Some companies have different classes of ordinary shares. For example, Non-**Voting** similar to other shares in every respect, except holders cannot vote.

Advantages to the Company

- No fixed annual charges are payable - no legal obligation to pay a dividend.
- Do not have a maturity date and are not normally redeemable.
- Usually more attractive to investors than fixed interest securities.
- Might increase the creditworthiness of a company as they reduce gearing.

Disadvantages to the Company

- Issue might reduce EPS, especially if the assets acquired do not produce immediate earnings.
- Extend voting rights to more shareholders.
- Lower gearing as a result of the issue might result in a higher overall cost of capital than is necessary.
- Issues often involve substantial issue and underwriting costs.
- Dividends are not a tax allowable expense.

Preference Shares
The main features are:

- Holders are entitled to a fixed maximum dividend.
- Dividends are only paid if sufficient profits are available.
- Rank prior to ordinary shares (both dividends and capital on a winding-up).
- Cumulative Preference Shares the right to any arrears of dividend carried forward and they must be paid before any dividend is paid to the ordinary shareholders. Preference Shares are cumulative, unless expressly stated to be non-cumulative.

- Restricted voting rights - usually only available in a situation where the rights attaching to the shares are being amended or if dividends are in arrears.

Some companies have different classes of preference shares. For example,

Redeemable - generally redeemable subject to sufficient profits being available or sufficient cash being raised from a new issue.
Convertible - the right to convert to ordinary shares as per the terms of the issue.

Advantages to the Company

- A fixed percentage dividend per year is payable no matter how well the company performs, but only at the discretion of the company"s directors.
- Do not normally give full voting rights to holders.
- Preference shares are mostly irredeemable.

Disadvantages to the Company

- Cumulative arrears of dividend are payable.
- Dividends are not a tax allowable expense.

C. LOAN CAPITAL

The main types are Loan Stock and Debentures.

- **Loan Stock** - long-term debt (usually > 10 years duration) on which a fixed rate of interest (coupon rate) is paid. Generally unsecured.
- **Debentures** - a form of loan stock, legally defined as a written acknowledgement of debt. Usually secured. Trustees appointed to look after investors" interests. Can be redeemable or irredeemable.
- Loan capital ranks prior to share capital (both interest and capital on a winding-up).
- The ranking of individual debt will depend upon the specific conditions of each issue.
- Restrictive covenants are often included in the lending agreement (e.g. restrictions on further borrowings, the payment of dividends, or major changes in operations; the maintenance of certain key ratios in the accounts etc.).

If security is provided the cost to the company may be cheaper. Security may be in the form of a fixed or floating charge.

Interest payments are allowable for Corporation Tax.
If the net cost of debt is low why do companies not borrow more and more? Some of the reasons are:

- A high level of debt will increase the financial risk for the shareholders.
- Interest charges at a particular point in time may be high.
- The company may have insufficient security for new debt.
- There may be restrictions on further debt - Articles of Association; restrictive covenants; credit lines fully used etc.

Redemption of Loan Capital
Most redeemable stocks have an earliest and a latest date for redemption.

Redemption is at the company"soption anytime between these two dates.

When should the company redeem? Generally, if the coupon rate is below current interest rates delay to the later date and vice versa. However, the following factors should be considered:

- If internally generated funds are to be used, consider their availability.
- If a further issue of debt is to be used, consider issue costs.
- The trend in future interest rates.
- If new equity is to be used, shares should be issued when the price is relatively high.

Convertible Loan Stock
This is debt paying a fixed rate of interest but also providing the option to convert to equity at a pre-determined rate on pre-determined date(s).

The main features are:

- Conversion is at the option of the holder.
- Conversion terms usually vary over time.
- Once stock is converted it cannot be converted back.

Advantages to the Company

- It is cheaper than straight debt due to the conversion rights. The lower coupon rate may suit projects with low cash flows in the early years.
- A high-risk company may have difficulty raising long-term finance no matter what
- coupon rate is offered. Convertibles may attract investors due to the “upside potential”.
- If conversion takes place, the debt is self-liquidating. Conversion will reduce gearing and enable further debt to be raised in the future.
- Interest payments are tax deductible.
- Convertibles are often not secured and have less restrictive covenants than straight debentures.
- The number of shares eventually issued on conversion will be smaller than if straight equity is issued.

Advantages to the Investor

- If the market value of the company’s shares falls the value of the convertibles will not fall below the market value of straight debt with the same oupon.
- If the market value of the company’s shares rises the value of the convertibles will rise also.
- Convertibles rank before shares on a winding-up.
- If the company’s fortunes improve dramatically investors can share in this by exercising their ption.

Floating Rate Bonds

- These are debt securities whose interest is **not fixed** but is re-fixed periodically by reference to some independent interest rate index - e.g. a fixed margin over National Bank of Rwanda Interbank Rate. These are commonly referred to as Floating Rate Notes or FRNs. Coupons are re-fixed, and coupon payments made, usually every six months.

- When market interest rates **fall** the issuer (borrower) is not saddled with high fixed coupon payments. Likewise, when interest rates **rise** the investor is not stuck with a fixed income but will see his income rise in line with market rates.
- The market value of such securities should be fairly stable as interest rates will rise/fall in line with market interest rates.

Deep Discount Bonds

These are debt securities which are issued at a large discount to their nominal value but will generally be redeemable at par on maturity. To compensate for the fact that a large capital gain accrues on maturity, the ongoing coupon rate is substantially lower than other types of loan stock. An example might be:

- **2% Bond 2015, which was issued in 2005 at a price of RWF70 per cent.**
- The price of the bond in the secondary market will gradually appreciate as the maturity date approaches.
- Many projects require funding up-front, but are unlikely to give rise to an income stream to service interest costs for some period of time - e.g. a building project where income from rentals or sale of the building would be received much later. A Deep Discount Bond can be a useful source of funding for such a project as it helps to match cash flows.
- An attraction to the investor is the advantageous taxation treatment in certain countries - e.g. the capital gain at maturity is subject to CGT, which may be at a lower rate than income tax, or the gain is taxed as income in one lump sum on maturity or sale rather than as interest each year.

Zero Coupon Bonds

Zero Coupon Bonds are very similar to Deep Discount Bonds except that **no interest** is paid during the life of the bond and are, therefore, issued at a large discount to their nominal value. An example might be:

- **0% Bond 2020, which was issued in 2010 at a price of RWF50 per cent.**
- Instead of interest payments the investor receives as a return the difference between the issue price and the higher redemption proceeds.

D. WARRANTS

- Holder has the right (but not the obligation) to purchase a stated number of shares, at a **specified** price, anytime before a specified date.
- If not exercised the warrants lapse.
- Warrants are often issued as a “sweetener” to make a loan stock issue more attractive, or to enable the company to pay a lower coupon rate.
- The warrant-holder is **not** entitled to dividends/voting rights.
- Unlike convertibles, new funds are generated for the company if the warrants are exercised.
- Generally, the warrant is detachable from the stock and can be traded separately.
- The value of the warrant is dependent on the underlying share price.

E. METHODS OF SHARE ISSUE

Offer For Sale

- Public at Large
- Fixed Price

Offer For Sale By Tender

- Public at Large
- Not a Fixed Price
- Set a Minimum Price & Invite Tenders
- Shares Issued at Highest Price where All Taken-up

Placing
Shares "Placed" with Target Audience – generally institutions

Rights Issue
Shares Issued to Existing Shareholders
Pro-rata to Existing Shareholding (e.g. One for Five Issue)

Example:

One for Five Issue

Company		**Shareholder**	
10m	shares	1m	shares (10% holding)
2m	new shares	0.2m	new shares
12m		1.2m	(10% holding)

Possible Choices

- Subscribe for new shares (exercise rights)
- Sell "rights" to new shares
- Exercise rights (part) & sell rights (part)
- Do nothing

Example:
Shares currently trading at RWF2.00 (cum rights). Rights issue on a one-for-four basis at a price of RWF1.50. Examine the consequences for a shareholder who currently owns 1,000 shares.

Firstly, calculate the "Theoretical Ex-Rights Price"

4 shares	@ RWF2.00	=	RWF8.00
1 share	@ RWF1.50	=	RWF1.50
5 shares		=	RWF9.50

Theoretical Ex-Rights Price = RWF9.50/5 = RWF1.90

Secondly, calculate the **Value of The Rights**

Ex-Rights Price	RWF1.90
Issue Price	RWF1.50
Value of Rights	RWF0.40

(i) Exercise Rights

Value of Shares (1,000 + 250) @ RWF1.90	RWF2,375.00
Less Cost of Purchase (250 @ RWF1.50)	(RWF375.00)
	RWF2,000.00
Current Wealth (1,000 @ RWF2.00)	**RWF2,000.00**

(ii) Sell Rights

Sale of Rights (250 @ RWF0.40)	RWF100.00
Value of Shares (1,000 @ RWF1.90)	RWF1,900.00
	RWF2,000.00
Current Wealth (1,000 @ RWF2.00)	**RWF2,000.00**

(iii) Exercise Half & Sell Half

Sale of Rights (125 @ RWF0.40)	RWF50.00
Value of Shares (1,000 + 125 @ RWF1.90)	RWF2,137.50
Less Cost of Purchase (125 @ RWF1.50)	(RWF187.50)
	RWF2,000.00
Current Wealth (1,000 @ RWF2.00)	**RWF2,000.00**

(iv) Do Nothing

Value of Shares (1,000 @ RWF1.90)	RWF1,900.00
Current Wealth (1,000 @ RWF2.00)	RWF2,000.00
Loss of Wealth	(RWF100.00)

F. BANK LENDING

The main considerations by the bank before advancing a loan can be summarized by the mnemonic PARTS.

P URPOSE

A MOUNT

R EPAYMENT

T ERM

S ECURITY

CAPITAL MARKETS

Introduction

Capital Markets are markets where **long-term** instruments are traded e.g. equities, preference shares, debentures etc.
A good example of a Capital Market is the Stock Exchange.

The Rwanda Stock Exchange was incorporated as a limited company 7 October 2005

Main functions

The main functions of the Stock Exchange are:

- PRIMARY MARKET - used to raise new finance/issue new securities
- SECONDARY MARKET - trade in second-hand securities. This is where most of the day-to-day activity takes place.
- COMPANY FLOTATION
- SHARE SWAP - securities used as consideration in takeover of other companies

Capital providers
The main providers of capital are:

- Pension Funds
- Insurance Companies
- Investment Trusts
- Unit Trusts
- Other Financial Institutions
- Overseas Investors
- Venture Capital Organisations
- Individual

Company flotation
There are many reasons why a company may be floated on the Stock Market ("Going Public"). Chief among these is access to capital.

1. ADVANTAGES - SHAREHOLDERS

- Cash for some shares.
- Wider market for remaining shares.
- Shares perceived as less risky.
- Ready share price available.

2. ADVANTAGES - COMPANY

- Possibility of new funds.
- Better credit-standing.
- Ability to "swap shares" on a takeover.

- Ability to issue shares more easily at a later date.
- Reduced risk & greater marketability leads to lower cost of capital.
- Extra status.
- Possibility of share options for top employees.

3. DISADVANTAGES

- Costs can be quite high.
- Compliance with stringent regulations.
- Dilution of control.
- Additional administration.
- Extra scrutiny of profitability/performance.

What are the benefits of investing through the capital markets?

Savings

Investing in securities that are listed in the Capital or Stock market encourages investors to accumulate their savings in small amounts over time

Income

Investment in the stock market provides a source of income. Shares pay dividends when companies declared profits and decide to distribute part of the profits to shareholders. Bonds pay an interest income to the bondholders. Sometimes the income earned from listed securities is higher than interest earned from the money or banking sector.

Wealth or Capital gain

Whenever the prices of securities listed in the market go up, the value of the investment of the holders of those securities increases. This is called capital gain and is an important way of growing wealth through the stock market. It is important to note that a one –off investment in the Capital market does not make sense. It is therefore the accumulative investment over time that creates opportunities for growth in wealth through the Capital Market.

Securities as Collateral

Listed securities are easily acceptable as collateral against loans from financial institutions.

Liquidity

Liquidity is the ability to convert shares or bonds into cash by selling within the shortest time possible without losing much value. When one needs funds urgently, listed securities could be very useful because they are more liquid than most other forms of assets.

Bonds pay an interest income and shares pay dividends income

- Grow wealth: Over time, the value of your investment increases, whenever the prices of your stock go up. This is called capital gains.
- Listed securities are easily acceptable as collateral against loans.

Efficient markets
A market is generally regarded as efficient if the following are present:

- Prices immediately reflect all relevant available information
- No individual investor dominates the market
- Transaction costs are not too high to discourage trading

Are the markets efficient? The Efficient Market Hypothesis (EMH) has been developed to test different levels of efficiency. [Note: Hypothesis is defined as a supposition put forward as a basis for reasoning or investigation.]
The Efficient Market Hypothesis tests three degrees of efficiency

1. Weak Form Efficiency

- Prices reflect the information in past stock prices.

2. Semi-strong Form Efficiency

- Prices reflect past price information
- Plus
- All publicly available information.

3. Strong Form Efficiency

- Prices reflect past price information
- Plus
- All publicly available information
- Plus
- Inside information

Most of the research suggests that capital markets are semi-strong-form efficient but not quite strong-form efficient.

Leasing
A lease is a contract between a **lessor** (bank/finance house) and a **lessee** (person/company to whom the asset is leased) for the hire of a specific asset. The lessor retains ownership but gives the lessee the right to use the asset for an agreed period in return for the payment of specified rentals.

OPERATING AND FINANCE LEASES Operating

Lease
The lessee hires the asset for a period which is normally substantially **less** than its useful economic life. The lessor retains most of the risks and rewards of ownership. Generally, there will be more than one lessee over the life of the asset. An operating lease is "Off Balance Sheet" finance.

Finance Lease
This transfers substantially all the risks and rewards of ownership, **other than legal title**, to the lessee. It usually involves payment to the lessor over the lease term of the full cost of the asset plus a commercial return on the finance provided by the lessor.

Both the leased asset and the corresponding stream of rental liabilities must be shown on the lessee"s Balance Sheet. Other features include:

- The lessee is responsible for the upkeep, maintenance etc. of the asset.
- The lease has a **primary period**, covering the whole or most of the economic life of the asset. The asset will be almost worn out at the end of the primary period, so the lessor will ensure that the cost of the asset and a commercial return on the investment will be recouped within the primary period.
- At the end of the primary period the lessee has the option to continue to lease at a very small rent ("peppercorn rent"). Alternatively, he can sell the asset and retain about 95% of the proceeds.

C. ADVANTAGES OF LEASING

- The lessee"s **capital is not tied up** in fixed assets, so a cash flow advantage accrues.
- **Liquidity** is improved as no down-payment is required.
- The lessor can obtain **capital allowances** and pass the benefit to the lessee in the form of lower lease rentals. This is especially important for a company with insufficient taxable profits.
- The whole of the rental payment is **tax deductible**.
- **Security** is usually the asset concerned. Other assets are free for other forms of borrowing.
- Traditional forms of borrowing often impose **restrictive covenants**.
- The **cost** of other forms of borrowing may exceed the cost of leasing.

SALE AND LEASEBACK

This is an arrangement whereby a firm sells an asset, usually land or a building, to a financial institution and simultaneously enters an agreement to lease the property back from the purchaser. The seller receives funds immediately and retains use of the asset but is committed to a series of rental payments over an agreed period. Thus, it is suited to capital-rationed companies who are eager to finance expansion programmes before the opportunity is lost.

The main disadvantages are the loss of participation in any capital appreciation and the loss of a valuable asset which could have been used as security for future borrowing.

HIRE PURCHASE (HP)

The user pays a periodic hire charge to a finance house which purchases the asset. The charge includes both interest and capital. Generally, the hirer must pay a deposit up-front. Ownership of the asset passes to the user at the end of the contract period, unless he defaults on repayments when the finance house will repossess the asset. The user **can claim capital allowances** on the cost of the asset and the interest element of the periodic charge is tax deductible.

Venture Capital

Introduction

Many new business ventures are considered too risky for traditional bank lending (term loans, overdrafts etc.) and it is this gap that Venture Capital usually fills.

Venture Capital could be described as a means of financing the start-up, expansion or purchase of a company, whereby the venture capitalist acquires an agreed proportion of the share capital (equity) of the company in return for providing the requisite funding. To look after its interests the venture capitalist will usually want to have a representative appointed to the board of the company.

The venture capitalist"s financing is not secured – he takes the risk of failure just like other shareholders. Thus, there is a high risk in providing capital in these circumstances and the possibility of losing the entire investment is much greater than with other forms of lending. The venture capitalist also participates in the success of the company by selling his investment and realising a capital gain, or by the company achieving a flotation on the Stock Market in usually five to seven years from making his investment. As a result, it will generally take a long time before a return is received from the investment but to compensate there is the prospect of a substantial return.

Venture Capital has grown in popularity – for instance in the UK in 1979 venture capital investments amounted to GBP20m., whereas this had grown to GBP1,000m. by 1991.

STAGES OF INVESTMENT

The various stages of investment by a venture capitalist can be defined as follows:

- **Seed Capital** – finance provided to enable a business concept to be developed, perhaps involving production of prototypes and additional research, prior to bringing the product to market.
- **Start-Up** – finance for product development and initial marketing. Companies may be in the process of being set up or may have been in business for a short time but have not sold their product commercially.
- **Expansion** – capital provided for the growth of a company which is breaking even or possibly, trading profitably. Funds may be used to finance increased production capacity, market or product development and/or provide additional working capital. Capital for "turnaround" situations is also included in this category.
- **Management Buy Out (MBO)** – funds provided to enable **current** operating management and investors to acquire an existing business.
- **Management Buy In (MBI)** – funds provided to enable a manager or group of managers from **outside** the company to buy into the company

SPECIALIST AREAS

Venture Capitalists may specialise in areas in which they will invest. These may relate to:

- **Preferred Business Sectors** – e.g. consumer services, Information Technology, property etc.
- **Stage of Investment** – many venture capitalists will finance expansions, MBO"s and

MBI"s but far fewer are interested in financing "Seed Capital," start-ups and other early stage companies, due to the additional risks and time/costs involved in refinancing smaller deals as compared with the benefits.

- **Regional Preferences** – the preferred geographical location of the investee.
- **Amount of Investment** – varies with the stage of the investment. Start-up and other early stage investments are usually lesser in amount than expansion and MBO/MBI investments. RWF

BUSINESS PLAN

Before deciding whether an investment is worth backing the venture capitalist will expect to see a Business Plan. This should cover the following:

- **Product/Service** – what is unique about the business idea? What are the strengths compared to the competitors?
- **Management Team** – can the team run and grow a business successfully? What are their ages, relevant experience, qualifications, track record and motivation? How much is invested in the company by the management team? Are there any non-executive directors? Details of other key employees.
- **Industry** – what are the issues, concerns and risks affecting the business area?
- **Market Research** – do people want to buy the idea?
- **Operations** – how will the business work on a day-to-day basis?
- **Strategy** – medium and long-term strategic plans.

- **Financial Projections** – are the assumptions realistic (sales, costs, cash flow etc.)?
- Generally, a three year period should be covered. Alternative scenarios, using different economic assumptions. Also state how much finance is required, what it will be used for and how and when the venture capitalist can expect to recover his investment?
- **Executive Summary** – should be included at the beginning of the Business Plan. This is most important as it may well determine the amount of consideration the proposal will receive.

METHODS OF WITHDRAWAL BY VENTURE CAPITALIST

The various means by which an investment may be withdrawn after a number of years include:

- The company is acquired by another company (probably through an arranged deal).
- A management buy out occurs and the venture capitalist"s shares are purchased by the
- existing management team.
- A management buy in occurs.
- The investment is refinanced, possibly by another venture capitalist organisation.
- The company obtains a listing on a Stock Market.
- A minority equity stake is purchased in the company, possibly by a customer or other company in the same industry. This is sometimes referred to as "Corporate Venturing."
- The company is liquidated.

Study Unit 3

Cost of Funds

- Meaning and assumptions of cost of capital
- Classification of cost of capital
- Arguments for cost of capital

Computations of cost of capital:

- Cost of equity
- cost of debenture - redeemable ,irredeemable and convertible debentures
- cost of preferred stock
- Measurement of overall cost of capital (WACC), application and interpretation.

A. INTRODUCTION

It is important that a company is aware of its cost of capital. In certain cases it is not initially apparent what this cost is (e.g. new share issue, retained earnings etc.) and a number of models have been developed to assist in calculating the cost of individual sources of finance. Having calculated the cost of each individual source of finance it is then important to calculate an overall cost for the company, based on the mix of funds which it chooses to use.
This is the price the company pays to obtain and retail finance. To obtain finance a company will pay implicit costs which are commonly known as floatation costs. These include: Underwriting commission, Brokerage costs, cost of printing a prospectus, Commission costs, legal fees, audit costs, cost of printing share certificates, advertising costs etc. For debt there are legal fees, valuation costs (i.e. security, audit fees, Bankers commission etc.) such costs are knocked off from:

- The market value of shares if these have only been sold at a price above par value.
- For debt finance – from the par value of debt.

I.e. if flotation costs are given per share then this will be knocked off or deducted from the market price per share. If they are given for the total finance paid they are deducted from the total amount paid.

Cost of Retaining Finance
This will include dividends for share capital and interest for debt finance (tax deducted) or effective cost of debt. However, when computing the cost of finance apart from deducting implicit costs, explicit costs are the most central elements of cost of finance.

Importance of Cost of Finance
The cost of capital is important because of its application in the following areas:

- Long-term investment decisions – In capital budgeting decisions, using NPV method, the cost of capital is used to discount the cash flows. Under IRR method the cost of capital is compared with IRR to determine whether to accept or reject a project.
- Capital structure decisions – The composition/mix of various components of capital is determined by the cost of each capital component.
- Evaluation of performance of management – A high cost of capital is an indicator of high risk attached to the firm. This is usually attributed to poor performance of the firm.
- Dividend policy and decisions – E.g if the cost of retained earnings is low compared to the cost of new ordinary share capital, the firm will retain more and pay less dividend. Additionally, the use of retained earnings as an internal source of finance is preferred because:
    - It does not involve any floatation costs
    - It does not dilute ownership and control of the firm, since no new shares are issued.
- Lease or buy decisions – A firm may finance the acquisition of an asset through leasing or borrowing long-term debt to buy an asset. In lease or buy decisions, the cost of debt (interest rate on loan borrowed) is used as the discounting rate.

Factors That Influence the Cost of Finance

- Terms of reference – if short term, the cost is usually low and vice versa.
- Economic conditions prevailing – If a company is operating under inflationary conditions, such a company will pay high costs in so far as inflationary effect of finance will be passed onto the company.
- Risk exposed to venture – if a company is operating under high risk conditions, such a company will pay high costs to induce lenders to avail finance to it because the element of risk will be added on the cost of finance which may compound it.
- Size of the business – A small company will find it difficult to raise finance and as such will pay heavily in form of cost of finance to obtain debt from lenders.
- Availability – Cost of finance (COF) prices will also be influenced by the forces of demand and supply such that low demand and low supply will lead to high cost of finance.
- Effects of taxation – Debt finance is cheaper by the amount equal to tax on interest and this means that debt finance will entail a saving in cost of finance equivalent to tax on interest.
- Nature of security – If security given depreciates fast, then this will compound implicit costs (costs of maintaining that security).
- Company's growth stage – Young companies usually pay less dividends in which case the cost of this finance will be relatively cheaper at the earlier stages of the company's development.

B. CALCULATION OF COST OF CAPITAL

1. Equity

- **Constant Dividends**

$$r = \frac{d}{MV}$$

Where: r = cost of capital

d = annual dividend

MV = market value (ex. div)

Example:

Dividend of RWF150 per share recently paid and expected to continue at this level for the foreseeable future. Current market value of share is RWF800 ex. div.

$$r = \frac{150}{800} = 18.75\%$$

- **Growth in Dividends**

$$r = \frac{Do\ (1+g)}{MV} + g$$

Where: r = cost of capital

Do = most recent dividend

MV = market value (ex. div)

g = annual rate of growth in dividends

Example:
Dividend of RWF20 per share about to be paid. Dividends expected to grow by 10% per annum in the future. Current market value of share is RWF160.

$$r = \frac{RWF20\ (1.10)}{RWF140} + 0.10 = 25.71\%$$

Note: Ex. div. price (RWF160 - RWF20) must be used in calculation.

2. Preference Shares

$$r = \frac{d}{MV}$$

Where: r = cost of capital d = annual dividend

MV = market value (ex. div)

Example:
7% Preference Shares RWF1000; Current market value 700 ex. Div

$$r = \frac{70}{700} = 10\%$$

3. Irredeemable Debentures

$$r = \frac{K}{(I - t)\ MV}$$

Where: r = cost of capital

k = coupon rate

t = rate of corporation tax

MV = market value (ex. interest)

Example:
7% Irredeemable Debentures; Current market value RWF70 ex. Interest. Corporation Tax 40%

$$r = \frac{RWF7}{(I - 0.40)\ RWF\ 70} = 6\%$$

4. **Redeemable Debentures**

To find cost of capital calculate the **Internal Rate of Return**.

Example:

10% Redeemable Debentures
Redeemable **at par** in **5** years
Corporation Tax = **40%**
Current Market Value RWF**90** ex. interest

Year	**Cash Flows**	**PV – 10%**	**PV – 8%**
0	(90)	(90)	(90)
1-5	6	22.75	23.96
5	100	62.10	68.10
	(5.15)		2.06

$$\textbf{IRR} = 8\% + \frac{2.06}{2.06 + 5.15} \times (10\% - 8\%) = 8.57\%$$

C. WEIGHTED AVERAGE COST OF CAPITAL (WACC)

	Market Val.	**Weighting**	**Cost**	**WACC**
Equity	RWF15m	75%	16%	12%
Debt	RWF5m	25%	8%	2%
	RWF20m	100%		14%

Equity 16%

"POOL" OF FUNDS

WACC 14%

Debt 8%

Assumptions:

- Weightings do **not** change.
- Business risk does **not** change

Study Unit 4

Capital Structure

Contents

- Review of factors affecting capital structure
- Theories underlying capital structure (NOI, NI, Traditional approach, MM Approaches),

CAPITAL STRUCTURE

Factors That Affect Capital Structure

- Availability of securities – This influences the company's use of debt finance which means that if a company has sufficient securities, it can afford to use debt finance in large capacities.
- Cost of finance (both implicit and explicit) – If low, then a company can use more of debt or equity finance.
- Company gearing level – if high, the company may not be able to use more debt or equity finance because potential investors would not be willing to invest in such a company.
- Sales stability – If a company has stable sales and thus profits, it can afford to use various finances in particular debt in so far as it can service such finances.
- Competitiveness of the industry in which the company operates – If the company operates in a highly competitive industry, it may be risky to use high levels of debt because chances of servicing this debt may be low and may lead a company into receivership.

CAPITAL STRUCTURE THEORIES

THE NET INCOME APPROACH (NI)

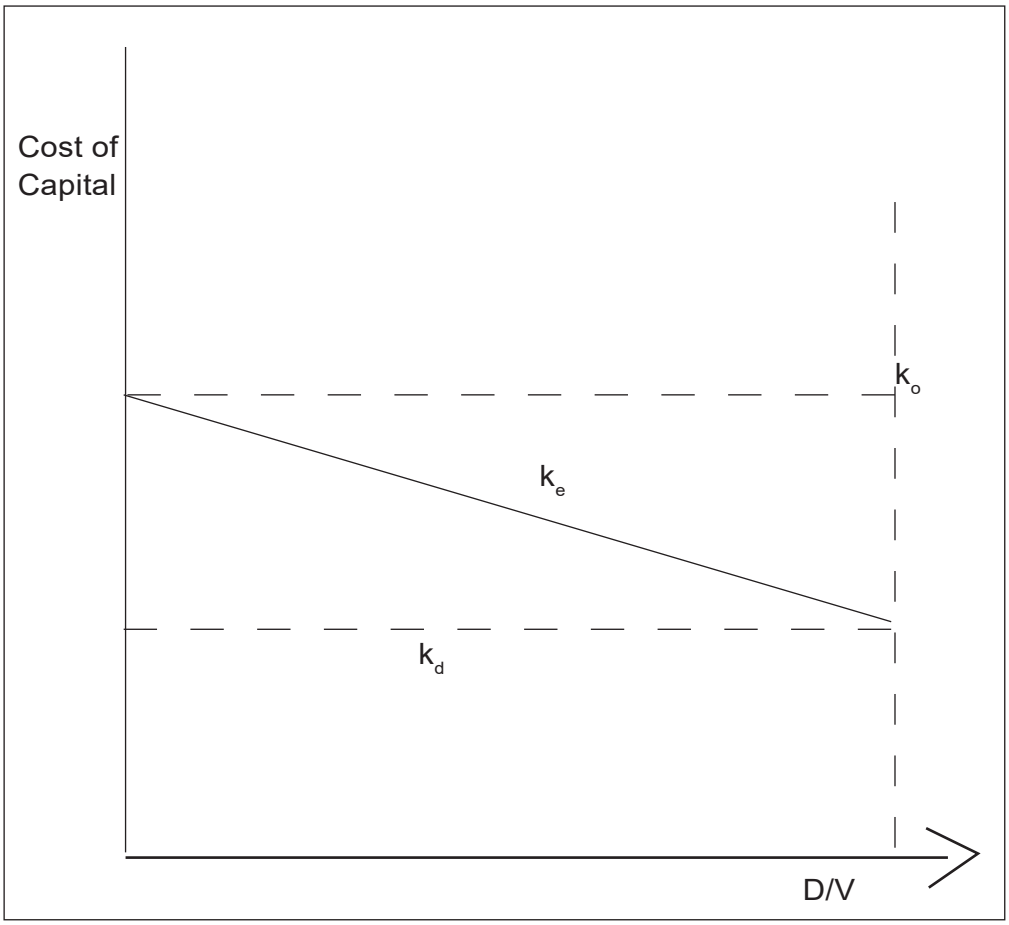
The essence of the NI approach is that the firm can increase its value or lower the overall cost of capital by increasing the proportion of debt in the capital structure. The crucial assumption of this approach are:

- The use of debt does not change the risk perception of the investor. Thus K_d and K_e remain constant with changes in leverage.
- The debt capitalization rate is less than equity capitalization rate (i.e. $K_d < K_e$).

The implications of these assumptions are that with constant K_d and K_e, increased use of debt, by magnifying the shareholders earnings will result in a higher value of the firm via higher value of equity. The overall cost of capital will therefore decrease. If we consider the equation for the overall cost of capital,

$$K_o = K_e - (K_e - K_d)\frac{D}{V}$$

K_o decreases as D/V increases because K_e and K_d are constant as per our assumptions and K_d is less than K_e. This also implies that K_o will be equal to K_e if the firm does not employ any debt (i.e. when D/V = 0) and that K_o will approach K_d as D/V approaches 1. This argument can be illustrated graphically as follows.

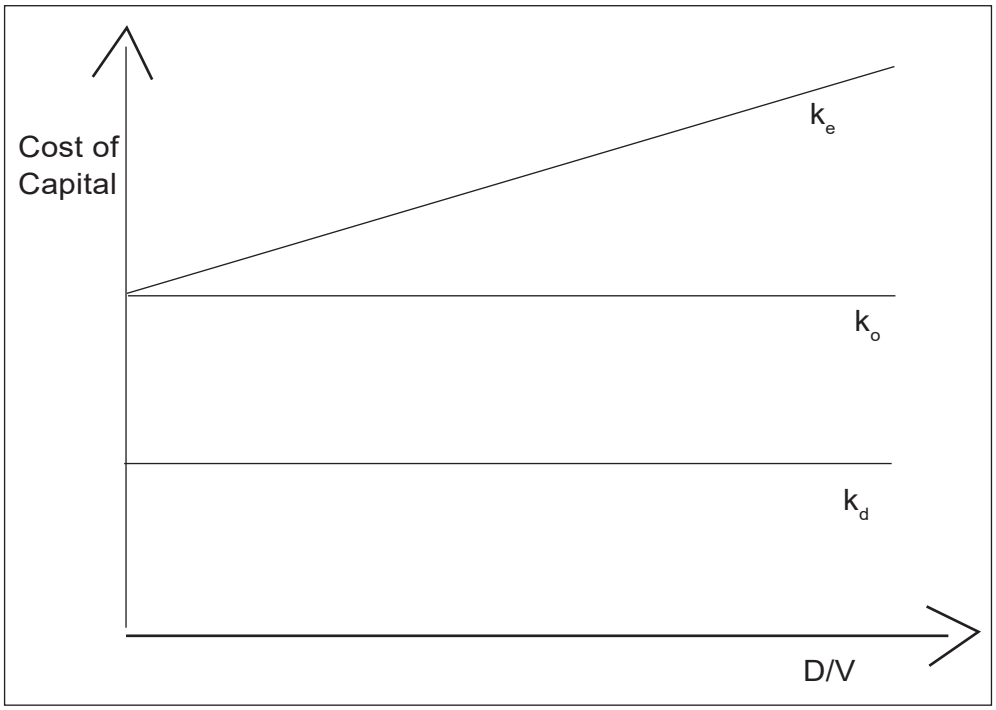


NET OPERATING INCOME (NOI) APPROACH

The critical assumptions of this approach are:

- The market capitalizes the value of the firm as a whole.
- Ko depends on the business risk. If the business risk is assumed to remain constant, then Ko will also remain constant.
- The use of less costly debt increases the risk of the shareholders. This causes Ke to increase and thus offset the advantage of cheaper debt.
- Kd is assumed to be constant.
- Corporate income taxes are ignored.

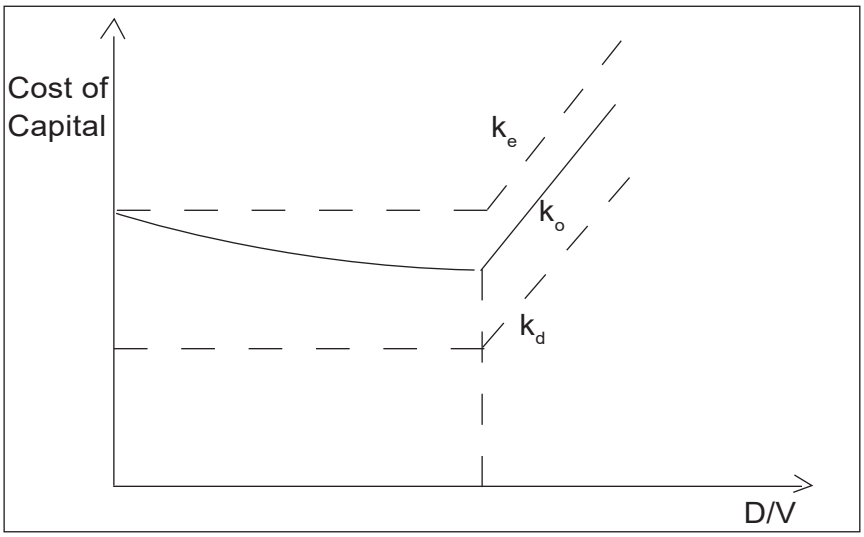
The implications of the above assumptions are that the market value of the firm depends on the business risk of the firm and is independent of the financial mix. This can be illustrated as follows:



TRADITIONAL APPROACH TO CAPITAL STRUCTURE

The traditional approach to the valuation and leverage assumes that there is an optimal capital structure and that the firm can increase total value through the judicious use of leverage. It is a compromise between the net income approach and the net operating income approach. It implies that the cost of capital declines with increase in leverage (because debt capital is cheaper) within a reasonable or acceptable limit of debts and then increases with increase in leverage.

The optimal capital structure is the point at which K_o bottoms out. Therefore this approach implies that the cost of capital is not independent of the capital structure of the firm and that there is an optimal capital structure. Graphically this approach can be depicted as follows:



The traditional approach has been criticized as follows:

- The market value of the firm depends on the net operating income and the risk attached to it, but not how it is distributed;
- The approach implies that totality of risk incurred by all security holders of a firm can be altered by changing the way this totality or risk is distributed among the various classes of securities. In a perfect market this argument is not true.

The traditional approach however has been supported due to tax deductibility of interest charges and market imperfections.

2. 4 THE MODIGLIANI-MILLER (MM) HYPOTHESIS

The MM, in their first paper (in 1958) advocated that the relationship between leverage and the cost of capital is explained by the net operating income approach. They argued that in the absence of taxes, a firm's market value and the cost of capital remains invariant to the capital structure changes. The arguments are based on the following assumptions:

- Capital markets are perfect and thus there are no transaction costs.
- The average expected future operating earnings of a firm are represented by subjective random variables.
- Firms can be categorized into "equivalent return" classes and that all firms within a class have the same degree of business risk.
- They also assumed that debt, both firm's and individual's is riskless.
- Corporate taxes are ignored.

Proposition I

The value of any firm is established by capitalizing its expected net operating income (If Tax = 0)

$$V_L = V_U = \frac{EBIT}{WACC} = \frac{EBIT}{K_O}$$

- The value of a firm is independent of its leverage.
- The weighted cost of capital to any firm, levered or not is
  - Completely independent of its capital structure and
  - Equal to the cost of equity to an unlevered firm in the same risk class.

Proposition II

The cost of equity to a levered firm is equal to

- The cost of equity to an unlevered firm in the same risk class plus
- A risk premium whose size depends on both the differential between the cost of equity and debt to an unlevered firm and the amount of leverage used.

$$K_e = K_a + Risk\ premium = K_a + (K_a - K_d)\frac{D}{E}$$

As a firm's use of debt increases, its cost of equity also rises. The MM showed that a firm's value is determined by its real assets, not the individual securities and thus capital structure decisions are irrelevant as long as the firm's investment decisions are taken as given. This proposition allows for complete separation of the investment and financial decisions. It implies that any firm could use the capital budgeting procedures without worrying where the money for capital expenditure comes from. The proposition is based on the fact that, if we have two streams of cash, A and B, then the present value of A +B is equal to the present value of A plus the present value of B. This is the principle of value additivity. The value of an asset is therefore preserved regardless of the nature of the claim against it. The value of the firm therefore is determined by the assets of the firm and not the proportion of debt and equity issued by the firm.

The MM further supported their arguments by the idea that investors are able to substitute personal for corporate leverage, thereby replicating any capital structure the firm might undertake. They used the arbitrage process to show that two firms alike in every respect except for capital structure must have the same total value. If they don't, arbitrage process will drive the total value of the two firms together.

Ilustration

Assume that two firms the levered firm (L) and the unlevered firm (U) are identical in all important respects except financial structure.

Firm L has frw 4 million of 7.5% debt, while Firm U uses only equity. Both firms have EBIT of frw 900,000 and the firms are in the same business risk class.

Initially assume that both firms have the same equity capitalization rate $K_{e(u)} = K_{e(L)} = 10\%$.

Under these conditions the following situation will exist.

Firm U

$$\text{Value of Firm U's Equity} = \frac{\text{EBIT - KD}}{\text{Ke}} = \frac{900{,}000 - 0}{0.1}$$

$$= \underline{\text{frw } 9{,}000{,}000}$$

$$\text{Total market value} = D_u + E_u$$

$$= 0 + 9{,}000{,}000$$

$$= \text{frw } \underline{9{,}000{,}000}$$

Firm L

$$\text{Value of Firm L's Equity} = \frac{\text{EBIT - KD}}{\text{Ke}} = \frac{900{,}000 - 0.075(4{,}000{,}000)}{0.10}$$

$$= \text{frw } 6\text{m}$$

$$\text{Total market value} = D_L + E_L$$

$$= 4\text{m} + 6\text{m}$$

$$= \underline{\text{frw } 10{,}000{,}000}$$

Thus the value of levered firm exceeds that of unlevered firm. The arbitrage process occurs as shareholders of the levered firm sell their shares so as to invest in the unlevered firm.
Assume an investor owns 10% of L's stock. The market value of this investment is frw 600,000. The investor could sell this investment for frw 600,000, borrow an amount equal to 10% of L's debt (frw 400,000) and buy 10% of U's shares for frw 900,000. The investor would remain with frw 100,000 which he can invest in 7.5% debt. His income position would be:

	frw	frw
Old income 10% of L's frw 600,000 equity income		60,000
New income 10% of U's income	90,000	
Less 7.5% interest on 400,000	(30,000)	60,000
Plus 7.5% interest on extra frw 100,000		7,500
Total new investment income		67,500

The investor has therefore increased his income without increasing risk.
As investors sell L's shares, their prices would decrease while the purchaser of U will push its prices upward until an equilibrium position is established.

Conclusion:
Taken together, the two MM propositions imply that the inclusion of more debt in the capital structure will not increase the value of the firm, because the benefits of cheaper debt will be exactly offset by an increase in the riskiness, and hence the cost of equity.
MM theory states that in a world without taxes, both the value of a firm and its overall cost of capital are unaffected by its capital structure.

Study Unit 5

Capital Budgeting

- Need for capital budgeting
- Capital budgeting process
- Identification of relevant cash flows.
- Estimation of investments cash flows
- Capital budgeting valuation techniques:
    - Pay-back period
    - Post pay –back profitability method
    - Profitability index
    - Accounting rate of return.
    - Modified pay back period
    - NPV and IRR Techniques
    - Adjusted present value techniques
    - The effects of inflation, taxation and capital rationing on the investment decision
- Risk and Uncertainty in Capital Budgeting
- Lease or buy decisions.
- Replacement decision

NATURE AND STAGES OF INVESTMENT APPRAISAL

Nature

- Replacement Investment
- Investment for Expansion
- Product Improvement/Cost Reduction
- New Ventures
- Strategic Investment – may satisfy overall objectives but might **not** satisfy normal financial criteria.
- Statutory Requirements/Employee or Community Welfare – may not produce a positive NPV but may be essential.

Stages

- **Identification.**

Ideas may generate from all levels of the organisation. Initial screening may reject those that are unsuitable - technically/too risky/cost/incompatible with company objectives etc. The remainder are investigated in greater depth - assumptions required regarding sales, costs etc./collect relevant data. Also consider alternative methods of completing projects.

- **Evaluation**

Identification of expected incremental cash flows. Measure against some agreed criteria - Payback/Accounting Rate of Return/Net Present Value/Internal Rate of Return. Consider effect of different assumptions - Sensitivity Analysis or other techniques. Consultation with other interested parties (particularly if great organisational and/or technological change) - accountants/ production staff/marketing staff/trade unions etc.

- **Authorisation**

Submit to appropriate management level for approval/rejection/modification. The larger the expenditure, the higher the management level. Reappraise investment - reassess assumptions and cash flows (e.g. check for any "bias" in estimates)/evaluate how investment fits within corporate strategy and capital constraints (if any). If budgetary or other constraints exist, rank as to how essential (financial and non- financial considerations).

- **Monitor & Control**

Regularly review to ascertain if any major variations from cash flow estimates. If significant variations - consider continuation v abandonment. Post audits (one or two years after implementation!) are useful - encourage more realistic estimates at evaluation stage/help to learn from past mistakes/ basis for corrective action to existing investments.

INVESTMENT APPRAISAL TECHNIQUES

There are many techniques for evaluating investment proposals. These can be broadly classified as:

Non-Discounting
Payback Period
Accounting Rate of Return (ARR)

Discounted Cash Flow
Net Present Value (NPV)
Internal Rate of Return (IRR)

Payback Period
Definition: The time taken in years for the project to recover the initial investment. The shorter the payback, the more valuable the investment.
Example
An initial investment of RWF50,000 in a project is expected to yield the following cash flows:

	Cash Flow
Year 1	RWF20,000
Year 2	RWF15,000
Year 3	RWF10,000
Year 4	RWF10,000
Year 5	RWF8,000
Year 6	RWF5,000

The Payback Period is 3 1/2 years - the cash inflows for that period equal the initial outlay of RWF50,000.

Is 3 1/2 years acceptable? - It must be compared to the target which management has set. For example, if all projects are required to payback within, say, 4 years this project is acceptable; if the target payback is 3 years then it is not acceptable.
Although of limited use it is the most popular technique.
It is often used in conjunction with other techniques.
It may be used as an initial screening device.

Advantages

- Calculation is simple.
- It is easily understood
- It gives an indication of liquidity.
- It gives a measure of risk - later cash flows are more uncertain.
- It considers cash flow rather than profit – profit is more easily manipulated.

Disadvantages

- Cash flows after the Payback Period are ignored.
- It ignores the timing of the cash flows ("Time Value of Money").
- No clear decision is given in an accept/reject situation.

Accounting Rate of Return (ARR)

Definition:

$$\text{ARR} = \frac{\text{Average Annual Accounting Profits}}{\text{Initial Investment}} = \%$$

(Alternative definitions may be used occasionally - e.g. „Average Investment" may replace „Initial Investment").

The Accounting Rate of Return is based upon accounting profits, not cash flows.

Example

A company is considering an investment of RWF100,000 in a project which is expected to last for 4 years. Scrap value of RWF20,000 is estimated to be available at the end of the project. Profits (before depreciation) are estimated at:

Year 1	RWF50,000
Year 2	RWF50,000
Year 3	RWF30,000
Year 4	RWF10,000

Find the Accounting Rate of Return

Total Profits Before Depreciation	RWF140,000
Less Total Depreciation	(RWF80,000)
Total Accounting Profits	RWF60,000

$$\text{Average Annual Profits (4 years)} \quad \frac{\text{RWF60,000}}{4} = \text{RWF15,000}$$

$$\text{ARR} = \frac{\text{RWF15,000}}{\text{RWF100,000}} = \mathbf{15\%}$$

To ascertain if the project is acceptable the ARR must be compared to the target rate which management has set. If this target is less than 15% the project is acceptable; if greater than 15% the project is unacceptable.

Advantages

- Calculation is simple.
- It is based upon profits, which is what the shareholders see reported in the annual accounts.
- It provides a % measure, which is more easily understood by some people.
- It looks at the entire life of the project.

Disadvantages

- It is a crude averaging method.
- It does not take account of the timing of the profits.
- It is based on accounting profit which can be manipulated by creative accounting.
- Shareholders" wealth is determined by cash. Varied Definitions are used.

Discounted Cash Flow (DCF)

The main shortcomings of the non-discounting techniques of Investment Appraisal can be summarised as:

- They do not allow for the **timing** of the cash flows/accounting profits
- They do not evaluate cash flows **after** the payback period
- They do not allow for the changing value of money over a medium to long term

Discounted Cash Flow addresses these shortcomings, by allowing for the **"time-value of money"** and looking at **all** cash flows. So what is discounting? Discounting can be regarded as Compound Interest in reverse. To understand Compound Interest let us take a simple example.

Example

If you invest RWF100 and are guaranteed a return of 10% per annum we can work out how much your investment is worth at the end of each year.

	PRESENT VALUE		FUTURE VALUE
End of Year 1	RWF100 x (1.10)	=	RWF110.00
End of Year 2	RWF100 x (1.10)(1.10)	=	RWF121.00
End of Year 3	RWF100 x (1.10)(1.10)(1.10)	=	RWF133.10
For simplicity this can be re-written			
End of Year 1	RWF100 x $(1.10)^1$	=	RWF110.00
	1.1 to power of 1		
End of Year 2	RWF100 x $(1.10)^2$	=	RWF121.00
	1.1 to power of 2		
End of Year 3	RWF100 x $(1.10)^3$	=	RWF133.10
	1.1 to power of 3		

In general terms we can express this as:

$$PV\ (1 + i)^n = FV$$

Where: PV = Present Value
i = Rate of Interest
n = Number of Years/Periods
FV = Future Value

We are starting with a Present Value (RWF100) and depending on the rate of interest used (i) *(above 10%)* and the duration of the investment (n) we can find the Future Value, using Compound Interest.

As mentioned above, Discounting is Compound Interest in **reverse**. Thus, using the statement

$PV\ (1 + i)^n = FV$ we can turn it around to get

$$\frac{FV}{n} = PV \quad \text{or} \quad FV \times \frac{1}{(1 + i)^n} = PV\ (1 + i)$$

Again, taking the example above, if you are given the **Future Value** and asked to find the **Present Value**

	FUTURE VALUE		PRESENT VALUE
End of Year 1	RWF110.00 x	$\frac{1}{1}$ =	RWF100 (1.10)
End of Year 2	RWF121.00 x	$\frac{1}{2}$ =	RWF100 (1.10)

In effect, what you are doing is ascertaining the amount which must be invested **now** at 10% per annum to accumulate to RWF110 in a year"s time (or RWF121.00 in two years; or RWF133.10 in three years).

In converting the Future Value to a Present Value it is multiplied by a factor (Discount Factor), which varies depending on the discount rate (i) selected and the number of years/periods (n) into the future. Fortunately, it is not necessary individually to calculate each factor, as these can be easily obtained from **DISCOUNTING TABLES** (attached). These tables supply a factor for all % rates and periods.

The previous example is reproduced using the Discounting Tables, at 10%

		FUTURE VALUE		PRESENT VALUE
End of Year 1	RWF110.00 x	.909	=	RWF100
End of Year 2	RWF121.00 x	.826	=	RWF100
End of Year 3	RWF133.10 x	.751	=	RWF100

The compounding and discounting features shown above relate to **single** payments or receipts at different points in time. Similar calculations can be done for a series of cash flows, where a single present value can be calculated by aggregating the present value of several future cash flows.

ANNUITIES

An annuity is where there is a **series** of cash flows of the **same** amount over a number of years.

The present value of an annuity can be found by discounting the cash flows individually (as above).

Example

Using a discount rate of 10% find the present value of an annuity of RWF2,000 per annum for the next four years, with the first payment due at the end of the first year.

Year	Cash Flow	Disc. Factor (10%)	Present Value
1	RWF2,000	0.909	RWF1,819
2	RWF2,000	0.826	RWF1,653
3	RWF2,000	0.751	RWF1,502
4	RWF2,000	0.683	RWF1,366
		Net Present Value	RWF6,340

However, a much quicker approach is to multiply the annual cash flow by an **annuity factor**. The annuity factor is simply the sum of the discount factors for each year of the annuity. In this example the annuity factor is 3.17 (0.909 + 0.826 + 0.751 + 0.683). If you multiply the RWF2,000 by the annuity factor of 3.17 you get RWF6,340, which is the same Net Present Value as the longer approach adopted in the example. Annuity factors are available for all % rates and periods in **Annuity Tables** (attached) and you will see the factor of 3.17 at period 4 under the 10% column.

In the above example the first receipt arose at the **end** of the first year. If this is not the case you can still use the Annuity Tables but you must modify your approach. The present value can be found by multiplying the annual cash flow by the annuity factor for the **last** date of the annuity less the annuity factor for the year **before** the first payment.

Example

Using a discount rate of 10% find the present value of an annuity of RWF5,000 per annum, which starts in year 5 and ends in year 10.

Annuity Factor Years 1 – 10	6.145
Annuity Factor Years 1 – 4	3.170
Annuity Factor Years 5 – 10	2.975

Therefore, the Present Value is RWF5,000 x 2.975 = RWF14,875.

PERPETUITIES

A perpetuity is an annuity which continues forever. To find the present value of a perpetuity which starts at year 1 you use the following simple formula:

$$PV = \frac{a}{i}$$

where: a = amount for perpetuity

i = the discount rate

Example

The present value of a payment in perpetuity of RWF1,000 per annum, which commences at the **end of year 1**, at a discount rate of 10% is:

$$PV = \frac{a}{i} = \frac{RWF1,000}{10} = \textbf{RWF10,000}$$

If the payment commences at a time other than year 1 a further calculation is required.

Example

Using a discount rate of 10% find the present value of a payment in perpetuity of RWFRWF1,000 per annum, if it commences (a) end of year 1, (b) immediately - year 0, or (c) end of year 6.

(a)

$$PV = \frac{a}{i} = \frac{RWF1,000}{10} = \textbf{RWF10,000}$$

(b) PV = RWF10,000 as at (a) + PV of RWF1,000 in year 0

= RWF10,000 + RWF1,000 = **RWF11,000**

(c) We can find this in <u>two</u> stages.

The PV **in year 5** of a perpetuity of RWF1,000 from year 6 onwards is

$$PV = \frac{a}{i} = \frac{RWF1,000}{10} = RWF10,000$$

We must now convert this to a **year 0** value, by discounting the RWF10,000 (year 5 value) at 10%.

PV = RWF10,000 x .621(Discount Factor for year 5 @ 10%) = RWF**6,210**

Net Present Value (NPV)

This technique converts future cash flows to a common point in time (Present Value), by discounting them. The present values of the individual cash flows are aggregated to arrive at the Net Present Value (NPV).

The NPV figure represents the change in shareholders' wealth from accepting the project. It produces an **absolute value** (RWF) and therefore, the impact of the project is identified.

For independent projects the decision rule is:

- **Accept** if the NPV is **positive**
- **Reject** if the NPV is **negative**

For **mutually exclusive** projects (where it is only possible to select **one** of many choices) - calculate the NPV of each project and select the **one** with the highest NPV.

In calculating the NPV, the selection of a discount rate is vitally important. It is generally taken as the cost to the business of long-term funds used to fund the project.

Example 1 - Independent Project
A company is considering a project, which is expected to last for 4 years, and requires an immediate investment of RWF20,000 on plant. Inflows are estimated at RWF7,000 for each of the first two years and RWF6,000 for each of the last two years. The company"s cost of capital is 10% and the plant would have zero scrap value at the end of the 4 years.

Calculate the NPV and recommend if the project should be accepted.

YEAR	CASH FLOWS	DISC. FACTOR 10%	PRESENT VALUE
0	(20,000)	1.0	(20,000)
1	7,000	.909	6,364
2	7,000	.826	5,785
3	6,000	.751	4,508
4	6,000	.683	4,098
		Net Present Value	+755

The project should be accepted as it produces a positive NPV. This indicates that the project provides a return in excess of 10% (the discount rate used).

Example 2 - Mutually Exclusive Projects

A company has RWF100,000 to invest. It is considering two mutually exclusive projects whose cash flows are estimated as follows:

YEAR	PROJECT A	PROJECT B
0	(100,000)	(100,000)
1	50,000	70,000
2	60,000	50,000
3	40,000	30,000

Which project should the company select if its cost of capital is 10%

YEAR		DISC FACTOR 10%	PRESENT VALUE	
			PROJECT A	PROJECT B
0	1.0		(100,000)	(100,000)
1	.909		45,450	63,630
2	.826		49,560	41,300
3	.751		30,040	22,530
		Net Present Value	+ 25,050	+ 27,460

Project B should be selected as it has the higher NPV.

Advantages

- Correctly accounts for the time value of money.
- Uses all cash flows.
- Is an absolute measure of the increase in wealth
- Consistent with the idea of maximising shareholder wealth i.e. telling managers to maximise NPV is equivalent to telling them to maximise shareholder wealth.
- It can be used for benchmarking in post-audit review.

Disadvantages

- Difficult to estimate cost of capital.
- Not easily interpreted by management i.e. managers untrained in finance often have difficulty in understanding the meaning of a NPV.

Internal Rate of Return (IRR)

The NPV method produces an absolute value in currency (RWF). A positive NPV indicates that the project earns more than the required rate of return and should be accepted; a negative NPV indicates a return less than the required rate and rejection of the proposal.

The IRR is another discounted cash flow technique. It produces a percentage return or yield, rather than an absolute value. It is the discount rate at which the NPV would be zero - where the present value of the outflows = present value of the inflows. It can, therefore, be regarded as the expected earning rate of the investment.

If the IRR exceeds the company's target rate of return it should be accepted. If less than the target rate of return it should be rejected.
The IRR can be estimated by a technique called **'Linear Interpolation"**. This requires the following steps:

- Calculate <u>two</u> NPV's, using two different discount rates.
- Any two rates can be used but, ideally, one calculation will produce a positive NPV and the other a **negative** NPV.
- Choosing the discount rate is a 'shot in the dark.' However, if the first attempt produces a positive NPV, generally a **higher** discount rate will be required to produce a negative NPV and vice versa.

Example 3 - Internal Rate of Return

Using the cash flows from example 1, a discount rate of 10% produced a positive NPV of RWF755. In an attempt to find a **negative** NPV try a higher rate of 15%.

YEAR	CASH FLOWS	DISC. FACTOR 15%	PRESENT VALUE
0	(20,000)	1.0	(20,000)
1	7,000	.869	6,083
2	7,000	.756	5,292
3	6,000	.658	3,948
4	6,000	.572	3,432
		Net Present Value	**(1,245)**

We now know that the real rate of return is > **10%** (+ NPV) but < **15%** (- NPV). The IRR is calculated by 'Linear Interpolation.' It will only be an approximation of the actual rate as it assumes that the NPV falls in a straight line (linear) from + RWF755 at 10% to - RWF1,245 at 15%. The NPV, in fact, falls in a curved line but nevertheless the interpolation method is accurate enough. In this example the IRR is:

$$10\% + \frac{755}{755 + 1{,}245} \times (15\% - 10\%) = \mathbf{11.9\%}$$

Advantages

- Often gives the same decision rule as NPV.
- More easily understood than NPV.
- Doesn"t require an exact definition of "r" in advance.
- Considers the time value of money.
- Considers all relevant cash flows over a project"s life.

Disadvantages

- Relative, not absolute return -> ignores the relative size of investments.
- If there is a change in the sign of the cash flow pattern, one can have multiple IRR"s.
- NPV is much easier to use for benchmarking purposes in a post-audit situation than IRR.
- It looks at projects individually – the results cannot be aggregated.
- It cannot cope with interest rate changes.

DCF Techniques v Non-DCF Techniques

DCF techniques have advantages over non-DCF techniques:

- They allow for the 'time value of money.'
- They use cash flows, which result from an investment decision. The ARR technique is affected by accounting conventions (e.g. depreciation, deferred expenditure etc.) and can be susceptible to manipulation.
- They take account of all cash flows. The Payback Period disregards cash flows after the

payback period.

- **Risk** can be easily incorporated by adjusting the discount rate (NPV) or cut-off rate (IRR).

Advantages of IRR Compared To NPV

- It gives a ***percentage rate or return***, which may be more easily understood by some.
- To calculate the IRR it is ***not necessary to know in advance*** the required rate of return or discount rate, as it would be to calculate the NPV.

Advantages of NPV Compared To IRR

- It gives an absolute measure of profitability (RWF) and hence, shows immediately the change in shareholders' wealth. This is consistent with the objective of shareholder wealth maximisation. The IRR method, on the other hand, ignores the relative size of investments.
- It always gives only one solution. The IRR can give multiple answers for projects with non-conventional cash flows (a number of outflows occur at different times).
- It always gives the correct ranking for mutually exclusive projects, whereas the IRR technique may give conflicting rankings.
- Changes in interest rates over time can easily be incorporated into NPV calculations but not IRR calculations.

RELEVANT CASH FLOWS

In an examination question you will be given much information regarding the impact on the organisation of a new investment proposal etc. Some of the information may not be relevant to the decision and it is important that you are able to figure out which flows are relevant and should be included in an investment appraisal calculation.
For example, suppose you were asked to evaluate whether a U.K. organisation should establish a subsidiary in the USA and the following paragraph appeared halfway through the question:

The company currently exports to the USA, yielding an after-tax net cash flow of GBP100,000. No production will be exported to the USA if the subsidiary is established. It is expected that new export markets of a similar worth in Southern Europe could replace exports to the USA. Home production is at full capacity and there are no plans for further expansion in capacity".

This lengthy paragraph is, obviously, designed to confuse you. If we analyse it further we find that it is merely saying that the organisation currently exports GBP100,000 worth of goods to the USA which will be replaced by GBP100,000 of new exports to Southern Europe, if we establish the subsidiary. Thus, it has a neutral impact on our decision and can be omitted from the appraisal.
The following pointers and simple examples should assist in coping with the various items which are presented to you in an examination:

1. CASH FLOWS v PROFITS

Shareholders" wealth is based upon the movement of cash. Accounting policies and conventions have no effect on the value of the firm and, thus, pure accounting or book entries should be excluded from calculations. The most common of these is depreciation, which should be excluded as it is a non-cash item.

Example

A company is considering investing in a new project which requires the expenditure of RWF12m. immediately on plant. The project will last for 5 years and at the end of the project the plant is expected to have a scrap value of RWF2m. The company normally depreciates plant over 5 years using the straight-line method.

In this simple illustration the last sentence concerning depreciation can be ignored completely as it does **not** affect the cash flows. It would be incorrect to show an outflow of RWF2m p.a. for depreciation. The relevant cash flows are the outflow of RWF12m. on plant in year 0 and the inflow of RWF2m as scrap in year 5.

2. CASH FLOWS SHOULD BE INCREMENTAL

The effect of a decision on the company"s **overall** cash flows must be considered in order to determine correctly the changes in shareholders" wealth.

Example

A company is considering a proposal which would require (amongst other cash flows) the purchase of a new machine for RWF100,000. If it proceeds with the proposal it could dispose of an existing machine which has a book written-down value of RWF30,000. This machine could be sold immediately for RWF20,000 instead of waiting for 5 years as planned and selling it for scrap value of RWF5,000. Should the existing machine be taken into account in evaluating the new proposal ?

Undertaking the new proposal requires the purchase of a new machine which, in turn, enables the existing machine to be sold, thereby generating an inflow for the organisation. Thus, the cash flows associated with the existing machine are relevant in evaluating the new proposal. The present written-down value of RWF30,000 is not relevant as it is merely an accounting book entry. The sale proceeds of RWF20,000 is obviously relevant as is the **loss** of RWF5,000 scrap value which the company would have received in year 5 if the new proposal was not undertaken.

The relevant cash flows are:

Year	New Machine	Sale – Existing Machine	Scrap Foregone Existing Machine	Net Cash Flows
0	(100,000)	20,000		(80,000)
1				
2				
3				
4			(5,000)	
5				(5,000)

3. OVERHEADS

Variable overheads will **always** be relevant in decision making. However, depending on the situation fixed overheads may or may not be relevant. If fixed overheads are allocated on some arbitrary basis (e.g. on the basis of machine or labour hours) they are not usually relevant. However, if the total fixed costs of the organisation are affected by the proposal then they are relevant and should be incorporated as a cash flow.

Example

A company is considering the introduction of a new product to its existing range. Each product will take two hours labour to manufacture. Fixed overheads are allocated within the company on the basis of RWF1 per labour hour. Sales of the new product are estimated at 12,000 units per annum. If the new product is manufactured the company will have to employ an additional supervisor at a salary of RWF20,000 per annum.

The allocation of fixed overheads at the rate of RWF2 per unit has no effect on cash flows and is **not** relevant. It is merely an accounting entry for costing or control purposes.

The additional supervisory salary of RWF20,000 per annum **is** relevant, as it is incurred solely as a result of the new proposal and must be taken into account.

Example

A company is considering the introduction of a new product to its existing range. It currently rents a factory at an annual rental of RWF100,000. Only three-quarters of the factory is used on production of its existing range of products and the remaining quarter of the factory would be adequate in which to produce the new product. However, it will be necessary to rent additional warehouse space at RWF20,000 per annum in order to store the new production.

To produce the new product the organisation can utilise factory space which is currently idle. **No additional** factory rental costs will be incurred by the company and it would be incorrect to show an annual cash outflow of RWF25,000 (one-quarter) in respect of rent when evaluating the new proposal.

On the other hand, the additional warehouse rent of RWF20,000 per annum is **incurred solely** as a result of the new proposal and must be taken into account in the evaluation process.

4. SUNK COSTS

Sunk costs (or past costs) are costs which have already been incurred. When making an investment decision sunk costs can be **ignored** and you need only consider future incremental cash flows.

Example

A company is considering the introduction of a new type of widget. Over the past two years it **has** spent RWF100,000 on research and development work.

The RWF100,000 spent on research and development is a sunk cost and can be ignored when evaluating the future inflows and outflows of the proposal. One way of looking at it is that

whether you decide to go ahead with the new proposal or not this will not alter the position of the RWF100,000 - it **has** already been incurred.

Example

A company uses a special raw material, named Zylon, in production. It currently has 5,000 tons in stock. The company is considering a once-off project which would use 2,000 tons of Zylon. The original cost of the Zylon in stock was RWF20 per ton; the current purchase price is RWF17 per ton and its resale value is RWF10 per ton.
What is the relevant cost of the Zylon for the project if :

(a) It is **regularly used** by the company ?
(b) It is **no longer used** and any remaining stock will be sold off immediately ?

(a) The original cost of RWF20 per ton is **not** relevant. The 2,000 tons used on this project are taken out of stock and must be replaced at the current purchase price, as the Zylon is regularly used by the company. Thus, **current purchase price** is the relevant cost - 2,000 tons @ RWF17 = **RWF34,000**.

(b) Again, the original cost of RWF20 per ton is **not** relevant. If the company does not use the existing stock in the new project the next best use is to dispose of it at RWF10 per ton, as it is no longer used in production. Thus, **current resale value** is the relevant cost - 2,000 tons @ RWF10 = **RWF20,000**.

5. OPPORTUNITY COSTS

The use of resources for a new project may divert them from existing projects, thereby causing opportunity costs. These opportunity costs must be taken into account in evaluating any new project.

Example
A company is considering the introduction of a new range of advanced personal computer, which will be very competitively priced. While accepting that the new machine is vital to remain competitive, the marketing manager has estimated that sales of existing models will be reduced by 100 units per annum for the next three years as a consequence. The existing model sells for RWF3,000 and variable costs are RWF1,750 per unit.
In evaluating the introduction of the new advanced machine, the **lost contribution** from reduced sales of existing models must be included as an opportunity cost. In this case the opportunity cost is RWF125,000 [100 units x (RWF3,000 - RWF1,750)] per annum for the next three years.

6. INTEREST COSTS

In many examination questions you will be presented with all the costs of the proposed project. These may be presented in the form of a standard Profit & Loss Account. One of these costs may be „Interest." The figure for interest should **not** be included as a relevant cost because the cost of finance, no matter what its source, is encompassed within the discount rate. Therefore, to include the annual interest charge as a relevant cost and to also discount the cash flows would result in double counting.

7. WORKING CAPITAL

Where the project requires an investment of, say RWF50,000, for working capital it

should be remembered that working capital revolves around continuously in the project (e.g. purchase of raw materials, which are used to manufacture goods, sold and eventually generate cash to enable the purchase of more raw materials etc.. and continuously repeat the cycle). Thus, the RWF50,000 flows back into the organisation once the project ceases. In this example, if the project has a life of five years the cash flows relating to working capital are:

Year	Working Capital
0	(50,000)
5	50,000

THE EFFECTS OF TAXATION ON THE INVESTMENT DECISION

To appraise fully an investment, management must take account of the impact of taxation, as it is the after-tax cash flows that are relevant to decision making.
As a result of accepting a project tax payments or savings will, generally, be made by the company. These relate to:

- Corporation Tax payments on profits.
- Tax benefits due to capital allowances granted on certain expenditure.

CORPORATION TAX

Annual cash inflows from a project will cause an increase in taxable profits and, hence, a tax payment. Annual cash outflows (e.g. cost of materials, labour etc.) will reduce taxable profits and yield tax savings. However, tax payments or savings can be based upon the **net** cash inflows or outflows each year.

One can assume that an annual cash flow (inflow or outflow) will produce a similar change in taxable profits, unless the exam question specifically indicates otherwise. For example, you may be told that a particular item of expenditure (say, a contract termination payment of RWF100,000) is **not** allowable for tax purposes. In this instance, the RWF100,000 must be shown as an outflow of the project but it is ignored when calculating the taxation effect.

It is important to appreciate that the taxation payment or saving is the cash flow multiplied by the rate of Corporation Tax. For example, if the net cash inflow in a particular year is RWF50,000 and the rate of Corporation Tax is 40% an outflow of RWF20,000 (RWF50,000 x 40%) is shown in the taxation column.

CAPITAL ALLOWANCES

The Rwandan Revenue Authority does not allow depreciation charges as a deduction in calculating the tax payable. However, it does grant capital allowances, which can be quite generous. These allowances on capital items can be set-off against taxable profits to produce tax savings (i.e. cash inflows).

The capital allowances can take various forms. The most common are:

- **40% initial allowance**, whereby an allowance equivalent to the full cost of the item is treated as allowable depreciation in the first year.

Again, it is important to appreciate that the cash flow effect is the capital allowance multiplied by the rate of Corporation Tax. For example, if the capital expenditure (which qualifies for 40% allowances) in a particular year is RWF50,000 and the rate of Corporation Tax is 40% then a saving of RWF20,000 (RWF50,000 x 40%) is shown in the taxation column.

The eventual sale of capital items will usually cause a balancing **charge** or a balancing **allowance**, which must also be taken into account in the project appraisal.

TIMING OF TAXATION EFFECTS

Unless specifically advised to the contrary in an examination, assume that there is a time lag of **one** year between a cash flow and the corresponding taxation effect. Thus, expenditure on a capital item in year 0 will usually be accompanied by a tax saving in year 1.

Impact of Inflation

To illustrate how inflation should be handled in Investment Appraisal we shall take a simple example, under two different scenarios – an environment with no inflation and an environment where inflation is present:

1. **No Inflation** – suppose you are considering the purchase of a television for RWF1,000.

   I am undertaking a simple one-year project and I require RWF1,000. I approach you and guarantee you a return of 5% on your investment. Your investment will have grown to RWF1,050 at the end of the year and, in theory, because there has been no inflation the price of the television should still be RWF1,000. Thus, you have made RWF50 in the process and also got your television. Therefore, you have achieved a **real return** of 5%.

2. **Inflation (assume 20% per annum)** – using the same example as number 1. If you had given me the RWF1,000 this would be worth RWF1,050 at the end of the year but the price of the television would probably have risen to RWF1,200 (+20%) because of inflation, so you would not be able to afford it. The value of your savings has been eroded because of inflation – you have got a return of 5% in money terms but inflation has been running at 20%. Therefore, you have not got a **real return** of 5% - this is only a **nominal (or money) return**. In this instance, with inflation of 20% you would require a nominal (money) return of 26% in order to obtain a real return of 5%.

Obviously, there is a link between the nominal (or money) rate of return (26%), the real rate of return (5%) and the rate of inflation (20%). This relationship may be expressed as follows:

$$(1+\text{Real Rate}) = \frac{(1 + \text{Nominal Rate})}{(1 + \text{Inflation Rate})}$$

Using the figures in the above example:

$$\frac{1.26}{1.20} = 1.05$$

If you have any two variables you can find the third. For example, if you require a real return of 5% from an investment and you estimate inflation to be 20% you can work out the required nominal return at 26% as follows:

(1 + Real Rate)	x	(1 + Inflation Rate)	=	(1 + Nominal Rate)
(1.05)	x	(1.20)	=	(1.26)

REAL vs NOMINAL (MONEY) DISCOUNT RATES

Now that you know the difference between a real and a nominal rate of return (or discount rate) which rate should be used in discounting the cash flows of a project? This really depends on how the **cash flows** are expressed. They can be stated either as:

- **Real Cash Flows** – stated in today"s prices and **exclude** any allowance for inflation.
- **Nominal/Money Cash Flows** – these **include** an allowance for inflation and are stated in the actual RWF"s receivable/payable.

As a very simple illustration, an examination question might state (amongst other things) ….”materials for the project cost RWF10 per unit in terms of today"s prices. Inflation is expected to run at the rate of 10% per annum and the project will last for three years.”

We can express the cash flows in either real or nominal terms:

YEAR	REAL CASH FLOWS	MONEY CASH FLOWS		
1	RWF10	RWF10 x (1.10)	=	RWF11.00
2	RWF10	RWF10 x $(1.10)^2$	=	RWF12.10
3	RWF10	RWF10 x $(1.10)^3$	=	RWF13.30

The rules for handling inflation are quite straightforward:

- If the cash flows are expressed in **real terms** (today"s money), use the **real discount** rate.
- If the cash flows are expressed in **money terms** (the actual number of RWF that will be received/paid on the various future dates), use the **nominal/money discount rate.**
- No matter which approach is used you should get the same result.

Example:
A company is considering a project which will last for three years. The initial cost is RWF100,000 and cash inflows of RWF60,000, RWF50,000 and RWF40,000 respectively are anticipated for the three years. These inflows are expressed in **current values** and do not take account of any projected inflation. It is estimated that inflation will be 20% per annum for the life of the project. The investment will have no residual value at the end of the project. The company"s required rate of return in money terms is 26%.

First Approach – Real Cash Flows & Real Discount Rate

$$(1 + \text{Real Rate}) = \frac{(1 + \text{Nominal Rate})}{(1 + \text{Inflation Rate})}$$

$$\frac{1.26}{1.20} = 1.05$$

Year	Real Cash Flows	Dis. Factor 5%	Pres. Value
0	(100,000)	1.000	(100,000)
1	60,000	.952	57,120
2	50,000	.907	45,350
3	40,000	.864	34,560
			37,030

Second Approach – Money Cash Flows & Money Discount Rate

We already have a money rate (26%) but we need to re-express the cash flows in money terms by inflating them at 20% per annum.

Year	Real Cash Flows	Money Flows	Dis. Factor 26%	Pres. Value
0	(100,000)	(100,000)	1.000	(100,000)
1	60,000	x 1.20 = 72,000	.794	57,168
2	50,000	x $(1.20)^2$ = 72,000	.630	45,360
3	40,000	x $(1.20)^3$ = 69,120	.499	34,491
				37,019

Allowing for some rounding, the same answer is produced under each approach.

So which approach should be used? In most cases it is probably best to inflate the cash flows to money cash flows and then discount at the money required rate of return. Among the reasons for suggesting this are:

Different inflation rates may apply to different variables. For example, raw materials may inflate at 5% per annum, labour at 3% per annum etc. Thus, in converting a money rate to a real rate, which inflation rate do you divide by – 5% or 3%?

When converting a money rate to a real rate you often end up with fractions. For example, where the money rate of return is 15% and inflation is expected to be 5% per annum, this translates to a real rate of 9.52%. This rate may be difficult to handle as Discount Tables tend to be produced for whole numbers only.

When taxation is included in the appraisal capital allowances are based on **original**, rather than replacement cost and do not change in line with changing prices. Therefore, if the cash

flows are left in terms of present day prices and discounted at the real discount rate it would understate the company's tax liability.

HANDLING DIFFERENT INFLATION RATES

Where different inputs inflate at different rates the best approach is to inflate each element by the appropriate inflation rate and then to discount the net cash flows (which are now in money terms) by the money rate of return.

Example:
A company is considering a new project which would cost RWF60,000 now and last for four years. Sales revenue is expected to be RWF50,000 per annum. Raw materials will cost RWF10,000 in the first year and will rise thereafter by 5% per annum because of inflation. Labour costs will be RWF15,000 in year 1 and agreement has just been concluded, whereby increases of 4% per annum will apply for the following three years. No residual/scrap value will arise at the end of the project. Due to the current competitive environment it will not be possible to increase selling prices.

The general rate of inflation is expected to be 8% per annum for the next few years. The company's required money rate of return is 15%. Should the project be undertaken?

Year	Investment	**Sales**	**Material**	**Labour**	Net	**D.F.** 15%	Pres. Value
		(Fixed)	(+5%)	(+4%)			
0	(60,000)				(60,000)	1.000	(60,000)
1		50,000	(10,000)	(15,000)	25,000	.870	21,750
2		50,000	(10,500)	(15,600)	23,900	.756	18,068
3		50,000	(11,025)	(16,224)	22,751	.658	14,970
4		50,000	(11,576)	(16,873)	21,551	.572	12,327
							7,115

As the project produces a positive NPV it should be accepted.

GENERAL CONSIDERATIONS - INFLATION

- **Planning** – more difficult
- **Project Appraisal** – another complication
- **Interest Rates** – higher nominal rates
- **Capital** – additional capital required
- **Borrowings** – extra borrowings => increased financial risk for shareholders
- **Nature of Borrowings** – long v short; fixed v floating; foreign borrowings?
- **Selling Prices** – can increase in costs be passed on?
- **Impact on Customers** – delayed payment; bad debts; liquidations etc.

REPLACEMENT OF ASSET

An organisation may be faced with a decision on the best policy regarding the replacement of assets. If the asset is to be replaced with an "identical asset" the question is how long to retain the asset and the optimum interval between replacement ?

When making this decision the cash flows which must be considered are:

- Capital Cost – the more frequent the replacement cycle, the more frequently this will be incurred.
- Maintenance/Running Cost – this tends to increase with the age of the asset.
- Resale/Residual Value – this tends to decrease with the age of the asset.

EQUIVALENT ANNUAL COST

One method of identifying the optimum replacement cycle for an asset is to calculate the Equivalent Annual Cost (EAC).

This technique examines the various replacement options and calculates the present value of the total costs, over **one** cycle only. For example, if a machine has a life of three years there are only three options – replace every year, every two years or every three years. For each option identify the cash flows over one cycle:

- Replace **every** year - identify cash flows over a one year cycle
- Replace every **two** years – identify cash flows over a two year cycle
- Replace **every** three years – identify cash flows over a three year cycle

Finally, having obtained the present value of the cash flows over each cycle, convert them to an Equivalent Annual Cost by dividing the total costs by the appropriate annuity factor (one year; two year or three year).

Example

A machine has a life of three years and the following running costs and resale value are estimated:

	Year 1	Year 2	Year 3
Running Costs	15,000	20,000	25,000
Resale Value	35,000	25,000	15,000

The machine costs RWF50,000 and the company's cost of capital is 10%. Identify how frequently the asset should be replaced.

The Cash Flows for each cycle are:

Year	**Replace Every Year**	**Replace Every 2 Years**	**Replace Every 3 Years**
0	(50,000)	(50,000)	(50,000)
1	20,000	(15,000)	(15,000)
2		5,000	(20,000)
3			(10,000)

The Present Values of the Cash Flows at 10% are:

Year	**Replace Every Year**	**Replace Every 2 Years**	**Replace Every 3 Years**
0	(50,000)	(50,000)	(50,000)
1	18,180	(13,635)	(13,635)
2		4,130	(16,520)

3			(7,510)
PV Total Costs	**(31,820)**	(59,505)	(87,665)
Equivalent Annual Cost	(31,820)	(59,505)	(87,665)
	0.909	1.736	2.487
	= (35,005)	**(34,227)**	**(35,249)**

The optimum replacement cycle is every two years as this has the lowest cost

Capital Rationing

Capital Rationing is a situation where a company has insufficient capital to complete all projects which it would like to undertake (e.g. those with a positive NPV).

Broadly, Capital Rationing can be described as:

- **Soft Capital Rationing** – due to factors internal to the organisation. For example, projects are limited to funds available from retentions; management are unwilling to commit to additional debt due to the risk involved; the capacity of management to undertake many projects etc.

- **Hard Capital Rationing** – due to factors external to the organisation. For example, restrictions imposed on further borrowing due to a credit squeeze or lenders unwilling to provide further funds due to risk factors; stock market depressed and share issue not acceptable etc.

RANKING OF PROJECTS

Example

A company is reviewing its capital expenditure budget and has identified five projects. Its cost of capital is 10% and it has calculated the NPV of each project as follows:

Project	Capital Investment	NPV
A	100,000	10,000
B	400,000	36,000
C	300,000	21,000
D	600,000	51,000
E	700,000	62,000

The company only has RWF1.6m available for investment. Assume that the projects are divisible and calculate the optimum solution.

If capital was not rationed the company should undertake all projects because they all have positive NPV"s. As capital is rationed (RWF2.1m. required to undertake all projects but only RWF1.6m. available) it is necessary to use a technique which links the NPV with the Capital Investment – calculate the **Profitability Index** (NPV per RWF of investment) and then rank the projects by their Profitability Index.

Project	Investment	NPV	Prof. Index			Ranking
A	100,000	10,000	10,000/100,000	=	0.10	1
B	400,000	36,000	36,000/400,000	=	0.09	2
C	300,000	21,000	21,000/300,000	=	0.07	5
D	600,000	51,000	51,000/600,000	=	0.085	4
E	700,000	62,000	62,000/700,000	=	0.088	3

Optimum Solution

Project	Investment		NPV
A	100,000		10,000
B	400,000		36,00
E	700,000		62,000
D		(2/3rd)	34,000 (2/3rd)
	400,000		
	1,600,000		142,000

Thus, undertake all of projects A, B, and E and 2/3rd of project D. Project C is not undertaken. By doing only 2/3rd of project D (the projects are divisible) the entire RWF1.6m. of available funds are used.

If the projects are <u>not</u> divisible we must deal in whole projects. Calculate by "trial and error" the combination of various projects which will use up to RWF1.6m. and select the combination with the highest NPV. For example,

Projects	Investment	NPV
A, B, C, D	1,400,000	118,000
A, B, C, E	1,500,000	129,000
C, D, E	1,600,000	134,000

Thus, by undertaking projects C, D and E the highest combined NPV of RWF134,000 is achieved.

POSSIBLE WAYS OF SOLVING CAPITAL RATIONING

- Defer one or more projects to a later period when capital is not rationed
- Share project(s) with another partner
- Outsource part of a project (e.g. component)
- Consider licensing/franchising
- Seek alternative sources of funding (e.g. venture capital, sale & leaseback)

F. LEASE v BUY DECISION

The Traditional Method breaks the decision into two stages – Acquisition & Financing Decisions:

- **Acquisition Decision** - Is the asset worth acquiring? Operational cash flows are discounted by the cost of capital normally applied to project evaluations – **after-tax cost of capital**. If a positive NPV results, then proceed to Financing Decision

- **Financing Decision** – Cash flows of the financing decision (lease v buy) are discounted by the **after-tax cost of borrowing**.

Example

PP wishes to replace a piece of equipment, costing RWF120,000. This will produce operating savings of RWF50,000 per annum and will have a life of five years. PP"s after-tax cost of capital is 15% and operating cash flows are taxed at 30%, one year in arrears.

PP can borrow funds at 13% to purchase the machine or alternatively, it could acquire it by means of a finance lease costing RWF28,000 per annum for five years, the lease rentals payable in advance. The machine is expected to have zero scrap value at the end of the five years.

The machine qualifies for capital allowances on a reducing balance basis at the rate of 25% per annum. However, due to its tax position PP is unable to utilise any capital allowances on the purchase until year one.

Should PP replace the equipment and if so, should it buy or lease it?

Capital Allowances

1	RWF120,000 x 25%	30,000
2	RWF30,000 x 75%	22,500
3	RWF22,500 x 75%	16,875
4	RWF16,875 x 75%	12,656
		82,031
	Balancing Allowance: RWF120,000 - RWF82,031	37,969
		120,000

Taxation

	Savings	Cap. Allowance	Taxable	Tax @ 30%
1	50,000	30,000	20,000	6,000
2	50,000	22,500	27,500	8,250
3	50,000	16,875	33,125	9,937
4	50,000	12,656	37,344	11,203
5	50,000	37,969	12,031	3,609

1. Acquisition Decision

	Equipment	Savings	Taxation	Net	D.F. 15%	Pres. Val.
0	(120,000)			(120,000)	1.000	(120,000)
1		50,000		50,000	0.870	43,500
2		50,000	(6,000)	44,000	0.756	33,264
3		50,000	(8,250)	41,750	0.658	27,471
4		50,000	(9,937)	40,063	0.572	22,916
5		50,000	(11,203)	38,797	0.497	19,282
6			(3,609)	(3,609)	0.432	(1,559)
						24,874

As the NPV is positive PP should acquire the machine.

Now examine the Financing Decision (Lease v Buy).

2. Financing Decision

The cash flows associated with the two options (Lease and Buy) are discounted by a rate appropriate to a financing decision => the **after-tax cost of borrowing**. We concentrate on the financing cash flows – ignore any cash flows which are common e.g. sales revenue.

After-Tax Cost of Borrowing:

13% x (1 – t)
13% x 0.7
= 9.1% (say, 9%)

Buy:

	Item	Cash Flow	D.F. 9%	Pres. **Val.**
0	Purchase	(120,000)	1.000	(120,000)
2	Allowance 30,000 x 30%	9,000	0.842	7,578
3	Allowance 22,500 x 30%	6,750	0.772	5,211
4	Allowance 16,875 x 30%	5,063	0.708	3,585
5	Allowance 12,656 x 30%	3,797	0.650	2,468
6	Allowance 37,969 x 30%	11,390	0.596	6,788
Present Value of Cost				**(94,370)**

Lease:

Lease Rental	Tax Taving	D.F. 9%	Pres. Val.
0-4	(28,000)	4.239	(118,692)
1-5	8,400	3.890	32,676
Present Value of Cost			(86,016)

Note: The discount factor for years 0-4 can be found by adding 1.0 (for the first instalment of rental paid **up-front**) to 3.239 from the 9% Annuity Tables – year 3 (for the remaining three rentals paid at the **beginning** of years 1, 2 and 3).

*** Conclusion**: It is cheaper to **lease** the machine rather than purchase.

F. LEASE v BUY DECISION

The Traditional Method breaks the decision into two stages – Acquisition & Financing Decisions:

- **Acquisition Decision** - Is the asset worth acquiring? Operational cash flows are discounted by the cost of capital normally applied to project evaluations – **after-tax cost of capital**. If a positive NPV results, then proceed to Financing Decision
- **Financing Decision** – Cash flows of the financing decision (lease v buy) are discounted by the **after-tax cost of borrowing**.

Example

PP wishes to replace a piece of equipment, costing RWF120,000. This will produce operating savings of RWF50,000 per annum and will have a life of five years. PP"s after-tax cost of capital is 15% and operating cash flows are taxed at 30%, one year in arrears.

PP can borrow funds at 13% to

The machine qualifies for capital allowances on a reducing purchase the machine or alternatively, it could acquire it by means of a finance lease costing RWF28,000 per annum for five years, the lease rentals payable in advance. The machine is expected to have zero scrap value at the end of the five years.balance basis at the rate of 25% per annum. However, due to its tax position PP is unable to utilise any capital allowances on the purchase until year one.

Should PP replace the equipment and if so, should it buy or lease it?

Capital Allowances

1	RWF120,000 x 25%	30,000
2	RWF30,000 x 75%	22,500
3	RWF22,500 x 75%	16,875
4	RWF16,875 x 75%	12,656
		82,031
	Balancing Allowance: RWF120,000 - RWF82,031	37,969
		120,000

Taxation

	Savings	Cap. Allowance	Taxable	Tax @ 30%
1	50,000	30,000	20,000	6,000
2	50,000	22,500	27,500	8,250
3	50,000	16,875	33,125	9,937
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Study Unit 6

Working Capital Management

Contents

Concept of Working Capital:

- Gross working capital
- Networking capital

- Types of working capital:
  - Temporary W.C
  - Permanent W.C
  - Semi- Variable Working Capital
  - Sources of working capital
- Factors influencing working capital management
- Working capital policies and strategies- Conservative/Aggressive/Hedging- Matching
- The operating cycle and determination of working capital
- Working capital ratios
- Overtrading - symptoms, causes and remedies.
- Inventory management (EOQ, EBQ, and JIT).
- Cash management.
- Debtor and creditor management: terms of credit, credit evaluation, settlement discounts, debt collection techniques, factoring and invoice Discounting.

CONCEPT OF WORKING CAPITAL

Definition of Working Capital

Working Capital (Net Current Assets) = Excess of Current Assets over Current Liabilities.

Current Assets: Stock (Finished Goods, WIP and Raw Materials), Debtors, Marketable Securities and Cash/Bank.

Current Liabilities: Creditors Due Within One Year, Trade Creditors, Prepayments received, Tax Payable, Dividends Payable, Short-term Loans and Long-term Loans Maturing Within the Year.

It may be regarded loosely as: **STOCKS + DEBTORS - CREDITORS**.

Working Capital Management is basically a trade off between ensuring that the business remains liquid while avoiding excessive conservatism, whereby the levels of Working Capital held are too high with an ensuing large opportunity loss. Obviously, the levels of Working Capital required depend to a large extent on the type of industry within which the company is operating ; contrast service industries with manufacturing industries.

Matching Concept

Long-term assets must be financed by long-term funds (debt/equity). Short-term assets can be financed with short-term funds (e.g. overdraft, creditors) but it may be prudent to finance partly with long-term funds. Working capital policies can be identified as conservative, aggressive or moderate:

- **Conservative** – financing working capital needs predominantly from long-term sources of finance. Current assets are analysed into permanent and fluctuating – long-term finance used for permanent element and some of the fluctuating current assets. This will increase the amount of lower risk finance, at the expense of increased interest payments and lower profitability.

- **Aggressive** – short-term finance used for all fluctuating and most of the permanent current assets. This will decrease interest costs and increase profitability but at the expense of an increase in the amount of higher-risk finance used.

- **Moderate (or matching approach)** – short-term finance used for fluctuating current assets and long-term finance used for permanent current assets.

Short-term finance is more *flexible* than long-term finance and usually cheaper. However, the trade-off between the relative cheapness of short-term debt and its risks must be considered. For example, it may need to be continually renegotiated as various facilities expire and due to changed circumstances (e.g. a credit squeeze) the facility may not be renewed. Also, the company will be exposed to fluctuations in short-term interest rates (variable).

DETERMINANTS OF WORKING CAPITAL NEEDS

There are several factors which determine the firm's working capital needs. These factors are comprehensively covered by A Textbook of Business Finance by Manasseh (Pages 403 – 406). They however include:

- Nature and size of the business.
- Firm's manufacturing cycle
- Business fluctuations
- Production policy
- Firm's credit policy
- Availability of credit
- Growth and expansion activities.

IMPORTANCE OF WORKING CAPITAL MANAGEMENT

The finance manager should understand the management of working capital because of the following reasons:

- **Time devoted to working capital management**

A large portion of a financial manager's time is devoted to the day to day operations of the firm and therefore, so much time is spent on working capital decisions.

- **Investment in current assets**

Current assets represent more than half of the total assets of many business firms. These investments tend to be relatively volatile and can easily be misappropriated by the firm's employees. The finance manager should therefore properly manage these assets.

- **Importance to small firms**

A small firm may minimise its investments in fixed assets by renting or leasing plant and equipment, but there is no way it can avoid investment in current assets. A small firm also has relatively limited access to long term capital markets and therefore must rely heavily on short-term funds.

- **Relationship between sales and current assets**

The relationship between sales volume and the various current asset items is direct and close. Changes in current assets directly affects the level of sales. The finance management must therefore keep watch on changes in working capital items.

Overtrading/Undercapitalisation

This occurs where a company is attempting to expand rapidly but doesn"t have sufficient long-term capital to finance the expansion. Through overtrading, a potentially profitable business can quite easily go bankrupt because of insufficient cash.

Output increases are often obtained by more intensive use of existing fixed assets and growth is financed by more intensive use of working capital. Overtrading can lead to liquidity problems that can cause serious difficulties if they are not dealt with promptly.

Overtrading companies are often unable or unwilling to raise long-term capital and rely more heavily on short-term sources (e.g. creditors/overdraft). Debtors usually increase sharply as

credit is relaxed to win sales, while stocks increase as the company attempts to raise production at a faster rate ahead of increases in demand.

Symptoms of Overtrading

- Turnover increases rapidly
- The volume of current assets increases faster than sales (fixed assets may also increase)
- Increase in stock days and debtor days
- The increase in assets is financed by increases in short-term funds such as creditors and bank overdrafts
- The current and quick ratios decline dramatically and Current Assets will be far lower than Current Liabilities
- The cash flow position is heading in a disastrous direction.

Causes of Overtrading

- Turnover is increased too rapidly without an adequate capital base (management may be overly ambitious)
- The long-term sources of finance are reduced
- A period of high inflation may lead to an erosion of the capital base in real terms and management may be unaware of this erosion
- Management may be completely unaware of the absolute importance of cash flow planning and so may get carried away with profitability to the detriment of this aspect of their financial planning.

Possible means of alleviating overtrading are:

- Postponing expansion plans
- New injections of long-term finance either in terms of debt/equity or some combination
- Better stock/debtor control
- Maintaining/increasing proportion of long-term finance

Undertrading/Overcapitalisation
Here the organisation operates at a lower level than that for which it is structured. As a result capital is inadequately rewarded. This can normally be identified by poor accounting ratios (e.g. liquidity ratios too high or stock turnover periods too long).

Assessment of Liquidity Position

The liquidity position of an organisation may be assessed using some key financial ratios:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick Ratio or ("Acid Test")} = \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities}}$$

$$\text{Debtors Collection Period} = \frac{\text{Debtors}}{\text{Sales}} \times 365 \text{ days}$$

Sales

$$\text{Creditors Payment Period} = \frac{\text{Creditors}}{\text{Purchases}} \times 365 \text{ days}$$

$$\text{Stock Period} = \frac{\text{Stock}}{\text{Cost of sales}} \times 365 \text{ days}$$

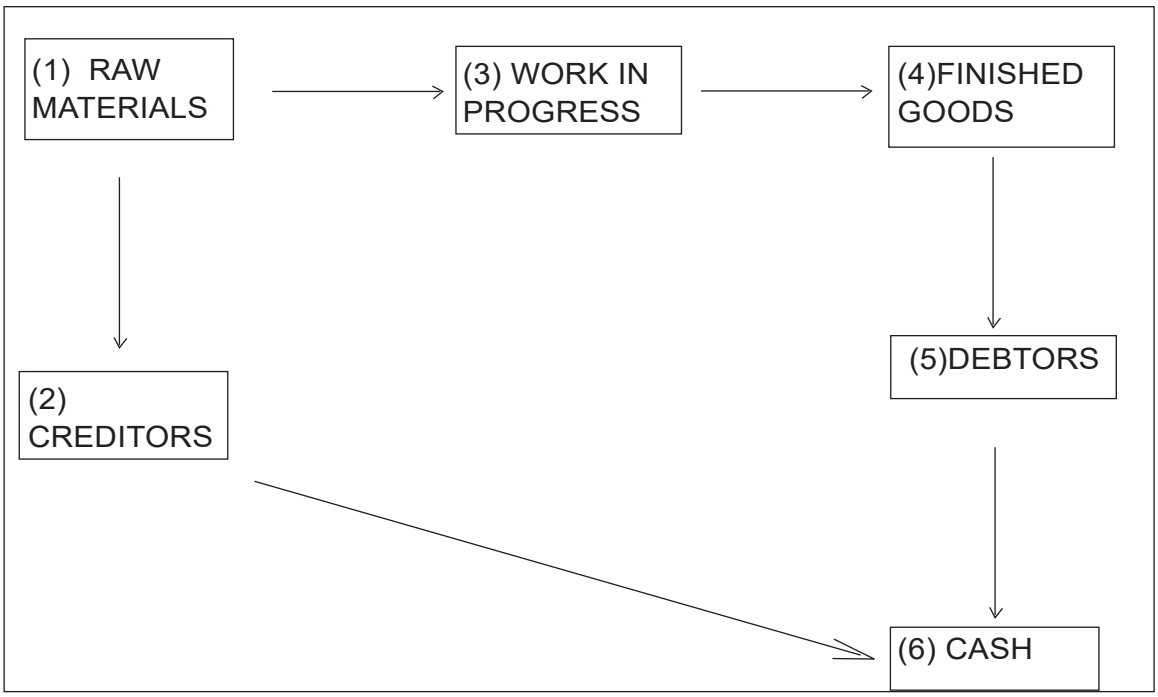
Alternatively:

$$\text{Stock Turnover Period} \quad \frac{\text{Cost of sales}}{\text{Stock}} = Y \text{ times}$$

Benchmarks often quoted are a Current Ratio of 2 : 1 and a Quick Ratio of 1 : 1 but these should not be adopted rigidly as organisations have vastly different circumstances (operating in different industries, seasonal trade etc.).

Working Capital Cycle

Often referred to as the "Operating Cycle" or the "Cash Cycle" this indicates the total length of time between investing cash in raw materials and its recovery at the end of the cycle when it is collected from debtors. This can be shown diagrammatically:



The Working Capital Cycle can also be expressed as a **period of time**, by computing various ratios:

$$\text{Stock} \quad \frac{\text{Avg. Stock}}{\text{Cost of Sales}} \times 365 = Y \text{ days}$$

$$\text{Debtors} \quad \frac{\text{Avg.Debtors}}{\text{Sales}} \times 365 = D \text{ days}$$

$$\text{Less: Creditors} \quad \frac{\text{Avg. Creditors}}{\text{Purchases}} \times 365 = (C \text{ days})$$

Working Capital Cycle (days) W days

It is difficult to determine the optimum cycle. Attention will probably be focussed more on individual components than on the total length of the cycle. Comparison with previous periods or other organisations in the same industry may reveal areas for improvement.

The factors determining the level of investment in current assets will vary from company to company but will, generally, include:

- **Working Capital Cycle** – companies with longer working capital cycles will require higher levels of investment in current assets.
- **Terms of Trade** – period of credit offered; whether discounts permitted.
- **Credit Policy** – company"s attitude to risk ("conservative" v "aggressive").
- Industry – some industries have long operating cycles (e.g. engineering), whereas others have short cycles (supermarket chain)

CASH MANAGEMENT

Cash is an idle asset and the company should try to hold the minimum sufficient for its needs. Three motives are suggested for holding liquid funds (cash, bank deposits, short-term investments):

- **Transaction Motive** - to meet payments in the ordinary course of business – pay employees, suppliers etc. Depends upon the type of business, seasonality of trade etc.
- **Precautionary Motive** - to provide for unforeseen events e.g. fire at premises.
- Depends upon management"s attitude to risk and availability of credit at short notice.
- **Speculative Motive** - to keep funds available to take advantage of any unexpected
- "bargain" purchases which may arise - e.g. acquisitions, bulk-buying etc.

Cash Budget

A very important aid in cash management: most organisations, whether small or large multinationals, will prepare a Cash Budget at least once a year. It is usually prepared on a monthly/quarterly basis to predict cash surpluses/shortages.

Example

A company"s sales are RWF100,000 for November and these are expected to grow at the rate of 10% per month. All sales are on credit and it is estimated that 60% of customers will pay in the month following sale; the remainder will pay two months after sale but on average 10% of sales will turn out to be bad debts. The company has some investments on which income of RWF20,000 will be received in February.

Materials must be purchased two months in advance of sale so that demand can be met. Materials cost 50% of sales value. The supplier of the materials grants one month"s credit. Wages and overheads are RWF30,000 and RWF15,000 respectively per month.

A new machine costing RWF48,000 will be purchased in February for cash. The estimated life of the machine is 4 years and there will be no scrap value at the end of its life. Depreciation will be at the rate of RWF12,000 per annum and this will be charged in the monthly management accounts at RWF1,000 per month.
Rent on the company"s factory is charged in the monthly management accounts at RWF5,000. This is paid half-yearly in March and September.

The company's fleet of cars will be replaced in January at a cost of RWF50,000.

At the 31st December the company expects to have a cash balance of RWF50,000. Prepare a Cash Budget for the period **January to March**.

(RWF'000)		**January**	**February**	**March**
Inflows				
Sales Revenue:				
November	100,000 x 30%	30		
December	110,000 x 60% / 30%	66	33	
January	121,000 x 60% / 30%		73	36
February	133,100 x 60%			80
Investment	Income		20	
		96	126	116
Outflows:				
Materials:				
February	133,100 x 50%	67		
March	146,410 x 50%		73	
April	161,051 x 50%			81
Wages		30	30	30
Overheads		15	15	15
Rent				30
Machine			48	
Car Fleet		50		
		162	166	156
Opening Balance		50	(16)	(56)
Inflows – Outflows		(66)	(40)	(40)
Closing Balance		(16)	(56)	(96)

The opening cash surplus of RWF50,000 turns into a negative figure from end of January onwards, mainly due to capital expenditure, and peaks at (RWF96,000) in March. Thus, the company will have to arrange an overdraft in advance to cover the shortfalls. Alternatively, the company could take action to avoid the potential negative results. Some possibilities are:

- Deferring replacement of fleet of cars.
- Deferring purchase of machine - impact on production and sales must be considered.
- Considering leasing cars/machine.
- Negotiating more generous credit period from supplier.
- Encouraging earlier payment by customers, possibly by offering a discount.
- Chasing bad debts and reducing below 10%.

- Liquidating investments - consider yield etc.
- Selling any non-essential assets
- Rescheduling loan repayments
- Reducing dividend payments
- Deferring Corporation Tax (penalties!)

Bank Overdraft
This is one of the most important sources of short-term finance. It is a very useful tool in cash management, particularly for companies involved in **seasonal** trades.

The main **advantages** are:

- Cost may be lower than other sources (generally, short-term finance is cheaper than long-term).
- Less security required than for term loans - overdraft can be recalled at short notice.
- Repayment is easier as there are no structured repayments - funds are simply paid into the account as they become available.
- Interest is only charged on the amount outstanding on a particular day.
- Extra flexibility is provided as all of the facility may not be used at any one time. The unused balance represents additional credit which can be obtained quickly and without formality.

The main **disadvantages** are:

- Renewal is not guaranteed.
- Technically, the advance is repayable on demand - could lead to a strain on the company"s cash flow.
- Variable rate of interest – the facility may be renewed on less favourable terms.

Term Loan
Finance is made available for a fixed term and usually, at a fixed rate of interest. Repayments are in equal instalments over the term of the loan. Early repayment may result in penalties.

The main **advantages** are:

- The term can be arranged to suit the borrower"s needs.
- The repayment profile may be negotiable to suit the expected cash flow profile of the company (e.g. interest only basis to keep ongoing repayments lower).
- Known cash flows assist financial planning.
- The interest rate is fixed, so the company is not exposed to increases in rates.

Cash Lodgement
It is important that cash is lodged as quickly as possible so that the organisation gets the benefit through an increase in investments or a reduction in overdraft. However, apart from the security risk of cash lying idle there are costs of making lodgements (bank, clerical, transportation etc.) It becomes a “Balancing Act” to minimise costs and maximise benefits (interest).

Example
A company always works off an overdraft which currently costs 15% p.a. Sales are RWF600,000 per week (5 working days). Half the cash is received on Monday and Tuesday,

split equally between the two days. The remaining sales are split equally over the other days. At present all lodgements are made on Friday afternoon.

It is now proposed to lodge on Monday, Wednesday and Friday but this will increase administration and bank costs by RWF200 per week. Should the company change policy?

	Receipts (RWF"000)	**Day** Banked	**Days** Saved	**Overdraft** Saving (RWF)		
Monday	150	Monday	4	(150 x 4/365 x 15%)	=	246
Tuesday	150	Wednesday	2	(150 x 2/365 x 15%)	=	123
Wednesday	100	Wednesday	2	(100 x 2/365 x 15%)	=	82
Thursday	100	Friday	0			0
Friday	100	Friday	0			0
	600					451

Weekly saving of the new policy is (RWF451 - RWF200) = RWF251

Annual saving is RWF251 x 52 = RWF13,052.

The new proposal should be adopted.

Centralised Cash Management
If an organisation has decentralised operations e.g. multiple branches, there may be advantages in centralising cash management at Head Office. These are:

- **Economies of Scale -** by avoiding duplication of skills among divisions.
- Expertise - specialist staff employed at Head Office.
- **Higher Yield -** increased funds available may provide a greater return and reduce transaction charges. Likewise, borrowings can be arranged in bulk at keener interest rates than for smaller amounts.
- **Planning -** a cash surplus in one division may be used to offset a deficit in another, without recourse to short-term borrowings.
- **Bank Charges -** should be lower as the carrying of both balances and overdrafts should be eliminated.
- **Foreign Currency Risk -** can be managed more effectively as the organisation"s total exposure situation can be gauged.

Some disadvantages are:

- Slower decision making
- Loss of local market knowledge
- Demotivation of local staff

Computerised Cash Management
This allows companies via a computer terminal to get up-to-date information on cleared balances on their bank accounts. Three basic services are provided:

- Account Balances - information provided on all accounts within a group (domestic and foreign). Details of un-cleared items which will clear the next day, forecast balances and individual transactions are available.
- Decision Support - current money market and foreign exchange rates provided.
- Funds Transfer - some services offer a direct link to brokers/banks, permitting instant deals to be made.

The service facilitates more efficient cash management as available cash balances are identified and utilised to the maximum. Thus, overall cash flow planning is more accurate. To obtain the full benefit cash management should be centralised. However, potential benefits must be compared with the additional costs incurred.

Cash Management Models
A number of cash management models have been developed to determine the optimum amount of cash that a company should hold. One approach is to use the **Economic Order Quantity (EOQ) Model**, which is used in stock management (see Stock Management section later). Another (and more sophisticated) approach is the **Miller-Orr Model**. This determines a lower limit, an upper limit and a normal level on cash balances. If cash reaches the lower limit the firm sells securities to bring the balance back to the normal level. On the other hand, if the cash balance reaches the upper limit the firm should buy sufficient securities to return to the normal level. The various limits are set by reference to the variance of cash flows, transaction costs and interest rates.

Investment of Short-Term Funds
In deciding the best approach consideration must be given to the quantity of funds; length of time for which available; certainty of the funds; rate of return; risk and variability of return; possibility and costs of early termination (liquidity). Possible investments are:

- Short-Term Deposits - return depends on the period and amount.
- Certificates of Deposit (CD's) - flexible as CD"s are negotiable.
- Treasury Bills - known, fixed return if held to maturity. Early disposal may result in capital gain/ loss.
- Reduction in Overdraft

THE MANAGEMENT OF DEBTORS

Excessive debt balances are a wasted resource which should be avoided by careful management. Good Management means reducing it to the practical minimum, consistent with not damaging the business. For example, it is no good simply refusing to give customers credit - they will go elsewhere. A balanced approach is required which will reduce debtors to a minimum acceptable level.

Debtors are often one of the largest items in a company"s Balance Sheet and also one of the most unreliable assets, largely because company policies concerning them are often inadequate or poorly defined and in the hands of untrained staff. Typically, a company could have 20% - 25% of total assets as debtors.

Credit management is a problem of balancing profitability and liquidity. Extended Credit terms can be a sales attraction but higher debtors put a strain on liquidity. Management of debtors will be concerned with achieving the optimum level of investment. This requires finding the correct balance between:

- Extending credit to increase sales and, therefore profits and
- The cost of investment in debtors (cost of finance, administration, bad debts etc.)

By setting the "terms of sale" the company can, to some extent, control the level of debtors. However, the relative strengths of the credit-giver and the credit-taker are important. Consideration must also be given to the industry norm.

The company has at least four factors to control debtors:

- The **customers** to which it is prepared to sell.
- The **terms of credit** offered.
- Whether **cash discounts** will be offered?
- The **follow-up** procedures for slow payment.

Evaluating Credit Risk

Before extending credit to new customers management will assess the risk of default in payment/non-payment. This will be based upon experience and judgement but in addition, the following sources may be used:

- **Trade References** - from other suppliers (at least two).
- **Bank References** - may be of limited use as banks are reluctant to supply adverse references.
- **Credit Agency Reports** - specialist agencies (e.g. Dun & Bradstreet) will provide detailed reports on the history, creditworthiness, business etc. of individuals and organisations on payment of a fee.
- **Published Information** - annual accounts etc.
- **Own Salesmen** - useful source but views may not be objective (commission receivable?).
- **Newspapers and Trade Journals**.
- **Other Credit Controllers** - many trade associations where controllers meet regularly to exchange information about the state of the industry generally and slow/bad payers in particular.
- **Own Information** - check old customer files to see if you have ever done business in the past.
- **Trial Period -** on a "cash -only" basis.
- **Credit Limit** - fix at low level initially and only increase if payment record warrants.
- **Site Visits** - an opinion on the operations can be formed by visiting the premises.
- **Credit Scoring** - evaluate potential customer using credit scoring or other quantitative techniques. Credit scores are risk indicators - the higher the score, the lower the risk. Scores will be allocated based on the characteristics of the new customer (e.g. age, occupation, length of service, married/single, home owner, size of family, income, commitments etc.). Credit scoring is particularly suited to financial institutions and the amount of credit offered, if any, will depend on whether the credit score is above a predetermined cut-off level. Computerised systems ("expert systems") are especially useful for this purpose.

Although terms and settlement discounts are often influenced by custom and practice within an industry it is still possible to change them. Once defined, ensure that the customers are aware of them - ideally, they should be informed when they order, when they are invoiced and when they receive statements. Always try to enforce the specified discount policy.

Discounts

As extended credit facilities may be expensive to finance the firm may offer customers a discount (cash/settlement discount) to encourage them to pay early. As with extended credit discounts may also be used as a marketing tool in an effort to increase sales. To evaluate whether it is financially worthwhile the cost of the discount should be compared with the benefit of the reduced investment in debtors.

Example

A company offers its customers 40 days credit. On average they take 60 days to pay. To encourage early payment the company now proposes to offer a 2 % discount for payment within 10 days.

For each RWF100 of sales the cost is RWF2 and the company only receives a net RWF98. In return the company receives payment 50 days earlier (day 60 - day 10). The annualised cost of the discount is:

$$\frac{2}{98} \times \frac{365}{50} = \textbf{14.9\% p.a}.$$

The cost of 14.9% should be compared with other sources of finance. If, for example, the cost of the company"s overdraft is 16% p.a. the discount would seem to be worthwhile. If, on the other hand, the cost of the overdraft is only 10% p.a. the discount should **not** be offered as it would be better to leave the debts outstanding and finance through the overdraft.

In industries that deal with both trade and retail customers (e.g. building supplies) it is usual to offer **trade** discounts. This may reflect the economies of scale which derive from larger orders and the greater bargaining power of the customer. Trade discounts are frequently much larger than cash/settlement discounts and may be for as much as 25% of the quoted price.

Debt Control

Good debt control can be summed up as ensuring that all sales are paid for within an agreed period, without alienating customers, at the minimum cost to the company.

The company itself can take steps to “assist” the debtors to pay promptly:

- Issue invoices and statements promptly.
- Deal with customer queries/disputes immediately.
- Issue credit notes as agreed.
- Be flexible in billing arrangements to accommodate customers.

There is no one debt collection policy that is applicable to all companies. Policies will differ according to the nature of the product and the degree of competition. Debt control **system** will probably include:

- Well trained credit personnel.
- Measures to ensure that credit limits are not exceeded.
- Formal set procedures for collecting overdue debts, which should be known by all staff and applied according to an agreed time schedule. Care must be taken that the cost of the debt collection does not exceed the amount of the debt, except where used as a deterrent. Also over-zealous collection techniques may damage goodwill and lose future sales.
- Computerised monitoring systems to identify overdue accounts as early as possible.

  For example, ratios, compared with the previous period to highlight trends in credit levels and the incidence of overdue and bad debts; statistical data to identify causes of default and the incidence of bad debts among different classes of customer and types of trade. An **"Aged Analysis of Debtors"** is particularly useful in this regard.

Debtor	**Total**	**Current**	**1-2 Months**	2-3 Months	>3 Months
A	RWF10,000	RWF5,000	RWF5,000		
B	RWF20,000	RWF10,000		RWF5,000	RWF5,000
C	RWF50,000			RWF30,000	RWF20,000
D	RWF50,000	RWF10,000		RWF20,000	RWF20,000
E	RWF60,000	RWF30,000	RWF20,000		RWF10,000
F	RWF40,000	RWF10,000	RWF20,000		RWF10,000
G	RWF30,000	RWF10,000			
H	RWF50,000	RWF20,000	RWF20,000	RWF20,000 RWF10,000	
Total	RWF310,000	RWF95,000	RWF65,000	RWF85,000	RWF65,000
%		**31%**	**21%**	**27%**	**21%**

Debt collection policies must not be regarded as completely inflexible and systems should be modified as circumstances change.
Among the many debt collection techniques that can be used are:

- **Invoices** - issued promptly following delivery of goods/service.
- **Overdue Letters** - carefully drafted to provoke an immediate response; individual rather than computer-produced; series of letters of varying degrees of severity.
- **Telephone Calls** – these ensure that customer has received the letter(s) and gives him an opportunity to raise any queries or advise of any difficulties which may cause a change of approach to help him out.
- **Mail or Email Reminders**.
- **Visits by Sales Staff**.
- **Visits by Credit Control Staff**.
- **Use of External Agencies** - debt collection agency; factoring company etc.
- **Threaten Withdrawal of Credit Facilities/Discounts**.
- **Threaten To Withhold Future Supplies**.
- **Lawyer"s Letter**.
- **Legal Action** - beware cost of action does not exceed debt.

In most cases some extra spending on debt collection will reduce the overall cost of the investment in debtors (e.g. reduction in bad debts/average collection period etc.). However, beyond a certain level extra spending is not usually cost effective.

Credit Policy

Example 1

Current sales are RWF500,000 p.a. - all on credit. On average customers take 60 days credit. Bad debts are 1% of sales.

Marketing manager suggests that if credit is relaxed to 90 days sales will increase by 20%. However, bad debts will increase to 2%. It is estimated that 75% of existing customers will take the 90 days. Variable costs are 90% of sales value and the company uses an overdraft costing 10% p.a.

Should the new proposal be adopted?

Increased Sales (20%)				100,000
Increased Contribution (10%)				10,000
Bad Debts	- Existing	500,000 x 1%	5,000	
	- Revised	600,000 x 2%	12,000	
				(7,000)
Debtors	- Existing	500,000 x 60/365	82,192	
	- New	500,000 x 75% x 90/365	92,466	
		500,000 x 25% x 60/365	20,548	
		100,000 x 90/365	24,658	
			137,672	
Increase in Debtors			55,480	
Cost of Increased Debtors @ 10% p.a.				5,548)
Net Cost				(2,548)

The New Policy is **Not** Worthwhile

Example 2

Current sales are RWF500,000 p.a. - all on credit. 60 days credit allowed but on average 90 days taken.

New credit terms of a 4% discount for payment by day 10 are being considered. It is estimated that 60% of the customers will take the discount. The new terms will increase sales by 20%. Variable costs are 85% of sales value and the company uses an overdraft costing 11% per annum. Should the discount be offered?

Increased Sales (20%)			100,000
Increased Contribution (15%)			15,000
Cost of Discount	600,000 x 60% x 4%		(14,400)
Debtors - Existing	500,000 x 90/365		123,287
- New	600,000 x 60% x 10/365	9,863	
	600,000 x 40% x 90/365	59,178	
			69,041
Reduction in Debtors			54,246
Saving due to Reduced Debtors @ 11% p.a.			5,967
Net **Benefit**			6,567

The New Policy **Is** Worthwhile.

Factoring

This involves the sale of trade debts for immediate cash to a "factor" who charges commission. Factoring companies are financial institutions often linked with banks. Unlike an overdraft the level of funding is dependent, not upon the fixed assets of the company, but on its success, for as the company grows and sales increase the facility offered by the factor grows, secured against the outstanding invoices due to the company. Three basic services are offered, although a company need not use all of them:

- **Finance** - instruction on invoices that payment is to be made to the factor, who is responsible for collection of the debt. When the factor receives the invoices 80% approx. of value is advanced. The balance (less charges, including interest) is paid, either when the invoice is settled or after a specified period.

- **Sales Ledger Management** - the factor takes the place of the client"s accounts department. Duplicate invoices are sent to the factor who maintains a full sales ledger for each client, handles invoices, chases outstanding payments etc. Commission of 1% - 2% is usually charged.

- **Credit Insurance** - in return for a commission the factor provides a guarantee against bad debts.

Recourse Factoring - the factor will reclaim the money advanced on any uncollected debt so the business will retain the risk of non-recovery and, depending on the contract terms, perhaps the administration burden as well.

Non-Recourse (Full) Factoring - the factor runs credit checks on the company"s customers and agrees limits dependent on their creditworthiness. These can be adjusted in the light of experience, once a pattern has been established. The factor will protect the client against bad debts on **approved** sales and will also take on all the administration burden. The balance over the 80% advance is paid to the client an agreed number of days after the initial advance.

Recourse v Non-Recourse Factoring - with non-recourse factoring the business knows that it will get paid, no matter what happens but protection only applies to **credit-approved** debts and it is not always easy to get this approval for doubtful ones. Recourse factoring allows more funding to be made available against less credit-worthy debtors and the business is in control of when and how individual debts are to be pursued and collected.

The cost of finance through factoring is usually slightly above overdraft rates. The administration charges vary between 0.6% and 2.5% approx.

Advantages of Factoring

- It is an alternative source of finance if other sources are fully utilised, particularly for a company with a high level of debtors.
- It is especially useful for growth companies where debtors are rising rapidly and funds available from the factor will rise in tandem.
- Security for the finance is the company"s debtors, leaving other assets free for alternative forms of debt finance.
- The factor may be able to manage the company"s sales ledger more efficiently by employing specialist staff, leading to lower costs for the company and freeing management to concentrate on growing the business.
- Bad debts will be reduced or guaranteed by credit insurance.
- Due to the greater guarantee of cash flow the company will have a better opportunity for taking up cash discounts from suppliers.
- The factor will be more efficient in collecting monies. Evidence in Europe suggests that, on average, it takes over 75 days for an invoice to be paid, whereas the average debt turn of companies using factoring is 60 days.
- The company replaces a great many debtors with one - the factor - who is a prompt payer.

Disadvantages of Factoring

- It may be more expensive than other sources.
- When fixing credit terms and limits the factor will be concerned with minimising risk and, therefore, certain risky but potentially profitable business may be rejected.
- The factor may be “pushy” when collecting debts. This may lead to ill-feeling by customers.
- Use of a factor might reflect adversely on a company"s financial stability in the eyes of some ill-informed people. Factoring is more acceptable nowadays but this problem could be overcome by undisclosed factoring, which leaves the company to collect payment as agent for the factor.

Invoice Discounting

This is similar to factoring but only the finance service is used. Invoices are discounted (like Bills Receivable) and immediate payment, less a charge, is received. The company still collects the debt as agent for the financial institution and is also liable for bad debts. The service tends to be used on an ad hoc basis and is provided by factors for clients who need finance but not the administrative service or protection. Invoice Discounting is confidential and solely a matter between the lender and borrower, unlike Factoring where the bank assumes a direct and visible role between the company and its debtors. Also, the company retains full control over the management of its debtor"s ledger, including credit control.

D. THE MANAGEMENT OF CREDITORS

Trade credit is often used as a source of finance. The costs of this source of finance are the costs of any discounts forgone and any interest charges which the creditor charges on overdue bills. Of course, excessive use of this source may lead to poor relations with a supplier (or even no relations) which can be damaging.
Credit from suppliers is a very important source of short-term finance.

The credit is mistakenly believed to be cost-free. The costs include the following:

- **Loss of Supplier's Goodwill** - this is difficult to quantify. If the credit period is regularly overdone suppliers may put a low priority on the quality of service given; further orders may be refused; cash on delivery or payment in advance demanded.
- **Higher Unit Costs** - the supplier may try to recoup the cost of longer credit by charging increased prices.
- **Loss of Cash Discounts** - if the credit period is used then discounts are not being taken.
- Thus, the cost of credit is the cost of **not** taking the discount.

Example
Your company normally pays within 45 days. The supplier offers a 2% discount for payment within 10 days. If the company refuses the discount the implied cost of not taking the discount is:

$$\frac{2}{98} \times \frac{365}{35} = 21.3\% \text{ p.a.}$$

The cost of **not** taking the discount (opportunity cost) is 21.3% p.a.

Despite the above costs trade credit is the largest source of short-term funds for companies. Among the advantages are:

- Obtaining credit is **informal**.
- It is a **flexible** source of finance - but payment should not be delayed regularly.
- It is a relatively **stable** source of finance - it is available continuously.
- **No security** is required - unlike other forms of credit.

THE MANAGEMENT OF STOCKS

In many organisations stock requires the commitment of a large amount of resources. The classic conflict often arises:

- The **Production** manager desires a large stock of **raw materials** so that production is uninterrupted.
- The **Sales** manager desires a large stock of **finished goods** so that no sales are lost.
- The **Finance** manager desires a **low** level of **all types** of stock so that costs are minimised.

Ordering and Holding Costs
High levels of stock can only be achieved at a cost. The total cost of stock-holding has many elements:

- Cost of financing
- Storage (warehousing)
- Handling
- Insurance
- Administration
- Obsolescence
- Deterioration
- Pilferage

Sound stock control entails having the right product available in the right quantity, at the right time and at the right cost.

Fast and frequent replenishment of sales will minimise stock-holding.
Overall, reducing stock is likely to increase profitability rather than decrease it. Reducing stock is almost totally within the control of management - unlike reducing debtors or increasing creditors, it does not rely on the co-operation of third parties.

Economic Order Quantity (EOQ)
Total stock-holding costs could be broadly classified as "Holding" costs and "Ordering" costs. The EOQ model attempts to **minimise** total costs by balancing between holding and ordering costs. If large batches are ordered this will result in high holding costs and low ordering costs. Conversely, if small batches are ordered this will result in low holding costs and high ordering costs.

$$EOQ = \sqrt{\frac{2\,cd}{h}}$$

where: c = cost per order
d = annual demand for item of stock
h = annual cost of holding a unit in stock

The EOQ Model makes a number of **assumptions**:

- Order cost is constant regardless of the size of the order.
- Use of the item of stock is constant.
- No stock-outs occur.
- Purchase price is constant.

Example:
A company has annual demand for 2,000 units. Each unit can be purchased for RWF20. The cost of placing each order is RWF20 and the annual cost of holding an item in stock is RWF2. Calculate the Economic Order Quantity.

$$EOQ = \sqrt{\frac{2\,cd\ 2 \times 20 \times 2{,}000}{2}} = 200 \text{ units}$$

Discounts

If the supplier offers a discount for larger orders this may alter the position. The discount will offer two savings - a reduced purchase price and lower ordering costs because fewer orders are placed. Using the above example, suppose that a discount of 2% is offered on orders of 400 or more.

Calculate the total costs with and without the discount. Total costs will now consist of ordering costs + holding costs + purchase price.

200 units

Ordering:	RWF20 x $\frac{2,000}{200}$	RWF200
Holding:	RWF2 x $\frac{2,000}{2}$	RWF200
Purchase:	2,000 x RWF20	RWF40,000
		RWF40,400

400 units

Ordering:	RWF20 x $\frac{2,000}{400}$	RWF100
Holding:	RWF2 x $\frac{4,00}{2}$	RWF400
Purchase:	2,000 x RWF19.60	RWF39,200
		RWF39,700

THE DISCOUNT IS WORTHWHILE

Just In Time Stock Management (JIT)

The main purpose of JIT purchasing is to ensure that delivery of supplies occurs immediately prior to the requirement to use them in manufacture, assembly or resale. Close co-operation between user and supplier is essential. The supplier is required to guarantee product quality and reliability of delivery while the user offers the assurance of firmer long-term sales. Users will purchase from fewer and perhaps, only a single supplier, thus enabling the latter to achieve greater scale economies and efficiency in production planning. The user expects to achieve savings in materials handling, inventory investment and store-keeping costs since (ideally) supplies will now move directly from unloading bay to the production line. There may also be benefits from bulk purchasing discounts or lower purchase costs.

With a JIT system there is little room for manoeuvre in the event of unforeseen delays – e.g. on delivery times. The buyer is also dependent on the supplier for the quality of materials, as expensive downtime or a production standstill may arise, although guarantees and penalties may be included in the contract as protection.

Study Unit 7

Portfolio Theory

Contents

- Introduction to risk management (types of risks and risk management process)
- Portfolio diversification (Systematic and unsystematic risk)
- Portfolio theory and its application in practical financial management.
- Calculate and interpret the risk and return of a two asset portfolio.
- Markowtzportifolio theory
- Security pricing: CAPM and APT (Assumptions and there Application)
- Efficient Frontier and Capital market line

Portfolio Theory

INTRODUCTION

A portfolio is a collection of different investments which comprise an investor"s total investments. For example, a property investor"s portfolio may consist of many investment properties in different locations and which are used for varied purposes. Other examples of a portfolio are an investor"s holding of shares, or a company"s investment in many different capital projects. Portfolio Theory is concerned with setting guidelines for selecting suitable shares, investments, projects etc. for a portfolio.

PORTFOLIO RISK AND RETURN

By investing all of one"s funds in a single venture the whole investment may be lost if the venture fails. However, by spreading the investment over a number of ventures the risk of losing everything will be reduced. If one of the ventures fails only a proportion of the investment will be lost and hopefully, the remainder will provide a satisfactory return.

Example
An investor has RWF100,000 to invest. He is considering two companies A and B but is unsure as to which company to select. He expects that either company will produce a return of 12%, which is acceptable. As he is a little worried about the risk of the investments he eventually decides to invest RWF50,000 in each company.

What actually transpires is that company A produces a return of 22% but company B produces a disappointing return of only 2%. By diversifying – i.e. by holding shares in both companies - the investor achieves an overall return of 12% (1/2 x 22% + 1/2 x 2%). If he had invested all of the RWF100,000 in company B a return of only 2% would have been achieved. Thus, the risk of achieving a less than satisfactory return has been reduced by investing in both companies. The exceptional return of company A has offset the poor return of company B.

Investors are generally risk-averse and will seek to minimise risk where possible. The objectives of portfolio diversification are to achieve a satisfactory rate of return at minimum risk for that return.

A portfolio is preferable to holding individual securities because it reduces risk whilst still offering a satisfactory rate of return – i.e. it avoids the dangers of “putting all your eggs in one basket”

When investments are combined, the levels of risk of the individual investments are not important. It is the risk of the portfolio which should considered by the investor. This requires some measure of joint risk and one such measure is the coefficient of correlation. The relationship between investments can be classified as one of three main types:

- **Positive Correlation** – when there is positive correlation between investments if one performs well (or badly) it is likely that the other will perform similarly. For example, if you buy shares in one company making souvenirs and another which owns tourist hotels you would expect poor tourist numbers to mean that both companies suffer. Likewise, good tourist numbers should bring additional sales for both companies.

- **Negative Correlation** – if one investment performs well, the other will do badly and vice versa. Thus, if you hold shares in one company growing coffee and another which makes soft drinks such as lemonade, the change in fashion for a type of drink will affect the companies differently.
- **No Correlation** – the performance of one investment will be independent of how another performs. If you hold shares in a mining company and a leisure company it is likely that there would be no obvious relationship between the profits and returns from each.

The Coefficient of Correlation can only take values between –1 and +1. A figure close to +1 indicates high positive correlation and a figure close to –1 indicates high negative correlation. A figure of 0 indicates no correlation.

It is argued that if investments show high negative correlation then by combining them in a portfolio overall risk would be reduced. Risk will also be reduced by combining in a portfolio securities which have no significant correlation at all. If perfect negative correlation occurs portfolio risk can be completely eliminated but this is unlikely in practice.

Usually returns on securities are positively correlated, but not necessarily perfectly positively correlated. In this case investors can reduce portfolio risk by diversification.

You may be asked to calculate the expected return of individual investments and also their risk (Standard Deviation). You may also be expected to calculate an expected return if the individual investments are then combined in a portfolio.

Example:
Your client is planning to invest in a portfolio of investments. Details are as follows:

Investment 1
Investment of RWF300,000 in Cape Verde property. Expected annual returns are as follows:

Annual Investment Return	Probability of Occurrence
-20%	0.5
40%	0.5

Investment 2
Investment of RWF700,000 in a London Alternative Investment Market (AIM) equity index fund for a minimum five year period. The fund provides a guarantee against capital erosion, and its expected annual returns are as follows:

Annual Investment Return	Probability of Occurrence
8%	0.9
12%	0.1

The co-efficient of correlation between the two investments is calculated at - 0.2.

Liquidity
The liquidity of an investment refers to the ease with which the investment can be converted into cash. As an investor is never fully sure as to future occurrences it is always important to consider the ease of liquidating an investment. Generally, the more liquid an investment the lower the return that can be expected.

Kigali AIM investment
Has a minimum investment period of 5 years. Thus is not liquid as the investment is 'tied-in' for five years. This should be considered carefully prior to making that proposed investment.

Musanze Property
On the face of it the property could be sold and liquidated at short notice. However, you should look carefully at whether or not in reality such property can be sold quickly without the need to reduce prices drastically.

Risk
Investment risk refers to the likelihood that:

- The investment will suffer a reduction in capital value
- That the returns expected from the investment will not materialise/will be lower than expected

Investment risk can be systematic: the risk of the market as a whole and/or unsystematic i.e. risk specific to a specific investment/industry.

Unsystematic risk can be reduced through portfolio diversification whilst systematic risk must be accepted by the investor.

AIM investment
The risk is lower than the Musanze investment as the return expected is 8.4% with an associated risk of 1.2% calculated as follows:

Investment in AIM Fund

					Deviation	S Deviation =
% Return		Probability	Expectation	Deviation	Squared	Square Root
x	p	x*p	x – EV	(x-EV)2	P((x-EV)Sq)	
8	0.9	7.2	-0.4	0.16	0.144	
12	0.1	1.2	3.6	12.96	1.296	
Expected Value (EV)		8.4			1.44	1.2

The fund is less risky as it presents no probability of capital erosion.

Musanze Property
Whilst the potential return of 40% looks attractive there is also the risk of investment losses of 20%. The annual return expected from your investment in Musanze property is 10% and the risk attaching thereto measured by standard deviation is 30%. They are calculated as follows:

Investment in Musanze Property

x	% Return P	Probability x*p	Expectation x – EV	Deviation Deviation (x-EV)2	Squared P((x-EV)Sq)	S Deviation = Square Root
-20	0.5	-10	-30	900	450	
40	0.5	20	30	900	450	
Expected Value (EV)		10		900		
						30

This investment is significantly riskier than the AIM fund.

Overall Portfolio Return

The overall expected return form your proposed portfolio is 8.88%. This is a weighted average of the expected return of both investments in the proposed portfolio, using the proportion of each investment as the respective weights. It is calculated as follows:

Expected Portfolio Return

Investment **Share**	Expected **% Return**	Weighted **Investment**	Expected Portfolio **Return**
Musanze	10	30%	3%
AIM Fund	8.4	70%	5.88%
Expected Return (EV)			8.88%

Capital Asset Pricing Model

Introduction

The Capital Asset Pricing Model (CAPM) is an extension of Portfolio Theory, which is concerned with the risk and return of portfolios and the process by which risk can be reduced by efficient diversification. The CAPM assumes that all investors are efficiently diversified and examines the risk and return of any capital asset. A capital asset can be a portfolio, an individual share or security, a portfolio of projects or investments made by a company or even an individual project.

The CAPM gives the required rate of return on a capital asset, based on its contribution to total portfolio risk, called systematic risk. It gives a very neat way of calculating risk- adjusted discount rates.

Basic assumptions of CAPM

- Investors are rational and they choose among alternative portfolios on the basis of each portfolio's expected return and standard deviation.
- Investors are risk averse.

- Investors maximise the utility of end of period wealth. Thus CAPM is a single period model.
- Investors have homogeneous expectations with regard to asset return. Thus all investors will perceive the same efficient set.
- There exist a risk-free asset and all investors can borrow and lend at this rate.
- All assets are marketable and perfectly divisible.
- The capital market is efficient and perfect.

EFFICIENT PORTFOLIO AND THE EFFICIENT FRONTIER

Efficient portfolios can be defined as those portfolio which provide the highest expected return for any degree of risk, or the lowest degree of risk for any expected return.

The investor should ensure that he holds those assets which will minimise his risk. He should therefore diversify his risk.
The risk can be divided into two:

- The diversifiable (unsystematic) risk;
- The non-diversifiable (systematic) risk.

The diversifiable risk is that risk which the investor can be able to eliminate if he held an efficient portfolio.
The non-diversifiable risk on the other hand is those risks that still exist in all well diversified efficient portfolios.
The investor therefore seeks to eliminate the diversifiable risk. This can be shown below:

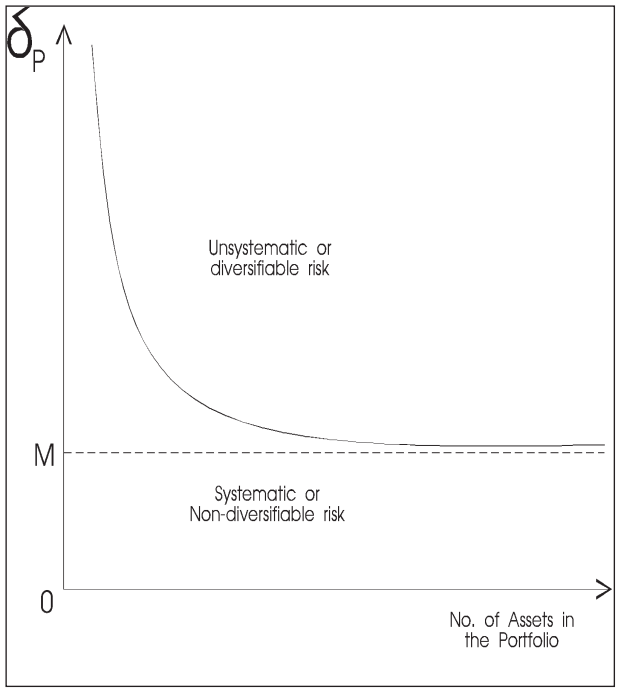


Figure 7.1 Diversification of Risk

From the graph shown above as the number of assets increases, the portfolio risk reduces up to point M. At this point the lowest risk has been achieved and adding more assets to the portfolio will

not reduce the portfolio risk.
An efficient portfolio therefore is well diversified portfolio.
Note: The non-diversifiable risk can also be referred to as the market risk.

EFFICIENT SET OF INVESTMENT

If consider many assets, the feasible set of investment will be given by the following graph

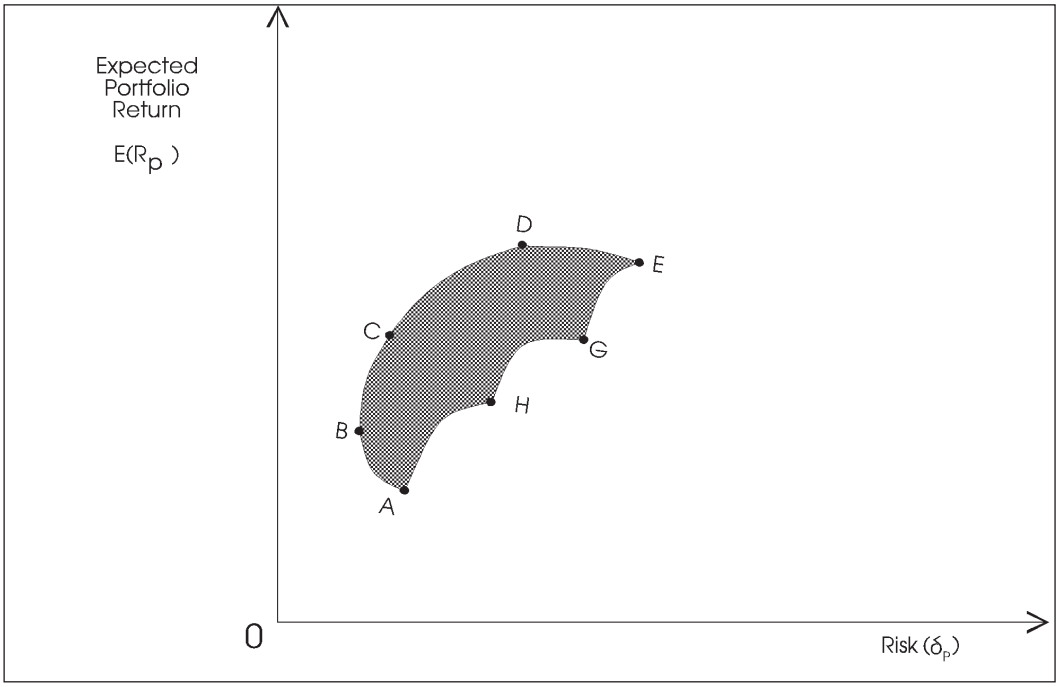


Figure 7.2

The shaded area is the attainable set of investment. However, investors will invest in a portfolio with the highest return at a given risk or the lowest risk at a given return. The efficient set of investment, therefore, will be given by the frontier B C D E. This frontier is referred to as the Efficient Frontier.

Any point on the efficient frontier dominates all the other points on the feasible set.

SYSTEMATIC AND UNSYSTEMATIC RISK

When securities are combined in a portfolio part of each security"s total risk (its standard deviation) is eliminated. This is the basis of diversification. That part of an individual security"s total risk which can be eliminated by combining that security with an efficient portfolio is called unsystematic (or specific) risk. The balance of an individual security"s total risk (that part which cannot be eliminated by diversification) is called systematic (or market) risk.

- **Unsystematic Risk** – risk which can be eliminated by diversification. It is the variation in a company"s returns due to specific factors affecting that company and not the market as a whole, e.g. strikes, the breakdown of machinery, changes in fashion for that company"s products etc. This specific risk is a random fluctuation uncorrelated with the returns on the market portfolio (the market as a whole). Therefore, when a large number of shares are held these random fluctuations tend to cancel out – i.e. there is risk reduction.

- **Systematic Risk** – risk which cannot be eliminated by diversification. This is the fluctuation in returns due to general factors in the market affecting all companies e.g. inflation, government policy, economic conditions etc. It is that part of the fluctuations in returns which is correlated with those of the market portfolio.

When a capital asset (S) is combined with no other assets, the risk of the portfolio is simply the standard deviation of (S). When further assets are added, however, the contribution of (S) to the portfolio risk is quickly reduced – diversification is eliminating the unsystematic risk. It takes a surprisingly low number of shares in a portfolio to eliminate the majority of unsystematic risk (twenty shares in a portfolio will eliminate approximately 94% of unsystematic risk). All unsystematic risk could only be eliminated when the market portfolio is held.

Only systematic risk is relevant in calculating the required return on capital assets. This is because, on the assumption that investors hold efficient portfolios, unsystematic risk is automatically eliminated when another asset is incorporated within that portfolio. The only effect an asset has on portfolio risk is through its systematic risk.

Some investments may be regarded as risk-free – such as investment in government bonds. . Investors in risky investments should expect to earn a higher return than investors in risk-free investments, to compensate for the risks they are taking. Thus, if investors in Bonds can obtain a return of, say, 6%, an investor in a risky asset should expect a yield in excess of 6%. The Capital Asset Pricing Model uses this approach of rewarding investors in risky assets with a premium on top of the yield on risk-free assets. The CAPM is:

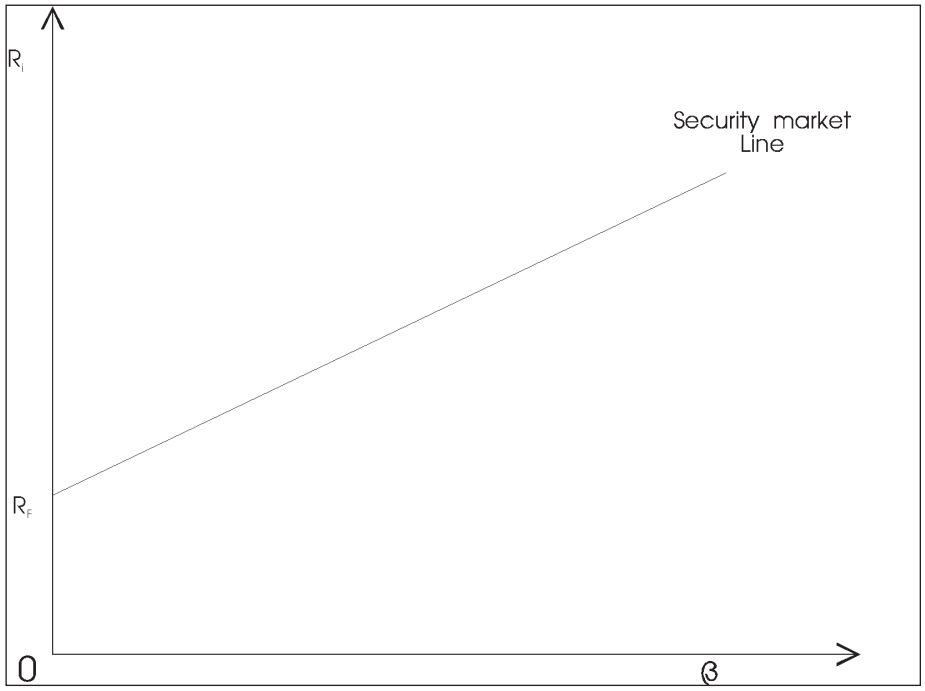
$$Rs = Rf + ß\,(Rm - Rf)$$

Where:

Rs	=	The expected return on a capital asset(s)
Rf	=	The risk-free rate of return
ß	=	A measure of the systematic risk of the capital asset (the Beta factor)
Rm	=	The expected return from the market as a whole

This is a very important formula. Note that the expected return (Rs) is equal to the risk-free rate of return (Rf) plus an excess return or premium (Rm - Rf) multiplied by the asset"s Beta factor. You may see different symbols in many textbooks but the same principles apply.

The Beta factor is a measure of the systematic risk of the capital asset. Thus, if shares in ABC Ltd tend to vary twice as much as returns from the market as a whole, so that if market returns increase by, say, 3%, returns on ABC Ltd shares would be expected to increase by 6%. Likewise, if market returns fall by 3%, returns on ABC Ltd shares would be expected to fall by 6%. The Beta factor of ABC Ltd shares would, therefore, be 2.0.



All correctly priced assets will lie on the security market line. Any security off this line will either be overpriced or underpriced.

The security market line therefore shows the pricing of all asset if the market is at equilibrium. It is a measure of the required rate of return if the investor were to undertake a certain amount of risk.

Example

The returns from the market as a whole have been 15% for some time, which compares with a risk-free rate of return of 7%. Alpha Ltd"s shares have a Beta factor of 1.25. What would be the expected returns for Alpha"s shares if:

- Market returns increased to 16%
- Market returns slumped to 9%

1. Rs = Rf + ß (Rm - Rf)
   = 7% + 1.25(16% - 7%)
   = 7% + 11.25%
   = 18.25%

2. Rs = Rf + ß (Rm - Rf)
   = 7% + 1.25(9% - 7%)
   = 7% + 2.5%
   = 9.5%

The CAPM provides a useful technique for calculating costs of capital and discount rates appropriate to capital projects based on their individual levels of risk. However, there are two drawbacks to the practical application of the CAPM. Firstly, the data necessary to calculate Beta factors and the difficulty in obtaining them. Secondly, the assumptions on which the model is based, which question the validity of the model itself.

In conclusion, although the CAPM can be criticised it is nevertheless a very useful model in dealing with the problem of risk.

LIMITATIONS OF CAPM

CAPM has several weaknesses e.g.

- It is based on some unrealistic assumptions such as:
    - Existence of Risk-free assets
    - All assets being perfectly divisible and marketable (human capital is not divisible)
    - Existence of homogeneous expectations about the expected returns
    - Asset returns are normally distributed.
- CAPM is a single period model—it looks at the end of the year return.
- CAPM cannot be empirically tested because we cannot test investors expectations.
- CAPM assumes that a security's required rate of return is based on only one factor (the stock market—beta). However, other factors such as relative sensitivity to inflation and dividend payout, may influence a security's return relative to those of other securities.

The Arbitrage pricing theory is designed to help overcome these weaknesses.

ARBITRAGE PRICING THEORY (APT)

Formulated by Ross(1976), the Arbitrage Pricing Theory(APT) offers a testable alternative to the capital market pricing model(CAPM). The main difference between CAPM and APT is that CAPM assumes that security rates of returns will be linearly related to a single common factor- the rate of return on the market portfolio. The APT is based on similar intuition but is much more general. APT assumes that, in equilibrium, the return on an arbitrage portfolio (i.e. one with zero investment, and zero systematic risk) is zero. If this return is positive, then it would be eliminated immediately through the process of arbitrage trading to improve the expected returns. Ross (1976) demonstrated that when no further arbitrage opportunities exist, the expected return (E(Ri)) can be shown as follows:

$$E(R_i)=R_f + \beta_1(R_1-R_f)+\beta_2(R_2 -R_f)+--------+ \beta_n(R_n-R_f)+\acute{\varepsilon}_i$$

Where,

$E(R_i)$ is the expected return on the security
R_f is the risk free rate
B_i is the sensitivity to changes in factor i
$\acute{\varepsilon}_i$ is a random error term.

APT and CAPM compared

The Arbitrage Pricing Theory (APT) is much more robust than the capital asset pricing model for several reasons:

- The APT makes no assumptions about the empirical distribution of asset returns. CAPM assumes normal distribution.
- The APT makes no strong assumption about individuals' utility functions (at least nothing stronger than greed and risk aversion).
- The APT allows the equilibrium returns of asset to be dependent on many factors, not just one (the beta).
- The APT yields a statement about the relative pricing of any subset of assets; hence one need not measure the entire universe of assets in order to test the theory.

- There is no special role for the market portfolio in the APT, whereas the CAPM requires that the market portfolio be efficient.
- The APT is easily extended to a multi-period framework.

Since APT makes fewer assumptions than CAPM, it may be applicable to a country like Kenya. However, the model does not state the relevant factors. Cho(1984) has, however, shown the security returns are sensitive to the following factors: Unanticipated inflation, Changes in the expected level of industrial production, Changes in the risk premium on bonds, and Unanticipated changes in the term structure of interest rates

Illustration

Security returns depend on only three riskfactors-inflation, industrial production and the aggregate degree of risk aversion. The risk free rate is 8%, the required rate of return on a portfolio with unit sensitivity to inflation and zero-sensitivity to other factors is 13.0%, the required rate of return on a portfolio with unit sensitivity to industrial production and zero sensitivity to inflation and other factors is 10% and the required return on a portfolio with unit sensitivity to the degree of risk aversion and zero sensitivity to other factors is 6%. Security i has betas of 0.9 with the inflation portfolio, 1.2 with the industrial production and-0.7 with risk bearing portfolio—(risk aversion)

Assume also that required rate of return on the market is 15% and stock i has CAPM beta of 1.1

REQUIRED:

Compute security i's required rate of return using

- CAPM
- APT

Using APT $R_i = 8\% + (13\% - 8\%)0.9 + (10\% - 8\%)1.2 + (6\% - 8\%)(-.7)$

$= 16,3\%$

Using CAPM $R_i = R_F + (E(R_M) - R_F)ß_i$

$R_i = 8\% + (15\% - 8\%)1.1 = 15.7\%$

LIMITATIONS OF APT

APT does not identify the relevant factors that influence returns nor does it indicate how many factors should appear in the model. Important factors are inflation, industrial production, the spread between low and high grade bonds and the term structure of interest rates.

Study Unit 8

Corporate Dividend Policy and Strategy;

- Factors determining dividends policy
- Forms of dividends
- The value of dividends
- Dividends Theories/Models
- Walter's Model,
    - Gordon's Model
    - The Dividend-Irrelevance Theory and Company Valuation (MM Theory)
    - Factors affecting dividends payouts

INTRODUCTION

Dividends are paid from retained earnings

Retained Earnings – -One of the most important sources of "new" **equity** funds for companies. The more funds retained, the less available for the payment of dividends and vice versa.

Prime Objective – To maximise the wealth of the shareholders. **Dilemma** – Pay dividends now or retain earnings for future capital gain.

PRACTICAL CONSIDERATIONS

There are a number of practical considerations which a company must take into account in setting its particular dividend policy. Chief among these are:

- **Taxation** – Income Tax v Capital Gains Tax. If shareholders pay high marginal rates of Income Tax they may prefer low dividends. If subject to low tax rate or zero tax, they may prefer high dividends.

- **Investment Opportunities** – ***"Residual Theory"*** => retain sufficient funds until all profitable investments (those with a positive NPV) have been funded. Balance to be paid as dividends. Drawback is that dividends may vary dramatically from year to year. Also, consider the timing of the cash flows from the investments as these will be required to pay future dividends.

- **Availability of Finance** – If the company is highly geared it may have little option but to retain. Retentions will build up the equity base, thus reducing gearing and assisting future borrowing. Certain types of company (e.g. small/unquoted) may not have access to external funds and may need to retain.

- **Liquidity** – Profits do not equal cash. Adequate cash must be available to pay dividends. Also, for growth companies, sufficient liquidity must be available for reinvestment in fixed assets.

- **Cost of New Finance** – The costs associated with raising new equity/debt can be quite high. If debt is raised interest rates may be high at that particular point in time.

- **Transaction Costs** – Some shareholders may depend on dividends. If earnings are retained they can create "home-made" dividends by selling some shares (capital). However, this may be inconvenient and costly (brokerage fees etc.).

- **Control** – If high dividends are paid the company may subsequently require capital and this may be obtained by issuing shares to new shareholders. This may result in a dilution of control for existing shareholders.

- **Inflation** – In periods of high inflation companies may have to retain funds in order to maintain their existing operating capability. On the other hand, shareholders require increased dividends in order to maintain their purchasing power.

- **Information Content** – The declared dividend provides information to the market about the company"s current performance and expected future prospects. An increase or a reduction will be reflected in the share price.

- **Existing Debt** – Restrictive covenants in existing loan agreements may limit the dividend payout or prohibit the company from arranging further borrowing. Existing debt which may be due for repayment will require funds and may cause a reduction in the level of dividend.

- **Legal Restrictions** – Dividends can only be paid out of **realized** profits. Past losses must first be made good.

- **Perceived Risk** – The earnings from retained dividends may be perceived as being a more risky return than actual cash dividends, thereby causing their perceived value to be lower (the "Bird in the Hand Theory").

- **Stable Dividends** – Generally, shareholders require a stable dividend policy and hopefully, steady dividend growth.

Note: Some companies adopt a constant payout ratio, whereby a fixed percentage of earnings is paid out as dividends. This has the drawback that dividends will rise and fall with earnings. However, this may not be a problem for a company which is not subject to cyclical factors and whose earnings grow steadily.

Conclusion: There is unlikely to be a single dividend policy which will maximize the wealth of all shareholders. The company should try to ascertain the composition of its shareholders in order to pursue a dividend policy which is acceptable. Maybe, the best is to adopt a consistent policy and hope to attract a "clientele of shareholders" to whom it appeals.

ALTERNATIVE DIVIDENDS POLICIES

a) Constant payout ratio

This is where the firm will pay a fixed dividend rate e.g. 40% of earnings. The DPS would therefore fluctuate as the earnings per share changes.

Dividends are directly dependent on the firms earnings ability and if no profits are made no dividend is paid.

This policy creates uncertainty to ordinary shareholders especially who rely on dividend income and they might demand a higher required rate of return.

b) Constant amount per share (fixed D.P.S.)

The DPS is fixed in amount irrespective of the earnings level. This creates certainty and is therefore preferred by shareholders who have a high reliance on dividend income.

It protects the firm from periods of low earnings by fixing, DPS at a low level.
This policy treats all shareholders like preferred shareholders by giving a fixed return. The DPS could be increased to a higher level if earnings appear relatively permanent and sustainable.

c) Constant DPS plus Extra/Surplus
Under this policy a constant DPS is paid every year. However extra dividends are paid in years of supernormal earnings.

It gives the firm flexibility to increase dividends when earnings are high and the shareholders are given a chance to participate in super normal earnings

The extra dividends is given in such a way that it is not perceived as a commitments by the firm to continue the extra dividend in the future. It is applied by the firms whose earnings are highly volatile e.g agricultural sector.

d) Residual dividend policy
Under this policy dividend is paid out of earnings left over after investment decisions have been financed. Dividend will only be paid if there are no profitable investment opportunities available. The policy is consistent with shareholders wealth maximization.

Forms of dividends

- Cash and Bonus issue
- Stock split and reverse split
- Stock repurchase
- Stock rights/rights issue (Scrip Dividend)

1. Cash and bonus issue
For a firm to pay cash dividends, it should have adequate liquid funds.
However, under conditions of liquidity and financial constraints, a firm can pay stock dividend (Bank issue)
Bonus issue involves issue of additional shares for free (instead of cash) to existing shareholders in their shareholding proportion.
Stock dividend/Bonus issue involves capitalization of retained earnings and does not increase the wealth of shareholders. This is because R. Earnings is converted into shares.

Advantages of Bonus Issue

- **Tax advantages**

Shareholders can sell new shares, and generate cash in form of capital gains which is tax exempt unlike cash dividends which attract 5% withholding tax which is final

- **Indication of high profits in future:**

A Bonus issue, in an inefficient market conveys important information about the future of the company.

It is declared when management expects increase in earning to offset additional outstanding shares so that E.P.S is not diluted.

- **Conservation of cash**

Bonus issue conserves cash especially if the firm is in liquidity problems.

- **Increase in future dividends**

If a firm follows a fixed/constant D.P.S policy, then total future dividend would increase due to increase in number of shares after bonus issue.

Journal entry in case of bonus issue

- Dr. R. Earnings (par value)
- Cr. Ordinary share capital (par value)

NB: A firm can also make a script issue where bonus shares are directly from capital reserve.

2. Stock Split and Reverse Split

This is where a block of shares is broken down into smaller units (shares) so that the number of ordinary shares increases and their respective par value decreases at the stock split factor.

Stock split is meant to make the shares of a company more affordable by low income investors and increase their liquidity in the market.

Illustration

ABC Company has 1000 ordinary shares of frw.20 par value and a split of 1:4 i.e one stock is split into 4. The par value is divided by 4.

1000 stocks x 4 = 4000 shares

$$\text{par value} = \frac{40}{5} = \text{frw.5}$$

Ordinary share capital = 4000 x 5 = frw.20,000

A reverse split is the opposite of stock split and involves consolidation of shares into bigger units thereby increasing the par value of the shares. It is meant to attract high income clientele shareholders. E.g incase of 20,000 shares @ frw.20 par, they can be consolidated into 10,000 shares of frw.40 par. I.e. (20,000 x ½) = 10,000 and frw.20 = x 2 = 40/=

3. Stock Repurchase

The company can also buy back some of its outstanding shares instead of paying cash dividends. This is known as **stock repurchase** and shares repurchased, (bought back) are called **treasury** Stock. If some outstanding shares are repurchased, fewer shares would remain outstanding.

Assuming repurchase does not adversely affect firm's earnings, E.P.S. of share would increase. This would result in an increase in M.P.S. so that capital gain is substituted for dividends.

Advantages of Stock Repurchase

- It may be seen as a true signal as repurchase may be motivated by management belief that firm's shares are undervalued. This is true in inefficient markets.
- Utilization of idle funds

Companies, which have accumulated cash balances in excess of future investments, might find share reinvestment scheme a fair method of returning cash to shareholders.

Continuing to carry excess cash may prompt management to invest unwisely as a means of using excess cash.

Example
A firm may invest surplus cash in an expensive acquisition, transferring value to another group of shareholders entirely. There is a tendency for more mature firms to continue with investment plan even when E (K) is lower than cost of capital.

- **Enhanced dividends and E.P.S.**

Following a stock repurchase, the number of shares issued would decrease and therefore in normal circumstances both D.P.S. and E.P.S. would increase in future. However, the increase in E.P.S is a bookkeeping increase since total earnings remaining constant.

- **Enhanced Share Price**

Companies that undertake share repurchase, experience an increase in market price of the shares. This is partly explained by increase in total earnings having less and/or market signal effect that shares are under value.

- **Capital structure**

A company's managers may use a share buy back or requirements, as a means of correcting what they perceive to be an unbalanced capital structure.

If shares are repurchased from cash reserves, equity would be reduced and gearing increased (assuming debt exists in the capital structure).

Alternatively a company may raise debt to finance a repurchase. Replacing equity with debt can reduce overall cost of capital due to tax advantage of debt.

- **Employee incentive schemes**

Instead of cancelling all shares repurchase, a firm can retain some of the shares for employees share option or profit sharing schemes.

- **Reduced take over threat**

A share repurchase reduced number of share in operation and also number of 'weak shareholders' i.e shareholders with no strong loyalty to company since repurchase would induce them to sell.

This helps to reduce threat of a hostile takeover as it makes it difficult for predator company to gain control. (This is referred as a poison pill) i.e. Co.'s value is reduced because of high repurchase price, huge cash outflow or borrowing huge long term debt to increase gearing

Disadvantages of stock repurchase

- **High price**

A company may find it difficult to repurchase shares at their current value and price paid may be too high to the detriment of remaining shareholders.

- **Market Signaling**

Despite director's effort at trying to convince markets otherwise, a share repurchase may be interpreted as a signal suggesting that the company lacks suitable investment opportunities. This may be interpreted as a sign of management failure.

- Loss of investment income

The interest that could have been earned from investment of surplus cash is lost.

- **Scrip dividends**

A scrip dividend is where a company offers existing shareholders a choice of new shares in lieu of their cash dividend. This effectively converts reserves into issued share capital.

The advantage for the company is that it conserves cash and increases the capital base, thereby improving gearing. The shareholders can increase their holdings without incurring brokerage fees.

Some companies have offered enhanced scrip dividends, where the value of the shares offered is greater than the cash alternative. Thus the shareholder is enticed to choose the scrip dividends.

DIVIDENDS THEORIES (WHY PAY DIVIDENDS)

The main theories are:

- **Residual dividend theory**

Under this theory, a firm will pay dividends from residual earnings i.e. earnings remaining after all suitable projects with positive NPV has been financed.

It assumes that retained earnings is the best source of long term capital since it is readily available and cheap. This is because no floatation cash are involved in use of retained earnings to finance new investments.

Therefore, the first claim on earnings after tax and preference dividends will be a **reserve** for financing investments.

Dividend policy is irrelevant and treated as passive variable. It will not affect the value of the firm. However, investment decisions will.

Advantages of Residual Theory

- **Saving on floatation costs**

No need to raise debt or equity capital since there is high retention of earnings which requires no floatation costs.

- **Avoidance of dilution of ownership**

New equity issue would dilute ownership and control. This will be avoided if retention is high.

A high retention policy may enable financing of firms with rapid and high rate of growth.

- **Tax position of shareholders**

High-income shareholders prefer low dividends to reduce their tax burden on dividends income.

They prefer high retention of earnings which are reinvested, increase share value and they can gain capital gains which are not taxable in Kenya.

ii) MM Dividend Irrelevance Theory

Was advanced by Modiglian and Miller in 1961. The theory asserts that a firm's dividend policy has no effect on its market value and cost of capital.

They argued that the firm's value is primarily determined by:

- Ability to generate earnings from investments
- Level of business and financial risk

According to MM dividend policy is a passive residue determined by the firm's need for investment funds.
It does not matter how the earnings are divided between dividend payment to shareholders and retention. Therefore, optimal dividend policy does not exist. Since when investment decisions of the firms are given, dividend decision is a mere detail without any effect on the value of the firm.

They base on their arguments on the following assumptions:

- No corporate or personal kites
- No transaction cost associated with share floatation
- A firm has an investment policy which is independent of its dividend policy (a fixed investment policy)
- Efficient market – all investors have same set of information regarding the future of the firm
- No uncertainty – all investors make decisions using the same discounting rate at all time i.e required rate of return (r) = cost of capital (k).

iii) Bird-in-hand theory
Advanced by John Litner (1962) and furthered by Myron Gordon (1963).
Argues that shareholders are **risk averse** and prefer certainty. Dividends payments are more certain than capital gains which rely on demand and supply forces to determine share prices.

Therefore, one bird in hand (certain dividends) is better than two birds in the bush (uncertain capital gains).
Therefore, a firm paying high dividends (certain) will have **higher value** since shareholders will require to use lower discounting rate.
MM argued against the above proposition. They argued that the required rate of return is independent of dividend policy. They maintained that an investor can realize capital gains generated by reinvestment of retained earning, if they sell shares.

If this is possible, investors would be indifferent between cash dividends and capital gains.

iv) Information signaling effect theory
Advanced by Stephen Ross in 1977. He argued that in an inefficient market, management can use dividend policy to signal important information to **the market which is only known to them.**

Example – If the management pays high dividends, it signals high expected profits in future to maintain the high dividend level. This would increase the share price/value and vice versa.
MM attacked this position and suggested that the change in share price following the change in dividend amount is due to **informational content of dividend policy** rather than dividend policy itself.Therefore, dividends are irrelevant if information can be given to the market to all players.
Dividend decisions are relevant in an inefficient market and the higher the dividends, the higher the value of the firm. The theory is based on the following four assumptions:

- The sending of signals by the management should be cost effective.
- The signals should be correlated to observable events (common trend in the market).
- No company can imitate its competitors in sending the signals.
- The managers can only send true signals even if they are bad signals. Sending untrue signals is financially disastrous to the survival of the firm.

v) Tax differential theory
Advanced by Litzenberger and Ramaswamy in 1979

They argued that tax rate on dividends is higher than tax rate on capital gains.Therefore, a firm that pays high dividends have lower value since shareholders pay more tax on dividends.
Dividend decisions are relevant and the lower the dividend the higher the value of the firm and vice versa.

Note
In Rwanda, dividends attract a withholding tax of 15% which is final and capital gains on shares traded in stock exchange are tax exempt.

vi) Clientele effect theory
Advance by Richardson Petit in 1977

It stated that different groups of shareholders (clientele) have different preferences for dividends depending on their level of income from other sources.

Low income earners prefer high dividends to meet their daily consumption while high income earners prefer low dividends to avoid payment of more tax. Therefore, when a firm sets a dividend policy, there'll be shifting of investors into and out of the firm until an equilibrium is achieved. Low, income shareholders will shift to firms paying high dividends and high income shareholders to firms paying low dividends.

At equilibrium, dividend policy will be consistent with clientele of shareholders a firm has. Dividend decision at equilibrium are irrelevant since they cannot cause any shifting of investors.

vii) Agency theory
The agency problem between shareholders and managers can be resolved by paying high dividends. If retention is low, managers are required to raise additional equity capital to finance investment.Each fresh equity issue will expose the managers financing decision to providers of capital e.g bankers, investors, suppliers etc.Managers will thus engage in activities that are consistent with maximization of shareholders wealth by making full disclosure of their activities.

This is because they know the firm will be exposed to external parties through external borrowing. Consequently, Agency costs will be reduced since the firm becomes self-regulating.
Dividend policy will have a beneficial effect on the value of the firm. This is because dividend policy can be used to reduce agency problem by **reducing agency costs**.The theory implies that firms adopting high dividend payout ratio will have a higher due to reduced agency costs.

Factors to consider in paying dividends (factors influencing dividend)
1. Legal rules

- Net purchase rule States that dividend may be paid from company's profit either past or present.
- Capital impairment rule: prohibits payment of dividends from capital i.e. from sale of ssets. This is liquidating the firm.
- Insolvency rule: prohibits payment of dividend when company is insolvent. Insolvent company is one where assets are less than liabilities. Insolvent company is one where assets are less than liabilities. In such a case all earnings and assets of company belong to debt holders and no dividends is paid.

2. Profitability and liquidity
A company's capacity to pay dividend will be determined primarily by its ability to generate adequate and stable profits and cash flow.
If the company has liquidity problem, it may be unable to pay cash dividend and result to paying stock dividend.

3. Taxation position of shareholders
Dividend payment is influenced by tax regime of a country e.g in Kenya cash dividend are taxable at source, while capital are tax exempt**.**
The effect of tax differential is to discourage shareholders from wanting high dividends. (This is explained by tax differential theory).

4. Investment opportunity
Lack of appropriate investment opportunities i.e. those with positive returns (N.P.V.), may encourage a firm to increase its dividend distribution. If a firm has many investment opportunities, it will pay low dividends and have high retention.

5. Capital Structure
A company's management may wish to achieve or restore an optimal capital structure i.e. if they consider gearing to be too high, they may pay low dividends and allow reserves to accumulate until a more optimal/appropriate capital structure is restored/achieved.

6. Industrial Practice
Companies will be resistant to deviation from accepted dividend or payment norms within the industry.

7. Growth Stage
Dividend policy is likely to be influenced by firm's growth stage e.g a young rapidly growing firm is likely to have high demand for development finance and therefore may pay low dividend or a defer dividend payment until company reaches maturity. It will retain high amount.

8. Ownership Structure
A dividend policy may be driven by Time Ownership Structure e.g in small firms where owners and managers are same, dividend payout are usually low.

However in a large quoted public company dividend payout are significant because the owners are not the managers. However, the values and preferences of small group of owner managers would exert more direct influence on dividend policy.
9. Shareholders expectation
Shareholder clientele that have become accustomed to receiving stable and increasing div. Will expect a similar pattern to continue in the future.

Any sudden reduction or reversal of such a policy is likely to dissatisfy the shareholders and may result in a fail in share prices.

10. Access to capital markets
Large, well established firms have access to capital markets hence can get funds easily
They pay high dividends thus, unlike small firms which pay low dividends (high retention) due to limited borrowing capacity.

11. Contractual obligations on debt covenants

They limit the flexibility and amount of dividends to pay e.g. no payment of dividends from retained earnings.

Dividend ratios

1. Dividend per shares (DPS) = $\frac{\text{Earnings to ordinary shareholders}}{\text{Number of ordinary shares}}$

   Indicate cash returns received fro every share holder.

2. Dividend yield (DY) = $\frac{\text{DPS}}{\text{MPS}}$

Indicate dividend returns for every shilling invested in the firm.

3. Dividend cover = $\frac{\text{DPS}}{\text{DPS}}$

Indicate the number of times dividends can be paid out of earnings of shareholders. The higher the DPS the lower the dividend cover.

4. Dividend Payout Ratio = $\frac{\text{DPS}}{\text{EPS}}$

Shows the proportion of Earnings which was paid out as dividends and how much was retained.

Stuy Unit 9

Company Valuations

Contents

A. Introduction

B. Valuation Bases

C. Defence Tactics

D. Due Diligence

A. INTRODUCTION

A business may be valued for different reasons such as for merger, takeover, acquisition, or outright sale or liquidation. In purchasing a business, a buyer will be interested in not only the assets but also the future income this business is expected to generate.

It may be necessary to carry out a valuation for:

- **Quoted Companies** - where a bid is made and the offer price is an estimated "fair value" in excess of the current market price of the shares.
- **Unquoted Companies** - where the company is going public; a scheme of merger is being considered; shares are being sold; taxation purposes; to establish collateral for a loan etc.

The valuation of companies is **not** an exact science.
It is, generally, necessary to use a number of bases to arrive at a range of values.
In the end it is a matter of negotiation:

- How badly do you need the company?
- How badly do the existing owners wish to dispose?

Depending on the circumstances different valuations may be applied to the company.For example, where the bidder wishes to establish a presence in a new market it may be prepared to pay a premium, which will be reflected in the valuation. Likewise, where a company in the same industry makes a bid any synergistic benefits could reflect in the valuation it places on the target.

B. VALUATION BASES

Broadly, the various methods of valuation may be based on:

- Earnings
- Assets
- Dividends
- Cash Flow
- Combination of Other Methods

1. Earnings

***P/E Ratio** - the P/E Ratio is the relationship of a company"s share price to its EPS.

$$P/E = \frac{\text{Price}}{\text{EPS}}$$

Therefore: $P/E \times EPS = Price$

If the prospective EPS can be estimated and a suitable P/E Ratio selected it should be possible to arrive at a price (value) for the company. Where an unquoted company is being valued a "best fit" P/E can be obtained from similar quoted companies (same industry, similar size, gearing etc.). When an appropriate P/E has been selected this should then be reduced by 20% - 30% to recognise that shares in unquoted companies are more risky and less marketable than those of quoted companies.

***Accounting Rate of Return (ARR)** - the estimated maintainable earnings of the target can be capitalised using the ARR.

$$\frac{\text{Estimated Maintainable Earnings}}{\text{ARR}} = \text{Value}$$

Example:
If maintainable earnings are estimated at RWF1.5m. and the ARR is 10% the value is:

$$\frac{\text{RWF1.5m}}{10} = \text{RWF15m}$$

.

RWF15m is the absolute maximum which could be paid in order to achieve the 10% rate of return. When estimating the maintainable earnings it may be necessary to adjust them to bring them into line with the bidder"s policies.

***Super Profits** - if super profits are expected these are reflected in the valuation. A normal rate of return for the industry is applied to the net tangible assets in order to establish normal profits. These are then compared with the expected annual profits and if the expected profits are higher the difference is regarded as a super profit. The valuation is the net assets plus a number of years (say, 3) of super profits. This method has become less fashionable than previously.

2. Assets

The valuation is based on the Net Tangible Assets which are attributable to the equity.
Any intangible assets and the interests of other capital providers are deducted.

Net Assets per Balance Sheet		X
Less Intangibles (e.g. Goodwill)		(X)
		X
Less Other Parties:		
Preference Shares	X	
Loan Capital	X	
		(X)
Net Tangible Assets – Equity (Valuation)		X

The figure attached to an individual asset may vary considerably depending on whether it is valued on a going-concern or a break-up (asset stripping ?) basis.

While an earnings basis might be more relevant the Net Assets basis is useful as a measure of the "security" in a share value.

3. Dividends

The Dividend Valuation Model may be used to value the company"s stream of expected future dividends. It is suitable for the valuation of small shareholdings in unquoted companies.

(i) Constant Dividends

$$\text{Value} = \frac{d}{r}$$

Where: d = dividend per share
r = company"s cost of equity

(ii) Growth In Dividends

$$\text{Value} = \frac{d_o (1 + g)}{r - g}$$

Where: d_o = most recent dividend
g = expected growth rate in dividends
r = company"s cost of equity

4. Cash Flow

The valuation is based upon the expected net present value of future cash flows, discounted at the required rate of return. However, accurate estimates of the cash flows will rarely be available in an acquisition situation.

5. Combination of Other Methods

***Berliner Method** - this takes the average of the prices calculated using the earnings method and the Net Assets method.

C. DEFENCE TACTICS

Where an unwelcome or hostile bid is received from another company there are a number of steps that can be taken to thwart it:

- Reject the bid on the basis that the **terms are not good enough.**
- ssue a forecast of **attractive future profits and dividends** to persuade shareholders to hold onto their shares.
- **Revalue** any undervalued assets.
- Mount an effective **advertising and P.R. campaign**.
- Find a **"White Knight"** that is more acceptable - in 1986 Distillers Co. (U.K.) received an unwelcome bid from Argyll and found a white knight in Guinness. In Ireland in 1988 Irish Distillers Group found Pernod in their battle with G.C. & C. Brands (Grand Metropolitan).
- Make a **counter bid** – generally only possible if the companies are of a similar size.
- Arrange a **Management Buyout**.
- Attack the **credibility of the offer or the offeror** itself, particularly if shares are offered - e.g. commercial logic of the takeover, dispute any claimed synergies, criticize the track record, ethics, future prospects etc. of the offer or.
- Appeal to the **loyalty** of the shareholders.
- Encourage **employees** to express opposition to the merger
- Persuade **institutions** to buy shares.

D. DUE DILLIGENCE

The main objective of Due Diligence is to confirm the reliability of the information which has been provided and has been used in making an investment decision. Changes in these primary assumptions may have a significant impact on the price to be paid and possibly even raise questions on the wisdom of proceeding with the transaction. This is a very useful process and at minimum will provide additional information on the potential target.

The following should be considered:

- **Earnings** – audited financial statements are prepared to comply with statutory/tax requirements. To assess the true quality of earnings an in-depth review of the business and detailed management accounts must be performed. Adjustments may need to be made for one-off events, lost customers, discontinued products, changes in cost structure etc. Also, evaluate non-financial information e.g. quality of risk management, quality of management, corporate governance etc.
- **Forecasts** – may be prepared on a high-level basis with oversimplified assumptions. The assumptions may be difficult to reconcile with historical performance.
- **Assets** – write-offs for aged debtors, obsolete stock, idle assets, capitalised costs etc. may need to be made. Also, clarify which assets are to be included in the transfer and agree valuations.
- **Undisclosed Liabilities** – substantial hidden tax liabilities, penalties and exposures may subsequently arise. Evaluate and possibly, seek protection by obtaining warranties or indemnities against future potential tax issues.
- **Trading Performance** – related party transactions are often conducted under special pricing terms (e.g. business support services not charged by parent company). The impact on the business of a change in ownership should be assessed to reflect normal commercial arrangements.
- **Controls** – additional investment in new reporting systems may be required to obtain the quality of information needed to properly monitor performance. Also, ensure the necessary staff are locked-in for an appropriate period.
- **Balanced View** – issues should be weighed against the upside potential in a balanced way. Examples of the upside might include synergies, optimal financing structure, access to new markets, new management team etc.
- **Tax Structure** – effective tax planning is a key component in delivering value as quickly as possible.

Study Unit 10

Emerging issues in Financial Management

NB:

To Be done by the tutors as per the emerging issues existing at the time.

Study Unit 11

Sundry Definitions

Contents

A. INTRODUCTION

One of the questions on the Compulsory Section (Section A) of your paper requires you to write briefly on a number of topics. There is a small choice in that you must complete five out of seven topics. There is a limited range of areas that are examined and certain topics tend to repeat over a number of examination sessions.

You do not need to write a thesis on each subject but a couple of well chosen sentences (as below in Section B) will suffice. Where appropriate a numerical example will help you to get your message across and put some order on your solution.

You should regard this question as a "banker" and if you have done your work you should be well capable of attaining almost maximum marks (20 marks in total, 4 per topic).

B. SUNDRY DEFINITIONS

Altman"s Z-Scores

Professor I Altman researched 66 companies that experienced corporate failure to determine whether or not their ultimate failure could have been predicted? His summarised findings are known as Altman"s Z-Score Model. This model suggests that if five key financial ratios are calculated and weighted, and, if the result lies outside stated parameters, then the business faces a heightened risk of future corporate failure. The model is used by investors and analysts to inform them of the financial risk associated with potential investments because of its usefulness in predicting corporate failure.

Beta as a Measure of Market Risk

One of the fundamental principles of financial theory is that individual shares (or more generally individual securities) will relate to the average market risk in a fairly consistent manner. Empirical statistical research of a share"s actual performance (in terms of its returns and the variation in such returns) will indicate whether it is more prone to variation than the market as a whole - i.e. either more or less risky than the market. The risk of a particular share relative to the market as a whole is measured by that share"s unique "beta" value. The beta value reflects differences in systematic risk characteristics and is most frequently used in CAPM calculations. The beta value for the market as a whole is usually set at 1.0, and so any share with a Beta greater than 1.0 is considered to a relatively riskier investment than a portfolio of shares representative of the market as a whole.

Capital Asset Pricing Model

The CAPM is a model which sets out in mathematical form the relationship between the return on any individual security, the risk free rate of return, and the return on the market portfolio. It may be summarised as follows:

$$Rp = Rf + ß (Rm - Rf)$$

in the equation above (the „Beta" factor) is a variable which attempts to capture the Systematic Risk associated with the business activity of a company. The model is significant in that it is premised on the view that the return on any given security is associated with the non-diversifiable (systematic) risk associated with the security.

Capital Rationing

Capital rationing refers to a situation where there is a budget ceiling or constraint on the amount of funds available to a firm for investment purposes during a specific period of time. The significance of such a circumstance is that firms facing a capital rationing constraint must attempt to identify and implement the optimal selection of investment opportunities which will maximise the value of the firm while remaining subject to the given constraint. In theory, however a firm should accept all projects that yield a positive NPV when evaluated at an appropriate cost of capital. A selection process which causes firms to select only a limited number of potentially value enhancing projects is by definition sub-optimal. Typically when firms consider themselves to be subject to some capital constraint, it is probably untrue to say that capital is simply not available. Rather the more likely explanation of a capital shortage is that firms believe the cost of capital to be too high, and so they express a reluctance to continue raising further capital. Ultimately though the test of whether the cost of capital is too high should centre on the positive/ negative nature of the resultant NPV outcome.

Centralised Treasury Management

Companies of significant size are often diverse in terms of trading activities and/or geographic spread. Many such companies choose to centralise their treasury function. This involves expert staff conducting the treasury management function for all parts of the business, however diverse. This decision will be reached for a combination of the following reasons:

- Ability to afford specialist staff
- Increased purchasing power given the increased value of borrowings/investments
- Foreign currency set-off potential
- Better control over activities
- Improved risk monitoring
- Improved tax planning
- The ability to “offset” negative cash balances in one unit against the positive cash balances in another

Convertible Loan Stock

Convertible loan stock is a debt instrument issued by firms which offers the holder the right to have the debt redeemed in the usual way at the redemption date. Alternatively, the holder of the loan stock may exercise a right to convert the debt into equity at some pre-determined conversion rate. The buyer of convertible loan stock usually accepts a slightly lower rate of interest on the instrument as part of the price to be paid for holding what amounts to a bet on the future movement of the share price - the holder of loan stock in effect enjoys an option on the firm"s equity. This lower rate of interest makes loan stock attractive to the issuer, as does the fact that conversion into equity represents an in-built form of liquidation of the instrument and removes the necessity to raise further debt in order to redeem the initial loan stock.

Corporate Raider

Corporate raider is a title given to organisations/individuals who target companies to acquire, and, if successful, will in the post acquisition period carve the business into its component parts with a view to selling/strip the individual parts at a profit. Ultimately, the corporate raider may retain ownership of a small element (if any) of the acquired enterprise.

Corporate raiders are also known as „asset strippers."

Deep Discount Bonds

A Deep Discount Bond is a bond which is usually issued at a price considerably lower than its par value. The investor in these bonds is, therefore, given the opportunity to buy a bond at a very cheap price. Typically, the trade-off for this benefit is that the bond will carry a lower coupon rate of interest than other comparable debt instruments. The investor, therefore is essentially attracted by a potential capital gain, while the issuer of the loan stock will be attracted by the relatively lower service costs of the loan stock. This latter feature can be particularly attractive to companies which wish to raise capital for a new business venture and where the future cash flows may be uncertain in the early years of the project, thereby putting a strain on servicing a higher cost loan stock.

Dividend Policy – Considerations in Determining

It should always be remembered that ordinary shareholders are not prima facie entitled to receive an annual dividend. The decision whether or not to declare a dividend and if declared, the extent of same, rests with the Board of Directors. Each year the Board will consider the dividend decision. The key considerations when making this decision will include:

- **Profitability** – what are the profits for the period for which the dividend is to be decided?
- **Legality** – in short, only realised gains can be distributed
- **Cash Flow** – has the company the cash reserves from which to pay dividends?
- **Taxation** – is it more tax efficient for equity shareholders to receive dividends or capital growth, or the optimum mix thereof?
- **Signalling Effect** – what will the declaration of any size dividend (including a nil declaration) signal to the investment community?
- **Expectations** – what are shareholders expecting as a dividend and how any change will impact on their investment behaviour?
- **Residual Theory** – can the company use profits to invest in projects which will increase the capital value of shares by more than the dividend that could be paid?

Dividend Yield as a Method of Company Valuation

The dividend yield is the ratio of the most recent dividend to the market price of the security under review. In this sense the dividend yield is a measure of the "rate of return" on equity capital which might serve as a comparable ratio to the percentage yield on loan stock. However, as dividends are paid net of withholding tax, it is usually necessary to calculate the grossed up equivalent of the dividend and use this figure in working out the dividend yield. Such an approach allows yields on equity to be compared more directly to yields on interest bearing loan stock. By convention, a normal yield gap implies that the return on equity should be higher than that on debt. Nevertheless it can occasionally be observed that the dividend yield can be less than yields on debt. In the long run, however, it is true to say that investors expect their return on equity, in terms of dividend yield and capital gains, to exceed the yield debt.

Efficient Market Hypothesis

The efficiency of a stock market means the ability of the market to price shares quickly and fairly to reflect all the available public information in respect of each share.

The Efficient Market Hypothesis proposes that a particular stock market is an efficient stock market. This is because of the role that well informed institutional investors and their market analysts play.

How efficient the market is at responding to such information is considered to vary between:

- Strong form efficiency
- Semi-strong form efficiency
- Weak form efficiency

There has been much research carried out on the topic of measuring market efficiency, with varying and sometimes contradictory findings.

Equivalent Annual Cost

Equivalent annual costs are employed when considering the optimum cycle within which to replace capital assets, or in other circumstances when assessing the repayments on a loan over a given schedule of years. In effect, EACs are the direct reciprocal of annuity factors. This technique becomes useful when an analyst is examining assets with different life spans and so the question of replacement cycles cannot be easily addressed given that in any particular year one or more of the assets being considered will still have some period of its useful life left to run. The EAC may perhaps best be understood by reference to the concept of annuity factors. For example, whereas annuity factors allow the analyst to reduce a known and constant future cash flow to a present value using an uncertain discount factor , the EAC method facilitates the conversion of a known present value capital cost to an unknown future stream of (notional) cash flows over a defined period of time. This restructuring of the financial data can allow a more direct comparison to be made between assets with different useful lives and thereby allow decisions to be made on optimal replacement cycles.

Factoring of Debtors

The factoring of debtors is a financial service usually provided by a specialist agency, such as a department within a bank. Typically, it involves the administration of a client companies debtors, the collection of its debts, the elimination or at least tighter control of bad debts, and the advancement of certain sums of cash on the basis of invoices issued to date. The provision of factoring services therefore represents - on the part of the Factor - the ability to develop specialist expertise, operating economies of scale, and an access to a level of liquidity which is only likely to be available to a major financial institution such as a bank. Factoring services are not however simply a means of resolving the problems of financially distressed or illiquid companies, but rather are only likely to be available to reputable companies with an established trading record. Most banks will be reluctant to take on the administration of a particularly troublesome debtors" ledger containing many unknown client firms.

Flotation Costs

Flotation costs arise in the context where a company is offering its securities - either debt or equity - for sale in the capital market. These costs can be significant and in most cases the amount of funds the firm receives is less than the aggregate value suggested by the price at which the issue in question has been sold. Typically flotation costs can involve all or any of the following items - underwriting expenses, audit and legal fees, fees to corporate bankers or their financial advisors, public relations fees, costs of printing, advertising and circulating the offer for sale, and stock market fees. Although these costs can be significant, most firms tend to tale the prudent view that they cannot afford to avoid them entirely. This is particularly so in relation to underwriting costs and the fees associated with professional advice on the issue price for the particular security in question. This latter aspect is especially important as failure to strike the correct issue price could undermine the success of the entire issue.

Internal Rate of Return

The internal rate of return is the discount rate that equates the present value of cash inflows with the present value of cash outflows (often the initial investment associated with the project). In other words, it is the discount rate that yields an NPV of zero for the project. For the investor, the IRR of a project represents a form of cut off rate for project financing. If the investor concerned can manage to raise funds at a rate lower than the IRR, the NPV of the project will be positive and the investor would proceed with the proposed investment. If on the other hand the cost of funds was greater than the IRR then the investor would recognise that the return on the investment would not be sufficient even to remunerate the capita, committed, much less create additional wealth by way of a positive NPV outcome.

Management Buyouts (MBOs)

When an organisation decides to divest itself of part of its business for whatever reason (cash absorber, lack of strategic fit etc.) it may receive offers from many parties. Occasionally, the management of the part of the business being sold may decide to mount a bid for the purchase. This is known as a management buyout. Research has shown than MBOs tend to be more successful than 3rd party acquisitions. This is for many reasons including knowledge of the industry and the specific business being bought as well as increased levels of motivation to make the business a success.

Often with MBOs the most difficult challenge is to raise sufficient finance.

Money Markets and Capital Markets

The capital market is the market where various long term financial instruments (ordinary shares, bonds etc.) are initially raised and subsequently traded. It is the market where business seeks long term financial capital which will support the company and its ongoing operations. The capital market also represents a structured interface between those with surplus funds who are seeking out remunerative opportunities (investors), and those agents with a capital deficit who need to raise additional finance (borrowers). By contrast, the money market is essentially a market for short term investments only. The money market does not necessarily need a physical location in which to operate, and is better understood as a loose network of traders and financial institutions engaged in an ongoing process of electronic trading. Typically the instruments traded mature in a matter of days or months, and usually involve investors with short term surplus cash or those interested in tactical or speculative trading. The instruments traded do not form part of the fundamental financial structure of a business. Typical instruments traded on the money market are, short dated government stock, certificates of deposit, repurchase agreements, and commercial paper.

Operating Gearing

Operating gearing describes the relationship between the fixed and variable costs of production. Operating gearing can be measured either as the percentage change in earnings before interest and tax for a percentage change in sales, or as the ratio of fixed to variable costs. Companies whose costs are mostly fixed are said to have high operating gearing. These companies are highly vulnerable to the need to generate consistently high revenue earnings in order to cover the high fixed costs. High operating gearing therefore is perceived to increase business risk, and empirical tests have tended to support the view that such companies should have relatively higher Beta factors *(Study Unit 17 above)*. In terms of an influence on a company's Beta factor, the analogy between financial and operating gearing is quite strong.

Operating Lease
An operating lease is distinguished from a finance lease in that the lease period is usually less than the useful life of the asset. The lessor therefore relies upon either subsequent leasing or the eventual sale of the asset to cover the initial outlay involved in acquiring the asset. Under an operating lease, the lessor is usually responsible for repairs and maintenance, and therefore retains the risks and rewards of ownership of the asset. In effect then, an operating lease involves the short term rental of an asset.

Overtrading
The term "overtrading" refers to a situation where a company is unable to finance the level of operations which it has achieved. Usually this can arise where a company is under-capitalised at the outset, or where providers of long-term capital remain unwilling to inject further funds as the business grows and expands in volume terms. In such cases, the continued growth of the business will put increasing strains upon working capital, as the company realises it has little option but to have further recourse to short term borrowing and securing finance through the non payment of creditors. Very often, overtrading occurs where a company significantly expands its sales (and accordingly its volume of operations) through the introduction of generous credit terms without enjoying any corresponding credit concessions from its creditors. Such an arrangement will inevitably place a strain on the company's liquidity which is only likely to be finally resolved through some form of financial restructuring involving access to long term capital.

Portfolio Theory
A portfolio is the collection of different investments that make up an investor"s total holding.
A portfolio might be the investment in stocks and shares of an investor or the investments in capital projects of a company. Portfolio theory is concerned with establishing guidelines for building up a portfolio of stocks and shares, or a portfolio of projects. The same theory applies to both stick market investors and to companies with capital projects to invest in.

There are five major factors to be considered when an investor chooses investments, no matter whether the investor is an institutional investor, a company making an investment or a private individual investor:

- **Security** - Investments should at least maintain their capital value.
- **Liquidity** - Where the investments are made with short-term funds, they should be convertible back into cash at short notice.
- **Return** - The funds are invested to make money. The highest return compatible with safety should be sought.
- **Spreading Risks** - The investors who puts all his funds into one type of security risks everything on the fortunes of that security. If it performs badly his entire investment will make a loss.
- **Growth Prospects** - The most profitable investments are likely to be businesses with good growth prospects.

Price Earnings Multiple
This is a way of determining the worth of a share/a business. It is normally used in the context of an acquisition whereby the target company is valued at a multiple of its profit before tax. It is a widely recognised indicator of value by the investment community. The multiple which will be used in each case is normally industry dependent. For example an IT based industry may have a different P/E multiple than the retail industry, given the differences in the two industries such as; risk profile, life cycle stage etc. In practice, the final agreed multiple paid would be influenced greatly by the negotiation skills of both parties. It should be noted

that using the P/E multiple is not the only way in which shares/business can be valued. Other methods include asset-based valuations.

Public/Private Funding Partnerships

This is a new and increasingly popular method of funding public capital projects e.g. schools, infrastructure projects etc. In essence, the capital cost of the project is borne by the private enterprise and the public body will pay for the use of the facility over an extended contractual period. At the end of the period the facility will revert to public ownership. The attraction to the private enterprise is the security, and hopefully, the guaranteed financial return of contracting with government departments. Examples of public/private partnerships include the much delayed and much publicised new Cork School of Music.

Reverse Yield Gap

A Yield Gap refers to a position whereby it is normally expected that the yield on equities will be greater than that available on debt. This is so because equity is considered to be more risky than debt, and so in order to compensate shareholders for accepting this extra risk, a higher level of reward must be offered. In some rare instances though, it can emerge to be the case that the yield on debt is actually greater than the yields on equity - this position is referred to as a reverse yield gap. However such a situation should emerge as a temporary phenomenon only. If the yield position did not correct itself (i.e. showing a higher return on equities once again),then the entire investment market for equities would eventually collapse. It is likely that such a build up of sentiment against equities would serve as the very stimulus necessary to depress share prices and so bring dividend yields into a more normal position.

Scrip Dividends

Scrip dividends are shares given to shareholders instead of - or in addition to - cash. Firms may elect to pay a scrip dividend in circumstances where competing pressures on cash reserves might render it unattractive to make a more conventional cash payment - this could be the case where the firm is experiencing liquidity difficulties or where surplus cash may be target on a potential capital investment. In such circumstances a firm may pay a scrip dividend in order to be seen to be remunerating shareholders‟ investment in the firm without placing an unwelcome strain on current cash resources.

Semi-Strong Form Efficiency in Capital Markets

Semi-strong form efficiency is one of three categories described in that aspect of capital market theory concerned with the efficiency with which the market processes relevant information. This is a significant question as it allows analysts to arrive at a view as to how well informed a particular capital market is. In this context, the phrase „well informed‟ can be taken to mean that actors on the market have access to all pertinent information, and that they enjoy the capacity to understand and interpret that information with a view to basing subsequent trade decisions on that insight. Semi-strong efficiency refers to a context where investors are in possession of all historical information pertaining to a particular financial instrument, as well as all published information relating to the instrument. This is considered to be the circumstance which best describes most capital markets. To make any stronger claims would move the investor into a position of privileged or insider information, which would in turn move the market towards strong form efficiency.

Strong Form Efficiency

Strong form efficiency refers to a position in the capital markets where the market is considered to be so efficient at filtering relevant information, whether of a public or private nature, that the prices of all financial securities traded on that market are thought to embody all such information. In this sense then, and under conditions of strong form efficiency, "insider trading" could not conceivably happen, since no sooner would an individual have identified a reason to adopt a particular trading position, than market prices would have immediately adjusted to reflect this rationale, and any envisaged gains from trade in such securities would thereby be dissipated.

Systematic Risk

Systematic risk refers to the inherent risk of a particular investment which cannot be diversified away. This systematic risk simply reflects the fact that some business activities are naturally more risky than others and any investor wishing to invest in the financial securities of such a business, must accept the associated level of risk which cannot be detached from the business. Normally, investors will expect to earn a higher reward for taking this additional level of risk. This need to earn a higher reward is captured by the beta term of the capital asset pricing model which serves to quantify the amount of risk premium to be associated with the particular financial security.

Traditional View of Gearing and the WACC

The traditional view of the relationship between gearing and the **W**eighted **A**verage **C**ost of **C**apital is that the two variables are directly correlated. Graphically this relationship is shown as a "U" shaped curve, suggesting that as the level gearing rises from an initial level of zero indebtedness, the WACC initially falls, bottoms out to a minimum position, and then begins to rise again as the level of gearing rises with more and more debt being added to the capital mix. The simple reason for this characterisation of events was that because the return on debt was necessarily lower than the return on equity (because of the different risk profiles), then introducing debt into the capital mix must inevitably lead to a fall in the overall cost of capital. This view, of course, presupposes that that at low levels of gearing, equity holders would not be alarmed by the initial introduction of debt and that accordingly their expected rate of return would not change. However at high levels of gearing, the equity holders begin to perceive a significantly changed risk environment and they therefore seek compensation by way of higher returns. This then leads to a subsequent rise in the WACC.

The particular significance of the traditional view was that because it suggested that the WACC could possess minimum point (i.e. a gearing level where the WACC was at its lowest), then this in turn implied that the value of the firm would alter in line with changes in gearing and that management could, by virtue of some creative financial engineering, manipulate the value of the firm.

Venture Capital

The role of the Venture Capitalist as a source of finance has in many countries increased in profile over the last number of years. A Venture Capitalist, as the name suggests is an organisation which provides finance for new and developing businesses. A Venture Capitalist typically takes the form of a department of an established financial services organisation or as a private asset management expert.

Venture Capitalists carefully vet proposals put to them by businesses that require funding. Only those businesses that are operationally and technologically feasible have market appeal and are financially viable are likely to be backed by the Venture Capitalist.

Once backing is agreed the Venture Capitalist will fund an agreed percentage of the venture. This funding, typically, will be a mixture of equity and debt. Venture Capitalists will require board representation in order to help protect their interest by having influence (voting rights) over policy and strategic decision-making. Venture Capitalists do not expect to retain interests in businesses they back for the long term. A typical "get-out" to liquidate their investment would be in the form of "going public".

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$

Where r = discount rate
n = number of periods until payment

Periods
Discount rates *(r)*

(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0·990	0·980	0·971	0·962	0·952	0·943	0·935	0·926	0·917	0·909	1
2	0·980	0·961	0·943	0·925	0·907	0·890	0·873	0·857	0·842	0·826	2
3	0·971	0·942	0·915	0·889	0·864	0·840	0·816	0·794	0·772	0·751	3
4	0·961	0·924	0·888	0·855	0·823	0·792	0·763	0·735	0·708	0·683	4
5	0·951	0·906	0·863	0·822	0·784	0·747	0·713	0·681	0·650	0·621	5
6	0·942	0·888	0·837	0·790	0·746	0·705	0·666	0·630	0·596	0·564	6
7	0·933	0·871	0·813	0·760	0·711	0·665	0·623	0·583	0·547	0·513	7
8	0·923	0·853	0·789	0·731	0·677	0·627	0·582	0·540	0·502	0·467	8
9	0·914	0·837	0·766	0·703	0·645	0·592	0·544	0·500	0·460	0·424	9
10	0·905	0·820	0·744	0·676	0·614	0·558	0·508	0·463	0·422	0·386	10
11	0·896	0·804	0·722	0·650	0·585	0·527	0·475	0·429	0·388	0·350	11
12	0·887	0·788	0·701	0·625	0·557	0·497	0·444	0·397	0·356	0·319	12
13	0·879	0·773	0·681	0·601	0·530	0·469	0·415	0·368	0·326	0·290	13
14	0·870	0·758	0·661	0·577	0·505	0·442	0·388	0·340	0·299	0·263	14
15	0·861	0·743	0·642	0·555	0·481	0·417	0·362	0·315	0·275	0·239	15

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0·901	0·893	0·885	0·877	0·870	0·862	0·855	0·847	0·840	0·833	1
2	0·812	0·797	0·783	0·769	0·756	0·743	0·731	0·718	0·706	0·694	2
3	0·731	0·712	0·693	0·675	0·658	0·641	0·624	0·609	0·593	0·579	3
4	0·659	0·636	0·613	0·592	0·572	0·552	0·534	0·516	0·499	0·482	4
5	0·593	0·567	0·543	0·519	0·497	0·476	0·456	0·437	0·419	0·402	5
6	0·535	0·507	0·480	0·456	0·432	0·410	0·390	0·370	0·352	0·335	6

7	0·482	0·452	0·425	0·400	0·376	0·354	0·333	0·314	0·296	0·279	7
8	0·434	0·404	0·376	0·351	0·327	0·305	0·285	0·266	0·249	0·233	8
9	0·391	0·361	0·333	0·308	0·284	0·263	0·243	0·225	0·209	0·194	9
10	0·352	0·322	0·295	0·270	0·247	0·227	0·208	0·191	0·176	0·162	10
11	0·317	0·287	0·261	0·237	0·215	0·195	0·178	0·162	0·148	0·135	11
12	0·286	0·257	0·231	0·208	0·187	0·168	0·152	0·137	0·124	0·112	12
13	0·258	0·229	0·204	0·182	0·163	0·145	0·130	0·116	0·104	0·093	13
14	0·232	0·205	0·181	0·160	0·141	0·125	0·111	0·099	0·088	0·078	14
15	0·209	0·183	0·160	0·140	0·123	0·108	0·095	0·084	0·074	0·065	15

Annuity Table

Present value of an annuity of 1 i.e. $\frac{1-(1+r)^{-n}}{r}$

Where r = discount rate
n = number of periods until payment

Periods
Discount rates *(r)*

(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0·990	0·980	0·971	0·962	0·952	0·943	0·935	0·926	0·917	0·909	1
2	1·970	1·942	1·913	1·886	1·859	1·833	1·808	1·783	1·759	1·736	2
3	2·941	2·884	2·829	2·775	2·723	2·673	2·624	2·577	2·531	2·487	3
4	3·902	3·808	3·717	3·630	3·546	3·465	3·387	3·312	3·240	3·170	4
5	4·853	4·713	4·580	4·452	4·329	4·212	4·100	3·993	3·890	3·791	5
6	5·795	5·601	5·417	5·242	5·076	4·917	4·767	4·623	4·486	4·355	6
7	6·728	6·472	6·230	6·002	5·786	5·582	5·389	5·206	5·033	4·868	7
8	7·652	7·325	7·020	6·733	6·463	6·210	5·971	5·747	5·535	5·335	8
9	8·566	8·162	7·786	7·435	7·108	6·802	6·515	6·247	5·995	5·759	9
10	9·471	8·983	8·530	8·111	7·722	7·360	7·024	6·710	6·418	6·145	10
11	10·37	9·787	9·253	8·760	8·306	7·887	7·499	7·139	6·805	6·495	11
12	11·26	10·58	9·954	9·385	8·863	8·384	7·943	7·536	7·161	6·814	12
13	12·13	11·35	10·63	9·986	9·394	8·853	8·358	7·904	7·487	7·103	13
14	13·00	12·11	11·30	10·56	9·899	9·295	8·745	8·244	7·786	7·367	14
15	13·87	12·85	11·94	11·12	10·38	9·712	9·108	8·559	8·061	7·606	15

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0·901	0·893	0·885	0·877	0·870	0·862	0·855	0·847	0·840	0·833	1
2	1·713	1·690	1·668	1·647	1·626	1·605	1·585	1·566	1·547	1·528	2
3	2·444	2·402	2·361	2·322	2·283	2·246	2·210	2·174	2·140	2·106	3
4	3·102	3·037	2·974	2·914	2·855	2·798	2·743	2·690	2·639	2·589	4
5	3·696	3·605	3·517	3·433	3·352	3·274	3·199	3·127	3·058	2·991	5
6	4·231	4·111	3·998	3·889	3·784	3·685	3·589	3·498	3·410	3·326	6
7	4·712	4·564	4·423	4·288	4·160	4·039	3·922	3·812	3·706	3·605	7
8	5·146	4·968	4·799	4·639	4·487	4·344	4·207	4·078	3·954	3·837	8
9	5·537	5·328	5·132	4·946	4·772	4·607	4·451	4·303	4·163	4·031	9
10	5·889	5·650	5·426	5·216	5·019	4·833	4·659	4·494	4·339	4·192	10
11	6·207	5·938	5·687	5·453	5·234	5·029	4·836	4·656	4·486	4·327	11
12	6·492	6·194	5·918	5·660	5·421	5·197	4·988	4·793	4·611	4·439	12
13	6·750	6·424	6·122	5·842	5·583	5·342	5·118	4·910	4·715	4·533	13
14	6·982	6·628	6·302	6·002	5·724	5·468	5·229	5·008	4·802	4·611	14
15	7·191	6·811	6·462	6·142	5·847	5·575	5·324	5·092	4·876	4·675	15