

INSTITUTE OF CERTIFIED
PUBLIC ACCOUNTANTS
OF RWANDA

CPA



A2.1

STRATEGIC CORPORATE FINANCE

Study Manual

2nd edition February 2020,

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INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS OF RWANDA

Advanced Level

A2.1 STRATEGIC CORPORATE 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.

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INTRODUCTION TO THE COURSE

Stage: Advanced Level 2

Subject Title: A2.1 Strategic Corporate Finance

Aim

The aim of this subject is to enable students to understand the key responsibilities and financing decisions facing today's strategic financial manager. Students should be able to develop detailed business plans, to assess the potential financial risks and to advise on suitable risk management strategies for entrepreneurial activities and established organisations.

Strategic Corporate Finance as an Integral Part of the Syllabus

Strategic Corporate Finance develops the financial management skills acquired by students in Managerial Finance Intermediate and other disciplines acquired in the earlier examination stages. Strategic Corporate Finance requires students to integrate and expand that knowledge so as to provide a framework for strategic financial management analysis and decisions.

Learning Outcomes

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

- Evaluate the financial objectives of an organisation, explain how they are determined and interrelate with the non-financial objectives and stakeholder interests.
- Discuss the legal regulations, the professional and ethical considerations facing financial managers.
- Value shares / businesses in the context of a proposed merger, acquisition or management buyout.
- Analyse reasons for and advise on actions to prevent corporate failure.
- Evaluate and advise as to the optimum capital gearing structure, term structure and dividend policy for an organisation.
- Advise as to appropriate exchange risk and interest rate risk management strategies and discuss the use of derivatives in long term risk management.
- Discuss the relevance of portfolio theory and the Capital Asset Pricing Model to financial managers.
- Prepare a business plan for an organisation given prescribed information.
- Evaluate the financial management of an organisation over a period of time and/or relative to competitors / industry norms.

Study Unit 1

FINANCIAL ENVIRONMENT

Contents

- Determining financial objectives within the strategic planning process.
- Identify key stakeholders of organizations and the interests of each stakeholder group.
- Corporate Social Responsibility, its relationship to the objective of organisation
- Maximising shareholder wealth.
- Agency theory and its relevance to financial managers.
- The professional, regulatory and legal framework relevant to financial requirements, money laundering, directors' responsibilities.
- Monetary regulation and its effect on Capital Markets.
- The key activities undertaken by treasury managers.
- Centralized treasury management and the arguments for and against.
- The efficient market hypothesis

INTRODUCTION

Corporate finance is the field of finance dealing with financial decisions that business enterprises make and the tools and analysis used to make these decisions. The primary goal of corporate finance is to maximize corporate value while managing the firm's financial risks

- a. Corporate Finance and the Finance Manager ie what do you as the financial manager what do?
 - Identify Long term investment ; identify investment opportunities with value for money
 - Decide on a financial mix (debt and equity) which maximizes value
 - Manage working capital , for the benefit of the organization
 - Other goals of a firm may exist like survive, maximize market share, maximize profits etc, all these are in line with maximizing shareholder interest
- b. Corporate Finance and the different business forms
 - Liability – Unlimited and Limited
 - » Unlimited liability – Sole proprietorship & partnerships
 - » Limited liability - incorporated bodies
 - Considerations on the business form include cost, continuity, control, liability & tax issues

It is often assumed that the single objective of commercial entities is:

To Maximise the **Value** of the Firm

Or

To Maximise the **Wealth** of the **Shareholders**

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:

1. Shareholders
2. Loan Creditors – seek security, repayment of loan interest and principal.
3. Employees – seek fair wages, promotional opportunities, welfare & social facilities => improved motivation.
4. Management - job security; fair reward; job satisfaction.
5. Trade Creditors - payment within credit terms.
6. The Community - sponsorship; charities; install environmental measures.
7. The Government - payment of taxes, rates, provide employment.
8. 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 averse 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:
 1. Shareholders and Management
 2. Shareholders and Creditors
 3. Shareholders and the Government
 4. Shareholders and Auditors
 5. 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:

i. 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.

ii. 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.

iii. 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.

iv. 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.

v. 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 between the shareholders and the managers.

vi. 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.

vii. 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 be threatened to sell their shares to competitors. In this case the management team is fired and those who stay on can lose 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.

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.

f. 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:

- a. No disposal of assets without the permission of the lender.
- b. No payment of dividends from retained earnings
- c. Maintenance of a given level of liquidity indicated by the amount of current assets in relation to current liabilities.
- d. Restrictions on mergers and organisations
- e. No borrowing of additional debt, before the current debt is fully serviced/paid.
- f. 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.

NATIONALISED INDUSTRIES/PUBLIC SECTOR

The objectives of nationalised industries are likely to be strongly influenced by the government and not primarily financial. These organisations exist to provide a service 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 a nationalised industry and investor wealth maximisation is not the assumed objective, some private sector investment appraisal techniques will not be appropriate. However, some private sector financial management techniques can be used in the public sector - e.g. discounted cash flow is often used.

CORPORATE SOCIAL RESPONSIBILITY (CSR)

Corporate Social Responsibility (CSR) is often used to describe the actions of a private, commercial organisation 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 (CSR).

Examples of acting in a socially responsible manner may include:

Such as KPMG International’s policy of purchasing over 90% of its electricity from renewable sources.

Junior Achievement Awards initiative.

Likewise, companies have been alleged to have acted in a less than socially responsible manner. Examples include clothing and sports goods companies using sub-contractors who employ child labour practices.

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

Many organisations view CSR 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 operationalise CSR. This has been achieved in many ways including:

Incorporating CSR in their mission statements

Appointing a 'champion' of CSR

Formally incorporating CSR objectives into its strategic planning process

Dissemination of CSR 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 CSR 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 CSR as the preserve of multinationals and government. Part of the challenge in pursuing CSR related objectives lies in the relative novelty of the concept. The critical debate is whether or not CSR detracts from the objective of maximising shareholder wealth. As with all debates there are opposing views including:

Arguments in favour of CSR include that it:

- Creates positive Public Relations for the organisation, or, as a minimum avoids bad P.R.
- 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 maximise profits.

However, there are many writers who vigorously oppose the notion that private organisations should embrace social responsibility. Some of the main arguments against CSR 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 CSR detracts from the profit maximization

Conclusion

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

As the public debate on CSR and the changing role of business in society intensifies, companies will need to determine their own view on CSR 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 (Business Expansion Scheme, etc.)
- » **Monetary Policy** – Rates of Inflation, Interest Rates, Exchange Rates etc.
- » **Investment Incentives Offered** - Grants, etc.
- » **Legislation** - Monopolies, Competition, Environmental etc.
- » **Wage Controls**
- » **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

CORPORATE GOVERNANCE

Corporate governance, “Refers to the manner in which the power of the corporation is exercised in the stewardship of the corporation total portfolio of assets and resources with the objective of maintaining and increasing shareholders value through the context of its corporate vision”

Corporate Governance can be defined as the system by which organizations are directed and controlled.

Rationale for corporate governance

The organization of the world economy (especially in current years) has seen corporate governance gain prominence mainly because:

- Institutional investors, as they seek to invest funds in the global economy, insist on high standard of Corporate Governance in the companies they invest in.
- Public attention attracted by corporate scandals and collapses has forced stakeholders to carefully consider corporate governance issues.

Corporate governance is therefore important as it is concerned with:

- Profitability and efficiency of the firm.
- Long-term competitiveness of firms in the global economy.
- The relationship among firm's stakeholders

BEST PRACTICE

Financial aspects of corporate governance have introduced a "Code of Best Practice"
Some of the main recommendations are:

1. The roles of chairman and chief executive should generally be separate. Whether or not the roles are combined, a senior non-executive director should be identified.
2. Non-executive directors should comprise at least one-third of the membership of the board and the majority of non-executive directors should be independent.
3. Boards should establish a Remuneration Committee, made up of independent non-executive directors, to develop policy on remuneration and devise remuneration packages for individual executive directors.
4. Each company should establish an Audit Committee of at least three non-executive directors, at least two of them independent. The audit committee should keep under review the overall financial relationship between the company and its auditors, to ensure a balance between the maintenance of objectivity and value for money.
5. Disclosure of directors' total emoluments, including pension contributions and stock options. Separate figures for salary and performance-related elements and the basis on which performance is measured.
6. Directors should report on internal controls.
7. The accounts should contain a statement of how the company applies the corporate governance principles and explain the policies, including any circumstances justifying departure from best practice

EFFICIENT MARKET HYPOTHESIS (EMH)

Types of Efficiency

Efficient market hypothesis can be explained in 3 ways:

a) Allocative Efficiency

A market is allocatively efficient if it directs savings towards the most efficient productive enterprise or project. In this situation, the most efficient enterprises will find it easier to raise funds and economic prosperity for the whole economy should result. Allocative efficiency will be at its optimal level if there is no alternative allocation of funds channelled from savings that would result in higher economic prosperity. To be allocatively efficient, the market should have fewer financial intermediaries such that funds are allocated directly from savers to users, therefore financial disintermediation should be encouraged.

b) Operational Efficiency

This concept relates to the cost, to the borrower and lender, of doing business in a particular market. The greater the transaction cost, the greater the cost of using financial market and therefore the lower the operational efficiency. Transaction cost is kept as low as possible where there is open competition between broker and other market participants. For a market to be operationally efficient, therefore, we need to have enough market makers who are able to play continuously.

c) Information Efficiency

This reflects the extent to which the information regarding the future prospect of a security is reflected in its current price. If all known (public information) is reflected in the security price, then investing in securities becomes a fair game. All investors have the same chances mainly because all the information that can be known is already reflected in share prices. Information efficiency is important in financial management because it means that the effect of management decision will quickly and accurately be reflected in security prices. Efficient market hypothesis relates to information processing efficiency. It argues that stock markets are efficient such that information is reflected in share prices accurately and rapidly.

Forms of Information Efficiency

Informational efficiency is usually broken down into 3 different levels (forms):

a. Weak form level of efficiency

This level states that share prices fully reflect information in historic share price movement and patterns (past information/historic information). If this hypothesis is correct, then, it should be possible to predict future share price movement from historical patterns. E.g. If the company's shares have increased steadily over the past few months to the current price of RWF .30, then this price will already fully reflect the information about the company's growth and therefore the next change in share prices could either be upward, downward or constant with equal probability. It therefore follows that technical analysis or Chartism will not enable investors to make arbitrage profits. In markets that have achieved this level then security prices follow a trendless random walk.

Studies to test this level have been based on the principle that:

- The share price changes are random
- That there is no connection between share price movement and new share price changes. It is possible to prove statistically that there is no correlation between successive changes in price of shares and therefore trend in share price changes cannot be detected. This can be done by using serial correlation (or auto-correlation) test such as Durbin Watson Statistics.

b. Semi-Strong form level of Efficiency

This level states that share prices reflects all available public information. (past and present information). If the market has achieved this level, then fundamental analysis will not enable investors to earn consistently higher than average returns. Fundamental analysis involves the study of company's accounts to determine its theoretical value and thereby find any undervalued share. Fundamental theory states that every share in the market has an intrinsic value, which is equal to the present value of cash flows expected from the security.

Tests to prove semi-strong form of efficiency have concentrated on the ability of the market to anticipate share price changes before new information is formally announced. These tests are referred to as Event Studies. E.g. if two companies plans to merge, share prices of the 2 companies will change once the merger plans are made public. The market would show semi-strong form of efficiency if it were able to anticipate such changes so that share prices of the company would change in advance of the merger plans being confirmed. Other events that can affect share prices are:

- a) Stock splits
- b) Death of CEO of company
- c) Investment in major profitable projects
- d) Changes in dividend policy, etc

c. Strong form level of Efficiency

This level states that price reflects all the available public and private information (past, present and future information). If the hypothesis is correct, then, the mere publication of information that was previously confidential should not have impact on share prices. This implies that insider trading is impossible. It follows therefore, that in order to maximize shareholders' wealth, managers should concentrate on maximizing the NPV of each investment.

Tests that have been carried out on this level have concentrated on activities of fund managers and individual investors. If the markets have reached the strong form levels, then fund managers cannot consistently perform better than individual investors in the market.

IMPLICATIONS OF EMH FOR FINANCIAL DECISION MAKERS

a. The Timing Of Financial Policy

Some financial managers argue that there is a right or wrong time to issue securities i.e. new shares should only be issued when the market is at the top rather than the bottom. If the market is efficient, however, price follows a trendless random walk and its impossible for managers to know whether today's price is the highest or the lowest. Timing other policies e.g release of financial statements, announcement of stock splits, etc has no effect on share prices.


b. Project Evaluation Based Upon NPV

When evaluating new projects, financial managers use the required rate of return drawn from securities traded in the capital market. For example, the rate of return required on a particular project may be determined by observing the rate of return required by shareholders of firms investing in projects of similar risk. This assumes that securities are fairly priced for the risks that they carry (i.e. the market is efficient).

If the market is inefficient, however, financial managers could be appraising projects on a wrong basis and therefore making bad investment decisions since their estimate on NPV is unreliable.

c. Creative Accounting

In an efficient market, prices are based upon expected future cash flow and therefore they reflect all current information. There is no point therefore in firms attempting to distort current information to their advantage since investors will quickly see through such attempts. Studies have been done for example to show that changes from straight-line depreciation to reducing



balance method, although it may result to increasing profit, may have no long-term effect on share prices. This is because the company's cash flows remain the same. Other studies support the conclusion that investors cannot be fooled by manipulation of accounting profit figure or charges in capital structure of company. Eventually, the investors will know the cash flow consequences and alter the share prices consequently.

d. Mergers and Takeovers

If shares are correctly priced then the purchase of a share is a zero NPV transaction. If this is true then, the rationale behind mergers and takeovers may be questioned. If companies are acquired at their correct equity position then purchasers are breaking even. If they have to make significant gains on the acquisition, then they have to rely on synergy in economies of scale to provide the saving. If the acquirer (or the predator) pays the current equity value plus a premium, then this may be a negative NPV decision unless the market is not fully efficient and therefore prices are not fair.

e. Validity of the current market price

If markets are efficient then they reflect all known information in existing share prices and investors therefore know that if they purchase a security at the current market price they are receiving a fair return and risk combination. This means that under or over valued shares or market securities do not exist. Companies shouldn't offer substantial discounts on security issues because investors would not need extra incentives to purchase the securities.

Study Unit 2

MERGERS AND ACQUISITIONS

Contents

- Organic and acquisitive corporate growth.
- Mergers and acquisitions, the arguments for and against.
- Procedures to be complied with during an acquisition.
- Valuation of an organization in the context of a potential takeover using the earnings, cashflow and assets based methodologies.
- The significance of Value Gaps and the information efficiency of capital markets.
- Methods of financing mergers and takeovers including cash, debt, equity and hybrids.
- Defense tactics used during a hostile takeover.
- The role of legal and financial due diligence during a merger/acquisition.
- The attractions and risks associated with Management Buy-outs(MBOs).
- Sources of finance for MBOs.
- The advantages and disadvantages of management buy-ins.
- The arguments for and against a quoted company going private.

INTRODUCTION

When an organisation decides on expansion the choice is between organic growth or acquisition. Organic growth is internal growth by expansion of the existing business (e.g. opening more outlets, major marketing/sales campaign, reduce prices to achieve additional sales etc.) or investment in new projects. The alternative is to acquire a competitor (thus reducing competition), or other companies in related or non-related lines of business. Acquisition achieves the objective more quickly and avoids the risk of start-up. However, it is generally more expensive than organic growth.

Merger – this is generally where two companies unite to form a single entity.

Acquisition/Takeover – generally where one company purchases a controlling interest in another company.

TYPES OF COMBINATIONS

Generally, the combinations can be categorised as follows:

Vertical Integration - combination of two firms in the same industry but at different levels - e.g. a production company acquires its supplier of raw materials.

Horizontal Integration - combination of two firms in the same industry and at the same level - e.g. the acquisition of a direct competitor.

Conglomerate Merger/Takeover - combination of two firms in unrelated/indirectly related industries - e.g. a tobacco company acquires an insurance company.

ARGUMENTS FOR MERGERS AND ACQUISITION (REASONS FOR MERGERS AND ACQUISITION)

There are many reasons why one company may wish to acquire another. The following list is not in any particular order as priorities may vary from one acquisition to another

Synergy => $2 + 2 = 5$ (benefits accrue due to increased earnings or reduction in costs e.g. reduced advertising & distribution costs; disposal of one H.O. etc.)

Economies of Scale - Fixed operating costs spread over larger production volume; equipment used more efficiently; bulk purchasing (production, marketing, administration, R & D, finance etc).

New Market - quick entry

Management Acquisition - a company with a weak management team acquires a company with a strong team.

Diversification - reduction of risk. This may not be beneficial to shareholders who already hold diversified portfolios. Can be beneficial if the acquired company is one in which the shareholder could not previously invest.

Increased Market Share & Market Power - gain some monopoly power which may increase profitability (e.g. price leadership). In some markets to operate effectively requires the achievement of a "critical mass" size. Beware of Monopolies legislation.

Bolster Asset Backing - a company with a high level of earnings relative to its assets may wish to improve the overall risk profile by acquiring a company with substantial assets.

Growth - growth through acquisition may be cheaper and quicker than internal expansion.

Taxation - a company with unused tax allowances may wish to combine with a company with large taxable profits. Similarly, a company with accumulated tax losses may be acquired so that the losses can be offset against the taxable profits of the acquiring company.

Reduction of Competition – consider Monopolies legislation and attitude of Competition Authority

Asset Stripping – company broken up and assets sold off.

Use of Surplus Cash – acquire “earnings enhancing” company.

Lower Costs Of Financing - improved credit-rating following reduced variability of returns may make it easier/cheaper to raise finance.

Improvement In Gearing – highly geared company links up with “cash-rich” company.

Purchase of Patents/Brands

Note: Evidence suggests that many acquisitions are financially unsuccessful. There is often some abnormal return for the shareholders of the target (premium paid for their shares) but very little for the bidding company shareholders. Also, acquisitions often experience difficulties in integrating the operations of the companies. Research by the London Business School indicates that 75% fail to reach their financial targets and 50% of acquiring companies fail to recoup the premium they pay above market value.

ARGUMENTS AGAINST MERGERS AND ACQUISITION - REASONS BEHIND FAILED MERGERS AND ACQUISITION

Mergers and acquisitions are extremely difficult. Expected synergy values may not be realized and therefore, the merger is considered a failure. Some of the reasons behind failed mergers are:

Poor strategic fit - The two companies have strategies and objectives that are too different and they conflict with one another.

Cultural and Social Differences - It has been said that most problems can be traced to “people problems.” If the two companies have wide differences in cultures, then synergy values can be very elusive.

Incomplete and Inadequate Due Diligence - Due diligence is the “watchdog” within the M & A Process. If you fail to let the watchdog do his job, you are in for some serious problems within the M & A Process.

Poorly Managed Integration - The integration of two companies requires a very high level of quality management. In the words of one CEO, “give me some people who know the drill.” Integration is often poorly managed with little planning and design. As a result, implementation

fails.

Paying too Much - In today's merger frenzy world, it is not unusual for the acquiring company to pay a premium for the Target Company. Premiums are paid based on expectations of synergies. However, if synergies are not realized, then the premium paid to acquire the target is never recouped.

Overly Optimistic - If the acquiring company is too optimistic in its projections about the Target Company, then bad decisions will be made within the M & A Process. An overly optimistic forecast or conclusion about a critical issue can lead to a failed merger.

IMPACT OF ACQUISITION

On Shareholders in Bidding Company

Approval may not be forthcoming if the shareholders regard the bid as unattractive because:

- » It might reduce EPS
- » The target company is in a risky business
- » It might reduce the net asset backing per share
- » It might dilute their control.

On Directors & Shareholders in Target Company

The Board and/or shareholders in the target company may regard the bid as unattractive because: They regard the terms of the offer as poor

THE OVERALL MERGER & ACQUISITION PROCESS

The Merger & Acquisition Process can be broken down into five phases

Phase 1 - Pre Acquisition Review:

The first step is to assess your own situation and determine if a merger and acquisition strategy should be implemented. If a company expects difficulty in the future when it comes to maintaining core competencies, market share, return on capital, or other key performance drivers, then a merger and acquisition (M & A) program may be necessary.

It is also useful to ascertain if the company is undervalued. If a company fails to protect its valuation, it may find itself the target of a merger. Therefore, the pre-acquisition phase will often include a valuation of the company - Are we undervalued? Would an M & A Program improve our valuations?

The primary focus within the Pre Acquisition Review is to determine if growth targets (such as 10% market growth over the next 3 years) can be achieved internally. If not, an M & A Team should be formed to establish a set of criteria whereby the company can grow through acquisition. A complete rough plan should be developed on how growth will occur through M & A, including responsibilities within the company, how information will be gathered, etc.

Phase 2 - Search & Screen Targets:

The second phase within the M & A Process is to search for possible takeover candidates. Target companies must fulfill a set of criteria so that the Target Company is a good strategic fit with the acquiring company. For example, the target's drivers of performance should compliment the acquiring company. Compatibility and fit should be assessed across a range of criteria - relative size, type of business, capital structure, organizational strengths, core competencies, market channels, etc.

It is worth noting that the search and screening process is performed in-house by the Acquiring Company. Reliance on outside investment firms is kept to a minimum since the preliminary stages of M & A must be highly guarded and independent.

Phase 3 - Investigate & Value the Target:

The third phase of M & A is to perform a more detail analysis of the target company. You want to confirm that the Target Company is truly a good fit with the acquiring company. This will require a more thorough review of operations, strategies, financials, and other aspects of the Target Company. This detail review is called “due diligence.” Specifically, Phase I Due Diligence is initiated once a target company has been selected. The main objective is to identify various synergy values that can be realized through an M & A of the Target Company. Investment Bankers now enter into the M & A process to assist with this evaluation.

A key part of due diligence is the valuation of the target company. In the preliminary phases of M & A, we will calculate a total value for the combined company. We have already calculated a value for our company (acquiring company). We now want to calculate a value for the target as well as all other costs associated with the M & A.

Phase 4 - Acquire through Negotiation:

Now that we have selected our target company, it’s time to start the process of negotiating a M & A. We need to develop a negotiation plan based on several key questions:

- How much resistance will we encounter from the Target Company?
- What are the benefits of the M & A for the Target Company?
- What will be our bidding strategy?
- How much do we offer in the first round of bidding?

The most common approach to acquiring another company is for both companies to reach agreement concerning the M & A; i.e. a negotiated merger will take place. This negotiated arrangement is sometimes called a “bear hug.” The negotiated merger or bear hug is the preferred approach to a M & A since having both sides agree to the deal will go a long way to making the M & A work. In cases where resistance is expected from the target, the acquiring firm will acquire a partial interest in the target; sometimes referred to as a “toehold position.” This toehold position puts pressure on the target to negotiate without sending the target into panic mode.

In cases where the target is expected to strongly fight a takeover attempt, the acquiring company will make a tender offer directly to the shareholders of the target, bypassing the target’s management. Tender offers are characterized by the following:

- The price offered is above the target’s prevailing market price.
- The offer applies to a substantial, if not all, outstanding shares of stock.
- The offer is open for a limited period of time.
- The offer is made to the public shareholders of the target.

A few important points worth noting:

- Generally, tender offers are more expensive than negotiated M & A’s due to the resistance of target management and the fact that the target is now “in play” and may attract other bidders.
- Partial offers as well as toehold positions are not as effective as a 100% acquisition of “any and all” outstanding shares. When an acquiring firm makes a 100% offer for the outstanding stock of the target, it is very difficult to turn this type of offer down.

Another important element when two companies merge is Phase II Due Diligence. As you may recall, Phase I Due Diligence started when we selected our target company. Once we start the negotiation process with the target company, a much more intense level of due diligence (Phase II) will begin. Both companies, assuming we have a negotiated merger, will launch a very detailed review to determine if the proposed merger will work. This requires a very detail review of the target company - financials, operations, corporate culture, strategic issues, etc.

Phase 5 - Post Merger Integration:

If all goes well, the two companies will announce an agreement to merge the two companies. The deal is finalized in a formal merger and acquisition agreement. This leads us to the fifth and final phase within the M & A Process, the integration of the two companies.

Every company is different - differences in culture, differences in information systems, differences in strategies, etc. As a result, the Post Merger Integration Phase is the most difficult phase within the M & A Process. Now all of a sudden we have to bring these two companies together and make the whole thing work. This requires extensive planning and design throughout the entire organization. The integration process can take place at three levels:

Full: All functional areas (operations, marketing, finance, human resources, etc.) will be merged into one new company. The new company will use the “best practices” between the two companies.

Moderate: Certain key functions or processes (such as production) will be merged together. Strategic decisions will be centralized within one company, but day to day operating decisions will remain autonomous.

Minimal: Only selected personnel will be merged together in order to reduce redundancies. Both strategic and operating decisions will remain decentralized and autonomous.

If post merger integration is successful, then we should generate synergy values. However, before we embark on a formal merger and acquisition program, perhaps we need to understand the realities of mergers and acquisitions.

The employees are strongly opposed to it.

The takeover has no obvious advantages

METHODS OF FINANCING MERGERS AND TAKEOVERS (PURCHASE CONSIDERATION)

There are a number of ways that the acquiring company can pay for the target. Briefly, these are:

- **Cash**
- **Share Exchange** – e.g. three shares in company A for every five shares in company B
- **Loan Stock** - e.g. RWF100k of 10% Loan Stock for forty shares in company B
- **Combination** – some cash plus some shares etc.
- **Deferred Expenditure** - Performance Related.

Before deciding on the method of consideration there are a number of factors to consider:

1. **Factors - Bidding Company & Shareholders**
 - » **Dilution in EPS** - may occur in certain circumstances when the consideration is equity (if the target company is bought on a higher P/E Ratio than the bidder).

- » **Cost** - may be less with loan stock as the interest is allowable for Corporation Tax. Also, dilution of EPS may be avoided.
- » **Gearing** - a highly geared company may find it difficult to issue additional loan stock.
- » **Control** - may be diluted if a large number of shares is issued. Cash causes less dilution of ownership.
- » **Cash Resources** - use of equity conserves cash resources and may be the only real alternative when the target company is large in relation to the bidding company. The issue of Loan Stock will also conserve liquidity but will increase gearing.
- » **Price** - if equity is offered the value of the bid is dependent upon the share price - fluctuations causing the attractiveness of the bid to alter. The cost of the bid is more precise when cash is the consideration. Where shares are offered the bidding company will be concerned that the market value of their shares should not fall before the target company's shareholders have accepted.

2. Factors - Shareholders in Target Company

- » Taxation - if cash is offered an immediate C.G.T./Income Tax liability arises. If paper (shares/stock etc.) is offered the tax liability is deferred.
- » Income - if paper is offered, the bidding company should generally ensure that the shareholders' income is at least maintained.
- » Future Investment - shareholders may prefer equity to maintain a continued interest in their company, albeit as part of a larger group, without incurring transaction costs of purchasing in the new group. Unless Loan Stock is issued as "convertibles" or with warrants attached the shareholders will not maintain an equity interest in the group.
- » Cash - if cash is offered the value is certain and the shareholder is free to invest elsewhere, without incurring transaction costs of selling shares.
- » Value - evidence suggests that the consideration is higher when equity rather than cash is used as consideration.
- » Risk - the receipt of fixed interest stock will change the risk of the shareholders' portfolios which they may not wish.

FINANCIAL TERMS OF EXCHANGE

When two companies are combined, a ratio of exchange occurs, denoting the relative weighting of the firms. The ratio of exchange can be considered in respect to earnings, market prices and the book values of the two companies involved.

a. Earnings

In evaluating possible acquisition, the acquiring firm must at least consider the effect the merger will have on the earnings per share of the surviving company. We can discuss this through an illustration:

Example 1 cash settlement

Company Atu is considering the acquisition by shares of Company Bote. The following information is also available.

	Company ATU	Company BOTE
Present earnings	frw 20,000,000	frw 5,000,000
Shares	5,000,000	2,000,000
Earnings per share	frw 4	frw 2.50
Price/earning ratio	16	12
Price of shares	frw 64	frw 30

Company Bote has agreed to an offer of frw 35 a share to be paid in Company Atu shares.

REQUIRED:

Consider the effect of the acquisition to the earnings per share.

SOLUTION

The exchange ratio = $35/64 = 0.546875$ shares of Company A's stock for each share of Company B's stock.

The total number of shares needed to acquire company Bote's share
 $= 0.546875 \times 2,000,000 = 1,093,750$ shares of Company Atu

The earnings per share therefore can be computed as follow:

$$\begin{aligned}
 \text{EPS combined Companies} &= \text{Earnings of Atu} + \text{Earnings of BOTE} / \text{Total No. of shares} \\
 &= \frac{20,000,000 + 5,000,000}{5,000,000 + 1,093,750} \\
 &= \frac{25,000,000}{6,093,750} \\
 &= \text{frw } 4.10
 \end{aligned}$$

Therefore the earnings for share of the combined firm is frw 4.10.

There is therefore an immediate improvement in earnings per share for Company Atu as a result of add from RWF 4 to RWF 4.1.

However, Company Bote's former shareholders experience a reduction in earnings per share. These EPS will be given by

$$0.546875 \times 4.10 = \text{frw } 2.24 \text{ from frw } 2.50$$

b. Future Earnings

If the decision to acquire another company were based solely on the initial impact on earnings per share, an initial dilution in earnings per share would stop any company from merging with another. However, due to synergetic effects discussed earlier, the merger may result in increased future earnings and therefore a high EPS in future.

c. Market Value

The major emphasis in the bargaining process is on the ratio of exchange of market price per share. The market price per share reflects the earnings potential of the company, dividends, business risk, capital structure, asset values and other factors that bear upon valuation. The ratio of exchange of market price is given by the following formula:

$$\text{Market price ratio} = \frac{\text{Market price per share of acquiring company X} \times \text{No. of shares offered of exchange}}{\text{Market price per share of the acquired company}}$$

Considering the previous example

$$\text{Market price ratio} = \frac{64 \times 0.546875}{30} = 1.167.$$

Therefore, Company Bote receive more than its market price per share. It is common for the company being acquired to receive a little more than the market price per share. Shareholders of the acquired company would therefore benefit from the acquisition because their shares were originally worth frw 30 but they receive frw 35.

Example 2 share Exchange

The following information relates to Company X and Y.

	Company X	Company Y
Present earnings	frw 20,000,000	frw 6,000,000
No. of shares	6,000,000,000	2,000,000
Earnings per share	frw 3.33	frw3.00
Market price per share	frw 60.00	frw 30.00
Price/earning ratio	18	10

Company X offers 0.667 shares for each share of Company Y to acquire the company.

$$\text{The market price exchange ratio} = \frac{60 \times 0.667}{30} = 1.33$$

Shareholders of Y are being offered a share with a market value of frw 40 for each share they own (i.e. 1.333 X 30). They benefit from acquisition with respect to market price because their shares were formerly worth frw 30. We can consider the combined effect.

	Combined Effect
Total earnings	frw 26,000,000
No. of shares	7,333,333

Earnings per share	frw 3.55
Price/earning ratio	18
Market price per share	frw 63.90

Note:

Both companies tend to benefit due to the merger. This can be seen by the increased market price per share for both company. This is due to the assumption that the price earnings ratio of the combined company will remain 18. If this is the case, companies with high price/earning ratios can be able to acquire companies with lower price/earnings ratio to obtain an immediate increase in earnings per share (even if they pay a premium for the share.)

d. Book value

Book value per share is not a useful basis for valuation in most mergers. However, it may be important if the purpose of an acquisition is to obtain the liquidity of another company. The ratio of exchange of book value per share of the two companies are calculated in the same manner as is the ratio for market values computed above. The application of this ratio in bargaining is usually restricted to situations in which a company is acquired for its liquidity and asset values rather than for its earning power.

VALUING THE TARGET FIRM

To determine the value of the target firm, two key items are needed:

- a. A set of proforma financial statements which develop the incremental cashflows expected from the merger, and
- b. A discount rate or cost of capital, to apply to these projected cashflows.

CASH FLOW STATEMENTS

In a pure financial merger, the post-merger cash flows are simply the sum of the expected cashflows of the two firms if they were to continue operating independently. If the two firm’s operations are to be integrated however, forecasting future cashflows is a more complex task.

The following illustration can be used to determine the value of target company.

Example

XYZ Ltd. is considered acquiring ABC Ltd. The following information relates to ABC Ltd. for the next five years. The projected financial data are for the post-merger period. The corporate tax rate is 40% for both companies.

Amounts are in Frw `000'					
	2014	2015	2016	2017	2018
Net sales	1,050	1,260	1,510	1,740	1,910
Cost of sales	735	882	1,057	1,218	1,337
Selling & admn. expenses	100	120	130	150	160
Interest expenses	40	50	70	90	110

Other information

- a. After the fifth year the cashflows available to XYZ from ABC is expected to grow by 10% per annum in perpetuity.
- b. ABC will retain frw 40,000 for internal expansion every year.
- c. The cost of capital can be assumed to be 18%.

REQUIRED:

- i. Estimate the annual cash flows.
- ii. Determine the maximum amount XYZ would be willing to acquire ABC at.

SOLUTION:

XYZ LTD

i. PROJECTED POST-MERGER CASHFLOWS FOR ABC LTD.

Amounts are in Frw `000'					
	2014	2015	2016	2017	2018
Net sales	1,050	1,260	1,510	1,740	1,910
Less cost of sales	735 315	882 378	1,057 453	1,218 522	1,337 573
Less selling and admn. costs	100	120	130	150	160
EBIT	215	258	323	372	413
Less interest	40	50	70	90	110
EBT	175	208	253	282	303
Less tax 40%	70	83.2	101.2	112.8	121.2
Net income	105	124.8	151.8	169.2	181.8
Less Retention by ABC	40	40.0	40.0	40.0	40.0
Cash available to XYZ	65	84.8	91.8	129.2	141.8
Add terminal value		.	.	.	1,949.75
Net cash flows	65	84.8	91.8	129.2	2,091.55

Computation of terminal value

$$TV = \frac{141.8 (1 + 0.1)}{0.18 - 0.1} = \text{frw } 1,949.75$$

- ii. Assuming the discount rate of 18%, the maximum price of ABC can be determined by computing the PV of the projected cashflows.

Year	Cashflow	PVIF18%	PV
1	65	0.847	55.055
2	84.8	0.718	60.886
3	91.8	0.607	55.723
4	129.2	0.516	66.667
5	2,091.55	0.437	914.24
			1,152.57

The maximum price will therefore be frw 1,152,570

DEFENCE TACTICS

Where an unwelcome or hostile bid is received a number of steps can be taken to :

- Reject the bid on the basis that the terms are not good enough.
- Issue a forecast of attractive future profits and dividends to persuade shareholders to hold onto their shares
- Revalue any undervalued assets.
- Attempt to have the offer referred under Monopolies legislation - at minimum this will delay the bid.
- Mount an effective advertising and P.R. campaign.
- Find a “White Knight” that is more acceptable – where a company finds a more suitable acquirer and deals with them rather than the original bidder.
- Make a counter bid - 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 offeror.
- Appeal to the loyalty of the shareholders.
- Encourage employees to express opposition to the merger
- Persuade institutions to buy shares.

Note: In fighting the bid, the company may be restricted by a Rwandan Stock Exchange (RSE) Code on Takeovers and Mergers.

DUE DILIGENCE

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:

- 1. 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.
- 2. Forecasts** – may be prepared on a high-level basis with oversimplified assumptions. The assumptions may be difficult to reconcile with historical performance.
- 3. 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.
- 4. 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.
- 5. 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.
- 6. 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.
- 7. 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.
- 8. Tax Structure** – effective tax planning is a key component in delivering value as quickly as possible.

MANAGEMENT BUYOUT (MBO)

This is the purchase of all or part of a business by one or more of its executive management. The main factors to consider are the riskiness and the problems which may arise when the new company becomes independent (e.g. loss of H.O. support; customers may go elsewhere if they regard the firm as too risky).

Management put up some of the capital themselves and obtain the remainder from other sources (e.g. Venture Capital organisations). Equity from external investors will often be in a form other than ordinary shares e.g. convertible redeemable preference shares.

They will also require board representation and options on future share issues. Management will to keep effective control by ceding <50% of voting rights to external equity holders. External investors will need some potential exit route e.g. future listing, refinancing, sale of entire

business to another company or the management team.

Originally used to dispose of poor performing subsidiaries at a discount but nowadays, mostly used to dispose of successful operations which do not fit the “core” business.

An MBO may also arise where a company or subsidiary is threatened with closure.

There are usually three parties to an MBO:

- The management team who must possess the necessary skills and ability.
- The directors/owners who are willing to dispose of the entity.
- The financial backers (possibly more than one) who will usually require an equity stake. They will review strategic business plans & cash flow projections and assess the personal commitment and quality of the management team.

The main reasons for an MBO are:

- The subsidiary no longer fits the group’s overall strategy.
- The parent’s desire to sell a loss-maker (MBO possibly cheaper than liquidation).
- The parent needs cash urgently.
- The subsidiary is too small for the level of time involved in managing it.
- Management is unable to devote the time/capital necessary to develop the subsidiary.

Rather than run it down or sell it to a competitor it may arrange an MBO (possibly on generous terms) in order to retain trading contacts with the subsidiary in the future.

- A new parent wishes to sell unwanted parts, following acquisition.
- The best offer may come from the management team.
- There will generally be better co-operation in an MBO.

The main advantages of an MBO are:

- Although high-risk, the potential for rewards is high
- Less risky than starting from scratch
- MBO firms tend to operate at a higher level of efficiency

How to Finance a Management Buyout

A management buyout (MBO) is a type of business acquisition in which the managers of a company purchase the business from the current owners or parent company. Management buyouts can be structured in a number of ways such as a conventional purchase or a leveraged buyout model.

Leveraged buyouts are often used because few management teams have the financial resources to buy the target company outright. They need external financing to facilitate the purchase, and are often interested in leveraging some of the assets of the target company.

Funding the purchase

The type of funding that is available to purchase the company is based on the size, brand recognition, assets, and cash flow of the company. Larger transactions, such as when a corporation is selling off a division, may be able to use a number of products such as bonds, senior and mezzanine loans, private equity injections, and so on.

Smaller companies or turnaround situations usually have fewer options than their larger or better-

established counterparts. However, it is possible to finance the buyout of a small company if the management team is willing to use alternative financing. Such options include:

1. Equity from new management team: Perhaps the most important type of financing comes from the managers who are making the purchase. The management team that is organizing the buyout must contribute some of their own cash and assets to purchase the target company. It is not unusual for managers to raise the funds by selling off certain assets (e.g., stocks) or getting a second mortgage on their home.

The management team's financial contribution is very important. Funding companies consider it a gauge of how committed the team is to the transaction.

2. Seller financing: One of the most common options to finance a management buyout is for the seller to provide financing (also known as deferred consideration). Usually, the seller creates a note that is amortized over a period of time. This option is an advantage for the management buyout team because sellers are usually more willing than banks to provide the funding.

Additionally, as a condition of financing the transaction, some lenders may insist that a portion of the sale be financed by the seller. This condition provides a measure of confidence to the lenders because it shows that the seller believes that the business will remain a viable concern once the sale is completed.

3. Bank loan: Although often hard to get, a bank loan is an effective way to finance a management buyout. The obvious benefit is that bank loans are cheaper than most other options.

4. Assumption of debt: Part of the acquisition cost can be paid by assuming some or all of the liabilities of the target company.

5. Private equity: In some cases, the management team may be able to secure financing through a private equity firm. However, private equity firms prefer scale and tend to invest in larger transactions. Their investment may consist of buying shares and/or providing additional funding such as loans and asset-based financing.

Keep in mind that the private equity firm may have objectives that differ from those of the management team. Private equity firms usually want a liquidity event after 3 to 6 years. They look to exit the transaction in that time frame, allowing them to realize their gains. Consequently, their funding programs often include stipulations of how the company is to be run and what objectives have to be met.

Remember that the private equity firm is looking to maximize its short-term rate of return – often at the expense of future opportunities. Therefore, management teams must be careful to align themselves with the right funding partners.

Funding operations

Once the management team has acquired the business, they will likely need financing to operate the company. Six options that are commonly used to finance operations are:

1. Bank lines of credit: The most popular product to finance operations is a regular commercial line of credit. These lines offer great flexibility at a very competitive cost. Unfortunately, getting a line of credit can be difficult, especially if you had to encumber a lot of assets to finance the management buyout. Also, lines of credit have covenants that must be met to remain in compliance with the facility. This compliance can be difficult in the initial stages of operations. .

2. Accounts receivable financing: Accounts receivable financing can help a company that has cash flow problems due to slow-paying accounts receivable. This solution can help finance your MBO immediately after the purchase, when cash is tight. It helps provide the working capital to make payroll and pay suppliers. Receivables financing can also help later on, once the company starts growing.

3. Inventory financing: Another way to get funds for your company is to finance your current inventory. While inventory financing can free up funds, it comes at a relatively high cost. This solution is more expensive than other alternatives and best used as a last resort – or in combination with other solutions.

4. Purchase order financing: One of the challenges of getting a large order is that the company may not have enough working capital to cover supplier expenses. Purchase order financing can help you pay suppliers and deliver large orders. However, purchase order financing can only help companies that re-sell third-party goods. They must use a third-party manufacturing facility and must have a minimum gross profit margin of 20%.

5. Asset-based loans: Asset-based loans (ABLs) are umbrella facilities that combine accounts receivable financing, inventory financing, and equipment financing. In terms of price and flexibility, ABLs stand somewhere between a line of credit and a conventional accounts receivable financing line. Generally, ABLs have fewer covenants than conventional lines of credit.

6. Vendor financing: One form of financing that should not be overlooked is your own vendors. If the new company is well funded, vendors may be able to extend more generous terms than they did to the seller's original company. Changes in vendor payment terms, such as going from net-30 to net-45 (or higher), can have a quick and positive effect on your cash flow. Also, vendors don't charge interest for offering terms, which makes it very cost effective.

Management Buy-In (MBI)

This is a variation on the MBO theme and occurs when a team of outside managers mounts a takeover bid and then assumes the executive responsibilities for running the business themselves.

Advantages of MBI

- The buyers, in many cases, get undervalued companies in MBI. The value of which can be unlocked and sold at much higher prices later.
- If the current owners of a company are not able to manage the company, MBI is a win-win situation for both buyers as well as the sellers.
- The new management team might have better knowledge, contacts, experience, etc. It might actually help the company grow and maximize the shareholder's wealth.
- Current employees may get motivated because of new changes in the management.

Disadvantages of MBI

- The new management team may also fail to bring the required growth in the company.
- There are chances that even after changing the management, companies may not be successful.

- The existing employees of the company may feel demotivated.
- The buyer may end up paying way more than required if they estimate the value of the company incorrectly.

DEMERGERS

A demerger results in the splitting up of a firm into smaller legally separate firms.

A demerger may arise:

- Where one part of a firm is of an unusual level of risk.
- Where one part of a firm has unusual financing requirements.
- Where a firm has grown too large for its management structure.

Among the financial advantages are:

- Ensures the continued survival and viability of the profitable parts of a firm whose existence could otherwise be threatened by a loss-making division.
- Enables management to have a direct investment in their activities and to observe their performance as evidenced by the share price behaviour for their part of the firm.
- May enable the separate and smaller firms to take advantage of lower tax rates, government subsidies etc. applicable only to smaller firms.
- May enable risky but worthwhile activities to be separated from the rest of the less risky firm. This will enable shareholders to choose the level of risk of their investments.

Among the financial disadvantages are:

- Any economies of scale may be lost.
- Total overheads may be greater.
- Total borrowing capacity may be reduced. Before demerger the portfolio effect of many activities will help to smooth cash flows and, therefore, will assist in boosting borrowing capacity.

MEZZANINE FINANCE

This is a layer of funding between senior debt and equity.

It ranks behind senior debt and usually has little or no asset backing.

To compensate for the higher risk it normally carries an enhanced coupon rate together with some participation in the equity of the business.

In an MBO this allows the percentage of true equity in the total package to be smaller and control of the company can be left in the hands of the management group.

The major characteristics are:

- Floating interest rate, normally higher than senior debt.
- Equity participation, either by way of warrants or initial subscription, to give a total return

somewhere below straight equity but above straight debt.

- Repayment terms of eight to ten years or more.
- Security on the basis of second fixed and floating charges behind similar charges in favour of senior lenders.

POST-ACQUISITION ISSUES

When one company successfully acquires another company it is very important to consider the issues which may arise following the acquisition. Amongst these are:

- Organisation Structure
- Change Management
- Key Employees
- Major Customers
- Cultural Issues
- Technology
- Control

ETHICAL CONSIDERATIONS

When a company receives a bid from another company it is important that the board of the target company take account of any ethical considerations. Examples might include:

- Any Issues which might be Illegal
- Any Issues which may Distort the Markets (price-manipulation)
- Insider Dealing
- Use of Price-Sensitive Information
- Terms of Confidentiality Agreements
- Any Incentives Offered to Ensure the Bid is Accepted (e.g. seats on the board of the bidding company; enhanced salaries, bonuses)
- Impact on Shareholders and Other Stakeholders
- Impact on Employees

Study Unit 3

CORPORATE FAILURE

Contents

- The symptoms and causes of corporate failure.
- Avoidance of corporate failure.
- The nature, scope and elements of working capital and the importance of effective working capital management to corporate survival.
- Overtrading- symptoms, causes and remedies.

Financial Distress

Financial distress is the condition where a firm makes decision under pressure to satisfy its legal obligations to creditors. Financial distress is a condition in which a company or individual cannot generate revenue because it is unable to meet or cannot pay its financial obligations. This could be due to high fixed cost, illiquid assets or revenues sensitive to economic downturns

Not all firms in financial distress ultimately enter into the legal status of bankruptcy.

Extreme financial distress may very well lead to bankruptcy.

When more debt financing is used, fixed legal obligations increase and the ability of the firm to satisfy these increasing fixed payments decreases – therefore as more debt financing is used the probability of financial distress and bankruptcy increases.

Another factor to consider in assessing the probability of distress is the business risk – uncertainty associated with earnings from operations

Corporate Failure

The term corporate failure entails discontinuation of company's operations leading to inability to reap sufficient profit or revenue to pay the business expenses. It happens due to poor management, incompetence, and bad marketing strategies.

Symptoms of Corporate failure

- Failure to focus on a specific market because of poor research
- Failure to control cash by carrying too much of stock, prompt payment of suppliers and allowing customers to take long to pay
- Failure to control costs
- Failure to adapt your products to meet customer needs
- Failure to carry out decent market research
- Failure to build a team which is compatible and has the skills to finance, produce, sell and market
- Failure to pay taxes
- Failure of business need to grow

Causes of Corporate Failure

- Inefficient utilisation of economic resources at the disposal of the management characterized by:
 - ✓ Underutilization of assets
 - ✓ Over-extension of credit or long term periods of collection of accounts from customers
 - ✓ Excessive stock piling of inventories
- Inefficient financial management leading to poor portfolio management marked by:
 - ✓ Overinvestment in fixed assets
 - ✓ Excessive borrowing

- ✓ Inability of the business to pay its long term debts as they fall due without having to sell some assets
- ✓ Deficiency in working capital
- Inefficient human resources management leading to under-utilization of human resource at the disposal of the business and personality conflicts in management
- Inefficient marketing, selling and distribution strategies leading to loss of markets to competitors or yielding to pressure of competitors.
- Severe austerity of government economic, taxation and regulatory policies leading to unavailability of raw material and contraction of market outlets.
- Continued operating losses or inadequacy of the profits of the business to cover the cost of sales and operating expenses and leave some surplus to the owners/shareholders.
- Extraneous factors such as fire, world economic melt-down, burglaries, theft, sophisticated internet fraud etc

Avoiding Failure

- Restructuring
- Selling off unproductive assets
- Discarding projects which are no longer financially viable
- Implementing cost reduction program e.g layoffs
- You must have a strategy – to revive the business
- You must have controls – effective working controls
- The board must participate – active
- You must avoid one man rule
- There must be management in depth
- Keep informed of and react of change
- The customer is the king – prioritize the customers
- Do not manipulate your accounts
- Avoid misuse of Assets - Do not misuse computers
- Organize to meet employees needs

Predicting corporate failure

Corporate failure models can be broadly divided into two groups: quantitative models, which are based largely on published financial information; and qualitative models, which are based on an internal assessment of the company concerned. Both types attempt to identify characteristics, whether financial or non-financial, which can then be used to distinguish between surviving and failing companies

1. Quantitative models

Altman Z-Score Bankruptcy Model

- The Z-score formula for predicting bankruptcy was published in 1968 by [Edward I. Altman](#), who was, at the time, an Assistant Professor of Finance at [New York University](#).
- The formula may be used to predict the probability that a firm will go into bankruptcy within two years.
- Z-scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies in academic studies.
- The Z-score uses multiple corporate income and balance sheet values to measure the financial health of a company.

The Altman formula for prediction of bankruptcy is given as follows:

$$Z \text{ score} = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1X5$$

X1, X2, X3, X4 and X5 are ratios as indicated below:

Where: X1 = Working capital/Total assets

X2 = Retained earnings/Total assets

X3 = Earnings before interest and tax/Total assets

X4 = Market value of Equity/book value of Liabilities

X5 = Sales/Total assets

In this model, a Z-Score of 2.7 or more indicates non-failure and a Z-Score of 1.8 or less indicates failure.

Example

Two companies have the following financial characteristics:

	Wendo Ltd	Chaka Ltd
	Frw '000'	Frw '000'
Working capital	10500	-1600
Total assets	50000	21000
Total liabilities	22000	13000
Equity value (market)	38000	5100
Retained earnings	19000	3000
Sales	86000	23000
Earnings before interest & tax	12000	1300

Required:

Using Altman model for predicting bankruptcy , determine the Z score index for each company explain on likelihood of failure

2. Qualitative models

This category of model rests on the premise that the use of financial measures as sole indicators of organisational performance is limited. For this reason, qualitative models are based on non-accounting or qualitative variables. One of the most notable of these is the A score model attributed to Argenti (1976), which suggests that the failure process follows a predictable sequence:

Defects



Mistakes made



Symptoms of failure

Defects can be divided into management weaknesses and accounting deficiencies as follows:

Management weaknesses:

- autocratic chief executive (8)
- failure to separate role of chairman and chief executive (4)
- passive board of directors (2)
- lack of balance of skills in management team – financial, legal, marketing, etc (4)
- weak finance director (2)
- lack of ‘management in depth’ (1)
- poor response to change (15).

Accounting deficiencies:

- no budgetary control (3)
- no cash flow plans (3)
- no costing system (3).

Each weakness/deficiency is given a mark (as shown) or given zero if the problem is not present. The total mark for defects is 45, and Argenti suggests that a mark of 10 or less is satisfactory.

If a company’s management is weak, then Argenti suggests that it will inevitably make mistakes which may not become evident in the form of symptoms for a long period of time. The failure sequence is assumed to take many years, possibly five or more. The three main mistakes likely to occur (and attached scores) are:

- i. high gearing – a company allows gearing to rise to such a level that one unfortunate event can have disastrous consequences (15)

- ii. overtrading – this occurs when a company expands faster than its financing is capable of supporting. The capital base can become too small and unbalanced (15)
- iii. the big project – any external/internal project, the failure of which would bring the company down (15).

The suggested pass mark for mistakes is a maximum of 15.

The final stage of the process occurs when the symptoms of failure become visible. Argenti classifies such symptoms of failure using the following categories:

- » Financial signs – in the A score context, these appear only towards the end of the failure process, in the last two years (4).
- » Creative accounting – optimistic statements are made to the public and figures are altered (inventory valued higher, depreciation lower, etc). Because of this, the outsider may not recognise any change, and failure, when it arrives, is therefore very rapid (4).
- » Non-financial signs – various signs include frozen management salaries, delayed capital expenditure, falling market share, rising staff turnover (3).

Terminal signs – at the end of the failure process, the financial and non-financial signs become so obvious that even the casual observer recognises them (1).

The overall pass mark is 25. Companies scoring above this show many of the signs preceding failure and should therefore cause concern. Even if the score is less than 25, the sub-score can still be of interest. If, for example, a score over 10 is recorded in the defects section, this may be a cause for concern, or a high score in the mistakes section may suggest an incapable management. Usually, companies not at risk have fairly low scores (0–18 being common), whereas those at risk usually score well above 25 (often 35–70).

The A score has therefore attempted to quantify the causes and symptoms associated with failure. Its predictive value has not been adequately tested, but a misclassification rate of 5% has been suggested. While Argenti's model is perhaps the most notable, a large number of non-accounting or qualitative variables have been included in other studies. These include:

- company-specific variables – such as management experience, customer concentration, dependence on one or a few suppliers, level of diversification, qualified audit opinions, etc
- general characteristics – such as industry type
- factors in the external environment – such as the macroeconomic situation, including interest rates, the business cycle, and the availability of credit

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

Study Unit 4

SOURCES OF FINANCE

Contents

- Short term funding.
- Equity and debt financing. (the attractions and risks associated with each).
- Optimizing the gearing structure of an organization.
- The optimum term structure , taking into account strategic plans.
- Dividend policy-key considerations. Including theories of Mogdalini & Miller and Myers Pecking Order Hypothesis.
- Advise on dividend policy.
- Investment from overseas.
- Weighted Average Cost of Capital(WACC)-calculate and discuss its uses and limitations

Short -Term Sources of Finance

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.

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:

1. **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.

2. **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.
3. **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

1. It is an alternative source of finance if other sources are fully utilised, particularly for a company with a high level of debtors.
2. It is especially useful for growth companies where debtors are rising rapidly and funds available from the factor will rise in tandem.
3. Security for the finance is the company's debtors, leaving other assets free for alternative forms of debt finance.
4. 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.
5. Bad debts will be reduced or guaranteed by credit insurance.
6. Due to the greater guarantee of cash flow the company will have a better opportunity for taking up cash discounts from suppliers.
7. 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.
8. The company replaces a great many debtors with one - the factor - who is a prompt payer.

Disadvantages of Factoring

1. It may be more expensive than other sources.
2. 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.
3. The factor may be “pushy” when collecting debts. This may lead to ill-feeling by customers.
4. 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.

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.
- b) 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.
- c) 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

1. Right to vote
 - a. elect BOD
 - b. Sales/purchase of assets

2. Influence decisions:

- a) Right to residual assets claim
- b) Right to amend company's by-laws
- c) Right to appoint another auditor
- d) Right to approve merger acquisition
- e) 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

i) 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.

ii) Capital Reserves

1. 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).
2. Through revaluation of the company's assets. This leads to a fictitious entry which is of the nature of a capital reserve.
3. 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%)	<u>20</u>	<u>20</u>	<u>20</u>
	80	0	280
Corporation Tax (20%)	<u>16</u>	<u>0</u>	<u>56</u>
Profits After Tax	64	0	224
(ii) Preference Dividend	<u>10</u>	<u>0</u>	<u>10</u>
(iii) Available for Equity	<u>54</u>	<u>0</u>	<u>214</u>

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.

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's option 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 coupon.
- 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 option.

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.

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.

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.

ADVANTAGES OF LEASING

1. The lessee's **capital is not tied up** in fixed assets, so a cash flow advantage accrues.
2. **Liquidity** is improved as no down-payment is required.
3. 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.
4. The whole of the rental payment is **tax deductible**.
5. **Security** is usually the asset concerned. Other assets are free for other forms of borrowing.
6. Traditional forms of borrowing often impose **restrictive covenants**.
7. 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.

CASE STUDY

Balderton Capital Management, with \$19bn. in assets under management is one of Europe’s largest. In March 2008 it made more than nine times its initial investment when it sold a

15.7% stake in Bebo to Time Warner for \$140m. It had made the investment less than two years earlier.

The following is from an interview with Barry Moloney, MD Balderton Capital Management

29.11.2009 The Sunday Times, England

Balderton sold a stake in MySQL, a software company, to Sun Microsystems for a hefty multiple and then made ten times its original stake when Cisco Systems bought Scansafe, an online security business. Yoox, an online fashion retailer and another Balderton investment, will be the first IPO on the Milan bourse for 18 months. Next year Balderton could yield one of its biggest ever paydays when the online betting exchange Betfair debuts on London’s Stock Market.

Balderton’s model is “labour intensive” investing in early-stage companies with a view to big returns. The goal for every investment is nine or ten times return. Of ten investments we would expect three or four to lose money and three or four to return twice or three times our money. Then we would expect two of the ten to make a return of eight, nine or ten times. It’s not a fool-proof formula, however. In the past two years Balderton had two spectacular blowouts Payzone and Setanta Sports. Payzone is still a live investment but the company is so burdened with debt that equity holders are likely to be wiped out in an upcoming restructuring. A \$75m - \$80m. loss at Setanta Sports is balanced by an earlier \$50m. gain that Balderton made from NASN, the sports network that Setanta sold to ESPN. The risk did not pay off but that’s par for the Venture Capital course – if you are not prepared to take risk, you shouldn’t be in the game.

Balderton has 67 investments, many of them in the “new economy” – wonga.com, a loans company; Bling Nation, a mobile payments company; figleaves.com, which sells lingerie and LoveFilm, a movie rentals business. It has backed a disproportionately high number of Irish companies, with almost a quarter of its total funds (\$450m) invested in them.

Optimal capital structure - Optimizing the gearing structure of an organization.

Is it possible to increase shareholder wealth by changing the capital structure?

The first question to address is what is meant by capital structure. The capital structure of a company refers to the mixture of equity and debt finance used by the company to finance its assets. Some companies could be all-equity-financed and have no debt at all, whilst others could have low levels of equity and high levels of debt. The decision on what mixture of equity and debt capital to have is called the financing decision.

The financing decision has a direct effect on the weighted average cost of capital (WACC). The WACC is the simple weighted average of the cost of equity and the cost of debt. The weightings are in proportion to the market values of equity and debt; therefore, as the proportions of equity and debt vary, so will the WACC. Therefore the first major point to understand is that, as a company changes its capital structure (ie varies the mixture of equity and debt finance), it will

automatically result in a change in its WACC.

However, before we get into the detail of capital structure theory, you may be thinking how the financing decision (ie altering the capital structure) has anything to do with the overall corporate objective of maximising shareholder wealth. Given the premise that wealth is the present value of future cash flows discounted at the investors' required return, the market value of a company is equal to the present value of its future cash flows discounted by its WACC.

Market value of a company = Future cash flows / WACC

It is essential to note that the lower the WACC, the higher the market value of the company – as you can see from the following simple example; when the WACC is 15%, the market value of the company is 667; and when the WACC falls to 10%, the market value of the company increases to 1,000.

Market value of a company

$$100 / 0.15 = \mathbf{667}$$

$$100 / 0.10 = \mathbf{1,000}$$

Hence, if we can change the capital structure to lower the WACC, we can then increase the market value of the company and thus increase shareholder wealth.

Therefore, the search for the optimal capital structure becomes the search for the lowest WACC, because when the WACC is minimised, the value of the company/shareholder wealth is maximised. Therefore, it is the duty of all finance managers to find the optimal capital structure that will result in the lowest WACC.

What mixture of equity and debt will result in the lowest WACC?

As the WACC is a simple average between the cost of equity and the cost of debt, one's instinctive response is to ask which of the two components is the cheaper, and then to have more of the cheap one and less of expensive one, to reduce the average of the two.

Well, the answer is that cost of debt is cheaper than cost of equity. As debt is less risky than equity, the required return needed to compensate the debt investors is less than the required return needed to compensate the equity investors. Debt is less risky than equity, as the payment of interest is often a fixed amount and compulsory in nature, and it is paid in priority to the payment of dividends, which are in fact discretionary in nature. Another reason why debt is less risky than equity is in the event of a liquidation, debt holders would receive their capital repayment before shareholders as they are higher in the creditor hierarchy (the order in which creditors get repaid), as shareholders are paid out last.

Debt is also cheaper than equity from a company's perspective is because of the different corporate tax treatment of interest and dividends. In the profit and loss account, interest is subtracted before the tax is calculated; thus, companies get tax relief on interest. However, dividends are subtracted after the tax is calculated; therefore, companies do not get any tax relief on dividends. Thus, if interest payments are \$10m and the tax rate is 30%, the cost to the company is \$7m. The fact that interest is tax-deductible is a tremendous advantage.

Let us return to the question of what mixture of equity and debt will result in the lowest WACC. The instinctive and obvious response is to gear up by replacing some of the more expensive equity with the cheaper debt to reduce the average, the WACC. However, issuing more debt (ie increasing gearing), means that more interest is paid out of profits before shareholders can get paid their dividends. The increased interest payment increases the volatility of dividend payments

to shareholders, because if the company has a poor year, the increased interest payments must still be paid, which may have an effect the company's ability to pay dividends. This increase in the volatility of dividend payment to shareholders is also called an increase in the financial risk to shareholders. If the financial risk to shareholders increases, they will require a greater return to compensate them for this increased risk, thus the cost of equity will increase and this will lead to an increase in the WACC.

In summary, when trying to find the lowest WACC, you:

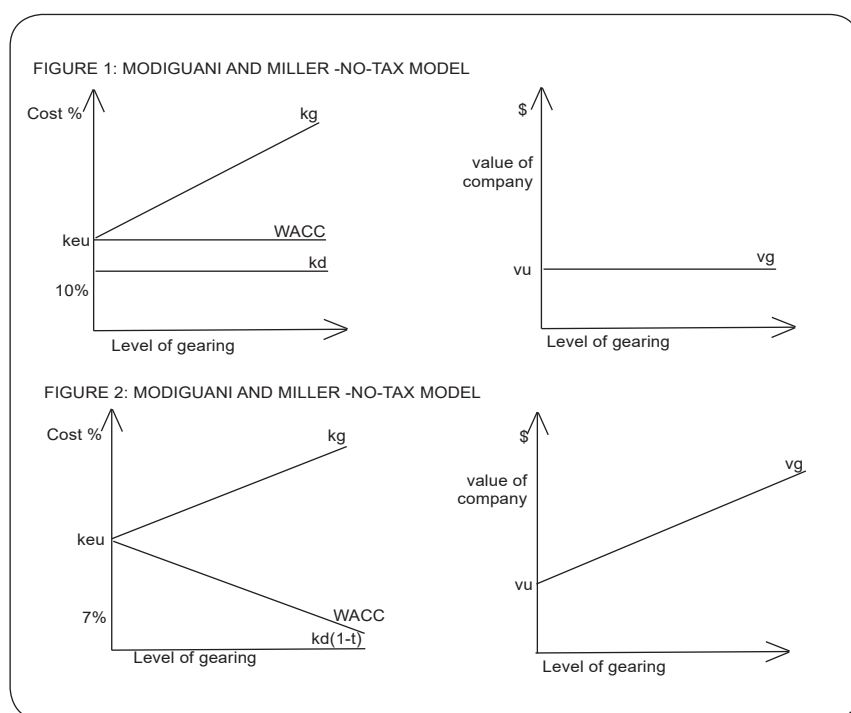
issue more debt to replace expensive equity; this reduces the WACC, but more debt also increases the WACC as:

- gearing
- financial risk
- beta equity
- k_{eg} WACC.

Remember that k_{eg} is a function of beta equity which includes both business and financial risk, so as financial risk increases, beta equity increases, k_{eg} increases and WACC increases.

The key question is which has the greater effect, the reduction in the WACC caused by having a greater amount of cheaper debt or the increase in the WACC caused by the increase in the financial risk. To answer this we have to turn to the various theories that have developed over time in relation to this topic.

1. M + M (No Tax): Cheaper Debt = Increase in Financial Risk / k_{eg}
2. M + M (With Tax): Cheaper Debt > Increase in Financial Risk / k_{eg}
3. Traditional Theory: The WACC is U shaped, ie there is an optimum gearing ratio
4. The Pecking Order: No theorised process; simply the line of least resistance first internally generated funds, then debt and finally new issue of equity



Modigliani and Miller's no-tax model

In 1958, Modigliani and Miller stated that, assuming a perfect capital market and ignoring taxation, the WACC remains constant at all levels of gearing. As a company gears up, the decrease in the WACC caused by having a greater amount of cheaper debt is exactly offset by the increase in the WACC caused by the increase in the cost of equity due to financial risk. The WACC remains constant at all levels of gearing thus the market value of the company is also constant. Therefore, a company cannot reduce its WACC by altering its gearing (Figure 1).

The cost of equity is directly linked to the level of gearing. As gearing increases, the financial risk to shareholders increases, therefore K_e increases. Summary: Benefits of cheaper debt = Increase in K_e due to increasing financial risk. The WACC, the total value of the company and shareholder wealth are constant and unaffected by gearing levels. No optimal capital structure exists.

Modigliani and Miller's with-tax model

In 1963, when Modigliani and Miller admitted corporate tax into their analysis, their conclusion altered dramatically. As debt became even cheaper (due to the tax relief on interest payments), cost of debt falls significantly from K_d to $K_d(1-t)$. Thus, the decrease in the WACC (due to the even cheaper debt) is now greater than the increase in the WACC (due to the increase in the financial risk/ K_e). Thus, WACC falls as gearing increases. Therefore, if a company wishes to reduce its WACC, it should borrow as much as possible (Figure 2).

Summary: Benefits of cheaper debt > Increase in K_e due to increasing financial risk.

Companies should therefore borrow as much as possible. Optimal capital structure is 99.99% debt finance.

Market imperfections

There is clearly a problem with Modigliani and Miller's with-tax model, because companies' capital structures are not almost entirely made up of debt. Companies are discouraged from following this recommended approach because of the existence of factors like bankruptcy costs, agency costs and tax exhaustion. All factors which Modigliani and Miller failed to take in account.

Bankruptcy costs

Modigliani and Miller assumed perfect capital markets; therefore, a company would always be able to raise funding and avoid bankruptcy. In the real world, a major disadvantage of a company taking on high levels of debt is that there is a significant possibility of the company defaulting on its increased interest payments and hence being declared bankrupt. If shareholders and debt-holders become concerned about the possibility of bankruptcy risk, they will need to be compensated for this additional risk. Therefore, the cost of equity and the cost of debt will increase, WACC will increase and the share price reduces. It is interesting to note that shareholders suffer a higher degree of bankruptcy risk as they come last in the creditors' hierarchy on liquidation.

If this with-tax model is modified to take into account the existence of bankruptcy risks at high levels of gearing, then an optimal capital structure emerges which is considerably below the 99.99% level of debt previously recommended.

Agency costs

Agency costs arise out of what is known as the 'principal-agent' problem. In most large companies, the finance providers (principals) are not able to actively manage the company. They employ 'agents' (managers) and it is possible for these agents to act in ways which are not always in the best interest of the equity or debt-holders.

Since we are currently concerned with the issue of debt, we will assume there is no potential conflict of interest between shareholders and the management and that the management's primary objective is the maximisation of shareholder wealth. Therefore, the management may make decisions that benefit the shareholders at the expense of the debt-holders.

Management may raise money from debt-holders stating that the funds are to be invested in a low-risk project, but once they receive the funds they decide to invest in a high risk/high return project. This action could potentially benefit shareholders as they may benefit from the higher returns, but the debt-holders would not get a share of the higher returns since their returns are not dependent on company performance. Thus, the debt-holders do not receive a return which compensates them for the level of risk.

To safeguard their investments, debt-holders often impose restrictive covenants in the loan agreements that constrain management's freedom of action. These restrictive covenants may limit how much further debt can be raised, set a target gearing ratio, set a target current ratio, restrict the payment of excessive dividends, restrict the disposal of major assets or restrict the type of activity the company may engage in.

As gearing increases, debt-holders would want to impose more constraints on the management to safeguard their increased investment. Extensive covenants reduce the company's operating freedom, investment flexibility (positive NPV projects may have to be forgone) and may lead to a reduction in share price. Management do not like restrictions placed on their freedom of action. Thus, they generally limit the level of gearing to limit the level of restrictions imposed on them.

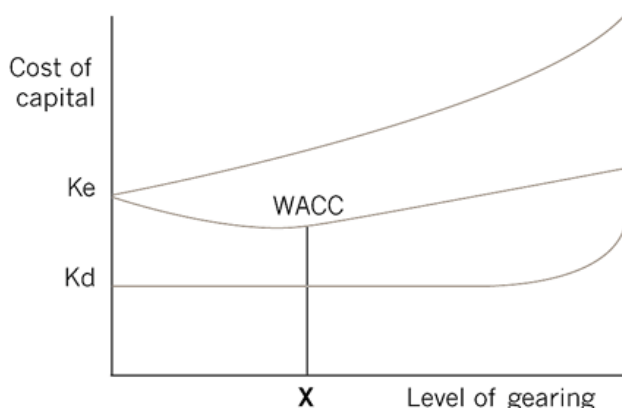
Tax exhaustion

The fact that interest is tax-deductible means that as a company gears up, it generally reduces its tax bill. The tax relief on interest is called the tax shield – because as a company gears up, paying more interest, it shields more of its profits from corporate tax. The tax advantage enjoyed by debt over equity means that a company can reduce its WACC and increase its value by substituting debt for equity, providing that interest payments remain tax deductible.

However, as a company gears up, interest payments rise, and reach a point that they are equal to the profits from which they are to be deducted; therefore, any additional interest payments beyond this point will not receive any tax relief.

This is the point where companies become tax - exhausted, ie interest payments are no longer tax deductible, as additional interest payments exceed profits and the cost of debt rises significantly from $K_d(1-t)$ to K_d . Once this point is reached, debt loses its tax advantage and a company may restrict its level of gearing.

The traditional view



The WACC will initially fall, because the benefits of having a greater amount of cheaper debt outweigh the increase in cost of equity due to increasing financial risk. The WACC will continue to fall until it reaches its minimum value, ie the optimal capital structure represented by the point X.

Benefits of cheaper debt > increase in k_{eg} due to increasing financial risk

If the company continues to gear up, the WACC will then rise as the increase in financial risk/ k_{eg} outweighs the benefit of the cheaper debt. At very high levels of gearing, bankruptcy risk causes the cost of equity curve to rise at a steeper rate and also causes the cost of debt to start to rise.

Increase in k_{eg} due to financial and bankruptcy risk > Benefits of cheaper debt

Shareholder wealth is affected by changing the level of gearing. There is an optimal gearing level at which WACC is minimised and the total value of the company is maximised. Financial managers have a duty to achieve and maintain this level of gearing. While we accept that the WACC is probably U-shaped for companies generally, we cannot precisely calculate the best gearing level (ie there is no analytical mechanism for finding the optimal capital structure). The optimum level will differ from one company to another and can only be found by trial and error.

Pecking order theory

The pecking order theory is in sharp contrast with the theories that attempt to find an optimal capital structure by studying the trade-off between the advantages and disadvantages of debt finance. In this approach, there is no search for an optimal capital structure. Companies simply follow an established pecking order which enables them to raise finance in the simplest and most efficient manner, the order is as follows:

- Use all **retained earnings** available;
- Then **issue debt**;
- Then **issue equity**, as a last resort.

The justifications that underpin the pecking order are threefold:

- Companies will want to minimise issue costs.
- Companies will want to minimise the time and expense involved in persuading outside investors of the merits of the project.

The existence of asymmetrical information and the presumed information transfer that result from management actions. We shall now review each of these justifications in more detail.

Minimise issue costs

- Retained earnings have no issue costs as the company already has the funds
- Issuing debt will only incur moderate issue costs
- Issuing equity will incur high levels of issue costs

Minimise the time and expense involved in persuading outside investors

- As the company already has the retained earnings, it does not have to spend any time persuading outside investors
- The time and expense associated with issuing debt is usually significantly less than that associated with a share issue

The existence of asymmetrical information

This is a fancy term that tells us that managers know more about their companies' prospects than the outside investors/the markets. Managers know all the detailed inside information, whilst the markets only have access to past and publicly available information. This imbalance in information (asymmetric information) means that the actions of managers are closely scrutinised by the markets. Their actions are often interpreted as the insiders' view on the future prospects of the company. A good example of this is when managers unexpectedly increase dividends, as the investors interpret this as a sign of an increase in management confidence in the future prospects of the company thus the share price typically increases in value.

Suppose that the managers are considering how to finance a major new project which has been disclosed to the market. However managers have had to withhold the inside scoop on the new technology associated with the project, due to the competitive nature of their industry. Thus the market is currently undervaluing the project and the shares of the company. The management would not want to issue shares, when they are undervalued, as this would result in transferring wealth from existing shareholders to new shareholders. They will want to finance the project through retained earnings so that, when the market finally sees the true value of the project, existing shareholders will benefit. If additional funds are required over and above the retained earnings, then debt would be the next alternative.

When managers have favourable inside information, they do not want to issue shares because they are undervalued. Thus it would be logical for outside investors to assume that managers with unfavourable inside information would want to issue share as they are overvalued. Therefore an issue of equity by a company is interpreted as a sign the management believe that the shares are overvalued. As a result, investors may start to sell the company's shares, causing the share price to fall. Therefore the issue of equity is a last resort, hence the pecking order; retained earnings, then debt, with the issue of equity a definite last resort.

One implication of pecking order theory that we would expect is that highly profitable companies would borrow the least, because they have higher levels of retained earnings to fund investment projects. Baskin (1989) found a negative correlation between high profit levels and high gearing levels. This finding contradicts the idea of the existence of an optimal capital structure and gives support to the insights offered by pecking order theory.

Another implication is that companies should hold cash for speculative reasons, they should built up cash reserves, so that if at some point in the future the company has insufficient retained

earnings to finance all positive NPV projects, they use these cash reserves and therefore not need to raise external finance.

As the primary financial objective is to maximise shareholder wealth, then companies should seek to minimise their weighted average cost of capital (WACC). In practical terms, this can be achieved by having some debt in the capital structure, since debt is relatively cheaper than equity, while avoiding the extremes of too little gearing (WACC can be decreased further) or too much gearing (the company suffers from bankruptcy costs, agency costs and tax exhaustion). Companies should pursue sensible levels of gearing.

Companies should be aware of the pecking order theory which takes a totally different approach, and ignores the search for an optimal capital structure. It suggests that when a company wants to raise finance it does so in the following pecking order: first is retained earnings, then debt and finally equity as a last resort.

FINANCIAL & OPERATIONAL GEARING

FINANCIAL GEARING

In financial management the term financial gearing (leverage) is used to describe the way in which owners of the firm can use the assets of the firm to gear up the assets and earnings of the firm. Employing debt allows the owner to control greater volume of assets than they could if they invested their own money only. The higher the debt equity ratio, the higher the firm equity and therefore the firm level of financial risk. Financial risk occurs due to the higher proportion of financial obligations in the firms cost structure. The degree to which the firm is financially geared can be measured by the degree of financial gearing given by:

$$\text{Degree of Financial Gearing (DFG)} = \frac{(\% \Delta \text{ in EPS})}{(\% \Delta \text{ in EBIT})}$$

The degree of financial gearing indicates how sensitive a firm's E PS is to changes in earnings before changes in interest and taxes (EBIT).

ILLUSTRATION

The financial manager of ABC Ltd expects earnings before interest and taxes of RWF50,000 in the current financial year and pays interest of 10% as long-term loan of RWF200 000. The company has 100 000 ordinary shares and the tax rate is 20%. The finance manager is currently examining 2 scenarios.

A case where EBIT is 25% less than expected.

A case where EBIT is 25% more than expected.

REQUIRED

Compute the EPS under the 3 cases and the degree of financial gearing for both scenario 1 and 2.

Solution:

	<u>Scenario 1</u>	<u>Base Case</u>	<u>Scenario 2</u>
	(-25%)	RWF	(+25%)
EBIT	37 500	50 000	62 500
Interes	20 000	20 000	20 000
EBT	17 500	30 000	42 500
Tax (20%)	<u>(3 500)</u>	<u>(6 000)</u>	<u>8 500</u>
EAT	<u>14 000</u>	<u>24 000</u>	<u>34 000</u>
EPS	<u>RWF0.14</u>	<u>RWF0.24</u>	<u>RWF0.34</u>

$$\text{DFG} = \frac{\% \Delta \text{ in EPS}}{\% \Delta \text{ in EBIT}}$$

$$\text{Scenario 1} \quad \text{DFG} = \frac{(0.24 - 0.14) / 0.24}{0.23} = \underline{1.67}$$

$$\text{Scenario 2} \quad \text{DFG} = \frac{(0.34 - 0.24) / 0.24}{0.25} = \underline{1.67}$$

The degree of financial gearing can be calculated more easily using the following formulae.

$$\begin{aligned} \text{DFG} &= \frac{\text{EBIT}}{\text{EBT}} \\ &= \frac{50\,000}{30\,000} = \underline{1.67} \end{aligned}$$

Note that this formulae should be used for the base case only.

A degree of financial gearing greater than one indicates that the firm is financially geared. The higher the ratio, the more vulnerable the firm's earnings available to shareholders are to changes in firm's EBIT.

Operating Gearing

Financial gearing is related to the proportion of fixed financial cost in the firm's overall cost structure. Operating gearing however relate to the proportion of fixed operating cost in the firm's overall cost structure. Operating gearing mainly considers the relationship between changes in EBIT and changes in sales. The degree to which a firm is operationally geared can be measured as follows:

$$\text{D.O.G.} = \frac{\% \Delta \text{ in EBIT}}{\% \Delta \text{ in Sales}}$$

D.O.G. therefore measures the sensitivity or vulnerability of EBIT to changes in sales. It can also be used to measure Business Risk. If D.O.G is more than one, then the business is operationally geared.

Illustration:

Assume that the finance manager of ABC Ltd expects to generate sales of RWF50 000 in the current financial year. Analysis of the firms operating cost structure reveals that variable operating cost is 40% of sales and fixed operating cost at RWF250 000.

The manager wishes to explore the effect of changes in sales and has developed 2 scenarios.

- Sales revenue is 10% less than expected
- Sales revenue is 10% greater than expected

Required:

Compute EBIT for each of the scenarios and the degree of operating gearing.

<u>Scenario 1</u>	<u>Base Case</u>	<u>Scenario 2</u>	
(-10%)	RWF	(+10%)	
Sales	450 000	500 000	550 000
Variable cost	<u>180 000</u>	<u>200 000</u>	<u>220 000</u>
Contribution	270 000	300 000	330 000
Fixed cost	<u>250 000</u>	<u>250 000</u>	<u>250 000</u>
	<u>20 000</u>	<u>50 000</u>	<u>80 000</u>
	D. O. G. = $\frac{(50\,000 - 20\,000)}{50\,000}$		= 6
	$\frac{(500\,000 - 450\,000)}{500\,000}$		

For the Base Case the degree of operating gearing can be given by the following formulae:

$$\begin{aligned} \text{D.O.G.} &= \frac{\text{Contribution}}{\text{EBIT}} \\ &= \frac{300\,000}{50\,000} \\ &= 6 \end{aligned}$$

Total Gearing

Its possible to obtain an assessment of the firms total gearing by combining its financial gearing and operating gearing so that the degree of total gearing (D.T.G) is equal to degree of operating gearing multiplied by degree of financial gearing.

$$D.T.G. = D.O.G. \times D. F. G.$$

$$= \frac{\% \Delta \text{ in EPS}}{\% \Delta \text{ in sales}}$$

$$\% \Delta \text{ in sales}$$

D.T.G. therefore measures the sensitivity (vulnerability) of EPS to changes in company's sales.

ILLUSTRATION

Consider the ABC illustration and compute the degree of total gearing.

Solution:

	<u>Base case</u>	<u>Scenario 2</u>
	RWF	+10%
Sales	500 000	550 000
Variable cost	<u>200 000</u>	<u>220 000</u>
Contribution	300 000	330 000
Fixed cost	<u>250 000</u>	<u>250 000</u>
EBIT	50 000	80 000
Interest	<u>20 000</u>	<u>20 000</u>
EBT	30 000	60 000
Less Tax(10%)	<u>6 000</u>	<u>12 000</u>
EAT	<u>24 000</u>	<u>48 000</u>
EPS	0.24	0.48

$$D.T.G = \frac{(0.48 - 0.24) / 0.24}{(550\,000 - 500\,000) / 500\,000} = 10$$

For the base case,

$$D.T.G = \frac{\text{Contribution}}{\text{EBT}}$$

$$= \frac{300\,000}{30\,000} = 10$$

WEIGHTED AVERAGE COST OF CAPITAL (WACC)

The WACC is the overall cost of using the various forms of fund. It can be given by:

$$WACC = \frac{\text{Net operating Earnings (NOE)}}{\text{Total Market Value of the firm}}$$

It can also be expressed as

$$\text{Where } K_o = K_d \left(\frac{D}{V} \right) + K_p \left(\frac{P}{V} \right) + K_e \left(\frac{E}{V} \right)$$

K_o is the weighted average cost of capital

K_d is the cost of debt
 K_p is the cost of preference shares
 K_e is the cost of equity

$\frac{D}{V}$, $\frac{P}{V}$, $\frac{E}{V}$ are the proportions of debt, preferred stocks and equity in capital structure

For easy analysis we shall assume that the firm uses only debt and equity. The overall cost of capital will therefore be given by:

$$\begin{aligned}
 K_o &= K_d \left(\frac{D}{V} \right) + K_e \left(\frac{E}{V} \right) \\
 &= K_e - (K_e - K_d) \frac{D}{V}
 \end{aligned}$$

With this background we can look at what happens to K_d , K_e and K_o as the degree of leverage (denoted by D/E changes). This will be done by looking at the theories of capital structure.

Weaknesses of WACC as a discounting rate

WACC/Overall cost of capital has the following problems as a discounting rate:

- It can only be used as a discounting rate assuming that the risk of the project is equal to the business risk of the firm. If the project has higher risk then a percentage premium will be added to WACC to determine the appropriate discounting rate.
- It assumes that capital structure is optimal which is not achievable in real world.
- It is based on market values of capital which keep on changing thus WACC will change over time but is assumed to remain constant throughout the economic life of the project.
- It is based on past information especially when determining the cost of each component e.g in determining the cost of equity (K_e) the past year's DPS is used while the growth rate is estimated from the past stream of dividends.

Note When using market values to determine the weight/proportion in WACC, the cost of retained earnings is left out since it is already included or reflected in the MPS and thus the market value of equity. Retained earnings are an internal source of finance thus, when they are high there is low gearing, lower financial risk and thus highest MPS.

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.

INVESTMENT FROM OVERSEAS

Overseas expansion may be achieved by:

- (i) **Exporting** – often used as a first step to direct investment.

Advantages: uses spare capacity at existing plants; safe way to enter new market as costs are relatively low if strategy fails.

Disadvantages: high transportation costs; may be difficult or expensive due to imposition of tariffs, quotas, taxes etc; consumers may prefer locally produced goods; service, spare parts etc. normally less reliable with exports.

- (ii) **Foreign Direct Investment (FDI)** – establish a new subsidiary or acquire existing local company.

Advantages: establish new markets & demand; benefit from economies of scale; take advantage of relatively cheap labour or land; avoid tariffs and restrictions; international diversification; highly skilled or educated workforce; use foreign

raw materials & avoid high transport costs; take advantage of undervalued foreign currency; exploit monopolistic or competitive advantage; react to overseas investment by competitors.

Disadvantages: commitment of substantial capital; significant risk.

- (iii) **Licensing** - local company manufactures in return for a royalty. Often used where countries have high import barriers.

Advantages: penetration of foreign markets without large capital outlay; political risk reduced as product is manufactured locally; transportation costs avoided

Disadvantages: difficult to ensure quality control; local company might export and compete with multinational's exports; problems of technology transfer or licensee may become a significant competitor when licence expires.

- (iv) **Joint Venture** – two or more independent companies cooperate in an agreed manner in a project/projects.

Advantages: access to new markets at relatively low cost; use of joint venture partner's knowledge of the local environment, distribution network, technology, patents, brands, marketing or other skills; risk and cost shared; easier access to local capital markets/tax incentives/ grants in overseas country; may be the only way to enter some markets - host government may impose requirements that any direct investment must be a joint venture.

Disadvantages: agreement on terms - percentage ownership of each partner, transfer pricing rules, reinvestment decisions, nationality of key managers, where raw materials and components are to be purchased etc; may be time consuming and difficult to find a reliable partner; managerial freedom may be reduced.

Study Unit 5

Financial Risk Management

Contents

- The key financial risks facing an enterprise.
- Currency risk - transaction, translation and economic exposure.
- The workings of the foreign exchange markets.
- The relationship between foreign exchange rates and interest rates in different countries.
- Forward Exchange Contract and Money Market hedges.
- Other forms of exchange rate risk management including, netting, leading and lagging, currency swaps, currency futures and currency options.
- Exchange risk management strategies.
- Interest rate options, swaps, forwards and futures .
- Interest rate risk management strategy.

INTRODUCTION

In this study unit we will be looking at the workings of the foreign exchange market, and examining the more practical aspects of the subject, such as the different exchange rate systems, the calculation of exchange rates, the impact of international trade on an organisation, various methods of expansion overseas, exchange risk and the various techniques used to reduce this risk.

Exchange Rates

An exchange rate is the rate at which a unit of one currency can be exchanged for another - for any currency there is an exchange rate for each currency it can be traded with.

Foreign Exchange Market (Forex)

The foreign exchange market is a world market and competition is freely applied. However, governments do intervene in the market to influence prices, and some currencies are not freely dealt in the market. The largest dealing centre is London followed by New York and Tokyo. The main dealers on forex markets are banks.

Some countries have strict exchange control regulations and fix the exchange rate, often in an arbitrary manner. Nevertheless the foreign exchange market exists to buy and sell currencies and this it does efficiently and effectively.

Exchange Rate Systems

Governments have a choice of exchange rate policies that they can adopt in order to achieve their economic (and political) aims.

The main exchange rate policies are:

Fixed exchange rates, where governments which are members of the international monetary system use their official reserves (which comprise foreign currency and gold) to maintain a fixed exchange rate. By adding to, or using, the official reserves the government ensures that the demand for, and the supply of, their currency are balanced (thus maintaining its price). The exchange rate of each member currency is generally set against a standard - which could be gold, a major currency (e.g. the US \$) or a basket of currencies. It is also possible for each currency in the system to be set against each other. Fixed exchange rate systems encourage international trade by removing uncertainty. However, they restrict member states' independence in setting domestic economic policies by requiring them to take appropriate action to maintain their exchange rate.

Floating exchange rate systems are those whereby exchange rates are left to, and are determined by, market forces, there being no use of the official reserves in maintaining the exchange rate level. Floating exchange rate systems may be either **free floating** or, more commonly, **managed floating**. Wide fluctuations of exchange rate values can occur under floating exchange rate systems creating problems of uncertainty for international trade. However, it is likely that the underlying economic conditions creating these fluctuations would have created severe problems for the working of a fixed exchange rate system - even creating instability.

Adjustable (or moveable) peg system is a fixed exchange rate system which has provisions for the devaluation and revaluation of currencies for countries with persistent balance of payments' deficits or surpluses. Adjustable peg systems allow more flexibility than a fixed exchange rate system but still limit the choice of government action to either maintaining the exchange rate or devaluing/revaluing the currency.

FACTORS TO CONSIDER – INTERNATIONAL TRADE

Risk Factors

Apart from the normal problems which occur in any type of business there are further complications when the organisation is involved in international trade. Among these are:

Credit Risk - usually higher risk for foreign trade

Physical Risk – there is a greater risk of goods in transit being lost, stolen or destroyed.

Exchange Controls - may hinder movement of funds.

Foreign Laws & Customs - different practices in certain countries.

Taxation - different tax rates/rules. Double Taxation Treaty may apply.

Political Risk - actions of a foreign government may prevent/delay payment being made. This can take many forms, ranging from bureaucratic delays to war (e.g. Iran/Iraq).

Exchange Rate Risk - losses due to unforeseen movement in currency exchange rates.

Some forms of risk may be reduced/eliminated by insurance - e.g. normal commercial insurance (physical risk), export credit insurance (credit risk). Credit risk may also be reduced by screening customers or by the terms of trade (e.g. irrevocable letter of credit).

Methods of Expansion Overseas

Overseas expansion may be achieved by:

- (i) **Exporting** – often used as a first step to direct investment.

Advantages: uses spare capacity at existing plants; safe way to enter new market as costs are relatively low if strategy fails.

Disadvantages: high transportation costs; may be difficult or expensive due to imposition of tariffs, quotas, taxes etc; consumers may prefer locally produced goods; service, spare parts etc. normally less reliable with exports.

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Disadvantages: agreement on terms - percentage ownership of each partner, transfer pricing rules, reinvestment decisions, nationality of key managers, where raw materials and components are to be purchased etc; may be time consuming and difficult to find a reliable partner; managerial freedom may be reduced.

C. EXCHANGE RISK

Exchange Rate Volatility

As an example of the volatility of **exchange rates** look at the US\$/RWF exchange rate in the period January 2006 – January 2012:

Average Bid price for month	RWF/GBP	% change from previous	% change since Jan 2006
Jan 2006	933.6		
Jan 2007	1009.43	8.12%	8.12%
Nov 2007	1086.44	7.63%	16.37%
Jan 2008	1029.94	2.03%	10.32%
Jan 2009	784.944	-23.79%	-15.92%
Jan 2010	890.19	13.41%	-4.65%
May 2010	820.194	-7.86%	-12.15%
Jan 2011	905.957	1.77%	-2.96%
Jan 2012	934.662	3.17%	0.11%

The movements during the intervening period have been quite dramatic. In the period January 2006 – January 2012 there was almost no change against the GB pound. But, within each year the movements were quite volatile – Jan 2008 to Jan 2009 saw a 23.8% increase in the value of the Rwf. In Jan 2008 GBP1,000 could have been exchanged for Rwf 1,029,100 but in Jan 09 the same GBP1,000 would have been exchanged for Rwf 785,000, a difference of almost 240,000 francs. If you are selling in the currency of your purchaser volatility of this magnitude can be expensive

Examples – Impact of Rate Movements

Before deciding what action, if any, we should take it is necessary to appreciate where the problem arises. We shall examine a few very simple examples:

Example 1

An **importer buys** from the USA. He receives an invoice for \$10,000, which must be paid immediately. The importer must exchange his RWF's for Dollars (he buys Dollars). His bank quotes a selling rate of, for argument say, RWF560 per USD. The cost to the importer is:

$$\underline{\$10,000 \times \text{RWF}560} = \text{RWF}5,600,000$$

Example 2

An **exporter** to the USA invoices his customer in Dollars (\$10,000), which is paid immediately. The exporter must exchange his Dollar receipt for RWF (he sells Dollars). His bank quotes a buying rate of 540RWF per USD. The receipt to the exporter is:

$$\underline{\$100,000 \times \text{RWF}540} = \text{RWF}5,400,000$$

The difference between the payment and the receipt of RWF200,000 is the bank's turn/profit. This is achieved by quoting different buying and selling rates. In addition, the bank may also charge a commission.

Examples 1 and 2 are quite straightforward. The account is settled immediately and the value of the payment/receipt is known using the "spot" rate (basically, the current rate). However, most international trade involves credit. Thus, there is a risk that the exchange rate may move against the importer/exporter during the credit period. We will now restate examples 1 and 2 allowing for credit:

Example 3 (similar to Example 1)

An **importer** from the USA receives an invoice for \$10,000. The supplier allows 90 days credit. His bank quotes a "spot" (current) rate (selling) of 560RWF. Using the "spot" rate the cost to the importer is RWF5,600,000 (as Example 1). However, during the 90 days credit period assume that the Dollar strengthens and the rate settles at 565RWF. The cost to the importer has now risen to:

$$\$100,000 \times 565 = \text{RWF}5,650,000 \text{ (an increase of RWF}50,000\text{)}$$

Example 4 (similar to Example 2)

An exporter to the USA invoices his customer in Dollars (\$10,000) and to remain competitive allows 90 days credit. His bank quotes a "spot" rate (buying) of 540RWF. Using the "spot" rate the receipt to the exporter is RWF5,400,000 (as Example 2). However, during the 90 days credit period assume that US \$ weakens (the USD buys fewer RWF) and the rate settles at 525RWF. The value of the receipt for the exporter has now fallen to:

$$\$10,000 \times 525 = \text{RWF}5,250,000 \text{ (an decrease of RWF}150,000\text{)}$$

Examples 3 and 4 examine the situation where the spot rate moves against the importer/exporter. Equally, the spot rate could turn out to be favourable and a **windfall gain** would arise. In international trade either the importer or the exporter must trade in a foreign currency. Alternatively, both parties may if the deal is denominated in a third currency - e.g. an company imports oil from a Mexican company and payment is in US\$.

Classification of Exposure

Transaction Exposure - The above exposure is known as Transaction Exposure, which exists because of the time lag between the initiation of the transaction and the actual payment/receipt of the foreign currency.

Translation Exposure - The risk of profits and losses arising from the conversion of foreign currency assets and liabilities from one Balance Sheet date to the next is known as Translation Exposure.

Economic Exposure - This exists where there is the possibility that the value of the company will change due to unexpected changes in exchange rates. Unexpected currency fluctuations can affect both the future cash flows and their riskiness. Both of these are likely to result in a change in the value of the company.

Exchange Rates – Spot v Forward

An exchange rate is the price of a currency expressed in terms of another currency. The spot rate is the current rate of exchange. Two prices will be quoted by the bank - a buying rate and a selling rate. The difference between the two prices is known as the “spread” and represents the bank’s profit or turn.

For example, if the spot rate for GBP is quoted as:

\$1.50 - \$1.52

One is the bank’s buying rate and the other is the bank’s selling rate, but which is which? Firstly, the rates are quoted from the bank’s perspective. Secondly, remember the phrase **HELLO : BYE-BYE**. This translates to **SELL LOW: BUY HIGH**.

Thus, the bank’s rates are:

Sell Buy
\$1.50 - \$1.52

If an exporter receives \$100, 000 he can exchange it (the bank will buy) at the rate of \$1.52 and receive GBP65,789. On the other hand, an importer who is due to pay an invoice of \$100,000 can buy (the bank sells) these at the rate of \$1.50 and pay GBP66,666.

If a company wishes to contract to buy/sell foreign currency at some future date. The bank in this case will quote a forward rate. Thus, the bank might quote:

Spot Rate	\$1.50 - \$1.52
1 Month Forward	\$1.51 - \$1.53
3 Month Forward	\$1.54 - \$1.56

At these rates a customer could contract to buy \$’s in 3 months at \$1.54 or sell \$’s at \$1.56

An alternative way of quoting forward rates is to express them as an *adjustment* to the spot rate. For example, the above may be quoted as:

Spot Rate	\$1.50 - \$1.52
1 Month Forward	1 cent - 1 cent
3 Month Forward	4 cents - 4 cents

Therefore, to determine the outright forward rates, add or subtract 1 cent or 4 cents to/from the spot rate. If the forward rates are quoted at a Discount => add to the spot rate. If quoted at a Premium => subtract from the spot rate. Using the above example, the forward rates are quoted at a discount. To recollect the approach, remember the word **ADDIS** (the tooth-brush manufacturer) => **Add** a Discount (abbreviated to “dis”); **Subtract** a Premium (abbreviated to “pm”). Note that the premiums and discounts are quoted in fractions of a currency – the \$ is quoted in cents, Sterling in pence etc.

Beware the decimal point. If, in the above example, the 3 month forward rate was quoted as .4 cents discount then the forward rate could be derived as

Spot Rate	1.500
Plus 3 month discount	<u>0.004</u>
3 month Forward Rate	<u>1.504</u>

METHODS OF REDUCING RISK

Exposure can, to a certain degree, be managed by “hedging”, which is the taking of any action that protects against adverse movements in exchange/interest rates. This “action” may take a number of forms, several of which we shall discuss.

Essentially there are three general courses of action available to the treasurer:

- Do nothing, i.e. leave exposed positions uncovered.
- Hedge everything.
- Hedge selectively.

The course taken will depend on the organisation’s philosophy, the treasurer’s perception as to future movements and the value of the potential exposure.

Remember that not all rate movements are detrimental; fortuitous gains often arise. A company may seek to hedge or to be partially hedged in the hope of achieving high profits. Risk management consists of the techniques and policies adopted by an organisation to minimise its exposure to risk, and takes two main forms:

The internal management of risks, or pooling. Here risks are aggregated and offset against each other; this is the general method of dealing with normal business risks, and is also used in areas such as insurance and portfolio diversification.

The external management of risk, or hedging. This is where two or more parties make an agreement in which their risks cancel each other out. This is used in areas outside the company’s control, e.g. in exchange rate and interest rate risk. The parties involved may be those facing the same risk but in opposite directions, or may include one or more speculators.

Forward Exchange Contract

With this technique we take action to-day so as to “lock-in” a rate which will apply in the future.

A Forward Exchange Contract is an agreement between two parties to exchange (buy/sell) one currency for another at some future date. The exchange rate, amount involved, and delivery date are agreed up-front but funds do not change hands until delivery date.

It is a straightforward contract and one of the most commonly used risk hedging mechanisms.

It is one of the best means of establishing a **perfect** hedge - full insurance is provided against adverse rate movements. However, it is important to remember that these contracts are binding on both parties and must be carried out. At the date that the agreement matures (the value date), if rates have moved in the customer’s favour he cannot decide that he no longer needs the forward contract.

It allows an importer/exporter to calculate up-front the precise domestic currency value of the underlying commercial transaction.

Contracts are available in most markets for maturities up to one year in all major currencies. For large amounts some banks will contract for several years forward, if they can match buyers and sellers.

Advantages

- Facilitates perfect hedging of foreign currency payables/receivables.
- Can be tailor-made to suit a customer’s requirements (amount, currency, and timing).
- Simple implementation and standardised documentation.

Disadvantages

- Legally binding contract which must be performed. It is usually non-transferable and can only be cancelled with the consent of the counterparty and payment of a penalty.
- Opportunity costs arise if rates do not move as anticipated (see example below).

Example:

An company is due to receive \$150,000 in June. It is now January and the following rates are quoted:

Spot	\$1.00=RWF562
Six Month Forward	\$1.00=RWF585

Assume that the company arranges a forward contract.

In June when the \$150,000 is received the then spot rate may be **lower**, **higher** or the **same** as the spot rate in January. Let us examine the consequences:

Spot Rate 1st June

1. Worsens to RWF555/ USD	No Action Sell \$'s at spot Proceeds RWF83,250,000	Forward Rate Fixed Delivery \$'s to bank at \$1.50 Proceeds RWF87,750,000
------------------------------	--------------------------------------------------------------	----------------------------------------------------------------------------------------

2. Improves to RWF590	Sell \$'s at spot Proceeds RWF88,500,000	As above RWF87,750,000
3. Static at RWF562	Sell \$'s at spot Proceeds RWF84,300,000	As above RWF87,750,000

No matter what happens to the spot rate in June an amount of RWF87,750,000 is guaranteed if the forward rate is fixed. In scenario 2, with hindsight this turns out to be a disadvantage as an additional RWF750,000 could be gained if the \$'s are sold at the more favourable spot rate. However, this only becomes known with the benefit of hindsight – scenarios 1 and 3 produce higher values with the forward contract.

If a Forward Contract is entered into and its ultimate performance cannot be carried out due to a change in circumstances, what can happen?

Close Out The Contract - if an exporter had contracted to sell \$1m forward but the customer will not now make payment to the exporter (e.g. due to bankruptcy) the bank will arrange for the exporter to buy the “missing” currency at the spot rate and thus perform his part of the contract. The exporter will:

- (1) Buy \$1m at the prevailing spot rate, and
- (2) Immediately sell \$1m to the bank at the contracted forward rate.

A **loss** or a **gain** may arise depending on current spot rate at no.1 above.

Extend The Contract - if an exporter had contracted to sell \$1m forward but the customer will not now make payment until say, one month later. The bank will accept a request to extend the period of the existing contract, changing its rate to a new rate applicable to the forward date when performance is now expected.

Option Dated Forward Contract - where a future cash flow is not known with certainty to the day the “fixed” forward contract, as above, may cause problems. The option dated contract allows the customer to call for settlement:

- (1) At any date from contract date up to a specified future date,
or
- (2) At any date between two specified future dates.

However, there is a cost as the bank will quote the more favourable of the two applicable rates (or less favourable to the customer).

Note: The option is not on the ultimate performance of the contract, it is on when it may be performed.

Foreign Currency Option

A currency option gives the holder the right (but not the obligation) to buy or sell an underlying currency at an agreed exchange rate (known as the “strike price”). Depending on the terms, the option can be exercisable on a single date at expiry (European Option) or over a period of time on any day (American Option).

Option is the key word because this particular instrument offers a good deal of flexibility. An option is purchased for an up-front payment, known as a Premium (usually a flat percentage fee of the amount to be covered). Thereafter, the holder exercises the option if it is in his interest to do so, or allows it to lapse if the transaction can be carried out at a more favourable rate in the spot market.

A **Call** Option is the right to buy the underlying currency. A **Put** Option is the right to sell the underlying currency.

Options differ fundamentally from traditional risk-management tools such as forward cover, as the company is not obliged to deal at an exchange rate which may turn out to be quite unfavourable depending on how rates subsequently move. It is like a forward contract from which the holder can walk away. Thus, it provides a mix of protection (guaranteed rate) and opportunity (to trade at the spot rate if this turns out to be more favourable).

Note: Currency options are not the same as Forward Exchange Option contracts, which must be completed at some date.

Advantages

- Highly flexible.
- Suited to uncertain cash flows.
- Does not absorb foreign exchange line, once the premium has been paid.

Disadvantages

- Cost can be relatively high and must be paid up-front (cash flow?).
- Tailor-made options (OTC – Over The Counter) lack negotiability.

Example 1

An importer needs to buy \$10k in three months. The following rates are quoted:

RWF/USD Spot	575
3 Month Forward	584

The importer essentially has three alternatives:

- (1) **Leave The Exposure Open** (do nothing) - he will gain if the \$ weakens (pick them up more cheaply), but lose if the \$ strengthens.
- (2) **Arrange a Forward Contract** - he will gain if the \$ strengthens (pick them up at the fixed forward rate), but lose if the \$ weakens (lose the opportunity to pick them up at the relatively cheap spot rate, as he must deal at the agreed fixed rate).

- (3) Arrange An Option - he is protected if the \$ strengthens but he also retains the opportunity to benefit from a weaker \$.

Suppose that the company buys a Call Option for \$10k., expiring in 3 months time (European), at a strike price of RWF579/\$ for a premium of RWF10 per \$. Therefore, a premium of RWF100,000 must be paid up-front.

- (i) If in 3 months time the spot rate has appreciated to, say 595/\$, the company will exercise its option at the more favourable rate of RWF584 and pay RWF5,840,000 (\$10k x 584). The cost of \$10k at the spot rate of 595/\$ would have been RWF5,950,000. Thus, the company saves RWF110,000 over the cost of spot \$'s or a net saving of RWF10,000 if the premium is taken into account.
- (ii) If in 3 months time the spot rate has weakened to, say RWF568/\$, the company will allow the option to lapse and buy the \$10k at the more favourable spot rate of RWF568, paying RWF5,680,000. The cost of forward cover would have been RWF5,840,000, so the company saves RWF160,000 or a net RWF60,000, if the premium is taken into account.

An option can never perform quite as well as forward cover if the spot moves against the company, or an open exposure if the spot moves in its favour (because a premium must be paid for the option). However, in a world of volatile and unpredictable exchange rates an option can significantly outperform an unfavourable forward contract or an open position. At the same time, it can capture a high percentage of the gains provided by a favourable covered or open exposure, especially if there is a major move in the spot rate

Example 2

A construction company regularly tenders for contracts abroad. These are in \$'s yet it often does not know for quite some time in advance whether or not it will win the contract. If it sells the anticipated \$ income forward and the \$ strengthens it runs the risk of being left with an exchange loss if it is not awarded the contract.

On the other hand, if it neglects to sell the anticipated \$ income forward and the \$ weakens then the company loses if it is awarded the contract.

The solution - purchase a put option on \$'s with a strike price based on the spot rate prevailing on the day of tender. Thus, the company will be able to sell the anticipated income at a pre-determined rate, while the option may be allowed to expire without being exercised should the tender be unsuccessful.

Another example of where options may be useful is where an exporter needs to have a pre-determined exchange rate upon which to prepare accurate price lists in advance.

The **premium** payable on an option depends upon:

- How favourable the strike price is in relation to the outright forward rate - the more favourable the higher the premium.
- The term of the option - the longer the time to expiry the higher the premium.
- The volatility of the exchange rate involved - e.g. RWF/USD expensive.
- Whether the option is European or American style.

Money Market Cover

This involves borrowing in one country, converting the funds borrowed at the spot rate into the currency in which payment is due and investing it in the second country. The total proceeds will then be used to make the payment or repay the loan.

Example 1

An **exporter** to the Burundi is due to receive BIF1m in 3 months time. The borrowing rate for \$BIFs is 8% per annum and RWF deposits can earn 10% per annum. The BIF/RWF spot rate (buy) is 1.50.

1. Arrange a BIF loan to-day for 3 months. The cost is 8% per annum or 2% over the 3 month period. Sufficient BIF are borrowed to mature at \$BIF1m in 3 months time. This can be found by: $\text{RWF1m}^{1.02} = \text{BIF980,392}$
2. Convert the \$BIF980,392 to RWF's at the spot rate of 1.50, which will equate to RWF653,595. This can be placed on deposit at 10% per annum to earn RWF16,340 over the 3 months (or possibly used to reduce an overdraft, depending on the company's circumstances).
3. The eventual receipt of \$BIF1m from the customer in 3 months can be used to repay the \$ loan which, with interest will mature at exactly BIF1m. Thus, the exporter is guaranteed the value of his receipt and is not exposed to movements in the BIF/RWF rate.

Example 2

An **importer** buying from the Burundi is due to pay BIF1m in 3 months time. The deposit rate for BIF is 5% per annum and RWF's can be borrowed at 12% per annum. The BIF/RWF spot rate (sell) is 1.50.

1. Deposit sufficient \$BIF to-day which, with interest, will grow to BIF1m. in 3 months time. Burundi francs earn 5% per annum or 1.25% over the 3 month period. The required amount to place on deposit can be found:
$$\frac{\text{RWF1m}}{1.0125} = \text{BIF987,654}$$
2. To obtain the BIF987,654 we must buy at the spot rate. This will cost RWF658,436 (BIF987,654/1.50).
3. The BIF deposit will mature in 3 months for a guaranteed BIF1m and will be used to pay the supplier. The importer also knows that his cost is fixed at RWF658,436.

Note: If one wishes to compare the cost of Money Market Cover, under example 2, with other techniques (e.g. Forward Cover) it is necessary to add the cost of borrowing RWF658,436 for 3 months at 12% per annum. This is because the cost of acquiring the \$ is incurred up-front, whereas under a Forward Contract the terms are agreed up-front but the cost will not be incurred until the end of the 3 month period.

The total cost will be:

Cost of Buying BIF spot	RWF658,436
Interest Cost (RWF658,436 x 12% x 3/12)	<u>RWF19,753</u>
	RWF678,189

Currency Swap

In a currency swap two counterparties exchange principal amounts of different currencies, usually at the prevailing spot exchange rate. On the maturity of the swap the principal amounts will be re-exchanged at the same exchange rate. Over the term of the swap the counterparties make periodic exchanges of fixed rate interest in the different currencies.

Companies enter into currency swaps because it allows them to exploit their relative strength (comparative advantage) in different markets and reduce each party's funding costs.

Example:

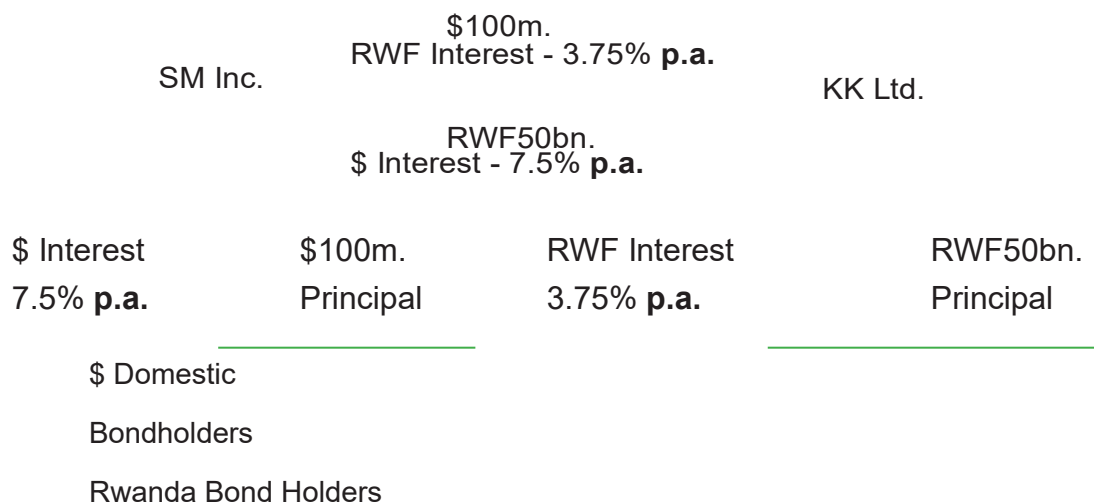
SM Inc. (a U.S. corporation) is about to commence operations in the EAC. It is well known in the U.S. debt markets but relatively unknown in the East African markets. SM Inc. can borrow at better rates in the \$US than in the East African markets. If the company or its bank can find an EAC company with the opposite profile (e.g. KK Ltd, wishing to finance a US subsidiary but not well known in the US credit markets), both companies can obtain funds in the currencies they want at cheaper cost by using a currency swap than if they raised them directly themselves as follows:

SM Inc. can raise \$100m from a 10 year bond issue in the US markets at 7.50%. Alternatively, it could raise RWF50bn. in the Rwanda bond market at 4.25%.

KK Ltd can raise RWF50bn for 10 years in the Rwanda market at 3.75%. It could raise \$100m at 8.20%.

SM Inc. will, therefore, issue a \$US domestic bond and KK Ltd will make a Rwanda bond issue. The two parties agree to swap the proceeds of these issues and to make periodic payments to reflect each other's interest liability in currency to the holders of the bonds. The swap will be reversed after 10 years when the bonds are due for redemption.

The cash flows can be shown diagrammatically:



The cash saving to SM Inc. is the difference between the RWF interest paid on the swap and what would be payable if it made its own RWF issue (4.25% - 3.75% = 0.50% per annum). Similarly, the saving to KK Ltd is 8.20% - 7.50% = 0.70% per annum.

It is possible that the rates would be adjusted so that both parties shared equally in the saving or the stronger party (in this case SM Inc.) receives more of the saving.

A bank may take a position between the two parties and make a profit by taking a turn out of the funds paid on to one or both parties. Alternatively, the bank may act purely as a broker and charge a fee or commission to one or both parties.

Currency Swaps offer several advantages:

- Companies have a greater access to funds as they can borrow in any currency and swap it into the currency they need.
- They are off-balance sheet instruments.
- They can enable a company to source cheap funding in one currency by borrowing another currency and swapping it into the currency needed.
- They can be tailored in terms of start date, maturity, principal, interest rates, currencies etc.

THE INTERNAL TECHNIQUE

Home Currency Invoicing

One way of avoiding exchange risk is for an exporter to invoice the customer in his domestic currency, or for an importer to be invoiced in his domestic currency.

However, only one party can deal in his domestic currency, the other must accept the exchange risk.

It is more usual for the exporter to invoice in his own currency and the importer to be invoiced in a foreign currency.

Consideration must be given to the bargaining position of the exporter/importer; the company's policy on price revisions etc.

Netting

A Rwandan company with receipts and payments in the same foreign currency should plan to

net them off against each other, where possible. Thus, it does not matter whether the currency strengthens or weakens against the RWF as there is no purchase or sale of the currency.

There is very little cost with this approach but it is only practicable to the extent that receipts and payments can be matched. Any mismatch could be covered by some other method e.g. forward contract.

Matching

Matching is an asset and liability management technique in which a company matches, say,

its dollar outflows with its dollar inflows, such that they correspond in size and the period in which they occur. This particular strategy is valuable if the firm wishes to minimize the impact of unanticipated exchange rate changes on its net cash flows. If the matching is complete in terms of currency, size and timing, then changes in values of outflows will be offset by equivalent changes in values of inflows.

An example is where the purchase of a U.S. subsidiary or property by a Rwandan company would be financed by a U.S. \$ loan, rather than a RWF loan.

Leading & Lagging

This involves altering the normal receipts/payments schedule by accelerating or delaying foreign currency payments, in anticipation of exchange rate fluctuations.

Lead Payment - where the foreign currency is strengthening it may be worthwhile making an early payment of an outstanding liability, rather than taking an extended credit period and running the risk of having to pay more in RWF's. However, account must be taken of any additional financing costs, due to the early payment.

Lagged Payment - if it is felt that the foreign currency is weakening it may be worthwhile delaying payment for as long as possible to obtain the benefit of a more favourable exchange rate.

Purchasing Power Parity Theory (PPP)

This theory is based on the idea that in terms of an international price a product should cost the same wherever it is produced. Using this basic idea, expected exchange rate changes and forecast inflation differentials can be linked. If the expected rate of inflation in country A is greater than that in country B then the rate of exchange of the currency of country A will fall against the currency of country B.

Example

The current \$/RWF exchange rate is 1/550. The rate of inflation next year is expected to be

3% in the Rwanda and 9% in the USA. The Purchasing Power Parity Theory suggests that the value of the \$ will fall by approximately 6% (9% - 3%) against the RWF. This can be shown more accurately as:

$$\frac{1.09}{1.03} = 1.058 \quad =5.8\%$$

Thus, the rate of exchange next year is predicted at 550/ 1.058 = \$1 /RWF520

INTEREST RATE MANAGEMENT

Question

Suppose that you are the Finance Director of a large organisation wishing to raise RWF100m.

to finance a project for the next ten years. Your bank has evaluated the proposal and approved the loan.

A number of options are open to you as follows:

1. A ten year term loan at a fixed rate of interest – 7%
2. A floating rate loan at a margin of 2% over 6-month INTERBANK (6-month INTERBANK is currently 4.25%).
3. RWF5m ten year term loan at a fixed rate of 7% (as 1 above).
RWF5m floating rate loan at a margin of 2% over 6-month INTERBANK (as 2 above).
4. A five year term loan at a fixed rate of 6.5%.

REQUIREMENT:

Which would you choose and why?

Answer

- In deciding how one should manage interest rate movements it is necessary to understand where the **exposure** arises and what would be the impact of change(s) in interest rates.
- It is also important to appreciate that a **depositor** of surplus funds can be exposed to a change in interest rates in the same manner as a borrower. We tend to only think of borrowers.

An understanding of where the exposure lies may be gleaned from the following:

Interest Movement	Exposure – Borrower	Exposure – Depositor
Increase	Variable Rate	Fixed Rate
Decrease	Fixed Rate	Variable Rate

The following simple example of two companies with RWF15m. variable (floating) rate borrowings may illustrate the impact of interest rate sensitivity:

	Company A	Company B
Profit (RWF'000)	3,000	1,600
Interest @ 10% p.a.	<u>1,500</u>	<u>1,500</u>
Net Profit	1,500	100

Suppose that interest rates **increase** to 11% for the year, this would imply an additional interest cost of RWF150,000 and Net Profit/Loss would be revised as follows:

	Company A	Company B
Profit (RWF'000)	3,000	1,600
Interest @ 11% p.a.	<u>1,650</u>	<u>1,650</u>
Net Profit/Loss	<u>1,350</u>	(50)

Percentage Change	-10%	-150%
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Thus, the management of interest rates is more critical for Company B.

The above example examines the negative aspect - where interest rates increase. Should interest rates fall by 1% the percentage change in Net Profit would be Company A + 10% and Company B + 150%. Variable rates are a **twin-edged sword**.

The company can elect to carry the risk itself by doing nothing or decide to manage the risk by using some of the techniques which we shall now examine. Much will depend on the attitude of management to risk. Most management teams are **risk-adverse**.

RISK MANAGEMENT -MAIN TECHNIQUES/INSTRUMENTS

Interest Rate Guarantee (IRG)/Option

These provide a degree of **flexibility** which is not provided by certain other instruments. They protect one from **adverse** interest rate movements but also **allow one to profit from favourable** movements.

- (i) **Interest Rate Cap - Borrower** agrees with bank a ceiling to the interest rate on a loan. If the interest rate turns out to be **higher** the bank pays the difference to compensate. If the interest rate turns out to be **lower** than the agreed rate, the company benefits by borrowing at the lower market rate. The effect of the Cap is to ensure that the borrower pays no more than the agreed rate, no matter how high interest rates move.

Unlike certain other techniques the buyer of the Cap must pay a **premium** (price) up-front, when the agreement is set.

Example:

A borrower buys a Cap at 8%.

- (1) If actual interest rates turn out to be 10% the borrower will receive compensation of 2%.
 - (2) If actual interest rates turn out to be 7% the borrower will deal at this favourable rate.
- (ii) **Interest Rate Floor** - Similar to the Cap. Here an **investor** is protected by receiving compensation if rates **fall** below an agreed floor. However, the investor can take advantage of any **upward** movement in interest rates.

Example:

An investor sells a Floor at 5%.

- (1) If actual interest rates turn out to be 4% the investor will receive compensation of 1%.
 - (2) If actual interest rates turn out to be 6% the investor will deal at this favourable rate.
- (iii) **Interest Rate Collar** - An amalgamation of a Cap and a Floor. Simultaneously, a borrower buys a Cap to limit the maximum rate of interest and sells a Floor to fix the minimum borrowing cost. Thus, the borrower gives up the benefit of interest rates falling below the floor. To compensate, the cost (premium) is less than the equivalent Cap.

Thus, the company will know both the maximum and minimum interest rate it would have to pay during the life of the Collar.

Example:

A borrower buys a Cap at 8% and sells a Floor at 6%.

The difference represents a **band** of interest rates that the borrower might pay.

Future Rate Agreement (FRA)

A Future Rate Agreement (sometimes called a Forward Rate Agreement) is an agreement between a bank and a customer made to-day (contract date), whereby:

The customer can secure an **agreed** interest rate (contract rate) On an agreed amount of its borrowings (principal amount)

For an agreed duration (period)

Commencing on an agreed future date (settlement date)

The FRA **does not require any outlay of cash.**

The guaranteed interest rate is achieved by the exchange of an amount of money (settlement amount) between the parties.

The FRA is ideal for:

Depositors seeking protection against a **fall** in interest rates, or

Borrowers who want to protect against a **rise** in interest rates.

(i) **FRA Example - Deposit**

On the 1st January a corporate treasurer places a deposit of RWF10m. for one month fixed at 11%. He reckons interest rates will **fall** significantly over the coming months and he wants to protect his current level of income. The six month FRA rate, for the period commencing one month hence is quoted at 10%. He decides to do an FRA for the period in question for RWF10m.

If interest rates fall as he predicts:

1st January FRA agreed at
Contract Rate (10%)

1st February

Six month period of

FRA commences. Fix
Settlement Rate (say, 9%).

31st July FRA cover period ends

At the start of the FRA period (1st February) interest rates have fallen and the Settlement Rate turns out to be 9%. The **bank** will pay compensation of the difference between the Contract Rate (10%) and the Settlement Rate (9%) for the six month period.

Thus, the position is:

Actual rate received on deposit	9%
Compensation paid by bank under FRA (10% - 9%)	<u>1%</u>
Total Yield	<u>10%</u>

Should the Settlement Rate at the start of the FRA period on the 1st February **rise** to, say, 13% the position would be:

Actual rate received on deposit	13%
Compensation paid to bank under FRA (13% - 10%)	<u>(3%)</u>
Total Yield	10%

Having entered into the FRA on the 1st January the total yield will **always** be

10%, by virtue of the compensation paid **by/to** the bank under the FRA, no matter what the actual rate turns out to be on the 1st February.

(ii) **FRA Example - Loan**

On the 1st January a corporate treasurer realises that a loan of RWF10m. which had been borrowed on a six month rollover basis has one month to run to the next rollover. Currently, the loan is based upon an interbank rate of 10%. He reckons interest rates will **rise** significantly over the coming months and he wants to protect his current position. The six month FRA rate, for the period commencing one month hence is quoted at 11%. He decides to do an FRA for the period in question for RWF10m.

If interest rates rise as he predicts:

1st January FRA agreed at
Contract Rate (11%)

1st February

Six month period of

FRA commences. Fix

Settlement Rate (say, 12%).

31st July FRA cover
period ends

At the start of the FRA period (1st February) interest rates have risen and the Settlement Rate turns out to be 12%. The **bank** will pay compensation of the difference between the Contract Rate (11%) and the Settlement Rate (12%) for the six month period.

Thus, the position is:

Actual rate paid on loan	12%
Compensation paid by bank under FRA (12% - 11%)	<u>1%</u>
Total Cost	11%

Should the Settlement Rate at the start of the FRA period on the 1st February **fall** to, say, 8% the position would be:

Actual rate paid on loan	8%
Compensation paid to bank under FRA (11% - 8%)	<u>3%</u>
Total Cost	11%

Having entered into the FRA on the 1st January the **total cost** will always be

11%, by virtue of the compensation paid **by/to** the bank under the FRA, no matter what the actual rate turns out to be on the 1st February.

The position can be summarised:

	Settlement Rate	
	**	
	14%	Borrower
	13%	Compensated
	12%	By Bank
Contract Rate	11%	-----
	10%	Borrower
	9%	Makes Payment
	8%	To Bank
	*	
	*	

Rather than wait for six months to elapse (31st July in above examples) before payment, a convention has developed that the settlement is paid on the FRA start date (1st February), by discounting the settlement amount at the Settlement Rate.

An FRA makes interest rate risk management possible by enabling one to protect one's business against adverse interest rate movements in the future.

An FRA allows one to support one's own views on interest rate movements and as a result manage one's affairs with a degree of certainty. Where forward interest rates are attractive FRA's can be used to lock in these rates.

There is no need to borrow or lend cash to do an FRA, so it has very little impact on existing bank credit lines.

FRA's are off Balance Sheet and extremely flexible as to size and maturity.

It is important to appreciate that an FRA is not a source or use of funds and can only be used to manage the interest rate risk associated with an underlying borrowing or investment.

The FRA is ideal for:

- Borrowers who want to protect against a rise in interest rates.
- Depositors seeking protection against a fall in interest rates.
- Project managers who want to fix interest costs for the duration of a project but cannot get a fixed rate loan.
- Fund managers who want to guarantee an interest rate to investors.

Interest Rate Swap

An Interest Rate Swap is a transaction in which two parties agree to exchange their respective fixed interest rate and floating rate borrowings at periodic intervals over a specified time period in order to reduce the cost of borrowing for both. This may be arranged to exploit different interest rates available in different markets or to change the profile of the company's debt.

The Swap is based on a notional amount and does **not** involve any exchange of principal - each party will still pay on its primary debt but they settle the adjustment in the cash flows of interest rates between themselves. Interest payments are usually netted so that only one payment has to be made between the parties.

Example

Company A has borrowings of RWF100m on which the rate is fixed at 11% per annum

for the next five years. The treasurer expects interest rates to fall and requests an Interest Rate Swap from fixed to floating rate. Company B, on the other hand, (e.g. a Hire Purchase company) has similar borrowings at a floating rate but is anxious to borrow fixed more readily to match the fixed nature of its Hire Purchase advances.

The companies enter a five year Interest Rate Swap for a **notional** RWF100m for a five year term.

The position might turn out as follows:

Company A

Borrowing: Pay Fixed (11%)

Swap: (i) Pay Floating INTERBANK
(ii) Receive Fixed 11%

Net Cost

Company B

Borrowing: Pay Floating INTERBANK

Swap: (i) Pay Fixed (11%)
(ii) Receive Floating INTERBANK

Net Cost

(11%)

At End of First 6-Month Period

Let us assume that INTERBANK turns out to be 9%.

Company B pays A $(11\% - 9\%) \times 6/12 \times \text{RWF}100\text{m} = \text{RWF}1\text{m}$.

The net result of combining the loan with the interest rate swap is that Company B's effective rate is **11%** fixed (9% on borrowings + 2% on swap).

Company A's effective rate is **9%** (11% on borrowings less 2% from swap), which is the same as INTERBANK.

The settlement figure will be adjusted every 6 months to reflect changes in the 6-month INTERBANK rate. This will leave Company B with a fixed rate (11%) over the entire five year period and Company A with a floating rate.

Conceptually, a swap is the same as a series of FRA's but it allows corporations to hedge interest rate exposures for 10 years or longer.

Swaps are easy to arrange, flexible (any size, maturity and can be reversed if required)

and transaction costs are low.

The swap does **not** have to be arranged with the same bank from whom the original borrowings have been arranged.

There are many applications for, and variations of, an Interest Rate Swap. Swaps are useful from both a liability management as well as an asset management perspective. Companies that borrow on a fixed or floating rate basis can use a swap to alter the interest rate profile (i.e. from floating to fixed or vice versa). Asset managers that desire to alter the frequency at which their investments are re-priced can use the swap market for this purpose.

In addition to assisting in the management of interest rate risk, swaps offer several other

advantages including:

- Swaps can often reduce all-in financing costs or increase investment yields, relative to alternative sources and uses of funds.
- Once credit approval has been obtained, swaps can be executed in a matter of minutes. Documentation is standard, resulting in reduced administration.
- Swaps are typically off-balance sheet transactions.
- Swaps are customised transactions to meet the specific needs of the client, including notional principal amount, tenor, indices (fixed/floating), frequency of settlement etc.
- A liquid market exists making it easy to unwind transactions or close out transactions early should interest rate views change.

Some of the reasons why a swap may be used are:

- Borrowing costs may end up lower than direct borrowing in the market.
- The company can change its debt profile, without involvement in further debt.
- Availability of finance markets that are not open to the company directly.

Note: An Interest Rate Swap is **not** a source or use of funds.

A swap is used to manage the interest rate risk associated with an underlying transaction.

Swaption (Option on Swap)

Swaptions are hybrid derivative products that integrate the benefits of swaps and options.

The buyer of a swaption has the **right, but not the obligation**, to enter an interest rate or currency swap during a limited period of time and at a specified rate.

Swaptions require the payment of a premium, normally upfront.

Example:

You have borrowed RWF500,000 for a three year period. You want to protect your firm against **rising** interest rates and guarantee a maximum cost of funds of 8%. At the same time you want to be able to take advantage of any possible **fall** in interest rates. You buy a Swaption from your bank at a rate of 8% for a three month period.

- (1) Assume that in three month's time the Interest Rate Swap rate for 2 3/4 years is at **8.5%**. You make use of your Swaption and arrange an Interest Rate Swap for this period at the agreed rate of 8%. Thus, your 8% cost of funds for the period is protected.
- (2) Assume that in three month's time the Interest Rate Swap rate for 2 3/4 years is at **7.5%**. You do not want to take up your Swaption and instead you will borrow at the cheaper rate of 7.5%. In these circumstances the Swaption protected you against a higher borrowing cost and also allowed you to take advantage of the fall in rates.

Swaptions can also be used for cash managers (depositors) to protect against **falling** interest rates while providing the freedom to enjoy any **increase** in interest rates.

The Swaption will provide full protection against **rising** interest rates but the freedom to benefit if rates move **lower**.

Swaptions can be tailored to meet one's needs.

Swaptions can be provided in all major currencies for a wide range of maturities. The option period can last for any length of time, but generally no longer than 12 months.

A Swaption can be negotiated with any bank. It does not have to be with the bank who lent the money.

The premium will depend on the guaranteed rate compared with the Interest Rate Swap rate, the duration of the Swaption and how interest rates may perform in the future.

Financial Futures

The Futures Market has long been a risk management tool in the commodities markets, used for forward buying/selling of everything from coffee beans to tin. Its advantages will be familiar to a manufacturer who relies on raw materials whose prices are susceptible to cyclical variances.

A futures contract can be described as a binding agreement to buy/sell through an established Exchange, at a specified price, on a definite date, a standard quantity of a commodity of predetermined quality on fixed conditions of delivery.

In the case of Financial Futures the commodity is currency or financial paper. They were first traded in the International Money Market in Chicago in 1972. In the U.K. the London International Financial Futures Exchange (LIFFE) opened in September 1982.

Futures contracts are standardised - the size of each contract and the maturity dates are standard. They offer an alternative covering mechanism for currency and interest rate risk. Actual or anticipated risks in money or foreign exchange markets (cash markets) can be minimised by taking an equal and opposite position in the futures market. Any cash market loss resulting from adverse exchange or interest rate movements should be offset by profits on futures contracts (and vice versa).

Although each futures deal is negotiated between the buying and selling parties, the actual financial transaction is conducted by the Exchange's clearing house. By interposing itself between the two transacting parties it provides a guarantee against default.

Note: No exchange of principal takes place.

To avoid the risk of default by holders of contracts a purchaser/seller of a futures contract must deposit an **Initial Margin** with the clearing house, effectively as security. This Initial Margin is very small relative to the size of the contract. As prices fluctuate each day the value of the outstanding contracts will change. If the price has moved in favour of the contract-holder, the surplus (called a variation margin) is added to the Margin Account and is available for distribution to the contract-holder. Similarly, if the price moves against the contract-holder he must cover any losses to ensure that at the close of every business day his total margin, net of losses, is equal to the Initial Margin. The Initial Margin is set at a level which is unlikely to be exceeded by losses arising from the price movement of any one day

Example

It is 1st June and a company treasurer has a RWF10m. loan which is rolled over every quarter. The next rollover is end of August and he fears that rates will **rise** in the interim. He wishes to hedge his exposure, using interest rate futures. The current price of September RWF three month time deposit futures is 88.00. The standard contract size is RWF500,000.

Cash Market

1st June

RWF10m borrowing – rollover end

August

Sell 20 INTERBANK September Futures contracts Rate = 12%
At 88.00 (Futures rate = 12%)

End August

Rollover loan

Current rate = 14%

Higher Cost of Borrowing:

RWF10m x 2% x 3/12

= RWF50,000

Futures Market

Buy 20 INTERBANK September Futures contracts

At 86.00 (Futures rate = 14%)

Profit on Futures contracts:

20 contracts x interest rate movement x
3/12

= RWF50,000

* **The additional cost of borrowing is offset by the profit on the Futures contracts.**

Using the above example, if the treasurer gets it wrong and interest rates **fall** the position is:

Cash Market

1st June

RWF10m borrowing – rollover end

August

Sell 20 INTERBANK September Futures contracts

Rate = 12%

End August

Rollover loan

Current rate = 10%

Lower Cost of Borrowing:

RWF10m x 2% x 3/12

= RWF50,000

Futures Market

Buy 20 INTERBANK September Futures contracts

At 90.00 (Futures rate = 10%)

Loss on Futures contracts:

10 contracts x interest rate movement x
3/12

= RWF50,000

* **The unexpected “saving” on borrowing is offset by the loss on the Futures contracts.**

The Futures Market can also be used to cover **Foreign Exchange** risk.

Example

A U.K. company which imports from the U.S.A. is due to pay \$4m. in February. It is now November and the company wishes to protect against a strengthening of the \$.

The spot rate is \$1.603 - \$1.605 /£

The March \$/£ Futures is quoted at \$1.60 (Note: contracts are in units of £25,000).

Based on the spot rate \$4m = £2,495,321 [\$4m./1.603 (sell rate)].

The company can **sell** 100 March contracts at \$1.60 (\$4m/1.60 = £2.5m, requiring 100 £25,000 contracts).

Assume that in February the \$ has strengthened and the following rates are quoted: Spot Rate: \$1.5500 - \$1.5523

Futures Price: \$1.5525

The company will:

1. Buy \$4m. in the spot market at 1.5500 (sell rate). The cost is £2,580,645 (£85,324 dearer than the spot cost on 15th November.
2. Close-out the Futures contracts at 1.5525, by **buying** 100 Sterling March contracts.

The cost is \$3,881,250 (£2.5m. x 1.5525). Thus, the gain on the Futures contracts is \$118,750 (\$4m. - \$3,881,250) or £76,499 [\$118,750/1.5523 (spot buying rate)]. This would be taken in margin surplus during the life of the contract.

Summary:

Cost – Spot Market	£2,580,645
Gain on Futures	<u>£76,499</u>
Net Cost	<u>£2,504,146</u>

* Compared with the spot cost in November this is only £8,825 dearer.

Study Unit 6

PORTFOLIO THEORY

Contents

- Portfolio diversification, estimate the risk and return of a portfolio
- The relevance of portfolio theory to practical financial management.
- The Capital Assets Pricing Model (CAPM) – application and limitations.
- APT Arbitrage pricing theory application and limitations.
- Portfolio management strategies

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% ($1/2 \times 22\% + 1/2 \times 2\%$). 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 be 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:

1. **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 umbrellas and another which sells raincoats you would expect fine weather to mean that both companies suffer. Likewise, bad weather should bring additional sales for both companies.
2. **Negative Correlation** – if one investment performs well, the other will do badly and vice versa. Thus, if you hold shares in one company making umbrellas and another which sells ice-cream, the weather will affect the companies differently.

3. **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.

Basic assumptions of CAPM

1. Investors are rational and they choose among alternative portfolios on the basis of each portfolio's expected return and standard deviation.
2. Investors are risk averse.
3. Investors maximise the utility of end of period wealth. Thus CAPM is a single period model.
4. Investors have homogeneous expectations with regard to asset return. Thus all investors will perceive the same efficient set.
5. There exist a risk-free asset and all investors can borrow and lend at this rate.
6. All assets are marketable and perfectly divisible.
7. 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.

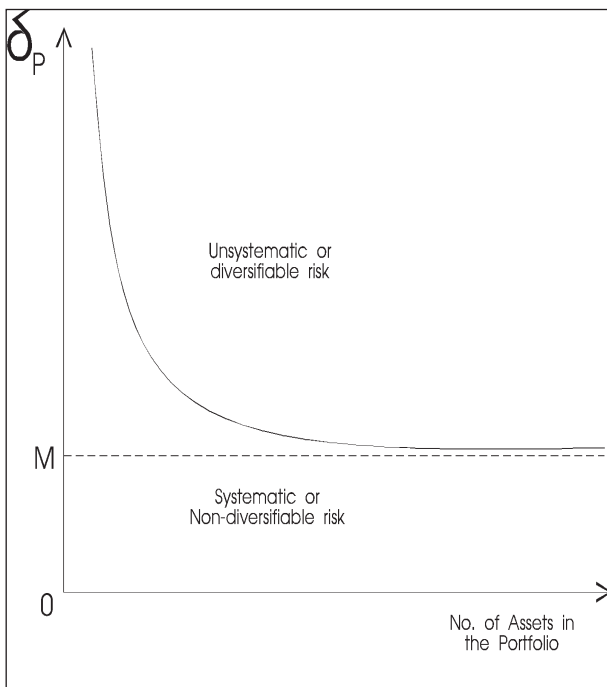
The risk can be divided into two:

- a. The diversifiable (unsystematic) risk;
- b. 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:



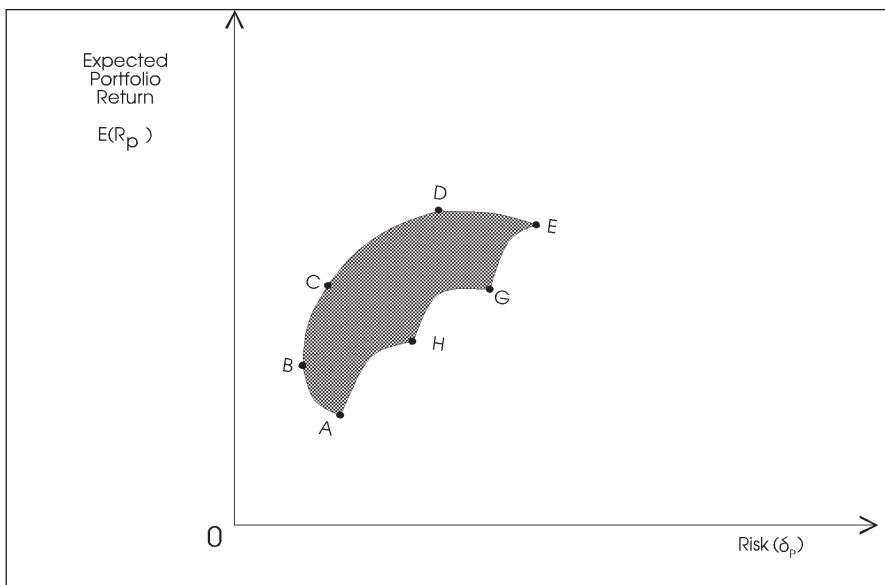
From the graph shown above as the number of assets increases, the portfolio risk reduces up to point M. At this point the lowest risk has been achieved and adding more assets to the portfolio will not reduce the portfolio risk.

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



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:

$$R_s = R_f + \beta(R_m - R_f)$$

Where:

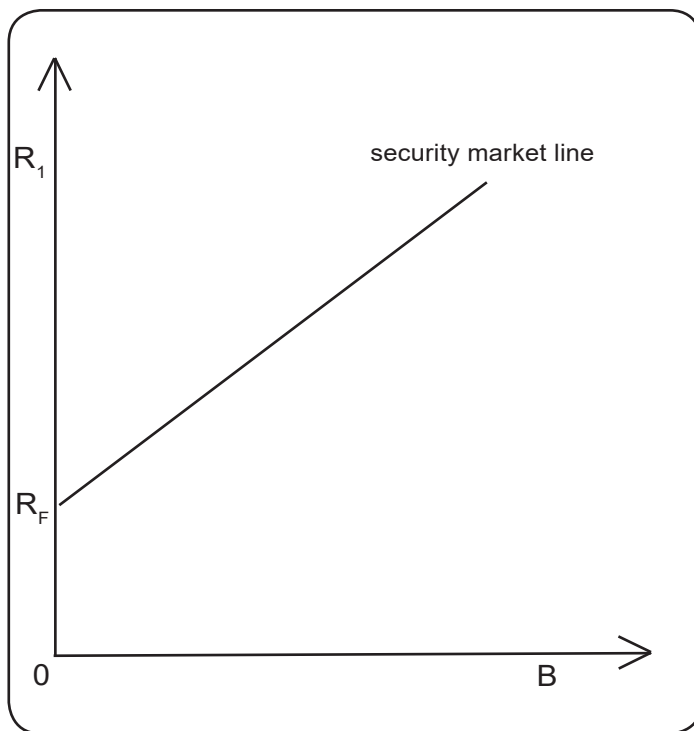
R_s	=	The expected return on a capital asset(s)
R_f	=	The risk-free rate of return

$\beta =$ A measure of the systematic risk of the capital asset (the Beta factor)

$R_m =$ The expected return from the market as a whole

This is a very important formula. Note that the expected return (R_s) is equal to the risk-free rate of return (R_f) plus an excess return or premium ($R_m - R_f$) 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%

$$\begin{aligned} 1. \quad R_s &= R_f + \beta(R_m - R_f) \\ &= 7\% + 1.25(16\% - 7\%) \\ &= 7\% + 11.25\% \\ &= 18.25\% \end{aligned}$$

$$\begin{aligned} 2. \quad R_s &= R_f + \beta(R_m - R_f) \\ &= 7\% + 1.25(9\% - 7\%) \\ &= 7\% + 2.5\% \\ &= 9.5\% \end{aligned}$$

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.

- a. It is based on some unrealistic assumptions such as:
 - i. Existence of Risk-free assets
 - ii. All assets being perfectly divisible and marketable (human capital is not divisible)
 - iii. Existence of homogeneous expectations about the expected returns
 - iv. Asset returns are normally distributed.
- b. CAPM is a single period model—it looks at the end of the year return.
- c. CAPM cannot be empirically tested because we cannot test investors expectations.
- d. 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 ($E(R_i)$) can be shown as follows:

$$E(R_i) = R_f + \beta_1(R_1 - R_f) + \beta_2(R_2 - R_f) + \dots + \beta_n(R_n - R_f) + \epsilon_i$$

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

ϵ_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

- a. CAPM
- b. APT

Using APT

$$R_i = 8\% + (13\% - 8\%)0.9 + (10\% - 8\%)1.2 + (6\% - 8\%)(-0.7)$$
$$= 16.3\%$$

Using CAPM

$$R_i = R_F + (E(R_M) - R_F)\beta_i$$
$$R_i = 8\% + (15\% - 8\%)1.1 = 15.7\%$$

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.

PORTFOLIO MANAGEMENT PROCESS

Investment management also known as portfolio management is a complex activity though most of us hold several portfolios. Almost all of you have some sort of investments though they may not be as sophisticated as financial assets. A portfolio is a basket of various Assets or an Asset Mix. The following process applies to portfolio management:

The investment process undergoes several steps as follows:

1. **Determine or specify the investment objectives and constraints.** The typical objectives sought by investors are *current income capital appreciation, and safety of principal*. The relative importance of each should be determined. The constraints arising from each asset such as its *liquidity, time horizon, tax, convenience and special circumstances* should be identified beforehand.
2. **Choice of the Asset Mix;** The most important decision in portfolio management is the asset mix. This is concerned with the proportions of stocks (equity shares, mutual fund shares) and bonds (fixed income securities). This can be likened to identifying a “pool” of potential investment assets. The appropriate stock-bond mix depends on the risk-tolerance and investment horizon of a particular investor.
3. **Formulation of Portfolio strategy;** Once a certain asset mix is chosen an appropriate portfolio strategy is formulated. There are two broad avenues:
 - ✓ **The active portfolio strategy:** this strives to earn superior risk-adjusted returns through appropriate market timing (buying and selling at right market times), sector rotation

(changing from underperforming to superior performing sectors) and security selection. These enjoy playing the game of investing.

- ✓ **The passive portfolio strategy:** Involves holding a broadly diversified asset mix and maintaining a predetermined level of risk exposure.
- 4. **Selection of securities:** Generally, investors pursue the active portfolio strategy to select the securities. The factors considered to select bonds (fixed income securities) are yield to maturity, credit rating, term to maturity, tax shelter and liquidity.
- 5. **Portfolio execution/implementation:** This is concerned with actual buying and selling of assets in given amounts.
- 6. **Portfolio revision:** The value of an asset or portfolio as well as its composition i.e. the relative proportions of stock-bond instruments, may change as stock and bond value fluctuate. In response to such normal and regular changes, especially with stock, it is necessary to review the portfolio mix regularly. This may call for sector rotation or security switching (selling some category assets and investing in a different category of security)
- 7. **Performance evaluation:** The performance of a portfolio should be evaluated periodically. The key factor in performance evaluation is the **Risk-Return** assessment. Such assessment may provide useful indicators in order to improve investment/portfolio management.

A simpler version of the above process would be:

- i. Determine the investment objectives and constraints
- ii. Undertake Security Analysis
- iii. Construct Portfolio
- iv. Review Portfolio
- v. Evaluate Performance of the portfolio

Performance evaluation

Performance evaluation is a term for assessing how well a money/fund manager achieves a balance between high returns and acceptable risks.

Can anyone consistently earn an “excess” return, thereby “beating” the market? Performance Evaluation Measures

The **raw return** on a portfolio, R_p , is simply the total percentage return on a portfolio.

The raw return is a **naive** performance evaluation measure because:

The raw return has no adjustment for risk.

The raw return is not compared to any benchmark, or standard.

Therefore, the usefulness of the **raw return** on a portfolio is limited.

1. Treynor ratio

The *Treynor ratio* is a reward-to-risk ratio that looks at *systematic risk only*.

It is computed as a portfolio's risk premium divided by the portfolio's beta coefficient.

$$\text{Treynor ratio} = \frac{R_p - R_f}{\hat{a}_p}$$

- Risk premium per unit of market risk
- The higher, the better the performance
- Implies a diversified portfolio

2 The Sharpe ratio

The *Sharpe ratio* is a reward-to-risk ratio that focuses on *total risk*.

It is computed as a portfolio's risk premium divided by the standard deviation for the portfolio's return.

$$\text{Sharpe ratio} = \frac{R_p - R_f}{\sigma_p}$$

- Risk premium per unit of risk
- The higher, the better the performance

Provides a ranking measure for portfolio

3 Jensen's alpha

Jensen's alpha is the excess return above or below the security market line. It can be interpreted as a measure of how much the portfolio "beat the market."

It is computed as the raw portfolio return less the expected portfolio return as predicted by the CAPM.

$$\hat{a}_p = R_p - \left\{ R_f + \hat{a}_p \times [E(R_M) - R_f] \right\}$$

"Extra" Return Actual return CAPM Risk-Adjusted 'Predicted' Return

EXAMPLE

The return of the market portfolio is 14.7% and the treasury bill rate is 8.4%. The Manager of convection investor's ltd has gathered the following data on three stock portfolios:

Stock Portfolio Expected return (%) Beta of the portfolio Std. Dev. of the portfolio return

X	12.6	0.95	1.9
Y	16.8	1.10	2.3
Z	18.9	1.26	2.4

The standard deviation of the returns of the market portfolio is 2.1%.

Required

Evaluate the performance of each portfolio using:

- (i) Treynor's portfolio measure
- (ii) Sharpe's portfolio measure
- (iii) Jensen's portfolio measure

Study Unit 7

FINANCIAL ANALYSIS AND BUSINESS PLANNING

Contents

- Preparation of long-term business plans from prescribed information.
- Appraise capital investment options using NPV,IRR,APV and Pay back criteria.
- Evaluation of a business plan from the perspective of an equity investor or provider of debt funding.
- Assessment current financial position.
- Comparison and evaluation of the financial management of an organization with that of competitors and industry norms.
- Preparation, evaluation and discussion of key financial management indicators based on the published financial statements of an enterprise..
- Benchmarking of selected financial KPIs against companies in the same industry sector.

Business Plans

INTRODUCTION

There are many reasons why companies prepare Business Plans. One of the most common reasons is where the promoters of the company are intending to raise finance and a detailed Business Plan is required for presentation to potential investors.

CONTENTS OF BUSINESS PLAN

The Business Plan must be well constructed and provide sufficient detail to enable a potential investor to decide in principle, whether the company is a candidate for investment.

The Business Plan should include the following:

1. Executive Summary

Potential investors often make an initial judgement based on the content of the Executive Summary and their decision to read the detailed content of the Business Plan will depend on its content.

While the Executive Summary is shown at the front it should not be completed until the Business Plan has been written. It will highlight all milestones in the company's development over the next five years. At minimum, it should summarise the following:

Purpose of the Plan

Product or Service and its advantages

Market Opportunity

Management Team

Track record, if any

Financial Projections – sales, net profit before tax, investment etc.

Funding Requirements

2. Company Description Promoters and Shareholders Promoters

Management structure and areas of responsibility

Shareholders names, % shareholding, cash invested to date

Advisors

Financial, legal and other advisors with contact details

Products and Services Explain the product/service Background to development Benefits and features

Unique selling point Advantages to customers Disadvantages or weak

points Future developments

Long Term Aim of Business

Objectives

Specific objectives to be achieved over next five years (sales, exports, employment, product development etc.)

SWOT Analysis

Analyse the strengths and weaknesses of the business and product/service, the opportunities that exist in the marketplace and the threats to the viability of the project.

3. Market Analysis

This covers market research and competitor analysis and demonstrates that the research undertaken justifies the projections made in the plan and indicates a viable market exists for the product/service.

Target Market

Analyse the market:

Size of each segment

Is the segment growing or declining?

Characteristics of potential customers in each segment

Total Market Valuation

Show the total potential value of the market for the product/service, in all targeted markets (domestic and international).

Target Company Revenue

The basis for the sales figures in the financial projections and must be based on realistic assumptions. Include average deal size, length of sales cycle, recurring revenues.

Market Trends

Recent changes Future predictions

Drivers – demographic changes, economic and legislative factors

Implications for company product/service

Plans to meet future demands and changes in the market

Profile of Competitors

What are the competing products/services

Profile of key players (size, turnover, profitability etc.) and their market share

Advantages and disadvantages of competitors' offerings

Competitive Advantage

Why potential customers will choose company's product

Unique features

Price

New technologies or systems

Better value (efficiency, ROI, cost/benefit) Greater compatibility with existing systems Include any independent validation

Benefits to Clients

What does product/service provide to potential customers?

Increase sales Increase efficiencies Save money

Save time

Maximise resources Reduce errors Reduce downtime

Improve customer service, increase loyalty

4. Marketing/Sales Strategy

Strategies for reaching target market, generating interest in the product/service and actually achieving sales.

Marketing Strategy

Which segments of the market will be targeted first and why

How will product/service be differentiated

What potential customers have already been targeted

Is test site in operation and what is feedback

What contacts can be used to generate market awareness and sales

Who will do the marketing – staff, agency, representatives

Sales Strategy

How will product/service be sold

Directly Retail
Distributor Agent

Sales Representatives

Website

State the advantages of the methods chosen

Pricing

How will price charged be set? Consider

Competitors' prices

Level of competition in market

Perception of quality-price relationship by customers

Production costs and overheads

Marketing and Communications Strategy

How will product/service be promoted in the marketplace?

Advertising – where, when, how and whom

Public Relations

Direct Marketing

Website and internet marketing

Exhibitions and conferences
Word of mouth

5. Research and Development

Intended future development of product/service. Detail plans for new products/services. List all technical partners and indicate nature of involvement.

State any protection available for product/service – patented, copyright or trademark registration and brand image to be built up as protection against competition.

6. Staffing and Operations

Outline intended structure of the company – management, number of employees and physical operations.

Management (including Board) Organisation Chart

Areas of responsibility of each manager

Staffing

What employees will be hired over the next three years, skills and in which areas?

Training

Planned employee and management development. Should tie-in with future product/market developments.

Operations

Premises

Equipment

Production facilities

Infrastructure

Communications facilities

Suppliers

7. Financial Projections

Key Assumptions

Income sources

Number of employees projected for each year and their salaries

Projected investment in equipment and materials

Projected R & D costs

Depreciation policy

Expected rent and rates charges Creditor
and Debtor days expected Expense
calculations

Profit & Loss Accounts

Projected for first three years of operations

Balance Sheets

Projected for first three years of operations

Cash flow

Monthly cash flow predicted for the first two years of operations

8. Sales Pipeline

Analyse pipeline business – customer, size of deal, date expected, probability of achieving sale etc.

9. Funding Requirements

Total funding requirements and how these are to be provided. Also state approximate breakdown of how funds are to be spent.

Sources Promoters' funds
Bank lending

Grants or loans from agencies
Investment already received
Investment sought

Spending
Equipment R & D
Marketing Staffing

10. Appendices

Provide detailed data on which the main text of the plan is based and extra information of interest to the readers. Details will vary from business to business but may include:

Promoters' CVs

Detailed financial assumptions

Most recent company audited accounts
Share capital table and investment history
Term sheet from potential investors
Detailed market research findings
Promotional literature

Product or service information

Details of company website

Testimonials or letters of intent from customers

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:

$$\text{ARR} = \frac{\text{Average Annual Accounting Profits} * 100}{\text{initial investment}}$$

(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	<u>(RWF80,000)</u>	
Total Accounting Profits	<u>RWF60,000</u>	
Average Annual Profits (4 years)	<u>RWF60,000</u>	= RWF15,000
	4	
ARR =	<u>RWF15,000</u>	= 15%
	RWF100,000	

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.

<u>PRESENT VALUE</u>		<u>FUTURE VALUE</u>
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
<i>1.1 to power of 1</i>		
End of Year 2 RWF100 x (1.10) ²	=	RWF121.00
<i>1.1 to power of 2</i>		
End of Year 3 RWF100 x (1.10) ³	=	RWF133.10
<i>1.1 to power of 3</i>		

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

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

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

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

	<u>FUTURE VALUE</u>		<u>PRESENT VALUE</u>
End of Year 1	$RWF110.00 \times \frac{1}{1}$	=	RWF100 (1.10)
End of Year 2	$RWF121.00 \times \frac{1}{2}$	=	RWF100 (1.10)
End of Year 3	$RWF133.10 \times \frac{1}{3}$	=	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%

<u>FUTURE VALUE</u>	=	<u>PRESENT VALUE</u>
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	<u>RWF1,366</u>
		Net Present Value	<u>RWF6,340</u>

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	<u>3.170</u>
Annuity Factor Years 5 – 10	<u>2.975</u>

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:

$$PV = \frac{a}{i} = \frac{\text{FRW } 1,000}{10} = \text{RWF10,000}$$

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 RWF1,000 per annum, if it commences (a) end of year 1, (b) immediately - year 0, or (c) end of year 6.

(a)

$$PV = \frac{A}{i} = \frac{\text{FRW } 1,000}{10} = \text{RWF10,000}$$

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

$$= \text{RWF10,000} + \text{RWF1,000} = \text{RWF11,000}$$

(c) We can find this in two stages.

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

$$PV = \frac{a}{i} = \frac{\text{FRW } 1,000}{10} = \text{RWF}10,000$$

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

$$PV = \text{RWF}10,000 \times .621 (\text{Discount Factor for year 5 @ 10\%}) = \text{RWF}6,210$$

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	<u>+755</u>

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	PRESENT VALUE 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	<u>+ 25.050</u>	<u>+ 27.460</u>

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:

1. Calculate two NPV's, using two different discount rates.
2. Any two rates can be used but, ideally, one calculation will produce a positive NPV and the other a **negative** NPV.
3. 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		<u>3,432</u> 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:

1. They allow for the '**time value of money.**'
2. 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.
3. They take account of **all cash flows**. The Payback Period disregards cash flows after the payback period.
4. **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.

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			<u>(7,510)</u>
PV Total Costs	<u>(31,820)</u>	<u>(59,505)</u>	<u>(87,665)</u>
	<u>(31,820)</u>	<u>(59,505)</u>	<u>(87,665)</u>
Equivalent Annual Cost	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	36,000
E	700,000	62,000
D	<u>400,000 (2/3rd)</u>	<u>34,000 (2/3rd)</u>
	<u>1,600,000</u>	<u>142,000</u>

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

If the projects are not 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

1. Defer one or more projects to a later period when capital is not rationed
2. Share project(s) with another partner
3. Outsource part of a project (e.g. component)
4. Consider licensing/franchising
5. 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:

1. **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
2. **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%	<u>12,656</u>
		82,031
	Balancing Allowance: RWF120,000 - RWF82,031	<u>37,969</u>
		<u>120,000</u>

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.	Pres. Val.
0	(120,000)			(120,000)	15% 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			<u>(3,609)</u> <u>(1,559)</u>	(3,609)	0.432	_____
						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:

$$13\% \times (1 - t)$$

$$13\% \times 0.7$$

$$= 9.1\% \text{ (say, 9\%)}$$

Buy:

	Item	Cash Flow	D.F. 9%	Pres. Val.
1	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	<u>6,788</u>
		Present Value of Cost		(94,370)

Lease:

	Lease Rental	TAX Saving	D.F. 9%	Pres Val.
0-4	(28,000)		4.239	(118,692)
1-5		8,400	3.890	32676
				<u>(86,016)</u>

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
Investment Appraisal – Risk & Uncertainty

Definition of Risk

- (a) (i) **Risk** occurs where it is not known what the future outcome will be but where the likelihood of various possible future outcomes may be assessed with some degree of confidence, probably based on a knowledge of past or existing events. In other words, probabilities of alternative outcomes can be estimated.

- (ii) **Uncertainty** occurs where the future outcome cannot be predicted with a degree of confidence from a knowledge of past or existing events, so that no probability estimates are available.

Risk and uncertainty are the business risk of an investment.

- (b) **Business risk** can be defined as the potential volatility of profits caused by the nature and types of business operations.

There are three elements of business risk:

- The inherent risk of the industry or market itself
- The stage of the product life-cycle
- The proportion of fixed costs in total costs

METHODS OF TREATING RISK OR UNCERTAINTY

1. Adjust The Discount Rate

This method requires that risky projects should earn a higher return than that required for ongoing operations. By adding a safety margin into the discount rate, what were marginally profitable projects, i.e. the riskier projects, are less likely to have a positive NPV.

If, for example, the company's cost of capital is 10% a premium of say, 5% might be added for risk and the project evaluated using a discount rate of 15%. If the project still produces a positive NPV at 15% it would be considered acceptable, even allowing for its risk.

The main advantage of this method is that it recognises that risky projects should earn a higher return to compensate for the additional risk. The main drawback is in deciding the size of the premium to be added. Thus, it is subjective and some may regard the method as unreliable.

2. Payback Period – Applying A Time Limit

In addition to requiring projects to yield a positive NPV when discounted at the cost of capital, management may apply a payback period as a means of limiting risk. Thus, projects may be required to:

Provide a positive NPV when discounted at, say 10%

and

Have a Payback Period of, say, 5 years or less

One of the drawbacks to this approach is that projects with very good long-term prospects may be rejected because they do not offer the required return in the short-term.

3. Sensitivity Analysis

The impact of changes in individual variables is measured to see the extent of the leeway before a project would only just breakeven. What would have to happen to the variable for the NPV to change to zero?

In this way the key variables are highlighted so that management is aware of the dangers of incorrect estimating and can perhaps make contingency plans in the event of this happening.

Example

Your company is considering a project with the following cash flows:

Year	Machinery	Running Costs	Savings
0	(11,000)		
1		(2,000)	6,000
2		(3,000)	8,000
3		(4,000)	9,000

The cost of capital is 10%. You are asked if the project should be accepted and what is the scope for error as some of the estimates of cash flow may be open to question. Ignore taxation.

Firstly, work out the present value of the cash flows:

Year	PV - Machinery	PV – Costs	PV – Savings	PV Cash Flows
0	(11,000)			(11,000)
1		(1,818)	5,455	3,637
2		(2,479)	6,611	4,132
3		<u>(3,005)</u>	<u>6,762</u>	<u>3,757</u>
	<u>(11,000)</u>	<u>(7,302)</u>	<u>18,828</u>	<u>526</u>

The project has a positive NPV and would appear to be acceptable.

Secondly, check each of the variables (machinery, costs and savings) to see how sensitive they are to change – i.e. by how much can they alter before the NPV is just zero. This can be done by relating the NPV to the present value of each of the variables.

Machinery

$$\frac{526}{11,000} = 4.8\%$$

The cost of machinery could increase by 4.8%

Running Costs

$$\frac{526}{7,302} = 7.2\%$$

Running costs could increase by 7.2%

Savings

$$\frac{526}{18,828} = 2.8\%$$

Savings could reduce by 2.8%

If asked how sensitive the project is to changes in the cost of capital this can be found by calculating the Internal Rate of Return (IRR). In the above example, the IRR is

12.5%. Thus, the cost of capital could increase by 25%, from the existing level of 10%, before the NPV is just zero.

The conclusion is that savings are the most sensitive and particular attention must be paid by management to the estimates of these as the margin for error is only 2.8%. They could take measures in advance to ensure that they will be achieved – e.g. by insisting on fixed price contracts.

Some of the drawbacks to Sensitivity Analysis are:

It treats variables as if they are independent and does not consider the inter-relationships that might exist between variables.

There is no measure of the probability of changes in any of the variables occurring.

There is no automatic decision rule for managers. Managers do not know whether their decisions should be altered because of the level of sensitivity of a variable.

4. Certainty Equivalent

The expected cash flows of the project are converted to riskless equivalent amounts.

The greater the risk of an expected cash flow, the smaller the certainty equivalent value (for receipts) or the larger the certainty equivalent value (for payments).

Example:

Year	Cash Flow		Certainty Equivalent	D.F. 10%	Pres. Value
0	(12,000)		(12,000)	1.0	(12,000)
1	7,000	x 90% =	6,300	0.909	5,727

2	5,000	x 80% =	4,000	0.826	3,304
3	5,000	x 70% =	3,500	0.751	<u>2,629</u>

The main drawback is that the adjustment to each cash flow is subjective.
(340)

5. Expected Values

Instead of just estimating individual cash flows for a project, probabilities could be assigned to various outcomes and these could be used to find expected values.

Example

A company is considering the addition of a new product to its range. The marketing manager has estimated sales for the next four years as:

Probability	Annual Sales (units)
.10	2,000
.30	4,000
.25	5,000
.20	7,000
.15	10,000

Once sales are established for the first year they will be maintained at that level. Selling price and variable costs are estimated at RWF20 and RWF15 per unit respectively. New machinery costing RWF70,000 must be purchased immediately and this is expected to have a scrap value of RWF10,000 at the end of the project in four years' time. Additional fixed costs of RWF5,000 per annum will be incurred. The cost of capital is 10%. Calculate the expected NPV.

Firstly, calculate the expected value of sales volume per annum.

Probability	Sales (units)	Expected Value (units)
.10	2,000	200
.30	4,000	1,200
.25	5,000	1,250
.20	7,000	1,400
.15	10,000	<u>1,500</u>
		<u>5,550</u>

Secondly, calculate the expected value of contribution => 5,550 units x (RWF20 - RWF15) = RWF27,750 per annum. Deducting fixed costs of RWF5,000 per annum gives net cash flow of RWF22,750 per annum.

The expected value of NPV is:

Year	Cash Flow	D.F. 10%	Pres. Value
0	(70,000)	1.000	(70,000)
1-4	22,750	3,170	72,118
4	10,000	0.683	<u>6,830</u>
			8,948

The expected NPV is positive and the project would be acceptable.

The drawback to this technique is the difficulty in estimating probabilities of the various outcomes for the key variables.

6. Standard Deviation of the NPV

It is unlikely that you will be expected to calculate the standard deviation of a project, but you must be able to:

- Understand how a standard deviation might be used for risk analysis of individual investment projects.
- Understand the relevance of standard deviations to risk measurement.

Example

Y Ltd is considering which of two mutually exclusive projects, A or B, to undertake.

There is some uncertainty about the running costs with each project and a probability distribution of the NPV for each has been estimated as follows:

Project A Probability		Project B Probability	
NPV		NPV	
RWF'000		RWF'000	
-20	0.15	+5	0.2
+10	0.20	+15	0.3
+20	0.35	+20	0.4
+40	0.30	+25	0.1

Which project should the company choose, if either?

Begin by calculating the EV (Expected Value) of the NPV for each project.

Project A			Project B		
NPV RWF'000	Probability RWF'000	EV	NPV RWF'000	Probability	EV RWF'000
-20	0.15	(3.0)	5	0.2	1.0
10	0.20	2.0	15	0.3	4.5
20	0.35	7.0	20	0.4	8.0
40	0.30	<u>12.0</u>	25	0.1	<u>2.5</u>
		EV = <u>18.0</u>			EV = <u>16.0</u>

Project A has a higher EV of NPV, but what about the risk - i.e. the possible variations in NPV above or below the EV that might occur? This can be measured by the standard deviation.

The of the project NPV, S, can be calculated as:

$$S = \sqrt{\sum p (x - \bar{x})^2}$$

where \bar{x} is the EV of the NPV.

Project A

Xi	Pi	Xi*Pi	M	Xi-x	Pi*(Xi-M) ²
-20	0.15	-3	18	-38	216.6
10	0.2	2	18	-8	12.8
20	0.35	7	18	2	1.4
40	0.3	12	18	22	145.2
		18			376

$$S = \sqrt{376} = 19.39$$

Project B

Xi	Pi	Xi*Pi	M	Xi-x	Pi*(Xi-M) ²
5	0.2	1	16	-11	24.2
15	0.3	4.5	16	-1	0.3
20	0.4	8	16	4	6.4
25	0.1	2.5	16	9	8.1
		16			39

$$S = \sqrt{39} = 6.24$$

i.e. RWF19,390 approx

i.e. RWF6,240 approx

Although Project A has a higher EV of NPV, it also has a larger standard deviation of NPV, and so has greater business risk associated with it.

Which project should therefore be selected? Clearly it depends on the attitude of the company's management to business risk.

7. Simulation

The Monte Carlo simulation technique is most appropriate for modelling cash flow forecasting problems where there are several independent uncertain cash flows for which discrete probability distributions can be estimated. The more independent cash

flows there are, the more likely it is that simulation will be the only practical method available to model the system.

Random numbers are allocated to the cash flows in proportion to their relative probabilities. A stream of random numbers is then fed into the system to simulate actual cash flows during a number of periods.

The numerical output from the application of simulation techniques is a range of possible cash flow outcomes with an indication of the likelihood of each outcome – i.e. a probability distribution of possible outcomes. This can be used to assess the probabilities of particular events occurring during the review period.

ADJUSTED PRESENT VALUE (APV)

It has been noted that the company's gearing level has an implication for both the value of equity and the overall cost of capital. The viability of an investment project would depend partly on how it is financed and partly on how the method of financing affects the company's gearing. Investment projects can be evaluated using NPV method by discounting the cash flows at the projects overall cost of capital or the risk adjusted discount rate. An alternative method of carrying out project appraisal is use of NPV method involving 2 stages:

Evaluate a project as if its an all equity financed to determine the base case NPV

Make adjustments to allow for the effect of the method of financing that has been used

$$\text{APV} = \text{Base case NPV} + \text{PV of financing effect}$$

Illustration

Assume XYZ Ltd is considering a project which costs sh.100 000 to be financed by 50% equity with a cost of 21.6% and 50% debt with a pre-tax cost of 12%.

The financing method would maintain the company's overall cost of capital to remain unchanged. The project is estimated to generate cash flows of \$.36 000 p.a. before interest charges and corporate tax at 33%.

Required:

Evaluate the project using:

NPV method

APV method

Solution:

$$\begin{aligned} 1 \quad K_o &= K_d (1 - T) \left(\frac{B}{V}\right) + K_e \left(\frac{E}{V}\right) \\ &= 0.12 (1 - 0.33) 0.5 + 0.216 (0.5) \\ &= 14.82\% \end{aligned}$$

$$\text{After tax cash flows} = 36\,000 (1 - 0.33) = 24\,120$$

$$\text{NPV} = \frac{24\,120}{0.1482} - 100\,000$$

$$= 162\,753 - 100\,000$$

$$= \$62\,753$$

$$\text{Amounts of debt} = 50\% (162\,753) = \$81\,376.5$$

$$\text{Amount of equity} = 50\% (162\,753) = \$81\,376.5$$

2. $K_{el} = K_{eu} + (1 - T) (K_{eu} - K_d) B/E$

$$0.216 = K_{eu} + (1 - 0.33) (K_{eu} - 0.12) 0.5/0.5$$

$$K_{eu} = 0.177485029$$

Step 1 Base Case NPV = $\frac{24\,120}{0.177485029} - 100\,000$

$$= 135\,899 - 100\,000$$

$$= 35\,899$$

$$\text{APV} = \text{Base case NPV} + \text{PV of the interest tax shield (tcB)}$$

$$= 35\,899 + 0.33 (81\,376.5)$$

$$= \$62\,753$$

Decision:

Accept because NPV > 0

Note: APV and NPV method produce the same conclusion since the capital structure remains constant. However, the NPV and APV method will produce different results in cases where the financing method used changes the firm's capital structure.

Illustration:

Assumes in the above illustration that the entire project were to be financed by debt.

The APV would be:

$$\text{APV} = 35\,899 + 0.33 (100\,000)$$

$$= \$68\,899$$

APV is a better method where initial capital is raised in such a way that it changes the capital structure proportions. It can be used to evaluate the effect of the method of financing a project and therefore is better than NPV.

However, APV has the following Limitations:

- Computation of the cost of a no equity-financed company may not be easy.
- Identifying all costs associated with the method of financing would be difficult e.g. the transaction costs, agency cost, etc.

Performance Appraisal

To judge the performance of a company or group of companies the analysis of financial statements is normally based largely on ratio analysis.

You may be expected to carry out a performance analysis on a set of company accounts. Generally, this will require you to extract the relevant figures from financial statements and notes to the statements. Having done this you must then calculate suitable trends and ratios. Finally, and most importantly, you must be able to analyse and interpret the figures, trends and ratios. This may require you to draft a report with supporting appendices.

You should be familiar with many of the important ratios from your other studies. This note is intended to pull all the ratios together and to comment on their usefulness.

The **purpose** of ratio analysis is:

1. To appraise the performance of a business.
2. To highlight significant changes.
3. To reveal a company's strengths and weaknesses.
4. To illustrate underlying trends in a company's activities.

Financial analysis is undertaken by four main **groups**:

1. The company itself for management control.
2. Current and potential shareholders in order to make investment decisions.
3. Suppliers of capital (banks, trade creditors etc.).
4. Financial analysts (stockbrokers, business journalists etc.).

A ratio expresses the relationship of one figure to another. A change in the ratio represents a change in the relationship. Ratios once computed should then be subjected to comparison. The two broad areas of comparison are:

Internal - present performance is compared with past performance and with budgets.

External - present performance is compared with similar firms in the same industry or with industry averages.

Ratio analysis has many limitations and care must be exercised in their use. Among the limitations are:

1. Ratios are only a guide, they cannot be used to make absolute statements. For example, if the Debtors Collection Period is lengthening it might be concluded that there is poor credit control with additional costs incurred by the company. However, if other aspects of performance are checked

it may become apparent that longer credit has been used as a marketing tool, which in turn has led to increased sales and profitability. Thus, ratios should be used to provide support for other information.

2. A ratio represents the relationship between figures. Thus, both figures can alter the ratio and this should be taken into account when indicating the reason for change. Also,

note that proportionate changes in both figures will leave the ratio unaltered. For example:

$$\frac{10}{100} = 10\% \quad \text{As is} \quad \frac{100}{1,000}$$

3. For ratios to be fully comparable the figures used must be computed in like manner from year to year or from firm to firm. Changes in accounting policies or firms adopting different accounting policies will render the ratios not comparable.
4. A Balance Sheet represents a company's financial position at one particular point in time. A Balance Sheet drawn up one month, or even a day, earlier or later might reveal a sharply contrasting situation, particularly for current assets and liabilities.

CATEGORIES OF RATIOS

Broadly, the basic ratios can be grouped into four categories:

1. Profitability
2. Debt & Gearing
3. Liquidity
4. Shareholders' Investment Ratios

1. Profitability

To assess properly a company's profits or profit growth it is necessary to relate them to

the capital employed in producing them. The most important profitability ratio is, therefore, the Return on Capital Employed (ROCE), which shows the profit as a percentage of the amount of capital employed.

$$\text{ROCE} = \frac{\text{PBIT}}{\text{Employed}} \times 100\% \text{ Capital}$$

Where: PBIT = Profit Before Interest and Tax.

Capital Employed = Total Assets - Current Liabilities (Looking at the Liability side of the Balance Sheet this is the same as Shareholders Funds + Long Term Debt).

ROCE is a measure of the efficiency with which the company is using its funds.

To look more deeply into the ROCE it can be divided into two secondary ratios:

$$(1) \text{ Profit Margin} = \frac{\text{PBIT}}{\text{Sales}} \times 100\%$$

$$(2) \text{ Asset Turnover} = \frac{\text{Sales}}{\text{Capital employed}} \times \text{times}$$

It may be appreciated that:

$$\text{Profit Margin} \times \text{Asset Turnover} = \text{ROCE}$$

$$\frac{\text{PBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}} = \frac{\text{PBIT}}{\text{Capital Employed}}$$

Example

A company with net assets of RWF10m earns profits before interest and tax of RWF2.5m on a turnover of RWF40m.

$$\text{ROCE} = \frac{2.5\text{m}}{10\text{m}} = 25\%$$

$$\text{Profit Margin} = \frac{2.5\text{m}}{40\text{m}} = 6.25\%$$

$$\text{Asset Turnover} = \frac{40\text{m}}{10\text{m}} = 4 \text{ times}$$

Profit Margin	x	Asset Turnover	=	ROCE
6.25%		4 times		25%

A low profit margin can be caused by relatively low selling prices, high costs or both. Asset Turnover indicates the efficiency with which the business is using its assets. A low turnover shows that the volume of business is too low relative to the value of the assets used.

Other profitability ratios used are:

(1) $\text{Gross Profit Margin} = \frac{\text{Gros profit}}{\text{sales}} \times 100\% \text{ Sales}$

This gives an indication of the total margin available to cover operating expenses and yield a profit.

(2) $\text{Net Profit Margin} = \frac{\text{Net profit}}{\text{sales}} \times 100\% \text{ Sales}$

This shows the after-tax profits per RWF of sales. Low profit margins indicate that the sales prices are relatively low or that costs are relatively high or both.

(3) $\text{Return on Equity} = \frac{\text{Earnings Available to Equity}}{\text{Equity Capital (including Reserves)}} \times 100\% \text{ Equity}$

This shows the rate of return available to **equity** on their investment

2. Debt & Gearing

Gearing Ratio

This is concerned with a company's long-term capital structure. There is no absolute limit to what the gearing ratio ought to be. Many companies are highly geared but if such companies wish to borrow further they may have difficulties unless they can also boost shareholders' capital, either with retained profits or a new share issue.

Gearing Ratio can be expressed as:

$$(1) \frac{\text{Prior Charge Capital}}{\text{Capital (including Reserves)}} \text{ Equity}$$

or

$$(2) \frac{\text{Prior Charge Capital}}{\text{Capital Employed}} \text{ Total}$$

* Prior Charge Capital refers to long-term debt and includes Preference Shares but does not normally include Bank Overdraft.

Interest Cover

This shows the financial risk in terms of profit rather than capital values. It demonstrates whether a company is earning enough profits before interest and tax to pay its interest costs comfortably.

$$\text{Interest Cover} = \frac{\text{PBIT}}{\text{Charges}} \text{ Interest}$$

As a general guide, an interest cover of less than 3 times is considered low, indicating that profitability is too low given the gearing of the company.

3. Liquidity

A company requires liquid assets in order to meet its debts as they fall due. Liquidity is the amount of cash a company can put its hands on quickly to settle its debts and possibly meet other unforeseen demands.

Current Ratio

Indicates the extent to which the claims of short-term creditors are covered by assets that are expected to be converted to cash in a period which corresponds roughly to the maturity of the liabilities.

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

A benchmark of 2:1 is often quoted but this should not be adopted rigidly as organisations have vastly different circumstances (e.g. operating in different industries, seasonal trade etc.).

Quick Ratio (“Acid Test”)

This is a measure of the company's ability to pay off short-term obligations without relying upon the sale of its stocks, which may not be disposed of easily and for the value at which they are being carried.

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities}}$$

A benchmark of 1:1 is often quoted but, again, this should not be adopted rigidly.

Debtors Collection Period

This is a measure of the average length of time it takes for a company's debtors to pay what they owe. The credit period allowed may depend on the industry in which the company operates.

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

Creditors Payment Period

This is a measure of the average credit period that a company takes before paying its suppliers.

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

Stock Turnover Period

This shows the number of times the stock is turned over during the year and indicates how vigorously a business is trading.

$$\text{Stock Turnover Period} = \frac{\text{Cost of Sales}}{\text{Stock}} \times \text{times}$$

Alternatively:

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

4. Shareholders' Investment Ratios

These ratios help equity shareholders and other investors to assess the value and quality of an investment in the ordinary shares of the company.

Earnings Per Share (EPS)

EPS is the profit in Rwandan Francs attributable to each equity share. Following the publication of FRS 3 this is the profit after tax, minority interests and extraordinary items and after deducting preference dividends; divided by the number of equity shares in issue and ranking for dividend.

EPS on its own does not tell us too much but it is widely used to measure a company's performance and to compare the results over a number of years.

Fully Diluted EPS can be calculated where a company has securities that might be converted into equity at some future date. A hypothetical EPS is calculated as if the options, warrants or convertible loan stock were converted and thus, the investor can appreciate by how much the EPS may change.

Price Earnings Ratio (P/E Ratio)

$$\text{P/E Ratio} = \frac{\text{Market Price per Share}}{\text{EPS}}$$

All quoted companies have a P/E Ratio. It is equal to the number of years earnings needed to cover the current market price. The value of the P/E Ratio reflects the market's appraisal of the share's future prospects. A high P/E Ratio indicates strong shareholder confidence in the company and its future (e.g. profit growth etc.), and a lower P/E Ratio indicates lower confidence.

The P/E Ratio of one company can be compared with the P/E Ratio of other companies in the same business sector or other companies generally.

Dividend Cover

This is the number of times the actual dividend could be paid out of current earnings. A high rate of dividend cover means that a high proportion of earnings are being retained.

$$\text{Dividend Cover} = \frac{\text{EPS}}{\text{Dividend per Share}} \quad \text{or} \quad \frac{\text{Total Earnings}}{\text{Total Dividends}} = x \text{ times}$$

Dividend Yield

$$\text{Dividend Yield} = \frac{\text{Gross Dividend per Share}}{\text{Market Price per Share}} \times 100\%$$

The gross dividend is the dividend paid plus the appropriate tax credit. The Gross Dividend Yield is used so that investors can make a direct comparison with (gross) interest yields from loan stock and Government Stocks (gilts).

Z-SCORES

One of the limitations of Ratio Analysis is that each ratio is examined in isolation and the combined effects of several ratios are based solely on the judgement of the financial analyst. Therefore, to overcome these shortcomings it is necessary to combine different ratios into a meaningful predictive model.

Professor Altman established a model for predicting bankruptcy in the U.S. Using a sample of sixty-six manufacturing firms, half of which went bankrupt, he identified five key variables which contributed most. Each ratio is given a weighting to arrive at the Z-Score.

$$Z = 1.2x1 + 1.4x2 + 3.3x3 + 0.6x4 + 1.0x5$$

Where:	x1	=	Working Capital/Total Assets
	x2	=	Retained Earnings/Total Assets
	x3	=	PBIT/Total Assets
	x4	=	Market Capitalisation/Book Value Of Debt
	x5	=	Sales/Total Assets

A score of 2.7 or greater indicates that the company should be safe. A score below 1.8 indicates potential problems. A score between 1.8 and 2.7 is a “grey area,” indicating that remedial action may be required.

KEY PERFORMANCE INDICATORS

Key Performance Indicators, or KPIs, help determine the condition and sustainability of your current business model. Think of Financial KPIs as your business’ health checkup. Regularly reviewing them will help you spot potential problems before they become serious, allowing you to manage proactively. More specifically, KPIs help you determine which aspects of your business are underperforming, be they products, departments or something else, and address them before the loss to your business in revenue is substantial.

All Financial KPIs have a common goal: keeping your business fine-tuned for financial success. However, how they go about this can vary dramatically. KPIs can and should track accuracy, speed, and efficiency in all departments, whether they deal with customers, manufacturing, billing, etc. Of course, this is only half the battle. Business leaders must also learn how to read KPIs effectively. In short, it does a manager no good to see sales cold call numbers if he or she doesn’t understand the impact that those numbers have on the overall business.

If you’re a finance manager, getting a full view of your company’s financial landscape is particularly important for increasing your competitive advantage. Finances provide some of the most quantifiable KPIs, making them easier to read and act on. Use financial KPIs to track the processing and reporting of transactions, billing, collections, and more. Then, use the insight you gain from these financial management performance indicators to roll-out changes that address any weaknesses. The more insight and efficiency you bring to this process, the bigger your competitive advantage. If you’re eager to assess your business’s financial health, consider starting with the following twenty essential KPIs for finance directors.

1. Working Capital KPI

Immediately available cash is known as working capital. The Working Capital KPI, calculated by subtracting current liabilities from current assets, includes assets such as on-hand cash, short-term investments, and accounts receivable and liabilities such as loans, accounts payable, and accrued expenses. It creates a picture of your business’s financial health by evaluating available assets that meet short-term financial liabilities. If you were to only choose a sample KPI for your finance manager to use, this one would be easy calculate and be immediately meaningful.

2. Operating Cash Flow KPI

The Operating Cash Flow KPI is another important way to monitor the financial health of your business. In analyzing this financial KPI, it's crucial to compare it to the **total capital employed**. This analysis helps you find out if the operational aspect of your business is producing enough cash to sustain the capital investments that you are putting into your business. The operating cash flow to total capital employed ratio analysis allows you to dive a little bit deeper into the financial health of your business to see beyond just your profits, making it an ideal KPI for finance directors.

3. Current Ratio KPI

It's no mystery that your company needs to meet its financial obligations on time to maintain the positive credit rating that is so crucial for growth and expansion. The Current Ratio KPI weights your assets, such as accounts receivable, against current liabilities, including accounts payable, to help you understand the solvency of your business.

4. Payroll Headcount Ratio KPI

How many of your employees are engaged in payroll processing? The Payroll Headcount Ratio displays the number of employees your company supports per dedicated full-time payroll employee. Obviously, the bigger your company, the bigger your payroll department. However, if you have one employee in payroll processing for every three employees in other parts of the business, you may have a problem with payroll efficiency. More than just a financial management performance indicator, this KPI helps you evaluate whether your human resources in this area are being used to their full advantage and informs future staffing decisions.

5. Return on Equity KPI

Return on Equity (ROE) is a financial KPI that measures your organization's net income against each unit of shareholder equity (or net worth). ROE tells you if your net income is enough for a company of your size by comparing it to the overall wealth of your business. Basically, it doesn't matter what you're worth right now (net worth) if you aren't generating enough net income, because the latter will determine how much you'll likely be worth in the future. Therefore, the return on equity ratio not only provides a measure of your organization's profitability, but also its efficiency. A high or improving ROE demonstrates to your shareholders that you're optimizing their investments to grow your business.

6. Quick Ratio/Acid Test KPI

The Quick Ratio KPI measures the ability of your organization to use highly liquid assets to immediately satisfy all financial obligations or current liabilities. It can determine your ability to meet short-term financial obligations by measuring both your company's wealth and financial flexibility. It's considered a more conservative assessment of your fiscal health than the current ratio because it excludes inventories from your assets. This KPI gets its nickname from the nitric acid tests used for detecting gold. Similar to those tests, it's considered a quick and easy trick to assess the vitality and wealth of a company. If you're just getting started with KPIs, this sample KPI for finance managers can give you a quick and easy glimpse of your business's overall health.

7. Debt to Equity Ratio KPI

The debt to equity ratio measures how your organization is funding its growth and how effectively you are using shareholder investments. Calculated by taking your company's total liabilities against shareholder equity (net worth), it's the other side of the coin to the REO KPI mentioned in number five. Only instead of telling your shareholders how profitable you are, it's telling them how much debt you've accrued in trying to become profitable. A high debt-to-equity ratio is evidence of an organization fueling growth by accumulating debt. This financial KPI keeps you accountable.

8. Accounts Payable Turnover KPI

Accounts payable turnover shows the rate at which your company pays off their suppliers. This ratio is calculated by taking total costs of sale during a specified period, costs incurred by your company when supplying goods or services, against average accounts payable during the same period. This ratio is most informative when taken over several periods and compared. A falling accounts payable turnover KPI could mean that the amount of time it takes your company to pay off suppliers is increasing and action should be taken.

9. Accounts Receivable Turnover KPI

If the accounts payable turnover KPI shows you the rate at which your company is paying its dues, then the accounts receivable turnover KPI shows you the rate at which your company is collecting what's due to it. Calculate this KPI by taking your total earnings through sales in a given time period against your average accounts receivable in the same time period. This KPI for finance directors can alert you to outstanding payments and help you maximize the efficiency of your payment collections.

10. Inventory Turnover KPI

Obviously, to meet demand, companies must keep inventory flowing in and out seamlessly. Thus, it can sometimes seem like you're never fully selling off your inventory because you always have more coming in. The inventory turnover KPI helps you see how much of your average inventory you've effectively sold off in a given time period regardless of what your storage rooms may look like. This KPI is calculated by dividing sales within a given time period over average inventory in the same time period. It can help you determine the strength or weakness of your sales. Just one data sample of this KPI can tell you quite a bit.

Related: [What is Cloud Based ERP Software](#)

11. Net Profit Margin KPI

The Net Profit Margin KPI calculates your business's effectiveness at generating profit on each dollar of revenue made. This financial management performance indicator is calculated by dividing the net profit of your company within a certain timeframe by your company's total revenue in the same timeframe. This net profit considers not only costs of sale, but also other more nuanced expenses, like administration. This financial KPI is an excellent snapshot of the profitability of your business, and it is useful for making both long-term and immediate financial decisions

12. Gross Profit Margin KPI

The gross profit margin is like the net profit margin. However, it only factors in the costs of sale when calculating the gross profit. The gross profit for a certain timeframe is then divided by the revenue for that same timeframe. The gross profit margin is easier to calculate than the net profit margin, but it's less accurate. Still, it can be a great snapshot of data for finance managers and directors.

13. Finance Error Report KPI

The Finance Error Report is the tattletale of financial KPIs, calling out finance reports that require clarification or contain obvious errors. This helps build confidence in the validity of your company's reporting. It also indicates a need for improvement, be it in software, employee training or other aspects of financial report generation.

14. Payment Error Rate KPI

The Payment Error Rate is a percentage of incoming or outgoing payments that were not completed due to a processing error. This could mean no purchase order was referenced, no approval was given, documentation is missing, etc.

15. Budget Variance KPI

How realistic are your budget projections? The budget variance KPI compares projected budget totals to actual operating budget totals. This financial KPI can help businesses more effectively predict budget needs by calculating and analyzing the differences between their projections and actual data.

16. Line Items in Budget KPI

This KPI gives you the total number of line items in your budget and illustrates its relative complexity and depth.

17. Budget Creation Cycle Time KPI

While taking time to plan your annual budget is important, it is also important to remember that time spent on budget creation is also money spent on budget creation. The Budget Creating Cycle Time KPI includes the number of days needed to research, produce and publish the firm's budget. It provides an important benchmark for year-to-year improvement. Of all the KPIs for finance directors, this one may be one of the hardest to calculate, but its value is without question.

18. Expense Management KPI

Employee expenses can make up a significant chunk of your overall expenses. It benefits you to look closely at how these expenses are managed. The percentages of travel and expense vouchers submitted by employees that contain errors – such as insufficient documentation, wrong charge codes, or no receipts – are tracked through Expense Management KPI. This financial management performance indicator is a particularly helpful KPI for finance directors in that it measures processes that can easily be modified.

19. Internal Audit Cycle Time KPI

Management and stakeholders can view the amount of time required to perform a full internal audit on Internal Audit Cycle Time reports

20. Customer Satisfaction KPI

CFOs often consider budget and time targets as benchmarks for successful project delivery. While those KPIs are important, the ultimate test is customer satisfaction. The Net Promoter

Score is a simple and effective measurement of how well you are serving your clientele. This score is calculated from responses on a scale of 1-10 given to a single question: *How likely is it that you would recommend our company/product/service to a friend or colleague?* More than just a financial KPI, this widely applicable measure is informative for many different departments.

What You Want To Avoid

There is no specific KPI that you need to steer clear from. While some KPIs are more informative than others, all Financial KPIs provide insights that can prove beneficial. What you really want to avoid is KPI misuse. In other words, if you do not calculate a KPI correctly or interpret the information in the wrong way, you'll do your business more harm than good.

KPI failures can happen for a variety of reasons. However, they are most noticeably the result of human error or poor planning; overworked or undertrained employees are significantly more likely to make mathematical errors. Customized KPIs that have not been thoroughly vetted for their value to the business can distract from true KPIs and send a business down the wrong path. Finally, KPIs can also be misused when too much emphasis is placed on the result, the magic KPI number, and not enough attention is paid to how those numbers are made and what business strategies would have the most impact on improving them.

BENCHMARKING

Benchmarking is a process of measuring the performance of a company's products, services, or processes against those of another business considered to be the best in the industry, aka "best in class." The point of benchmarking is to identify internal opportunities for improvement. By studying companies with superior performance, breaking down what makes such superior performance possible, and then comparing those processes to how your business operates, you can implement changes that will yield significant improvements.

That might mean tweaking a product's features to more closely match a competitor's offering, or changing the scope of services you offer, or installing a new customer relationship management (CRM) system to enable more personalized communications with customers.

There are two basic kinds of improvement opportunities: continuous and dramatic. Continuous improvement is incremental, involving only small adjustments to reap sizeable advances. Dramatic improvement can only come about through reengineering the whole internal work process.

Step-by-Step Benchmarking

Benchmarking is a simple, but detailed, five-step process:

- Choose a product, service, or internal department to benchmark
- Determine which best-in-class companies you should benchmark against – which organizations you'll compare your business to
- Gather information on their internal performance, or metrics
- Compare the data from both organizations to identify gaps in your company's performance
- Adopt the processes and policies in place within the best-in-class performers

Benchmarking will point out what changes will make the most difference, but it's up to you to actually put them in place.

First Steps

In order to benchmark anything, you need to have quantitative data available to study. That means breaking down internal processes to calculate performance metrics. Quantify everything, because only quantifiable information can be accurately compared.

Key Benefits

In addition to helping companies become more efficient and profitable, benchmarking has other benefits, too, such as:

- Improving employee understanding of cost structures and internal processes
- Encouraging team-building and cooperation in the interests of becoming more competitive
- Enhancing familiarity with key performance metrics and opportunities for improvement company-wide

In essence, benchmarking helps employees understand how one small piece of a company's processes or products can be the key to major success, just as one employee's contributions can lead to a big win.

Study Unit 8

International Managerial Finance

Contents

- International capital markets
- International money markets
- Project Finance
- Currency Cocktails
- Foreign financial intermediaries
- International financial institutions
- Bilateral, multilateral and regional financial institutions
- Integration & Segmentation of financial markets

INTRODUCTION

Foreign currencies have a habit of changing relative to the domestic currency and therefore add risk to dealing with foreign countries as sales markets or sources of supplies.

Foreign companies also can be a source of capital to facilitate capital investment and growth. Some foreign currencies are seen as more stable than domestic currencies and can be a more predictable source of long term debt.

B. INTERNATIONAL CAPITAL MARKETS

Many developing countries do not have sufficient resources to finance their investment needs. To meet these needs, they are depending on international capital markets, either from official sources or from private capital sources. Governments in developed countries and the international financial institutions (IFIs) are examples of official capital sources for developing countries.

Examples of private sources are banks and companies. The latter, in particular, can play an important role as suppliers of capital through Foreign Direct Investment. eg. Viz Heineken in Bralirwa

For instance, Bralirwa is part owned by Heineken and a Belgian company whilst 25% is owned by “others” who trade on the Rwandan Stock Exchange (RSE)

Foreign financial intermediaries

Banks, both domestic and international, play a part in the transfer of funds from overseas into Rwanda, as Money Market Instruments (liquid) and Bonds (less liquid); but there other financial institutions which arrange the transfer of capital from/to foreign organisations.

These could be Insurance companies, asset managers such as JP Morgan or BNY Mellon. The Financial Intermediary is important as an adviser as well as means of transferring funds. Foreign Financial Intermediaries specialise in foreign funds and are very important in the integration of financial markets.

Integrated financial markets

Financial markets all over the world have witnessed growing integration within as well as across boundaries, spurred by globalisation and advances in information technology. Central banks in various parts of the world have made concerted efforts to develop financial markets, especially after the experience of several financial crises in the 1990s. As may be expected, financial markets tend to be better integrated in developed countries. At the same time, deregulation in emerging market economies (EMEs) has led to removal of restrictions on pricing of various financial assets, which is one of the pre-requisites for market integration. Harmonisation of regulations in line with international best practices, by enabling

competitive pricing of products, has also strengthened the market integration process. Capital has become more mobile across national boundaries as nations are increasingly relying on savings of other nations to supplement their domestic savings.

Integrated financial markets assume importance because:

Integrated markets can transmit important price signals – necessary for an efficient market

Efficient and integrated financial markets constitute an important vehicle for promoting domestic savings, investment and consequently economic growth (Mohan, 2005).

Financial market integration fosters the necessary condition for a country's financial sector to emerge as an international or a regional financial centre (Reddy, 2003).

Financial market integration, by enhancing competition and efficiency of intermediaries in their operations and allocation of resources, contributes to financial stability (Trichet, 2005).

Integrated markets lead to innovations and cost effective intermediation, thereby improving access to financial services for members of the public, institutions and companies alike (Giannetti *et al.*, 2002).

Integrated financial markets induce market discipline and informational efficiency.

C. INTERNATIONAL FRANCHISES AND LICENCES

A business wishing to expand might consider being a franchisee for an international company or a Rwandan company wanting to set up in a foreign country might consider offering a franchise to a business in that foreign country

Franchise businesses for which franchising work best have one or several of the following characteristics :

- A good track record of profitability
- Ease of duplication
- Detailed systems, processes and procedures
- A unique or unusual concept
- Broad geographic appeal
- Relative ease of operation
- Relatively inexpensive operation.

As practiced in retailing, franchising offers franchisees the advantage of starting up business quickly based on a proven brand or trademark, and immediate access to the tooling and infrastructure, as opposed to having to develop them. Also the franchisor usually provides publicity and advertisements and can offer preferential loans to help the franchisee get started. The agreement is usually for a defined term and penalty clauses may be added to discourage early departure from the agreement.

An alternative is for a local business to purchase a licence to make a product associated with an international company. For instance Guinness is brewed all over the world and Bralirwa has a licence to brew Guinness. At the same time it also brews local beer.

The Bralirwa story is a little more complicated. Heineken owns 45% of Bralirwa and Heineken would have brought in overseas currency when the shares were acquired. So another way to raise foreign finance is to sell part of the business to a foreign and probably multi-national, however the local shareholders may lose control of their business.

D. INTERNATIONAL MONEY MARKETS

Simply a market for the lending and borrowing foreign currencies. This, for a business, would be carried out through a financial intermediary such as Bank of Kigali or KCB.

E. INTERNATIONAL FOREIGN BONDS

Again these would probably be purchased through a bank, but a member of the Rwandan Stock Exchange should be able to effect the transaction.

The foreign bond would effectively be a loan from a bank or financial institution in a foreign currency. The advantage might be lower and more stable interest rates and bonds are of normally fixed interest rate – predictability helps with budgeting and pricing.

Variable interest rates such as might be offered with an overdraft can leave a financial controller having to estimate for a more uncertain future.

Suppose Business A knew he had to pay GBP10,000 for a foreign supply, he could borrow GBP10,000 by means of a bond

F. INTERNATIONAL CERTIFICATES OF DEPOSIT

The opposite of a Foreign Bond is an International Certificate of Deposit. This is really a deposit in a foreign bank in the local currency of that bank.

A **Certificate of Deposit (CD)** is a time deposit, a financial product commonly offered to businesses or other clients by banks.

CDs are similar to savings accounts; they are “money in the bank”.

They are different from savings accounts in that the CD has a specific, fixed term (often monthly, three months, six months, or one to five years) and usually at a fixed interest rate. It is intended that the CD be held until maturity, at which time the money may be withdrawn together with the accrued interest.

Sometimes CDs may be indexed to the stock market, the bond market, or other indices. A few general guidelines for interest rates are:

- A larger principal should receive a higher interest rate.

- A longer term will usually receive a higher interest rate, except in the case of an inverted yield curve (i.e. preceding a forecast recession)

- Smaller institutions tend to offer higher interest rates than larger ones.

Buying and selling bonds and shares on the RSE are done through a stock broker who is registered as a member of the RSE

G. MULTICURRENCY BONDS

A multi-currency is a type of bond, when interest is charged in one currency, but the payment is made in another (based on a predetermined exchange rate, taking into account a certain percentage of depreciation rates).

Dual currency bonds

•**Traditional dual currency bonds:** The traditional form for a dual currency bond specifies that interest will be paid in the investor's domestic currency, with the principal amount of the bond denominated in the issuer's domestic currency.

•**Reverse dual currency bonds:** A variant on the dual currency bond, the reverse dual currency bond pays interest in the issuer's domestic currency, while the principal amount of the bond is denominated in the currency of the investor.

H. MULTICURRENCY COCKTAIL BONDS

Are bonds where the investor's income is a mixture of several currencies at predetermined proportions, usually correlated with the special drawing rights (SDRs), or other international institution/unit such as the ECU.

Example

Multicurrency Cocktail bonds Sperry Corporation issued a US\$56 million dual currency bond in February, 1985

- The interest rate, payable annually in dollars, was 6 3/4%.
- The principal was equal to 100 million Swiss francs. The final maturity was February, 1995.
- The spot exchange rate at the time was SF **1.7857** per US dollar, making SF100 million equivalent to \$56 million.
- The 10 year US dollar and Swiss franc interest rates at the time were 9.1% and 6.2 %.

Multicurrency Cocktail bonds: We need the Swiss franc/ US dollar 10-year forward exchange rate to see what the repayment really cost Sperry. From interest rate parity, the forward rate can be calculated as follows:

$$\begin{aligned} 10 \text{ Year Forward} &= \text{Spot} * \left[\frac{(1 + \text{Swiss rate})}{(1 + \text{US rate})} \right]^{10} \\ &= 1.7857 * \left[\frac{(1 + .062)}{(1 + .091)} \right]^{10} \\ &= 1.3640 \end{aligned}$$

I. FOREIGN EXCHANGE RISK – HEDGING

When companies conduct business across borders, they must deal in foreign currencies. Companies must exchange foreign currencies for home currencies when dealing with receivables, and vice versa for payables. This is done at the current exchange rate between the two countries. Foreign exchange risk is the risk that the exchange rate will change unfavourably before the currency is exchanged.

Hedging and financial markets

Hedging is defined here as risk trading carried out in financial markets. Businesses do not

want market-wide risk considerations – which they cannot control – to interfere with their economic activities. They are, therefore, willing to trade the risks that arise from their daily conduct of business. Whether in industrial, commercial or financial businesses, the financial assets – loans, bonds, shares, stocks, derivatives – they trade, allow them to hedge the risks that accumulate in their balance sheets in the course of business.

Investors' holdings of securities – or long positions in shares, stocks, bonds or loans – expose them to the sort of risks with which the securities are associated. Part of this risk stems from the unique features of the security, but part is related to more common characteristics shared across securities. Two common macroeconomic risks are those associated with the exchange rate and the interest rate risk in a given economy.

Pooling securities together in portfolios takes advantages of the idiosyncratic nature of the risks they bear to reduce the overall risk that investors face. For example, including the shares of exporting companies and non-tradable services in an equity portfolio helps to reduce the overall risk of the portfolio to a fall in external demand. From the economy's point of view, portfolio pooling spreads risk across investors.

Two cash markets typically help in the development of derivatives markets. The first is the foreign exchange market.

A second market is the local currency bond market.

Hedging took a gigantic step forward with the development of derivative products in global financial markets.

Derivatives are financial contracts that commit counterparties to exchange cash payments related to the value of a commodity or financial asset (underlying asset) with no actual delivery of the underlying asset (Kohn (2004)). They allow investors to deal with individual sources of risks, or a more limited set of risks than other financial assets. There are four main financial contracts: futures, forwards, swaps and options.

Futures are exchange-traded contracts for the sale or purchase of an asset at a future date. They are written over a large range of underlying assets such as commodities, foreign currency or interest rates. Forwards are also contracts that trade an underlying asset at a future date but differ from futures in that they are traded in OTC (over the counter) markets rather than on exchanges.

A swap is a contract in which the parties agree to a stream of payments determined with reference to the price of an asset over time. In the case of all three contracts, payments are netted and settled in cash.

Finally, options are contracts where one party buys/sells (for the payment of a fee) to the counterparty the right to trade in the underlying asset.

Foreign Exchange (FX):

Currencies are traded on international exchanges in a similar manner to stocks and shares. The forces of supply and demand dictate the relative prices of each currency.

Exchange rates are the relative prices of different currencies.

Fixed exchange rates:

This is where a government intervenes in the international exchanges in such a way as to keep the price of its currency stable. For example, if the price of its currency rises, it may sell reserves of the currency.

This, effectively, increases the supply to the international markets and therefore keeps the price down. Alternatively it may buy up currency and hold it if the price is becoming too low. The price of the currency is usually calculated by reference to another major currency (US\$), a basket of currencies or a major commodity (usually gold).

E.g. The government of Utopia decide that they wish to maintain an exchange rate of 1

Utopian Dollar to 1 Euro. If the price of the Utopian Dollar climbs against the Euro (possibly due to a growing demand for Utopian exports), the government will sell off some of their reserves of Utopian dollars on the international exchanges until the rate returns to 1=1.

One of the advantages of fixing an exchange rate is that it promotes stability within the economy. If, in the above example, Utopian Dollars rose sharply against the Euro, this would make the cost of buying Utopian exports more expensive for Europeans. This would therefore have an adverse effect on exports from Utopia and therefore profits and employment etc. If the value of the Utopian dollar fell sharply, it would become very expensive for Utopians to import supplies or goods as their dollars would be worth much less in terms of the Euro.

The problem with adopting a policy of fixing exchange rates is that if the value of the local currency is depreciating, the government cannot keep buying it forever to keep the exchange rate fixed. Eventually it will have to stop buying and when this happens, the value of the local currency can depreciate rapidly. In Argentina, the government had to abandon fixing exchange rates in December 2001. The value of the peso fell by over 70% in a few months. The risk to importers is that big and sudden devaluation can be devastating.

(ii) Floating exchange rates:

Floating exchange rates can be either free floating or managed floating.

Under a free floating FX system, governments do not intervene in FX rates. Under a managed floating FX system, governments will only intervene when the currency goes above or below a certain value.

(iii) Adjustable peg system:

This is similar to the fixed rate system except that, on occasion, the government will move to revalue/devalue the currency to what it believes is the real value of the currency (i.e. the price that the currency would be if the exchange rates were floating).

E.g. Following a period of high inflation, the Utopian government may decide to revalue the currency so that 1 Utopian Dollar equalled €0.80. The idea behind this method of FX system is that currency movements take place in deliberate, once-off movements rather than constantly moving up and down. It also keeps the FX rate in line with the real relative values of the currencies.

Understanding FX rates:

1. “Spot rate” and FX “spread”.

The spot rate is the current rate that a bank is offering. However, banks quote two rates – a buy rate and a sell rate. Rates quoted by banks are always from the banks point of view. Therefore if a bank quotes the following:

US Dollars:

We buy \$0.0017

We sell \$0.0015

This means that the bank will buy dollars from you and pay you Rwf1 for every \$0.0017 you sell them and will sell dollars to you and charge you Rwf1 for every \$0.0015 you buy.

The foreign currency is effectively a product that the bank is buying and selling. Naturally, if they want to make a profit, they will buy low and sell high. The rates banks quote (as shown above) are not prices per se. Instead they are quantities of the product they are selling. The price on their board will always in terms of the local currency; in Rwandan banks this will obviously be Rwf.

The spread is the difference between the buy and sell rates and is effectively the profit the bank makes on the transaction.

2. “Forward” rates

Companies can contract with a bank to buy or sell FX at a date in the future at an agreed price. In this case the bank might quote as follows:

We Buy We Sell

Spot rate \$0.0018 \$0.0015

1 month forward rate \$0.0019 \$0.0016

6 month forward rate \$0.0020 \$0.0018

Forward rates can be quoted also be quoted at discounts and premiums to the spot rate. If quoted at a discount, that means the forward rates are cheaper (discounted) and therefore the number of dollars per Rwf will be higher (since they are worth less). The opposite is true for a premium. Based on this, the above rates could be quoted as follows:

We Buy We Sell

Spot rate \$0.0018 \$0.0015

1 month forward rate \$0.0001 \$0.0001 Discount

6 month forward rate \$0.0002 \$0.0003 Discount

International Trade:

Companies engage in international trade through a variety of means:

1. Exporting:

Goods are shipped abroad and sold through an agent or wholesaler. This is the simplest and most common method of carrying out international trade.

Advantages:

- Little or no set-up costs – only the cost of shipping – therefore low risk;
- Takes advantage of the local knowledge of the agent or wholesaler;

Disadvantages:

- Import duties may be expensive;
- Transport costs may be high depending on the nature of the product;
- Customers may prefer locally produced goods.

2. Foreign Direct Investment (FDI)

This is where a company establishes a branch, manufacturing facility or other direct presence in the foreign country.

Advantages:

- Eliminates or reduces shipping costs and import duties;
- Shorter lead-time in getting goods to market;
- May be advantages to the business environment in the foreign country (fewer regulations, lower taxes, cheaper raw materials);
- Eliminates the commission/cut taken by an agent or wholesaler;

Disadvantages:

- Expensive set-up costs – therefore high risk;
- Involves book-keeping as well as dealing in foreign currencies;
- Lack of knowledge of regulations, culture and local ethics etc. which are local to the foreign country;

Licensing:

A licence is given to a foreign company to produce your patented/trademarked goods/services in their country in return for an agreed royalty payment. E.g. Guinness is produced under licence all over the world. In Rwanda the Bralirwa brew and sell Guinness.

Advantages:

- Low set-up costs - therefore low risk;
- Shipping costs are avoided;
- Takes advantage of the local knowledge of the foreign company.

Disadvantages:

- The foreign company takes a high proportion of the profits;
- Quality control – If the foreign company produces sub-standard versions of the products, the product brand names could be weakened;
- It involves handing over expertise to the foreign company.

FX Risk:

Any company that has any dealings in a foreign currency is exposed to the risk that the exchange rate between the foreign currency and the company's local currency could move in such a way as to affect adversely the company's profitability.

E.g. A Rwandan company which imports from the USA is invoiced in US\$ as per agreement with the supplier. (Generally goods are paid for in the currency of the supplier).

The supplier issues an invoice for goods shipped totalling \$100,000 and allows 30 days credit. The spot rate on the date the invoice is received is \$1=Rwf1,000. When the Rwandan company arranges to make payment (30 days later) the spot rate has changed to \$0.50 = Rwf1,000. It now costs the company Rwf200,000,000 instead of Rwf100,000,000.

The risk of FX exposure to a company can be classified into three types:

- 1. Transaction exposure** – As illustrated in the above example, this is the exposure resulting from the time lag between the time the goods are ordered (at an agreed price) and the time that the goods are paid for.
- 2. Translation exposure** – This is the exposure that exists where a company has assets/liabilities denominated in foreign currencies. E.g. A Rwandan company could have taken out a loan in the USA to fund a marketing campaign. The liability (in Francs) could increase or decrease over time simply as a result of FX movements. This obviously affects the value of the company.
- 3. Economic exposure** – This is the exposure of future cash flows to movements in FX rates. E.g. A Rwandan company exports coffee to the USA. If the value of the Franc moves up against the US Dollar, it will be more expensive for Americans to import coffee. Therefore the expected future sales and profits of the company will decline and, in turn, the value of the company will decline.

Methods of minimising FX risk:

Forward Exchange Contract

A forward contract is where a company agrees to buy or sell a given amount of foreign currency at an agreed rate at an agreed date in the future. This is a very common method of managing FX risk.

Advantages:

- By estimating its FX requirements for a given period, a company can *completely* cover itself against any FX rate movements for that period;
- The company can budget in advance without fear of the budget becoming inaccurate due to FX movements

Disadvantages:

- The contract is legally binding and must be carried out – even if the FX rates turn out to be more favourable than the rate contracted for or if the company incorrectly estimates its foreign currency requirements;
- Banks usually charge a premium on what they expect the rate to be at the date in the future (E.g. Assume an economic environment where FX rates rarely move and that Rwf1,000=\$1. The bank may expect the same rate to rule in 3 months' time but may contract with a company to sell it dollars at the rate of Rwf1,100=\$1 in 3 months). The spot rate may turn out to be more or less favourable than the forward contract rate at the date of maturity. Companies know this but still tend to enter into FX forward contracts. The reason is that by entering into FX forward contracts, the companies know what rate they can get in the future.

This eliminates risk. If a company with foreign currency exposure does not hedge against the risk of FX rate movements, capital markets will perceive the company as having a higher risk profile than might otherwise be the case and the company's cost of capital will increase. Special types of forward contracts called "Option dated forward contracts" are available. These are similar to forward contracts except that the contracts can be completed at any point during a range of dates. However, they are still legally binding and must be completed at some point during the agreed range.

If it happens that a company cannot complete a contract, the following options are available: (i) Close out the contract:

Assume a company has contracted with a US supplier to buy a shipment of chairs for

\$100,000 at the end of 2011. In order to protect itself against currency fluctuations, at the end of 2010 it contracts with the bank to buy \$100,000 for Rwf66,000,000. If the contract falls through for any reason (US supplier goes bankrupt), the company has the option simply to buy the \$100,000 from the bank as contracted for and sell it back to the bank at the same rate. However, depending on what the spot rate is at the end of 2010, the company could make a profit or loss on the transaction.

(ii) Extend the contract:

Take the example given above except that, instead of going bankrupt, the US supplier cannot supply the chairs until 3 months later than expected for some reason. The company can extend the contract for three months. The drawback with this method is that the bank will charge a premium on the original price.

Foreign Currency Option

This is similar to a forward contract except that the holder has the option either to exercise the option to buy/sell the foreign currency or allow it to lapse.

Example

In January 2011 a company buys a FX option to purchase \$100,000 on 30 June 2011 for Rwf100,000,000. On 30/6/11 the spot rate turns out to be \$1=RWF500. By simply allowing the option to lapse, the company can buy the \$100,000 for Rwf50,000,000. If the company had purchased a forward contract, it would have been obliged to pay Rwf100,000,000.

A FX option can either be “European” – the option can only be exercised on a given date or

“American” – the option can be exercised at any point during a range of dates. A “Put” option is the option to sell currency;

A “Call” option is the option to buy currency.

The FX option has the obvious advantage over a forward contract of not having to be exercised. The disadvantage is that a premium is charged on options. The premium is usually a fixed percentage of the amount of currency to be bought/sold.

Money Market Cover

If a company is contracted to purchase from, say, the USA for a fixed price in Dollars at

some date in the future, it is exposed to a potential loss if the Dollar appreciates against the Rwf in the intervening period. Therefore, to balance out this risk, a company can borrow money in Rwf and use it to purchase dollars. If the dollar appreciates the gain will cancel out the loss due to the higher costs of paying the US company.

Example

A company is contracted to purchase a shipment of chairs from a US supplier at the end of

June 2012 for \$100,000. The spot rate is currently Rwf1,000=\$1. To cover against fluctuations, the company immediately borrows Rwf100,000,000 and buys \$100,000. At

31/6/12, the spot rate turns out to be Rwf1,000=\$0.50. The company can now use the

\$100,000 to pay the US. The cost of buying the chairs is therefore Rwf100,000,000. If the company had done nothing and simply waited until 31/6/12, it would have cost Rwf200,000,000 to buy the \$100,000 necessary to pay the US company.

The borrowing of Rwf100,000,000 will attract interest. However, the \$100,000 can be invested and the return on investment will help offset the interest on the loan.

Example

A company is contracted to sell a shipment of chairs to the USA for \$100,000 at the end of

2011. The spot rate is currently Rwf1,000=\$1. The company borrows \$100,000 and buys Rwf100,000,000. The spot rate at 31/12/2011 turns out to be Rwf1,000=\$1.50. When the company receives the payment of \$100,000 from the US customer, it uses this to repay the loan of \$100,000. It then keeps the Rwf100,000,000 for itself. If the company had done nothing and waited until 31/12/11, the receipt from the US customer of \$100,000 would have been converted at the spot rate and the company would only have received Rwf66,666,667 instead of Rwf100,000,000.

Advantages:

- Completely shelters the company against currency fluctuations;
- Easy to arrange, low transaction fees;

Disadvantages:

- The interest on the loan may not be completely matched by the return on the investment;

Foreign Currency Invoicing

Another method that a company can use to hedge against FX fluctuations is to arrange for its customers to pay in its domestic currency and its suppliers to invoice it in its domestic currency.

Example

A company has contracted to purchase a shipment of chairs from the USA for \$100,000. The current FX rate is Rwf1,000=\$1. The company is worried about fluctuations in the FX rate and changes the terms with the US supplier so that it will be invoiced Rwf100,000,000 (instead of \$100,000) for the chairs. The US company is now exposed to FX rate fluctuations instead of the Rwandan company.

Note that the norm in business is for goods to be paid for in the currency of the supplier.

Advantages:

- Cheap to arrange – no transactions fees as no banks or other 3rd parties are involved;
- Completely shelters a company against FX rate fluctuations.

Disadvantages:

- May be difficult to convince the foreign supplier/customer to invoice/pay in your domestic currency (relative bargaining power of the companies will usually decide this issue);
- This will not usually work if FX rates change substantially or for a long period as the price in domestic currency will be forced to change.

- **Netting**

If a Rwandan company buys and sells in US\$ then the effects on the profitability of the company are offset in terms of both increased/decreased costs and increased/decreased revenues.

Example

A Rwandan company has annual sales to the USA of \$100,000 and sales to Europe of €50,000. It buys stock from the USA which is used for sales in both USA and Europe and its costs for the year are \$100,000 (for stock) and Rwf20,000,000 (for overheads). At the beginning of the year, the FX rate is Rwf1,000=\$1. Therefore the company budgets for a profit for the year of Rwf30,000,000.

Unexpectedly, the FX rate immediately moves to Rwf1,000=\$2. The Euro rate stays unchanged.

The sales to the USA now transpire to be worth only Rwf50,000,000 (\$100,000 = Rwf50,000,000). Similarly, the costs of buying the stock are also Rwf50,000,000.

The company's profits are therefore as follows:

Revenues:

USA	Rwf50,000,000
Europe	Rwf50,000,000

	Rwf100,000,000

Costs:

Stock	Rwf50,000,000
Overheads	Rwf20,000,000

	(Rwf70,000,000)

Profits Rwf30,000,000

The movement in the FX rate therefore has had no effect whatsoever on the profits of the company.

Advantages:

- Cheap to arrange – no banks or 3rd parties involved;

Disadvantages:

- Rarely possible in practice exactly to match foreign currency inflows and outflows (any mismatch should be hedged using some other means such as a forward contract);

Matching

This method involves trying to ensure that the value of a company's foreign currency assets and liabilities are matched. E.g. If a company was investing in property in the UK, it may choose to borrow the funds in Sterling. If the Rwf value of the property was to rise/fall as a result of a move in FX rates, the Rwf value of the loan would rise/fall by an equivalent amount.

Leading and Lagging

Under this method a company tries to predict movements in the FX rates and time its cash inflows and outflows accordingly.

Lead Payment:

If a Rwandan company expects, say, dollars to strengthen against the Franc over the coming month, it may decide to pay its US supplier immediately before dollars get too expensive. This may be done even if payment isn't due until the end of the month.

Lagged Payment:

A lagged payment is made where a company is expecting the foreign currency to weaken against the domestic currency. Therefore by waiting a while before making payment, the company can buy the required amount of foreign currency cheaper.

The above technique is usually only used in relation to payments. It is not usually possible to time receipts.

Advantages:

- Cheap method of hedging – banks and other 3rd parties not involved;
- Enables a company to profit from FX movements;

Disadvantages:

- Can be a risky business trying to predict FX movements;
- Can result in dis-satisfied suppliers;
- Limited in terms of timeframe – a company can only alter the timing of its payments by a few weeks, any more than that could result in being sued by a supplier.
- Market integration promotes the adoption of modern technology and payment systems and vice versa.

J. INTERNATIONAL PROJECT FINANCE


Project finance is finance for a particular project, such as a mine, railway, pipeline, power station, hospital or prison, which is repaid from the cash-flow of that project.

Project financing techniques have been used on many high-profile corporate projects, including Euro Disneyland. Increasingly, project financing is evolving as the preferred alternative to conventional methods of financing infrastructure and other large-scale projects internationally.

Project Financing includes understanding:-

- The basis for project financing
- How to prepare the financial plan
- Assess the Risks
- Design the financing mix
- Raise the funds

Project finance is different from traditional forms of finance because the financier principally looks to the assets and revenue of the project in order to secure and service the loan. A most important point to remember in project financing is the identification, analysis, allocation and management of every risk



associated with the project. Financiers and their advisers will go to substantial measures to ensure that the risks associated with the project are reduced or eliminated as far as possible.

The cost of project finance is generally higher and it is more time consuming for such finance to be provided.

Possible risks associated with project finance would include:-

- Project not being finished on time, on budget, or at all
- Project not functioning at its full capacity
- Project failing to generate sufficient revenue to service the debt
- Project hastily comes to an end

Each project gives rise to its own unique risks and hence poses its own unique challenges, therefore in every case all parties and those advising them need to act creatively to meet those challenges and to effectively and efficiently minimise the risks embodied in the project in order to ensure that the project financing will be a success.



Study Unit 9

Sundry Definitions

Contents:

- A. Introduction
- B. Sundry Definitions

A. INTRODUCTION

You may be expected to write briefly on a number of topics, as part of one of the questions. This is an opportunity to gain some very valuable marks for a small amount of effort. There is a limited range of areas that can be examined and certain topics may repeat over a number of examination sessions. You do not need to write a thesis on the 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.

This section can also assist you in your revision, immediately prior to the exam.

B. SUNDRY DEFINITIONS

Adjusted Present Value

Adjusted Present Value (APV) represents an alternative approach to WACC in terms of valuing a business and its operations. All DCF calculations involve discounting forecast future cash flows to a present value equivalent at a discount rate which reflects accurately the particular risk of the business. The approach taken under APV is to separate operational and financial effects, and to discount the former at some base-line cost of capital in order to arrive at a basic calculation of present value. As a separate and subsequent step, the cash flow consequences of alternative project financing options are discounted and added to the base-line present value. In effect the introduction of the term “adjusted” in APV reflects a concern to evaluate separately, the side effects of project financing. The attempt to identify and trace the consequence of each side effect involves the APV analyst in a series of separate DCF calculations. This added computational burden might help to explain some earlier reluctance to use APV, although the widespread use of sophisticated spreadsheets in recent years tends to diminish the significance of this argument.

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 shares 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.

Call Option

A call option gives its owner the right to buy a financial instrument at a specified price -

sometimes referred to as the strike price. Where the call option can only be exercised on a given date in the future, it is known as a European call option. Where the option can be exercised on any day up to and including a defined future date, it is known as an American call option. Where the exercise price of a call option is below the current market price of the financial instrument in question, the option is said to be “in the money”. Conversely where the exercise price of the option is above the current market price of the financial instrument in question, it is said to be “out of the money”.

Options are a secondary market activity affecting only the two parties involved - there are no consequences for the company which originally issued the financial instrument. The party which issues the call option is known as the “writer” of the call.

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:

$$R_p = R_f + (\beta)(R_m - R_f)$$

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.

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

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.' Example of such a business would be Hanson Industries Plc, quoted in the U.K.

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 therefrom 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, 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.

Due Diligence

This is the process which should 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.

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. Thus, the possibility of a “speculative bubble” is minimised.

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.

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, stamp duties, 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 take 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

Foreign Exchange Exposure

Foreign exchange exposure arises from exchange rate functions. Transaction exposure arises

where an exporter or importer is vulnerable to adverse movements in foreign exchange rates when there is a period of credit involved (as there almost always is). For example if an exporter sells goods to the USA for US\$57,600 when the exchange rate is US \$1.6 to RWF1, he would expect to earn RWF36,000 from the sale.

However if the customer is allowed credit of three months and the exchange rate alters to US \$1.8 to RWF1 in this time, the eventual income would be only RWF32,000, which is RWF4,000 less than expected.

Forward Exchange Rate

The risk inherent in foreign exchange dealings can be overcome by entering a forward

exchange contract which involves an importer/exporter in buying or selling a specified amount of foreign currency, at some specified date in the future, and at an agreed and fixed rate of exchange to be determined when the contract is established. Under these arrangements therefore, the importer/exporter can lock in to a certain financial outcome and does not have to live with the uncertainty of not knowing what spot rate may prevail on the date of the anticipated transaction, thereby remaining unsure of the financial consequence of the transaction itself. The Forward Exchange Rate is derived by adjusting the spot rate (ie the rate prevailing on the day when the contract is made) by the interest rate differential which exists between the two currencies. It always remains possible however that an importer/exporter who enters into a Forward Rate agreement, may discover that s/he would have been better off to have completed the transaction at the eventual spot rate on the date set for final payment.

Forward Exchange Contracts

These are contracts entered into with a financial institution to reduce the risk associated with foreign currency transactions. An organisation can guarantee the domestic currency value of a future foreign currency receipt or payment. The rate agreed is essentially the spot rate as adjusted by a premium or discount to allow for the differential in the interest rates between the economies of the two relevant currencies.

Interest Rate Options

Organisations with debt commitments will have to pay interest thereon. They may have negotiated a fixed or variable rate of interest. However, such an organisation may wish to purchase an option to vary the basis of their interest rate exposure at/by a future date. This is known as an interest rate option.

An example would be in times of falling interest rates, an organisation presently paying interest at a fixed rate may wish to exercise the interest rate option in order to pay interest at the lowering variable rate

Interest Rate Parity Theorem

The Interest Rate Parity Theorem essentially says that differences in forward and spot rates of exchange are caused by differences in interest rates in the economies in question. This may be summarised as follows:

$$(1+r\$) / (1+rRWF) = (\text{For rate } \$ \text{ to RWF}) / (\text{Spot rate } \$ \text{ to RWF})$$

Under the terms of this relationship therefore, only a divergence between interest rates in the \$ and RWF economies will cause a difference to occur between the forward and spot rates. Specifically, if interest rates are higher in the domestic country than in the foreign country, then the foreign country's currency will sell at a premium in the forward market. If on the other hand, interest rates are lower in the domestic country, then the foreign currency will sell at a discount in the forward market.

Interest Rate Swap

An interest rate swap arises where two parties (usually two firms) agree to exchange interest repayment commitments on existing loans. This would often involve a situation where one company with fixed rate interest commitments might wish to change to floating rate interest commitments, and it would therefore seek out a counter-party with the correct fit. Swaps are usually arranged by banks on behalf of client companies. Despite the fact that a Swap might be arranged, both parties retain legal responsibility for the cost of servicing the original loans taken out.

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 capital 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 that 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 betas. In terms of an influence on a company's beta, 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 stock 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 investor 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 weighted average cost of capital 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 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.

Value Gap

A Value Gap refers to a situation where the publicly quoted price for a company's ordinary share differs from the value which might be attributed to that share based upon one of the conventional share valuation models (e.g. fundamental share valuation of price = d/r , P/E basis, or free cash flows). Value gaps can arise in cases where a particular economic significance might be attached to information about the business and its operations (e.g. investment in brands, new technologies, know how etc), but where capital markets are sufficiently information inefficient to allow the significance remain concealed. In such cases investors on the capital market remain unaware of the underlying economic potential of a particular company and so its share price might remain unduly low. Value gaps can also arise in circumstances of poor “corporate parenting” where a business may simply be badly managed thereby allowing a potential predator to believe that the company, under new and improved management could be made to perform more profitably. In these circumstances the predator could be motivated to make a take-over offer for the company in question at a price in excess of the share's publicly quoted market price. This would be done in the belief that such a Value Gap will be more than adequately redeemed by way of an improved operating performance.

Venture Capital

A Venture Capitalist, as the name suggests is an organisation which provides finance for new and developing businesses. Venture Capitalists typically take the form of a department of an established financial services organisation or as private asset management experts e.g. Hibernia Capital Partners.

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”. A classic example of a successful Venture Capital backing would be Cisco Systems, a Californian base internet infrastructure provider, the most successful global company in its field.

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$

Where r = discount rate

n = number of periods until payment

<i>Periods</i>	<i>Discount rates (r)</i>									
	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
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766W	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239

(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
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065

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

<i>(n)</i>	<i>Periods</i>										<i>Discount rates (r)</i>			
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909				
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736				
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487				
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170				
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791				
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355				
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868				
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335				
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759				
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145				
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495				
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814				
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103				
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367				
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606				

(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
2	1·713	1·690	1·668	1·647	1·626	1·605	1·585	1·566	1·547	1·528
3	2·444	2·402	2·361	2·322	2·283	2·246	2·210	2·174	2·140	2·106
4	3·102	3·037	2·974	2·914	2·855	2·798	2·743	2·690	2·639	2·589
5	3·696	3·605	3·517	3·433	3·352	3·274	3·199	3·127	3·058	2·991
6	4·231	4·111	3·998	3·889	3·784	3·685	3·589	3·498	3·410	3·326
7	4·712	4·564	4·423	4·288	4·160	4·039	3·922	3·812	3·706	3·605
8	5·146	4·968	4·799	4·639	4·487	4·344	4·207	4·078	3·954	3·837
9	5·537	5·328	5·132	4·946	4·772	4·607	4·451	4·303	4·163	4·031
10	5·889	5·650	5·426	5·216	5·019	4·833	4·659	4·494	4·339	4·192
11	6·207	5·938	5·687	5·453	5·234	5·029	4·836	4·656	4·486	4·327
12	6·492	6·194	5·918	5·660	5·421	5·197	4·988	4·793	4·611	4·439
13	6·750	6·424	6·122	5·842	5·583	5·342	5·118	4·910	4·715	4·533
14	6·982	6·628	6·302	6·002	5·724	5·468	5·229	5·008	4·802	4·611
15	7·191	6·811	6·462	6·142	5·847	5·575	5·324	5·092	4·876	4·675