Title:
INVESTMENT PLANNING

1st Edition 2002
2nd Edition 2003
3rd Edition 2004
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5th Edition 2008
6th Edition 2014
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Module 3 - Investment Planning
RFP Programme

Preface

In this edition, several chapters have been updated based on feedback and changes that had been implemented in the capital markets. These changes include the introduction of new products and the related trading rules.

In this revised edition, students will be exposed to additional computation techniques relating to evaluation of investment proposals such as IRR and NPV. Techniques relating to investment portfolio management include standard deviations under three approaches and computation of correlation coefficient using financial calculators. Financial calculators can help to solve complex models and formulas relating to investment with ease. Computation of investment risk has been presented in much greater details in this edition. This is due to the increased emphasis that investors should be well informed of the risk associated with investment. In order to identify high risk or low risk instruments, quantitative techniques are inevitable but again they can be simplified using financial calculators. In the era of globalization with extremely keen competition, financial planners should be better equipped.

One must be aware that this is the study materials for investment planning for individuals. Hence, it is inevitable that the area of emphasis may differ slightly from the literatures that focus on investment for corporations. An example is the inclusion of selection of housing loan packages for individuals in this module. Asset acquisition is often financed by loans to individuals. In the case of real estate, most individuals rely on mortgage loans to complete the purchase of real estate. Extremely keen competition amongst bankers has seen the advent of numerous types of loan offers. Computations of housing loan instalment amount based on multi-rates housing loan package have therefore been included. Readers will find two approaches in selecting housing loan packages in this module.

Investment for individuals is an art and science of managing money to meet personal financial goals. Since it is not a pure science, certain areas and theories are subject to challenges and debates which remain unresolved. One may therefore find conflicting views on investment approaches in the text materials. Examples are technical analysis vs fundamental analysis and bottom-up approach vs top-down approach in securities selection. On the more scientific aspect of investment analysis, changes in variables relating to bonds and their consequences on values of bonds are more predictable.

Registered Financial Planner (RFP) Programme

Module 3:
Investment Planning

Contents

Chapter

Chapter 1

Basic Concepts of Investments

Chapter Objectives

On completion of this chapter you should have a basic knowledge on:

- Definition of investment

- Broad classifications of investment instruments

- Types of investments and benefits of investment to investors

- Brief introduction to the Malaysian capital market

- Types of risks an investor may be exposed to

- The importance of risk management

- Factors that affect investments

- Steps in financial planning

Introduction

The basic objective of financial planning is to provide appropriate investment recommendations that meet the needs, goals and objectives of the client. Investment is thus the solution for the clients' financial goals and problems identified in the financial planning process. While inheritance also provides the financial resources, generally, it is what we do with the financial resources that will eventually make it grow to satisfy the numerous future needs. As can be seen, investment plays the most prominent and vital role as a mechanism for financial liberation and future wealth.

What is investment? Investment is generally construed as ***the conversion of surplus money to financial assets that are expected to generate income or capital gain to increase the investor's wealth.*** In the context of personal financial planning, the general definition is somehow a bit narrow because it ignores the fact investment can be funded by loans. In other words, investment need not be funded fully by surplus funds. In addition, individuals' investment need not be confined to financial assets which differ from real assets. A more appropriate way to define investment is: ***the placement of funds in any assets with the expectation of capital gain and/or periodic income in future.*** The later definition defines investment in such a way that it does not exclude acquisition of assets that are funded by loans and advances. It also does not restrict investment to financial assets. Base on this definition, several observations and conclusions can be made:

- Placement of funds in savings account or fixed deposits constitutes investment. Hence, conservative clients who could not accept investment have actually invested their money without knowing it. In the investment vehicles they have chosen, the return is merely in the form of interest income. There is no capital gain whatsoever.

- Purchase of shares in the stock market is a form of investment. Investors expect dividend payments and capital gain in the form of increase in share prices.

- Purchase of real estate also fits into the definition. In this case, the periodic income is in the form of rental. Increase in property prices is an example of capital gain.

- Purchase of loan stocks is also a form of investment as interest income can be expected. Changes in price of loan stock also provide an opportunity of capital gain.

- Purchase of warrants is a form of investment. However, this instrument will only provide potential of capital gain. There will not be any periodic income.

- Contribution to EPF is a form of investment, particularly if the contributions are made by the self–employed and by those who are not required to do so under the law.

- Purchase of life insurance policies with surviving cash benefits is also part of investment. In this case, payments of claims are not part of investment gains.

- Charity is not an investment activity since contributors do not expect any return from their contributions. Interestingly, this also means that contribution of funds with expectation of personal gain, whether in tangible or intangible form, does not constitute charity.

From the few examples of investment, one can see that investment involves placement of funds. Return can come in one or two forms.

Based on the definition and the examples of investment, it is important that one must not have the thought that all investment must be profitable. Note that the definition merely suggests that all investments are **expected to generate capital gain and/or periodic income.** For any rational investor, the expectation in investment has to be positive. Otherwise, the investor will not invest in the first place. In reality, a lot of investments failed. Capital gain can end up as capital loss. Periodic income from investment may also turn out to be periodic losses as in the case of the obligation to pay maintenance charges with no rental income from apartment.

The definition also touched on financial assets. In our society, the production capacity of goods and services is a function of the real assets of the economy. Real assets refer physical assets such as land, buildings, knowledge and machines that are used to produce goods and services. On the other hand, owners of financial assets provide the capital for business operations. As such, financial assets represent claims of income generated by corporations or the government. Examples of financial assets are ordinary shares, preference shares and loan stocks. These financial assets are unique in the sense that they are intangible. They can be created when corporations go for listing in the exchange. They can also be cancelled when loans stocks mature or when corporations go for delisting.

In this chapter we will introduce the basic concepts on types of investments such as short-term and long-term investments, investment vehicles, direct and indirect investments, and the relationship of risk and return on investment. In addition, we will also cover briefly the investment process and the types of securities market. Various steps of investment planning to meet the various types of investment objectives are also included. Unit trust funds are covered in later chapters.

Broad Classifications of Investment Instruments

We have earlier defined investment as placing funds into any asset in expectation of generating future income and/or capital gain. The investment or placement of funds may be with government or other organizations. As the government and organizations compete for funds, investors will invest with the one they think best suits them and their available resources, goals, knowledge and personality. There are various types of investments that can be differentiated on basis of a number of factors. Such factors are ownership, risk, liquidity, nature of investment, and direct or indirect investment. The differences are described briefly in the paragraphs below. The details are covered in later chapters accordingly.

1.   **Securities investment** – these are evidence of ownership or debt of a business or other assets or legal right to acquire or sell ownership interest in a business or other assets. Examples of such securities are shares (equity), bonds (debts), and options (derivative).

2.   **Tangible assets investment** – these are holding of real property or tangible collectibles. Real properties are land and building which are permanently affixed to the land. Tangible collectibles includes items of gold and jewelry, artwork, antiques and other collectibles.

3.   **Direct investment** – this implies that the investor directly acquires a claim on a security or property. In other words, the investor directly holds the property or shares or bonds in the investee entity (entity where funds are being invested in).

4.   **Indirect investment** – this implies that an investor invests through a third party. An example will be investment in unit funds. These fund management companies consist of members who have the expertise in investment, who will then invest on their behalf in the form of portfolio.

Investment Vehicles

Short-term investment vehicles – these normally include savings instruments that usually have lives of one year or less. Short-term vehicles generally carry little or no risk. Often these are used to "warehouse" temporary idle funds and earn some return just before a suitable longer-term investment vehicle is identified or time for consumption. Examples of these short term investment vehicles are Malaysian Treasuries Bills, Bank Negara Bills, Government Investment Certificates, Bankers Acceptances and Negotiable Instrument of Deposits.

However, these are also popular among conservative investors who use short-term vehicles as a primary investment outlet. The most common ones are various types of short term deposit accounts with banks and financial institutions, short-term treasury bills and bonds, and money market unit trust funds.

In addition to "warehousing" function, these short-term vehicles also provide liquidity, as these investments can be converted to cash quickly and with little or no loss in value. Ensuring liquidity is an important part of any financial planning. Financial planners often recommend that it is good to "warehouse" sufficient short-term funds (three to six months of after tax income) in short-term vehicles to meet unexpected needs.

The returns on short-term investment vehicles are normally in the form of interest.

Long-term investment vehicles – these are securities investments that generally give higher return over a longer period. They are discussed as follows:

Share capital / ordinary shares / common stock / shares stock – these are equity investments that represent ownership in a company. Each unit of share held represents a fraction of ownership. Since the investment is in ownership and *without specific maturity date*, it is classified as long-term investment. If the investor wishes to liquidate the investment, he needs to sell the shares to another buyer in the exchange.

The returns on share capital investments are in two forms, namely *dividends* and/or *capital gain* Dividends are periodic payments made by the investees to the investors in shares, cash or both. Dividends are made from current earning or past earnings. As earning itself by nature is uncertain, so is the dividend. However the capital gain is the excess from the selling after deducting the cost of acquisition. Capital gain is not subjected to tax, as it is not considered as income under the Income Tax Act (ITA) 1967, and there is no capital gain tax in Malaysia on shares at present.

Preference share capital / preferred stock – like ordinary shares, preference shares represents an ownership interest in a company. Unlike ordinary shares, the return on preference shares has a *stated dividend* known as preference dividend. The payment of this dividend is given preference over ordinary share dividend of the same company.

In Malaysia, preference shares may be classified into:

a.   **Cumulative preference shares** – in times where the company does not make profit, the preference dividend is accumulated and paid in future years when the company has profit to pay. Otherwise this preference dividend is a fixed return.

b.   **Non-cumulative preference shares** – in times where the company does not make profits, the unpaid preference dividend cannot be carried forward, and will not be paid.

c.   **Convertible preference shares** – these are investments in preference shares having a fixed return, in addition they are ***permitted to be converted*** into ordinary shares at a ***predetermined number*** of ordinary shares at a future date. The convertible feature also provides the ***potential of capital gain*** upon conversion.

Bonds – bonds are long-term debt instruments (IOUs) of companies and governments. In Bursa Malaysia, it is more commonly known as loan stocks. A holder has a contractual right to receive a known interest return (fixed income), plus return of the bond's face value stated on the certificate on maturity. If an investor purchased a RM1,000 bond paying 8% interest in half yearly installments, the investor would be expected to be paid interest of RM40 every six months until maturity. Upon maturity, the face amount will be paid. Bonds are generally longer term financing ranging probably from 5 years to 20 years or even longer depending on the financial need of the borrower. An investor may buy or sell a bond prior to maturity. Similar to investment in ordinary shares, a wide range of return-risk combinations is available to the bond investor.

Convertible bond – this is identical to bond just stated above, however it has an additional feature of ***permitting it to be converted*** into ordinary shares just as that of convertible preference shares. The conversions are at a ***predetermined conversion*** rate, and within a specified period of time, normally close to or on maturity date. As in the case of convertible preference shares, there is a ***potential capital gain*** on conversion.

Derivative securities – these are neither debt nor equity. They give the investor an opportunity to buy or sell another security or underlying asset at a specified price during a given period of time. As such, their values are derived from and have characteristics similar to those of an underlying security or asset. The main derivatives are options and futures.

Options – purchasers or holders of options are given the rights, but not the legal obligation, to buy or sell a predetermined quantity of underlying asset at predetermined price and specific time. Most options are purchased in order to take advantage of an anticipated rise or fall in the price of shares/stocks. The purchaser or investor is not guaranteed any return and could even lose the entire amount invested if and when the options become unattractive.

Options are sometimes used to ***protect existing investment position*** against losses. The two common types of options are puts options and calls options.

Futures – these are legally binding contracts or obligations stipulating that the sellers of such contracts will *make delivery* and the buyers of contracts will take delivery of a specified commodity or financial instrument at some specific date in the future, at an agreed price concluded at the time of the contracts. Some of the commodity futures are soybeans, platinum, cocoa and crude palm oil. In the case of financial futures, they may be contracts for Japanese yen, U.S. Treasury securities, interest rates, and stock indices. Since physical delivery is not possible for these financial futures, they are cash-settled.

Unit Trust funds – it is a company that raises money from sale of its shares and invests in diversified portfolio of securities, and manages them professionally. Investors in the fund own an interest in the fund's portfolio of securities. All unit trust funds issue and repurchase shares of the fund as

demanded at a price that reflects the value of the portfolio at the time of the transaction. Money market unit trust funds are considered short-term investment vehicles, and so are the funds that only invest in other short-term vehicles.

Real Estate - this refers to property including residential homes, commercial property, land, and various forms of income producing property like warehouses, office / shop lots in a commercial center, apartments and condominiums. The returns from these investments are again similar to that of ordinary shares, mainly it is in two forms. Periodic income will be the rental income in the case of income producing property and capital gain will be applicable to income and non-income producing property / investment. In 2006, the Real Property Gain Tax had been abolished. On the risk factor, the periodic rental income received may not be sufficient to repay the periodic mortgage interest, and at time of disposal, there may be a capital loss depending on the economic conditions at time of purchase and disposal.

Tangibles & Collectibles – these are investments in asset that can be touched and seen other than real estate. These include precious metals like gold, gemstones, and collectibles such as coins, stamps, artwork and antiques. These assets are purchased for return in the form of capital gain. The gain derived is excluded from the Income Tax Act 1967 of Malaysia. During the ownership period, the investor may have the psychological enjoyment of the tangibles invested in. In terms of risk factor, since there is the psychological enjoyment, which is difficult to quantify, so is the risk. Despite saying so, in general, due to the nature of these items, the risk in general is considered to be negligible.

Investment-linked Life Insurance Plan: This may be considered yet another investment vehicle. The concept of these products is that they are basically life insurance plans, whatever name they are called. In these life insurance plans, the insured is given the opportunity to select and participate in the various funds within the insurance company, be it the income fund, growth fund and barakah (Islamic) fund or some other funds. These funds provide the insured opportunities to participate in the fixed interest securities and Malaysian equities market. The insured also has a choice to select between a single premium, 2-year premium and regular premium type of investment-linked life insurance plans.

Exchange Traded Funds: This is relatively new in Malaysia but is expected to grow as it offers the feature and benefits of unit trust funds at much lower fees to the investors. The first of this type of investment FBM 30etf was introduced last year. By buying into this counter, just like buying any counter listed in Bursa Malaysia, investors will have a portfolio which comprises 30 top largest corporations listed in Malaysia. FBM 30etf distribute income twice a year.

The Fund Flow Process in the Financial System

The fund flow process refers to mechanism by which the suppliers and users of funds are brought together. In reality these two parties are brought together either directly or indirectly.

When a public listed company issues new ordinary shares to its existing shareholders, the funds from the suppliers who subscribe for the new shares go directly to the issuers of shares. Similarly, when a listed corporation issues loan stock to the public or to their existing shareholders, they interact directly in the movement or circulation of funds from the suppliers to the users. In the examples given, although the users of funds get their funds directly from the suppliers, there are also other parties such as the securities issuing house, merchant bankers, public accountants, solicitors and valuation advisors that play a major role in making the exercise a success.

Traditionally, for most of the funds, users and suppliers do not interact directly. Instead, people with surplus funds place their money in banks and finance companies. The financial institutions in turn lend out theses funds to the user of funds. Banks and finance companies are thus termed as financial intermediaries in mobilizing funds from the suppliers to the users. Another category of financial intermediary is the life insurers. Life insurers gather a lot of funds from their policyholders. The moneys they gather are not left idle. They have to invest them based on a set of guidelines stated by the Bank Negara Malaysia.

There are essentially three key participants in the fund flow process. They are the Government, Business Sector and the Individuals.

Government. We have the Federal and State Governments. They require large sums of money for various objectives. The spending includes Capital expenditures such as construction of schools, roads, hospitals and public housing. Governments also need funds for their operations such as defense, welfare, and national debt. Operating expenses are usually met from collection of taxes and revenue. However, when there are shortfalls, the government may raise funds by issuing debt securities. Occasionally, governments may have temporary surplus of funds, especially in the first quarter of the year. These idle funds are then placed in short term investment. Thus, the government could be users and/or suppliers of funds.

Business Sector. Most business organizations require borrowings to support their businesses. They have long-term needs and short-term needs. Short-term needs (shorter than a year) are usually known as working capital needs and long-term needs are usually referred as capital expenditure. Proper matching of needs is recommended in such a way that short-term needs are matched by short-term funds; long-term needs are matched by long-term funds of equal tenor. For example, short-term needs of financing inventory and trade debtors could be funded by bank overdraft, supplier's credit and other forms of trade financing. For capital expenditure such as acquisition of machinery and equipment, financing alternatives such as term loans from financial institutions or issuing of ordinary or loan stocks could be explored by those organizations listed in the Exchange of Bursa Malaysia. There are also business organizations that are cash rich. These businesses usually collect cash from sales and sometimes enjoy credit terms from suppliers. Companies that conduct sales or business in cash terms include KFC, AMWAY, and RESORT WORLD. They usually invest their surplus funds based on their corporate objectives.

Individuals. Individuals place their money in Employees Provident Funds, insurance companies and financial institutions. They also undertake direct investments. They are the largest providers of funds in the system. On the other hand, consumers' credits are commonly seen in credit cards, housing loans and car loans. Wealthy society usually implies large per capital of savings by individuals.

When participants move out of the local market or domestic economy, there shall be foreign investment and external debts, whether it is private or public in nature.

Brief Introduction of the Malaysian Capital Market

Investment activities are primarily part of activities in the capital market. In order to make wise selection of investment vehicles using investment goals as the yardstick, investors need to have some basic knowledge of the capital market. Essentially, our financial market consists of the capital market and the money market. The capital market is a market that deals with long term instrument of more than one year while the money market is a market for instruments with tenure of less than a year.

The Malaysian capital market consists of
i.   the equity market
ii.   the private and public debt securities market
iii.   the financial derivatives market
iv.   . the Islamic capital market

Activities in the capital market include listing and trading of securities, placements, mergers and acquisitions, financial risk management, restructuring and underwriting. Important participants can be classified as follows:
i.   retail or individual investors
ii.   institutional investors such as life insurers and EPF
iii.   market intermediaries such as investment bankers and unit trust fund managers
iv.   . market institutions such as the issuing house and the stock exchange

The presence of such a large set of players and products naturally require regulations to ensure fair play and orderly growth to meet the desire objective of our nation. Hence, various regulatory frameworks have been formulated, amended and introduced from time to time to meet the ever changing environment in the era of globalization. At present, the capital market in Malaysia is governed by the following Acts of Parliament:
i.   Capital Markets and Services Act 2007
ii.   Securities Industries (Central Depositories) Act 1991
iii.   Securities Commission Act 1993
iv.   Companies Act 2016 (Repealed the Companies Act 1965)
v.   Off Shore Companies Act 1990
vi.   Labuan Offshore Securities Industry Act 1995.

The amount of capital raised in the capital market in year 2015 till 2018 through bond and equity markets were as follows:

Bond & Sukuk Statistics

Year	Month	Outstanding (RM Bil)	New Issuance (RM Bil)	Redemption (RM Bil)
2015		1,124.84	270.15	255.08
2016		1,172.91	240.56	192.49
2017		1,291.91	317.94	198.94
2018	Jan 2018	1,310.31	29.34	10.95
	Feb 2018	1,321.14	30.62	19.79
	Mar 2018	1,343.66	40.19	17.67
	Apr 2018	1,364.44	35.19	14.41
	May 2018	1,364.89	30.44	29.99
	Jun 2018	1,373.29	25.23	16.83
	Jul 2018	1,383.52	30.48	20.25
	Aug 2018	1,385.83	32.08	29.78
	Sep 2018	1,383.48	30.02	32.37
	Oct 2018	1,399.49	43.80	27.79

Corporate Bond Statistics

Year	Month	Corporate Bonds Outstanding (RM Bil)	Corporate Bonds Issuance (RM Bil)	Corporate Bonds Redemption (RM Bil)
2015		143.00	28.78	19.84
2016		139.31	20.83	24.52
2017		150.39	37.23	26.14
2018	Jan 2018	150.60	1.26	1.06
	Feb 2018	150.82	1.03	0.80
	Mar 2018	152.26	3.83	2.39
	Apr 2018	154.32	3.76	1.70
	May 2018	153.78	0.32	0.87
	Jun 2018	156.31	3.61	1.08
	Jul 2018	159.58	4.30	1.03
	Aug 2018	159.19	2.67	3.07
	Sep 2018	159.21	4.08	4.06
	Oct 2018	158.49	4.49	5.21

Corporate Sukuk Statistics

Year	Month	Corporate Sukuk Outstanding (RM Bil)	Corporate Sukuk New Issuance (RM Bil)	Corporate Sukuk Redemption (RM Bil)
2015		361.33	57.57	20.93
2016		393.45	64.82	32.70
2017		454.49	87.65	26.62
2018	Jan 2018	461.04	8.29	1.74
	Feb 2018	464.05	5.91	2.90
	Mar 2018	472.80	9.31	0.55
	Apr 2018	478.51	8.67	2.96
	May 2018	482.08	6.55	2.98
	Jun 2018	482.33	3.19	2.95
	Jul 2018	482.09	1.59	1.83
	Aug 2018	486.10	5.69	1.69
	Sep 2018	488.40	3.16	0.85
	Oct 2018	495.82	9.12	1.70

Source: BNM FAST

The Stock Exchange and the other Exchanges in Malaysia

The stock exchange is one of the most important institutions in the capital market. In Malaysia, the first stock exchange known as the Malayan Stock Exchange was formed in 1960. In 1973, the Malayan Stock Exchange was taken over by the Kuala Lumpur Stock Exchange or KLSE. In 1988, the Second Board was also introduced to enable smaller corporations to have access to the facilities provided by the KLSE. In 2004, KLSE, the first formal market institution that served the Malaysian capital market changed its name to Bursa Malaysia Bhd after a demutualization exercise. Subsequently, in March 2005, Bursa Malaysia was listed in the main board of the exchange.

In 1997, the second stock exchange, Malaysian Exchange of Securities Dealing and Automated Quotation Bhd (Mesdaq) was launched although it commenced trading only in 1999. The primary aim of the Mesdaq is to enable technology-based companies to raise capital for growth. Today it is replaced by the ACE Market (Access, Certainy, Efficiency) under Bursa Malaysia. The ACE Market was derives together with the unification of the Main and Second Board into the Main Market of Bursa Malaysia in 2009).

To further develop the capital market and to introduce financial risk management products classified as derivatives, Kuala Lumpur Options and Financial Futures Exchange (KLOFFE) and Commodity and Monetary Exchange of Malaysia (COMMEX) were formed in 1995 and 1998 respectively. In June 2001, these two derivatives exchange were merged to become the Malaysian Derivatives Exchange Bhd. This name was subsequently changed to Bursa Malaysia Derivatives Bhd.

As at 2018, the key indicators related to Bursa Malaysia (sourced from Bank Negara Annual Report 2006) are as follows:

Bursa Malaysia : Key Indicators (Volumn)

	Indexes			Volume * (million units)						
	FBMKLCI	FTSE Bursa Malaysia 100	FTSE Bursa Malaysia EMAS	MM	AM	ETF	SW	LN	LP	TOTAL
Dec 2017	1,796.81	12,614.20	12,942.57	27,587.16	12,853.30	19.16	3,996.27	233.73	0.38	44,689.99
Jan 2018	1,868.58	13,063.17	13,371.86	64,467.49	20,243.75	21.73	13,658.43	163.06	0.48	98,554.94
Feb 2018	1,856.20	12,922.76	13,218.25	29,981.72	8,034.51	18.30	9,045.35	131.01	0.52	47,211.42
Mar 2018	1,863.46	12,849.02	13,045.59	34,823.14	10,396.76	9.78	8,296.88	104.47	1.86	53,632.89
Apr 2018	1,870.37	12,852.17	13,033.69	33,541.10	9,495.04	12.29	12,064.56	79.87	0.30	55,193.16
May 2018	1,740.62	11,946.77	12,128.94	36,391.14	6,475.23	4.02	11,683.11	65.15	0.47	54,619.11
Jun 2018	1,691.50	11,757.93	11,960.93	31,819.29	6,869.37	3.17	10,996.06	27.97	0.53	49,716.39
Jul 2018	1,784.25	12,420.10	12,633.15	36,441.92	8,504.46	2.90	12,931.33	31.26	2.51	57,914.38
Aug 2018	1,819.66	12,526.43	12,719.42	34,047.46	9,020.67	6.27	8,817.38	22.72	3.23	51,917.72
Sep 2018	1,793.15	12,336.84	12,533.22	25,581.98	6,523.52	0.79	7,253.61	21.52	0.08	39,381.51
Oct 2018	1,709.27	11,624.27	11,770.04	35,594.84	7,529.50	1.17	9,375.12	13.01	1.56	52,515.20
Nov 2018	1,679.86	11,480.05	11,604.34	28,934.88	6,639.05	15.62	7,550.85	18.79	32.49	43,191.68
Dec 2018 (MTD)	1,694.99	11,571.98	11,701.99	4,146.71	418.33	0.18	776.12	1.30	8.37	5,351.02

MM : Main Market
SW : Structured Warrants
AM : ACE Market
ETF : Exchange Traded Funds
LN : Bond & Loan
LP : Leap

Bursa Malaysia : Key Indicators (Value and Market Capitalisation)

	Value* (RM million)							Market Capitalisation (RM billion)						
	MM	AM	ETF	SW	LN	LP	TOTAL	MM	AM	ETF	SW	LN	LP	TOTAL
Dec 2017	47,682.42	2,334.20	25.52	686.90	48.92	0.18	50,778.15	1,881.86	15.65	1.94	4.67	2.51	0.21	1,906.84
Jan 2018	66,896.07	3,506.84	26.18	2,107.11	39.91	0.12	72,576.23	1,934.44	15.49	1.94	5.86	2.38	0.23	1,960.34
Feb 2018	48,599.20	1,416.95	22.17	1,707.70	30.84	0.20	51,777.07	1,916.93	14.92	1.97	5.44	2.40	0.33	1,941.98
Mar 2018	51,418.55	1,706.66	11.97	1,346.95	12.89	0.70	54,497.72	1,873.06	13.47	1.96	4.43	2.29	0.45	1,895.66
Apr 2018	45,507.30	1,617.45	17.35	2,564.50	15.33	0.09	49,722.01	1,872.10	13.49	1.96	4.12	2.26	0.53	1,894.46
May 2018	64,194.06	1,088.15	5.35	1,947.06	12.45	0.13	67,247.22	1,770.88	12.97	2.05	3.67	2.20	0.56	1,792.33
Jun 2018	48,646.75	1,336.72	4.35	2,732.75	5.18	0.14	52,725.90	1,749.10	13.23	2.03	3.91	2.19	0.58	1,771.05
Jul 2018	48,303.39	2,110.53	3.78	3,812.88	6.60	0.32	54,237.50	1,836.62	15.17	2.03	4.34	2.42	0.55	1,861.13
Aug 2018	47,058.17	2,073.29	7.40	2,303.16	7.10	0.40	51,449.52	1,841.68	15.16	2.05	4.07	2.33	0.55	1,865.84
Sep 2018	39,339.19	1,227.58	1.08	1,893.92	4.68	0.02	42,466.46	1,810.76	15.85	2.04	3.96	2.22	0.59	1,835.43
Oct 2018	45,958.36	1,491.81	1.79	2,052.25	3.60	0.46	49,508.28	1,704.80	13.55	2.03	3.49	2.05	0.68	1,726.59
Nov 2018	41,311.51	1,428.41	18.67	1,793.57	5.49	0.91	44,558.56	1,690.01	13.78	2.04	3.40	2.02	0.75	1,712.00
Dec 2018 (MTD)	4,877.70	99.22	0.25	184.78	0.45	0.44	5,162.83	1,702.75	13.83	2.04	3.24	2.05	0.75	1,724.65

Types of Securities Markets

Securities markets are classifiable into **money markets** or **capital markets**. In the money market, short-term securities are traded. In the capital market, longer-term securities such as stocks and bonds are transacted. Our write up and study are focused on the capital markets. Capital markets can be further classified as either primary market of the secondary market.

Primary market. The market in which new issues of securities are offered for sale to the public is the primary market. The term Initial Public Offerings (IPO) refers to the first public sale of a company's shares. Before this could take place, there are a lot of conditions that have to be fulfilled. This area is covered in detail under chapter 4. To market its securities in the primary market, a company has at least 3 alternatives that comprise a) a public offerings, b) a rights offerings to existing shareholders and c) a private placement, in which new securities are sold directly to selected groups of investors.

Most public offerings are arranged with the assistance of investment bankers, merchant bankers or universal stock brokers. These advisors are financial intermediaries and they also undertake to buy up the shares that are taken up by the public. The undertaking to buy up shares not take up by the public is also known as underwriting. For big issues, a group of underwriters are usually involved. Usually shares offered to the public are fully taken up and oversubscribed during good times. During bad times, it is not uncommon to find that underwriters have to take up a large portion of new securities. An example of new offerings that were grossly under-subscribed was the Time. Com shares that were offered to the public in 2001.

Secondary market. The market in which securities are traded after they have been issued is the secondary market. The secondary market plays a very important role of providing liquidity to the investors. Investors who have excess funds when they purchase the securities may later encounter a need for funds for various reasons. A ready secondary market for the securities they have acquired thus provide them with the mechanism for liquidation with relative ease. Secondary market also provides a mechanism for continuous pricing for the securities to reflect their changing values at different times. It can be seen that for any primary market to succeed in marketing its securities, a secondary market must exist.

Risk and Return

Definition of Return
Returns are rewards for undertaking an investment. Returns consist of dividend or interest income plus principal or market price. There are three different types of rates of return, namely:

(1)   required returns (the minimum returns investors would expect from an investment);
(2)   expected returns (the returns expected to be generated by the investment); and
(3)   realized returns (the returns actually realized from a particular investment).

If an investment's expected return is higher than the required return, an investor may invest in that asset if the risk is acceptable to him. Given an alternative, an investor will not invest in asset with expected return lower than his required return. In order to evaluate investment performance, investors would compare the expected returns with the realised returns.

Risks
Investment risk is categorised according to two sources of investment return: a macro, pervasive factor such as the national economy and micro, localised factors such as the company itself. The risk associated with macro factors is called systematic risk; returns depend in a systematic and associative way on that factor. If the economy does well, returns on assets are likely to do well too.

The micro risks associated with factors particular to a company are called unsystematic risks or unique risks; investment returns are uniquely determined by the company's underlying earning power, such as its turnover of assets, its operating margin, and its return on assets and equity.

Systematic Risk

Political risk: The chance that returns will be affected by the policies and stability of nations is termed political risk.

Currency (Exchange risk): The chance that returns will be affected by changes in rates of exchange because investments have been made in international markets whose promise to pay dividends, interest or principal is not denominated in Ringgit is called currency risk or exchange risk.

The three somewhat interrelated systematic risk factors that are common to all assets are inflation, interest rates and movements in the markets in which a particular asset of portfolio of assets is traded.

Inflation risk. When investment return is lower than the risk of inflation, the investment assets will shrink. The presence of inflation give rise to the concept of real rate of return. The nominal return, the return that an investment vehicle supposed to provide, need to be discounted by the inflation rate. For instance, if the nominal rate of return is 6% and the inflation rate is 4%, the real rate of return shall be worked out as:

(Nominal rate – Inflation rate) ÷ (1 + Inflation rate) = (6% - 4%) ÷ 1.04 = 1.923%

In another example, if the nominal rate of return is 4% and the inflation rate is 5%, the real rate of return shall be negative 0.952% [(4% – 5%) ÷ 1.05].

Interest rate risk. The chance that returns will be better or worse than expected return because of changes in the level of interest rates is called interest rate risk. Fixed income securities are sensitive to interest rate changes. Prices of fixed income securities and interest rate are inversely related. Interest rate changes also affect the financial cost of corporations with borrowings. Increase in interest rate increase expenses and lower profits. Hence, the higher the gearing a corporation uses, the higher is its interest rate risk.

Interest rate changes is somehow affected by the rate of inflation. If the actual inflation rate is higher than expectation, there will be pressure to increase interest rate, pushing bond and stock prices lower. On the other hand, if the announced inflation rate is lower than expectation, the general effect will be favorable to bond and stock prices.

Market risk. It is the chance that market influences will affect expected returns of all equities in ways that were not anticipated. The extent of fluctuation would depend on the sensitivity of an individual stock or stock portfolio to movements in the stock market. The sensitivity measure is beta, a concept to be developed more fully in a later chapter.

Unsystematic risks
An investment asset's unsystematic risks consist of two major components: company risk and sector (or industry) risk.

Company risk/Credit risk. Company risk consists of a company's business and financial risks. Business risk is the risk inherent in the nature of the business. Financial risk is the risk that arises from using financial leverage. The demand for a corporation's products or services may be elastic or inelastic. When the demand of a product is inelastic, the percentage change in quantity purchased shall be lower than the percentage change in prices. When demand is inelastic, business risk is lower since prices can be adjusted and the increased costs of production can be passed on to consumers. On the other hand, if demand is elastic, the producer will have to absorb the increased costs of production and end up with lower operating profits. Based on the aforesaid, corporations in the supply of essential goods and services will have low business risk. On the other hand, corporations that supply goods with keen competition will have high business risk.

The operating fixed costs of a corporation is also used to measure its business risk. The higher the fixed cost, the higher will be the breakeven sales volume. Corporations with low fixed costs will find it much easier to break even to avoid losses. Hence, any increase in fixed operating cost shall be detrimental to business earnings. The operating fixed costs of a corporation may include financial charges if a corporation also borrow or issue loan stocks to fund its operation. The presence of financial charges increase fixed cost and increases its credit risk or financial risk.

Sector/Industry risk. Sector risk is the risk of doing better or worse than expected as a result of investing in one sector of the economy instead of another. It is also called industry risk. Certain industries perform better than others. The industries that are expected to perform better will attract more investment. However, actual performance of industries may differ from expectation. One of the most significant illustrations of sectorial risks is the rising fuel prices that affect the performance of transportation industries.

Real estate investment risk. As in the case of systematic risk, real estate requires a separate discussion because it has some unusual residual risks. Real estate is non- homogeneous and not easily divisible. Investors do not care which share of Telekom they hold. After all, a phone is a phone is a phone. But link house in Bangsar is different from one in Bukit Beruntung, thus give rise to a unique risk that may not be fully canceled through diversification.

The risk of an investment might be low or high depending on the type of investment vehicle used (as some investment vehicle may have greater risk exposure) and the nature of the investment/ business itself and the business environment. Low risk investment usually gives a low return. On the other hand, high risk investment might give high returns, but with more risk of disappointing results. It is important to understand that the result is the actual or realized return, whereas, return generally also has the same meaning of expected return.

Investment theory suggests that rational investors wish to maximize return and minimize risk. Thus if two investments have the same element of risk, the investor will choose the one yielding higher return. Similarly, if two investments have the same return, the investor will select the one with lower risk. This can be illustrated by the following diagram (Diagram 1.2).

Diagram 1.2
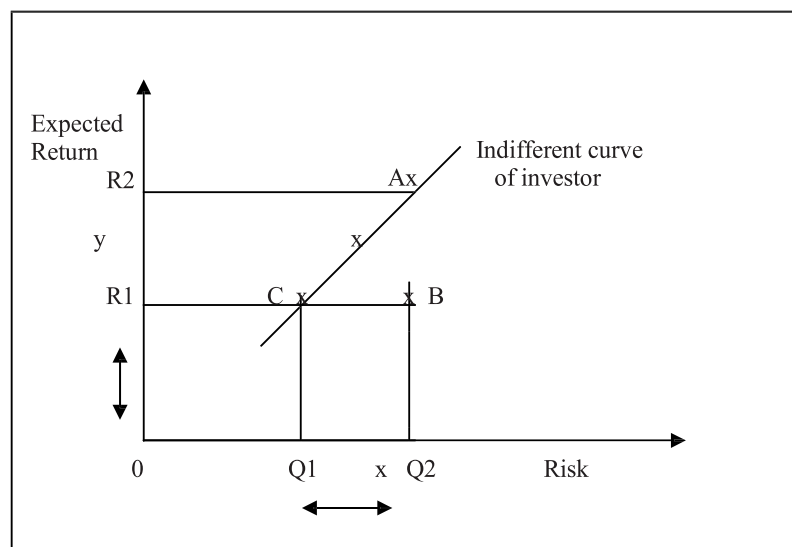
The above diagram shows that investment A (having return OR2) will be preferred to investment B (having return OR1) because it offers a higher expected return for the same level of risk (OQ1). Similarly, investment C (having return OR1) will be preferred to investment B (having return as C) because it offers the same expected return for lower risk (OQ1 instead of OQ2). Whether an investor chooses investment A or C will depend on the individual's attitude towards risk, whether he wishes to accept a greater risk for a greater expected return.

Indifference Curve

Each and every investment has its own expected rate of return and risk. Since investors are assumed to be naturally risk averse, they will avoid risk that they feel is not compensated by additional return. In addition, every investor has a different degree of risk aversion. Given its degree of risk aversion, an investor is able to derive certain level of satisfaction from its return on investment. This level of satisfaction or utility may be measured by a formula where:

Utility = Expected return – 0.005 x A (stands for degree of risk aversion) x Variance

A graph that connects all utility levels of an investor is called an indifference or utility curve. Each investor will have an infinite number of utility curves that will not intersect. Higher indifference curve is preferred over lower indifference curve.

Risk Management

Having identified the types of risk and their correlation which an investor will be faced with, it is only natural that we should discuss the management of risk. The total risk of any investment can be determined by the following equation:

Total risk = nondiversifiable risk + diversifiable risk

Nondiversifiable risk, also known as systematic risk, is caused by events like war, inflation, macroeconomic, and political events that affect all investments and therefore are not unique to a given investment vehicle.

Divesifiable risk, also known as unsystematic risk, is caused by random or uncontrollable events, such as labor unrest, strikes, lawsuit, and regulatory actions. This risk thus affects various investment vehicles differently. These kinds of risk represent the portion of an investment's risk that can be eliminated through diversification

Any wise investor can virtually eliminate or reduce diversifiable risk by holding a diversified portfolio of securities. Studies have shown that on average, by carefully selecting 8 to 15 securities for portfolio, an investor can eliminate most diversifiable risk. By selecting securities that are having correlation of less than one, portfolio risk will reduce; the degree of reduction depends on the correlation co-efficient of selected securities. The relationship between investments can be one of the three main types.

Positive correlation – positive correlation between investments refer to a situation where one investment does well (or badly) it is likely that the other will perform likewise. Thus if you buy shares in one company producing ice cubes and in another producing ice cream, you would expect both to do well during dry and hot season. On the other hand, it will probably do badly in rainy and wet season.

Negative correlation – negative correlation refers to a situation where when one investment does well the other will do badly, and vice versa. Thus if you buy shares in one company producing ice cream and in another manufacturing raincoat, during rainy season the raincoat company will perform well, however the ice cream company will do badly, and vice versa.

No correlation – the performance of one investment is independent of another. If you buy shares in a cooking oil producing company and in a property development company, it is likely that there would be no relationship between the return from each investment.

The relationship between the different investments is measured by the correlation coefficient. 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. If investments in a portfolio are showing high negative correlation coefficient, the overall risk would be reduced. In fact, risk of portfolio will be reduced as long as the correlation coefficient is less than + 1.

Apart from holding a diversified portfolio, another way of reducing risk of investment is done through the asset allocation process. Instead of selecting asset classes that are by nature risky, investor may choose to balance their risk exposure by selection of less risky assets in their portfolio. For instance, instead of investing 100% in corporations with small capitalization, investor may choose to allocate 20% of its funds to blue chips and 30% in bond funds.

Fund managers may also include options and futures as part of their portfolios in their attempt to reduce risk. In anticipation of a bull market, equity fund managers who may continue to receive funds for investment by clients can choose to buy the put options of the relevant index. They may also enter position as seller of index future in the futures market.

Measuring and assessing risk –As each investor has deferring preference of risk, it is not possible to fix a generally acceptable level of risk. There are three basic preference behaviors with regard to risk. They are risk seeking, risk averse and risk indifferent.

Consider two investment alternatives, Project A and Project B, which have the following possible outcomes depending on the state of the economy.

State of economy	Possible return (Project A) RM	Possible return (Project B) RM
Recession	90	0
Normal	100	100
Boom	110	200

If we assume that all the three states of economy are equally likely to take place, then the expected return is RM100 using the probability and expected value method to calculate the return as set out below

Expected return of Project A:

Probability		Expected return RM		Weighted amount RM
1/3	x	90	=	30.00
1/3	x	100	=	33.33
1/3	x	110	=	36.67
				100.00

Expected return of Project B:

Probability		Expected return RM		Weighted amount RM
1/3	x	0	=	00.00
1/3	x	100	=	33.33
1/3	x	200	=	66.67
				100.00

How does one determine whether Project A or Project B is more risky? There are several measurements of risk. In this chapter, we will use only the concept of "range" to define and measure degree of risk. In later chapters concept of standard deviation shall be used. Range is the difference between the highest rate of return and the lowest rate of return from an investment proposal. The higher the range, the higher is the risk of the investment proposal. In our example, the range of Project A is = Highest rate of return – Lowest rate of return = 110 – 90 = 20. For Project B, the range = 200 – 0 = 200. As such, it is very clear that risk of Project B is much higher than that of Project A.

With regard to the above scenario, a *risk seeking* investor given a choice between more or less *risky alternatives* with identical expected return, would prefer the riskier alternative (Project B), as it has a chance to reap a return of RM200. In this simple illustration, without any risk measurement, one can also say that Project B is riskier because there is 1/3 chance that the return is zero. Faced with the same choice, the *risk averse* investor prefers the *less risky* alternative (Project A). As Project A will *at least* give a minimum return of RM90, however the maximum possible return is only RM110 as compared to Project B which is RM200. The person who is *risk indifferent* or risk neutral would be indifferent to both alternatives as they give the same expected return. With regard to investors in general, studies of the securities markets provide convincing evidence that the majority of investors are *risk averse* (minimize risk).

Other Factors That Affect Investments

Liquidity – In investment, liquidity risk means how long does it take to dispose the investment or asset, and the offer price he can get, when an investor wants to sell an investment or asset. Some of the counters in the Bursa Malaysia are thinly traded. In order to buy or to sell such counters, investor will experience difficulty. When funds are required, selling the thinly assets usually involve reducing prices significantly in order to get buyers.

Based on the aforesaid, the liquidity of a given asset is an important consideration in an investment decision. In order to be considered liquid, the investment or asset must be easily sold at prevailing market price instead of at a steep discount.

To mitigate such liquidity risk, one of the measures taken by Bursa Malaysia was to increase salability of securities by reducing the number of shares in the board lot. From 1,000 shares per lot, the number of shares had since been reduced to 100 shares per lot. The theoretical consequence of such a measure is to reduce the transaction prices of the securities by 10 times.

Apparently, corporations in Bursa Malaysia are also aware of the liquidity factor. Recognizing that another way to increase salability of shares is to reduce the par value of shares, some of the corporations opted to do so. While we are not too sure of the actual intention, in 2007, we saw

corporations such as Genting Bhd and Resort World Bhd reduced the par value of their shares from 50 sen to 10 sen per share. Prices adjust accordingly when such par value reduction exercises are conducted.

Other ways to increase salability of shares and hence liquidity risk is to reduce net assets per share through bonus issue. Getting the same securities traded in more than one stock exchange is also another way to reduce the liquidity risk.

For investors who wish to avoid high liquidity risk, they should exercise care in selection of shares. Generally, blue chip shares traded in the Exchange of Bursa Malaysia are considered to be liquid assets. Such blue chips counter have good intrinsic value as they have a stable track record of earnings and dividend payments, proven management team and command respectable market share in the business they are in.

For investors who have neither the time nor the knowledge to invest in the share market directly, they may also reduce their liquidity risk of investment when they invest into the equity funds under unit trust scheme. Under the unit trust scheme, fund managers undertake to buy back the units at prevailing market prices whenever the investors need to liquidate their investments.

Taxation: Taxation is another factor to be considered before making any investment decision. In the selection of investment proposal, the projected rate of return from an investment should be adjusted for taxation before it can be used for comparison with other proposals.

In general, the rate of return after tax is computed based on a general formula as follows:

Rate of return after tax = (Rate of return before tax) x (1 – tax rate)

For instance, if the rate of return before taxation is 10% and the relevant tax rate is 25%, the rate of return after tax shall be 7.5% [10% x (1 – 0.25)].

Different countries have different tax rates. Supposing we have two investment proposals to be considered as follows:

Investment Proposal	Return before tax	Relevant tax rate
Country A	10%	25%
Country B	9%	15%
Difference	1%	10%

Ignoring the risk of international investment, which investment proposal provides higher return? In order to make a decision, one will have to compute the return after tax as follows:

Investment Proposal	Return before tax	Relevant tax rate	Return after tax
Country A	10%	25%	7.5%
Country B	9%	15%	7.65%
Difference	1%	10%	(0.15%)

Based on the computations made in column 4 of the table above, we can see that the investment proposal in Country B provides higher rate of return by 0.15% to investors. If investment decisions were made based on the return before tax, the choice would have been the investment proposal in Country A.

Different investment vehicles involve different tax treatment. Even corporate dividends paid can vary in tax rate. For instance, it is not uncommon to find some corporations that declared tax exempt dividends. If tax is payable, the net return to investor is definitely lower.

Real property gain tax is another tax issue with regard to investment in real property. This is the tax on gain on disposal of real property or real property shares (shares of a real property company). In 2007, the real property gain tax in Malaysia has been lifted. However, investors who are considering investing in overseas market should be aware of the property gain tax rate in arriving at the decisions. Detailed coverage on tax planning is made under the Module 4 on tax planning.

Investment Planning

The process of investing could be guided by well-developed plans that are formulated to meet the investment objectives. There can be several steps in plan formulation as follows:

Step One - Meeting the prerequisites. This step says that before any one talk about investment, he should have adequate provision for the basic necessities of life. This category should include food, shelter, clothing, and transport for himself and his dependents. In addition, the provision for contingency of funds to meet emergency is also necessary. One will find that the definition of basic necessities and contingency differ from one person to another. It is precisely because of these differences that no standard financial plans could be designed for all.

Step Two - Establishing investment objectives. Examples of investment objectives include retirement funds, education funds, funds for purchasing a car or a residence, and adequate funds to set up own business. The objectives must be specific, quantifiable and achievable within a time frame. Investment objectives are also part of life goals that could be qualitative and quantitative.

Step Three - Adopting an investment policy. After investment objectives are established, there should be a written plan as to how funds are invested. Is the amount to be invested in one lump sum or over a period of years on a regular basis? If regular savings are to be made, will the frequency be on a yearly, half-yearly, quarterly, monthly, weekly, or daily basis? Each and every objectives should be listed in order of priority. Certain goals are more serious than others and the level of risk should be low. For example, funds for education should not be built up based on investment vehicles that are highly risky.

Step Four - Evaluating the investment vehicles. This involves evaluation of investment vehicles based on their expected returns and risks. Measurement of historical performance and fluctuations in returns will give indications of expected returns and risk. The potential of the investment vehicles in the light of changing domestic and international environment is also to be evaluated.

Step Five - Selecting suitable investment. After proper evaluation, the next step is the selection of investment vehicles. The investment objective should form the primary criterion in the process of selection. Other criteria used include the risk tolerance level and age of the investors.

Step Six - Constructing a diversified portfolio. The key word here is to optimize the returns and risks, in order to achieve the investment objectives. A diversified portfolio might consist of common

stocks, bonds, and cash deposits. The percentage of each investment vehicles could differ from one person to another. Some investors may simply opt for indirect investments by picking unit trusts and/or fund managers with proven track record. Before unit trusts and/or fund managers are selected, the investors should study the prospectus of the funds to ensure that they are in line with the investment objectives of the investors.

Step Seven - Review the portfolio. A proper review should include measuring the performance of the funds, regardless whether it is direct or indirect investment. If the investment results are not in line with the objectives, there is a need to take corrective measures. These measures include switching if it is permitted under the indirect investments. When there is a need to switch funds, one will have to bear in mind the costs associated with switching. Some unit trust funds allow free switching up to a certain number of times a year whereas some will not allow switching, meaning investors will have to liquidate the position in order to enter into a new position! The cost associated with liquidation in order to go into a new position is definitely very high.

Self Assessment

1. Which of the following criteria is least considered when choosing securities for investment?
   A. The credibility of the issuer of the securities
   B. The liquidity and marketability of the securities
   C. The quantity of the securities issued
   D. The yield of the securities

2. Which of the following is NOT considered as an effective diversification strategy?
   A. Holding a portfolio consisting of different securities such as shares, bond and insurance
   B. Holding a portfolio consisting of perfectly positively correlated securities
   C. Holding a portfolio consisting of perfectly negatively correlated securities
   D. Holding a portfolio consisting of partially correlated securities

3. Which of the statements below FALSELY describes the risk and return relationship?
   A. An increase in the risk of an investment will result in a decrease in risk premium
   B. Generally, there is a negative relationship between the risk and the expected return
   C. The risk free asset earns the lowest rate of return
   D. Standard deviation is the reward to investor for bearing risk

4. _____ risk is part of the variability of an investment's returns that is caused by events affecting a specific company. It is also knows as _____ risk.
   A. Systematic; diversifiable
   B. Systematic; non-diversifiable
   C. Non-systematic; diversifiable
   D. Non-systematic; non-diversifiable

5. What of the following types off risks relates to the ability of an investor to buy and sell a company's security quickly and without a significant loss of value?
   A. Financial
   B. Business
   C. Maturity
   D. Liquidity

6. What of the following investments provides an investor who already owns share in Telekom Malaysia Berhad with the least amount of risk reduction?
   A. Share in Maybank Group
   B. Share in Kumpulan Hartanah Selangor
   C. Share in Sapura Telecommunications
   D. Share in IOI Oleochemical Industries

7. An investor purchased 400 shares at a price of RM26 per share. One year later, the shares were sold for RM21. At the end of the year, a RM2.20 per share dividend was paid. What is the total dollar return for the investment?
    A.   RM880
    B.   RM2,880
    C.   -RM1,120
    D.   -RM2,000

8. An investment promises 12.6% rate of return and there were news that the rate of inflation for this year is 3.5%. What is the real rate of return of the investment?
    A.   7.82%
    B.   8.79%
    C.   9.10%
    D.   9.42%

9. Given the following data, what is the percentage of unsystematic risk of Security ABC?

	Security ABC	Market (KLCI)
Standard deviation	1.5	0.8
Beta	1.2	1.0

    A.   50.28%
    B.   55.22%
    C.   59.11%
    D.   62.00%

10. An investment portfolio currently has an asset allocation that is 15% cash, 35% bonds and 50% shares. The return over the past years for cash was 3.5%, bonds were 5.75% and shares were -8.5%. What is the return on the portfolio for the past year?
    A.   -1.71%
    B.   -5.04%
    C.   0.25%
    D.   5.47%

Answer: 1.C, 2.B, 3.C, 4.C, 5.D, 6.C, 7.C, 8.B, 9.C, 10.A

Chapter 2

Quantitative Techniques in Investment

Chapter Objectives

On completion of this chapter, students are expected to acquire the major techniques relating to investment computations:

- Computation of Investment Returns based on Historical Data

- Computation of Investment Returns based on Projections

- Computation of Risks in Investment: Standard Deviation and Variance

- Application of Bell Curve in Investment Decision.

- Computation Techniques relating to Investment Criteria such as Payback, Net Present Value and Internal Rate of Return

Introduction

Financial planners will inevitably come across investments already committed by their clients when they first approach their clients or upon review of their financial positions. Several questions may need to be answered in such situations. Are existing investments generating sufficient return as compared to relevant benchmark? Are the investments exposed to excessive risks that may not be aware or unacceptable to clients? How can selection of investment proposals that clients are presented with be decided? This chapter is concerned with major techniques available for financial planners to evaluate past performance and selection of investment proposals. The relevant techniques for quantifying risks of investments are also presented herewith. Mathematical formulae and equations shall be presented together with steps used in financial calculators to simplify the computations.

Participants who have not gone through the Time-Value-of-Money techniques in Module 1 of RFP programme are advised to get acquainted with the techniques presented therein as those techniques will not be repeated here.

In order to carry out a more efficient evaluation of investments, it is also necessary for planner to acquire some common statistical terms and methods for evaluation involving mean, standard deviation, probability and probability distributions.

Historical Return on Investment

Return in investment may come in one or two forms. One is in the form of capital gain. Another one is the periodic income or cash flows. Mathematically, the return of investment in one year can be presented as follows:

$$AR = \frac{(V_1 - V_0) + Y}{V_0}$$

Where AR = Annual Return
V_1 = Value of Investment at the end of year 1
V_0 = Value of investment at the beginning of the year or original investment
Y = Income derived from the investment during the year.

Alternatively, Annual return may be expressed as follows:

$$Annual\ Return = \frac{Capital\ Gain + Income\ for\ the\ Year}{Value\ of\ Original\ Investment}$$

Where Capital gain = $V_1 - V_0$

For illustration, let us examine the following 3 examples:

Example2.1: Alex bought 1000 shares in Maybank Berhad at the beginning of the year at RM11 per share. During the year he received net dividend of 30 sen. The price of the share at the end of the year was RM12.50. The annual return relating to the investment shall be as follows:

In this case, V_1 = RM12.50 x 1000 = RM12,500, V_0 = RM11 x 1,000 = RM11,000, capital gain = (RM12.50 – RM11) x 1,000 = RM1,500. Income for the year was Y = RM0.30 x 1,000 = RM300.

$$Annual\ Return = \frac{RM1,500 + RM300}{RM11,000} = \frac{RM1,800}{RM11,000} = 16.36\%$$

Having examined an example that generated positive return, let us now look at an example that yields negative return as follows:

Example 2.2: At the beginning of the year, Ben purchased 20,000 in Q Berhad, a company quoted in Bursa Malaysia Berhad, at RM2.00 per share. Q Berhad reported earnings per share of RM0.05. It paid zero dividend during the year. At the end of the year, the price of Q Berhad dropped to RM1.92. The annual rate of return is as follows:

In this case, Y_1 = RM1.92 x 20,000 = RM38,400, Y_0 = RM2.00 x 20,000 = RM40,000, Y = 0.

Annual Return = $\dfrac{\text{RM38,400} - \text{RM40,000}}{\text{RM40,000}} = \dfrac{- \text{RM1,600}}{\text{RM40,000}} = -4\%$

This example highlights a situation where an investor who bought shares in profitable company can also suffers loss. If the investor needs the money at the end one year, he may have to sell the shares at a realized loss.

Another example to illustrate the annual return concept is to look at the performance of a unit trust fund as follows:

Example 2.3: The Net Asset Value of a unit trust fund was RM1.20 at the beginning of the year. The NAV rose to RM1.45. It paid no dividend during the year. The annual rate of return is as follows:

In this case, V_1 = RM1.45, V_0 = RM1.20, Y = 0,

A.R. = $\dfrac{\text{RM1.45} - \text{RM1.20}}{\text{RM1.20}} = \dfrac{\text{RM0.25}}{\text{RM1.20}} = 12.5\%$

Based on the three previous examples, we can see that calculations and the interpretation relating to annual return on a year to year basis can be fairly simple. However, when a planner made the first encounter with client, the situation could be different. The client might have invested in an investment vehicle for several years. The interpretation can be more complicated in this situation. We shall use another example to present this.

Example 2.4: Connie invested RM100k in Win-Win Equity Trust fund. The changes in price over the last 4 years are as follows:

Year	Beginning Value	Dividend	Ending Value	Annual Return
1	RM100,000	Nil	RM120,000	20%
2	RM120,000	Nil	RM110,000	− 8.33%
3	RM110,000	Nil	RM130,000	18.18%
4	RM130,000	Nil	RM150,000	15.38%
Total				45.23%

What is the average performance of the equity fund over the last 4 years under review?

The answer to this question will bring out a concept known as Arithmetic Mean of Annual Return.

Arithmetic Mean of Annual Return (AMAR)

One of the ways to compute average annual return is to simply add up the past 4 years annual return and divide the sum total by 4. By doing so, we will get, 11.31% (45.23% ÷ 4 = 11.31%). This is to say that for the past 4 years, the average rate of return of the unit trust fund was 11.31%, a fairly commendable rate of return!

> The formula for AMAR: Sum of annual return ÷ by number of years

So far, the computations and the result appear alright. However, we would like to highlight the problem associated with this approach in calculating return. We shall compute the average rate of annual return after changing the annual returns of the past 4 years as follows:

Example 2.5				
Year	Beginning Value	Dividend	Ending Value	Annual Return
1	RM100,000	Nil	RM 70,000	– 30%
2	RM 70,000	Nil	RM140,000	100.00%
3	RM140,000	Nil	RM 70,000	–50.00%
4	RM 70,000	Nil	RM100,000	42.86%
Total				62.86%

The AMAR based on the revised figure shall be 62.86% ÷ 4 = 15.72%.

We can see very clearly that the growth of the fund was 0 over the 4 year duration. Yet, the calculation shows impressive average annual return of 15.72%. This is one of the problems that planner may encounter in practice.

What appeared confusing based on our computation is known as the Arithmetic Rate of return. In order to overcome this problem, we should use Geometric rate of return which is based on the compounded rate of return.

Geometric Mean of Annual Return

The approach involved working out the ***product of annual return*** over the number of years. Let the number of years be N, **[Nth root of the product of annual return – 1]** shall be the Geometric mean of annual return. In the above example, the number of years is 4. We will need to find the 4th root of the product of annual return.

$$4^{th} \text{ Root of Product of annual return} = [(1+R1) \times (1 + R2) \times (1 +R3) \times (1 + R4)]^{1/4}$$

$$= [(1 − 0.3) \times (1 + 1) \times (1 − 0.5) \times (1 + 0.43)]^{0.25}$$

$$= [0.7 \times 2 \times 0.5 \times 1.43]^{0.25}$$

> NB: R1 = annual return in year 1, R2 = annual return in year 2,
> R3 = annual return in year 3 and R4 = annual return in year 4.

Based on the data given in the example,

Geometric Mean of Annual Return = 4th root of the product of annual return – 1 = 0.

Based on the calculation under the Geometric Mean of Annual return, the average return of zero is reflective of the actual performance. The misleading return as computed under the AMAR does not arise.

We shall now compute the GMAR based on the annual returns in example 2.4.

GMAR = $[(1+0.2) \times (1 - 0.0833) \times (1 + 0.1818) \times (1 + 0.1538)]^{1/4} - 1$
= $[1.2 \times 0.9167 \times 1.1818 \times 1.1538]^{0.25} - 1$
= $1.5)^{0.25} - 1 = 1.1067 - 1 = 0.1067$ or 10.67%

We can use financial calculator to simplify the calculation if there are no dividends received or additional investment since the date of initial investment. The approach is as follows:

HP10B/10BII Input	Display	FC 200V Input	Display
1 , shift, P/YR		CMPD (END)	
4, N	4	4, n	4
1, +/–, PV	– 1	PV, - , 1 , EXE	– 1
1.50, FV	1.5	FV, 1.50, EXE	1.5
I/YR	10.67	I%, SOLVE	10.67

The outcome of 10.67% under GMAR is lower than 11.31% of AMAR under example 2.4.
In general, the compounding effect of the return has been ignored under AMAR. Hence, it will give rise to higher return as compared with the GMAR.

Calculation of Risk of Investment

Definition of Risk
Risk of investment may be defined as variation from expected return. In investment, investors are assumed to be rationale in making decision. Before an investment is made, there should be an expectation of return. Risk refers to deviation or variation from such expected return. Expected return may be developed in more than one ways. A common method is to take the average of past returns. Risk can come in many forms, but we will not deal with them in this section as the emphasis here is the computation techniques on risk measurement.

Computation of Risk and Expected Return
Let us assumed that ABC Unit Trust Berhad has the following annual rates of return over the last 5 years as follows:

Table A

Year	Return
1	5%
2	-1%
3	15%
4	6%
5	21%

When we said that risk is the variation from expected return, the expected return refers to the average rate of return over the last 5 years. In this case, the average works out to be sum of past 5 years return divide by 5.

Expected return = Average of return = [5+ (– 1) + 15 + 6 + 21] ÷ 5 = 46 ÷ 5 = 9.2

The average rate of return forms a benchmark or standard for measurement of performance. For this reason, deviation from the expected return is also known as standard deviation. The deviations of the past years' return are as follows:

Table B

Year	Past return	Average	Deviation
1	5%	9.2%	5 − 9.2 = − 4.2
2	-1%	9.2%	−1 − 9.2 = −10.2
3	15%	9.2%	15 − 9.2 = 5.8
4	6%	9.2%	6 − 9.2 = −3.2
5	21%	9.2%	21 − 9.2 = 11.8
Sum			0

When all the deviations over the past 5 years in column 4 of the table are add together, we will get a total deviation of zero. When deviation is zero, the risk associated with the investment in this product is to be interpreted as zero or risk free. Nevertheless, we can see that there were actual deviations in the past. The computation that shows zero deviation is an outcome of cancellation effect when the negative deviations and the positive deviations are total up.

In order to overcome this cancellation effect, we can sum up the square of the individual deviations before dividing them by the number of items or years in this case to arrive at the variance. Thereafter we can take the square root of the variance to get the standard deviation.

Table C

Year	Past return	Average	Deviation	Variance
1	5%	9.2%	5 − 9.2 = − 4.2	17.64
2	-1%	9.2%	−1 − 9.2 = −10.2	104.04
3	15%	9.2%	15 − 9.2 = 5.8	33.64
4	6%	9.2%	6 − 9.2 = −3.2	10.24
5	21%	9.2%	21 − 9.2 = 11.8	139.24
Sum			0	304.8

Variance = 304.8 ÷ 5 = 60.96

Standard deviation = square root of variance = $(304.8 ÷ 5)^{0.5}$ = 7.8

The formula for computing standard deviation is:

$$\sqrt{\dfrac{\text{Sum of square of deviation}}{N}}$$

…………Formula 1

Computation of Risk and Return Using Financial Calculator

Notice that the calculation of standard deviation can be rather tedious if we adopt what has been presented so far. In order to simplify the calculation, we may use a financial calculator as follows:

CASIO FC200V

Step1   : Press STAT, choose 1-VAR by pressing EXE, fill up the X will past return

Step 2 : Input the individual data in to X.

Step 3 : Press Shift stat (to use S-Menu), press 5 (Var), press 2 (mean), EXE. Display will show 9.2.

Step 4 : Press Shift stat (to use S-Menu), choose Var by pressing 5

Step 5 : Choose 3, xσn, press EXE, display will show 7.8076

For HP10B/10BII, the inputs are as follows:

Step1   : Input the individual data. Each input of data must be followed by the '∑+' key as follows:

        5, ∑+, 1, ±, ∑+, 15, ∑+, 6, ∑+, 21, ∑+.

Step 2 : Compute the average return by pressing the following keys:

        Shift, 7, Display will show 9.2

Step 3 : Compute the standard deviation by pressing the following keys:

        Shift, 9, Display will show 7.8

Interpretation of Standard Deviation

We have so far calculated the standard deviation on the historical returns of a unit trust company. What do we understand by this 7.8? How do we apply this in investment decision? In order to answer these questions, we will need to draw on the findings of statistics. In this, the probability of returns on investment may be presented in a bell curve as follows:

Normal Distribution

Probability

-3σ -2σ -1σ μ   +1σ +2σ +3σ

Mean
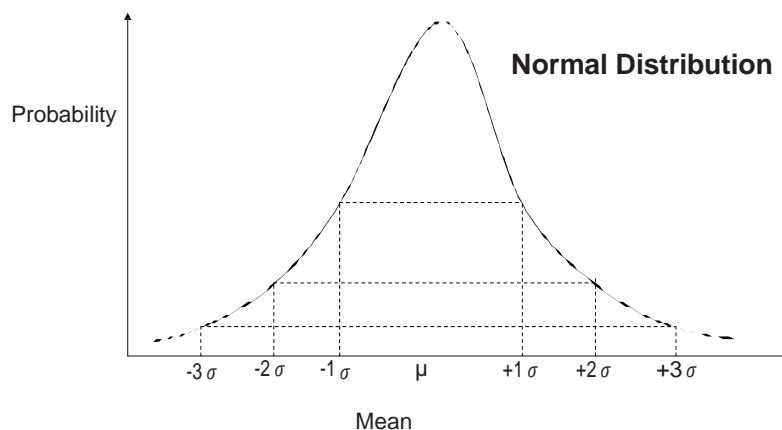
In the normal distribution curve above, several important findings are as follows:
*   the area covered between -1σ and +1σ forms 68% of the total area
*   the area covered between -2σ and +2σ forms 95% of the total area
*   the area covered between -3σ and +3σ forms 99% of the total area

Application of the Findings
In this case,
*   The mean (μ) = 9.2% and
*   1 standard deviation (σ) = 7.8%

We can form conclusions as follows:
*   There is a 68% chance that the return will vary from [(μ) – 1 SD] to [((μ) + 1 SD). In other words, there is a 68% chance that the return will vary from **1.4%** [9.2% – 7.8%] to **17%** [9.2% + 7.8%].
*   There is a 95% chance that the return will vary between **–6.4%** [9.2% - 2 x 7.8%] to **24.8%** [9.2% + 2 x 7.8%]
*   There is a 99% chance that the return of will fluctuate between **–14.2%** [9.2% – 3 x 7.8%] to **32.6%** [9.2% + 3 x 7.8%]

From the discussion given above, we can see that certain degree of prediction can be made on the returns of the unit trust fund. The larger the standard deviation, the higher is the risk. On the other hand, the lower the standard deviation, the lower is the risk. If the standard deviation is zero, the risk of investment is deemed to be risk-free.

Sample Standard Deviation VS Population Standard Deviation
In the example used for computing expected return and standard deviation, we have used annual returns over the last 5 years. If the company has been in operation for only 5 years, then we have taken all the data into consideration in our computation. In this situation, we are said to have utilized the population data or the entire data available in our computation. However, if the company has been in operation for more than 5 years, say 10 years, what we have done is actually taking a sample of data into computation. If this is the case, the calculation of expected return at 9.2% shall remain unchanged. However, the calculation of standard deviation will need to be adjusted based on a slightly modified formula as follows:

$$\sqrt{\frac{\text{Sum of square of deviation}}{N-1}} \qquad \ldots\ldots\text{Formula 2}$$

Applying the formula in respect of the figures presented in Table C, the following are computed:

Variance = [304.8 ÷ (5 – 1)] = 304.8 ÷ 4 = 76.2

Standard deviation = square root of variance = $(76.2)^{0.5}$ = 8.73

In general, computation of standard deviation of the sample tends to be underestimated if we adopt Formula 1. In order to overcome the underestimation, Formula 2 which adjusts the denominator of Formula is used whenever incomplete data is used for computation of standard deviation.

Computation of Standard Deviation Using Financial Calculator

The steps involved are substantially the same as in the case of computing population standard deviation. The only difference is in Step 3 as can be seen below:

CASIO FC200V
Step1 : Press STAT, EXE, Shift S-MENU, then choose Var

Step 2 : Choose 2 (Mean)

Step 3 : Key in all x value

Step 4 : Shift S-MENU, choose Var, choose 2 (Mean), EXE. Display will show 9.2 (Mean)

Step 5: Shift S-MENU, choose Var, choose 4 (xσn-1), EXE. Display will show 8.7292 (SD)

As for HP10B/10BII, the steps are also the same except for step 3 as can be seen below:

Step1 : Input the individual data. Each input of data must be followed by the '∑+' key as follows:

5, ∑+, 1, ±, ∑+, 15, ∑+, 6, ∑+, 21, ∑+.

Step 2 : Compute the average return by pressing the following keys:

Shift, 7, Display will show 9.2

Step 3 : Compute the standard deviation by pressing the following keys:

Shift, 8, Display will show 8.73

Standard Deviation Based on Projected Returns.

We have so far computed standard deviation based on historical returns. In Malaysia, unit trust companies are required to present the past 5 years return in their prospectus when they are promoting the sales of their funds. Similarly, life insurers are required to present their past 5 years performance in the quotations on the sale of investment linked funds. When we are computing risk of investing in the share of a particular company, we will also be able to gather its historical returns for computations.

In situations or investment proposals where there are no historical returns, expected returns and risk can still be quantified. This will involve projections on returns based on different economic conditions. Let us assume that there is a real estate project to be launched next year. The selling

prices of the properties in this project and hence its profitability will be dependent on the prevailing economic conditions. In this situation, we may generally classify the economic conditions as good, average and poor. In each of this economic condition, the return will differ. Now let us assume the following:

Economic Conditions	Probability of Happening	Estimated Return
Good	25%	28%
Average	60%	15%
Poor	15%	1%
Total	100%	

In this example, formulas for calculation of expected return and standard deviation are as follows:

Expected return $= \sum$ Probability x Estimated Return
$= 0.25$ x 28% + 0.6 x 15% + 0.15 x 1%
$= 7\% + 9\% + 0.15\%$
$= 16.15\%$

Variance $= \sum$ Probability x (Estimated Return – Expected Return)^2
$= 0.25$ x $(28 - 16.15)^2 + 0.6$ x $(15 - 16.15)^2 + 0.15$ x $(1 - 16.15)^2$
$= 0.25$ x $11.852^2 + 0.6$ x $(-1.15)^2 + 0.15$ x $(-15.15)^2$
$= 35,12 + 0.79 + 34.43$
$= 70.34$

Standard Deviation = square root of variance $= (70.34)^{0.5} = 8.39$

Simplifying the computations of expected return and standard using financial calculator is as follows:

FC100: Set the mode 3 for computation of standard deviation. The symbol "SD" should appear in the calculator screen.

Input as follows:

28 x 0.25	Data	15 x 0.60	Data	1 x 0.15	Data

After the input of data, to get the expected mean of 16.15, press "shift 1". To get the standard deviation of 8.39, press "shift, 2".

NB: Some calculators may not be programmed for this function.

Yardsticks for Selection of Investment Proposals

In our forever changing business and financial environment, investors are frequently presented with investment opportunities. Such offers or invitations would include investment proposals in real estates within and outside the country such as India, Vietnam, Cambodia, and China. They also include purchase of securities such as ordinary shares, loan stocks, and warrants under initial public offerings or in the secondary markets. Invitation to purchase unit trust funds by fund

managers and offer of sale of Merdeka Bond Fund by our government are all examples of investment opportunities.

On a smaller scale, your clients may also be offered to invest in private businesses of all types. Such proposals may involve venturing into opening a restaurant, a housing project, a manufacturing concern, and a retail outlet. Whenever you are confronted with such investment opportunities, on what bases are you going to make decisions on whether to accept the investment proposals or otherwise? In other words how can you tell what projects or which proposals are viable or otherwise?

There are several yardsticks, ranging from simple to complicated models, for investment selection. An example of one of the simplest yardsticks is **Payback Period**. More sophisticated criteria are **Net Present Value and Internal Rate of Return.** We shall present just three of the yardsticks in this module.

PAYBACK PERIOD

Under this model of investment selection, the first step is to ***determine the amount of initial cash flows required for investment.*** In other words, the amount to be invested at time zero is first examined. We may use a symbol CF0 to indicate such an investment cash outlay.

The second step is ***establishing the acceptable payback period.*** The acceptable payback period here simply means the acceptable duration of time for the investor to recover its original cash outlay. For illustration, if an investor has to invest RM500,000 today, how long does he require that his investment of RM500,000 be recovered or paid back? This yardstick has to be decided by the investor himself and he has to do so by considering several factors. One of the most important factors shall be the risks involved. The higher the risk, the shorter should be the payback period. For our purpose, we shall assume a maximum acceptable payback period of 3 years.

The third step is then to ***forecast the future net cash flows*** relating to the investment proposals. At this point, one will have to differentiate between net cash flows and profits. As some of you may be aware, profits are not necessary equal to net cash flows. We shall not deal in detail the derivation of future cash flows here.

Future net cash flows shall be cash flows after taxes plus non-cash expenses such as depreciation charges. Let us assume the following net cash flows projections relating to two investment proposals for purpose of illustration:

Table 2.1: Cash flows of Project A and Project B

Year	Project A	Project B
0	(RM250,000)	(RM250,000)
1	RM100,000	RM105,000
2	RM 80,000	RM 85,000
3	RM 70,000	RM 40,000
4	RM 40,000	RM 60,000
5	RM 25,000	RM 70,000
Total cash inflows	**RM315,000**	**RM360,000**

The fourth step is to *compute the estimated Payback Period*. From the cash flows given in the table above, one will then compute the time period required to recover the initial investment. For Project A, one will find the amount of net cash flows recovered after 3 years shall be RM250,000. This is exactly the maximum Payback Period acceptable for investment. Hence, Project A does meet the criterion for selection.

For Project B, the amount of cash flows recovered after 3 years is RM230,000. There is still a shortfall of RM20,000 needed to recover the total initial investment of RM250,000. In the fourth year, the amount of net cash flows under Project B is RM60,000. If cash flows are received proportionally, it will take another 4 months to get back the RM20,000 to fully recover the total initial investment of RM250,000. On this basis, we have estimated that the total Payback Period of 3 years 4 months for Project B. The estimated Payback Period of Project B at 3 years 4 months is then compared with the maximum Payback Period which the investor can tolerate. In this case, the estimated Payback Period of 3 years 4 months exceeds the maximum Payback of 3 years. Therefore, the decision is to regard the Project B as not acceptable.

While the adoption of selection criterion of a Payback Period of 3 years renders the Project B unacceptable, a longer Payback Period of say 4 years will produce a different outcome. In other words, if the maximum Payback Period is 4 years, both the proposals would be acceptable. In such a situation, there will be a need to rank the projects in order of priority for selection. In such event, Project A will still rank ahead of Project B as it has a shorter Payback Period.

Payback Period criterion is good because it is relatively easier to compute. In addition, it is simpler for investors to understand. Thirdly, it emphasizes the importance of quick collection. Given uncertainties in investment environment, the use of Payback Period suggests a solution to reduce the risk element associated in investment. Nevertheless, several shortcomings are obvious when we use payback as the sole criterion for investment selection.

First of all, a major pitfall of payback period it its negligence on the amount of cash flow after the payback period. For instance, when we examine the total cash flows that can be generated under Project A and Project B, we will find that Project B can generate total cash flows of RM360,000 as compared to RM315,000 under Project A. All cash flows after the payback periods were ignored under this payback criterion!

Another weakness of payback period is its ignorance on the time value of money. We all know that a dollar received today is better than a dollar to be received a year later. Payback period does not take into consideration this TVM concept!

In other more sophisticated technique of investment appraisal, the risk factor are formally considered and built into the yardstick for investment selection. However, the use of payback period does not explicitly emphasize on the risk factor. Essentially, the required rate of return (RRR) that is used in Net Present Value and Internal Rate of Return comprises the risk element in its basic equation:

RRR = Risk Free Rate of Return + Risk Premium

The presence of risk premium is to compensate investors for higher risk taken in non-risk free projects.

Net Present Value

The Net Present Value (NPV) of an investment proposal may be stated in equation form as follows:

NPV = Present value of cash inflows – Present value of cash outflows.

 t can also be stated as follows:

NPV = Present value of future cash flows – Initial cash outlay

When we say that a dollar received today is better than a dollar received a year later, several reasons that may be offered are as follows:

1.   The dollar received today may be used to earn interest for 1 year. Alternatively, we can say that it can be used to reduce interest expense.
2.   Inflation factor. The money received a year will buy lesser amount of goods.
3.   Consumption preference.
4.   Risk factor. A bird in hand is any time better than those flying in the air!

The concept of time value of money is recognized in NPV. NPV is a technique that recognizes that the money incurred today is not to be compared directly with the future net cash inflows. In other words, the total cash inflows of RM315,000 and RM360,000 estimated under Project A and Project B respectively may not be better than the initial cash outlay of RM250,000! The two equations on NPV suggest that in order to make a comparison, the future cash flows need to be adjusted to become present day value. In other words these future cash flows must be discounted to present value based on a discount rate. The discount rate is known as the RRR. Assuming that a discount rate of 10% is used, the NPV of cash flows relating to Project A and Project B as given in the Table 2.1 are as follows:

Table 2.2

Year	Projected cash Flow	Discount Factor	Present Value of Cash Outflow	Present Value of cash Inflow
0	-RM250,000	1.000000	-RM250,000	
1	RM100,000	0.909091		RM 90,910
2	RM 80,000	0.826446		RM 66,120
3	RM 70,000	0.751315		RM 52,590
4	RM 40,000	0.683013		RM 27,320
5	RM 25,000	0.620921		RM 15,520
Total			-RM250,000	RM252,460
NPV				**RM 2,460**

NPV = PV of cash inflows – PV of cash outflows
      = RM252,460 – RM250,000 = RM2,460 or

NPV = PV of future cash flows – Initial Investment
      = RM252,460 – RM250,000 = RM2,460

Table 2.3

Year	Projected cash Flow	Discount Factor	Present Value of Cash Outflow	Present Value of cash Inflow
0	-RM250,000	1.000000	-RM250,000	
1	RM105,000	0.909091		RM 95,450
2	RM 85,000	0.826446		RM 70,250
3	RM 40,000	0.751315		RM 30,050
4	RM 60,000	0.683013		RM 40,980
5	RM 70,000	0.620921		RM 43,460
Total			-RM250,000	RM280,200
NPV				**RM 30,200**

NPV = PV of cash inflows – PV of cash outflows
        = RM280,200 – RM250,000 = RM30,200 or

NPV = PV of future cash flows – Initial Investment
        = RM280,200 – RM250,000 = RM30,200

You will note that computation of NPV involves discounting the future cash flows individually before summing up the discounted values to give us PV of future cash flows. We have used Microsoft Excel to simplify the computations. Another way where NPV can be calculated is to use financial calculator as follows:

NPV of Project A

Input (FC200V)	Display	Input (HP 10B/10BII)	Display
CASH/D.Editor x	CF	1, Shift, P/YR	1
250,000 Freq 1	– 250000	250000, +/–, CFj	– 250,000
100,000 Freq 1	100,000	100,000, CFj	100,000
80,000 Freq 1	80,000	80,000, CFj	80,000
70,000 Freq 1	70,000	70,000, CFj	70,000
40,000 Freq 1	40,000	40,000, CFj	40,000
25,000 Freq 1	25,000	25,000, CFj	25,000
10, i%	10	10, I/YR	10
NPV	2,460.40	Shift, NPV	2,460.40

NPV of Project B

Input (FC200V)	Display	Input (HP 10B/10BII)	Display
CASH/E.Editor x	CF	1, Shift, P/YR	1
250,000 Freq 1	– 250000	250,000, +/–, CFj	– 250000
105,000 Freq 1	105,000	105,000, CFj	105,000
,,85,000 Freq 1	,,85,000	,,85,000, CFj	,,85,000
,,40,000 Freq 1	,,40,000	,,40,000, CFj	,,40,000
,,60,000 Freq 1	,,60,000	,,60,000, CFj	,,60,000
,,70,000 Freq 1	,,70,000	,,70,000, CFj	,,70,000
,,,,10, i%	,,,,10	,,,10, I/YR	,,,,,,10
NPV	30,200.37	Shift, NPV	30,200.37

Notes to the computations:

a. *For user of Casio FC200V, press the button "CASH", subsequently key in the cash flow and frequency of cashflow.*

b. *For user of HB10B/10BII, it is important to set the compounding frequency to yearly mode. This is done by inputting "1, Shift, P/YR".*

c. *For all cash outflow as in the case of initial cash outlay of RM250,000, the value must be followed by inputting the "+/–" key before pressing the CFj key.*

d. *In both brands of financial calculator, the first input is programmed to be the value at time zero. This means that user of the calculator will have to input whatever value at time zero as the first input. As in the case of Project A, RM250,000 is keyed in as first input. If the cash flow at time zero is 0, user must key in "0, CFj" first. Otherwise, the entire computation will be wrong.*

We have computed the NPVs of Project A and Project B and found that both the NPVs are positive. In other words, the PVs of cash inflows are greater than the PV of cash outflows. When the receipts of an investment are greater than the amount you paid out for the investment, do you wish to invest? Under normal circumstances, the answer should be yes as it generates additional cash benefits to the investor.

Other Ways Of Looking At NPV
Let us enhance our understanding of NPV by answering the following questions:

1.   With reference to the two projects A and B, if you have to borrow RM250,000 at interest rate of 10% per annum, would you want to invest?

2.   Alternatively, if you have to withdraw the RM250,000 from an existing investment that generates annual rate of return of 10%, would you want to invest?

To facilitate your answer to the above questions, we shall use a spread sheet to show the movement of cash flows including interest payment. Since you are able to earn a return of 10%, we will also assume that any surplus cash can similarly earn a reinvestment rate of return of 10% in the spread sheets below

Table 2.4: Project A

Year	Cash flows at the beginning of year	Interest	Cash inflows	Cash inflow at Year End
1	-250,000	-25,000	100,000	-175,000
2	-175,000	-17,500	80,000	-112,500
3	-112,500	-11,250	70,000	-53,750
4	-53,750	-5,375	40,000	-19,125
5	-19,125	-1,912	25,000	3,963

Table 2.5: Project B

Year	Cash flows at the beginning of year	Interest	Cash inflows	Cash inflow at Year End
1	-250,000	-25,000	105,000	-170,000
2	-170,000	-17,000	85,000	-102,000
3	-102,000	-10,200	40,000	-72,200
4	-72,200	-7,220	60,000	-19,420
5	-19,420	-1,942	70,000	48,638

Let us look at Table 2.4 above. When we borrow RM250,000 at interest rate of 10% per annum, interest expense for the first year shall be RM25,000 (10% of RM250,000 as in the third column). However, an inflow of RM100,000 (column 4) at the end of the year will help to reduce the borrowing. At the end of the year 1, the amount owing has been reduced to RM175,000 (sum of column 2, 3 and 4).

The amount of RM175,000 is then carried forward to second year. Interest is again computed and cash inflows used to reduce borrowing so that amount owing at the end of year 2 is RM112,500. The process is repeated till year 5 when cash inflows of RM25,000 would turn the amount of cash flow to a positive value of RM3.963. In other words, after paying back the loan of RM250,000 plus interest, there is still a cash surplus of RM3.963 at the end of year 5.

With the above illustration, do you think Project A is viable? If the initial cash outlay is borrowed, it should be rather straight forward to conclude that Project A is viable because after paying back loan plus interest, the investor still has surplus cash benefit of RM3.963.

An investor borrowed RM250,000 at 10% per annum for investment and can still benefit from such an investment. On the other hand, if the amount of initial cash outlay is sourced from an existing investment vehicle that pay 10% return, we can also see that Project gives an additional cash flows of RM3.963. Since the cash flows benefit of Project A is better than the return of existing investment vehicle, Project A should be chosen.

Based on what have been presented for Project A, we shall examine Project B under Table 2.5. The Table shows that Project B is expected to generate a cash surplus of RM48,640 after 5 years. The outcome is even more attractive as the cash surplus is higher than Project A. For this reason, Project B is ranked higher than Project A. You will notice that such ranking of Project B higher than Project A is in conflict with the ranking under the Payback Period criterion.

Difference Between NPV And Terminal Cash Value

Earlier, we have computed the NPVs of Project A and Project B at RM2,460 and RM30,200 respectively. These NPVs differ from the cash surplus of RM3.963 and RM48,640 which we computed under Table 2.4 and 2.5 respectively. There is a need to reconcile the differences. By discounting the future cash flows of investment proposals, the NPV technique has taken into account the time value of money. This helps to explain why the cash value at the end of 5th year differs from the NPV computed earlier. The reconciliations are as follows:

Project A

Input (Casio FC200V)	Display	Input (HP10B/BII)	Display
CMPD 5, n	5	5, N	5
10, i%	10	10, I/YR	10
2,460.40, +/–, PV	–2,460.40	2,460.40, +/–, PV	–2,460.40
Comp, FV	3,962.50	FV	3,962.50

Project B

Input (Casio FC200V)	Display	Input (HP10B/BII)	Display
CMPD 5, n	5	5, N	5
10, i%	10	10, I/YR	10
30,200.37, +/–, PV	–30,200.37	30,200.37, +/–, PV	–30,200.37
Comp, FV	48,638	FV	48,638

The computations above clearly show that the present value of RM3,962.50 is RM2,460.40 for Project A whereas the present value of RM48,638 is RM30,200.37.

Internal Rate Of Return

In computing the NPVs for Project A and Project B, we used a discount rate or required rate of return of 10% earlier. It ought to be pointed out that if we reduce the discount rate, the NPVs will increase. On the other hand, if we increase the discount rate, the NPVs will be reduced. In other words, the NPV of an investment proposal is inversely related to the discount rate used to compute the NPVS. We shall demonstrate this relationship by using discount rate of 8% and 12% as follows:

NPV of Project A

Input (FC200V)	Display	Input (HP 10B/10BII)	Display
CASH,D Editor	CF	1, Shift, P/YR	1
250,000, +/–	– 250,000	250,000, +/–, CFj	– 250,000
100,000	100,000	100,000, CFj	100,000
80,000	80,000	80,000, CFj	80,000
70,000	70,000	70,000, CFj	70,000
40,000	40,000	40,000, CFj	40,000
25,000	25,000	25,000, CFj	25,000
8, i%	8	8, I/YR	8
NPV	13164	Shift, NPV	13,164
12, i%	12	12, I/YR	12
NPV	-7,508	Shift, NPV	-7,508

NPV of Project B

Input (FC200V)	Display	Input (HP 10B/10BII)	Display
CASH,D Editor	CF	1, Shift, P/YR	1
250,000, +/–	– 250,000	250,000, +/–, CFj	– 250,000
105,000	105,000	105,000, CFj	105,000
85,000	85,000	85,000, CFj	85,000
40,000	40,000	40,000, CFj	40,000
60,000	60,000	60,000, CFj	60,000
70,000	70,000	70,000, CFj	70,000
8, i%	8	8, I/YR	8
NPV	43,592	Shift, NPV	43,592
12, i%	12	12, I/YR	12
NPV	17,834	Shift, NPV	17,834

Notes:

1.   *We can simplify the computation of NPV from the demonstration given above. When different discount rate is to be used, we need not repeat the entire input of data. We merely change the discount rate and we get different NPV.*

2.   *The calculator memory remains unchanged unless erased. To clear the financial calculator memory, we cannot achieve it by merely pressing the "clear" key. Instead we need to press delete to clear each value for FC200V or "Shift, Clear All" for HP.*

When the discount rate is 8%, NPVs of Project A and Project B are RM13,163.7 and RM43,591.93 respectively. However, when the discount rate is increased to 12%, the NPVs are -RM7,507.76 and -RM17,833.65 for Project A and Project B respectively. A summary of different discount rates and the resultant NPVs are as follows:

Discount rate	NPV (Project A)	NPV (Project B)
8%	RM13,164	RM43,592
10%	RM2,460	RM30,200
12%	RM– 7,508	RM17,834

We can see that by adjusting the discount rate, we will get different NPVs. As the discount rate increase, the NPV decreases. With reference to Project A, from a discount rate of 10% to 12%, the NPV changes from positive RM2,460.40 to negative RM7,507.76. This suggests that there should be a discount rate that gives a Zero NPV and this rate lies between 10% and 12%. For Project B, the rate of discount needs to be increased further before it changes to negative.

The rate of discount that gives a zero NPV is known as the ***Internal Rate of Return (IRR)***

Using IRR as the discount rate, we should get a relationship whereby:

NPV = PV of cash inflows – PV of cash outflow = 0.

In order to compute this IRR, we can either "Interpolation" technique or a financial calculator.

Interpolation Technique

Under this approach, we shall use the information already known earlier.

At 10% discount rate, NPV = RM2,460.40
At 12% discount rate, NPV = –RM7,507.76

Difference in discount rate of 2% creates a difference of RM9,968.16 (RM2460.40 + RM7,507.76) in NPV

From NPV of RM2,460.40 to 0 NPV, the difference is RM2,460.40. IRR is then computed as follows:

IRR = 10% + [RM2,460.40/RM9,968.16] x 2% = 10% + 0.2468% = 10.2468%

The results suggest that the IRR is 10.2468%. At this discount rate, we should be able to get zero NPV. However, because the interpolation technique is merely an approximation, the accuracy cannot expect to be perfect. In addition, the technique using the interpolation approach is tedious as it involves working out various NPVs at different discount rates. Computing NPVs by itself is a tedious exercise. Moreover, it requires different discount rates that include one that can change NPV from positive to negative Value. We will therefore recommend a much easier tool in financial calculator.

Financial Calculator

Computing IRR Of Project A

Input (FC200V)	Display	Input (HP 10B/10BII)	Display
CASH,D Editor	CF	1, Shift, P/YR	1
250,000, +/–	– 250,000	250,000, +/–, CFj	– 250,000
100,000	100,000	100,000, CFj	100,000
80,000	80,000	80,000, CFj	80,000
70,000	70,000	70,000, CFj	70,000
40,000	40,000	40,000, CFj	40,000
25,000	25,000	25,000, CFj	25,000
IRR	10.4807	Shift, IRR	10.4807

The IRR of Project A is thus computed to be 10.4807%. This is higher than the answer obtained under the Interpolation approach. Applying 10.4807% as the discount rate, we can verify this answer by using a spread sheet as follows:

Year	Cash flows at the beginning of year	Interest	Cash inflows	Cash inflow at Year End
1	-RM250,000	-RM26,202	RM100,000	-RM176,202
2	-RM176,202	-RM18,467	RM80,000	-RM114,669
3	-RM114,669	-RM12,018	RM70,000	-RM56,687
4	-RM56,687	-RM5,941	RM40,000	-RM22,628
5	-RM22,628	-RM2,372	RM25,000	RM0.00

In addition, we can deduce that NPV is zero as the future value after 5 years is also 0.

Interpretation of IRR

Having computed the IRR and said that it is a discount rate that gives zero NPV, what do you really understand by IRR and how can you use it for investment decision? These questions need to be answered. Otherwise, the entire study or computation shall be rather meaningless.

In layman term, IRR may be construed as the projected rate of return of an investment proposal. When we adopt this simpler definition, it carries an implication that the projected return from an investment proposal will need to be higher than the required rate of return in order to qualify for selection.

Decision criteria:
IRR > RRR, project is viable
IRR < RRR, project is not viable

What is the Required Rate of Return (RRR)? To recapitulate,

RRR = Risk-free Rate + Risk Premium.

Since the Risk-free rate can change from time to time, it follows that RRR can vary from time. In addition, different individuals will have different risk profile. Therefore, the RRR can vary from one person to another due to the difference in risk profile of individuals. Applying what we have just discussed, Project A is acceptable as long as the RRR is lower than 10.48%. Alternatively, we can say that any individuals with RRR higher than 10.48% will find Project A unacceptable.

COMPUTING IRR OF PROJECT B

Input (FC200V)	Display	Input (HP 10B/10BII)	Display
CASH,D Editor	CF	1, Shift, P/YR	1
250,000, +/–	– 250,000	250,000, +/–, CFj	– 250,000
105,000,	105,000	105,000, CFj	,,,105,000
85,000	85,000	85,000, CFj	,,,,,85,000
40,000	40,000	40,000, CFj	,,,,,40,000
60,000	60,000	60,000, CFj	60,000
70,000	70,000	70,000, CFj	70,000
IRR	15.1863	Shift, IRR	15.1863

The IRR of Project B is 15.1863%. In other words, 15.1863% is the projected rate of return of Project B. At this discount rate, the NPV of Project B shall be zero as can be proven below:

Year	Cash flows at the beginning of year	Interest	Cash inflows	Cash inflow at Year End
1	-RM250,000	-RM37,966	RM105,000	-RM182,966
2	-RM182,966	-RM27,786	RM85,000	-RM125,752
3	-RM125,751	-RM19,097	RM40,000	-RM104,848
4	-RM104,848	-RM15,923	RM60,000	-RM60,771
5	-RM60,771	-RM9,229	RM70,000	RM0.00

After computing the IRR of Project A and Project B, we can then rank them in order of priority. In this case, Project B is ranked in preference over Project A also. In a world full of investment opportunities, there should be numerous investment proposals available. As to which projects will be selected eventually will depend on a concept known as marginal cost of funds which is a concept developed in corporate finance. Readers interested in further reading may proceed to do as there are numerous text books available in the market.

CAUTION

1.   We cannot pretend or oversimplify the actual investment environment by stating that as long as a project has an IRR higher than the RRR, the project will definitely be selected. What we can merely conclude is that the project fits into one of the selection criteria. This is because of other constraints that might be confronted by investors. Firstly, the amount of capital available investment is not unlimited. If there are two viable projects that cost RM500,000 each but the amount of financial resources is RM600,000 only, only one of the projects can be selected. By ranking the projects, the investor is guided to accept the proposal that gives the highest return. Selecting a project with lower rate of return in preference over a project with higher rate of return can thus be avoided.

2.   Another problem that an investor may face in the actual world is termed as "mutually exclusive" in investment appraisal techniques. Under this concept, two projects are said to be mutually exclusive when the selection of one project will automatically exclude the selection of another. This could due to a number of reasons. For example, you may have only one team of technical experts for two projects to be completed within the same time frame. This being the case, the selection of one project will exclude the possibility of taking the other project.

Summary of Investment Selection Yardstick

We have presented three investment selection criteria. Of the three approaches, Payback period suggested that Project A is better than Project B based on the chosen payback period of 3 years. The advantage of payback period is its simplicity in computation. It emphasizes on the repayment of capital. Whatever cash flows after the payback period are mere bonuses. Payback is a very good criterion for selection of investment proposal when we are investing in a country where political risk is high. Its major shortcoming is failure to recognize the time value of money. In view of this, some analysts modify the payback period to discounted payback period. In this modification, cash flows are first discounted based on a discount rate before computing the payback period.

While payback period indicated that Project A is a better investment proposal, the other two techniques, NPV and IRR suggested that Project B is a better investment proposal. The conflicting result can be attributed to the fact that all the cash flows are taken care of in the computation of NPV and IRR. In addition, the time value of money is given emphasis in NPV and IRR. Risk of investment can also be incorporated in to the NPV and IRR by adjusting the discount rate or required rate of return to reflect the risk of investment. Hence, most finance managers and investment analysts prefer NPV and IRR as yardstick for selection of investment proposals.

Self- Assessment

1) What is the expected return of an investment with the following distribution of possible outcomes?

Return (%)	Probability
7	20%
12	30%
20	15%
5	35%
Total	100%

    a. 25.00%
    b. 11.00%
    c. 9.75%
    d. 9.50%

2) Stock A and stock B are positively correlated with a correlation coefficient of 0.75. When stock A moves up by 12%, how will stock B perform?

    a. Stock B will move up by 12%
    b. Stock B will move down by 12%
    c. Stock B will move up by 9%
    d. Stock B will move down by 9.0%

3) Given the following: -

    Stock A standard deviation = 0.45
    Stock B standard deviation = 0.32

If Stock A and Stock B are perfectly positively correlated, which portfolio combination represents the minimum variance portfolio?

    a. 100% Stock A
    b. 50% Stock A / 50% Stock B
    c. 100% Stock B
    d. 30% Stock A / 70% Stock B

4) Stock A has an expected return of 12% and a standard deviation of 18%, while stock B has an expected return of 15% and a standard deviation of 15%. What is the standard deviation of a portfolio weighted 75% A and 25% B if the correlation between stocks A and B is 0.8?

    a. 15.39%
    b. 16.65%
    c. 17.25%
    d. 14.01%

5) A stock selling for $25 per share is expected to increase to $30 by year-end, with expected dividend

of $1.50. What is the holding period yield?

    a. 6%
    b. 22%
    c. 26%
    d. 20%

6) Equal amount of investment is made in portfolio consisting of securities X and Y. Standard deviation of X is 12.43%. ; Standard deviation of Y is 16.54%.; Correlation coefficient is 0.82. ; The interactive risk of the portfolio, measured by covariance is:

    a. 0.01456
    b. 0.01562
    c. 0.01686
    d. 0.01726

7) An ordinary share is bought now for $12. During the following 6 months, a dividend of $0.70 is Paid. The share is sold at the end of the 6 months at a price 15% higher than the cost. What is the holding period return?

    a. 35%
    b. 15%
    c. 20.83%
    d. 25.12%

8) Mr. Alex purchased a piece of real estate for RM100,000. He sold it one year later for RM105,000. His income from the property during the year was RM13,000. What was his return (ignoring costs, taxation and inflation)?

    a. 5%
    b. 1.4%
    c. 12%
    d. 18%

9) The following four portfolios are expected to provide a range of returns as shown below. Which portfolio is the riskiest?

       Portfolio A: -5.6% to 20.5%
       Portfolio B: -2.8% to 16.4%
       Portfolio C: 3.6% to 10.2%
       Portfolio D: 0.7% to 12.5%

    a. Portfolio A
    b. Portfolio B
    c. Portfolio C
    d. Portfolio D

10) Ali invested RM10,000 into shares of ABC Berhad, and subsequently received dividend amounting to RM500. At the end of the year, the market value of the share rose to RM12,000. Compute the rate of return on Paul's investment in shares of ABC Berhad.

    a. 25%
    b. 50%
    c. 10%
    d. 5%

Answer: 1.C, 2.C, 3.C, 4.B, 5.C, 6.C, 7.C, 8.D, 9.A, 10.A

Chapter 3

Financial Statement Analysis

Chapter Objectives

On completion of this chapter you should have a basic knowledge on:

- Regulatory requirements on financial statements

- Accounting concepts and principles

- Difference between qualified accounts and unqualified accounts

- Brief outlines on balance sheet, profit & loss account and cash flows statement

- Financial statement analysis comprising various ratios in key areas such as liquidity, profitability, leverage, activity and

- Share market ratios

Introduction

The process of financial statement analysis consists of the application of analytical tools and techniques to financial statements and data in order to derive from them measurements and relationships that are significant and useful in decision making.

The process of financial analysis can be described in various ways, depending on the objectives to be attained. Thus it can be used as a preliminary screening tool in selection of investments or merger candidates. It can be used as a forecasting tool of future financial conditions and results. It may be used as a process of diagnosis of managerial, operating, or other problem areas. It can be served as a tool in the evolution of management. Above all, financial analysis reduces reliance on pure hunches, guesses, and intuition, and thus reduces and narrows the inevitable areas of uncertainty that affect all decision-making processes. Financial analysis does not lessen the need for judgment but rather establishes a sound and systematic basis for its rational application.

Regulatory Requirements on Financial Statements

The Companies Act 2016 (repealed CA 1965) requires all corporations incorporated under the Act to present their accounts in a manner so as to reflect a true and fair view on the financial position of the corporation. In addition, amongst the listing requirements of Bursa Malaysia, all listed corporations have to provide their accounts in such manner so as to give a true and fair view of their financial position. The accounts that report on their performances and financial positions must be communicated to the public, in particular to the stakeholders. The stakeholders include ordinary shareholders, loan stock holders, employees, bank creditors, suppliers, and the Inland Revenue Department. The requirements for public listed companies are even more stringent as their performances and activities interest a larger section of the public. The stakeholders are officially informed at least once a year through the release of audited accounts not later than 120 days after year end closing. In between, quarterly reports are to be released to keep the shareholders updated of the company's progress not later than 60 days after closing.

Apart from understanding three financial statements, namely, the balance sheet, profit and loss account and cash flow statements, analysts should read the entire annual report which includes many other areas such as the following:

I.   The Chairman's report
II.   Information on the directors
III.   List of Fixed assets
IV.   Investment
V.   Contingent liabilities
VI.   Auditors' report
VII.   Notes to these financial statements.

In some countries, there is also the statement of retained profits or statement of changes in equity that would incorporate profit appropriation. The manner of reporting follows the guidelines provided by the International Accounting Standard Board (IASB) as adopted by the local accounting bodies.

Financial statements provide answers to the following questions to the stakeholders:

● What does a corporation own as assets?
● How much the corporation owed others?

- Sources of income during the period?

- What are the expenses during the period?

- Where did the corporation get its funding and

- How the financial resources were utilized?

For the financial practitioner, the ability to read and interpret these reports and make appropriate recommendations will be of much help to financial planning.

Basic Accounting Concepts and Principles

The underlying accounting concepts must be understood before one goes into any analysis. Accountants prepared financial statements based on certain accepted rules, formats and assumptions. The rules that provide guidance on the preparation of financial statements are stated in the heading Generally Accepted Accounting Principles (GAAP). The Malaysian Accounting Standard Board (MASB) is primarily responsible for the setting up of accounting rules and standards. These rules and standards are revised from time to time. They must be adhered to by accountants in the preparation of accounts. Therefore, the accounting practice in Malaysia is determined by the following:

- The accounting standards by the MASB,

- The rules stated in the Bursa Malaysia Listing requirements

- The Companies Act 2016 (Repealed CA 1965)

MASB adopt the accounting framework issued by the International Accounting Standards Board. With the advent of globalization that brings about rapid changes in financial structure and vigorous overseas investments, there is a need for common language in order to communicate the financial information necessary for investment decision. Needless to say, the standardization of accounting concepts on a global basis will provide a smoother machinery so that accounting information are more easily understandable, reliable and comparable. Some of the rules for preparation of financial statements are as follows:

- **The Entity Concept**

Financial statements communicate the activities of a specific entity. The parameters covered by the financial statements must be clear. A reporting entity can be a grocery store, a manufacturing concern, or a financial services company. It can also be a multinational corporation or its subsidiaries operating independently or even a section of the organization. As long as there is a need to evaluate the performance separately, the rule of entity applies. In other words, the transactions of different entities should be segregated.

As an example, Resort World Berhad by itself is a separate legal entity in financial reporting. Genting Highland Berhad together with its several subsidiaries such as Resort World and Asiatic Development is also an entity that requires separate financial reporting.

● **Accrual Concept**

In accounting, profit is simply represented by the following equation:

Net Profit = Revenue – Expenses

NB: Other names for revenue are sales and turnover.

Here, reader has to be aware that **Net Profit** is a figure that is achieved within a time period, usually one year. Therefore, the value of sales and expenses must strictly refer to the figures that have been incurred within the same financial period.

On revenue reporting, all sales including sales on cash term and credit sales pending collection must be included. For instance, if cash sales for a year were RM100 million and credit sales were RM500 million with RM200 million still not collected, the sales reported under accrual concept shall be RM100 million + RM500 million = RM600 million. Notice that RM200 million which remains as account receivable has to be included as sales.

All expenses including those expenses that have been incurred but not yet paid are also to be recognized for the computation of profit. For illustration, we shall assume a corporation made a sale of RM600 million over the last 12 months just ended on 31st December 2007. However, only RM400 million of the sales have been received. Total expenses incurred were RM500 million but only RM450 million has been paid.

Based on the accrual concept,

Net profit = RM600 million – RM500 million = RM100 million

Notice that, if sales and expenses are recorded only upon receipt and payment, a loss instead of profit would have been incurred:

Loss = RM400 million – RM450 million = (RM50 million)

In practice, there can be some payments made but the related goods and services may not have been received by the corporation. Similarly, there can be instances where pre-payments have been received by corporations before supply of goods and services were made. There will also be some common expenses incurred but not yet paid. These include wages, overtime expenses and performance bonus. Short time gap or delays in payment of wages can happen when business organizations pay wages in the first week of the following month.

● **Realization Concept**

This concept deals with the ways revenue are recognized. Revenue is not considered realized by virtue of cash receipt. Neither can it be taken as realized when sale orders are received. Several criteria are to be observed for realization of revenue:

● Goods have to be provided to the buyer;

● Buyer accepts liability to pay for the goods and services;

● The monetary value of the goods and services has been ascertained; and

● The buyer has the ability to pay for the goods and services.

By ensuing that above criteria are observed, the need for adjustments due to return of goods sold, or price dispute can be minimized.

- **The Materiality Concept**

A limitation of financial statement is that they are prepared not exactly to the dollar, although the common expectation is for accountant to account for every single cent in accounting entries. The reality is that, financial statements are only *materially correct* to the extent that users can obtain a *fairly stated* view of the corporation. In practice, the *materiality* concept provides accountants with some leeway in the treatment of certain items. For instance, a simple calculator that cost only RM15 may have an economic life span of 3 years or longer. Under normal circumstances, it may need to be recorded as fixed assets with annual depreciation charges. However, applying the principle of materiality, the RM15 may be written off as expense for the year of purchase. The RM15 is not expected to have a material effect on the financial statements.

- **The Going Concern Concept**

Corporations are referred to as operating entities in financial statements. It is assumed that a corporation will continue to operate as a going concern in the foreseeable future so that values can be reasonably assigned to certain asset in the accounts. For illustration, we can understand that a manufacturing concern needs to put up a plant, machinery and equipment before production can commence. The assembly of these assets may take times before any production can takes place. As at the end of a financial year, the partially assembled plants may not be of value until completion. On the premise of the going concern concept, the partially assembled plant can be valued at cost, say RM20 million. Without the assumption that it is a going concern, the valuation at RM20 million that is not ready for use may not be justifiable.

Upon completion, ***plant, machineries and equipment*** are operational to produce goods. Due to wear and tear, on an annual basis, depreciation charges will be used to reduce their value. If the depreciation rate is 10% per annum, the value of the plant, machinery and equipment shall be RM16 million after 2 year. This valuation assumes that the business will continue as a going concern. Nonetheless, if manufacturing activities stopped anytime thereafter, the plant, machinery and equipment would need to be disassembled and sold on individual basis. In such a situation, diminution in value seems inevitable. Another reason for the lower value of disassembled parts is due to the fact that buyers of specialized equipment are limited. The combined effect is a much lower value for the individual assets; more so when they are sold under force sale environment.

The going concern concept is therefore a very important one in avoiding debate on the valuation of assets. In Malaysia, the current practice is beyond merely making the assumption. What is required now is that the management must confirm the ability of the corporation to operate as a going concern.

- **The Consistency Concept**

Can a corporation use different accounting rule from year to year? The answer can be found by referring to the laws and guidelines of regulatory bodies. For instance, the Companies Act requires that the accounts must be prepared to give a true and fair view on the financial position of a corporation. So long as the changes are justified in giving a true a fair view, it is in compliance with the provision of the Companies Act. Nevertheless, in the forthcoming deliberation, we can see that changes in accounting rule produce different outcome.

The *consistency* accounting concept requires that an entity follows similar accounting rule year after year. Consistent application of this concept enables financial analyst to make meaningful comparisons between current and historical results. The adherence to this concept tends to minimize the temptations of manipulation to cover up adverse results. Applying this concept, valuation of inventories should adopt similar method from year to year. The major approaches of inventory valuation are as follows:

a.   Weighted average cost approach,
b.   LIFO (Last In First Out) and
c.   FIFO (First In First Out).

Under weighted average cost approach, the total cost of purchases are divided by the total number of units purchased to give an average unit cost. Under FIFO, the inventory that were purchased first are considered utilized and sold first. However, under LIFO, the inventories bought last are considered utilized and sold first. Let us use an illustration to demonstrate the effect of using different methods on the financial statements.

Illustration: May Corporation imports hardwood furniture from overseas for domestic sales and re-export to other countries. During the last financial year, it imported 1 million sets of furniture at RM600 per set in the first 6 months and another 1 million sets at RM500 per set in the second half of the year. In the same financial year, 1.6 million sets were sold at RM800 per set. What will be the gross profit based on the approaches as described under Weighted average cost, FIFO and LIFO?

Suggested Solution

Under Weighted average cost approach	
Sales = 1.6 million sets x RM800	RM 1.280 million
Less cost of goods sold	
1.6 million x RM550 per unit (average cost)	(RM 880 million)
Gross profit	**RM 400 million**
Under FIFO	
Sales =1.6 million x RM800	RM 1,280 million
Less Cost of goods sold	(RM 900 million)
1 million x RM600 = RM600 million	
0.6 million x RM500 = RM300 million	
Total cost of goods sold = RM900 million	
Gross profit under FIFO	**RM 380 million**
Under LIFO	
Sales = 1.6 million x RM800	RM 1,280 million
Less cost good sold	(RM 860 million)
0.6 million x RM600 = RM360 million	
1 million x RM500 = RM500 million	
Total cost of good sold = RM860 million	
Gross profit under LIFO	**RM 420 million**

Based on the examples given in the table above, LIFO approach provides highest profit while FIFO approach gives lowest profit. The difference between the two approaches amounted to RM40 million. In general, when inventory prices are dropping, LIFO always gives a higher profit than FIF0 and weighted average cost approach. On the other hand, when inventory prices are rising during inflation, FIFO will provide higher profit as compared to other two approaches.

Since different approach of computing cost of goods sold can produce significant change in profit, the rule requires that business management adhere to the same way of valuing its cost of sales year after year. Nonetheless, this rule does not specify that there is absolutely no way the method of valuing inventory can be changed. If a change is necessary, the reason must be substantiated and justified in the notes to the accounts.

It should be noted that LIFO which produces lower profit during inflation is not used in Malaysia. The most common method seems to be the weighted average cost approach. This method is especially practical when a corporation has to deal with numerous products.

- **The Substance-Over-Form Concept**

Under this concept, an item is recorded not merely based on its legal form. Rather, it is recorded based on what and how it contributes to the business. For example, some fixed assets such as motor vehicles and machineries/equipments are acquired under hire purchase financing. In law, these fixed assets are not yet owned by the corporation until the purchase prices have been fully paid. Therefore, these items cannot be recorded as assets of the corporation. However, the common practice is to record these fixed assets and motor vehicles as if they are already owned and therefore they appeared as fixed assets in the balance sheet. To recognize the existence of the 'financier or owner', there is HP creditor in the liabilities side of the balance sheet. The justification for such practice is that, these fixed assets are already being used for the generation of gross income for the corporation. In other words they are in no way different from other income generating assets when come to usage. The accounting concept is further supported by the common practice that the hire purchaser will be the eventual owner when hire purchase loan is fully settled.

- **The Prudence Concept**

The concept was previously known as conservatism. It has now been changed to prudence. Under the concept of prudence, accountants are to record probable losses although the losses are not yet materialized. On the other hand, the appreciated value of an asset may not be taken in replacement of historical cost of the asset. Supposing we have a gold merchant who has an inventory of pure gold bought at cost of RM50 million.

We further assume that due to appreciation of gold prices, the same quantity of gold has appreciated by 30% by year end. Under the prudent concept, accountant should not record the increase in inventory value by RM15 million as profit. Here, the argument is that prices of gold fluctuate. By the time they are actually sold, it is possible that prices of gold may drop.

On the other hand, if the value of the same quantum of gold has dropped, the accountant is supposed to recognize the reduction in value under this rule of prudence. This practice is deemed necessary in order to protect the interest of the users of financial statements. It can be seen that the rule adopts an approach that underestimate profit rather than overstating it.

Another common area that involves application of this concept is the determination on the value of trade debtors of a corporation. In this area, accountants have to decide on the amount of bad debts to be written off. The effect on the profit and loss account can be very significant. If earnings of a corporation affect share prices, then the decision of the accountant will affect share prices. Determining amount of bad debts to be written off can be a very debatable issue. It is subjective and may lead to disagreement between auditors and the management of the corporation. Very sensitive financial analyst may therefore want to examine and investigate into the reason for change in auditors whenever there are changes.

Financial Statements

We have examined several accounting concepts and principles. We shall now look at the financial statements. The three major types of financial statements used in financial analysis of companies are the *balance sheet*, the *profit* and *loss account* and the *cash flow statement*.

The *balance sheet* and the *profit* and *loss account* are used mainly to compute the various financial ratios. Whereas the cash flow statement is for assessing the cash position or the liquidity of the company. Financial statements need to be reliable before any analysis is conducted. The credibility of a set of financial statements is enhanced when they are audited by qualified auditors. An analysis should therefore begin with a statement to indicate the source of data and whether the data are audited. An example is as follows:

> *"comments and analysis are based on unqualified accounts for years ended December 31, 2006 and 2007, audited by M/S ……., CPA"*

This statement may not look very significant unless it is compared with another statement as follows:

> *"comments and analysis are based on un-audited accounts for year ended December 31, 2007 and audited accounts for year ended December 31, 2006 audited and qualified by M/S ……. CPA"*

Qualifications of Accounts

By qualifications, auditors are essentially saying that they have certain reservations on the reliability of the financial statements. Qualified accounts are therefore not that reliable. The degree of non-accuracy depends on the nature of qualifications that come in 3 forms. Let us examine samples of unqualified and qualified accounts as follows:

i. Unqualified accounts
In our opinion:
a. The accounts have been properly drawn up in accordance with the approved accounting standards & the Companies Act, 2016 so as to <u>give a true and fair view of the financial position </u>of the company …..

b. The accounting & other records and the registers required by the act ….. have been kept in accordance with the provisions of the Act

ii. Qualified Accounts:
There are certain areas of disagreement by auditors. For example, there is no provision of bad debts. A sample of this situation is as follows:

> **"In our opinion, <u>except for</u> the failure to provide the amount described in the preceding paragraph:**
>
> **a. The accounts have been properly drawn up ……. to give a true and fair view ……"**

iii. Disclaimer of opinion
In this case, auditors expressed their limitation in carrying out their duties. It could be for instance, they are unable to perform any stock count or unable to confirm the amount of account receivable.

A sample is as follows:

> **"We were not able to observe all physical stocks and confirm accounts receivable due to limitations placed on the scope of work of our company.**
>
> **In view of the significance of the matters discussed in the preceding paragraph, we do not express an opinion on the accounts"**

iv. Adverse Opinion

In this case, the disagreement is so material and pervasive that qualification is inadequate to disclose the misleading or incomplete nature of the financial statements. Auditor has to say something very negative about the accounts. A sample is as follows:

> **"In our opinion, because of….**
>
> **a. The accounts do not give a true and fair view of the financial position of the company… "**

Timeliness of Accounts

The speed at which financial results are communicated to stakeholders is very important. Apart from reflecting the efficiency of the management, investors should have a level playing field in making investment decision. Investors should pray that the reason for delay is not due to the management's debates or negotiations with auditors on the qualifications of accounts. In general, investors should be wary of corporations which are slow in providing accounts to their stakeholders. This issue is taken care of by Bursa Malaysia which spelt out datelines for release of financial results for listed corporation. It is hoped that the current datelines be further shortened so that information affecting decision can reach investors in shorter time.

Notes to the Account

The notes to the accounts form an integral part of the financial statements. From the notes, analyst can get a better picture of the financial results. For example, a company may show a huge profit in one particular year. This could be the result of a non-recurring item. Non-recurring gains should not be taken as if it will continue to surface to benefit the shareholders. Computation of earnings per share will require adjustment for the purpose of share valuation. Without looking at the notes, we will not be in a position to tell whether certain gains or expenses are recurring.

Contingent Liabilities

A specific search into the notes of the account should be made with reference to contingent liabilities. Contingent liabilities do not appear as liabilities in the balance sheet of a corporation. As the name suggests, the liabilities may or may not be real. An important example of contingent liability is a corporation's guarantee to financial institutions for loans approved to its subsidiaries. If the subsidiaries perform well and has the repayment capacity, the guarantee is not going to be exercised by the lender. On the other hand, if the subsidiaries performed poorly and could not service debts or interest, the liabilities may crystallize and become real instead of being contingent. The need to pay contingent liabilities will have negative impact on earnings and net assets of the corporation. Early detection of these forms of liabilities will benefit investors.

The Balance Sheet

The balance sheet of a business entity can be defined in several ways. Basically, a balance sheet is a still picture of a business on one specific day, a moment in time, the date it was drafted. It shows

the financial standing of the business as of a particular date, commonly at the end of the business's fiscal year. It can also be defined as a statement of asset, liabilities and shareholder's equity at a particular point in time. It can also be stated as a statement of sources and uses of funds at a particular point in time. Let us examine the basic balance sheet equation and see how it explains the concept.

Total Asset = Total liabilities + Shareholders' Funds

In total asset, there are current assets and non current assets that include fixed asset. In equation form,

Total asset = Current asset + Non current assets

It tells us where the business entity invested its funds at a point in time, usually the year end if it is prepared for purpose of informing the shareholders of business performance and tax reporting.

The right hand side of the equation comprises shareholders' funds plus total liabilities with two sub-components in current liabilities and long term liabilities as follows:
Total liabilities = Current liabilities + Long term debt

Total liabilities are external funds which the business entity used to finance part of its assets. Another source of fund is the internal fund or the shareholders' funds. Together the internal funds plus the external funds will account for 100% of the total assets that appear on the left hand side of the balance sheet equation. Let us look at a simple balance sheet for further comments.

Balance Sheet of ZZ Corporation
As at 31st December 2018

ASSETS in RM000's			LIABILITIES in RM000's		
Current Assets			**Current Liabilities**		
Cash	RM	7,500	Bank Overdraft	RM	16,000
Accounts receivable		25,000	Accounts payable		29,500
Inventory		35,000	Tax payable		3,500
Total Current Assets		**67,500**	**Total Current Assets**		**49,000**
Non Current Assets			**Long-Term Debt**		
Fixed Assets					
Machinery & Equipments	RM	100,000	**Term loan**	**RM**	**40,000**
Motor Vehicles		25.250			
Total Fixed Asset		**125,250**	**Total Liabilities**		**89,000**
Investment in Subsidiary	**RM**	**10,000**	**Shareholders' Funds**		
Good Will	**RM**	**12,000**	Paid-up capital	RM	60,000
			Retained earnings		65,750
			Total Shareholders' Funds		**125,750**
Total Assets	**RM**	**214,750**	**Total Liabilities + Equity**	**RM**	**214,750**

On the left hand side of the above example, we can compute the values of the items as follows:

Total assets   =   Total current asset + Non current assets
                        =   RM67.5million + (RM125.25million + RM10million + RM12million)
                        =   RM214.75million

Total current assets   =   cash + accounts receivable + inventory
                        =   RM7.5million + RM25million + RM35million
                        =   RM67.5million

Non current assets   =   total fixed assets + investment in subsidiary + good will
                        =   RM125.25million + RM10million + RM12million
                        =   RM147.25million

On the right hand side of the balance sheet, we can find that:

Total liabilities + shareholders' funds   = RM89million + RM125.75million
                                           = RM214.75million

Therefore, we have a balance sheet equation:

Total assets = total liabilities + shareholders' funds = RM214.75million

What we have demonstrated is actually a simple balance sheet. In reality, the balance sheet can be much more complicated when the financial statements of a company and its subsidiaries are produce on a consolidated basis. An example of a consolidated balance sheet of a listed company and its subsidiaries for financial year ended November 30, 2018 is as follows:
The Profit and Loss Account/Income Statement

This is a financial summary of operating results for a period of time. It is a summary of revenues generated over a period of time, the cost, and expenses incurred (including tax) during the same period, and the profits. Unlike a balance sheet, profit and loss account covers the activities that have occurred during the accounting period. In this case, it is like a video shooting taken throughout a company trip, and the balance sheet is just a group photo taken at the end of a company trip. An illustration of profit and loss account/income statement is shown below:

CONDENSED CONSOLIDATED BALANCE SHEET

	As at end of Current Quarter 30.11.2018 RM'000 (Unaudited)	As at Preceding Financial Year End 30.11.2017 RM'000 (Unaudited)
Assets		
Property, plant and equipment	46,940	55,738
Investment properties	396	406
Land held for property development	10,671	10,581
Prepaid lease payment	6,785	6,937
Interest in an associate	15,512	14,874
Other investments	7,401	-
Deferred tax assets	-	168
Total non-current assets	87,705	88,704
Inventories	42,201	45,885
Trade and other receivables	32,975	24,404
Tax recoverable	487	1,628
Cash and cash equivalents	120,133	88,639
Total current assets	195,796	160,556
Total assets	283,501	249,260
Equity		
Share capital	172,500	142,226
Reserves	(8)	(11)
Retained profits	77,289	64,704
Total equity attributable to shareholders of the Company	249,781	206,919
Minority Interests	76	76
Total Equity	249,857	206,995
Liabilities		
Deferred tax liabilities	12	-
Borrowing	-	627
Total non-current liabilities	12	627
Trade and other payables	32,288	38,804
Borrowing	-	300
Taxation	1,344	2,534
Total current liabilities	33,632	41,638
Total equity and liabilities	283,501	249,260
Net assets per share (sen)	72.40	72.74

The Profit and Loss Account/Income Statement

This is a financial summary of operating results for a period of time. It is a summary of revenues generated over a period of time, the cost, and expenses incurred (including tax) during the same period, and the profits. Unlike a balance sheet, profit and loss account covers the activities that have occurred during the accounting period. In this case, it is like a video shooting taken throughout a company trip, and the balance sheet is just a group photo taken at the end of a company trip. An illustration of profit and loss account/income statement is shown below:

Profit before Tax or EBIT

With globalization, the need to understand accounting language has to be widened to include practices in countries where you have investment interest. These countries will probably include all the Asean countries with Malaysia in particular because of the historical link. There is a need to point out a significant difference on the usage of terminologies. For example, Profit & Loss A/C in some countries is known as Income Statement in USA.

Sometimes, operating profit is also referred to as **earnings before interest and taxes** (EBIT). The format of presentation may be as follows:

1	**Sales**
2	Cost of Sales
3 = 1 – 2	Gross profit
4	Operating Expenses
5 = 3 – 4	EBIT or operating profit
6	Finance charges
7 = 5 – 6	Earnings before tax
8	Taxation
9 = 7 – 8	Net Profit

In some presentations, operating expenses include interest cost or finance charges.
The presentation may be slightly different to cause confusion in analysis of financial statements.

1	**Sales**
2	Cost of Sales
3 = 1 – 2	Gross profit
4	Operating Expenses
5 = 3 – 4	Profit before tax
6	Taxation
7 = 5 – 6	Net Profit

Let us have an example of a simplified profit and loss account of a corporation listed in Bursa Malaysia.

CONDENSED CONSOLIDATED INCOME STATEMENTS FOR THE YEAR ENDED 30 NOVEMBER 2007

	Individual Quarter		Cumulative Quarters	
	Current Year Quarter 30.11.2018 RM'000 (Unaudited)	Preceding Year Quarter 30.11.2017 RM'000 (Unaudited)	Current Year to Date (Four Quarters to 30.11.2018) RM'000 (Unaudited)	Preceding Year To Date (Four Quarters to 30.11.2017 RM'000 (Unaudited)
Revenue	59,352	54,550	220,546	126,007
Profit from Operations	18,418	16,262	59,243	67,990
Finance Costs	-	(16)	(40)	(41)
Share of Profit after Tax of Associate	5,435	4,991	15,247	5,109
Profit before taxation	23,853	21,237	74,450	73,058
Income Tax Expense	(4,558)	(6,617)	(15,421)	(8,286)
Profit for the period	19,295	14,620	59,029	64,772

Cash Flow Statement

The cash flow statement provides a summary of cash movements (the inflows and outflows of cash and cash equivalents) and the events that cause the changes in the cash position of a company in the period. It shows how liquid a company is. Apart from the liquidity aspect, the statement also tells how efficient the company is in generating cash from its operations, where and for the types of activities it has been used. If there is an injection of funds, it is also being shown as a separate class of cash inflow.

However, a company's reported earning may have little resemblance to the company's cash flow. Profit/income is just the difference between revenues and the accounting cost that has been charged against the revenue; cash flow is the amount of cash actually taken in and paid out as a result of doing business.

For users, the cash flow statement provides valuable information on the changes in cash and cash equivalents during a financial year of a business. It also clearly defines cash and cash equivalent as follows:

i.   Cash is defined as cash in hand and cash in the bank.

ii.   Cash equivalents are defined as short-term investments, items that are readily convertible to cash. Examples would be mutual funds and similar securities.

The International Accounting Standard's Rule IAS 7 (revised) defines cash equivalents as those investments that are held for satisfying short-term cash commitments rather than for investments and other purposes. For an investment to qualify as a cash equivalent, it must be readily convertible to cash and subject to an insignificant risk of changes in value. The internationally advocated format shows the inflows of cash and cash equivalents of a business from its operating, investing and financing activities.

The method of activity classification is intended to indicate to the user the effect of the three activities on the cash resources of the business. In addition, it also reconciles the inter-dependency of one activity on the other. For instance, the cash flow statement may indicate to what extent cash from operations was used to finance investing activities or to what extent operating activities were dependent on the cash flow from financing activities.

Classification of the Cash Flow Statement

Cash flow means movements of cash in or out of the business, which result from transaction with an external party.

The following can increase an enterprise's cash balance:

● Net profit from operating activities;
● Proceeds from selling assets; or
● An increase in liabilities, such as additional loans taken

Similarly, the following can decrease the enterprise's cash balance:

● Net loss from operating activities;
● Cash purchases of assets; or
● A decrease in liabilities, such as payment of loans.

As mentioned earlier, the objective of the cash flow statement is to explain changes in the cash account according to management activities that cause those changes, such as operations, investing and financing.

The three types of activities of the cash flow statement are described below:

a.   Operating Activities

Essentially, operating activities are business activities that are not investing or financing activities. For the business, these are the principle revenue-producing activities. They include the sales of goods and services and all incidental costs incurred in earning the income. The operating activities are a main indicator of the extent the business have generated enough cash flows to settle loans, sustain the operating capacity of the business, pay dividends and make new investments without recourse to external sources of financing. Read in conjunction with other information, it can be used in forecasting future operating cash flows of the business. The following are examples of cash inflows from and outflows from operating activities:

i.   Cash receipts from sales or provision for services, such as collection of accounts and notes receivables from sales.
ii.   Cash receipts from investments or assets such as royalties, commission and other income.
iii.   Cash receipts to and on behalf of employees.
iv.   Cash payments or refunds of income tax unless they can be specifically identified with the financing and investing activities.
v.   Cash payments made to buy goods or services.

b.   **Investing Activities**

Investing activities are dealings that involve acquisition of long-term assets, either to replace outdated assets or for the purpose of satisfying expansion program, and the sale of fixed assets, etc. The information on the cash flow from investing activities is vital because it shows the extent to which expenditures have been made for resources intended to generate future income and cash flows for the business. The following are examples of cash inflows from and outflows from investing activities:

i.   Cash payments to obtain fixed assets (tangible and intangible) and long-term investments. Cash consumed to build or develop fixed assets is also part of cash outflow from investing activities.

ii.   Cash receipts from the sale of fixed assets and long-term investments.

iii. Cash payment for impending capital expenditure.

c.   **Financing Activities**

As for financing activities, these are dealings that entail the securing of financial resources from owners and other providers of long-term capital. These would include the return paid to these financial providers and the repaying of the money borrowed. The following are examples of cash inflows from and outflows from financing activities:

i.   Cash receipts from the issue of shares.

ii.   Cash payments on redemption of preference shares or other shares

iii. Cash receipts on issue of debentures, loan and other borrowings – both short and long-term.

iv.   . Cash payment of amounts borrowed and the redemption of debenturevs.

v.   Cash payment on finance lease (capital repayment).

Limitation of the Cash Flow Statement

Notwithstanding its value, a cash flow statement has limitations to its usefulness. Firstly, a cash flow statement is a mere record of historical facts of the business. It expresses no opinion of the facts stated. For instance, it may record expenditure when plant and machinery are bought, but does not tell the user whether what's bought is useful or profitable. Likewise, it may show a sudden magnification of stocks beyond normal level, but do not tell the user whether this was due to:
a.   poor stock planning or inefficient production control;
b.   ineffectiveness in marketing the products; or
c.   an intentional act of policy, because future shortage is expected soon, there may be a price increase or the need to pile up stock before a latest model is introduce.

A cash flow statement may highlight a deteriorating cash position, but does not tell how near a business is to the limit of its facilities. It will show how capital was raised, but not whether it was raised in the most effective way, nor indeed whether it really needed to be raised at all or if the need could have been avoided with improved asset management. And lastly, it only shows the cash flows for the period that ended several months ago, not the business's current standing. As we can see in the 1997/98 financial crisis in Asia, liquidity problems can and do arise very suddenly.

Financial Statement Analysis

By just looking at the financial statements, it does not give much insight on the performance of a company. These statements are just a mass of raw financial information. To make it more meaningful and relevant for decision-making, an insight study has to be carried out. This process involving analyzing data, interpreting outcome and comparison of results over time, a time frame, and amongst companies within the industries is what we term as financial statement analysis. This will give a better understanding on the nature and operating characteristics of the company.

It is believed that the performance of a company has a great influence on the market price of its shares. If a company has good performance and the prospects look good, the market price of its shares is likely to move upwards. However the market price does not only depend on the performance and prospects, but also its exposure to risks.

Key Financial Ratios

Financial ratios lie at the very heart of company analysis. Without ratios information on company, any analysis done would be incomplete. Ratio analysis is the study of the relationship between various financial statement accounts. Each measure relates one item on the balance sheet to another, or very often with items from profit and loss account. In this way, the investor looks not so much at the absolute size of the item, but rather the liquidity, activity and profitability of the company. In order to obtain a set of useful and meaningful financial ratios, one must have a good understanding of the uses and limitations of the financial statements themselves.

The analysis of financial ratios enables investors to assess a company's past and present financial condition and operation results. The mechanics of ratio analysis are straightforward (refer to 5 main groupings that follows). Obtain the relevant information from the financial statements, compute the whole set of ratios, then, compare them with the previous years' ratios and also that of the industry. In order for the investor to forecast the prospect to a certain degree of accuracy, he must know the past as a basis for the forecast.

Financial ratios can be classified into five (5) main groupings:

- Liquidity
- Activity ratios
- Leverage ratios
- Profitability ratios
- Share/market

We shall go through these groups of ratios based on a case example using the following balance sheet and profit & loss account.

Table 3-1: Balance Sheet of Optimum Corporation

Balance Sheets As At 31st December 2018

	2018 RM'000	2017 RM'000
Current Assets		
Cash and bank balances	105,287	77,554
Debtors	499,233	357,387
Stocks	24,680	41,459
	629,200	476,400
Current Liabilities		
Short term borrowings	269,814	200,304
Creditors	103,771	95,643
Taxation	20,500	18,099
Dividend payable	15,632	10,585
	409,717	324,631
Net Current Assets	219,483	151,769
Investments	265,194	256,150
Fixed Assets	27,220	40,660
Loans	(23,118)	(28,337)
Deferred Liabilities	(30,001)	(32,886)
Net assets	458,778	387,356
Shareholders' Funds		
Share capital	288,402	288,402
Reserves	170,376	98,954
	458,778	387,356

Table 3-2: Profit and Loss Accounts/Income Statement of Optimum Corporation

Profit and Loss Accounts for year ended 31st December 2018

	2018 RM'000	2017 RM'000
Turnover/ Sales revenue	1,154,329	1,409,220
Less Cost of sales	913,833	1,250,317
Gross profit	240,496	1 58,903
Less operating expenses	140,229	138,003
Earnings before interest and taxes	100,267	20,900
Less Financial charges	10,101	11,950
Operating profit before taxation	90,166	8,950
Taxation	(1,790)	(1,359)
Profit after taxation	88,376	7,591
Retained profit brought forward	98,954	99,739
	187,330	107,330
Profits available for appropriation	187,330	107,330
Dividend	(216,954)	(8,376)
Retained profits carried forward	170,376	98,954

Liquidity Ratio

The liquidity ratios of a company at one point in time, measures its ability to meet its financial obligations that will fall due in the next 12 months. The financial obligations that include the expenses and the short term liabilities that are payable in the next 12 months. The primary concern is whether the corporation will have sufficient cash to meet such demand. Relating to the issue is whether the existing current assets can turn into cash fast enough without losing much value. We will look at three ratios under this grouping:

● Current ratio,
● Quick ratio
● Net working capital

Current Ratio

This is the most common ratio and is computed based on the formula as follows:

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

In 2007, Optimum Corporation (MRC) had a current ratio of $= \frac{629,200}{409,717} = 1.54$

From the above we can safely say that for every RM1 short term debt that Optimum Corporation owed, it had RM1.54 backing by current assets. As a rule of thumb, a current ratio of 2:1 has been considered the ideal minimum. Of course, there are exceptions. Some corporation with a 2:1 ratio or more may have hidden financial problems such as poor quality of current assets. On other hand, company with current ratio below 1:1 may still be acceptable, particularly if the business is conducted on a cash basis. Another reason is because overdraft facilities offered by commercial banks is one form of current liabilities that really do not require full settlement within the next 12 months, as long as the overdraft account is conducted satisfactorily within the approved limit. If adjustment is made to less out the overdraft facilities from the current liabilities, the current ratio will improve significantly.

Exercise: **Please work out the current ratio for year ended 2017. Thereafter, the result is to be used to compare with the ratio of 1.54:1 in 2018. Which year has a better current ratio?**

Quick Ratio

This is a more stringent measurement of liquidity position of a corporation. It is in fact an extension of current ratio by eliminating the inventory (stock) from the current assets in the numerator of the current ratio as follows:

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory (Stock)}}{\text{Current Liabilities}}$$

Another name for the quick ratio is Acid Test Ratio. The rationale of such move is that stock is considered to be least liquid among all the current assets, and takes a much longer time to convert into cash in an operating or cash conversion cycle. The value may drop due to obsolescence and possible theft and therefore has a higher chance of possible loss. This ratio tells how well a corporation can meet its current obligation without reliance on its stocks or inventory.

In 2007, OC has a quick ratio of $= \frac{629,200 - 24,680}{409,717} = 1.48$

OC is covering its current liabilities 1.48 times without any contribution from its inventory. As a rule of thumb, a ratio of 1:1 is traditionally considered to be sufficient.

Exercise: **Please work out the quick ratio for year ended 2017 and compare it with the ratio of 1.48:1 in 2018. Which year has a better quick ratio?**

Net Working Capital
Technically speaking, this is not a ratio. However, it is often being used alongside the other liquidity rations. The current assets of a company are also known as working capital. Net working capital is the difference between current assets and current liabilities. Another name for net working capital,

as you can see in the balance sheet is net current asset. Net working capital ought to be positive under normal circumstances. Otherwise, the company is deemed to be illiquid. The higher the net working capital, the better is the liquidity of a company.

> ### *Net Working Capital = Current Assets – Current Liabilities*

In 2018, OC had a Net Working Capital of = RM629,200 – RM409,717 = RM219,483
It seems to suggest that OC has the excess capacity to pay its current liabilities.

> Exercise: **Compute the net working for year ended 2017 and compare it with the amount of RM219,483 in 2018. Which year has a better net working capital quick ratio?**
>
> **Summary: Please summarize the overall liquidity strength of OC and provide an indication whether the position was improving or otherwise?**

The analysis of the liquidity position of a company should not be confined to the above ratios only. Very often, a more thorough and detailed analysis can be made. This could be achieved in many ways. The nature of products is important in assessing whether inventory turnover is satisfactory or otherwise. If a company is distributing fresh fruits, inventory turnover of more than 2 weeks may not be acceptable. This is because fruits are easily perishable and costs of storage will be high if refrigeration is required. On the other hand, a company selling tractors may have inventory turnover of more than 4 months and still could be acceptable. In general, any goods that are not readily available will require larger level of inventory and hence create longer movement of stocks.

The nature of business entity also plays a role in the assessment of liquidity performance. A retailer should have a lower level of receivable as compared with a wholesaler. In general, a wholesaler has a much higher business volume and has to act as stockiest to service the retailers to ensure that they do not run out of stock. A manufacturer will usually require even higher inventory level. Very often, the need to store raw materials, cater for work-in-progress and finished goods call for a higher level of inventory.

Current assets are assets convertible into cash within the next 12 months. Current liabilities are liabilities that are due for payment within the next 12 months. In a crude sense, if the value of current assets is higher than the current liabilities, the company's liquidity is deemed acceptable. However, the timing of conversion of current assets into cash and the timing of financial obligation payable under current liabilities are not necessary proportionate over the next 12 months. In addition, some of the current assets may experience delay in conversion into cash whereas creditors have predetermined credit collection period. Therefore, some leeway is necessary. This implies that the value of current assets needs to be significantly higher than current liabilities if the corporation does not wish to delay paying their financial obligations.

It is simply not good enough to accept the value of current assets as presented. A portion of the accounts receivable may not be collectible. To provide additional input an understanding, several measures can be conducted.

1. Compute the average collection period and compare it with previous years' performance. This is called a time series analysis.
    Compute the average collection period and compare it with other companies in the industry.
2. This is called a cross sectional analysis.
3. Examine the schedule of aging of receivables. The credit period is used to compare the breakdown of the amount receivable. Generally, if the receivable has been outstanding for number of days longer than the credit period allowed, the experience is considered unsatisfactory. An example of aging of accounts receivable is tabulated below:

NAME OF CLIENT	< 2 MONTH	2 TO 3 MONT	3 TO 4 MONT	4 TO 5 MONT	5 TO 6 MONT	> 6 MONTH	TOTAL
A1	RM20,000	RM3,000	RM4,000	RM5,000	RM0	RM0	RM32,000
B2	RM50,000	RM40,000	RM30,000	RM20,000	RM10,000	RM0	RM150,000
C3	RM38,000	RM3,000	RM0	RM0	RM0	RM0	RM41,000
D4	RM0	RM50,000	RM40,000	RM59,000	RM49,000	RM100,000	RM298,000
E5	RM90,000	RM0	RM0	RM0	RM0	RM0	RM90,000
F6	RM70,000	RM79,000	RM40,000	RM0	RM0	RM0	RM189,000
G7	RM0	RM50,000	RM70,000	RM0	RM80,000	RM100,000	RM300,000
TOTAL	RM268,000	RM225,000	RM184,000	RM84,000	RM139,000	RM200,000	RM1,100,000

The interpretation and conclusion of aging of receivables are very much dependent on the credit terms granted to the purchasers. For instance, if the credit term in the example here is 4 months, it will appear that only customers C3, E5 and F6 have been paying promptly. Customers A1, B2, D4, and G7 have not been paying promptly. Further examination reveals that Customer D4 and G7 require more attention and follow up.

4. Provision for bad and doubtful debts. Based on the aging of receivables, doubtful accounts can be identified. From these accounts, investigation has to be carried out as to whether provision for bad and doubtful accounts should be made.

Activity Ratios

Measurement of general liquidity is merely one aspect of financial statement analysis. The next issue is whether the assets of OC were underutilized or otherwise in generating sales. In order to do this, we have to assess the composition and the underlying liquidity of key current assets in sales generation. We are to evaluate how effectively the company is making use of its assets. Therefore, activity ratios compare company sales to various asset categories in order to measure its efficiency in asset utilization for purpose of generating revenue.

The three most common ratios used for comparisons are:

● Sales with accounts receivable – **Average Collection Period**

● Sales with inventory – **Inventory Turnover**

● Sales with total assets – **Total Asset Turnover**

Average Collection Period / Accounts Receivable Turnover

Usually accounts receivable constitute a major portion of the current assets in the balance sheet. This is what our debtors or customers owe us. Whatever our customers owe us is an investment within the business, and is important that it is collected within a tolerable time frame.

Accounts receivable turnover is a measure of how intense these invested resources are being managed and utilized.

Average Collection Period = (Accounts Receivable / Total Credit Sales) x 365 days

In 2018, OC had an Average collection period $= \dfrac{RM499,233}{RM1,154,329}$ x 365 days

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad = $ 158 days

In 2018, OC turned its average collection period of 158 days. In other words, it takes more than 5 months to collect the amount owing by the trade debtors. In general, the faster the collection period, the better is the management of the credit sales. Efficiency in collection is deemed to be better as the collection period gets shorter. However, a trend may be constructed from past data to see whether there is improvement or deterioration in performance.

Exercise: **What is the average collection period for year ended 2017? Compare the result with 158 days in 2018, which year has a shorter collection period?**

Sales to Inventory Turnover Ratio

Inventory or trading stocks is another major item within the balance sheet. In its simplified form, inventory or stocks are the goods purchased for resale and are left unsold at the close of the accounts. In practice, inventory or stocks may fall under several categories. They may be in the form of raw material, work-in-progress and finished goods. For trading concern, the stocks are mainly in the form of finished goods. No value added is required. There are also some dealers that purchase materials parts for assembling before sales. For manufacturers, value added through the manufacturing process required inventory in raw materials, consumable parts, semi-finished goods and finished goods that are for delivery.

Sales-to-Inventory Turnover is a measure of how intense these invested resources in stock are being utilized and controlled. It indicates the kind of return the company is getting from its investment in inventory.

Generally, the higher the turnover figure, the shorter the time an item of stock spends in the store, thus the better the return the company is able to earn from funds tied up in the inventory.

Inventory Turnover Ratio   =   Cost of Sale
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ **Average Inventory**

In 2018, OC has an inventory turnover of $= \dfrac{913,833}{(24,680 + 41,459)/2} = $ 27.63 times

Note: when sales are used instead of cost of sales, the result tends to be less accurate due to the variation in profit margin.

Exercise: **What is the average inventory turnover ratio based on average inventory of RM30,000 for year ended 2017? Compare the outcome with 27.6 times in 2018, which year has a better inventory turnover?**

Total Asset Turnover (TAT)

Total asset turnover indicates how efficient assets are being used to generate sales. It is calculated as follows:

Total Asset Turnover Ratio = $\dfrac{\text{Annual Sale}}{\text{Total Asset}}$

The total asset of OC is made up of three items here. They are current assets (RM629,200), investment (RM265,194) and fixed assets (RM27,220). Total amounted to RM921,614.

In 2018, OC has a TAT of = $\dfrac{\text{Annual sale}}{\text{Total asset}}$ = $\dfrac{\text{RM1,154,329}}{\text{RM921,614}}$ = 1.25

From the calculation we can see that for every RM1 of asset invested, it generates RM1.25 of sales. This is considered a low turnover figure and seems unsatisfactory. It may be described as a case of under trading.

A high turnover figure suggests that the corporate resources are being well managed and that the firm is able to realize a high level of sales from its asset investment, which ultimately gives high profit. It has a direct bearing on the corporate profitability. The principle at work here is like the return to an individual investor (earning RM100 from an investment of RM1, 000 is more desirable than earning RM100 from an investment of RM2,000). This ratio can provide insight as to whether an organization has too much capacity or too little for a given sales volume. This will give a better picture when comparing with other organizations in the same industry.

Exercise: Compute the TAT in 2006 and compare it with the TAT in 2018.

Leverage Ratios

This category of ratios focuses on the usage of external funds and the impact of such financing on the financial position of a company. Investors in loan stocks or bonds should pay more attention to his category of ratio. We will examine three ratios in this sub-section:

i.   Debt- Equity Ratio:
ii.   Total Debt- Equity Ratio
iii.   Interest Coverage

Debt – Equity Ratio

Debt–Equity ratio is defined as Total Long Term Debt ÷ Total Equity. It is a measurement of the amount of debt used by the company in comparison with its own capital. A high debt-equity ratio of more than one suggests that external funds exceed the internal funds of shareholders. For OC, the Debt-Equity ratio in 2018 was:

$\dfrac{\text{23,118 (loan) + 30,001 (deferred laibilities)}}{\text{458,778 (shareholders' funds)}}$ = 0.1158

The ratio suggests that OC's reliance on external fund was very small in 2018.

Total Debt- Equity Ratio

Instead of using only long term debts, another measurement of leverage used total debts or liabilities of the company to compare with the shareholders' funds. In other words, instead of using merely long term liabilities, current liabilities are also added up as numerator. This is based on the argument that most current liabilities also incurred interest charges. The higher the total liability, the heavier is the financial commitments. In OC's case, the total debt-equity ratio in 2018 was:

$$\frac{23,118 \text{ (loan)} + 30,001 \text{(deferred liabilities)} + 409,717 \text{ (current liabilities)}}{458,778 \text{ (total shareholders' fund)}} = 1.001$$

The ratio was slightly higher than 1. This implies that the total liabilities of OC ware higher than the shareholders' capital in 2018.

Interest Coverage

In order to measure the ability of a company to service interest, interest coverage ratio is used. Another name for this ratio is Times Interest Earned ratio. The ratio is defined as EBIT ÷ Total Interest Expense. It shows how many times the business can generate cash flows before interest and taxes to service interest. As one can see, the higher the ratio, the stronger is the ability to service interest. This is one of the most important ratios which investors in bonds or loan stocks should examine for purpose of foretelling the likelihood of default by issuers.

The interest coverage of OC in 2018 = EBIT ÷ Total Interest
                                     = 100,267 ÷ 10,101 = 9.93 times

The outcome suggests that the financial resources available were sufficient to cover interest payments 9.93 times. Should OC wished to obtain more loans, the interest coverage ratio provide support and comfort for lenders to lend. On the other hand, assuming the coverage was only 2 times, OC may have problem getting additional financing.

> Exercise: Compute all the leverage ratios indicated here for OC for year ended 2017 before making comparisons with ratios computed in 2018.

Profitability Ratios

Let us begin by examining the following statement:

> *AA Corporation's net profit improved from RM209 million in 2017 to RM259 million for the year ended 30th September 2018*

Is there any problem with the statement? Was the performance for year ended 2018 indeed better than the previous financial year as indicated in the statement?

Supposing the company increased its shareholders' funds from RM1.5 billion to RM2.5 billion at the beginning of financial year ended September 2018, is the performance considered better?

The problem inherent in the statement is that it does not indicate how much financial resources were used to generate the net profits of RM259 million and RM209 million. In financial or investment analysis, we have to understand the concepts of profit and profitability. Note that RM259 million and RM209 million net profit are absolute profits figure. Profitability, on the other hand, is a ratio,

usually expressed in percentage. Profitability relates the amount of resources utilized to bring in the absolute profit figures of RM259 million and RM209 million. We have three main measures of profitability as follows:

- Return on Equity

- Return on Assets

- Net Profit Margin

Return on Equity (ROE)

This is a measurement of how much shareholders' funds were used to generate the reported profit using the ratio:

$$\text{ROE} = \frac{\text{Net Profit after Tax}}{\text{Shareholders' Fund}}$$

Shareholders' fund of RM1.5 billion was utilized to generate profit of RM209 million in 2017 whereas RM2.5 billion was applied to generate net profit of RM259 million in 2018. The respective ROE are:

ROE for 2017 = RM209 million / RM1, 500 million = 0.139333 or 15.93%
ROE for 2018 = RM259 million / RM2, 500 million = 0.1036 or 10.36%

We can see that 2017 actually has better ROE when compared to 2018. The performance based on ROE tells us a different story as compared to merely the absolute profit figures of RM259 million VS RM209 million. It is important that investor must know how much of his own money is used to generate the net profit.

There are always investment alternatives competing for the investors' fund. If the rates of returns of alternative investments are better, the investors are not likely to be satisfied with the ROE of 15.93% obtained in the example given here. This is particularly true if we assume that the company is listed and there are listed companies in the same industries. In the local context, investors looking for shares in the banking sector may want to evaluate and compare the ROEs of Maybank, CIMB and Public Bank.

Return on Asset (ROA)

The ratio is a measurement of the amount of net profit per dollar of asset. It is based on the following formula.

$$\text{ROA} = \frac{\text{Net Profit after Tax}}{\text{Total Asset}}$$

The amount of financial resources utilized to generate profit is not always fully represented by the shareholders' funds. In practice, there could be financing from suppliers and bankers. If there are external financing (comprising short term and long term liabilities), the financial resources or total assets used to generate income will be greater than the shareholders' funds. Let us recall the relationship between total assets and shareholders' funds as follows:

Total Assets = Total liabilities + Shareholders' funds

When total liabilities is 0, Total assets = Shareholders' fund

It follows that ROE = ROA when there are no financing involved in investments. For individuals who use their surplus funds for investment, there will be no financing.

> Assuming CA Corporation relied on external financing up to RM750 million and RM25million for years ended 2017 and 2018 respectively, what will be the respective ROA?

ROA for 2017
Total Assets = Total liabilities + Shareholders' funds
            = RM750 million + RM1, 500 million = RM2, 250 million

ROA = RM209 million / RM2, 250 million = 0.9289 or 9.3%

ROA for 2018
Total asset = RM25 million + RM2,500 million = RM2, 525 million

ROA = RM259 million / RM2, 575 million = 0.1006 or 10.06%

Based on ROA and the hypothetical amount of financing, the profitability in 2018 was better than the result in 2017.

Net Profit Margin

If you are a trader and bought 1,000 sets of TV at RM1 million and sold them at RM1.5 million, what is your net sale margin if there are no other expenses and taxation?

Total sales = RM1.5 million
Cost of sale and all expenses = RM1 million
Net profit = total sales – cost of sales & expenses = RM0.5 million

Net Profit margin = $\dfrac{\text{RM0.5 million}}{\text{RM1 million}}$ = 0.5 or 50%

The answer of 50% obtained here reflects a common error in the computation of Net Profit Margin. In finance, the formula for Net Profit Margin is given as:

$$\textbf{Net Profit Margin} \; = \; \dfrac{\textbf{Net Profit}}{\textbf{Total Sales}}$$

In this case, NPM = $\dfrac{\text{RM0.5 million}}{\text{RM1.5 million}}$ = 0.3333 or 35.33%

Common Size Income Statement

NPM is a ratio indicating the amount of profit per dollar of sale. NPM is actually part of Common-Size Income Statement. This is a statement where every item in the income statement is expressed as a percentage of sales. A sample with expenses summarized into 3 categories (selling, administration and financial charges) is as given below:

	IN RM RM000's	% of Sales	% of Sales
SALES	987,277		100.00%
Opening Inventory	100,555	10.19%	
Purchases	673,211	68.19%	
Ending Inventory	124,888	12.65%	
COST OF SALES	648,878	65.72%	65.72%
GROSS PROFIT	338,399	34.28%	34.28%
OPERATING EXPENSES	294,252	29.8%	29.80%
Selling Expenses	55,662	5.64%	
Administration Expenses	199,776	20.24%	
Financial Charges	38,814		
NET PROFIT BEFORE TAX	44,147		4.47%
TAXATION	8,829		0.89%
PROFIT AFTER TAX	35,318		3.58%

From the table, you can see that the Net Profit Margin is 3.58%. You can also see that the gross profit margin is 34.28%.

Application of Profitability Ratios

Exercise: **Assuming you are a consultant and have been approached by a client with a question on the ways the profitability of his business can be increased, how would handle this issue with reference to the three ratios just presented?**

Back to Optimum Corporation

Having gone through the various concepts and profitability ratios, we shall now revert back to the financial statements of OC. Participants are required to complete the computation of profitability ratios for year ended 2006 in the table below.

Ratios	2018	2017
ROE	19.26%	?
ROA	9.6%	?
Net Profit Margin	7.7%	?

What comments and conclusions can you draw from the results? Between 2006 and 2007, which is a better year? Based on all the ratios computed in various categories, what conclusion can you draw on the performance of 2007 as compared with 2006?

Growth Analysis

This analysis examines how fast a company should grow. In general, the growth of a company would depend on the amount of resources retained and reinvested in the entity (retained earnings) and the rate of return earned on the resources retained (ROE).

The more the company reinvests, the greater the potential for growth. For a given level of reinvestment, the higher the rate of return, the higher will be the growth rate. The growth equation is as follows:

> **Growth = ROE x retention rate**
> **Retention rate = 1 - (Dividend declared / net profit after tax)**

The company can increase ROE through its profit margin, total asset turnover and financial leverage as illustrated by the DuPont system.

Share Market Ratios

The common ratios under this grouping are:

i)   earnings per share
ii) price/earning ratio
iii) dividend per share
iv) dividend yield
v)   payout ratio
vi) book value per share

These are ratios used to assess the performance of a company for stock/share valuation purposes. These ratios tell the investor exactly what portion of total profits, dividends, and equity is allocated to each share.

Earning Per Share (EPS) – this is a convenient measure which is always presented at the lower part of a profit and loss account. It indicates the annual earning capability of a company. Basically this shows the company's profit available to each unit of share held by the shareholders. EPS can be computed by using the following formula:

> **EPS = Net profit after tax – Preference share dividend**
> **Number of ordinary shares outstanding**

Assuming a company has a net profit after tax of RM15,000 and has to pay preference dividends of RM5,000. It has 20,000 ordinary shares outstanding at this date.

Therefore EPS = $\dfrac{\text{RM15,000} - \text{RM5,000}}{\text{20,000 shares}}$

= 50 sen

Price/Earning Ratio (P/E) – this measure is an extension of earning per share ratio and is used to determine how the market is pricing the company's share. This is a relationship between the market price of share and that of EPS of the company. It can be expressed in the following equation:

$$\text{P/E} = \frac{\text{Market price of share}}{\text{EPS}}$$

Therefore, to compute P/E ratio, we must first compute the EPS. Using the above EPS and extending the assumption on the above by assuming that the market price of the share is RM12.00.

$$\text{P/E} = \frac{\text{RM12.00}}{\text{RM0.5}} = 24 \text{ times}$$

This share is said to be selling at 24 times its earning. Historical P/E ratio is widely published in newspaper.

Gross Dividend Per Share – it has the same principle of EPS, that is, it expresses the gross dividend allocated to each unit of share. Dividend is the distribution of profit to shareholders. How much to distribute is dependent on the profit made by the company, the dividend policy of the company and at the discretion of the board of directors. It should be noted that gross dividend is quoted as a percentage of the par value of the share. For example, a share with a par value of RM1 that pays 10% gross dividend would pay gross dividend of 10 sen. Gross dividend per share is calculated as follows:

$$\text{Gross dividend per share} = \frac{\text{Annual gross dividend paid to ordinary shareholders}}{\text{Number of ordinary shares outstanding}}$$

Note:
Net dividend per share is computed by dividing net dividends by the number of ordinary shares.

In the above assumption, we have earning of RM10,000 after the preference dividend. Say RM8,000 is being distributed as dividend, then the dividend per share shall be:

$$\text{Dividend per share} = \frac{\text{RM8,000}}{\text{20,000 shares}} = 40 \text{ sen}$$

Gross Dividend Yield – this is yet another way of assessing a share by expressing the gross dividend received in percentage term of share price instead of gross dividend per share, which is in absolute terms. Gross dividend yield in effect indicates the rate of current income earned on the investment ringgit. It is computed as follows:

$$\text{Dividend yield} = \text{Annual dividend per share} \div \text{Current Market Price}$$

We can now compute the dividend yield on the above example.

$$\text{Dividend yield} = \frac{40 \text{ sen}}{1,200 \text{ sen}} = 3.33\%$$

Dividend Payout Ratio – this is an indicator as how generous the company is in distributing the profit earned (EPS) to the shareholders, and the proportion that is retained within the company for whatever future purposes. This is again expressed in percentage terms and can be calculated as follows:

$$\text{Dividend payout ratio} = \frac{\text{Dividend per share}}{\text{Earning per share}}$$

In the above example, the dividend payout ratio is as below:

$$\text{Dividend payout ratio} = \frac{40 \text{ sen}}{50 \text{ sen}} = 80\%$$

Although shareholders are in favour of dividends, normally they do not like too high a dividend payout ratio as this is difficult to maintain. If too much is paid out, the company might not be able to remain profitable or the operation capacity might be depleted due to reason like high inflation.

Sometimes, a company may declare share dividends instead of cash dividends. This is giving of "free share" to shareholders instead of cash. For example if the board of directors declares a 10% share dividend, each shareholder will receive 1 new share for 10 shares he already holds. In Malaysia, this is known as 'bonus issue'. Another form of share dividend is the distribution of treasury shares which the the corporation acquired in its buy back of own shares exercise.

Book Value Per Share or Net asset per share: This is just another term for net worth or shareholders' equity. It is obtained by dividing the net worth by the number of shares outstanding. Book value per share can be computed by using the following formula:

$$\text{Book value per share} = \frac{\text{shareholders' equity}}{\text{Number of ordinary shares outstanding}}$$

In the case of OC, book value per share $= \dfrac{\text{RM458778}}{\text{RM288402}} = 1.59$ per share

Price-to-Book Value Ratio (PBVR) – this is a convenient way to relate the book value of a company to the market price of its shares. This is another commonly used method of share valuation. This ratio shows how aggressively the shares are being priced. Most shares have a price-to-book-value ratio of more than 1.0, This simply means that the share is selling for more than its book value. Price-to-book-value can be computed from the formula as follows:

$$\text{PBVR} = \frac{\text{Market price of share}}{\text{Book value per share}}$$

Assuming that the market price of share is RM1.80, PBVR = RM1.80÷RM1.59 = 1.13. This means that the market price is 15% above the net book value per share. The lower the ratio, the more attractive is the share to investor. The chances of this ratio dropping below 1 do exist in Bursa Malaysia. In fact, this is one of the ratios used in identifying under-valued shares by some experts. Candidate should try to look for some shares with PBVR less than one.

Self Assessment

1) Which of the following is not an assumption in accounting?

   a. Separate entity
   b. Going concern or Continuity
   c. Market value in determining the cost of asset
   d. None of the above

2) In analyzing the financial statements of a client's business, you notice that the collection period for accounts receivable has been increasing. What does this increase suggest about the firm's credit policy?

   a. The firm's current ratio is also increasing
   b. The collection period has no relationship to a firm's credit policy
   c. The firm is losing qualified customers
   d. The credit policy is too lenient

3) Generally, a corporation is owned by its:

   a.   Managers
   b.   Board of Directors
   c.   Shareholders
   d. All of the above

4) The following are examples of real assets except:

   a. Machinery
   b. Common stock
   c. Office buildings
   d. Patents

5) Agency costs are:

   a. Costs incurred resulting from conflicts of interest between the shareholders and the managers of a corporation.
   b. Costs of monitoring the managers' actions
   c. Both A and B
   d. None of the above

6) Which of the following is not one of the three basic financial statements?

   a. Balance sheet
   b. Income and expense statement
   c. Uses of revenue accounts
   d. Statement of cash flows

7) When an auditor issues an unqualified opinion of a company's financial statements, this means that:

   a. The accounting estimates are the same as those used in the previous years
   b. The financial statements are presented fairly and, therefore, are free from error
   c. The auditor is unaware of any material misstatements affecting the financial statements
   d. A financial analyst does not need to make adjustments to the financial statements before computing financial ratios

8) Two companies are identical except for substantially different dividend payout ratios. After several years, the company with the lower dividend payout ratio is most likely to have:

   a. Lower stock price
   b. Higher debt/equity ratio
   c. Less rapid growth of earnings per share
   d. More rapid growth of earnings per share

Use the following information to answer the next three questions.

Resort Mountains Bhd reported the following financial information:

Tax	RM10
Current Liabilities	RM200
Non-current liabilities	RM100
Non-current assets	RM0
Expenses	RM30
Current assets	RM500
Revenues	RM60

9) If there were 5 ordinary shares outstanding, the earnings per share would be closest to:

   a. RM4
   b. RM8
   c. RM12
   d. RM100

10) Return on shareholders' funds would be closest to:

A 6.66 %
B 10.0 %
C 12.0 %
D 20.0 %

Answers: 1.C, 2.D, 3.C, 4.B, 5.C, 6.C, 7.C, 8.D, 9.A, 10.B

Chapter 4

Investment in Share Market

Chapter Objectives

On completion of this chapter you should have a basic knowledge on:

- Structure of Bursa Malaysia

- Types of shares/investment vehicle traded in the Bursa Malaysia

- Procedure on listing of shares

- Trading procedure in the Bursa Malaysia

- Bonus and rights issue; and its effect on share prices

- Takeover and mergers; and its effect on share prices

- Brief knowledge on market indices

- Factors to consider when investing in foreign markets

Introduction

Before we move into investment in shares, we will look into the organization structure of the stock exchange of Bursa Malaysia. Within this we will examine the types of shares dealing, listing requirements and procedures, trading procedures, and effects on share prices as a result of bonus issue, rights issue, takeover and mergers.

Organization Structure of the Bursa Malaysia

As a result of the Securities Industry Act which came into force in 1976, the Kuala Lumpur Stock Exchange (KLSE), a company limited by guarantee was formed in 1976 to take over the operation of Kuala Lumpur Stock Exchange Berhad (KLSEB) in December the same year.

Arising from the demutualisation exercise, Kuala Lumpur Stock Exchange (KLSE) has on 5 January 2004 been converted from a company limited by guarantee to a public company limited by shares. With this conversion, KLSE has vested and transferred its stock exchange business to a wholly-owned subsidiary, Bursa Malaysia Securities Berhad, whilst the demutualised KLSE has been approved as an exchange holding company, Bursa Malaysia Berhad.

Diagram 4.1 Organization structure of Bursa Malaysia
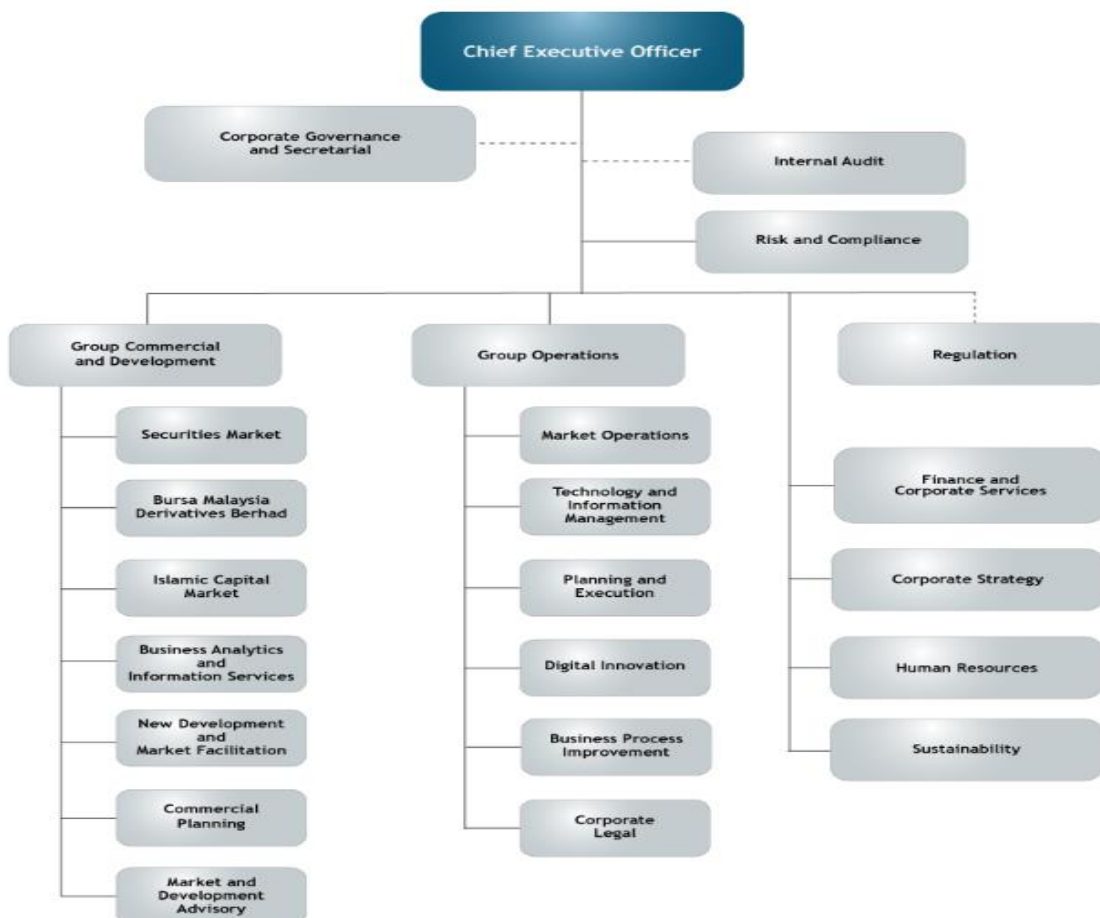
Source: Bursa Malaysia

Procedures of Listing of Shares

Going for listing is the cheapest way of raising capital or funds for a company to expand, and this is often regarded as an alternative to borrowing from banks. Funds are raised from the general public by offering them securities in the company. Besides having a cheaper source of fund, public listing enhances the credibility and reputation of a public listed company in the eyes of general public.

The securities offered may range from ordinary shares, preference shares, debentures and bonds. However, not all companies can be listed. Only public limited companies that have met the listing requirements can be listed. A company may be listed either with the main board, second board or Mesdaq, depending on the criteria being met.

Main Board Listing Requirements

A public company seeking listing of and quotation for its securities on the Main Board should have at least a total market capitalization of at least RM500 million upon listing, and incorporated and generated operating revenue for at least one full financial year prior to submission.

A non-infrastructure company seeking for listing must have at least 25% of the total number of shares for which listing is sought in the hands of a minimum of 1,000 public shareholders holding not less than 100 shares each. An allocation of 50% of the public spread requirement to Bumiputera investors on best effort basis. (refer to Securities Commission's website for best effort basis)

Companies applying for listing should have track record on an uninterrupted basis of three to five full financial years with an aggregate after-tax profit of not less than RM20 million. It should also need to fulfill the profit after-tax of at least RM6 million.

ACE Market Listing Requirement

The ACE Market which is stands for 'Access, Certainty, Efficiency' is actually the new name for the formally known MESDEQ (Malaysian Exchange of Securities Dealing and Automated Quotation) market. MESDEQ came in 1997 when it was the home of mainly technological stocks and today it is replaced by the ACE Market under Bursa Malaysia. The ACE Market was derived together with the unification of the Main and Second Board into the Main Market of Bursa Malaysia in 2009.

There is no minimum operating track record or profit requirement for the listing in ACE market. A non-infrastructure company seeking for listing must have at least 25% of the total number of shares for which listing is sought in the hands of a minimum of 200 public shareholders holding not less than 100 shares each.

There will be no requirement for bumiputera equity requirement upon initial listing. However, the allocation on best effort basis of 12.5% of their enlarged issued and paid-up share capital to bumiputera investor, 1) within 1 year after achieving main market profit track record, or 2) 5 years after being listed on ACE market, whichever is the earlier.

LEAP Market

Bursa Malaysia has announced a new market Leading Entrepreneur Accelerator Platform (LEAP) on 15th June 2017. The objective of LEAP market is to complement both the main market and ACE Market by addressing the funding gap faced by small and medium-sized enterprises (SMEs).

As a general rule of thumb, large companies that have paid-up capital more than RM50 million could seek listing on the Main Market, while fast growing companies that have paid-up capital approximately RM5 million to RM10 million may seek for listing on ACE Market. For a smaller company, a paid-up capital of RM2 million is suitable for the LEAP market.

Types of Securities Traded in Bursa Malaysia

Types of securities traded in the Bursa Malaysia are as follows:

a) **Equities**
   i)   Ordinary Shares. This includes shares in different industries such as consumer, industrial, trading/services, construction, finance, hotel, property, plantation and mining.

b) **Fixed Income Securities**
   i)   Preference shares
   ii)   Loan stocks
   iii)   Convertible loans stocks.

c) **Others**
   i)   Company Warrants
   ii)   Structured Warrants
   iii)   Real Estate Investment Trusts (REITs)
   iv)   Closed-end Funds
   v)   Exchange Traded Funds (ETFs)
   vi)   Business Trusts
   vii)   Stapled Securities

Equities

Ordinary shares – these shares give holders the right of ownership of the company, such as the right to share in the profits of the company by way of dividend, the right to vote in general meeting, and to elect and dismiss directors. Examples of such ordinary shares are given in the later section on the computation of KLCI. These ordinary shares are classified under different industries such as consumer products, industrial products, construction, trading/services, properties, hotels, finance, plantation, mining and infrastructure. 'A' Shares may sometime exist for some of the ordinary shares. Whenever there are bonus issues and rights issues which give rise to new shares that are not entitled to dividend payments, there is a need to differentiate these shares by classifying them as "A" shares. Since 'A' shares are not entitled to the cash dividends, they are sold at lower prices. These 'A' shares disappeared once the shares are traded ex-dividend. Apart from classifying shares under different industries, some of the news media also use symbols to provide additional information. Some of these symbols and their respective indications are as follows:

- ❑   This indicates Syariah approved shares (The Star)
- #   This indicates shares with 50 sen par value (The Star)
- PE   This indicates the price earnings ratio (The Star) (Historical EPS).
- DY   This stands for dividend yield (The Star) (Historical dividend paid).

Fixed Income Securities

Preference shares – these shares have a preferential position over ordinary shares, with regard to the payment of dividends and division of the company's assets. Some preference shares may have a cumulative entitlement in that dividends not paid can be carried forward and must be paid prior to any ordinary dividend payment or distribution on liquidation. Some preference shares are "participating" with ordinary shares in all dividends above a set rate, in addition to their own preferential dividend rate. Other preference shares are redeemable at a certain date. Preferences shares generally carry no voting rights, but voting rights may be made contingent upon failure to pay dividends on preference shares for a certain period of time

Loan stocks – A loan stock is a security issued by a company in respect of a loan made by investors. Loan stock is a may be secured, unsecured, convertible or non-convertible, but are often unsecured, unlike debenture. There are three types of loan stocks:
  i. **Unsecured loan stocks carry higher risk than debentures**, and in the event of a winding up, unsecured loan stock holders rank alongside all other unsecured creditors
  ii. **Convertible loan** stocks carry the right to be converted into ordinary shares of the company on pre-arranged terms and within a limited period. The objective of issuing a convertible loan stock is to obtain fixed interest finance at a relatively low rate of interest at the same time make it attractive to potential holders by the offer of equity participation at a later date.

  iii. **Notes** – There are fixed income securities by the offer of equity participation at a later date.

Exchange Traded Bond and Sukuk (ETBS) – Bonds/Sukuk have always been seen as an asset class to hedge when markets are bearish and a means to develop a steady income over many years. But in the pas the bonds/sukuk market was accessible only to high net worth and institutional investors. Now with ETBS, all investors can have access to the bond/sukuk market with ease, via the stock market.

Others Securities

Company Warrants – Company warrants are issued by the company and give the holders the right, but not an obligation, to subscribe for new ordinary shares at a specified price during a specified period of time. Warrants have a maturity date (up to 10 years) after which they expire are worthless unless the holder had exercised to subscribe for the new shares before the maturity date.

Structured Warrants – Structured warrants are proprietary instruments issued by a third-party issuer, namely an eligible broker or financial institution that give holders the right, but not the obligation, to buy or sell the underlying instrument in the future for a fixed price. Essentially, you are making a 'reservation' to buy or sell a predetermined number of the underlying instrument at a certain price in the future when you invest in a structured warrant.

Structured warrants can be issued over an underlying asset such as share, Exchange Traded Funds
(ETF), index or basket of shares. There are different types of Structured warrants, such as:

    i) **Call Warrants** – gives holders right to buy the underlying share at specified price within a limited period of time.

    ii) **Put Warrants** – gives holder right to sell the underlying share at a specified price within a limited period of time

    iii) **Callable Bull/Bear Certificates (CBBC)** – CBBC tracks the performance of an underlying stock without requiring investors to pay the full price required to own the actual stock. They are issued either as Bull or Bear certificates with a fixed expiry date, allowing investors to take bullish or bearish positions on the underlying stock with the possibility of an early termination before the expiry date when the underlying moves in contrary direction to investors' expectation.

Comparison of different types of Structured Warrants:

	Call Warrants	Put Warrants	Callable Bull/Bear Certificates (CBBC)
Issuer	Eligible brokers or financial institutions		
Underlying Instruments	1 underlying instrument (share, ETF or index)	1 underlying instrument (share, ETF or index)	1 underlying instrument (share, ETF or index)
Dilution of underlying shares	No new shares issued		
Expiry Period	6 months to 5 years	6 months to 5 years	3 months to 5 years
Expiration date	Fixed	Fixed	Fixed - also possible for early termination when the price/level of the underlying instrument reaches the 'Call Price'.
Settlement price/level at expiry	Share/ETF: Closing price 1 market day before expired; OR 5-days volume weighted average before expiry; OR 5-day average closing prices before expiry Index:- Index closing or average index levels or settlement price of index futures expiring in same month		At expiry: Share/ETF: Closing price 1 day before expiry; OR 5-days volume weighted average before expiry; OR 5-day average closing prices before expiry Index:-Index closing or average index levels or settlement price of index futures expiring in same months Upon MCE:- Share/ETF:- Lowest/highest price of the underlying in the next trading session (Main Trading Phase) Index: Index level expiring in the same month
Settlemet method	Delivery of underlying shares or cash		Cash only

REITS – is essentially a property trust fund company listed in Bursa Malaysia that only invests its funds in landed properties. It operates just like a unit trust company except it invests only in properties and not in shares. Through property trust, small investors can have access to retail and commercial properties, whereby on their own very often they cannot have access to due to the huge capital involved. REITS aims to provide a steady source of income generated from rentals. However, when there is a need for investor to cash out, he will have to look for another buyer in the Bursa Malaysia. This is different from unit trust scheme where fund manager undertake to repurchase the unit from investors. In view of the aforesaid, the liquidity risk of REITS is still relatively higher than that of unit trust funds.

REITS must be comply with the requirements of the Guidelines on Listed Real Estate Investment Trusts (REITs) by Capital Market and Services Act 2007, for listing on Bursa Malaysia.

Closed-End Funds – this is a company listed in Bursa Malaysia that invests only in shares of other companies. The number of shares issued at any point of time is fixed. The price of the share in this closed-end fund is determined by the market forces and the net asset value. Closed-end fund is not at all popular in Malaysia as there was only one counter, ICAP on 31st December 2007.

Exchange Traded Funds – Exchange traded fund is essentially a security that tracks an index, but trades like a share in Bursa Malaysia. As such it is experiencing price changes just like any counter in Bursa Malaysia. At the time of writing, there were only two counters classified under this category. The first ETF traded in Bursa Malaysia was the FBM30etf. It was introduced in 2007 and represent investment in the top 30 largest listed corporations in Bursa Malaysia. On the face of it, it is like investing in an unit trust equity fund. The major similarities and differences between ETF and unit trust are as follows:

Product	ETFs	UNIT TRUSTS
Diversification	✓	✓
Price Transparency	✓	✗
Entry Fee	✗	3% - 5%
Management Fees	0.5% p.a. of the NAV or lower	0.75% - 2% p.a. of the NAV
Traded through Broker	✓	✗
Cash Settlement	**T+3	Upfront
Liquidity	✓	✗

We can see from the above presentation that FBM30etf actually provide a good alternative for investors to get exposure in the Malaysian equity at much lower costs. However, like REITS, investors who invest in ETF will also have to find a buyer in the Bursa Malaysia. There will not be a fund manager to repurchase the ETF.

List of ETFs

Commodity ETF
TradePlus Shariah Gold Tracker (0828EA)
Equity ETF
FTSE Bursa Malaysia KLCI ETF (0820EA)
Principal FTSE ASEAN 40 Malaysia (0822EA)
Principal FTSE China 50 ETF (0823EA)
Trade Plus S&P New China Tracker (0829FB & 0829EA)
Equity ETF (Shariah Compliant)
MyETF Dow Jones U.S. Titan 50 (0827EA)
MyETF Dow Jones Islamic Market Malaysia Titan 25 (0821EA)
MyETF MSCI Malaysia Islamic Dividend (0824EA)
MyETF MSCI South East Asia Islamic Dividend (0825EA)
MyETF Thomson Reuters Asia Pacific Ex-Japan Islamic Agribusiness (0826EA)
Fixed Income ETF
ABF Malaysia Bond Index Fund (0800EA)
Leveraged & Inverse ETF
Kenanga KLCI Daily 2x Leveraged ETF (0834EA)
Kenanga KLCI Daily (-1x) Inverse ETF (0835EA)
TradePlus HSCEI Daily (2x) Leveraged Tracker (0832EA)
TradePlus HSCEI Daily (-1x) Inverse Tracker (0833EA)
TradePlus NYSE Fang+ Daily (2x) Leverage Tracker (0830EA)
TradePlus NYSE Fang+ Daily (-1x) Inverse Tracker (0831EA)

Business Trusts – A new asset class introduced in the Malaysian capital market following the release of the Securities Commission Malaysia Business Trust Guideline which came into force on 28 December 2012.

Business trusts are business enterprises set up as trust, instead of companies. They are hybrid structures with elements of both companies and Trusts. Like a company, a business trust operates runs a business enterprise. But unlikely a company, it is created by a trust deed under which the trustee has legal ownership of the trust assets and manages the assets for the benefits of the beneficiaries of the trust.

Unit holders of a business trust can participate in the profits or income arising from the managements of the assets in the business trust through receipt of distributions declared by the trustee-manager.

Business trust are suitable for businesses which are capital intensive with stable cash flow wishing to pay distributions out of cash flow without being constrained by accounting profit. The flexibility in the payment of distributions is an advantage especially for business which may be affected by high depreciation charges.

Stapled Securities – Refers to an arrangement under which different classes of securities are listed and traded as one security. Stapled securities may involve different classes of securities issued by an issuer or different issuers.

In general, stapled securities have the following characteristics:
-    Different classes of securities are stapled together, listed and traded as one security.
-    Issuer of stapled securities remain as separate legal entities even though their securities are stapled, listed and traded as one security.
-    A stapling deed would be entered into by both issuers of stapled securities.

The main advantage of stapled securities is that the stapling arrangement enhances the value and attractiveness of these securities in their stapled form as investors could enjoy the complementary benefits brought about by both securities, through different legal, tax structures and returns.

Trading Procedure in the Bursa Malaysia

Before a person can trade in the shares of Bursa Malaysia's listed companies, he or she must first open a trading account with one of the stock broking companies or an investment banker. A person can buy or sell shares through a licensed dealer or remisier. He may also go online to buy or sell provided he has been registered with a stock broker or investment banker to do so. With the implementation of the Central Depository System (CDS), he or she must also open a CDS account with one of the stock broking companies that act as the Authorized Depository Agent (ADA) of the Bursa Malaysia Depository.

A transaction starts off with an order given by a client to his or her remisier to buy (or sell) a specific number of shares of a company at a specific price. The client will also need to quote his or her CDS account number for CDS counters. This order will be keyed into the WinSCORE (SCORE is the Bursa Malaysia's fully automated trading system) terminal at the stock broking company. The order is then relayed through the WinSCORE system to the Bursa Malaysia's central computers. An order confirmation is immediately routed back to the broking company.

The order of the shares will then be matched automatically by the system, assuming that it is matchable in the first place. The price at which an order is not matched is not fixed by the Bursa Malaysia. All prices are determined by the market forces of supply and demand through a process of bid and offers.

The price transacted for a buy order will be either at the same price keyed in, or lower if the seller's price is below the buyer's price. In the case of a sale transaction, the price will be the same or higher if the buyer's order is higher. In other words, in every transaction, a security is sold to the highest bidder and purchased from the lowest offeror.

Once the order has been matched, a trade confirmation is printed out at the broker's office with detail such as the original order number, stock number, price and quantity matched and the counter-party broking company. The remisier in turn confirms with his client that he has bought the specified number of shares and the price at which it was bought. A sell order is carried out in the same manner.

The broking house will then send out contract notes, also in different colours for buying and selling, to the client giving details of the transaction such as brokerage, stamp duty and clearing fees payable and, of course, the cost of purchase or proceeds of the sale.

Under the CDS, there is no physical delivery of shares. Instead, the CDS uses a simple book entry system to keep track of the movement of shares arising from trades effected on the Bursa Malaysia. For example, if you are a buyer of Share A, your CDS account will be credited (added) with Share A and the seller's account will be debited (minus) with the same number of Share A.

However, the Fixed Delivery and Settlement System (FDSS) still apply, that is, the sellers must have adequate shares in their CDS accounts by 12.30 pm on T + 2 and buyer's account will be credited on T + 3. In this case, T stands for the date of transaction. "T + 2" means two trading days after the date of transaction. The buying client will be informed by his remisier that the shares have been transferred to his CDS account. However, the buying client cannot further trade in those shares until he has settled the payment due.

Trading Sessions

There are two trading sessions a day. The morning session starts from 9.00 a.m. to 12.30 p.m. and afternoon session starts from 2.30 p.m. to 5.00 p.m. The stock market opens from Monday to Friday, is closed on public holidays and other market holidays (when the Exchange is declared closed by Bursa Malaysia).

Transaction Cost

Transaction costs are cost of brokerage commission, clearing fees, stamp duty and registration fees. These are fees paid in addition to the cost of the shares. These may change from time to time depending on regulations from Securities Commission.

i)   **Brokerage Commission** – (payable by both buyer and seller).
           The brokerage payable for all trades in stocks, ordinary shares, preference shares and other securities listed and traded on the stock market of Bursa Malaysia [but excluding Government Bonds and Municipal Debentures, other debentures (non-convertible) and Overseas Options] shall be on a fully negotiated basis between the broker and its client, subject to a maximum of 0.70% of the contract value and minimum brokerage as follows:

Category of Trade	Minimum Brokerage Rate#
Inter-broker	Fully negotiable
Institutional	Fully negotiable
Retail trades valued above RM100,000	0.1% - 0.42% of contract value
Retail trades valued below RM100,000	0.1% - 0.60% of contract value
Online routed retail trades (via ECOS)*	Up to 30% discount of minimum rate
Same day buy and sell trades	0% - 0.15% of contract value

* Participating Organization's Electronic Client-Ordering System approved by Bursa Malaysia

ii)   **Clearing fee for On-Market** – (payable by both buyer and seller).
           ● 0.03% of transaction value (payable by both buyer and seller) with a maximum of RM1,000.00 per contract. No minimum.

iii)   **Clearing fee for Direct Business** – (payable by both buyer and seller).
           ● 0.03% of transaction value (payable by both buyer and seller), with a maximum of RM1000.00 and a minimum of RM10.00.

iv)   **Stamp duty** – (payable by both buyer and seller).
           ● RM1.00 for RM1,000 or fractional part of value of securities, limited to maximum of RM200.

v)   **Registration fees**
           ● RM3.00 per share certificate, payable to company. With scrip less trading, such cost is no longer incurred.

Contra Transaction

This refers to the buying and selling of the same number of identical counter without actually increasing or decreasing the number of shareholdings in the counter. If the cost of purchase is higher than the sale proceeds, the client will have to pay for the shortfall or losses. On the other hand, if the sale proceeds is higher than the costs of purchases, the client will be paid the surplus or profit by the broking firm.

In Bursa Malaysia, contra facility is merely a privilege given to certain clients. It is not a legal obligation to be accorded by the broking company to its clients. It can be used for speculation purposes if the time period is sufficiently long and lending of scripts is allowed. In Malaysia, the "T + 2" ruling makes this aspect of trading very tight.

Trading Lots

Shares in Bursa Malaysia traded in lots of 100 units, and is known as Board Lots. Any amount less than board lots are called special lots or odd lots. Odd lots or special lots come about when there are bonus issues or right issues. Supposing an individual has 500 shares in a corporation that announced bonus issue of 1 for 10, the client will end up having 50 bonus shares upon completion of the exercise. The 50 shares which are not multiples of 100 units are considered odd lot. Odd lots can also be bought and sold but at prices lower than the normal prices. People buy odd lot to make up board lot because prices of board lots are higher. On the other hand, people sell odd lots for whatever they are worth.

Minimum Bids

Minimum bid is the permissible change on the offer to buy price over the previous done or quoted price. In trading on the Bursa Malaysia, bids are offers for shares within different price ranges following different minimum bids. Below is a table showing the different minimum bids for different share price range:

Market Price of Share	Minimum Bids
Below RM1.00	1/2 sen
RM1.00 up to RM9.99	1 sen
RM9.00 up to RM99.98	2 sen
RM100 above	10 sen

Examples on how the minimum bids work are as follows:

Example A: Last done price of A Corporation	80 sen
Next buying quote (min change of 0.5 sen)	79.5sen
Next selling quote (min change of 0.5 sen)	80.5 sen
Example B: Last done price of B Corporation	RM2.00
Next buying quote (min change of 1 sen)	RM1.99
Next selling quote (min change of 1 sen)	RM2.01
Example C: Last done price of C corporation	RM11.00
Next buying quote (min change of 2 sen)	RM10.98
Next selling quote (min change of 2 sen)	RM11.02

Clearing & Settlement

Bursa Malaysia Securities Clearing Sdn Bhd provides clearing and settlement services for the Clearing Participants. Only domestic contracts of all securities listed by the Exchange are cleared by Bursa Malaysia Securities Clearing. To facilitate clearing and settlement, Bursa Malaysia has established a Fixed Delivery and Settlement System (FDSS).

The FDSS which is adopted by the Bursa Malaysia is based on a T + 3 (T indicates the transaction date) rolling settlement. A fixed rolling settlement system requires that all trades be scheduled for settlement the same number of days after trade date. In a T + 3 rolling settlement environment, Monday trades are settled by Thursday, three market days hence; Tuesday's trades are settled by Friday, etc. The diagram below shows the mechanics of T + 3:

T + 3 Rolling Settlement

Events	T Transaction Day	T+1	T+2	T+3	T+4
Date of contract					
Securities Settlement					
-ordinary transfer	Not later than 12:30 pm				
-book entry	Not later than 9:30 am				
-automatic buying in				Buy in	
Money Settlement					
-SBC to selling client	Not later than 12:30 pm				
-CH to SBC	Not later than 12:30 pm				
-SBC to CH	Not later than 10:00 am				
-buying client to SBC	Not later than 12:30 pm				
Automatic buying-in					
-SBC to selling client	Not later than 12:30 pm				
Closing of purchases position (selling out)	Not later than 12:30 pm				

The Bursa Malaysia Depository has done away with delivery and collection of physical scrip. Instead the accounts of seller and buyer shall be used to make or take deliveries of securities for the purpose of settlement of transactions done through the Exchange's SCORE system. Accordingly, sellers should ensure that there are sufficient securities in their accounts for settlement purposes.

Book-Entry Settlement

All contracts done on ready basis on a particular market day shall be by the third (3rd) market day following the date of contract. The book-entry is updated by this day both for the buyer and the seller.

-        **Buyer Securities Settlement**

A buyer will have his account credited by T + 3. However, if a buyer fails to pay by 12.30 pm on T + 3, the stock broking company will then "sell-out" the shares to cover his outlay on T + 4 (refer to diagram above).

-        **Seller Securities Settlement**

In line with the current FDSS, a seller's account is debited by T + 3. This also means that if a seller's account does not have shares on credit on his account on T + 2, to settle such trade, he can transfer the required shares into his account on T + 2 day itself before 12.30 pm. If seller fails to have shares in his account to settle a trade on T + 3, his trade will fail and buying-in will be instituted against him on the same day (refer to diagram above).

Automatic Buying-in

In the event that the seller's account does not have sufficient securities for settlement on T + 3 and as a result of which the stock broking companies are unable to settle the clearing house, the Exchange shall institute automatic buying-in against the concerned on the third (3rd) market day following the date of contract (refer to diagram above) and no withdrawal shall be allowed.

Buying-in takes place every market day from 8:30 am to 5:00 pm. If uncompleted, the buying-in will be continued on the following day at the same time.

The buying-in price is fixed by adding ten (10) bids to the last recorded sale or last buying offer at the close of business on the previous day.

Money Settlement

Payment for contracts done on ready basis shall be effected (refer to diagram above):

i)   On the third (3rd) market day following the date of contract, latest by 12:30pm in respect of Trading Clearing Participants (TCPs) to selling client.
ii)   On the third (3rd) market day following the date of contract, latest by 10.00am in respect of the Clearing House to the net selling TCPs.
iii)   On the third (3rd) market day following the date of contract, latest by 10:00am in respect of net buying TCPs to the Clearing House.
iv)   On the third (3rd) market day following the date of contract as between TCPs in respect of Direct Business transaction.
v)   Not later than the third (3rd) market day following the date of contract, latest by 12:30pm in respect of buying clients to TCPs.

TCPs shall close-off purchase positions of clients who fail to pay for their purchases by 12:30 pm on the third (3rd) market day and shall institute a selling-out on the fourth (4th) market day the securities or any of the securities for which the clients have not made full payment by the said due date. The TCPs may at any time thereafter sue the clients for the difference and all losses and

expenses consequent upon such selling-out. There is no need for whatever notice for selling-out, and all damages which the TCPs may sustain shall be recoverable from the clients as liquidated damages.

Payment for contract done on buying-in shall be effected (refer to diagram above):
   i)   On the next market day following the date of the buying-in, latest by 12:30pm in respect of TCPs to selling clients.
   ii) On the next market day following the date of buying-in, latest by 10:00 am in respect of the Clearing House to the selling TCPs.
   iii) On the next market day following the buying - in , latest by 10:00 am in respect of default TCPs to Clearing House.

Monetary settlement between Clearing House and Clearing Participants are conducted through designated Banks appointed by Bursa Malaysia Securities Clearing. These banks are known as Clearing Banks. All Clearing Participants are required to open a clearing bank account with any of the designated Clearing Banks to facilitate monetary settlement.

   i)   Financial settlement of securities shall be on a ***net basis.***
   ii) Net basis refers to a final position, either ***Due to Clearing House*** or ***Due from Clearing House*** and is computed based on off-setting the amount due to Clearing House and amount due from Clearing House.
   iii) Immediate value is given to both Clearing House and Clearing Participants.
   iv) Payment from Clearing House to Clearing Participants and vice versa must be ***final*** and ***irrevocable.***
   v)   Online Real Time payment via Desktop Banking and RENTAS (INTER- BANK Real Time Payment System) is the only acceptable mode of payment.

Bank reconciliation is performed on all Clearing Settlement Bank account on each settlement day, latest by 1:00 pm to ensure that respective bank balances and cash book balances tally. Any un-reconciled balance due to default by a Clearing Participant will be dealt with accordingly under Bursa Malaysia Securities Clearing' default rules.

Bonus and Right Issues and Effect on Share Price

Bonus Issue – a bonus issue is commonly known as scrip issue or a capitalization issue. Under such conditions, there is no additional fund being raised. This is a mere adjustment to the accounts. For example, the retained profit account being transferred into the capital account or other appropriate reserves being capitalized. This is being done as a result where the value of the company's assets may substantially exceed the value of its issued capital. When the reserves or the retained has been capitalized, new shares are being issued without payment, and only existing shareholders will get these issued in proportion to their existing shareholdings (e.g. one for two: i.e. one bonus share for every two shares held). With bonus issue, the share price generally will fall accordingly as there is no increase in cash or asset.

To illustrate the effect of a bonus issue, let us assume a corporation has 100 million shares of RM1 each. The net assets per share is RM2.20 and the shares are traded at RM6 per share with Price/ Earnings ratio of 10 times or earnings per share of RM0.60 (this implies total profit after tax of RM60 million). If the corporation declares a bonus issue of 1 for 2, the number of shares shall increase from 100 million shares to 150 million shares. As a result of the increased number of shares, the earnings per share will be RM0.40, based on the same P/E ratio of 10 times, the share is expected

to have an adjusted price of RM4 per share. Theoretically, the shareholders do not seem to have any benefit at all. Notwithstanding the aforesaid, there are advocates who argue that the price may not drop as much as 33.33 % from RM6 to RM4. Several reasons are offered:

- Prices after adjustment are lower and make them more affordable to the general public. When this happens, more people or investors are able to buy, hence transforming into higher demand. This seems to make sense for counters traded at very high prices.

- Some shareholders receiving additional shares feel good and have psychological thoughts that the company is doing well

- Bonus issue increases the paid up capital of a corporation. To the bankers and suppliers, it is considered financially more stable. The validity of this is further backed by the fact that cash is conserved under the bonus issue as compared to cash dividend that involves outflow of cash.

Rights Issues – these are issues of new shares through existing shareholders according to their holding proportions (e.g. one for three: i.e. a shareholder is entitled to buy one ordinary share for every three shares held). This happens when a company needs to raise additional funds for whatever valid purposes such as business expansion or other projects. It is also commonly used to refinance bank loans. This exercise leads to an increase in paid-up capital and shareholders' funds or equity. Rights issues are usually issued below the prevailing market price. Otherwise, there is no logic and reason for the existing shareholders or investors to purchase the rights issues since they can get to buy them at lower prices from the market. The actual rights issue prices are very much dependent on the prevailing market conditions. During bullish market, rights issues are usually well received and could be done at better prices at a premium above the par value of the shares. However, during bearish market, it is always tougher to get rights issues completed at a premium price above the par value. Some issuers have to add sweeteners such as free transferable warrants to attract the subscribers.

In the Bursa Malaysia, we can also find two-call rights issue. For example, in the case of Advance Synergy Bhd, two–call rights issues of 10-year ICULS were issued at nominal value of RM0.15. The first call requires investors to pay RM0.07 while the second call for the balance of RM0.08 is done through capitalization from the share premium account of the company. The entire exercise was completed in January 2008.

When the rights to subscribe additional shares or ICULS are provisionally allotted to existing shareholders, shareholders could either exercise their provisional rights (buy up the shares allocated) or sell off their provisional rights (selling the rights to buy the share at below market price) to other investors. The trading of the provisional rights to subscribe for rights issues is usually for a short period so that the purchasers can have ample time to take up the rights issues. In the case of ASB, the following dates were stated in the prospectus:

Entitlement date:	Wednesday, 26/12/2007
Last day for selling the provisional allotment of rights:	Monday, 07/01/2008
Last day for transfer of provisional allotment of rights:	Friday, 11/01 2008
Last day for acceptance and payment of rights:	Wednesday, 16/01/2008
Last day for application of excess shares:	Wednesday, 16/01/2008

Notice that the trading of the provisional rights was only for a short period of about 10 days till 07/01/2008. Thereafter the acceptance and payment of the rights issues were required to be made latest by 16/01/2008.

After the Rights Issues, share prices generally will fall. There are several reasons for such movements. Firstly, the increase in the number of shares will dilute the earnings per share and dividend per share. Secondly, the net asset per share is also likely to be reduced. There is no scientific way to determine the ex-right price of a share as the general market sentiment also plays a very vital role. For illustration of changes, let us assume the following hypothetical example:

Before Rights Issue of BB Berhad
Earnings per share: RM0.40 per share
Net asset per share: RM2.25 per share
Number of share: 100 million
Proposed rights issue: 1 for 2 at par value of RM1.20

After the Rights Issue if fully subscribed
Number of share: 150 million
Earnings per share: RM0.267 (RM40 million divide by 150 million shares)
Net asset per share: RM1.90 (total asset divide by 150 million shares)
Total asset: RM285 million
                         (RM2.25 x 100 million shares + RM1.20 x 50 million shares)

If the market values the share based on its net asset per share, its price before the rights issue should be RM2.25. After the rights issue, since the net asset per share is reduced to RM1.90, the price of the share shall be reduced to RM1.90. However, as we all know, prices of shares are not determined solely by its net asset value. Hence, the ex-right price is very hard to ascertain in practice.

Takeovers and Mergers

A takeover is the purchase of a controlling interest in one company by another company. Takeovers are also referred to as acquisitions, and are a form of external investment. When a large company 'merges' with a smaller company, the methods used for mergers are often the same as that of takeovers. In practice, the number of genuine mergers is small relative to the number of takeovers. Where there is a takeover or merger, there should be a 'synergistic' effect. Synergy can be defined as 2+2=5 effect. As a group, after the takeover, it should achieve a combined result that reflects a better rate of return before the takeover. Reasons for takeover may differ from one another, some of them could be for economies of scale, diversification, to improve the quality of earning, growth, tax factors and so on.

Takeover and merger can be either in friendly or hostile form. Friendly takeover implies that the management of the "victim" company actually welcomes the takeover as it will bring benefits to all the interested parties. On the other hand, hostile implies that the takeover is unwelcome by the "victim" company's management. Under such circumstances, usually takeover will bring disadvantages at least to the management. Probably it may result in overhauling of the top management.

Usually, before the takeover bid, the "predator" company will start to acquire the shares of the "victim" company. When this happens, the share price of this company will become volatile and subsequently starts to rise until such time, the predator will have to make a public offer for the takeover at a fixed price approved by the Securities Commission.

A very good example of merger exercise is what we saw in the last quarter of 2007. In this largest merger exercise in Bursa Malaysia, 8 companies were involved in a merger that saw the birth of Synergy Drive. The 8 companies were Golden Hope Plantations Bhd, Kumpulan Guthrie Bhd, Guthrie Ropel Bhd, Highlands and Lowlands Bhd, Mentakab Rubber (Co) Bhd, Sime Darby Bhd, Sime Darby Engineering Services Bhd and Sime UEP Properties BHd. The new corporate entity was to be named Synergy Drive Bhd. However, the name of the new entity was eventually reverted to Sime Darby Bhd.

Stock Market Indices

Stock market indices are used to indicate the performance of the stock market (i.e. the movements in the general price level of securities listed on the stock exchange). They are used by the investors and fund managers very often. The indices can be computed either based on all the stocks listed on a stock exchange or on only a sample of stocks. The methods used also vary. Some use simple average closing price basis, and some use the weighted average method. The Bursa Malaysia uses the weighted average method. The weight used is the market capitalization, which is mathematically defined as:

Market capitalization = Market price of share x Total number of shares.

For illustration, let us assume that AA Corporation has 200 million shares listed in Bursa Malaysia. The price of the share was RM2.50 yesterday. The market capitalization of AA Corporation is computed as RM500 million (RM2.50 x 200 million).

The formula for computing KLCI is as follows:

$$\frac{\text{Current Aggregate Market Capitalization x 100}}{\text{Base Aggregate Market Capitalization in 1977}}$$

The base year for the Kuala Lumpur Composite Index (hereafter referred to as KLCI) was 1977. This means that the total market capitalization of selected 100 companies as at 1977 is used as the denominator. In order to compute the KLCI for year ended 2007, the total market capitalization of selected 100 companies as at December 31st 2007 is used as the numerator.

It can be seen that the KLCI has been around for more than 30 years. The base of KLCI when it first started was 100 points and grew to 1,445 points as at the end of 2007. In other words, the index or the total market value of the shares that made up the index has increased by 13.45 times since its commencement.

We may want to note that the compounded rate of growth of KLCI over the last 30 years is about 9.31% per annum which is computed using financial calculator as follows:

Inputs:	30,	N,	100 ±,	PV,	1445,	FV,
Comp	I/YR					
Output:	9.31					

The KLCI actually is not an index that fully represents all the counters in the Bursa Malaysia. Instead it comprised only 100 counters which can be seen in the following pages.

Kuala Lumpur Composite Index (KLCI) {as at 30 November 2007}

Base year	1977
Calculation mode	Weighted by market capitalisation
Index	Current aggregate Market Capitalisation x 100 / Base Aggregate Market Capitalisation

No.	Stock Code	Short Name	Company Name
1	6599	AEON	AEON CO. (M) BHD
2	5185	AFFIN	AFFIN HOLDINGS BHD
3	5099	AIRASIA	AIRASIA BHD
4	2488	AFG	ALLIANCE FINANCIAL GROUP BHD
5	1015	AMMB	AMMB HOLDINGS BHD
6	6556	ANNJOO	ANN JOO RESOURCES BHD
7	5076	ASTRO	ASTRO ALL ASIA NETWORKS PLC
8	1473	BRDB	BANDAR RAYA DEVELOPMENTS BHD
9	1562	BJTOTO	BERJAYA SPORTS TOTO BHD
10	5032	BIPORT	BINTULU PORT HOLDINGS BHD
11	2771	BSTEAD	BOUSTEAD HOLDINGS BHD
12	4162	BAT	BRITISH AMERICAN TOBACCO (M) BHD
13	1023	COMMERZ	BUMIPUTRA-COMMERCE HOLDINGS BHD
14	1818	BURSA	BURSA MALAYSIA BHD
15	2836	CARLSBG	CARLSBERG BREWERY MALAYSIA BHD
16	2879	CCM	CHEMICAL COMPANY OF MALAYSIA BHD
17	7277	DIALOG	DIALOG GROUP BHD
18	6947	DIGI	DIGI.COM BHD
19	1619	DRBHCOM	DRB-HICOM BHD
20	3468	E&OPROP	E&O PROPERTY DEVELOPMENT BHD
21	5266	EONCAP	EON CAPITAL BHD
22	5398	GAMUDA	GAMUDA BHD
23	3182	GENTING	GENTING BHD
24	3255	GUINESS	GUINNESS ANCHOR BHD
25	1503	GUOCO	GUOCOLAND (MALAYSIA) BHD
26	3034	HAPSENG	HAP SENG CONSOLIDATED BHD
27	5819	HLBANK	HONG LEONG BANK BHD
28	1597	IGB	IGB CORPORATION BHD
29	3336	IJM	IJM CORPORATION BHD
30	1961	IOICORP	IOI CORPORATION BHD
31	5122	KENCANA	KENCANA PETROLEUM BHD
32	3492	KFC	KFC HOLDINGS (M) BHD
33	5089	KLCCP	KLCC PROPERTY HOLDINGS BHD
34	7164	KNM	KNM GROUP BHD
35	2445	KLK	KUALA LUMPUR KEPONG BHD
36	2003	KULIM	KULIM (M) BHD
37	5097	KURASIA	KURNIA ASIA BHD
38	3794	LMCEMNT	LAFARGE MALAYAN CEMENT BHD
39	1643	LANDMRK	LANDMARKS BHD

No.	Stock Code	Short Name	Company Name
40	6645	LITRAK	LINGKARAN TRANS KOTA HOLDINGS BHD
41	2011	LINGUI	LINGUI DEVELOPMENT BHD
42	2887	LIONDIV	LION DIVERSIFIED HOLDINGS BHD
43	4235	LIONIND	LION INDUSTRIES CORPORATION BHD
44	3735	MAGNUM	MAGNUM CORPORATION BHD
45	1155	MAYBANK	MALAYAN BANKING BHD
46	5014	AIRPORT	MALAYSIA AIRPORT HOLDINGS BHD
47	3786	MAS	MALAYSIAN AIRLINE SYSTEM BHD
48	5077	MAYBULK	MALAYSIAN BULK CARRIERS BHD
49	3867	MPI	MALAYSIAN PACIFIC INDUSTRIES BHD
50	1651	MRCB	MALAYSIAN RESOURCES CORPORATION BHD
51	4502	MEDIA	MEDIA PRIMA BHD
52	3816	MISC	MISC BHD
53	8893	MKLAND	MK LAND HOLDINGS BHD
54	2194	MMCCORP	MMC CORPORATIONS BHD
55	9768	MTDINFR	MTD INFRAPERDANA BHD
56	3905	MULPHA	MULPHA INTERNATIONAL BHD
57	4006	ORIENT	ORIENTAL HOLDINGS BHD
58	5053	OSK	OSK HOLDINGS BHD
59	6866	BERNAS	PADIBERAS NASIONAL BHD
60	5231	PELIKAN	PELIKAN INT. CORPORATION BHD
61	7108	PETRA	PETRA PERDANA BHD
62	5681	PETDAG	PETRONAS DAGANGAN BHD
63	6033	PETGAS	PETRONAS GAS BHD
64	5052	PLUS	PLUS EXPRESSWAYS BHD
65	4634	POS	POS MALAYSIA BHD
66	4065	PPB	PPB GROUP BHD
67	5304	PROTON	PROTON HOLDINGS BHD
68	1295	PBBANK	PUBLIC BANK BHD
69	6807	PUNCAK	PUNCAK NIAGA HOLDINGS BHD
70	1066	RHBCAP	RHB CAPITAL BHD
71	8575	SAPCRES	SAPURACREST PETROLEUM BHD
72	2356	SARAWAK	SARAWAK ENERGY BERHAD
73	7158	SCOMI	SCOMI GROUP BHD
74	1783	SPB	SELANGOR PROPERTIES BHD
75	5517	SHANG	SHANGRI-LA HOTELS (M) BHD
76	4324	SHELL	SHELL REFINING CO (F.O.M.) BHD
77	4197	SIME	SIME DARBY BHD
78	8664	SPSETIA	SP SETIA BHD
79	6084	STAR	STAR PUBLICATIONS (M) BHD
80	6165	SUNRISE	SUNRISE BHD
81	6289	SUNCITY	SUNWAY CITY BHD
82	5012	TAANN	TA ANN HOLDINGS BHD
83	4898	TA	TA ENTERPRISE BHD
84	4405	TCHONG	TAN CHONG MOTOR HOLDINGS BHD
85	2267	TANJONG	TANJONG PUBLIC LIMITED COMPANY

No.	Stock Code	Short Name	Company Name
86	4863	TM	TELEKOM MALAYSIA BHD
87	5347	TENAGA	TENAGA NASIONAL BHD
88	5103	TITAN	TITAN CHEMICAL CORP. BHD
89	7113	TOPGLOV	TOP GLOVE CORPORATION BHD
90	6327	TWSPLNT	TRADEWINDS PLANTATION BHD
91	7100	UCHITEC	UCHI TECHNOLOGIES BHD
92	1775	UEMWRLD	UEM WORLD BHD
93	4588	UMW	UMW HOLDINGS BHD
94	5005	UNISEM	UNISEM (M) BHD
95	5142	WASEONG	WAH SEONG CORPORATION BHD
96	9679	WCT	WCT ENGINEERING BHD
97	4243	WTK	WTK HOLDINGS BHD
98	3158	YNHPROP	YNH PROPERTY BHD
99	4677	YTL	YTL CORPORATION BHD
100	2283	ZELAN	ZELAN BHD

The movements of KLCI over the last 10 years from 1998 to 2007 were as follows:

Year	Opening Index	Closing Index	Change in %
1998	594.44	586.13	-1.40%
1999	586.13	812.33	38.59%
2000	812.33	679.64	-16.33%
2001	679.64	696.09	2.42%
2002	696.09	646.32	-7.15%
2003	646.32	793.94	22.84%
2004	793.94	907.43	14.29%
2005	907.43	899.79	-0.84%
2006	899.79	1096.24	21.83%
2007	1096.24	1445.03	31.82%

Changing from 100 stocks to 30 stocks

From July 6, 2009 onwards, FBM KLCI becomes the key benchmark representing Malaysian sotkc market. For the new FBM KLCI, it is much narrower 30-stock index compared with the predecessor, the KLCI, which encompassed more extensive 100 stocks covering wider range of sectors. Some of the sectors not included in FBM KLCI are construction, property, timber, IT etc.

No.	Stock Code	Short Name	Company Name
1	1015	AMBANK	AMMB HOLDING BERHAD
2	6399	ASTRO	ASTRO MALAYSIA HOLDINGS BERHAD
3	6888	AXIATA	AXIATA GROUP BERHAD
4	1023	CIMB	CIMB GROUP HOLDINGS BERHAD
5	6947	DIGI	DIGI.COM BERHAD
6	4715	GENM	GENTING MALAYSIA BERHAD
7	3182	GENTING	GENTING BERHAD
8	3034	HAPSENG	HAP SENG CONSOLIDATED BERHAD
9	5819	HLBANK	HONG LEONG BANK BERHAD
10	1082	HLFG	HONG LEONG FINANCIAL GROUP BERHAD
11	5225	IHH	IHH HEALTHCARE BERHAD
12	1961	IOICORP	IOI CORPORATION BERHAD
13	5235SS	KLCC	KLCC PROPERTY HOLDINGS BERHAD
14	2445	KLK	KUALA LUMPUR KEPONG BERHAD
15	6012	MAXIS	MAXIS BERHAD
16	1155	MAYBANK	MALAYAN BANKING BERHAD
17	3816	MISC	MISC BERHAD
18	4707	NESTLE	NESTLE (MALAYSIA) BERHAD
19	1295	PBBANK	PUBLIC BANK BERHAD
20	5183	PCHEM	PETRONAS CHEMICALS GROUP BERHAD
21	5681	PETDAG	PETRONAS DAGANGAN BERHAD
22	6033	PETGAS	PETRONAS GAS BERHAD
23	8869	PMETAL	PRESS METAL ALUMINIUM HOLDINGS BERHAD
24	4065	PPB	PPB GROUP BERHAD
25	1066	RHBBANK	RHB BANK BERHAD
26	4197	SIME	SIME DARBY BERHAD
27	5285	SIMEPLT	SIME DARBY PLANTATION BERHAD
28	5347	TENAGA	TENAGA NASIONAL BERHAD
29	4863	TM	TELEKOM MALAYSIA BERHAD
30	4677	YTL	YTL CORPORATION BERHAD

Updated: December 2018

The uses of KLCI to financial planner can be in several forms:

Performance Benchmark

KLCI can be used as a benchmark for evaluation of performance of unit trust fund or investment-linked funds that invested in the Malaysian equity market. For instance, in 2007, the KLCI climbed by 348.79 points or 31.81%. Any equity fund or investment-linked equity funds that generated return lower than 31.81% is said to have underperformed against this benchmark. On the other hand, funds that produced return more than 31.81% are said to have outperformed the market. Note that although the KLCI is not fully representative of the counters traded in BURSA MALAYSIA, analysts still refer KLCI as the market. Just like in USA, the Dow Jones Industrial Average comprised 30 counters only but its performance is still popularly referred to as the US market performance.

Economic Indicator

In financial planning, planners have to agree with their clients on certain economic indicators for planning purposes. More specifically, if the clients agree to the selection of equities as the channel for accumulation, the reasonable rate of return associated with such investment vehicle has to be determined. In this regard, it is common to use the historical average growth rate as the indicator. As we have computed earlier, the rate of 9.31% was the historical rate for equity market in Malaysia.

Planners who use rate of return close to this historical average for computation are deemed reasonable in their approaches. Any significant deviation from this average performance requires justification.

Factors Affecting Accuracy of KLCI as Performance Benchmark

There are several factors that affect the actual growth or the actual performance of KLCI. These include the following:

1. It is not fully representative of the counters in Bursa Malaysia. Only 100 counters are used in the computation

2. It can be inflated by merger exercise. An example is the merger of 8 listed companies to become one entity in Bursa Malaysia.

3. It can be deflated by privatization and delisting of counters in Bursa Malaysia. Some listed companies which were components of KLCI have been privatized and delisted. A component stock with big capitalization may be replaced by a new component stock of lower market capitalization.

Apart from the KLCI there are other indices such as the Second Board Index, the EMAS index and the Mesdaq Index. Other indices are Consumer Products, Industrial Products, Construction and Trading or Services Indices, which were introduced in 1993. In November 2007, the Second Board index and the Mesdaq index were retired. The FTSE Bursa Malaysia Indices have been introduced earlier since 2006 to replace them (both past and present indices running concurrently at one time). The FTSE Bursa Malaysia indices are divided into 2 main subgroups, namely, the Tradable Indices and the Benchmark Indices. All the FTSE Bursa Malaysia Indices started with a base of 6,000. An extract of the indices under the FTSE Bursa Malaysia indices are as   follows:

TRADABLE INDICES
FTSE Bursa Malaysia KLCI Index   Comprises the 30 largest companies in the FTSE Bursa Malaysia EMAS Index by full market capitalisation   **FTSE Bursa Malaysia Mid 70 Index**   Comprises the next 70 companies in the FTSE Bursa Malaysia EMAS Index by full market capitalisation   **FTSE Bursa Malaysia 100 Index**   Comprises the constituents of the FTSE Bursa Malaysia KLCI and the FTSE Bursa Malaysia Mid 70 Index   **FTSE Bursa Malaysia Hijrah Shariah Index**   Comprises the largest 30 companies of the FTSE Bursa Malaysia EMAS Index by full market capitalisation that are screened by Yasaar and the Securities Commission's Shariah Advisory Council to meet the requirements of international Shariah-compliant investors   **FTSE Bursa Malaysia Asian Palm Oil Plantation Index (USE and MYR)**   Comprises the companies from the universes of developed, advanced emerging and secondary emerging countries as classified by FTSE in the Asia Pacific region excluding Japan, Australia and New Zealand that derive substantial revenue from palm oil activities

BENCHMARK INDICES
FTSE Bursa Malaysia EMAS Index   Comprises the constituents of the FTSE Bursa Malaysia 100 Index and FTSE Bursa Malaysia Small Cap Index   **FTSE Bursa Malaysia Mid Cap Index**   Comprises constituents from the FTSE Bursa Malaysia EMAS Index with full market capitalization between MYR200 million and less than MYR2 billion   **FTSE Bursa Malaysia Small Cap Index**   Comprises those eligible companies within the top 98% of the Bursa Malaysia Main Board excluding constituents of the FTSE Bursa Malaysia 100 Index   **FTSE Bursa Malaysia Fledging Index**   Comprises the Main Market companies which meet stated eligibility requirement, but are not in the top 98% by full market capitalization and are not constituents of the FTSE Bursa Malaysia EMAS Index. No liquidity screening is applied.   **FTSE Bursa Malaysia EMAS Shariah Index**   Developed for domestic Shariah-compliant investors, comprising the Shariah-compliant constituents of the FTSE Bursa Malaysia EMAS Index that meet the screening requirements of the Securities Commission's Shariah Advisory Council   **FTSE Bursa Malaysia Mid Cap Shariah Index**   Comprises all constituents of the FTSE Bursa Malaysia Mid Cap Index that are Shariah compliant according to the SAC screening methodology   **FTSE Bursa Malaysia Small Cap Shariah Index**   Comprises all constituents of the FTSE Bursa Malaysia Small Cap Index that are Shariah compliant according to the SAC screening methodology   **FTSE Bursa Malaysia ACE Index**   Comprises all eligible companies listed on the ACE Market. No liquidity screening is applied.   **FTSE Bursa Malaysia Palm Oil Plantation Index**   Comprises all constituents of the FTSE Bursa Malaysia EMAS Index that derive substantial revenue from palm oil activities that meet the stated eligible requirements.   **FTSE Bursa Malaysia EMAS Industry Indices**   Comprise the constituents of the FTSE Bursa Malaysia EMAS indices and are categorized into 10 industy, 19 supersector, and 39 sector indices.   **FTSE 4Good Bursa Malaysia**   Comprises constituents of the FTSE Bursa Malaysia index that meet a variety of environmental, social and governance criteria.

Additional Factors to Consider When Investing in Foreign Markets

Based on modern portfolio theory, investing in foreign market can reduce risk and increase return if foreign assets selected are not perfectly positively correlated with existing portfolio. Investing overseas make sense if the local market is not going to perform better than the overseas market. Countries with GDP growing faster than Malaysia may deserve consideration. However, there is no definite direct relationship between share prices and the GDP.

On the other hand, there are counter arguments against investing overseas. Their arguments were fully backed up by what US investors had experienced during the Asia Financial crisis in 1997. During the crisis, most of the Asian stock markets collapsed by 50% to 80%. Apart from that, the exchange rate worked against the US investor when the Asian currencies declined by about 50% against the US dollar.

There are two main factors to be considered while investing in foreign markets. The first one is the political factor that is the stability of the government in that particular foreign country. Political risk can be taken to mean the possibility of expropriation of assets, changes in licensing requirement for certain industries and changes in tax policy. An example of political risk is the Gulf War in 1991 when investors in Kuwait experienced their investment been destroyed by the war. In the advanced countries, probably there is very little or no political risk at all. Even though there is a change in government, the country is still enjoying peace. However, in less developed countries, this is the most important factor as the political risk could be very high.

The second factor concerns the currencies exchange rate. At the time of writing, the ringgit was seen appreciating against the US dollar. For a Malaysian to invest overseas, he might have to convert the currency to US dollar. For example if the overseas investment generated return of 12% after one year, he may not enjoy the 12% fully if the ringgit appreciated by 5% at the same time. The actual increase will only be about 6.67% (1.12/1.05). On the other hand, if the return were negative 12% after one year, the loss based on the similar change in exchange rate will be 17.6% (1.12 x 1.05).

Self Assessment

1. Which of the following securities represents part ownership in a public company?
    A.   Preference shares
    B.   Ordinary shares
    C.   Cumulative preference shares
    D.   Convertible securities

2. Who determines the market price of an ordinary share?
    A.   The board of directors of the company issuing the shares.
    B.   The stock exchange on which the share is listed.
    C.   The president of the company.
    D.   Individuals buying and selling the shares.

3. Which of the following statements is an appropriate description of blue chip shares?
    A.   They are ordinary shares of older, more mature company that pay higher dividends and are not growing rapidly.
    B.   They have high growth potential but are very risky.
    C.   They are ordinary shares of large, financially sound corporations with a good history of dividend payments and consistent earnings growth.
    D.   They are ordinary shares of medium-size company having earnings growth in excess of the industry average.

4. Which of the following best describes the constant-growth dividend discount model?
    A.   It is the formula for the present value of a growing perpetuity.
    B.   It is the formula for the present value of an ordinary annuity
    C.   It is the formula for the present value of a finite, uneven cash flow stream.
    D.   It is the formula for the present value of a growing annuity.

5. Which of the following statement is WRONG with regards to Bonus and Split issue?
    A. In a Bonus issue exercise, the share capital of a company increases
    B. In a Split issue exercise, the share capital of a company increases
    C. In a Bonus issue exercise, the shareholders funds of a company remains the same
    D. In a Split issue exercise, the shareholders funds of a company remains the same

6. A company offers a rights issue of 2 for 3 for RM3 each. The present share price is RM8. If the share price does not change the time of trading, what is the price after rights are taken up?
    A. RM6
    B. RM3
    C. RM2
    D. RM4.50

7. A company has a few ways to market its securities in a primary market. They are:
    A.   A Public Offering
    B.   A Rights Offering
    C.   A Private Placement
    D.   A Public Placement

8. Which are the ETF not traded in Malaysia?
    A.   FTSE Bursa Malaysia KLCI ETF (0820EA)
    B.   My ETF Dow Jones U.S. Titans 50 (0821EA)
    C.   My Bursa KL Tracker 100 (0808EA)
    D.   ABF Malaysia Bond Index Fund (0800EA)

9. Below are the types of Structured Warrants available in Malaysia, except:
    A.   Future Warrants
    B.   Call Warrants
    C.   Put Warrants
    D.   Callable Bull/Bear Certificates (CBBC)

10. Below are the tradable indices in Malaysia, except:
    A.   FTSE Bursa Malaysia KLCI Index
    B.   FTSE Bursa Malaysia Mid 30 index
    C.   FTSE Bursa Malaysia Mid 70 index
    D.   FTSE Bursa Malaysia Hijrah Shariah Index

Answers: 1.B, 2.D, 3.C, 4.A, 5.B, 6.A, 7.C, 8.C, 9.A, 10.A

Chapter 5

Basics of Equity Valuation

Chapter Objectives

On completion of this chapter you should have an understanding of:

- Reasons for Investing in Equities

- Fundamental analysis

- Two main investment approaches: Top-down and Bottom-up

- Share valuation based on dividend discount models

- How price/earning ratio has its role in relation to share price

- How to identify and select undervalued shares

Introduction

In this chapter we will examine first the reasons for investing in shares or equities. We also present some of the risk involved when we invest in the equities. Having examined the pros and cons of share investment, we will then move on to the selection of shares for accumulation of wealth to achieve financial goals of individuals. In the process of presenting ways of shares selection, we shall deal with several theoretical analyses on topics such as economics, sector/industry, fundamental and technical analysis in stock valuation. Basic valuation tools like the dividend discount model, P/E ratio and their roles in pricing of shares are also covered in this chapter.

Reasons for Investing in Equities or Ordinary Shares

Good Hedge against Inflation
One of the main reasons for investing in equities or ordinary shares is because, with selection of shares, it is an ideal instrument for wealth accumulation. Statistics show that the average growth rate of share prices far exceeds that of inflation. Take for instance the Kuala Lumpur Composite Index in Bursa Malaysia, the index which started in 1977 with a base of 100 had increased to about 1588 points as at December 2019. The compounded rate of growth over the 43 year period is computed to be 6.81%. This rate of return is much higher than the return offered by most investment vehicles.

The computation using financial calculator is as follows:

42	N	100	± PV	1588	FV	Compute for I/YR

Actual Return can Outperform the Market Return
Another reason for investing in equities is because the return can outperform the market rate of return. The market rate of return in Malaysia is commonly referred to as the KLCI which comprises 30 stocks from the various industries. We pointed out that the average compounded rate of growth of KLCI was 6.81% in the last 42 years. This does not mean that all the shares actually experienced such growth rate. In reality, some share had performed better than 6.81% and some record poorer than 6.81%. Skillful and careful of shares could result in return significantly higher than 6.81% per annum.

Although the risks associated with investment in shares are known to be much higher than the risks associated with investing in fixed income securities, there are techniques that can be used to reduce or mitigate such fluctuations of prices. In addition, there are individuals who are younger and are willing to assume higher risks.

Opportunity to Participate in Business Investment with Ease
Owning shares is one of the easiest ways of participating in whatever business an individual desires. As the business is managed by experienced professionals, there is no need to worry about management of the business.

Providing a Source of Regular Income
One of the benefits of share ownership is the entitlement to receive dividends on a regular basis. Corporations that are profitable are known to have distributed earnings made on a regular basis. Examples of these types of shares are blue chips. The rate of net dividend received in some shares can be just as good if not better than the FD rates.

Capital Gain is Free from Tax

Another reason for investing in shares is because of the fact that capital gain is not subject to taxes in Malaysia. This is a very good reason for individuals in the high tax bracket.

Quoted Shares are Liquid Investment

Quoted shares are easily convertible to cash when necessary. This is especially true when blue chips are chosen in the portfolio. Some of the investment assets such as real estate do not have such ease of converting to liquid cash. Apart from selling the shares when cash is required, the quoted shares are generally a form of popular collateral for banks in lending money.

Risk of Investing in Equities

Having presented the benefits of investing in equities in the earlier section, we should also point out some of the risk of investing in equities as follows:

Risk of Losing the Entire Capital Sum

If the selection of shares is not properly done, investors may not receive any dividend income at all. Instead, he may even lose all his money invested in shares. This is to say that while the possibility of higher return is found in investing in equities, the risk of substantial loss is also present. However, the risk can be minimized through careful selection of shares by experienced fund managers and if the investment time horizon is of long term nature. This can be reflected by the chart on the movements of KLCI as follows:

The chart which shows the movements of KLCI from 2006 to July 2020 shows that buying shares in the KLCI can be very risky if the time horizon is short. Any investor who bought shares just before the Asian Financial crisis in 2008 and liquidated them in 2009 would have suffered substantial loss. However, the risk is minimal if the investment time horizon is of long term nature.

Possibility that Loss Exceeds Original Capital Sum

Investing in share can create a situation where the loss is greater than the original sum invested. This is due to the leverage or availability of margin account that enables an investor to invest more than the capital sum available. For instance, an individual with RM50,000 may be allowed to purchase share up to RM150,000. When market turns bearish, this investor may incur a loss greater than RM50,000. This can happen when the RM150,000 investment drop 60% to RM60,000 this implies a loss of RM90,000 which not only wiped out the original capital sum of RM50,000, but

also created a further loss of RM40,000 to the investor. In fact, the entire RM150,000 can disappear if the shares selected are delisted from Bursa Malaysia due to poor performance. Adding salt to the wound is the interest charged on margin account. Due to interest accumulation, the amount owing can pile up to exceed the original value of shares bought.

Speculators can become Bankrupt

Speculators who buy shares without examining the fundamentals of the corporation can turn bankrupt when the shares they bought become worthless investments in very short time. The risks are real when investors use margin financing in shares investment. If surplus money is used for investment, the most an investor can lose will only be his own capital.

Possibility of Mismanagement/ Dishonest Management

When we buy shares as small minority shareholders, we have no influence and control over the management of the corporation. If the management is dishonest, the minority shareholders may not enjoy the deserved benefits at all.

Fundamental Analysis

Since selection of shares is one of the key determinants in determining success or failure of wealth accumulation in this asset class, it become necessary that individuals acquire certain techniques in identifying under valued shares; buy them before others came to know about them and sell them when prices increased at a time when most people are aware of the intrinsic value of the under valued shares.

Under the subject of shares analysis and valuation, one would think of various analyses such as economic analysis, industry/sector analysis and fundamental analysis. *Economic analysis* is concerned with assessing the general state of the economy and its potential effects on share returns. *Industry analysis* deals with the industry within which a particular company operates, how the company is positioning itself against its major competitors within the industry, and the general outlook of that industry. *Company analysis* looks in depth the financial condition and operating results of a specific company and the underlying behavior of its shares. We will deal with all these analyses in this chapter.

Economic Analysis

The economic performance of an economy is greatly dependent on the performance and profitability of companies and industries operating within the country. Inevitably, the performance of the company and the industries are in turn dependent on the economic environment. In fact they are so closely inter-linked that they tend to move in the same direction. As such, share prices are heavily influenced by the state of the economy and by economic events. As a rule, share prices tend to move up when the economy is strong, and they retreat when the economy starts to soften. Of course, it is not a perfect relationship, but it is a powerful one. However, not all shares will behave in the same way or to the same extent given a particular economic situation. Some sectors of the economy, like food retailing, may be only mildly affected by a declining economy, while others like the construction industry is often hard hit when times get rough.

A general study of the economy should not only give an investor a grasp of the underlying nature of the economic environment but also enables him or her to assess the current state of the economy and formulate the expectations of the future course. The investor may also go in to examine a particular sector of economy that is related to a particular share. In order to do that, an investor must

be aware that conducting an economy analysis involves examining the fiscal and monetary policies (including government spending), inflationary expectations, consumer and business spending, and the state of the economic cycle. Through analyzing the economic cycle, one is able to determine at what state is the current economy. The diagram below shows the various stages of an economic life cycle briefly.

Domestic Macro-Economy

Gross Domestic Product (GDP) measures the total production of goods and services in an economy. Fast growing GDP indicates an expanding economy with plenty of opportunities for a corporation to grow. The first step in forecasting the performance of the overall market is to assess the status of the economy by examining its GDP and various other macro aggregates such as level of unemployment, price indices, and interest rates. An assessment that concerned with the general state of the economy and its potential effects on share returns is also known as Economic Analysis. The ability to forecast the macro economy can translate into spectacular investment performance.

Diagram of Economic Life Cycle
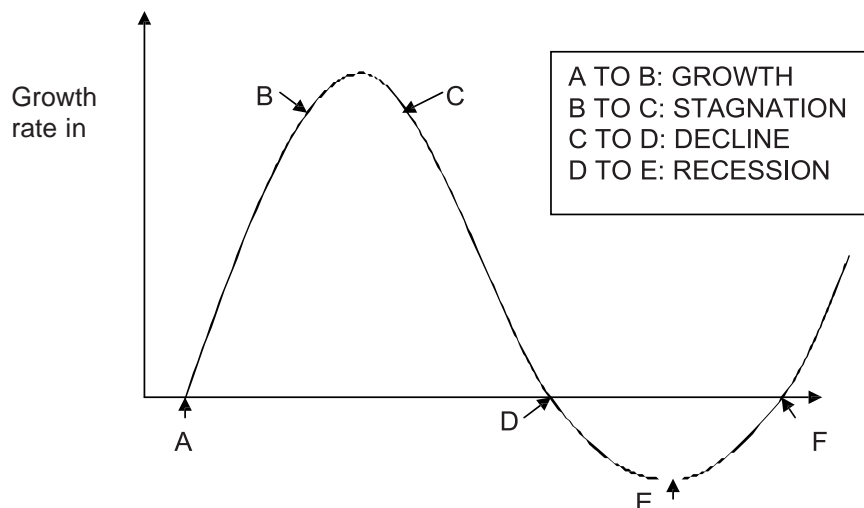
From the above diagram, it is noted that the economy experienced growth from point A to point B. From point B to point C, the growth has slowed down. Stagnation set in from C to D and GDP fell into negative growth after point D into recession. The diagram is a simplification of the reality in such a way that movements of GDP will never been so smooth. Fluctuations do happen within each phase of the cycle.

Application of Economic Life Cycle in Share Investment
Looking at the economic life cycle, there are several questions that need to be answered before it can be applied for share investing. These questions include:

a.   How do we decide the present stage of the economy we are in?
b.   At which stage should purchase of shares be made?
c.   What are the shares to buy at different stage of the economy?

At which stage should purchase of shares be made?

To make profits from any investment, one will of course have to buy low and sell high. Therefore, we have to buy shares when they are low and sell them when the prices are high. The problem here is when we feel share prices are low, they can drop further. Also, when we think that prices are high, they may continue to climb higher. If there is a direct relationship between share prices and economic growth, the most ideal time to buy is when the economy has reached the bottom of the recession. Such a direct relationship also suggests that in order to maximize profit, the best time to sell is the height of the growth stage. The question here is at what stage of the economy are we in?

Present stage of economy

To determine the stage of the economy we are in, there are at present no scientific ways of doing so. Nonetheless, we can use what the economists refer to as economic indicators. In general, economic indicators may be divided into 3 categories:

i.   leading indicators,
ii.   coincidence indicators and
iii.   lagging indicators.

Economic leading indicators move ahead of the economy by about 6 months. Some examples of leading indicators are the stock market indices, the number of new developers' licenses approved, new companies registered and growth rate of CPI for services.

Coincidence indicators move in tandem with the economy. Examples of coincidence indicators are index of industrial production, real gross imports, real salaries and wages in the manufacturing sector, real contributors to EPF and total employment in the manufacturing sector.

Lagging indicators follow the economy. Examples are number of defaulters in contribution to EPF, number of new vehicles registered, number of investment projects approved and real excess lending to the private sector.

After we have formed an opinion the stage of economic life cycle we are in, there is still a need to decide on the shares to buy. Theoretically, the shares of corporations that are leaders in the fastest growing industry should be picked. This leads us to study various sectors of the economy.

However, investors may do the analysis on a fairly informal basis instead. To form their economic judgments, they may rely on one or more of the popular published sources (e.g., economic report and annual report by Bank Negara Malaysia, periodic reports by major banks and brokerage houses). These sources provide a convenient summary of economic activities, and some near future outlook so the investor can have a general feel for the condition of the economy. Some examples of the indicators are:

Share Prices and Gross Domestic Product (GDP)/Gross National Product (GNP)

Gross domestic product (GDP) is the total value of the current production of final goods and services within a country during a period of time, normally a quarter or a year. Gross national product (GNP) is the value of final goods and services produced by domestically-owned factors of production within a given period. GDP measures the value of the goods and services produced within the country. It is a geographical concept that takes no account of the residents status of those who supply the labour or own the capital. GNP, on the other hand, attempts to measure goods and services attributable to the labour or property owned by residents.

Another way to measure GDP is to use the income approach. In brief, GDP may also be referred to as the total income generated by all the 3 main sectors of the economy, These sectors are: the Public Sector, the Business Sector, and the Individuals. When GDP is expected to increase, the main contributor of growth should be identified. In order that the stock market benefits from GDP growth, the best source of growth should preferably come from the business sector. Bearing in mind that corporations seeking listing in Bursa Malaysia need to have good track record of profits, we can say that most of the profitable corporations are listed. If the contributor of GDP growth is expected to come from the business sector, we may conclude that listed corporations are expected to perform well in terms of profitability. Most analysts will agree that there is a direct relationship between share prices and the corporate earnings.

Share Prices and Inflation
Inflation occurs when there is an increase in the general price level (i.e. when the cost of a given quantity of goods and services increases). Some of the indicators used to denote inflation are:
- consumer price index (CPI)
- producer/wholesale price index (PPI/WPI)
- GDP deflator
- export and import price index

In Malaysia, CPI is published monthly in a press release from the Department of Statistics, with a one-month lag. Financial markets generally await the CPI because it drives much of the activity in the market place.

In an economy where stability and systematic growth is emphasized as in Malaysia, the nominal interest rate should be higher than the inflation rate so that the real rate of interest remains positive. Therefore inflationary pressure will push up the nominal interest rate in the money market. An increase in interest rate means that interest expenses of corporations with debt financing will increase. Holding other factors unchanged, increase in interest expense lower earnings of corporation and prices of shares.

In this regard, it is not uncommon to find the following behavior in the share market:
a.   if the rate of inflation is higher than expectation or forecast, share prices will drop
b.   if the rate of inflation is lower than expectation, share prices will come down.

Share prices and Trade balance
Trade balance is the balance of a statement that shows all transactions between all residents of Malaysian with the rest of the world. A growing balance indicates that the demand for goods and services produced in Malaysia is stronger than the value of goods and services imported into Malaysia. This is considered a favorable factor.

Share Prices and Industrial Production Index (IPI)
The IPI are a set of index numbers which measures the physical output of Malaysian factories, mines and electric utilities. An increase in IPI signals economic growth. Hence, it has a positive effect on share prices, particularly on counters in the manufacturing sector. On the other hand, a decline in IPI signals slow down in manufacturing activities and lower sales and profitability.

Share Prices and Money Supply
Money supply affects interest rate. Tightening of money supply will increase interest rate which in turn reduce profits and share prices. On the other hand, an increase in money supply will reduce interest rate which will increase corporate earnings and increase share prices accordingly. Monthly

data on money supply are published by Bank Negara. These data are important to financial market participants as it indicates the liquidity situation of the economy.

Industry Analysis

Looking at shares in terms of industry or sector is a logical way of assessing shares and is widely used by both individuals and institutional investors. Investors should not be secluded from independent investors' guide or literature involving such assessment. This is a sensible approach as share prices are influenced by industry conditions. The level of demand in an industry and the forces exerted by other industries set the tone for individual companies. If the outlook is good for an industry, generally the prospect is good for companies that make up that industry. Since not all industries perform alike, it is important to establish the competitive position of a particular industry in relation to others.

An industry analysis can be conducted by an investor, by referring to published industry reports (e.g., Bank Negara Annual Report, report from Ministry of Trade and Industries and financial journals). These reports cover economics, market, and financial aspects of an industry, providing commentary as well as vital statistics.

One must also have the understanding of the life cycle of an industry as they may be divided into few main stages as follows:
i)   initial development stage,
ii)   rapid expansion stage,
iii)   mature growth stage, and
iv)   stability or decline stage.

Initial development stage – investment opportunities are usually not available to most investors other than the pioneer group only. The industry is new and untried, and the risks are very high.

Rapid expansion or growth stage – in this stage, the products acceptance is spreading fast and investors can foresee the industry's future more clearly and are more willing to invest. In this growth stage, economic variables are likely to have less to do with the industry's overall performance. Since it is at rapid growth stage, it is of substantial interest to investors, and effort is required to gain access to such opportunities. As usual, the life cycle has to set in some day, and usually this rapid growth stage would not last long.

Mature growth stage – after having gone through the first and second stages, the third stage is the one most influenced by the economic climate. The expansion now is solely dependent on the growth of the economy. The rate is very much slower compared to the previous two stages.

Stability or decline stage – this is the last phase of the life cycle, which is the declining stage of an industry. The demand for the industry's products is diminishing, and companies are leaving the industry. However, few good companies ever reach this final stage because they continually bring new products to the market and by doing so, they manage to remain in the mature growth stage.

Company Analysis

Company analysis – It is the study of the financial affairs of an enterprise for the purpose of better understanding the nature and operating characteristics of the company. This analysis begins with the study of historical financial statements in order to understand its financial strength

(financial ratios covered in chapter 3). With the insight knowledge, together with the economic and industry figures, one can then formulate expectations about the future growth and profitability of the company. As the company analysis is being carried out, one is able to ascertain the financial statements of the enterprise and learn the strengths and weaknesses of the company. This is done through identifying the trends and developments, evaluating operating efficiencies, and gaining a general understanding of the characteristics of the company. The priority areas are:

i)   the competitive position of the company,
ii)   the composition and the growth of sale,
iii)   the profit margins and earnings,
iv)   the composition and the liquidity of assets, and
v)   capital structure of the company.

Investment Approaches

Unit trust management companies and investment houses use different investment approaches when investing their clients' money. There are two basic investment approaches:

Bottom-up approach – Extensive research and analysis is done on individual shares and companies. Shares are chosen based on the company's future prospects and not on any significant economic and market cycles.

The bottom-up manager looks very closely at the company's management, history, business model, growth prospects and other company characteristics. He will not consider general industry and economic trends and then extrapolating them to the specific company.

This approach believes that some companies are superior to their peer groups, and therefore will outperform regardless of industry and economic circumstances.

Top-down approach – The overall economic environment is assessed (not individual shares). After the economy is expected to experience favorable growth, the next step is to identify the sector of the economy that will experience robust growth. After the industrial sector that is expected to be growing fast has been identified, then only the analyst will move in to see the market leaders of the industry. Asset allocation decisions are then made to determine how much money should be allocated to various asset classes within the market. These could include which types of shares to invest in (for example financial or industrial) or which countries to target. The top-down manager then buys individual shares within those selected sectors (relative to the specific weightings each sector has been allocated).

Share Valuation

Having carried out several aspects of economic, industry and fundamental analyses, we may now move into valuation of shares. It should be pointed out that what is important is the future net cash benefits and not the historical performance of a company that matters. Nonetheless, past results give us a good indication of the company's strengths and weaknesses. For example, it can tell us how competitive a company's products are during good and bad times.

The value of a share is dependent on its future returns. It is therefore necessary to use historical data and prevailing economic and industry factors to project key financial variables in the future. We are particularly interested in the future behavior of the company, especially the future dividends

and the price movements. The essence of share valuation is to determine what the share ought to be worth, given estimated returns to shareholders (future dividends and price behavior) and the amount of potential risk exposure. When various types of share valuation models are being used, the end product represents the intrinsic value ("justified price" or the underlying worth of a share) we have been seeking. When computed, if the intrinsic value is greater or equal to the market price of share, then the share can be recommended for purchase. There are many ways to compute the value of a share. However we will only cover two main methods in this chapter:

i)   dividend discount model, and
ii)   price/earning (P/E) ratio.

Dividend Discount Models

These models are based on discounted cash flow techniques with full recognition to the time value of money. As the models involve discounted cash flow, a natural issue that arises is the discount rate, commonly known as the required rate of return. Generally, the required rate of return must cover at least the cost of funds, or the cost of capital, or the opportunity costs of the funds.

When corporations issued shares in the primary markets, they collect cash from the shareholders. Subsequently, when corporations make profit, they may pay dividends to the ordinary share holders. Notice that under normal circumstances, the only form of monetary payment by a corporation to its shareholders is dividend. There will be no repayment of capital. What a corporation pays is what the shareholders receive. Following this reasoning, shareholders' cash benefits from investment in shares are future dividends only. There will not be any capital gain as all shareholders are deemed as a single entity in this model. Since the dividends attributable to shareholders are future cash flows, they need to be discounted back to present day value. Dividend discount model hence recognize dividend only in its valuation of ordinary shares.

Within these models, there are three different sub-models based on three different assumptions. The three assumptions are:

    constant flow of future dividends or zero growth model,

    Gordon growth model and

    fluctuating future dividends or the variable growth model.

Zero Growth Model

Under this model, it is assumed that the dividend received and receivable will be the same year after year perpetually without change at all. To value the share under these assumptions, we are merely computing the capitalized value of its annual dividends. To find the capitalized value, we just divide annual dividends by the required rate of return. The required rate of return is the return required to compensate an investor for the risk involved plus his risk-free rate of return. In practice, required rate of return of individual investors differ from one another. Applying different rates will give different valuation of shares. This helps to explain why share prices can be transacted at different prices on the same trading day. The formula is as follows:

> **Value of a Share = Annual Dividend ÷ Required Rate of Return**

For instance, if a share gives an annual dividend of 50 sen, and assuming you want a 10% return on your investment, you would then value the share as below:

> **Value of share = 50 sen ÷ 10% = RM5.00**

Dividend payments can be expressed as a percentage or in actual amount of payment. For instance, it can be stated as 10% or 10 sen. When payment is expressed as a percentage, one will have to understand that it is a percentage of the par value. Therefore the actual amount depends on the par value. If the par value is RM1.00, a 10% dividend payment means 10 sen. If the par value is 50 sen, the dividend is actually 5 sen only.

Investors have to note that the annual dividend is decided by the management of the company. As a result, the management of the company could influence the share prices up to a certain extent. The caution to be taken is that investors should ensure that dividend payments are properly and adequately backed by current and future earnings. One of the rules of dividend payment is that they could be declared and paid as long as there are retained earnings. Therefore it is possible to find companies paying dividends despite consecutive losses for a few years, as long as they have adequate cash flow and retained earnings gathered from past years. In such a situation, investors using this model could be misled into buying the shares at fairly high prices, only to discover later that the company has become insolvent due to accumulated losses.

The required rates of return of investors differ because of several reasons. Generally, it is made up of a risk-free rate of return and a premium for risk taking. For a housewife who places RM10,000 fixed deposits for a year at interest rate of 4.5%p.a., her required rate of return is 4.5%. It is to be noted here that the return offered by the bank is considered risk free. For her to withdraw and shift her funds to buy shares, she needs to be compensated for the extra risk in the share purchase. The amount of compensation is termed risk premium.

Another illustration of the required rate of return is to examine the lending operation of a commercial bank. For a commercial bank that accepted the fixed deposit of RM10,000 from the housewife and lent the money to its prime customer, the required rate of return would be the Prime Rate or the Base Lending Rate of the bank. Essentially, the prime rate or the base lending rate covers all costs and still provides a profit margin to the bank. It is offered to its prime customers who are rated risk-free. Lending to other customers with lower credit standing will be at rates equivalent to its base lending rate plus a 'spread' or 'margin' to reflect the additional risks.

When the market is bullish, most banks indulge in share financing and borrowers are not hard to find. Generally, commercial banks charge a fairly high spread (about 3% to 4%) over their BLR on share financing. The required rate of return of "investors" taking loans to purchase shares has to cover the cost of borrowings apart from the premium for taking the higher risk.

Gordon growth model – in this model, the assumption is that the growth rate of dividend is the same year after year into infinity. This is considered by some to be more likely to happen compare to the zero growth models. It is generally a more acceptable valuation model, and appears to be quite true for a matured and established company with strong track records. Under this model, the value of share can be found by this formula:

Share Value = $\dfrac{\text{Next Year's Dividend}}{\text{(Required Rate of Return – Growth Rate in Dividend)}}$

OR $V_0 = D \div (k - g)$

Where D = annual dividends expected for next year

           k = the discount rate or capitalization rate

           g = the annual growth rate of dividends (a constant rate) up to infinity

The model is applicable to companies that have established dividend policies, particularly with regard to the payout ratio, and fairly predictable growth rates in earnings and dividends. These are companies with good growth record of narrow range and minimal fluctuation. We can then obtain the information like the current dividend, and determine the growth rate of the dividend by going into past growth rate of the share. When we have the growth rate (g), and current dividend, we can work out the next year's dividend ($D = D_0 \times (1+g)$). k is the required rate of return of the investor.

For instance, a share gives a current dividend (D_0) of 80 sen per share, the expected growth rate is 9%, and the required rate of return of the investor is 15%. What should be the fair price of this share?

Substituting the above information into the above equation:

    V   = $D \div (k - g)$

           =   *$D_0 \times (1 + 0.09) \div (k - g)$*

           =   80 sen x 1.09 ÷ (0.15 – 0.09)

           =   RM14.50

If an investor wants to earn 15% return on this investment, according to this valuation model, he should not pay anything above RM14.50 per share.

Note that with this valuation model, the price of share will increase over time so long as the values of *k* and *g* do not change. This is because the cash flow from the investment will increase with time as dividends grow. To see how this happens, we extend the above example into five years, and this is how it will be

Year	Dividend	Share Price
	RM	RM
0	0.80	14.50
1	0.87	15.80
2	0.95	17.20
3	1.03	18.80
4	1.13	20.50
5	1.23	22.30

We can see that as long as the values of k and g do not change, the dividend for each year can be computed as in the above table and so is the share price using the same formula above. On the other hand, if future expectations of k and g do change, the future price of the share will also change accordingly. Should this happen, the investor could use the new information to decide whether to continue to hold the stock.

Computation of Growth Rate

We have seen that the larger the value of g, the higher is the value of the share. Since g is one of the key determinants of share price, we ought to know how g is derived. In other words, in order to apply this model in practice, another variable that need to be determined is the growth rate of dividend. There are two approaches in arriving at an estimate of growth. One of the approaches is based on the following formula:

G = Dividend Retention Rate x ROE

Question: NK Corporation practiced a dividend policy of paying out 60% of its earnings. The latest financial statement reported ROE of 15% which is sustainable. What is the estimated growth rate of dividend for NK Corporation?

Suggested solution:
Dividend Retention Rate = 1 – Dividend Payout Ratio = 1 – 0.60 = 0.4.
Estimated growth rate = 0.4 x 15% = 6%

Estimate based on Historical Data

Another approach is to examine the past dividend payments of the corporation; from these historical records, an estimate is made based on the trend of dividend payments. The following example on Yaly Enterprise will how it is done.

Yaly Enterprise's dividend payment record

Year	Dividend per share
0	20 sen
1	21.5 sen
2	23 sen
3	25 sen
4	26.5 sen
5	29 sen

The historical data shows that EPS has increased from 20 sen to 29 sen in 5 years. We can therefore solve for the compounded rate of growth of EPS. This involves solving for g in the equation:

$FV = PV \times (1 + g)^N$, where FV = 29 sen, PV = 20 sen and N = 5.

Using financial calculator, the inputs are:

5	N	20	±	PV	29	FV

After the inputs are made, compute for i% and the answer will be 7.71%.

Limitations of the Constant Growth Model

The constant growth model has its limitations in applications. The formula which determine the price of the share is $PV = D1 \div (k - g)$. Note that if the value of g is greater or equal to the value of k, the formula produces meaningless outcome. In other words, the model requires that the required rate of return must be higher than the growth rate of earnings or dividends.

Variable growth model – in the constant growth model, the shortcoming is that it does not allow for any changes in expected growth rates. To overcome this problem, we use this variable growth model. This model is derived in two stages, a value based on future dividend, and the other is the future price of the share. The formula derived is as follows:

$$
\text{Value of a share} = \begin{array}{c} \text{present value of} \\ \text{future dividends} \\ \text{during the initial} \\ \text{variable growth} \end{array} + \begin{array}{c} \text{present value of the price} \\ \text{of the share at the end of} \\ \text{the variable growth period} \end{array}
$$

$$
V = (D \times PVIF) + (D_2 \times PVIF_2) + \dots
$$

$$
+ (D_n \times PVIF_n) + \left(PVIF_n \times \frac{D_n(1+g)}{k-g} \right)
$$

Where D, D_2, etc   = future annual dividends

                $PVIF_n$ = present value interest factor, as specified by the required rate of
                      Return for a given year n
             n = number of years in the initial variable growth period

Note: the last part of the formula is the constant growth model formula, which is used to find the price of the share at the end of the initial variable growth period.

This valuation model is more suitable for companies that are at the initial growth stage, probably the first 3 to 5 years or more, and then settle down to a constant growth stage.

For instance, the projected dividends are:

Year 1	RM0.90
Year 2	RM1.10
Year 3	RM1.40

Estimated annual rate of growth in dividends, g for year 3 and thereafter is 9% and the rate of return k is 15% during the initial variable growth period (first three years).
Using the above formula:

Value of a share = present value of future dividends during the initial variable growth period + present value of the price of the share at the end of the variable growth period

year dividend x PVIF = present
k=15%   value

Value of share	=	yr 1	RM0.9	0.870	0.783	+	$\dfrac{D_3 \times (1+g)}{[k - g] \times (1+k)^3}$
		yr 2	RM1.1	0.756	0.832		
		yr 3	RM1.4	0.658	0.92		
					2.536		

$$= \text{RM2.536} \qquad\qquad + \quad \frac{1.4 \times (1.09)}{[0.15 - 0.09] \times (1.15)^3}$$

$$= \text{RM2.54} + \text{RM25.43} \times 0.6575$$

$$= \text{RM19.26}$$

Therefore, with the required rate of return of 15% and the projected dividends as above, the variable growth model will suggest not to pay anything more than RM19.26 per share.

One may also simplify the calculations using financial calculator under uneven cash flow mode. The inputs are:

0	CFj	0.90	CFj	1.10	CFj	1.4 + 25.43 = 26.83	CFj	15	I/YR

After the inputs, simply compute for NPV and the answer RM19.26 will appear.

Price/Earnings (P/E) Ratio in Share Valuation

The dividend discount model discussed earlier is quite mathematical, and involved number crunching. Price/earnings ratio is an alternative valuation that is widely practiced in the industry. This is a relatively simple method because it is based on the standard P/E formula (P/E = market price of share/EPS), that is the market price per share divided by the share's EPS. By solving this equation, we can obtain the market price of the share.

$$P/E = \frac{\text{market price of share}}{\text{EPS}}$$

Therefore; market price of share = EPS x P/E ratio

Given an estimated EPS figure, investors decide on a P/E ratio (the amount of RM an investor is willing to pay for each RM of earnings the share enjoys) they feel is appropriate for the share. The application of an acceptable P/E ratio into the above equation will provide an indication of the acceptable price of the share. The computed price is then used to compare with the market price. If the computed price is higher than the market price, the decision is to buy. If the computed price is lower than the market price, the decision is to sell or to avoid acquiring the shares.

For instance, let us assume that an investor adopts P/E ratio of 9 times in his selection of shares. Assuming the earnings per share of a company listed in Bursa Malaysia has been projected to be 25 sen, the price of the share should be 25 sen x 9 = RM2.25.

Another way of looking at P/E ratio is that it actually means the payback period of an investment. If a P/E ratio is 10, it suggests that it will take 10 years for the investor to recover the cost of acquisition of the investment. In general, the shorter the payback period, the better is the investment. According to this rule, if the chosen minimum P/E ratio is 8 times, all shares with P/E ratios lower than 8 would be acceptable buy.

Major limitations of P/E ratio
P/E ratio as an investment yardstick suffers from several weaknesses. Firstly, the approach ignores the time value of money. Secondly, it assumes that EPS of a corporation is constant over the years. A loss making company with good potential of growth and is experiencing recovery will never be accepted for inclusion into portfolio. Thirdly, the earnings of the company may not be paid out to the shareholders as dividend fully.

Perhaps, the most serious weakness of P/E as a selection criterion lies in the way they are reported in the mass media. Most quoted shares in the Exchange of Bursa Malaysia have their P/E ratios published together with their prices in the daily newspapers. The P/E ratios in most if not all publications are basically based on the company's earnings per share for the last financial year end as denominator and the latest price of the share as numerator. For example, the P/E ratio that one read on 10th January 2008 could be a ratio which used the share price ended 9th January 2018 as numerator and EPS as at 3st December 2016 as denominator! This is because the EPS for year ended 31st December 2017 were still not available at the time of reporting. Quoted corporations are given 60 days for them to report their quarterly results. Hence, EPS for year ended 31st December 2017 would only be ready by then. In practice, an investor should buy shares for expected future earnings and not for their past. Thus the forecasted EPS, not historical, should be used in valuation.

In view of the time lag in reporting, uninformed investors who rely on P/E in mass media is likely to make poor investment decisions. Let us use several examples for illustration of the situations.

> Case Example 5-1: Con Corp Bhd reported EPS of 50 sen for year ended 2016. the EPS of Con Corp Bhd for year ended 2017 were still not available. The market price of the share as at 3st December 2017 was RM3.50. Mark used P/E ratio of 8 times as investment yardstick.
>
> a. What would be the reported P/E on the 1st day of January 2018?
> b. Would Mark accept Con Corp Bhd in his portfolio based on the P/E ratio?

Suggested solution:
The P/E ratio reported in most of the mass media would have been:
RM3.50 ÷ RM0.50 = 7 times.

Mark will accept Con Corp Bhd as P/E ratio is lower than 8 times.

Case Example 5-2: John is another investor who used P/E ratio of 8 times as investment yardstick. However, he is aware that Con Corp reported EPS of 10 sen in the first quarter ended March 3 ˢᵗ 2017, 8 sen for the second quarter ended June 30ᵗʰ 2017 and 6 sen for the third quarter ended September 30ᵗʰ 2017.

a. What would be the likely EPS for year ended 2017 for Con Corp Bhd if the profit trend is continued?
b. What would be the P/E ratio based on this forecast of EPS?
c. Would John buy into Con Corp?

Suggested Solution:

a. The EPS for year for the last 3 quarters show poorer performance. If the trend is maintained, the EPS for the last quarter is likely to drop further to about 4 sen. This means that total EPS for year ended 2017 may be estimated at 28 sen (10 + 8 + 6 + 4).
b. If the price is maintained at RM3.50, the P/E ratio will be RM3.50 ÷ 0.28 = 12.5 times.
c. John who will buy shares with P/E ratio at 8 or below will not want to buy into Con Corp.

Case Example 5-3: Con Corp actually experienced a loss in the final quarter of the year ended 2017. Consequently, the un-audited EPS for year ended 2017 was reported to be 20 sen only on 28ᵗʰ February. The audited EPS 20 sen for year ended 2017 was confirmed on 30ᵗʰ April 2018. Kenny was a close friend of one of the directors of Con Corp. Kenny who also used 8 times P/E ratio for selection of shares, held 100,000 shares in Con Corp as at September 2017. He started selling shares in Con Corp after 30ᵗʰ September 2017 and sold all the shares in January 2018.

a. What is the minimum selling price of Kenny based on EPS of 20 sen?
b. What would be the P/E ratios based on market price of RM3.50 and EPS of 20 sen?
c. What would be the market prices based on P/E ratio of 8 times and EPS of 20 sen?
d. If Mark has all the financial resources to buy Con Corp, what is the effect of his buying decision based on his knowledge of P/E ratio as reported in the mass media?
e. Under the existing law, is the mass media liable for the buying decisions of Mark?

Suggested Solution:

a. Based on P/E ratio of 8 times, the minimum selling price for Kenny would have been 8 x 20 sen = RM1.60.
b. P/E ratio based on price of RM3.50 and EPS of 20 sen = RM3.50 ÷ 20 sen = 17.5 times.
c. Market Price based on EPS of 20 sen and P/E ratio of 8 times = RM1.60
d. Mark will end up buying a lot of shares in Con Corp since the P/E ratio as reported by mass media kept on dropping to more and more attractive levels to Mark.
e. Not liable.

There is definite concern over the use of P/E ratio as reported by mass media. Indeed a lot of time is spent to arrive at an appropriate P/E ratio. This P/E ratio can be derived directly from the constant growth dividend discount model. By dividing both sides of the constant growth model by expected earnings per share for next year, E_1, we get an equation that defines a stock's P/E:

$$\text{Price/earnings ratio} = \frac{\text{next year's (expected) dividend payout ratio}}{\text{required rate of return} - \text{the expected rate of growth in dividends}}$$

$$P_0/E_1 = \frac{D_1/E_1}{k - g}$$

In this equation, it is important to note that the P/E ratio is defined as the current price of the stock, P_0, relative related to next year's expected EPS, or E . This is a common way of looking at P/E ratio, and in fact is the standard for the P/E stock valuation approach. In this approach we have included the dividends payout ratio (D /E) in the numerator of the equation. As both the dividends and earnings are of next year's estimates, we are using the expected payout ratio rather than the current dividend payout which is out dated.

From the above equation we notice that the share's P/E ratio is determined by three main variables (factors):

i)   the investor's required rate of return - k

ii)   the expected rate of growth in dividends (earnings) - g; and

iii)   the expected payout ratio.

The three variables are all important for P/E ratio calculations, however it (P/E ratio) tends to be more sensitive to the expected rate of return (k) and the expected rate of growth in dividends (g). Take for example that the required rate of return is 15%, the expected dividend growth is 9%, and the expected dividend is RM1.10, which is 60% of its earnings. Putting this information into the above equation:

$$P/E = \frac{0.60}{0.15 - 0.09} = 10$$

From the above equation, the P/E is 10. Since the expected EPS is RM1.10, the share price is RM11.00 (10 x RM1.10).

Now let see what happens when the expected growth rate (g) drops to 7% :

$$P/E = \frac{0.60}{0.15 - 0.07} = 7.5$$

Therefore, the share price now becomes RM8.25 (7.5 x RM1.10).

On the other hand, if the expected return is to increase by 2% to 17%:

$$P/E = \frac{0.60}{0.17 - 0.09} = 7.5$$

In both the cases, the P/E fell to 7.5 times earnings, and the share price dropped to RM8.25.

We may conclude that, when the growth rate is expected to fall or if the required return goes up (higher perceived risk), the net effect is a lower P/E and therefore a lower share price.

Selection of under-valued Shares based on ROE and PBVR

One of the ways to identify under valued shares is based on two yardsticks, namely, the ROE and PBVR that are used jointly. In other words, a share must exhibit performance or features that meet both criteria before they are considered under valued.

ROE or Return on Equity is a ratio defined as: Net Profit ÷ Shareholders' Funds. It is a measurement of net profit per ringgit of owners' fund. For instance, if the ratio is 10%, it simply means that for every ringgit that shareholders put into the corporation, the net profit would be 10 sen. As such, it is clear that the higher the ratio, the better it is for the shareholders. In general, the ROE should be higher than the rate of return of investors.

Another ratio that is used is the Price-to-Book Value Ratio (PBVR). The price in this ratio refers to the market price whereas the book value refers to net asset per share. Net asset per share is calculated based on the following formula:

> **Net Asset per Share = (Total assets – Total liabilities) ÷ Total number of shares**

For illustration, let us assume that information of a corporation quoted in Bursa Malaysia is as follows:

a.   The share was priced at RM1.20.
b.   It has total assets and total liabilities of RM300 million and RM100 million respectively. The paid up capital is RM100 million with par value of RM1.

The book value or net asset per share = [RM300m – RM100m] ÷ 100 m = RM2.00
Since the share was priced at RM1.20, the PBVR = RM1.20 ÷ RM2.00 = 0.60

According to the yardstick, the PBVR must be less than 0.67 in order that it fits into the criteria for selection. In the example above, the PBVR of 0.6 is acceptable.

To summarize, shares that are under valued should satisfy two conditions:
a.   The ROE must be higher than the required arte of return
b.   The PBVR must be lower than 0.67.

Under normal market conditions, to find shares that satisfy both conditions are very difficult. These shares are usually found after major financial or economic crisis during which small investors exercised panic selling.

Self Assessment

1) Which of the following have a negative impact on stock prices?

      I Increase in risk premiums
      II Increase in dividend growth rate
      III Increase in the discount rate
      IV Increase in interest rates

    a.   I II & III only
    b.   I II & IV only
    c.   I, III & IV only
    d.   II, III & IV only

2) Company Z has announced a 20% increase in net profit over the previous year. The stock price however fails to respond to the news and remains unchanged. This phenomenon reflects:

    a.   Weak form of market efficiency
    b.   Semi-strong form of market efficiency
    c.   Strong form of market efficiency
    d.   Investors are selling on fact

3) Which of the following is a comparative stock valuation ratio?

    a.   P/E ratio
    b.   Price-to-book ratio
    c.   Price-to-cash flow ratio
    d.   All of the above

4) Which one of the following is not an assumption of the constant perpetual growth valuation model?

    a.   The required return must be greater than the dividend growth rate
    b.   Dividends grow at a constant rate forever
    c.   The required rate of return can vary
    d.   The firm's risk and its cost of capital remain constant

5) In industry life cycle, revenue, margin and profit are expected to peak in the following order:

    a.   Revenue, margin, profit
    b.   Margin, profit, revenue
    c.   Margin, revenue, profit
    d.   Profit, margin, revenue

6) "Stock prices adjust rapidly to the release of all new public information." This statement is an expression of which one of the following ideas?

    a.   random walk hypothesis
    b.   arbitrage pricing theory
    c.   semi-strong form of the efficient market hypothesis
    d.   technical analysis

7) Company XYZ is currently trading at $35 and pays a dividend of $2.30. Analysts project a dividend growth rate of 4%. Your client Tom requires a rate of 9% to meet his stated goal. Tom wants to know if he should purchase stock in Company ABC.

    a.   Yes, the stock is undervalued
    b.   No, the stock is overvalued
    c.   Yes, the required rate is higher than the expected rate
    d.   No, the required rate is lower than the expected rate

8) According to fundamental analysis, which phrase best defines the intrinsic value of a share of common stock?

    a.   The book value of the common stock
    b.   The liquidating value of the firm on a per share basis
    c.   The stock's current price in an inefficient market
    d.   The discounted value of all future dividends

9) If the market risk premium were to increase, the value of common stock (everything else being equal) would

    a.   not change because this does not affect stock values
    b.   increase in order to compensate the investor for increased risk
    c.   increase due to higher risk-free rates
    d.   decrease in order to compensate the investor for increased risk

10) Capital structure of the firm can be defined as:

    a.   The firm's mix of different securities for financing its overall operations
    b.   The firm's debt-equity ratio
    c.   The market imperfection that the firm's manager can exploit
    d.   All of the above

Answer: 1.C, 2.B, 3.D, 4.C, 5.B, 6.C, 7.A, 8.D, 9.D, 10.A

Chapter 6

Technical Analysis

Chapter Objectives

On completion of this chapter you should have a basic knowledge on:

- General introduction to the concepts of Technical Analysis

- Underlying assumptions of options

- Rules and statistics of technical analysis

- General understanding of charting

- Types of charts and applications

Introduction

Technical analysis refers to the study of various forces at work in the stock market. Technical trading rules based on historical prices and volume are the main content of the study. The rationale behind technical analysis is in sharp contrast with the efficient market theory which contends that past performance has no impact on the future performance of share prices. Technical analysis also differs from fundamental analysis which involves making investment decisions based on the study of international economy, the national economy, the industry sector and the company financial statements plus other qualitative factors such as the market share analysis.

Technical analysis does not bother about the influence of economic forces, industry, and the company fundamentals in arriving at investment decisions. To the technical analysts, past price movements will provide directions on future price movements. Technical analysts even believe that future changes in fundamentals of companies, such as earnings and sales, are reflected in the changes in prices before they are announced.

While it is debatable whether technical analysts are correct, in practice, there are investors who rely solely on this analysis in making investment decisions. Today we see charts on the newspapers, magazines, television and media. Charts give a visual impact on what is happening in the stock market, foreign exchange market, commodity market, the economy, money supply and a host of different things. Investors are given up to date information on their investment in a pictorial format. The analysis of these price movements can also be presented in a pictorial form giving more visual impact. In Malaysia, investment bankers that employ fundamental analysts also employ technical analysts to provide investment advice.

The fact that the study of investment is not a total science suggests that there is really no single scientific approach that ensures success in investment. In this module, we have adopted a stand that technical analysis can be used as one of the several tools available for investors to make decisions on whether to buy, to hold or to sell their shares. In other words, we accept that technical analysis does have a role to play in investment decisions. We shall therefore examine some of the principles of technical analysis in this chapter and how they may be used for investment decisions.

Financial planners therefore should have a basic understanding of technical analysis such as the different charts, patterns and techniques to interpret them.

Underlying Assumptions of Technical Analysis

i.   The prices of any goods and services are determined by the interaction of forces of demand and supply.

ii.   The forces of demand and supply are determined by rational and irrational factors.

iii.   Ignoring minor price fluctuations, the prices of individual shares and the overall value of the market tend to move in similar direction. The study of Beta in Capital Asset Pricing Model in fact provides support in this claim.

iv.   Changes in demand and supply lead to changes in price trends. Regardless the reasons that cause changes, the change can be detected in the market eventually.

The assumptions are subject to challenges. However, they will not be dealt with here since the debates remain inconclusive. Instead, we shall provide a summary of the advantages of technical analysis:

i.   Technical analysts feel that although fundamental analysis can provide superior returns, it can only do so provided new information can be obtained accurately and timely before others can get them. Consistency of fundamental analysts in this area is doubted.

ii.   Technical analysis does not depend on the voluminous accounting information which is historical in nature. The reliability of financial statements can be challenged as experienced by some of the listed corporations in Malaysia and other parts of the world.

iii.   Even when under-valued shares have been identified, there is still a need to decide on the timing of entry. In the case of over-valued shares, there is also the need to decide on when to get out in a bullish market. Technical analysts feel that, the ability of technical analysis to predict price trends provide the solution.

Market Analysis

Since the early days, investors have been using this technical study of the market to make decisions on investment, mainly to foresee when the share price will go up and down. As we know, during the early days there was not so much information as what we have today. So the study was of the market itself, detailed charts were drawn in attempts to monitor what large market operators were doing. These charts were intended to show when major buyers were moving into or out of a particular share. The charts centred on share price movements, because it was believed that these movements produced a certain formation that indicated when the share price would rise and fall. This same principle still applies today, as technical analysts believe that internal market forces such as trading volume and price movements often reveal the market's future direction long before it actually takes place.

There have been ample evidences that share prices do in fact tend to move with the market. Studies of share betas (a number that measures market risk or indicates how the price of share response to market forces) show that anywhere from 20% to 50% of the share price behaviour can be traced to market forces. In a bullish market, share prices in general tend to rise and when market turns bearish, most share prices tend to fall. Share prices in fact react to various market forces like the demand and supply. Ultimately it is the demand of shares and supply of funds in the market that determine whether the share price will rise or fall. Thus, technical analysis is intended to monitor the pulse of demand and supply forces in the market. It also helps to detect any shifts in this important relationship to assist a more appropriate share price determination.

Ratios and statistics of Technical Analysis

Investors have several choices in the application of technical analysis. The usage of charts and the complex ratios are the two main alternatives. Technical analysis can be used in conjunction with fundamental analysis in investment decisions. Some investors will examine the technical aspects of a stock before conducting any fundamental analysis for decision making. We shall first of all examine some of the ratios and statistics before presenting some of the charts that are used by technical analysts.

Market Measurement

This is concerned with the market statistics, such as the volume of trading, the buying and selling patterns of small investors. This approach is based on the idea that by assessing some of the key elements of market behaviour, an analyst can gain valuable insight into the general condition of the market and where it is heading within the next few months. Although there are many market measures or technical indicators, we will confine our discussion to some of popular measures used by technical analysts:

•   Market volume,

•   Breadth of market,

•   Contrary-Opinion Rules, and

•   Short interest.

Market volume: This is the measure of total number of shares being traded in each business day. This information can be easily obtained online by entering into the web site of Bursa Malaysia: www.bursamalaysia.com. Alternatively, investors may also be able to get them from the daily local newspapers that publish the share prices. The volume will indicate how eager the investors are to buy or sell their shares thus affecting the price of each share. Volume is also a function of demand and supply for shares and indicates the underlying market strengths and weaknesses.

When the volume goes up in a rising market or drops off during market declines, the market is considered to be strong. In contrast, the market is considered weak when the volume rises during a decline or drops off during rallies. In short, market and prices must move in the same direction in a strong market. On the other hand, when prices and volume move in opposite direction, the market is considered weak.

At this point, one may ask what will be the appropriate indicator of the market movement. Although the overall indicator used by the foreign media on Bursa Malaysia is the KLCI, the answer for fund manager and financial planner may not be the same. It actually depends on the investment's objectives and the portfolio use to achieve the objective. The numerous market indices are available for selection as the benchmark or indicator.

Breadth of the market: This measures the numbers of gainers and losers in terms of prices in a particular time period. Usually, the number of counters that remain unchanged in prices and the counters not traded for the entire day are also reported. For most newspapers, a daily summary is given. Active analysis may involve much high frequency. Investors who log into Bursa Malaysia website can in fact obtain the information every minute.

In technical terms, when the share prices go up, it is known as share prices advance and when the share prices fall, it is known as share prices decline. In general, as long as the number of shares advances outnumbers the number of shares declines, the market is considered strong. However, the extent of strength depends on the spread between the numbers of advances and declines. If the spread narrows down, and the declines start to approach the number of advances, the market strength is said to be deteriorating. Similarly, in a weak market the number of declines will repeatedly exceed the number of advances. The principle behind this indicator is that the number of advances and declines reflects the underlying market sentiments and the future share prices.

A **trading index (TRIN)** which is also known as **The Arms Index** adds on the analysis on number of advances and declines by including the volume in up stocks and volume in down stocks as follows:

$$\text{TRIN} = \frac{\text{Number of up stocks}}{\text{Number of down stocks}} \qquad \frac{\text{Volume of up stocks}}{\text{Volume of down stocks}}$$

Supposing in a day, the number of shares that went up and came down were 500 and 300 respectively, and the volume of up counters and down counters were 600 million and 400 million respectively, the TRIN will be 500/300 ÷ 600/400 = 1.11.

Low TRIN is considered a strong market while high TRIN is considered bad for the market.

Since there are market indices that measure the performance of the market, why should we bother about the number of gainers and losers? In reality, it is not uncommon to find that while the KLCI goes up at the end of a day, the number of gainers actually declined. This is due to the selection of only 30 counters in the computation of KLCI which cannot fully represent more than 1000 counters in the exchange. Another factor is because of the weightings used in the computation of KLCI. The number of gainers and losers is felt to be more reflective of the overall market sentiment by some analysts.

Contrary-Opinion Rules: Some experts believe that success in share market is just to do the opposite of whatever the majority of investors are doing. Therefore, attempts are made to determine when the majority of the investors are bullish and bearish. Some of the indications are as follows:

i.   Behaviour of the small investors: The reasoning behind is that, as a group, small investors are totally wrong in their timing of investment decisions. These small investors do not come into the market in force until after a bull market has pretty much run its course, and they do not get out until late in a bear market.

ii.   Mutual fund cash position: Mutual funds managers hold cash for several reasons. One is to meet the cash need of the unit holders who sell back to fund managers. Another reason is the collection of new funds that have yet to be invested. A third reason is when fund managers are bearish about the market outlook. Contrary-opinion technicians believe that when the cash level in relation to the size of equity funds is high, it is positive indication of strong demand for shares. On the other hand, when the cash level is low, there is little purchasing power to support further market upwards. This approach implies that fund managers are also wrong in their reading of the market at the peaks and troughs. This does not mean to be an insult to the fund managers. In a very significant way, the cash holding of equity fund managers are very much determined by the buying and selling decisions of unit trust holders who possess similar characteristics of small investors.

iii.   Investment advisory opinions: Contrary-opinion technicians also believe that if a large proportion of investment opinions are bearish, this signals the end of the downtrend and the reversal to an uptrend. This is attributed to the observations that most investment advisory services tend to be trend followers.

Short interest: In some of the stock exchanges, investors are allowed to sell stocks that do not owned if they felt that the stocks are over-priced. Essentially, they are selling borrowed stocks. The number of shares under short selling in the market is known as short interest. The oversold position will sooner or later be corrected and represents a form of future demand for shares that push up prices. Thus, the higher the short interest, the more likely the market will advance in terms of prices.

Charting

Perhaps this is the most well known activity of a technical analyst (chartist). It is believed that the share prices are mainly determined by the market demand and supply forces. As such it is important to plot the behaviour of every kind of indicator in one form or another. Charts are popular because they provide visual summary of activity over time, and more important, valuable information like trends and the future behaviour of the market and or individual share. Chartists believe price patterns evolve into chart formations that provide signals about the future course of the market or a share. We will now briefly look into the practice of charting, including popular types of charts, chart formations, and uses of charts.

The Dow Theory

The Dow Theory was among the earliest work which used prices and volume for analyzing the market. The theory identified three types of movements in the market: (1) primary or major trends like the tide in the ocean, (2) intermediate trends like waves, and (3) short term movements like ripples. The focus is on the major or the primary trends which are long term in nature. Short term fluctuations are largely ignored. The key elements of the Dow Theory are shown as follows:
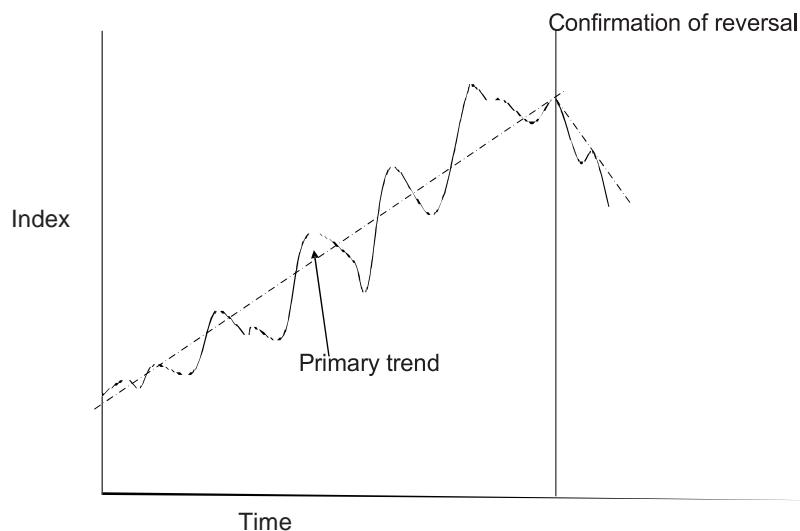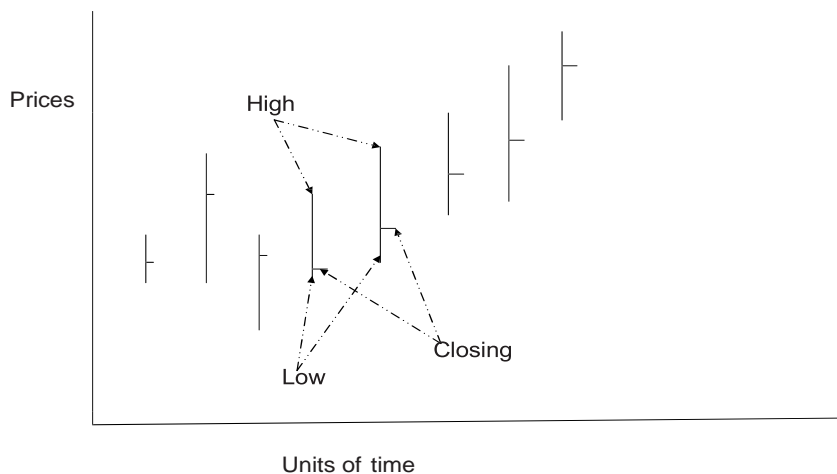

Charts
Line chart

Charts come in various forms. The simplest form is the line chart. Line chart is a graph that shows the movements of prices over time. The vertical axis represents the price while the horizontal axis is the time. This simple line chart links the closing prices of a share or the index of an industry. From the price changes that took place over a period of time, a trend may be observed to assist investors in decision making. An example is as follows:
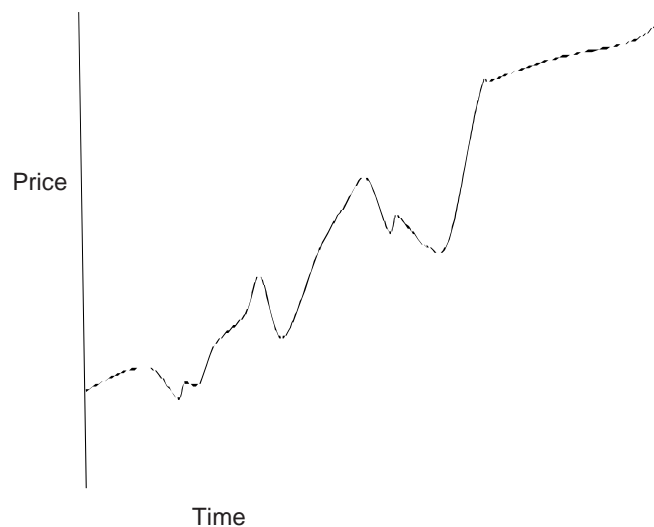
Bar chart

One of the most widely used types of chart is the bar chart which uses vertical bars for presentation. The prices are plotted on the vertical axis while the horizontal axis represents the time. Each vertical bar in the chart shows the high, low and closing prices. In this chart, the volume of transaction is usually given in the base of the bar chart. By joining the bars over a period of time we can create a line chart. This enables us to see the trend of the stock or investment. An illustration is shown below

As mentioned earlier, bar charts can be used to denote the daily volume traded. The daily volume traded reflects the underlying strength of the market and give technical analyst the "feel" of how the market would move in the future. It also signals "overheating" if high volumes are not accompanied with rising prices. In order to appreciate the application of this chart, let us take a look at an actual example of bar chart showing the movements of KLCI over the past 10 years up to 15th January 2008 as follows:

From the chart, one can see that despite the active fluctuations over the past 14 years which created fears in the mind of the retail investors, the overall trend had been positive. The chart indicated that the market dropped from about 1,466 points in Jan 2008 to below 843 points in 2009. It also suggests that short term investing in the share market can be very risky. In addition, it provides investors with long term investment time horizon good rate of returns.

Point and figure charts
These charts are used to keep track of emerging price patterns by plotting significant price changes with X's and O's but without any time dimension. Because there is no time dimension, they are not used for plotting technical measure. An example of this chart is given below:


To explain this chart, we start with the first column when the price of a share was RM10.20. In this chart, only price movement of at least 20 sen a day shall be considered significant and recorded. It does not matter when the significant price changes take place. In this case, an X was placed in

the box in the first column when the price moved up from RM10.20 to RM10.40. Another X was placed when the price moved up to RM10.60. from RM10.20 to RM11.00, the column recorded four "X". The price moved up to RM11.00 before it declined to RM10.80. A "0" was placed in the second column when such price reversal took place. When the share dropped from RM11.00 to RM10.00, there were four "0"s recorded. In the third column, another price reversal took place from RM10.20 to RM10.40 until it reached RM11.00 to experience another price reversal. Hence, every time when there is a price reversal, the chartist will move to a new column to record price changes. Eventually, a trend will be seen over a period of time. As in the chart given, a positive uptrend in price is detected.

Chart formations:

When charts are drawn consistently, some form of pattern is being formed; such formation is known as chart formation. Knowledge on interpretation of charts enables analyst to see signals of formation building and form opinions of buying, holding or selling shares. Some of the charts are as follows:

Uptrend
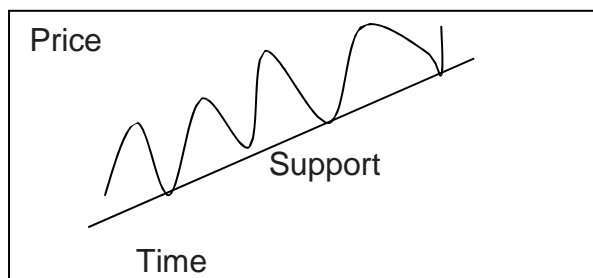
The uptrend chart shows that the prices of shares are moving up. Although fluctuations are experienced, each successive low is higher than the previous low. As long as the price remains above the support line, the uptrend is considered maintained. No reversal of trend is expected and therefore investors are expected to gain further by holding on to the shares.

The support line in the diagram represents the price levels that will attract many buyers so that the strong demand will stop the price from falling further. In any market, there are buyers who missed up buying opportunities in an uptrend. They will wait for market corrections before entry.

Downtrend
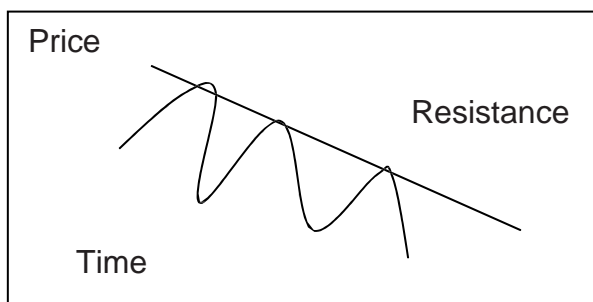
The downtrend chart shows that prices are declining. Each successive high is lower than the previous high. The downtrend is characterized by a series of resistance levels. As long as the price remains below the resistance line, the downtrend will continue; it is not yet the time to pick up shares. Each resistance level will see the emergence of large volume of selling by investors who could have

bought in when markets were down. When the overall trend is felt to be downward sloping, those who have bought at lower prices will take profit whenever there are technical rebounds.

Uptrend Breakdown
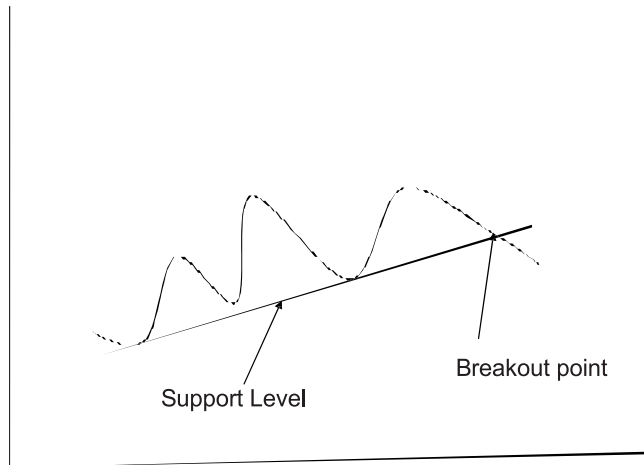
An uptrend breakout occurs when the share price falls below the support line. It implies that the uptrend has come to an end. Further declines in prices are expected although there still could be fluctuations below the support line. Investor should pick up the selling signals to avoid further losses.

Downtrend breakout
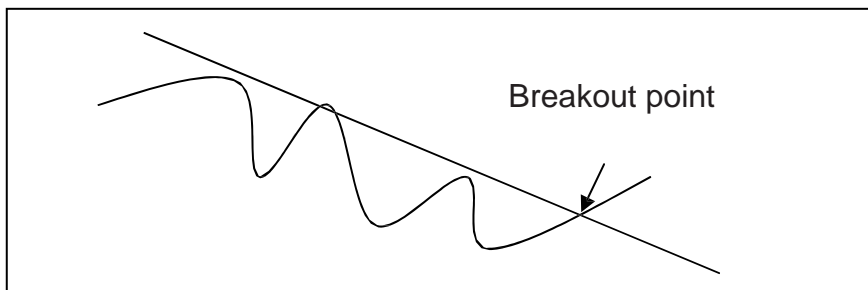
The downtrend breakout point indicates that downward trend in prices has come to an end. The number of buyers simply outnumbered the number of sellers. The resistance line that had prevented further price increases has been penetrated. Investors should take the cue to buy in to take advantage of the uptrend that is forthcoming.

Head and Shoulder
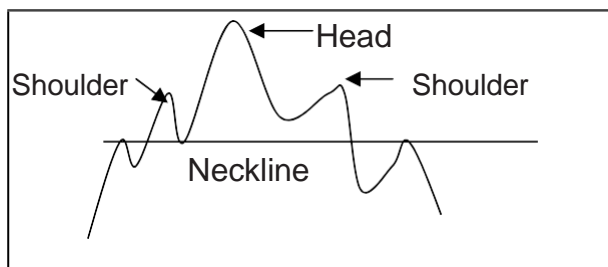
The shape of fluctuations in prices resembles 'head and shoulder'. This diagram shows that the uptrend has been reversed since prices drop below the neckline. Investors may have to cut further losses by liquidating their shares. Those thinking of buying should hold back their action as further declines are expected.

Inverse Head and Shoulder
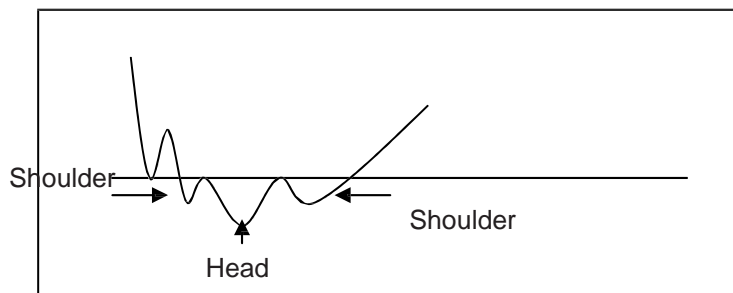
This is the chart that shows that the downtrend has come to an end. The price has penetrated the neckline. It is the reverse situation of the earlier head and shoulder. Although prices have increased from below the neckline, buying is still recommended since further advances in share prices are expected.

Triple Top
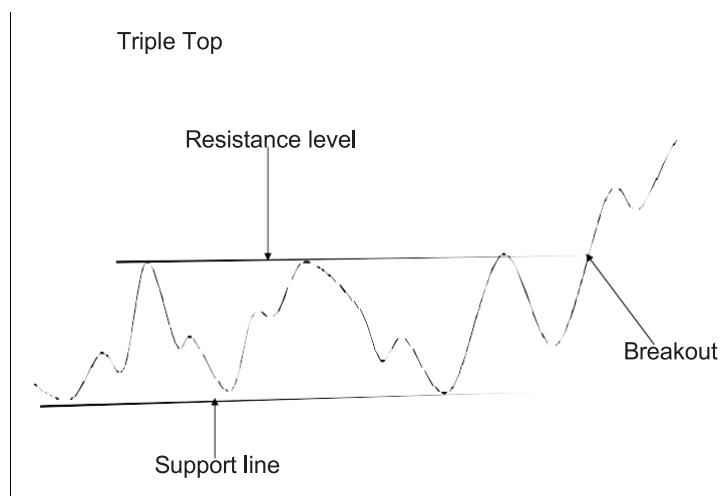
Triple top is a another signal to buy when the price line breakouts a resistance line. Notice that as long as the price fails to breakout, the buy signal does not appear.
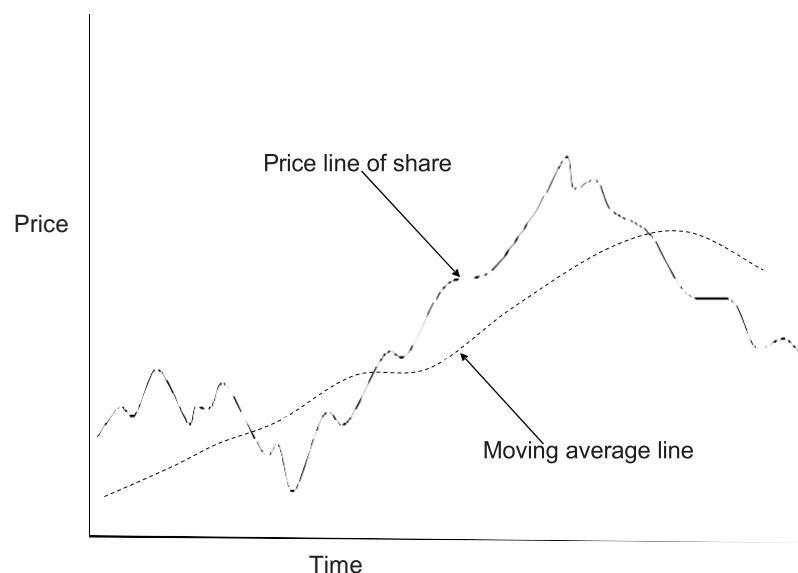
The Moving Average

One of the problems encountered by the daily price charts is that they contain too many meaningless price fluctuations. Moving average is used to eliminate the minor changes that mask the underlying trend. A moving average is a mathematical process that keeps track of the average value of a series of data over a period of time. The period of time selected depends on the need of the users. In our context, the calculation of the simple average is to add the closing prices for a selected number of days and divide it by the number of days selected. For example, a 7-day moving average

is to add the closing prices for 7 days and divide the sum total by 7 to arrive at the first number. With reference to the table below, the first number of 4.76 is computed as follows:

(4.80 + 4.90 + 5.00 + 4.70 + 4.60 + 4.80 + 4.50) ÷ 7 = 33.30 ÷ 7 = 4.76

This is repeated over a period of time and a graph plotted. For short term trading 7-days and 14-days moving average is used whilst for reading long term trends 200-days moving average is ommon.

Day	Price	7-day Moving Average
1	4.80	
2	4.90	
3	5.00	
4	4.70	
5	4.60	
6	4.80	
7	4.50	33.30/7 = 4.76
8	4.20	32.70/7 = 4.67
9	4.00	31.80/7 = 4.54
10	3.80	30.60/7 = 4.37
11	4.00	29.90/7 = 4.27
12	4.30	29.60/7 = 4.23
13	4.50	29.30/7 = 4.19
14	4.60	29.40/7 = 4.20

The application of the moving average line is as follows:

Buy: When the price lines cut the moving average line from below
Sell: When the price line cuts the moving average line from the top

Based on the simple rules, there are two points of selling and one point for buying in as follows:
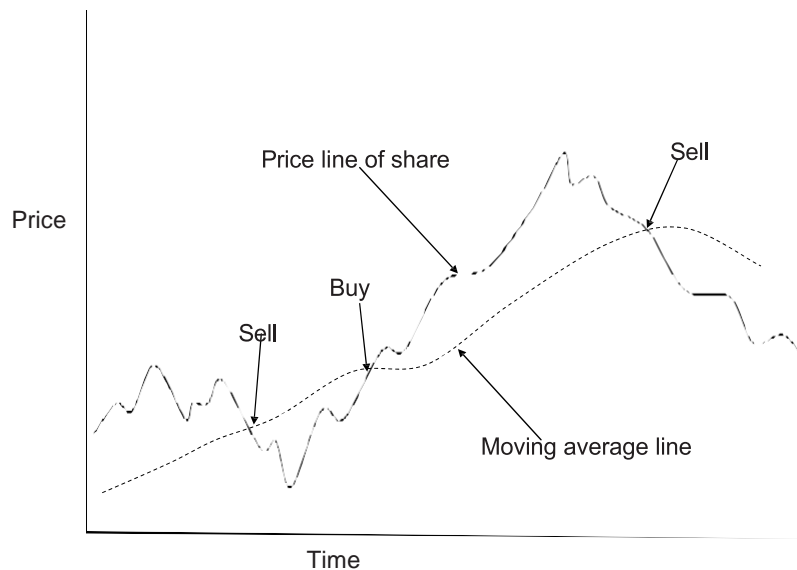
Relative Strength (RS)

Technical analysts believe that a trend that has started will last until some major event changes its direction. They also believe that this applies to the relative performance. In other words, an individual share that is outperforming the market will continue to do so. Based on this belief, technical analysts compute weekly and monthly relative strength ratios for individual shares and industry. The ratio is computed using the price of a share as numerator and the value of a stock index such as the S & P 500 as the denominator. If the ratio is increasing, it shows that the share is outperforming the market and this trend is expected to continue. Relative strength works during declining market also. If the price of a share declines less than the market does, the share's RS will also continue to increase.

Efficient Market Theory and Technical Analysis

The weak form efficiency of the Efficient Market Hypothesis states that an analyst cannot make excessive returns through analysis based on historical information. Historical information is already made known to all players in the market. Therefore, prices would have reflected whatever changes that have been made. On the other hand, technical analysis focuses on movements of prices and volume of shares which will only be available after transactions are recorded. Essentially, technical analyses are made based on historical data. Therefore, the weak form efficiency is in direct conflict with technical analysis.

Conclusion

Technical analysis is merely a means to an end and not an end itself. Its common usage and applications by many mass media and analysts shows the significance. It is too significant for traders, investors, speculators and financial planners to ignore the techniques. The need to know in advance the fate of one's future has resulted into fortune teller uses many techniques such as the reading of tea leafs, fung-shui, fortune telling and a host of other methods. Technical analyses are not acts of fortune telling but are forecasting techniques based on the studying of the actions of traders, speculators, investors and arbitragers that are translated in to "price". The required results are to tell the future with greater certainty and to make the right investment decisions.

The next time you look at a chart, pattern or techniques in a newspaper, magazine, television or media, the interpretation that come to mind would guide you to make the best decision. A picture paints a thousand words so goes the song and the technical analyst is singing praises of technical analysis in their search for a more effective and efficient method of making an investment decision.

Self Assessment

Q1) Which of the following is not an assumption of technical analysis?

   a) Changes in trend are caused by shifts in supply and demand relationship
   b) Stock price movements are independent
   c) Security price tend to move in trends
   d) Supply and demand of securities are determined by various factors

Q2) Calculate the trading index of a market based on following: Number of gainers: 750, number of losers:450, volume of gainers: 950 million, volume of losers 1.1 billon

   a) 1.93
   b) 0.69
   c) 1.44
   d) 0.76

Q3) Which of the given statement holds good with reference to Confidence index?

   a) It is calculated by the yield on low grade corporate bond devided by Dow Jones Industrial bond average
   b) When a weak economy and poor stock market are expected , the ratio is low
   c) CI ratio will decrease during a period of confidence
   d) If economic contraction is expected, investors will prefer lower rated bond and CI will be high

Q4) Which of the following are the two primary tools of a technical analyst?

   a) Level of the market index and volume
   b) Economic indicators and level of the market index
   c) Price and volume
   d) Price and technical indicators

Q5) Technical analysts say that a stock has 'good relative strength,' with means_____

   a) The total return on the stock has exceeded the total return on other stocks in the same industry
   b) The stock has performed well compared with other stocks in the same risk category as measured by beta
   c) The recent trading volume in the stock has exceeded the normal trading volume
   d) The ratio of the price of the stock to a market index has trended upward.

Q6) Which type of chart has no time horizon?

   a) Bar chart
   b) Candlestick chart
   c) Line chart
   d) Point and figure chart

Q7) Which of the following is one of the most popular tools used by technical analysts?

   a) P/E Ratio
   b) Book-to-market-value ratio
   c) Moving average
   d) Growth rate of dividends

Q8) What is the basic assumption of technical analysis in contrast to fundamental analysis?

   a) Security prices move in patterns, which repeat over long periods
   b) The stock market is inefficient
   c) A stock's price will approach its intrinsic value over time
   d) A technical analyst would evaluate the amount of short selling, the volume of trading, and the P/E value of a stock

Q9) Which amongst the given option is a characteristic of technical analysts?

   a) They treat a stock as a special and unique asset
   b) They are called fundamental analysis
   c) They believe that changes in the supply and demand for a stock cause prices to change
   d) They believe that price information must be supplemented with accounting information

Q10) Using the moving averages, when will a trader buy or sell?

   a) The trader will buy when the price of a financial instrument breaks above the moving average line and sell when the financial instrument breaks below the moving average line
   b) The trader will buy when the price of a financial instrument breaks below the moving average line and sell the financial instrument breaks above the moving average line
   c) The trader will buy when the price of a financial instrument stays below the moving average line and sell when the financial instrument stays above the moving average line
   d) The trader will sell when the price of a financial instrument breaks above the moving average line and buy when the financial instrument breaks below the moving average line

Answers: 1.B, 2.A, 3.B, 4.C, 5. D, 6. D, 7. C, 8. A, 9. C, 10. A

Chapter 7

Investment in Bonds

Chapter Objectives

On completion of this chapter you should have a basic knowledge on:

- What are bonds?

- Advantages and disadvantages of issuing bonds

- Reasons for investing in bonds

- Basic Features and characteristics of bonds

- Types of bonds in the market

- Risk of investing in bonds

- Valuation of bonds

- Relationship between Interest Rate and Bond Prices

- Relationship between bond prices and term-to-maturity

- Relationship between coupon rate and volatility

- Major rating agencies and how bonds are rated

- Factors affecting bond prices

- Yield curve

- Current Yield/ Yield-to-maturity/Yield-to-call

Introduction

In the balance sheet of a corporation, assets represent uses of funds. The sources of funds consist of total liabilities and owners' equity. Total liabilities can be broken down into current liabilities and long term liabilities. Managing current liabilities is essentially part of working capital management which does not form part of our studies. Our focus in this chapter is to examine bonds as long term sources of financing from the viewpoint of corporations and how these become investment instruments. We will look into the basic features and characteristics of bonds, the types of bonds, the risk and returns of investing in bonds in the primary market and secondary market. We will also examine how investment in bonds can enable individuals to achieve financial goals. For this purpose, there is a need to understand the valuation of bonds, calculation of various types of yield, and factors affecting bond prices.

What are Bonds?

The long term sources of financing of a corporation comprise long term liabilities, preference shares and shareholders' funds as represented by ordinary shares. These long term sources of funds can again be subdivided as internal sources and external sources of funds. The funds provided through issuance of preference shares and ordinary shares are considered internal funds whereas long term liabilities are external funds. Long term liabilities of a corporation may be incurred either through borrowing of long term loans from banking institutions or issuance of bonds or better known as loan stocks in Bursa Malaysia.

Bonds are documents recording loans with specified dates of maturity and interest rates payable. Bonds may be listed or unlisted. Listed bonds or loans stocks refer to those that can be bought and sold readily in the Bursa Malaysia. The advantages of issuing bonds or loan stocks are as follows:

Advantages of issuing Bonds

a.   Interests expenses are tax deductible: Under the provision of Income Tax Act, interest expenses incurred for the purpose of generating gross income is tax deductible. Issuers of loan stocks or bonds are therefore able to enjoy the deduction benefits.

b.   Avoids dilution of earnings per share: When rights issues or private placements are exercised, the number of ordinary shares in a corporation will be increased. All things other factors remaining unchanged, the earnings per share of the corporation will decrease accordingly. Issue of straight bonds will not increase the number of shares.

c.   Lower cost of funds: Corporations taking loan from banks will have to pay a minimum base lending rate which is 6.75% currently. When loan stocks are issued, corporations can tap the funds from the investors at a rate lower than BLR. As such, lower costs of long term funds are made available through bonds issuance.

d.   Issuance of bonds or loans stock avoids possible restrictions by bankers. When banks offered long term loans, it is normal for them to impose certain conditions to safeguard the interest of the banks. These usually include seeking their prior consent before acquisition of fixed assets and payment of dividends.

e.   Some bonds do not require repayment: As in the case of Irredeemable Convertible Unsecured Loan Stocks (ICULS), some bonds are convertible into ordinary shares upon expiry or maturity. When a loan of substantial amount is taken without any concern or worry for repayment, the management of the corporation will welcome it.

f.   It can increase profitability: When loan stocks are issued instead of additional ordinary shares to fund business expansion, the additional net profits are shared by same number of shares. Thus, the earnings per share will be higher.

Disadvantages of Bonds as a Source of Fund

a.   The financial risk is increased since fixed expenses in the form of interest expenses will be incurred,

b.   Issue of bonds in the form of ICULS will eventually increase the number of ordinary shares and lead to dilution of earnings per share,

Reasons for Investing in Bonds

Having listed down briefly the advantages and disadvantages of issuance of bonds for the purpose of raising funds from the view point of corporation, we shall now examine the primary reasons for investors to invest in bonds as follows:

a.   It provides a regular source of income. The regular payments of coupon interest provide a regular source of income for the investors of bonds. For investors whose investment emphasis is income, this instrument will be ideal.

b.   Interest payments are contractual. Regardless whether the corporation made profit or suffered losses, the interest payable under the bonds issued shall be paid to the bondholders.

c.   It helps to increase portfolio return. Investors who placed money in the banks should realize that their money is not risk free. This is because the deposits are covered by insurers up to RM250,000 only (PIDM). In addition, the deposits collected by banks are eventually lent to corporations in the business sectors. Investor who lend directly to corporations are able to earn higher rate of return as corporations are aware that they need to offer a rate of return higher than the FD rate but need not be lower than the BLR. Any 12 month rate of say, from 3.8% to 6.75% will hence give higher return to bond investors.

d.   It helps to reduce portfolio risk. By adding bonds into a portfolio, investors are able to reduce the overall risk of investment. The proportion of bonds and other asset class can be adjusted from time to time when necessary to suit the changing investment environment.

Disadvantages of Investing in Bonds

a.   No rights to vote in AGM. Unlike investing in ordinary shares, investors of bonds or loan stocks are not entitled to attend the Annual General Meeting of the corporation wherein he is a stakeholder. Ordinary shareholders may seek clarifications of directors in whatever areas which they are not happy with. They could even resort to taking actions to remove directors whom they are not happy. For bondholders, such rights and privileges are not accorded to them.

b.   Lower return when compared with ordinary shares: The real owners of a corporation are the ordinary shareholders. After all expenses including interest expenses have been paid, all the surpluses shall go to the ordinary shareholders. Bondholders are therefore not entitled to extraordinary gain or excessive profits when corporations performed well. The rates of return are generally lower.

c.   Risk exposure: Investing in bond is not risk free. Various types of risk are involved and they are discussed in later section of this chapter.

Basic Features and Characteristics of a Bond

The basic characteristics may be centered on the following areas:

1.   Interest
2.   Principal;
3.   Maturity date;
4.   Call features; and
5.   Secured or unsecured debt.

1.   **Interest.** In general, bond interests are being paid every six months. However, they may be paid in other frequencies such as quarterly or annually depending on the specifications in the loan document. The term coupon is being used to describe the contractual rate of interest payable to the bondholders. It is the rate of gross interest on the bond expressed as a percentage of the nominal value of the bond. For example, a RM1,000 bonds with a 6% coupon pays RM60 in interest annually. If the payment is four times a year as in most of the bonds in New Zealand, the amount shall be RM15 per quarter. If the payment is half-yearly, the amount shall be RM30 per payment. Therefore, in a 10-year bond, there shall be 10 yearly interest payments or 20 half–yearly interest payments or 40 quarterly interest payments, depending on the frequency of payment. Investors should bear in mind that these interest income represents future cash inflows relating to their investment in bonds. Therefore, valuation of bonds will have to consider the present value of these future cash flows.

The coupon rates are contractual and cannot be changed after issuance, regardless of whatever takes place in the money market. However, there are floating rate bonds that pay interest at a rate pegged to the money market instruments.

There are bonds that do not pay interest. These bonds are known as zero coupon bonds. In order to attract investors, these zero coupons are sold at a discount from its par value or maturity value. Since the element of interest is considered non-syariah compliance, it is therefore common for Islamic bonds to be issued based on zero coupon basis.

2.   **Principal.** Unless there are provisions to state otherwise (as in the case of convertible loan stocks), the principal or the par value must be paid on the maturity date. In the above example, when we talk about a RM1,000 bonds, it means the principal or par value is RM1,000. For a zero coupon bond, one will note that the maturity value will definitely be higher than the value at the time of issuance. Capital gain is therefore assured of when investors make purchases of zero coupon bonds. From this observation, one will have to note that if bonds are purchased at a discount and hold until maturity, there will be capital gain when maturity at par value is paid. On the other hand, if bonds are purchased at a

premium and hold until maturity, there shall be definite capital loss. Like the periodic interest income, the maturity values of bonds are cash benefits of investing in bonds. The future cash flows will also need to be discounted back to present value for purpose of valuation of bonds.

3. **Maturity date.** Since bonds are debt instruments, they have a maturity date. The maturity date may range from 2 to 30 years. However, in general, loan documents that have maturity dates varying from 2 to 10 years are classified as *notes* and not bonds. Bonds may be classified as term bond or serial bonds. Term bonds are those with a single, fairly lengthy maturity date and serial bonds such as MGS are those with a series of different maturity dates. Bonds normally carry maturities of more than 10 years, commonly up to 20 to 30 years. On maturity, the principal will be paid in full, whereas the interests are periodic payments during the term of the bonds.

    The maturity dates of bonds may be linked with the investment time horizon of investors. If bonds need to be sold before maturity, investors may suffer from capital loss when liquidation of bonds takes place at a time when interest rates are high. However, if bonds are held until maturity, there shall be no such risk of capital loss due to interest rate changes.

4. **Call feature.** This is the feature that specifies the conditions under which the issuer can retire or repay a bond prior to maturity date. You might have invested into a bond with high coupon rate. As long as the prevailing market interest rates are high, you would be able to enjoy the high return. However if the market interest drops, the issuer of the bond might make a call to retire the bond before the maturity date to enjoy the lower costs of borrowing. There is nothing you can do, but to accept the money repaid. This is legal if the bond is issued with the call feature, stating the conditions under which a bond can be called in for retirement prior to maturity date. Basically there are three types of call features:

    i)   a bond can be freely *callable*, which means that the issuer can prematurely retire the bond any time.

    ii) a bond can be *non-callable*, which means that the issuer is prohibited from calling in the bond prior to maturity date.

    iii) the issue can carry a *deferred call*, which means that the issuer cannot call for its retirement until a certain length of time has passed from the date of issue. In fact; it is non-callable within the deferment period, but is freely callable after its deferment period.

    Call premium is the amount added to a bond's par value and paid to the investors when a bond is retired prior to maturity date. The *call price* is the total price that the issuer must pay to retire a bond prior to maturity which is par value plus the call premium.

    However, some bonds may not have a refunding provision. This will prohibit the prior maturity retirement of bond by using the proceeds of a lower-coupon bond issued at a later date

5. **Secured or unsecured bonds.** At any point of time, an issuer may have different bonds outstanding. These could comprise secured (backed by a legal claim on specific property of the issuer) and unsecured bonds. In the case of secured bonds, it is also call *senior bonds*

Below are some common types of senior bonds.

i)   *Mortgage bonds,* these are bonds secured by real estate of the issuer.

ii)   *Collateral trust bonds* are bonds backed by securities owned by the issuer but held in trust by a third party.

iii)   *Equipment trust certificates* are senior bonds secured by specific pieces of equipment; popular with transportation companies.

Junior bonds are debts obligations backed only by the promise of the issuer to pay interests and the principal when they are due. Compared with the senior bonds, the junior bonds are unsecured and rank inferior in terms of priority of repayment. In case of liquidation, the secured bonds holders shall be paid before the unsecured bonds.

Types of Bonds and the Market

Basically there are two types of market for bonds. *Primary market* is where the bonds are first issued by issuers. On the other hand, *secondary market* is where the existing bonds are being bought and sold. In Malaysia, bond market is an emerging and important component of the capital market. Prior to the late 1980s, most Malaysian capital financing requirements were satisfied by traditional banking financing and the equity market. Initially, the Malaysian government developed the public debt market to meet the investment requirements of Employees Provident Fund (EPF). In addition, bonds were also issued to meet the statutory requirements of the banking, finance and insurance sectors where these companies have to invest a certain portion of their funds in Malaysian government securities (MGS). These bonds are issued by the government, its agencies and corporations. Although there is no requirement for these debt instruments to be listed, a small number of such securities usually in the form of convertible bonds have been listed in the Exchange of Bursa Malaysia.

The Asian financial crisis demonstrated that there was a need for the establishment of a liquid secondary market for bonds in order to provide borrowers with access to alternative methods of financing. The Malaysian government securities (MGS), Cagamas bond (a private debt security, PDS) and Khazanah bond (zero-coupon bond/Islamic bond) dominated the unlisted segment of the bond market. These bonds have an illiquid secondary market, as such these securities are usually held to maturity date by their holders to comply with the various regulations imposed under the banking and insurance legislations in Malaysia.

Treasury bonds or government bonds/MGS – these are fixed income securities with periodic interest payments. All government notes and bonds are issued as non-callable securities. Treasury bonds are the most well known bonds and are regarded as the highest quality bonds as their payments are guaranteed by the government. As such, treasury bonds are also known as risk free securities. Government bonds are popular with institutional investors as they are in large denomination and suit the requirements of financial institutions. For instance, insurance companies have endowment policies with tenure up to 30 years. The premiums collected represent long term commitment and obligation to the policy holders. The funds invested in long term bonds will provide a good matching for the money payable upon maturity to the policy holders. Other examples of institutional investors are pension funds, Employees Provident Fund (EPF), SOCSO, banking and financial institutions, unit trusts, large corporations and foreign funds.

Agency bonds – these are debt securities issued by various government agencies and organizations of the government. In order for Pengurusan Danaharta Nasional Berhad (Danaharta) to purchase non-performing loans (NPL) from banks and financial institutions, there must be sources of funds. Therefore, in 1999 alone, Danaharta issued bonds with face value of RM9.174 billion. These bonds were guaranteed for payment by the Malaysian government. Other example of government agency bond is the bonds issued by Khazanah Holdings   Bhd.

Corporate bonds – these are long-term debt securities known as bonds issued by Malaysian corporations to public investors within the domestic private debts market. Their maturity periods range from 3 to 15 years. Following the privatization of infrastructure projects in the first half of 1990s, long-term financings are required for the construction of the North-South Highway and independent power plants. Those companies involved accordingly issued bonds to finance their projects respectively. Issuers consist mainly of public-listed companies which have tapped the equity markets and traditional bank borrowings and are looking for other sources of funds to expand their business.

There is no standard classification of corporate bonds. They are grouped according to their characteristics such as coupons, security or external credit enhancements and convertibility. Common classifications are:

Straight bonds – these bonds have a fixed coupon rate, mature at a date fixed at time of issue, and pay semi-annual or annual coupon or interest payment.

Convertible bonds – these bonds give a fixed return. In addition, they give the holders the right to convert them into ordinary shares based on certain predetermined ratios and prices within a specified time frame. Some convertible bonds are redeemable but some are irredeemable. Most of the loan stocks traded in Bursa Malaysia is irredeemable unsecured convertible loan stocks, commonly known as ICULS.

Bonds issued in Malaysia with warrants – these bonds often have detachable warrants (or transferable subscription rights, TSR), and the rights can be sold and traded separately. The warrants in this case usually act as sweetener to attract bond subscription.

Floating rate bonds – theses bonds have coupon rates that are pegged to an agreed benchmark and periodically reset at a stated margin over a reference rate, usually the Kuala Lumpur inter-bank offered rate (KLIBOR).

Zero coupon bonds – these are bonds sold at high discount, pay no periodic interest payment, and have par value at maturity date. An example of such bonds is the Khazanah bond. This has also been included as an Islamic bond by the Syariah Advisory Council of Securities Commission.

Khazanah Nasional Bhd, an investment arm of the Ministry of Finance, launched its inaugural benchmark issue of Khazanah bonds in September 1997. The bond was called *Murabahah* bond. The zero coupon government-guaranteed bond had a three-year maturity date. The Khazanah bond programme is notable, as it was the first bond with zero coupon yield curve, whereas most treasury yield curves around the world are based on coupon-paying papers. It functions as a benchmark for the Islamic PDS market as the paper has been structured to comply with the *Syariah* principles.

Mortgage bonds – these bonds require the issuer to pledge certain real estate as security for the bond. A national mortgage corporation, Cagamas Bhd was formed in 1986. Cagamas Bhd acts as an intermediary between primary lenders of housing loans and investors who would invest in mortgage bonds. Apart from being the intermediary for housing loans, Cagamas as a major issuer

of private bonds is expected to spur the development of the domestic bond market. Cagamas papers are classified into Tier-1 papers backed by the purchase of conventional housing loans and Islamic housing loans, and Tier-2 papers backed by the purchase of industrial property loans.

Junk bonds – junk bonds, also called high-yield bonds, are highly speculative securities. These bonds are issued by corporations. Junk bonds generally take the form of unsecured debts with low or no claim on assets. The companies that issue them use excessive amount of debts in their capital structures, and their ability to service the debt is doubtful. The main reason why investors are drawn to junk bonds is because of the offer of high interest rates. The number of Junk bonds may also increase due to deteriorating credit ratings accorded to the issuers. In comparison to investment-grade bonds, a junk bond can give a yield of 2 to 5% higher. Such yield is only possible because of the correspondingly higher exposure to risk.

In addition to the above classifications, corporate bonds may be further classified depending on the credit enhancement features like secured and unsecured.

Shell MDS Malaysia Bhd was the first company to issue Islamic private debt securities in 1990 as deferred payment sale facility under the concept of Al-Bai' Bithaman. Other forms of Islamic private debts securities issued were on the basis of Al-Musyarakah (distribution of profits and loss of a partnership), and Al-Qardhul Hasan (interest free loan). The latter prescribes that a borrower is only required to repay the amount borrowed, but may pay an extra at his discretion as a token of appreciation.

Perpetual bonds – A perpetual bond, also known as a perp, is a bond issued with non maturity date. Therefore, perpetual bond issuer can choose to pay coupons forever without the need to return the principal.

Perpetual bonds typically offer higher yields compared with ordinary bonds with maturity dates. The feature of perpetual bonds that pay investors interest payments with no maturity dates are often compared with dividend-paying stocks. There are seen as hybrid securities as they are debt securities with equity-like features.

Like other types of bonds, perpetual bonds were not easily accessible by retail investors due to the high cost of entry. However, since the launch of platforms such as FSMOne Malaysia's Bond Express in 2019, local investors now have the option of investing in these bonds as and when the trading opportunities are made available. These perpetual bonds have a minimum investment amount of RM1,000. As at Jan 3,2020, two perpetual bonds listed on the platform were offered by CIMB Holdings Bhd and Hong Leong Financial Group Bhd, with annual coupon rates of 5.8% and 5.23% respectively.

It is worth noting that perpetual bonds are usually classified as a kind of equity, rather than a liability, under the international financial reporting standards. However, in countries like Thailand, such investment instruments will be reclassified as liabilities in companies' financial statement, according to a report published in the Edge in year 2019. Such a move is expected to increase the debt-to-equity ratio of some companies. The report also pointed out that in Malaysia, the classification of perpetual bonds depends on the contractual terms of the securities.

The table 7-1 below shows the funds raised via equity and corporate bond market from 2013 to 2018.

Table 7-1

The Malaysian capital market continued to play a vital role in financing the domestic economy
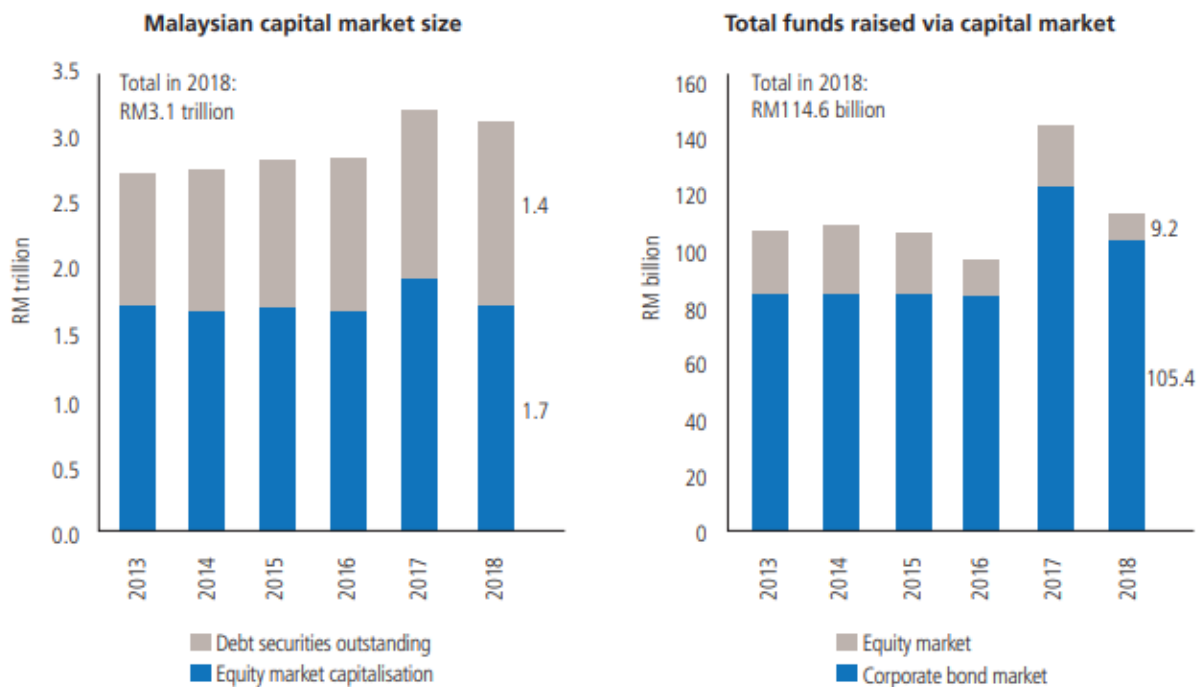
Source: SC, BNM, Bursa Malaysia

Negative Interest Rate

Negative interest rates occur when borrowers are credited interest rather than paying interest to lenders. This unusual scenario is most likely to occur during a deep economic recession when monetary policy and market forces have already pushed interest rates to their nominal zero bound.

While real interest rates can be effectively negative if inflation exceeds the nominal interest rate, the nominal interest rate had been theoretically bounded to zero. Negative interest rates are often the result of a desperate and critical effort to boost economic growth though financial means. The zero-bound refers to the lowest level that interest rates can fall to, and logic dictates that zero would be that level. There are instances where negative rates have been implemented during normal times. Switzerland for example, as of mid-2019 their target interest rate is -0.75%. Japan adopted a similar policy, within a mid-2019 target rate of -0.1%.

Negative interest rates may occur during deflationary periods when people and businesses hold too much money instead of spending. This can result in a sharp decline in demand, and send prices even lower. Often, a loose monetary policy is used to deal with this type of situation. However, with strong signs of deflation still a factor, simply cutting the central bank's interest rate to zero may not be sufficient enough to stimulate growth in credit and lending.

A negative interest environment is in effect when the nominal interest rate drops below zero percent for a specific zone, meaning banks and other financial institutions would have to pay to keep their excess reserves stored at the central bank rather than receive positive interest rate.

In the recent year, central banks in Europe, Scandinavia, and Japan have implemented a negative interest rate policy (NIRP) on excess bank reserves in the financial system. The unorthodox monetary policy tool is designed to spur economy growth though spending and investment as depositors would be incentivized to spend cash rather than store it at the bank and incur a guaranteed loss.

Risk of Investment in Bonds

Several types of risks are involved when bonds are chosen as the investment vehicles. Before we present on the types of risk involved in bonds, we wish to point out that in general, the treasury bonds are considered risk free as they are guaranteed by the Malaysian government. However, this merely means that it is free from default risk. There are other risks apart from the default risk which are applicable to bonds as investment vehicles as follows:

> **Default risk:** This refers to the risk that issuer may not pay the coupon interest and/or repay the loan sum upon maturity. Other than the MGS, issuers of bonds have varying degree of repayment capacity. In other words, investor actually faces the possibility of losing the entire investment. In order to overcome or mitigate this problem, rating agencies are set up to provide rating services. In some countries, corporations wishing to issue bonds need to have their financial position rated by approved rating agencies. The minimum long term investment grading is BBB in Malaysia. Rating by agencies at time of issuance does not eliminate the potential of future losses.

> **Inflation risk:** This risk arises because of the fixed coupon rates and the changing money market conditions. Let us recall the relationship between the real rate of interest and nominal rate as follows:

$(1 + N) = (1 + R)(1 + F)$ or

$R = [(1 + N)/(1 + F)] - 1$

Where
N = the nominal rate as given in the bond coupon
R = the real rate of return
F = the rate of inflation

Since the nominal rate is fixed. Any increase in inflation could reduce the real rate of return. Assuming a coupon rate of 5.5% and inflation rate of 3% at the time of issuance of bond, the real rate of return is:

r = [(1 + 0.055) / (1 + 0.03)] – 1 = 0.0243 or 2.43%

However, if the rate of inflation increases to 4% subsequently, the real interest rate will drop as follows:

r = [(1.055/1.04)]– 1 = 1.0144 – 1 = 0.0144 or 1.44%

When investors invest into bonds with low coupon rates, the chances of negative real interest can happen.

Liquidity risk: The availability and the efficiency of the secondary market will decide on the ease with which bond investor can sell their bonds without losing much value. The risk associated with the difficulty of selling bonds without losing much value is referred to as liquidity risk.

Call risk: The provision in the indenture may allow the issuer to 'call' back the bonds issued. The provision to call back bonds enables issuer to enjoy lower cost of funds when the rates in the money market are reducing. Without this provision, the fixed coupon rates would require that issuers continue to pay the same high rates. Definitely, the provision to call back the bond is good for the issuer. However, it is no good to the investors who rely on a fixed interest income from bonds. Investor investing in bonds should be aware that MGS are non callable in nature and hence represents a good instrument for hedging.

Currency risk: Investment in foreign currency denominated bonds may result in either gain or loss in currency fluctuations. This element of risk applies to all overseas investment in foreign currencies. If the exchange rate is against an investor, the loss in exchange could be higher than the total return in coupon interest and whatever capital gain. On the other hand, there could be gain from foreign exchange apart from bond interest. In this respect, one should be aware that the strength of a currency should be back up by the GDP growth of the country.

Reinvestment risk: Coupon interests are paid in periodic time interval of usually half-year. Coupon rates could be high at the time of issuance if the prevailing market conditions experienced tight liquidity. However, liquidity position could ease and as a result, interest rates in the market would drop accordingly. When interest rates are declining, the bond interest received by investors cannot be reinvested to generate the similar rate of return.

Interest risk: Interest risk actually relates that prices of bonds fluctuate as a result of changes in the market interest. The relationship between interest rates and bond prices are inversely related. When interest rate increases, bond price declines. When interest rate drops, bond price increases.

Valuation of Zero Coupon Bonds

Zero coupon bonds pay no interest during their entire loan tenure. In order to attract subscribers, zero coupon bonds are sold at a discount – usually a deep discount of their par value. Zero coupon bonds are important Islamic instrument for raising funds as interest payments is not permitted by the religion.

The mathematical formula for valuing zero coupon bonds is as follow:

$$PV = FV (1 + i)^{-N} \text{ or } PV = FV \div (1 + i)^{N}$$

The formula shows that the present value **(PV)** of a bond is equal to the future value **(FV)** or the maturity value of the bond discounted at **i%** for **N** years

In the computation of pricing or valuation of zero coupon bonds, there are 4 quantitative variables which we should be familiar with are:

1.   The fair selling price or the fair value of the bond which is equivalent to the present value as denoted by the key **'PV'** in any financial calculator. Using financial calculator in computation, the price pays by investor is the present value of the bond.

2.   The par value or maturity value of a bond is its future value as denoted by **'FV'** key in the financial calculator. Usually, the maturity value is also the face value, or the par value of the bond. In Malaysia, the most common type of bond is Malaysian Government Securities (MGS) which has a par value of RM100. Most corporate bonds have par value of RM1,000.

3.   The time period from the time of issuance of bond until its maturity is the bond's tenure and is represented by the **'N'** key in the financial calculator. When a bond is first issued, the term of the bond is pre-determined and stated in the prospectus. However, subsequent purchasers of the bond will have a different tenure of holding the bonds. For instance, an investor who is considering buying a 15-year bond that have been in the market for 5 years, the tenure of holding it till maturity will be 10 years only, not withstanding the fact that the bond is a 15-year bond.

4.   The yield-to maturity of the bond, yield-to-call or the required rate of return on bond investment is represented by the **'i%'** key in the case of the Casio FC100 or **'I/YR'** key in the case of the HP10B/10BII calculator. To compute the yield, we need all the essential variables such as the price, the number of years remaining before maturity, and the maturity value.

Example 7-A
Computing the Present Value of Zero Coupon Bonds
A zero coupon bond with face value of RM1000 is to mature 6 years from the time of issue. If an investor's required rate of return is 5.5% per annum, what should be the maximum price to pay for the bond?

Suggested Solution

In this case, the face value is also the maturity value = RM1,000, the tenure of the bond as represented by n is 6 years, and the required rate of return = r = 5.5% or 0.055, we need to find the

present value using the formula:

$$PV = FV (1 + i) \quad \text{or} \quad PV = FV/(1 + i)$$
$$= RM1,000 \times (1.05.5)^{-6}$$
$$= RM1,000 \times 0.725246 = RM725.25$$

Using financial calculators, the inputs are as follows:

Casio FC 200V		HP10B/10BI	
CMPD	Display	Input	Display
n	6	6, N	6
5.5, i%	5.5	5.5, I/YR	5.5
1000, FV	1000	1000, FV	1000
Solve, PV	-725.25	PV	-725.25

The computations show that the price of the bond should not be higher than RM725.25 in order that the investor can achieve a required rate of 5.5% per annum. Any price higher than the computed value will yield a lower return to the investor.

Example 7-B

Computing the Yield of Zero Coupon Bond

Kenneth Kong bought a zero coupon bond at a price of RM775. The bond had remaining term of 3 years and a maturity value of RM1000. What was the yield or the rate of return of the bond to Kenneth?

Suggestion Solution

We are still working on the same formula $PV = FV (1 + i)$. In this case, we have to solve for i based on the given variables as follows:

PV = RM775, FV = RM1,000, n = 3

$$RM775 = RM1,000 \times (1 + i)^{-3}$$
$$(1 + i)^3 = 1,000 \div 775 = 1.290323$$
$$(1 + i) = (1.290323)^{1/3} = 1.08677$$
Therefore, i = 0.088677 or 8.8677%

NB: To find the value of $(1.290323)^{1/3}$, you may key in 1.333333, shift, y^x, 0.333333 = 1.088678. Other than using a financial calculator, you may also use the interpolation technique with the aid of present value interest factor table.

Using the financial calculators:

Casio FC200V

Input	Display
3, n	3
775, +/–, PV	– 775
1000, FV	1000
Solve, i%	8.87

HP10B/10BII

Input	Display
3, N	3
775, +/– , PV	– 775
1000, FV	1000
/YR	8.87

The computations indicate that the bond offered 8.87% as the rate of return to Kenny.

Valuation of Coupon Bonds

Issuers of interest bearing bonds have to state the coupon rates payable at the inception or at the time of issuance. If the rates are fixed, they are not variable even though the money market conditions change subsequently. However, if they are floating rates bonds, the interest payable vary with the money market conditions. In our exercise, we shall assume coupon rates are fixed.

These coupon rates are fixed based on the prevailing market conditions of the inter bank money market. In other words, issuers of bonds have to compete with other financial institutions for funds. Rational investors are assumed to go for investment vehicles of higher returns when the risks of investment vehicles are comparable. Therefore, during the times of tight liquidity, the coupon rates are expected to be high. Similarly, when the money market is soft or easy, the coupon rates are expected to be low.

The risk of the bonds also affects the coupon rates. The assumed risk-averse investors need to be compensated for higher risk.

Since coupon interests are fixed and they are commonly payable at regular time intervals of half-year intervals, they are classifiable as a *form of annuity*. In addition, the payment of first interest shall be 6 months after date of issuance; this makes it a form of *ordinary annuity* In financial calculator this is denoted by **PMT** key. All other variables such as **PV, FV, i%** and are similar to those described under the zero coupon bonds.

Having established all the variables, we may now present the mathematical formula of interest bearing bonds as follows:

> PV of Bonds   =   **Present value of all future interest payments**
> **+ Present Value of maturity value of bonds**

Present value of future interest payments is equivalent to the present value of an ordinary annuity. The formula for present value of ordinary annuity is:

> ***PV of interests = PMT [1 – (1 + i/m)$^{-m \times n}$] ÷ (i/m)***

In this formula, m is the payment frequency or the number of times interest is paid in a year. Where interest is payable semi-annually, the value of m is 2. Hence, the formula for bonds that pay interest semi-annually can be written as:

> ***PV of interests = PMT [1 – (1 + i/2)$^{-2n}$] ÷ (i/2)***

Another part of the formula for interest bearing bonds is the ***Present Value of maturity value of bonds.*** This part of the formula can also be mathematically presented as follows:

> ***PV of maturity value = MV ÷ (1 + i/m)$^{m \times n}$***

Since the value of m is two in this case, the formula is written as: PV of maturity value = MV ÷ (1 + i/2)^{2n}. The two parts of the formula can now be combined as follows:

> ***PV of Bonds = PMT [1 − (1 + i/2)$^{-2n}$] ÷ (i/2) + MV ÷ (1 + i/2)^{2n}***

Example 7-C

Valuation of Coupon Bonds

Baba Corporation's guidelines for selection of bonds require that the return must not be less than 9% per annum. Based on this required rate of return, its analyst is trying to value a bond with other additional information as follows:

Par value = RM1000
Coupon rate = 6% payable half-yearly
Bond has a remaining term of 4 years before maturity.

If the bond is presently selling at RM900, will the bond provide the necessary rate of return?

Suggestion Solution

Let us identify the values of all related variables before solving the problem. The known variables are

FV = Par value = Future value = RM1,000
PMT = 1/2 of 6% of RM1,000 = RM30
n = 4 years
i = required rate of return = 9% or 0.09

We may now substitute all these known variables into the equation:

> **PV of Bonds = PMT [1 − (1 + i/2)$^{-2n}$] ÷ (i/2) + MV ÷ (1 + i/2)^{2n}**

PV = RM30 x [1 − (1 + 0.09/2)$^{-2 \times 4}$] ÷ (0.09/2) + RM1,000 ÷ (1+0.09/2)$^{2 \times 4}$

PV = RM30 [1 − (1.045)$^{-8}$] ÷ (0.045) + RM1,000 ÷ (1.045)^{8}

PV = RM666.67 x [1 − 0.703185] + RM1,000÷1.422101

PV = RM197.88 + RM703.18 = RM901.06

Based on Baba Holding's investment yardstick, it will not consider buying the bonds of Baronet unless the price falls below RM901.06. Any price above RM901.06 will not provide a return equal or higher than 9%.

The tedious computations can be simplified by using the financial calculator:

Casio FC200V-input	Display	HB10B10BII-Input	Display
2 x 4 =, n	8	2 x 4 = , N	8
9 ÷ 2 = 4.5, i%	4.5	9 ÷ 2 = 4.5, I/YR	4.5
30 , PMT	30	30, PMT	30
1000, FV	1000	1000, FV	1000
Solve, PV	-901.06	PV	-901.06

At this point, you might have noticed that the value of PV is negative. This is because we compute the answer from the viewpoint of investor. As you can understand, investor has to pay for the purchase (an action that involves cash outflow) in return for inflows of interest and maturity value. On the other hand, a bond issuer has to pay interest and repay the principal. We can of course key in the values of PMT and FV as negative, as should be the case if we look at it from the viewpoint of issuer. By doing so, we will get a PV which is positive.

Relationship between Interest Rate and Bond Prices

As pointed out earlier, the monetary benefits of investor buying bonds are cash inflows in the forms of coupon interest periodically over the holding period, and the maturity value which is also the par value. These monetary benefits are future cash inflows. How much are these worth so that that investor can decide on how much to pay for the purchase? This involves determining the present value of these future cash flows. The process of finding present value of future cash flows requires us to discount the future cash benefits back into the present day value. In order to do so, we have to decide on the discount rate for discounting future cash values. The discount rate is known as the required rate of return (RRR), which is made up of two components of return:

> **RRR = Risk-free Return + Risk Premium**

The risk free rate of return refers to the yield offers by the government bonds or MGS in Malaysia. Risk premium may be described as compensation for assuming extra risk of investment in assets of higher risk as compared to MGS. The RRR is influenced by the interest rates in the money market. Money market rates are influenced and intervened by the government through several measures such as fiscal and monetary policies. Such intervention is very much reflected in the yield of Treasury bills and interest rates in the money market. When interest rates in the market are high, the expectation of investors on the returns of alternative assets is normally higher. On the other hand, the expectation on the returns of other assets is lower when market rates are lower.

New Bonds Issue

Issuance of new bonds signifies that the issuer has to tap funds from the market. This involves competition with other users of funds. Its offer of return is stated in the coupon rate, the rate that reflects the prevailing market condition. Supposing the RRR as evidenced by yield of comparable bonds was 6% at the time of issue, the issuer will offer 6% as coupon rate. Let us assume that a 10-year bond with coupon rate of 6% is sold at par value of RM1,000. The future cash flows of investor shall be RM60 per year for 10 years and RM1,000 at the end of 10 years. The present value of these future cash flows is:

PV = PV of RM60 per year for 10 years + PV of maturity value of RM1,000 ten years later.

Using RRR of 6% as the discount rate, the PV of RM60 per year for 10 years
= RM60 [1 − (1.06)$^{-10}$] / (0.06) = RM441.61.

The PV of RM1,000 ten years from today discounting at RRR of 6%
= RM1,000 / (1.06)^{10} = RM558.39

Total PV = RM441.61 + RM558.39 = RM1,000 which is also the issue price.

Financial calculator

Casio FC200V-Input	Display	HP10B/10BI	Display
10, n	10	10, N	10
6, i%	6	6, I/YR	6
60, PMT	60	60,PMT	60
1000, FV	1000	1000, FV	1000
Solve, PV	-1000	PV	-1000

Assuming RRR increased to 7% after 1 month

Let us assume that RRR increased to 7% in response to the higher interest rates offered by banks. In order to enjoy the higher returns, alert investors holding the 6% coupon bond will quickly sell the bonds at as close to RM1000 as possible and use the proceeds to invest in instrument that offer 7% return. As more and more investors sell, the 6% coupon bonds will drop to a new level which is computed as follows:

Casio FC200V-Input	Display	HP10B/10BII	Display
10, n	10	10, N	10
7, i%	7	7, I/YR	7
60, PMT	60	60, PMT	60
1000, FV	1000	1000, FV	1000
Solve, PV	-929.76	PV	-929.76

Therefore, the price of the bond will have to be reduced to RM929.76 eventually so that it is in line with the return of comparable product.

RRR reduced to 5.5% after 1 month

In the earlier illustration, we assumed that interest rate increased after the issuance of bonds. Let us now assume that RRR is reduced to 5.5% one month after issue instead. When this happens, new investors who look for investment vehicles will quickly identify those that offer return equal or better than 5.5%. Since the bonds offered 6% which is higher than the RRR, investors with RRR of 5.5% will buy the bonds with yield of 6%. Their decisions and actions to purchase the bonds will push up the price. Eventually, at RRR of 5.5%, the price or PV of the bond is computed as follows:

Casio FC100V-Input	Display	HP10B/10BII	Display
10, n	10	10, N	10
5.5, i%	5.5	5.5, I/YR	5.5
60, PMT	60	60,PMT	60
1000, FV	1000	1000, FV	1000
Solve, PV	-1037.69	PV	-1037.69

From the above computations, we can see that when RRR or market interest rates increase, the price of bond will fall. On the other hand, when RRR or market rates drop, the price of bonds will increase. Changes of bonds prices are necessary to enable the instrument to adjust to changes in yield from time to time. The relationship of interest rates and bond prices may be summarized in a 10-year bond with 6% coupon rate in Table 7-3 as follows:

Table 7-3

Rate in %	Price
1	RM 1,473.565
2	RM 1,359.303
3	RM 1,255.906
4	RM 1,162.218
5	RM 1,077.217
6	**RM 1,000.000**
7	RM 929.764
8	RM 865.798
9	RM 807.470
10	RM 754.217
11	RM 705.538
12	RM 660.987
13	RM 620.163
14	RM 582.711
15	RM 548.311

Relationship between Bond Prices and Term to Maturity

We shall examine the relationship between bond price and term to maturity from two scenarios. One is when the bond is selling at a discount or below its par value. Another scenario is when the price is selling at a premium or above its par value.

Bond Priced at a Discount

Let us assume that a corporate bond with a par value of RM1,000 and coupon rate of 6% is selling at RM900. We also assume that all factors (including yield or RRR) affecting bond price remain unchanged, so that we can determine the behavior of bond price as the bond approaches its maturity which is 10 years from today.

Suggestion Solution

First of all, let us establish the RRR of the investor using financial calculator. After the RRR has been determined, we can continue with the computation of bond price by reducing the value of n from 10 to 9 and subsequently to 8, 7,……till 1 per table 7-4 as follows:

Table 7-4

Casio FC200V-Input	Display	HP10B/10BII-Input	Display
10, n	10	10, N	10
60, PMT	60	60,PMT	60
1000, FV	1000	1000, FV	1000
900, +/–, PV	– 900	900, +/–, PV	– 900
Solve, i%	*7.4538*	*I/YR*	*7.4538*
9, n	9	9,N	9
Comp, PV	–907.08	PV	– 907.08
8, n	8	8, N	8
Comp, PV	–914.69	PV	–914.69
7, n	7	7, N	7
Comp, PV	–922.88	PV	–922.88
6, n	6	6, N	6
Comp, PV	– 931.66	PV	– 931.66
5. n	5	5, N	5
Comp, PV	– 941.11	PV	– 941.11
4, n	4	4, N	4
Comp, PV	– 951.25	PV	– 951.25
3, n	3	3, N	3
Comp, PV	– 962.16	PV	– 962.16
2, n	2	2, N	2
Comp, PV	– 973.88	PV	– 973.88
1, n	1	1, N	1
Comp, PV	– 986.47	PV	– 986.47
0, n	0	0, N	0
COMP, PV	– 1000	PV	– 1000

Bond Price at a Premium

Our next example assumes that a corporate bond with a par value of RM1,000 and coupon rate of 6% is selling at RM1,100. We shall also assume that all other factors affecting remain unchanged in our attempt to find out the behavior of bond prices as the bond approaches its maturity which is 10 years from now.

Suggestion Solution

We shall likewise compute the RRR and thereafter gradually reduce the value of n yearly from 10 to 1 and compute for the related prices per table 7-5 as follows:
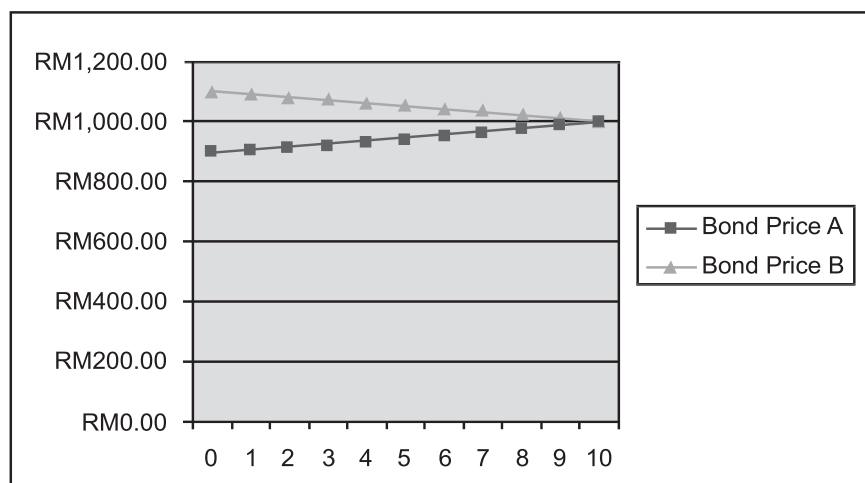
Table 7-5

Casio FC200V-Input	Display	HP10B/10BII-Input	Display
10, n	10	10, N	10
60, PMT	60	60,PMT	60
1000, FV	1000	1000, FV	1000
1100, +/–, PV	– 1100	1100, +/–, PV	– 1100
Solve, i%	*4.7224*	*I/YR*	*4.7224*
9, n	9	9,N	9
Comp, PV	–1091.95	PV	–1091.95
8, n	8	8, N	8
Comp, PV	–1083.51	PV	–1083.51
7, n	7	7, N	7
Comp, PV	–1074.68	PV	–1074.68
6, n	6	6, N	6
Comp, PV	– 1065.43	PV	– 1065.43
5. n	5	5, N	5
Comp, PV	– 1055.74	PV	– 1055.74
4, n	4	4, N	4
Comp, PV	– 1045.60	PV	– 1045.60
3, n	3	3, N	3
Comp, PV	– 1034.97	PV	– 1034.97
2, n	2	2, N	2
Comp, PV	– 1023.85	PV	– 1023.85
1, n	1	1, N	1
Comp, PV	– 1012.20	PV	– 1012.20
0, n	0	0, N	0
COMP, PV	– 1000	PV	– 1000

Observations

From Table 7-4, we can see that if a bond is selling below its par value, the price of bond increases as the bond approaches its maturity. In other words, the bond price increases as the value of n decreases. When n is zero, the price of the bond is exactly RM1,000. Table 7-5 shows a bond is selling at a premium; when the value of n decrease, the price of bond reduces. The process of reducing the value of n is continued until the bond price reduces to RM1,000 when the bond matures with value of n = 0. The combined scenarios are then consolidated into table 7-6 below.

Table 7-6

Year	Term-to-maturity	Bond Price A	Bond Price B
0	10	RM900.00	RM1,100.00
1	9	RM907.08	RM1,091.95
2	8	RM914.69	RM1,083.51
3	7	RM922.88	RM1,074.68
4	6	RM931.66	RM1,065.43
5	5	RM941.11	RM1,055.74
6	4	RM951.25	RM1,045.60
7	3	RM962.16	RM1,034.97
8	2	RM973.88	RM1,023.85
9	1	RM986.47	RM1,012.20
10	0	RM1,000.00	RM1,000.00

In Table 7-6, we have combined the two tables 7-4 and 7-5 and show the movements of bond prices when bonds approach their maturity. The conclusions that investors can draw and use for investment of bonds are as follows:

• Holding all factors including the yield unchanged, the prices of bond, whether selling at a discount or at a premium, will eventually revert to its par value of RM1,000.

• When bonds are selling at a premium, investors' hope of capital appreciation in holding bonds till maturity is extremely slim or nil. Instead, investor should be aware that there will be eventual capital loss in the bonds acquired. In this case, the coupon rates are higher than the yield as can be seen in the example set out in Table 7-5.

• For bonds selling at a discount, investors should be aware that the value will eventually increase to settle down at par value. There will no capital loss. Instead investors are assured of capital gain on condition that there is no default risk. In this scenario, the coupon rates are seen to be lower than the yield as in Table 7-4.

Bond Prices and Term-to Maturity under Changing Yield

The conclusions drawn in the previous section are useful guides to investor. However, it has an assumption that all factors including the yield remain unchanged as the bond approaches maturity. Let us now remove the restriction on unchanged yield.

Bond prices, Term-to-Maturity and Increasing Yield

Instead of assuming that the yield or money interest rate is unchanged, we shall now assume that interest rates or yield increase by 0.1% ever year for the bond selling at a discount. From table 7-4, the assumed yield was 7.4538% and this is the yield to start with in the second column of table 7-7 below. The effect which shows that the bond price will eventually increased to its par value of RM1,000 is seen as follows:

Table 7-7

Year to maturity	Yield to maturity	Price
10	7.4538%	RM 900.00
9	7.5538%	RM 901.11
8	7.6538%	RM 903.70
7	7.7538%	RM 907.92
6	7.8538%	RM 913.92
5	7.9538%	RM 921.90
4	8.0538%	RM 932.06
3	8.1538%	RM 944.65
2	8.2538%	RM 959.95
1	8.3538%	RM 978.28
0	8.4538%	RM1,000.00

Bond Prices, Term-to-Maturity and Decreasing Yield

Our next test is conducted based on the bond selling at premium RM1,100 under declining interest rates in the money market. Again, we will assume that interest rate drops by 0.01% every year for a 10 year period till the bond matures. The effect which shows that the price eventually drops to RM1,0000 is shown in Table 7-8 as follows:

Table 7-8

Year to maturity	Yield to maturity	Price
10	4.7224%	RM 1,100.00
9	4.6224%	RM 1,099.59
8	4.5224%	RM 1,097.37
7	4.4224%	RM 1,093.23
6	4.3224%	RM 1,087.03
5	4.2224%	RM 1,078.65
4	4.1224%	RM 1,067.96
3	4.0224%	RM 1,054.86
2	3.9224%	RM 1,039.23
1	3.8224%	RM 1,020.97
0	3.7224%	RM 1,000.00

Relationship between Coupon Rate and Volatility

There is a relationship between the coupon rate and the volatility of bond prices. In order to illustrate this relationship, let us assume we have 6 bonds with similar term to maturity of 10 years but different coupon rates of 0, 2%, 4%, 6%, 8% and 10%. In Table 7-9, we can see how bond prices change and the percentages of change when required rate of return increases from 3% to 6% due to changes in money market conditions.

Table 7-9

Bond	Coupon Rate	Price at 3% yield	Price at 6% yield	Change in %
A	0.00%	744.09	558.39	-24.96%
B	2.00%	914.70	705.60	-22.86%
C	4.00%	1085.30	852.80	-21.42%
D	6.00%	1255.91	1000.00	-20.38%
E	8.00%	1426.51	1147.20	-19.58%
F	10.00%	1597.11	1294.40	-18.95%

Table 7-9 shows that zero coupon bonds is the most volatile bond as it suffers the most in reduction of prices when the yield is increased from 3% to 6%. The bond with the highest coupon rate is the least sensitive to changes in yield or the market interest rate.

Application:
When interest rate is seen to be going up, investors holding coupon bonds will suffer most. Therefore, the zero coupon bonds should be liquidated first. On the other hand, when interest rates are seen to be dropping, bond investors should buy in zero coupon bonds.

Major Rating Agencies and How Bonds are being Rated

In Malaysia, there are two rating agencies namely *Rating Agency Malaysia Berhad and Malaysia Rating Corporation Berhad.*

Rating Agency Malaysia Berhad (RAM) was set up in November 1990 with a paid-up capital of RM10 million. This marked a breakthrough in the development and growth of Malaysian capital market. In 1992, rating of creditworthiness of Malaysian corporate enable bonds was made compulsory. This has enabled the rapid growth of credit rating industry as investors demand for credit ratings at that time was low. In ensuring greater transparency and cultivating market confidence, it accelerated the development of the domestic corporate bonds as an attractive alternative source of funding compared to the banking and equity funding. All the while, in the Malaysian capital market, corporate bonds or private debt securities lagged behind the other two pillars, namely the equity and banking sectors.

RAM was incorporated as a public limited company with 51 shareholders including two foreign institutions, with none holding more than 4.9% stake. This structure will ensure the independence and credibility of the operation.

The services provided by RAM include rating of corporate bonds, financial institution and "claim paying ability ratings" for evaluating an insurance institutions' financial strength. RAM has been ranked the top domestic rating agency in the Asia Pacific Economic Cooperation (APEC) region by the Asian Development Bank in April 1997.

RAM consists of five departments, the rating, business development and information services, economics and market research, corporate communications and training, electronic data processing, and accounts and administration department.

Malaysia Rating Corporation Berhad (MARC) was incorporated in October 1995 with a paid up capital of RM10 million. The shareholders consist of major life insurance companies, major general insurance companies, stockbrokers, and discount houses. In order to ensure independence and impartiality in its business operation, no one shareholder is allowed to hold more than 4.9% of its equity. MARC is committed to the development of the capital market by providing quality rating and comprehensive research services. MARC's services include the rating of:

*   Private debt securities;
*   Islamic capital market instruments;
*   Asset-backed securities;
*   Corporations;
*   Issuers;
*   Financial institutions; and
*   Insurance companies' claim-paying ability.

Ratings help to complement the disclosure system of corporations and enhance the transparency of the capital market. This will enable investors to make informed decisions backed by reliable and dependable qualitative and quantitative information.

MARC undertakes intensive research into issues and issuing institutions to provide investors with standardized indications on the ability and reliability of principal and interest repayment. All ratings are reviewed periodically to provide the latest updated rating information possible to investors. Ratings provide investors with dependable and comparable credit risk information, exposing them to a wider variety of market segments.

On the other hand, ratings provide issuers access to a wider pool of investors, both locally and globally. This is very important in a developing economy like Malaysia, as it increases the financing options and provides reduced financing cost, especially for high-rated issuers. Ratings and rating reviews help alleviate investors concerns and maintain investors' confidence by providing current and comprehensive information.

Corporate Debts/Bonds Rating

Corporate debt/bonds rating specifically assess the likelihood of timely repayment of principal and payment of interest over the term of the bond.

The Rating Process of RAM

The rating process starts with the corporate issuer approaching the rating agency for a rating formally. Normally this takes place after the issuer has authorized a bank to manage and advise on the issue of bonds. At this stage, the issuer has to provide a list of information to the rating agency. Such information includes the company history, supporting historical and projected financial statements, and business and industry information relating to the issuer's core operations. A team of analysts will visit the issuer and have discussions with the key management officials. The meeting is to provide an understanding of the management philosophy and its plan for the future. After having a series of discussions, the team will come up with a report and present it for an initial evaluation by

the management comprising all managers and analysts at the agency. This will then be presented to the external rating committee who will decide on the final rating.

Rating methodology adopted by RAM is a consistent analytical framework which covers the industry, business risks, financial risks, and management evaluation of issue. The industry analysis covers the industry's exposure to economic cycles, threat of substitutes, threat of competition, barriers of entry and the industry's growth prospects. Other factors include regulatory trends, international trends, and monetary policies are also included in the analysis.

Ratings Adopted by MARC

Long-term investment grade ratings
(investment-grade rating is designated to high-grade investment bonds, denoting extremely strong capacity to pay principal and interest)

AAA	Indicates that the ability to repay principal and pay interest on a timely basis is extremely high.
AA	Indicates very strong ability to repay principal and to pay interest on a timely basis, with limited incremental risk compared to issues rated in highest category.
A	Indicates the ability to repay principal and to pay interest is strong. These issues could be more vulnerable to adverse developments, both internal and external, than obligations with higher ratings.
BBB	The lowest investment grade category, indicates an adequate capacity to repay principal and to pay interest. More vulnerable to adverse developments, both internal and external, than obligation with higher ratings.

Long-term non-investment grade ratings
(non-investment grade rating represents those securities generally lacking desirable characteristics of investment bonds)

BB	While not investment grade, this rating suggests that likelihood of default is considerably less than that of lower-rated issues.
B	Indicates a high degree of uncertainty, and therefore, greater likelihood of default.
C	High likelihood of default, with little capacity to address further adverse changes in financial circumstances.
D	Payment in default.

Short-term investment grade ratings
MARC's short-term ratings are assigned to specific debt instruments with original maturities of one year or less.

MARC-1	The highest category; indicates a very high likelihood that the principal and interest will be paid on a timely basis.
MARC-2	While the degree of safety regarding timely repayment of principal and payment of interest is strong, the relative degree of safety is not as high as issues rated MARC-1
MARC-3	The lowest investment grade category; indicates that the obligation is more susceptible to adverse developments, both internal and external, the capacity to service principal and interest on a timely basis is considered adequate.

Short-term non-investment grade ratings

MARC-4	The lowest category; regarded as non-investment grade and therefore speculative in terms of capacity to service principal and interest.

Factors Affecting Bonds Prices

Factors that will affect bonds prices include *interest rate, inflation rate, exchange rate, and liquidity in the market.*

Interest rate – market interest rates do affect bond prices inversely. We have demonstrated this relation ship in the earlier section and will not want to repeat it here.

Rate of inflation – "nominal interest rate = real interest rate + rate of inflation." Nominal rates are the market interest rates. There is an argument that if the rate of inflation increases, the nominal or the market interest rate will increase accordingly to attract people with surplus cash to part with their money for future values (that is to put the money into savings). On the other hand, imagine a situation where the rate of inflation is higher than the market interest rate. Do you think you will still want to place your money with the bank or save in bonds (i.e. holding monetary assets)? When the market interest rates are lower than the inflation rate, you would rather withdraw your money to accumulate non-monetary assets like buying properties and goods. Under such situations there is no incentive to save, so demand for bonds will fall, so will the price of bonds. This fall in demand of bond and bond price is due to the high inflation rate.

Exchange rate - can affect the bond price movement in Malaysia before the foreign currency exchange control was introduced. This is due to the market forces of demand and supply. The greater the demand for Malaysian bonds, the higher the price of bonds will be. Similarly, when there are many keen sellers, the prices of bonds will fall. For instance, before the currency and capital control was introduced in Malaysia, if a foreign investor foresaw that the Ringgit Malaysia was appreciating against the U.S. Dollar, he would buy into Malaysian bonds. This move tends to push up the Malaysian bond prices. For the same reason, any investment vehicle in Malaysia is worth buying, so long as the returns are expected to be higher than what his existing fund could earn elsewhere. On the other hand, if the ringgit is seen to be falling, foreign investors holding any bonds or investment in Malaysia are likely to liquidate their investments before the exchange rate moves against them.

Liquidity - is another important determinant of bonds prices. The liquidity here refers to the money market liquidity or supply of funds in money market. A liquid money market (funds can be raised easily) implies lower market interest rate. Accordingly, the coupon rates will be fixed at a lower rate when a bond is first issued. As a result, the bond price is also high. Subsequently, when market liquidity is tight (less supply of fund), interest rates will rise causing bonds price to fall in the secondary market.

On the other hand, in an illiquid capital market, where fund is more difficult to raise, the coupon rate will tend to be high at the time of issuance. Subsequent fall in interest rate will push up the prices of bonds in the secondary market.

The fiscal policy – A reduction in income tax rate will increase the disposable income of the individuals. Higher disposable income could lead to higher level of savings and consequently a more liquid money market. Greater liquidity in the money market leads to lower interest rate and vice versa.

Yield Curve

A yield curve is a line that plots (interest rates) of bonds having equal credit quality but differing maturity dates. The slope of the yield curve gives an idea of future interest rate changes and economy activity.

Yield curve is used as a benchmark for other debt in the market, such as mortgage rates or bank lending rates, and it is used to predict changes in economic output and growth. The most frequent reported yield curve compares the three-month, two-year, five-year, and 30-year U.S Treasury debt. Yield curve rates are usually available at the Treasury's interest rate web sites by 6:00p.m. ET each trading day.

There are three main types of yield curve shapes:

i) Normal (upward sloping curve) – A normal or up-sloped yield curve indicates on longer-term bonds may continue to rise, responding to periods of economic expansion. When investors expect longer-maturity bond yields to become even higher in the future, many would temporarily park their funds in shorter-term securities in hopes of purchasing longer-term bonds later for higher yields.

In a rising interest rate environment, it is risky to have investments tied up in long-term bonds when their value has yet to decline as a result of higher yields over time. The increasing temporary demand   for shorter-term securities pushes their yield even lower, setting in motion a steeper up-sloped normal yield curve.

Normal (upward sloping curve)
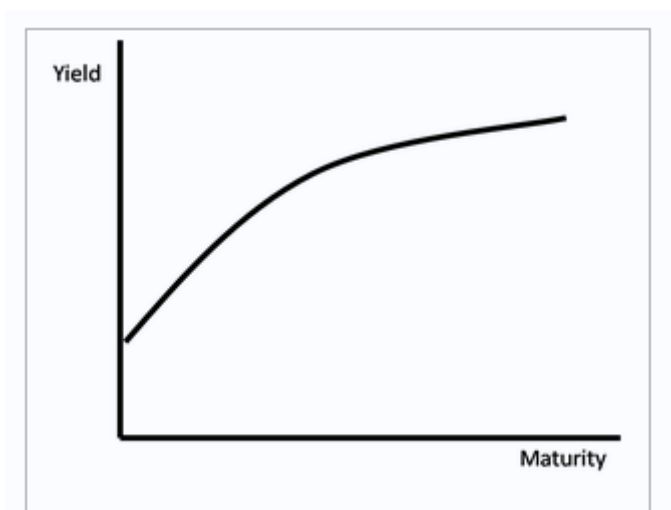
ii) Inverted (downward sloping curve) – An inverted or down-sloped yield curve suggests on longer-term bonds may continue to fall, corresponding to periods of economy recession. When investors expect longer-maturity bond yields to become even lower in the future, many would purchase longer-maturity bonds to lock in yields before they decrease further.

The increasing onset of demand for longer-maturity bonds and the lack of demand for shorter-term securities lead to higher prices but lower yields on longer-maturity bonds, and lower prices but higher yields on shorter-term securities, further inverting a down-sloped yield curve.

Inverted Yield Curve
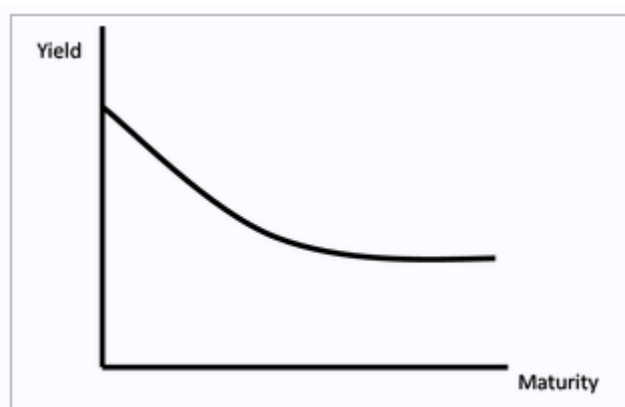
iii) Flat Yield Curve – A flat yield curve may arise from the normal or inverted yield curve, depending on changing economic environment conditions. When the economy is transitioning from expansion to slower development and even recession, yields on longer-maturity bonds tend to fall and yield on shorter-term securities likely rise, inverting a normal yield curve into a flat yield curve.

When the economy is transitioning from recession to recovery and potential expansion, yields on longer-maturity bonds are set to rise and yields on shorter-maturity securities are sure to fall, tilting an inverted yield curve towards flat yield curve.

Flat Yield curve
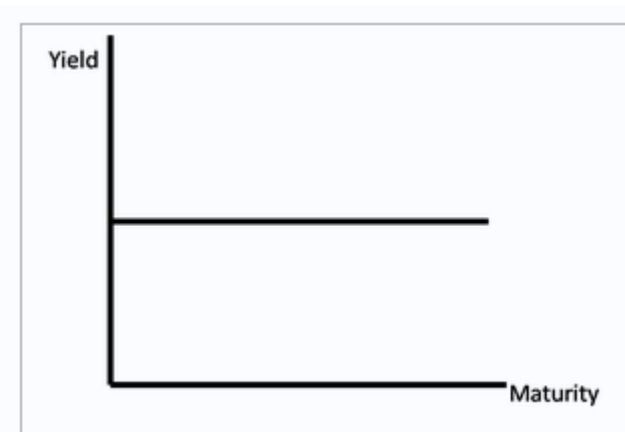
Returns from Investing in Bonds

There are three types return an investor can expect when he invest in bonds. They are current yield, yield-to-maturity and the yield-to-call.

Current Yield

Current yield is simply the ratio between the annual interest income divide by the price of the bond. Supposing we have a 15 year bond with coupon rate of 6.2% per annum payable half-yearly and the price of the bond yesterday was RM1,010. The current yield is then computed as follows:

Current Yield = Annual Interest ÷ Price = RM62 ÷ RM1,010 = 6.14%

One should note that the computation of current yield has omitted the maturity value as another source of cash benefits.

Yield to Maturity

As mentioned earlier, the monetary benefits of investing in bonds are future cash inflows in the forms of interest income and the bond maturity value. Since these cash benefits are future cash benefits, they may be discounted back to present value for purpose of bond valuation. Various discount rates may be used by different investors who have different required rates of return. However, there is a discount rate that equates the present value of future cash inflows of bonds with the purchase price of the bonds. Solving for such a rate is to compute the yield-to-maturity of the bonds. In other words, yield-to-maturity is also the internal rate of return of holding the bonds until maturity. It is the discount rate that equates the present value of all future cash flows of the bonds with the current price of the bonds. Mathematically, it is solving for YTM in the equation below:

$$Price = Int/(1+YTM) + Int/(1+YTM)^2 + Int/(1+YTM)^3 + \ldots.. Int/(1+YTM)^N + MV/(1+YTM)^N$$

Let us use an example for illustration. The price of a 15-year bond is assumed to be RM1,010 and the coupon rate is 6.2%, payable annually. If the maturity value is RM1,000, what is the YTM?

Suggested solution

This will be a case where we solve for YTM in the equation with following variables as follows:

$RM1,010 = RM62/(1+YTM) + RM62/(1+YTM)^2 + RM62/(1+YTM)^3 + \ldots RM62/(1+YTM)^{15} + RM1,000/(1+YTM)^{15}$

Solving for YTM in the equation can be tedious if we use interpolation technique. Using financial calculator, the YTM or the IRR shall be:

Input	Display
15, N	15
1010, ±, PV	- 1010
62, PMT	62
1000,FV	1000
I/YR	6.096

YTM can also be computed when interest payments are half-yearly. In this case, the number of payments shall be increased to 30 and the interest payment every 6 months shall be RM62 ÷2 = RM31.

Calculators input are as follows:

Input	Display
2, shift,	P/YR
15, shift, N	30
1010, ±, PV	- 1010
31, PMT	31
1000,FV	1000
I/YR	6.097

Results of the computation show that the YTM is marginally higher than the situation when interest is payable half-yearly.

After the yield to maturity has been computed, the next task is to compare it with the required rate of return. If the YTM is higher, the bond is said to be able to provide sufficient return to meet requirement. Any return in the form of YTM lower than the required rate will not be considered for investment.

Yield-to-Call

The yield to call is the IRR for holding a bond until the call date when a bond issuer can exercise prepayment of its bonds. It arises from the argument that in cases when bonds are callable, investors may not have the chance to hold the bond until maturity. It can enjoy the coupon rates until the date of call. As such, what is more relevant to investors should be the yield to call instead of yield to maturity. Since a call premium is added on to the par value, the future maturity value shall be the par value plus the call premium. In addition, the number of interest payments shall be the frequency of interest payments multiply by the number of years before bonds become callable.

An illustration to show its computation is as follows:

A call premium of RM30 shall be paid to investors of a 15-year callable bond with coupon rate of 6.2% payable half-yearly and par value of RM1,000. The bond is callable after a period of 5 years. Assuming a purchase price of RM1,010, what is the YTC?

Using financial calculator, the inputs are as follows:

Input	Display
2, shift, P/YR	
5, shift, N	10
1010, ±, PV	- 1010
31, PMT	31
1030,FV	1030
I/YR	6.48

The yield to call in this example is 6.48%. For purpose of application, the yield to call of a bond must be higher than the required rate of return before it can be accepted for investment.

Self Assessment

Multiple Choice
Circle the letter of the correct choice for each of the following.

1. There are two bonds, A and B. Both bonds are presently selling at their par value of RM1,000. Each pays interest of RM120 annually. Bond A will mature in 5 years while bond B will mature in 6 years. What we can say about the bond value if the yields to maturity on the two bonds change from 12% to 14%.
   A.   Both bonds will increase in value but bond A will increase more than bond B
   B.   Both bonds will increase in value but bond B will increase more than bond A
   C.   Both bonds will decrease in value but bond A will decrease more than bond B
   D.   Both bonds will decrease in value but bond B will decrease more than bond A

2. If the prevailing interest rate in the market is low, which of the following bonds is most likely to be called by the issuer?
   A.   Zero coupon bonds
   B.   Coupon bonds selling at a discount
   C.   Coupon bonds selling at a premium
   D.   Floating rate bonds

3. A bond is termed as a premium bond when _____.
   A.   It coupon rate is greater than its yield to maturity.
   B.   It coupon rate is less than its yield to maturity.
   C.   It coupon rate is equal its yield to maturity.
   D.   It coupon rate is zero.

4. What is the duration of 5-year zero coupon bond?
   A.   4.5
   B.   5.0
   C.   5.5
   D.   None of the above

5. Ceteris Paribus (other things being equal), a bond's duration is _____.
   A.   Higher when the coupon rate is higher
   B.   Lower when the coupon rate is higher
   C.   The same when the coupon rate is higher
   D.   Indeterminable when the coupon rate is higher

6. Ceteris Paribus (other things being equal), which of the following has the shortest duration?
   A.   20-year maturity and an 8% coupon bond
   B.   20-year maturity and a 12% coupon bond
   C.   15-year maturity and a 0% coupon bond
   D.   10-year maturity and a 15% coupon bond

7. In which set of conditions would a bond show the greatest price volatility?
    A.   A high coupon and a short maturity
    B.   A high coupon and a long maturity
    C.   A low coupon and a short maturity
    D.   A low coupon and a long maturity

8. The current price of a coupon bond is RM915.48. It pays a coupon interest of RM60 annually and has 5 years remaining to maturity. Its par value is RM1,000. The yield to maturity of this bond is approximately_____.
    A.   6%
    B.   7%
    C.   8%
    D.   9%

9. Find the Macaulay duration for a 5-year RM1,000 par value bond, will a 6% coupon and a yield to maturity of 8%. Interest is paid annually.
    A.   6.44 years
    B.   5.25 years
    C.   4.44 years
    D.   2.50 years

10. What should be the current selling price of a zero-coupon bond that has a yield to maturity of 5%, remaining years to maturity of 16 years and a par value of RM1,000?
    A.   RM458.00
    B.   RM641.00
    C.   RM789.00
    D.   RM1,100.00

Answers: 1.D, 2.C, 3.A, 4.B, 5.B, 6.D, 7.D, 8.C, 9.C, 10.A

Chapter 8

Derivatives Securities

Chapter Objectives

On completion of this chapter you should have a basic knowledge on:

- General understanding of derivatives

- The options, call and put options

- How options work

- Trading strategies of options

- Warrants and Call Warrants

- The financial futures, types and futures contracts

- Trading strategies of futures

- The risk involved in futures and options trading.

Introduction

In this chapter, we shall examine two financial instruments, futures and options, commonly known as derivatives. These instruments are derived from some other basic underlying instruments such as exchange rates, interest rates, share prices and indices. Therefore the value of derivatives depends on the value of the underlying instruments. These instruments are useful because they can be used to reduce the risks associated with interest rate, exchange rate, commodity and share price fluctuations.

Bursa Malaysia Derivatives Exchange Berhad is the organized exchange where securities instruments such as futures and options are traded. Currently the following 9 products are traded on the Exchange, namely, KL Composite Index Futures, KL Composite Index Options, Crude Palm Oil Futures, 3-month Kuala Lumpur Interbank Offered Rate (KLIBOR futures), 3-year Malaysian Government Securities Futures, 5-year Malaysian Government Securities Futures, 10-year Malaysian Government Securities Futures, Crude Palm Kernel Oil Futures and the Single Stock Futures. More contracts will be introduced in the future to meet the need for more risk management instruments.

We shall also examine securities such as convertibles and warrants. These two types of securities are also derivatives. However, they are derivatives issued by firms that own the underlying assets. (In the case of options and futures, the issuers need not be the owners of the underlying assets). Convertibles such as loan stock and warrants are actively traded by individuals in the Bursa Malaysia.

Options

An options contract can be defined as a legal agreement that gives the buyer the rights, but not the legal obligation, to buy or sell a predetermined quantity of underlying product at a specified price within a period of time. However, the seller of options has a contingent liability or obligation to fulfill if the buyer chooses to exercise that right.

The buyer of the options pays a premium to obtain the privilege to complete the deal only if the prices move in his favour. On the other hand, the seller of the option receives the premium and has to oblige when the buyer exercises his option.

An option contract is a legally binding contract between the buyer and the seller. It only ends when the option is exercised or upon expiry of the option.

Key Elements of an Option

The key elements of an option can be classified into 6 areas:
i.   types or categories of option
ii.   underlying assets or instruments
iii.   exercise or strike price
iv.   exercise style
v.   expiry or maturity date
vi.   premium

The key elements are further explained below.

Types of Option: Options can be classified into *calls* and *puts*

A **call option** gives the option buyer the right, but not the obligation, to buy a specified quantity of an underlying product at a specified price within a specified period of time. When call option is exercised, the option seller is legally obliged to buy the underlying asset.

A **put option** gives the option buyer the right, but not the obligation, to sell a predetermined quantity of an underlying product at a specified price within a specified period of time. When a put option is exercised, the option seller is legally obliged to buy the underlying asset from the put option buyer.

Underlying Asset: An option has to specify the asset to be bought or sold. Such asset is known as the underlying asset or instrument. The underlying assets which can be in tangible or intangible forms include: a specific share which is known as individual share option, a stock index such as the KLCI option, an identifiable debt instrument, a foreign currency and commodity such as gold.

Exercise or Strike Price: This refers to the contractual price which the option buyer needs to pay to acquire the underlying asset in the case of a call option. However, in the case of a put option, this refers to the contractual price that the option buyer will receive for disposing the underlying asset.

The option buyer is granted special privilege. He has the rights to exercise the option but has no legal obligation to do so. In order to exercise the option, option buyer will of course do so when situations favour him.

In the case of call option, option buyer will only exercise the rights to purchase when the prevailing market price of the underlying asset is higher than the strike price. We define the call option as "in-the-money" in situation where the market price is higher than the strike price. By buying the underlying asset from the option seller, the option buyer will be able to sell it in the exchange at higher market price. The definition of **"in-the-money"** for put option is just the reverse of call option. In the case of put option, if the market is lower than the strike price, the put option buyer is able to buy from the market and sell it to the option seller to make a profit.

Options can also be classified as **"out-of-the money"**. For a call option, if the prevailing market price is lower than the strike price, the option buyer will not be able to "buy low" from the option seller and "sell high" in the market. Situation where the strike price is higher than the prevailing market price in a call option is classified as "out-of-the-money". For a put option, "out-of the-money" refers to situation where the strike price is lower than the prevailing market price.

Option is described as **"at-the money"** when the strike price is the same as the prevailing market price. This classification applies to both the call and put option.

Exercise Style: Two styles of options are available. One is termed as the *American Style* option which allows the option to be exercised anytime before the maturity date. Another style of option is the *European Style* option which permits the option to be exercised only upon the maturity date. The only form of option, KLCI Option in the Bursa Derivatives Exchange is an European Style option. The flexibility of American Style option suggest that it is more valuable than the European Style option.

Expiry or Maturity Date: For an American style option, this is the last day on which an option can be exercised. In the case of European Style option, it is also the day on which the option can be exercised. The expiry date or the maturity date defines the remaining time available for option buyer to make buying or selling decisions. The longer the time available for decision making, the better is the chance for the option to move into the "in-the-money" situation. Hence, option is more valuable when the time to expiry is longer.

Premium: This is the price paid by option buyer to the option seller. In consideration of this premium, option buyer is given the rights to exercise buying or selling under the option.

Buyers & Sellers of Options

Just like any other contract, an options contract will have a buyer and a seller. Buyers in option are called "longs" while Sellers of options are called "shorts". Person who sells an option is also known as option writer. Another name for option buyer is option taker. For a transaction to materialize, buyers and sellers must take opposing views of the future movements of an underlying asset. Lack of interested buyers and sellers mean that no transactions can be generated.

How Call Options Works

Let us now take a look at how a call and put options work. As an investor, you would want to make a profit from these deals. For example, if you have a hunch that the share price of A company trading at RM5 will go up, you could possibly buy a call option at RM500 instead of buying 1,000 share at RM5,000. By buying this option, you have obtained the right to buy 1,000 shares at RM5,000 from the option writer and sell it at a higher price before the option expires. If the price goes up to RM7 per share, you would exercise your call option to buy one lot of share at RM5,000 and sell for RM7,000. This enables you to make a gain of RM1,500 (RM7,000 - RM5,000 – RM500).

However, an alternative is to spend RM5,000 to buy 1,000 shares at RM5 per share and sell it later when the price goes up to RM7 per share. In this alternative, you are required to have an initial capital of RM5,000, compared to the capital outlay of RM500 in call options. In terms of return on investment, the options instrument gives a much higher rate of return on capital as follows:

Initial capital = RM500
Gain = RM1,500 (RM7,000 - RM5,000 – RM500)
Return on capital = (RM1,500/ RM500) x 100% = 300%

In the case of outright purchase of share at RM5000, return on capital can be calculated as follows:
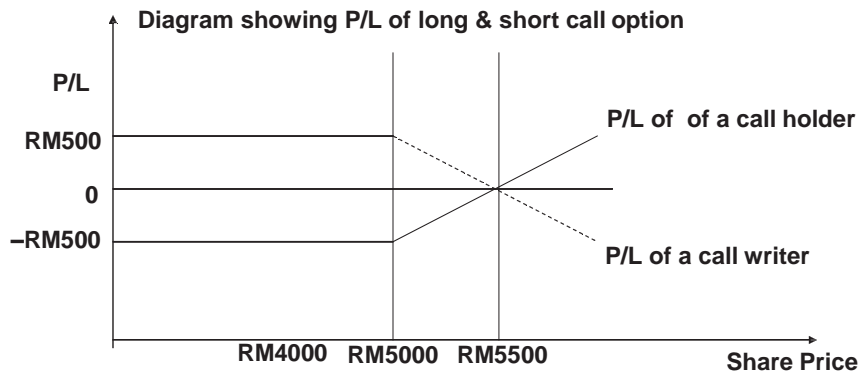
Initial capital = RM5,000
Gain   = RM2,000 (RM7,000-RM5,000)
Return on capital = (RM2,000/RM5,000) x 10 = 40%.

However, the expectation of price increase may not materialize. If the price of share falls below RM5, you will not exercise your right, but allow the option to lapse. Your loss is only the premium of RM500 that you have paid.

> Case Example: A Buyer of American style option has an in-the-money option which is about to expire but the amount in-the-money is lower than the premium paid to acquire the option. The exercise price and the prevailing market price are RM5,000.00 and RM5,250.00 respectively. Based on premium paid of RM500, should the investor exercise the option?

Suggested solution: The question may be answered using a diagram to depict the profit and loss situation of a call option buyer and seller as follows.

Profit of Option Buyer = (Market price – Exercise price – Premium) **or**

Premium paid, whichever is the higher

Diagram showing P/L of long & short call option

P/L

RM500

0

−RM500

P/L of of a call holder

P/L of a call writer

RM4000   RM5000   RM5500

Share Price

In order for the option buyer to breakeven, the market price must be able to absorb the total cost that comprises the price of the premium and the exercise price. If the call option is not exercised, the loss of the option buyer shall be the premium paid of RM500 upon expiry of the option. By exercising the option when the market price is RM5,250, the loss can be reduced to RM250. Notwithstanding the aforesaid, if the remaining time before expiry is ample, the investor may choose to wait with the hope that the market price will go up further before exercising the option.

The profit of the call option will increase with the market price of the asset. The maximum profit is the maximum price minus the exercise price, less the premium. The maximum loss is the premium paid to acquire the asset. On the other hand, the maximum profit of the option writer is the premium received. The maximum loss is the maximum gain of the option buyer. The risk of option writer is deemed to be higher based on the aforesaid. In practice, however, the option writers have better understanding of the product and protect its interest in many ways. Some of the option writers may be owners of such shares. When existing shareholders get into position as call option writers, they are said to have written covered option. The risk is much lower. In fact, for those who have significant shareholdings after writing a call option may even wish that price of shares move higher. Option writers who do not own any of the underlying asset on which he wrote an option is said to have written a "naked option".

How Put Options Work
A put option allows its taker to sell a predetermined number of shares of an underlying asset at a specified price within a specific time. Let us assumed that a put option with exercise price of RM5,000 is priced at RM500. An existing investor which expects the share trading at RM5,000.00 to fall may want to buy the put option to protect its position. The alternative for the investor is to sell the share at RM5,000.00 outright.

Assuming that after the purchase of put option the share price actually drops to RM3,000.00, the investor may still be able to sell the share at RM5,000. The right of the investor to sell at RM5,000 when the prevailing market is RM3,000 is due to the premium paid to acquire the rights. The put option is therefore a financial risk management tool.

On the other hand, if the price of the shares moves up instead, the investor will not exercise the puts option, but allow it to lapse. The profit and loss implication of the put option is as follows:

Profit of Put option buyer = Exercise Price – Market price – Premium.
Profit of put option writer = Premium + Exercise price – Market price
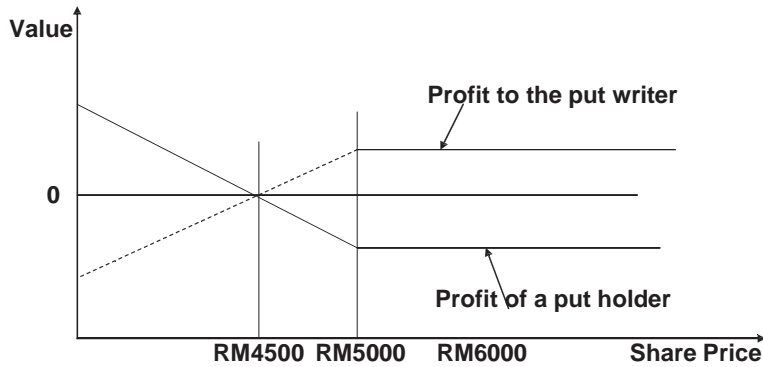
With reference to the diagram above, you may be able to make certain observations:

a.   The maximum profit of option buyer = Exercise price – Market price – Premium = Exercise price, if it both the premium and the market price = 0.
b.   The maximum loss of option buyer = Premium when option is not exercised
c.   The Maximum profit of option writer = Premium when option is not exercised.
d.   The maximum loss of option writer = Market price, if both premium and exercise = 0.

Fundamental Value of Calls and Puts

The value of call and put options depends on the ultimate exercised price stated on the option, and the prevailing market price of the underlying share/asset. The value of a call options is determined according to the following simple formula:

Fundamental value	{	market price of underlying share	strike price on the cal	}

Therefore, the fundamental value of a call options is the difference between the market price and the strike price. A call options will have a value whenever the market price of the underlying shares exceeds the strike price specified on the call options. For example, you have entered into a call options with a strike price of RM5 per share, and the current market price is RM6, your call options value is RM1000; i.e.[(RM6 - RM5) x 1000, assuming contract multiplier of RM1000].

However, a put options is valued with a different formula as follows:

Fundamental value of a put	{	strike price on the put	market price of underlying shares	}

In this case, a put options has a value as long as the strike price is higher than the market price of the underlying shares.

Prices of Options

Prices of options can be divided into two elements. The fundamental or the intrinsic value of the options is driven by the current market price of the underlying shares/securities [which we have covered earlier]. The other element of an options price is referred to as the time premium, and this represents the excess value embedded in the options price. (Two methods of valuing options are the Binomial Option Pricing Model and the Black-Sholes Option Pricing Model). This is the amount by which the options price exceeds the options fundamental value. The details are as follows:

A Typical Options Price Quote

Share Price	Strike price	Expiration months		
		February	**March**	**June**
7.1	6.5	-	0.7	0.9
7.1	7.0	0.2	0.3	0.6
7.1	7.5	0.01	0.1	0.3

The following table shows the breakdown of options prices into two elements of fundamental value and time premium.

Share Price	Strike price	Expiration months		
		February	**March**	**June**
		(Fv + tp = op)	(Fv + tp = op)	(Fv + tp = op)
7.1	6.5	-	0.6 + 0.1 = *0.7*	0.6 + 0.3 = *0.9*
7.1	7.0	0.1 + 0.1 = *0.2*	0.1 + 0.2 = *0.3*	0.1 + 0.5 = *0.6*
7.1	7.5	- + 0.01 = *0.01*	- + 0.1 = *0.1*	- + 0.3 = *0.3*

Where Fv = fundamental values i.e. difference between share price and strike price.
e.g., at strike price of RM6.5, Fv =RM7.1 – RM6.5 = RM0.6

tp = time premium, the excess of option price over the Fv (op-Fv = tp)
e.g., at strike price of RM6.5, option price = RM0.7, and the Fv = RM0.6,
tp = RM0.7-RM0.6=RM0.1.
op = options price.

From the second table, the italics bold figure are the options prices quoted as in the first table, but have now been broken into two elements of fundamental value and time premium. For example the options price for March at strike price of RM6.5, is RM0.7 and this is made up of fundamental value of RM0.6 and time premium of RM0.1.

Trading Strategies for Options

The two most common strategies are speculation and hedging. There are also other more complex strategies in the more complex markets.

Speculation – Buying options is just another way to invest in the shares/underlying securities. Speculator may find this to be a more cost effective way to speculate as the capital involved is

comparatively lower compared to buying into the shares/underlying securities. Through buying options, it is possible to generate a much higher rate of return on capital compare to buying into the shares/underlying securities. The earlier example shows a return of 300% through purchase of options as compared to only 40% when direct purchase of share is made. The point to learn here is, if you feel that the market price of a particular share is going to move up, one way of capturing the price appreciation is to buy a call on the share. In contrast, if you feel that the price of the share is about to fall, a put options will also generate profit for you. Therefore, investors buy options rather than shares whenever options are likely to yield a higher return. The principle behind this is to get the biggest return from your investment, and very often this can be done with puts and calls options because of the added leverage they offer. Furthermore, options also give protection on the downside risk. The most you can lose is the cost of the options which is always less than the cost of the underlying share/securities.

Hedging – Hedging is simply an action carried out to reduce risk. For example, if you intend to buy a share, and want to protect your capital and minimize a loss, you can actually at the same time buy a put options. In this case, if the share price falls, you will be protected by the put options. If the share price goes up, you can enjoy your capital gain. Your loss will be limited to the price paid for the put options. Suppose you bought a share at RM5.00 per share, and pay RM200 for a put with a strike price of RM5.00. Now no matter what happens to the share price over the life of the put options, your maximum loss is RM200, there is no limit as to your capital gain.

A put option can also be used to safeguard or protect your current position or existing gain. If you have bought some shares some time ago, and now it has appreciated from RM1,000 to RM10,000, a put options which gives you the right to sell at RM10,000 would provide the type of downside protection you need. In other words, you can keep the share to earn dividend with the assurance of being able to sell the share at RM10,000 any time before the expiry of the options. This is indeed the instrument required for financial risk management by fund managers. There is no need to sell a large quantity of shares in order to safeguard the interests of the investors. In fact, if the fund managers were to liquidate a large number of shares, the move will invariably force down the share prices.

We shall look at the only product available in the following section.

KLCI Options

Basically, this is a stock-index option launched in early December 2000. The underlying asset is the FBM KLCI Futures (FKLI) and its contract code specified by the Exchange is "OKLI". A call options contract is denoted by C OKLI whereas a put options contract is indicated by P OKLI. The KLCI options are European style options. This means that they can only be exercised on the expiry dates. The value of the index option moves according to the direction of composite index. As there is no share or other financial assets backing these options, settlement is defined in terms of cash. An extract of the contract specification is as follows:

Contract Code	Calls : C OKLI Puts : P OKLI
Underlying Instrument	FBM KLCI Futures (FKLI)
Contract Size	One FKLI contract
Minimum Price Fluctuation	0.1 index point valued at RM5.00.
Contract Months	Spot month, the next month, and the next two calendar quarterly months. The calendar quarterly months are March, June, September and December.
Trading Hours	First trading session: Malaysian 8:45 a.m. to 12:45 p.m. Second trading session: Malaysian 2:30 p.m. to 5:15 p.m.
Exercise Price Interval	At least 13 exercise prices (6 are in-the-money), 1 is at-the-money and 6 are out-of-the-money) shall be set at interval of 10 index points for the spot and next month contracts. At least 7 exercise prices (3 are in-the-money, 1 is at-the-money and 3 are out-of-the-money) shall be set at interval of 20 index points for the next 2 quarterly month contracts.
Option Series	At the start of daily trading, there shall be at least an in-the-Money Exercise Price, an Out-of-the-Money Exercise Price, and an approximate At-the-Money Exercise Price for each contract month of both the Call Options and Put Options. A new option series will not be introduced if it would expire in less than 10 Business Days before the Expiration Date.
Exercise	European style exercise. Options shall be exercised in accordance with the rules of Cleaning House.
Last Trading Day	The last Business Day of the contract month.
Final Settlement	Cash Settlement based on the Final Settlement Value.
Settlement of Option Exercise	In the absence of instructions delivered to the Clearing House, an option that is in-the-money at expiration shall be automatically exercised. Exercise results in a long FKLI position, which corresponds with the option's contract month for a call buyer or a put seller, and a short FKLI position for a put buyer or a call seller. The resultant positions in FKLI shall then be cash-settled based on the final settlement value of FKLI.
Speculative Position Limit	10,000 FKLI-equivalent contracts (a combination of OKLI and FKLI contract), net on the same side of the market in all contract months combined.

For example, suppose the FKLI in June is trading at 1200 and the September 1200 call option is quoted at 25.0 index points. This represents a premium of RM1,250. The option gives the speculator the right to buy and FKLI at 1200 at any time before the expiry of the contract. Long September OKLI 1200 Call Option, Premium of 25.0 points (RM1,250). If the FKLI expires at or below 1200, there will be a loss of 25 points which is equivalent to RM1,250 (the full premium).

The break-even point (where there is no profit or loss, if commissions are ignored) is 1225 – equal to the exercise price of 1200 plus the premium of 25.0. If at expiry, the underlying index is trading at a point between 1200 and 1225, the option buyer will be able to recover a portion of the premium by exercising the option. If the FKLI is above 1225 at this time, there will be a linear relationship between the index and the option profit. If the level has moved up to 1240 by the option expiry date, the profit on the option will be RM750 (the 40 points difference between the exercise price and current index level, less the option premium of 25 points equals 15 points x RM50).

The minimum option price movement of the KLCI option contract, known as the minimum tick, is 0.1 index point. Each tick value is worth RM5.00. The exercise or the strike price intervals for KLCI options is fixed at increments of 10 index points, for example 1410, 1420, 1430 for the spot and next month months and 20 index points for the next nearest two quarters. At the start of daily trading, there shall be at least an In-the-Money Exercise Price, an Out-of-the-Money Exercise Price, and an approximate At-the-Money Exercise Price for each contract month of both the Call Options and Put Options.

Individual Stock Options

The Exchange is looking forward to launch this individual stock options contract in the future. These individuals stock option contract will be based on stocks listed on the KLSE. The approach will be the Americans style options with a physical delivery at settlement.

Warrants/TSR and Call Warrants

The discussion on options will not be complete without mentioning warrants/transferable subscription rights and call warrants.

Warrant/TSR: A warrant/TSR is a rights given to the holder to purchase a fixed number of ordinary shares at a predetermined price during a specified period of time. How does this differ from the options we discussed earlier? The major difference lies in its transferability. In other words, warrants/TSR not exercised before expiry can be sold to other investors. It is because of this feature of transferability that warrants are also known as Transferable Subscription Rights (TSR). Another difference between an option and a warrant is that an option can be an offer to buy or an option to sell an underlying asset. In the case of warrant, only the buying rights are accorded to the holders.

In the case of warrant/TSR, the issuing corporation of ordinary shares is the same as the party that issued the warrants. For example, in January 2008, a company listed in the Bursa Malaysia, Hovid issued warrants that were priced at 2 sen per warrant. Each warrant is entitled to subscribe for new shares in Hovid at exercise price of 36 sen. When warrant holders exercised their rights, Hovid is required to issue new shares.

Warrants may also be issued as sweeteners to attract subscription of loan stocks, preferred shares or rights issues. When they are issued in conjunction with any of these instruments to raise funds, they are issued free of charge but on condition that the shareholders must subscribe for the underlying instrument. The concept of **"detachability of warrants"** also arises as a result of issuance of warrants in conjunction with debt, preferred share or ordinary share. Most warrants are said to be detachable in that they can be sold separately from the security to which they were originally attached. Therefore, an investor who acquired a loan stock that come with a warrant, could sell the warrant separately from the loan stock.

Theoretically, the value of a warrant is to be represented by the difference between the market price and the exercised price. If the market value is lower than the exercised price, the value of warrant should be zero. However, the time left to the warrant expiration date provides a chance of improvement in prices and this helps to explain why prices of warrants are positive although market price is lower than the exercised price. The following are examples of warrants quoted in the Bursa Malaysia:

Warrant name	Exercise Price	Exercise Ratio	Listing Date	Expiry Date
AEON-CZ	1.15	3	10 July 20	29 Mar 21
ABMB-C4	2.35	5	10 July 20	29 Mar 21
CMSB-C20	1.88	4	10 July 20	29 Mar 21
DAYANG-C9	1.6	4	10 July 20	29 Mar 21
ECOWLD-C2	0.48	2	10 July 20	29 Mar 21
MBMR-CQ	3.5	6	10 July 20	29 Mar 21

The few examples above show that some of the warrants have positive values despite the fact that the exercised prices are well above the current market prices. This is due to the presence of time premium of warrants. In practice, the preference in favour of warrant can be attributed to various factors explained under the reasons for purchasing call options. They will not be repeated here.

The loss associated with the trading in warrants is usually confined to the acquisition price of the warrants. The amount paid will not be recoverable if the warrants are not exercised upon maturity. Therefore, investors buying warrants must not adopt a passive strategy of "buy and hold". Financial planners in reviewing the assets of their clients should make a point to ensure that such investments be classified "ICU" as they in fact require intensive care. Negligence or overlooking could result into total loss.

Call warrants: Call warrants differ from the TSR in that they are issued by parties other than the corporations that issued the underlying ordinary share. In addition, the expiry date relating to call warrants can be up to 2 years from date of issuance as compared with the duration of up to 10 years for TSR. Since these third parties are not able to issue new shares, they will have to buy from the stock exchange if warrant holders exercise their rights of subscription. Another way to settle the claim of the call warrant holder is to cash-settled the obligation. Usually, the way of settlement is stated upon issuance of the call warrants.

In view of the arrangement that issuers' obligations under the call warrants can be cash-settled, it is getting more popular for investment bankers in Malaysia to issue call warrants relating to securities traded in other exchange. The issuers require interested investor to pay a premium for the call warrants. The exercise prices of the call warrants were also specified. Upon maturity, the warrant holders are paid accordingly if the market price of the underlying asset is higher than the exercise price.

Call warrants can be risky to the writers in a bullish market. In order to minimize their losses, issuers usually assigned short maturity period of about 6 months although the guideline on maturity date for call warrants is not to exceed 2 years. The gain associated with call warrant can be limited due to the shorter expiry date. In view of this, investor looking for long term capital appreciation should avoid call warrant as the appropriate instrument.

Factors Affecting Value of Warrants

Since warrants resemble call options in many ways and individual share options are still not available in Bursa Malaysia, it may be better for us to focus more on factors that affect price of warrants. Several factors that affect the value of warrants are as follow:

i.   Price of the underlying asset: The value of a warrant is directly related to the market price of the underlying share. The higher the market price of the underlying share, the higher is the value of the warrant.

ii.   Exercise price of the option: In the case warrant/TSR, the exercise price is the main determinant in deciding whether a call option shall be exercised. It sets the barrier to be overcome before an option can have any fundamental value.

iii.   Time to expiry: As the time to expiry of the warrant gets closer to the maturity date, the value of the warrants drops closer to zero. Ultimately, the warrant is worthless after expiry. A warrant with longer time to expiry should therefore be more valuable. This can be seen in the case of OSK Prop-WB which has a longer date of expiry and higher price as compared with OSK Prop-WA.

iv.   . Market volatility: Volatility which measures the price fluctuations of the underlying asset also affect the value of a warrant. The greater the price fluctuations, the higher should be the price of the warrant.

v.   Current interest rate: In general, high interest rate favors speculators' demand for warrant as compared with purchasing the underlying assets directly. This is because purchase of warrants involves lower capital outlay and hence lower cost of funds.

vi.   Payment of cash dividend: Payment of cash dividend will reduce the value and the price of the underlying share and hence reduce the value of a warrant. This is because the market price of the share is directly related to the value of its warrants.

Financial Futures and its Characteristics

Futures contracts are legally binding agreements, made on the trading floor of a futures exchange (or via an electronic screen dealing system), to buy or sell the underlying product at a specified time for a specific price determined at the time of contract. The underlying product can be gold, palm oil, a foreign currency, index, interest rates or shares.

A futures contract can either be settled through physical delivery of the underlying product or through cash settlement. A cash-settled contract requires payment on the contract expiration date and the payment sum represents the difference between the initial futures price and the price at settlement. On the other hand, deliverable contracts require the seller to deliver and the buyer to accept delivery, unless their positions are settled before expiry. In most cases, actual delivery rarely takes place because of the settlement before expiry.

Example of a deliverable contract in Malaysia is CPO futures contract, whereas KLSE CI futures, and 3-month KLIBOR are cash settled contracts. Each market establishes its own contract specifications, including delivery procedure and delivery month. The delivery month for futures contract is very much like the expiration date used in the options. It specifies when the item is to be delivered and thus defines the life of the contract.

Financial futures can be classified into foreign currency futures, interest rate futures and stock-index futures. These futures can be used for hedging, speculating and arbitrage. Speculators and arbitrageurs assume risk with expectations of profits and thus provide the liquidity needed for the hedgers to buy and sell in large volumes with ease.

Some Key Concepts on Futures

Cash Price: The price in the market for actual cash or spot commodities or financial instrument

Futures Price: The price of a given unit of commodity or financial asset determined in a futures exchange.

Basis: The difference between the spot price and the futures price

Volume: The total number of units purchased or the total number of units sold.

Open Interest: The total number of contracts in a market that remain unsettled or outstanding at the end of the previous day's trading session.

Contango/Backwardation : Prior to expiry of a futures contract, when futures price is higher than the cash price, the market is said to be in contango. When futures price is lower than the cash price, the market is said to be in backwardation.

Reasons for buying and selling futures contract

One of the main reasons for entering into futures contract is for the purpose of hedging. There are two types of hedging:

Anticipatory Hedge:
In this type of hedging, the hedger anticipates a future transaction and worries about the prices in future. For example, a palm oil producer may be worried about the declining selling prices of his palm oil which will be available in 3 month's time. In order to ensure the profitability based on the existing price levels, the producer could enter into futures contract as seller. By doing so, the selling prices are locked in and any future decline in prices will not affect the producer. In another example, an airline company may be concerned about rising fuel prices. In order to prevent the negative impact of rising fuel prices, the airline company can buy futures contract. Hedgers may be users or producers of the commodity and are in a position to deliver or accept delivery. By entering into anticipatory hedge, the hedgers forgo the prospect of higher profitability when prices actually move in the reverse direction of their anticipations.

Hedging a Current Position:
Under this type of hedging, the hedger has an existing position in the underlying asset, and is worried about the decline in the prices of the asset. In order to protect the existing position from dropping in value, the holder enters the futures contract as a seller. If the prices are actually dropping, the loss will be compensated by the profits in the futures contract. Managers of equity funds may choose to enter into futures contracts when they are worried about declining share prices. With the alternative of selling the futures, fund managers need not unload their shares.

Speculators: Speculators do not hold any current or future position in respect of the underlying assets. Rather, they buy futures contracts with the view and expectation that prices will rise further so that they can profit from rising prices. On the other hand, if they expect prices to drop in future, speculators will sell futures so that they can buy back at lower prices to make profits. If they read the price movements correctly, they will make profits. Otherwise, they will incur losses from such buying and selling activities. In other words, speculators do not have any risk exposure on the underlying asset originally. They assumed risk or created risk for themselves through their buying or selling action.

Speculators play a very important role in the futures market. They usually do not want to take delivery and will have to settle their position before delivery date. Their actions in taking up risk must be appreciated by the society. In order to appreciate their contribution, one must be able to see that hedgers are not interested in taking risks. Their risks are assumed by speculators. For example, hedgers buying futures do not want to see price increases further, so they have to look for speculators to transfer their risk. In the process, hedgers assume no risk of price increase but forgo the benefits of further price declines. Speculators selling the futures assume the risk of price increases but will gain from a fall in prices.

Arbitrageurs: People who buy and sell the same assets or commodity futures simultaneously in different markets to take advantage of differences in prices. Obviously, they will sell the assets in a market where prices are higher and buy at another market where prices are lower.

In the context of the futures, the prices of underlying asset traded now and the prices of the identical similar asset in the future market is generally determined by the carrying cost. For instance, if the price of an underlying asset is RM100,000 now and the cost of carrying the asset for 3 months is

RM1,000, the theoretical price of the asset should be RM101,000 3 months later. If the price in the future exchange for a 3-month contract is buying at RM102,000, it is possible for the arbitrageur to buy spot at RM100,000 and carry the asset for 3 months before selling the asset at RM102,000 The buying and selling will generate a profit of RM1,000 for the arbitrageur. .

The Futures Exchange

A futures exchange is a centralized and organized market place for trading futures. It is made up of members, committees and staff. All futures exchanges have a clearing house to clear and guarantee its transactions. Bursa Malaysia Derivatives (BMD) offers 3 categories of derivatives: Commodity Derivatives, Equity Derivatives and Financial Derivatives.

Commodity Derivatives:

- Gold Futures (FFLD)
- Crude Palm Oil Futures (FCPO)
- USD RBD Palm Olein Futures (FPOL)
- USD Crude Palm Oil Futures (FUPO)
- Crude Palm Kernel Oil Futures (FPKO)
- Options on Crude Palm Oil Futures (OCPO)
- Tin Futures (FTIN)

Equity Derivatives

- FTSE Bursa Malaysia KLCI Futures (FKLI)
- FTSE Bursa Malaysia KLCI Options (OKLI)
- Single Stock Futures (SSFs)

Financial Derivatives

- 3 Months Kuala Lumpur Interbank Offered Rate Futures (FKB3)
- 3-Year Malaysian Government Securities Futures (FMG3)
- 5-Year Malaysia Government Securities Futures (FMG5)
- 10-Year Malaysia Government Securities Futures (FMGA)

FTSE Bursa Malaysia KLCI Futures (FKLI)

FBM KLCI is a market-weighted index, where higher capitalized stock will have a greater impact on the level of the CI than the lower capitalized stocks. To date CI has established itself as the benchmark of market performance for the Malaysian equities market and is widely followed in the financial community. The contract code specified by the Exchange for the KLCI futures contract is 'FKLI'.

Contract Code	FKLI
Underlying Instrument	FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBM KLCI)
Contract Size	FBM KLCI multiplied by RM50
Minimum Price Fluctuation	0.5 index point valued at RM25
Daily Price Limits	20% per trading session for the respective contract months except the spot month contract. There shall be no price limits for the spot month contract. There will be no price limit for the second month contract for the final five Business Days before expiration.
Contract Months	Spot month, the next month, and the next two calendar quarterly months. The calendar quarterly months are March, June, September and December.
Trading Hours	First trading session: Malaysian 8:45 a.m. to 12:45 p.m. Second trading session: Malaysian 2:30 p.m. to 5:15 p.m.
Final Trading Day	The last Business Day of the contract month.
Final Settlement	Cash Settlement based on the Final Settlement Value.
Final Settlement Value	The Final Settlement Value shall be the average value, rounded to the nearest 0.5 of an index point (values of 0.25 or 0.75 and above being rounded upwards), taken at every 15 seconds or at such intervals as may be determined by the Exchange from time to time from 3.34:30 p.m. to 4.45:15 p.m. plus one value after 5.00pm of the FBM KLCI on the Final Trading Day excepting the 3 highest and 3 lowest values.
Speculative Position Limit	Maximum number of net long or net short positions to be held: 10,000 contracts for all months combined.

Price of Stock Index Futures

The value of stock index futures contracts is calculated by multiplying the product of the future price with a contract multiplier which is specified as a Ringgit Malaysia (RM). For the FKLI contract, the contract multiplier is RM50. If the market price of June FKLI contract is 1,500, the contract value would be RM75,000 (1500 x RM50).

Contract Month and Expiry Date

All futures contracts have a pre-determined date as when the contract matures and when to deliver the underlying asset. In the case of FKLI, there will be four contract months available for trading at any point in time. They are defined as the spot month, the next month and the next two calendar quarterly months. The calendar quarterly months are March, June, September and December.

Settlement

Almost all stock index futures contracts provide for cash settlement instead of physical delivery of the basket of stocks. Delivery of the physical basket of stocks is often a cumbersome method and impractical. Furthermore, cash settlement will suffice as future contracts are often used for hedging purposes.

At the end of trading on the maturity date of a futures contract, all outstanding positions that have not been closed out by an opposite trade will be settled using a final settlement value. For the FKLI contract, the expiration day for the respective contract month falls on the final trading day. The final trading day is defined as the last business day of the month. The final settlement value is calculated by taking the average value of the KLCI for the last half hour of trading on the Bursa Malaysia, ignoring the highest and the lowest values. The cash difference will have to be settled on the final settlement day, which is the business day following the final trading day.

Hedging Applications of Stock Index Futures

Portfolio Managers could use stock index futures to transfer the price risk of portfolio to the speculators. The transfer of risk is effected through the process of hedging. In the process, the futures contracts are used to substitute transactions made in the cash market. The hedge position logs in the current value of the cash position.

We shall use the example of a short hedge as illustration.

Short hedge. A short hedge protects a stock portfolio from decline in the market price. Portfolio managers could fix the future cash price by selling an index futures contract.

For instance, we assume an equity fund manager with investments in Bursa Malaysia has to pay RM10 million to the beneficiaries 6 months from now and this involves liquidating a portion of portfolio. If the prices of shares drop in 6 months period, a larger portion of the portfolio would have to be liquidated. The fund manager could execute a short hedge to lock in prices as follows:

The KLCI is currently at 1400. The quote for the 6 month KLCI futures contract is 1430. Therefore the value of the index is 1430 x RM50 = RM71,500.

Number of stock index futures contracts required to hedge = RM10,000,000 / 71,500
= 139.86 contracts

The fund manager will execute short hedge of 140 stock index fund contracts to lock in the value of the stocks in the portfolio today to meet the cash requirement 6 months later.

- Assuming KLCI futures declines 6 months later by 10%, this will mean that the KLSE CI futures contract is at 1287. We can compute as follows:

Value of stocks 6 months ago	=	RM10,000,000
Value of stocks now	=	RM 9,000,000
(1) Loss	=	(RM1,000,000)

Value of stock index futures short 6 months ago = RM71,500 x 140 = RM10,010,000
(1430 x RM50 = RM71,500)
Value of stock index futures upon maturity = RM64,350 x 140 = RM 9,009,000
(1287 x RM50 = RM64,350)
(2) Profit from futures = RM1,001,000

(3) Assuming no dividends received for 6 months

1 + 2 = RM1000 profit.

The short hedge has protected the portfolio from price decline and made a profit of RM1000.

Instead of coming down, the share market can go up instead. Assuming KLCI futures contract moves up by 10% to 1573 , we can compute the profit and loss as follows:

Value of stocks 6 months ago	RM 10,000,000
Value of stocks after 10% increase	RM 11,000,000
(1) Profit	RM 1,000,000

Value of stock futures 6 months ago	RM71,500 x 140 = RM10,001,000
Value of stock futures upon maturity	RM78,650 x 140 = RM11,011,000
(1573 x RM50 = RM78,650)	
(2) Loss from futures	(RM1,011,000)

(3) Assuming no dividends received for 6 months

(1) + (2) = RM11,000 losses.

In both the examples, the hedges minimized the portfolio risk and thus provide the financial certainty.

CPO FUTURES

World production of oils and fats amounted to about 149 million metric tons in 2006. Palm oil contributed about 25% of the total and Malaysia was the leading producer of palm oil. Out of the total palm oil production of about 36.7 million tons in 2006, Malaysia produced about 14.7 million tons or 40% of the total output. In 2006, about 28.7 million tons of palm oil was traded in the international market and Malaysia contributed about 14.4 million tons. This implies that Malaysia had a market share of more than half in the world's palm oil export market.

The Crude Palm Oil Futures contract was launched in October 1980 and remains the most successful commodity futures ever launched in Malaysia. The main users of the market are the plantations, millers, refiners, dealers and brokers.

Contract specifications CPO Futures are as follows:

Contract Code	FCPO
Underlying Instrument	Crude Palm Oil
Contract Size	25 metric tons
Minimum Price Fluctuation	RM1 per metric ton
Daily Price Limits	With the exception of trades in the spot month, trades for future delivery of Crude Palm Oil in any month shall not be made, during any one Business Day, at prices varying more than 10% above or below the settlement prices of the preceding Business Day ("the 10% Limit") except as provided below. When at least 3 non-spot month contracts are trading at the 10% Limit, the Exchange shall announce a 10-minute cooling off period ("the Cooling Off Period") for all contract months (except the spot month) during which trading shall only take place within the 10% Limit. Following the Cooling Off Period, all contract months shall be specified as interrupted for a period of 5 minutes, after which the prices traded for all contract months (except the spot month) shall not vary more than 15% above or below the settlement prices of the preceding Business Day ("the 15% Limit"). If the 10% Limit is triggered less than 30 minutes before the end of the first trading session, the following shall apply:- a.　　the contract months shall not be specified as interrupted; b.　　the 10% Limit shall be applied to all contract months (except the spot month) for the rest of the first trading session; and c.　　the 15% Limit shall be applied for all contract months (except the spot month) during the second trading session. If the 10% Limit is triggered less than 30 minutes before the end of the second trading session, the 10% Limit shall be applied to all contract months (except the spot month) for the rest of the Business Day.
Contract Months	Spot month and the next 11 succeeding months, and thereafter, alternate months up to 36 months ahead
Trading Hours	First trading session: Malaysian time: 10:30 a.m. to 12:30 p.m. Second trading session: Malaysian time: 2:30 p.m. to 6:00 p.m.
Speculative Position Limits	The maximum number of net long or net short positions which a client or a participant may hold or control is: 500 contracts for the spot month 20,000 contracts for any one contract month except for spot month 30,000 contracts for all months combined
Final Trading Day and Maturity Date	Contract expires at noon on the 15th day of the delivery month, or if the 15th is a non-market day, the preceding Business Day.

Contract Code	FCPO
Tender Period	1st Calendar Day to the 20th Calendar Day of the spot month, or if the 20th is a non-market day, the preceding Business Day.
Contract Grade and Delivery Points	Crude Palm Oil of good merchantable quality, in bulk, unbleached, in Port Tank Installations approved by the Exchange located at the option of the seller at Port Kelang, Penang/Butterworth and Pasir Gudang (Johor). Free Fatty Acids (FFA) of palm oil delivered into Port Tank Installations shall not exceed 4% and from Port Tank Installations shall not exceed 5%. Moisture and impurities shall not exceed 0.25%. Deterioration of Bleachability Index (DOBI) value of palm oil delivered into Port Tank Installations shall be at a minimum of 2.5 and of palm oil delivered from Port Tank Installations shall be at a minimum of 2.31.
Deliverable Unit	25 metric tons, plus or minus not more than 2%. Settlement of weight differences shall be based on the simple average of the daily Settlement Prices of the delivery month from: a. the 1st Business Day of the delivery month to the day of tender, if the tender is made before the last trading day of the delivery month; or b. the 1st Business Day of the delivery month to the Business Day immediately preceding the last day of trading, if the tender is made on the last trading day or thereafter.

3-MONTH KLIBOR FUTURES (FKB3)

KLIBOR (Kuala Lumpur Interbank Offered Rate) is an interest rate derived from the activities of borrowing and lending of funds in the interbank money market. 3-month KLIBOR futures contract is an interest rate futures contract. The contract represents a time deposit in the Kuala Lumpur Wholesale Money Market with a three month maturity on a 360-day year.

With the introduction of the 3-month KLIBOR futures contract, the Exchange will be the only exchange providing hedging instrument on Ringgit interest rates. KLIBOR futures can be used to cover interest rate risk. We have covered under the chapter on bond valuation that interest rates changes affect values of investment in bonds. We also touched on how KLIBOR futures could be used as a hedge.

Interest rate futures contracts are actively traded around the world. This could be attributed to the volatility of interest rates.

Contract specifications of 3-month KLIBOR are as follows:

Contract Code	FKB3
Underlying Instrument	Ringgit Interbank time deposit in the Kuala Lumpur Wholesale Money Market with a three month maturity on a 360-day year.
Contract Size	RM1,000,000 Quoted in index terms (100.00 minus yield).
Minimum Price Fluctuation	0.01% or 1 tick.
Contract Months	Quarterly cycle months of March, June, September and December up to 5 years ahead and 2 serial months.
Trading Hours	First trading session: Malaysian 9:00 a.m. to 12:30 p.m. Second trading session: Malaysian 2:30 p.m. to 5:00 p.m.
Final Trading Day and Maturity Date	Trading ceases at 11:00 a.m. (Malaysian time) on the 3rd Wednesday of the delivery month or the 1st Business Day immediately following the 3rd Wednesday of the delivery month if the 3rd Wednesday of the delivery month is not a Business Day.
Final Settlement	Cash Settlement based on the Cash Settlement Value.
Final Settlement Value	i. Calculated as 100.00 minus the Three Month KLIBOR as published by Reuters Ltd. On reference page "KLIBOR" at 11:00 hours (Malaysian time) on the Final Trading Day. ii. In the event that the above calculation (i) cannot be made, the final settlement value shall be calculated as 100.00 minus the Three Month KLIBOR as published by Dow Jones Telerate Ltd on page number 46387 at 11:00 hours (Malaysian time) on the Final Trading Day. iii. In the event that the above calculation (i) and (ii) cannot be made, the final settlement value shall be calculated as 100.00 minus the Three Month KLIBOR as obtained from Bank Negara Malaysia at 11:00 hours (Malaysian time) on the Final Trading Day. In the event that none of the above 3 calculations can be made, the final settlement value shall be determined by the Exchange.
Speculative Position Limits	5,000 contracts for all months combined.

3-month KLIBOR futures can be applied by fixed income fund managers in financial risk management. We know that market interest rates and prices of fixed income securities are inversely related. When interest rates are expected to be increased after an announcement of higher than expected rate of inflation, fixed income funds manager may want to enter into 3-month futures contract as a seller to protect the value of their portfolio.

Single Stock Futures
In April 2006, Bursa Malaysia Derivatives Bhd added Single Stock Futures (SSF) into its list of products when SSF contracts were introduced on 10 selected counters. These counters are:

Bursa Malaysia Bhd, Air Asia Bhd, AMMB Holdings Bhd, Berjaya Sports TOTO Bhd, Genting Bhd, IOI Corporation Bhd, Maxis Communication Bhd, RHB Capital Bhd, Scomi Group Bhd and Telekom Malaysia Bhd.

All investor who intends to enter into SSF contracts, whether as buyer or seller, are required to pay initial margin. This is a form of collateral to avoid default risk when losers in the SSF contract could not honour payments. In general, the amount of initial margin varies from 10% to 25% of the value of the underlying contract value. The futures broker may set minimum initial margin which is higher than the clearing house in order to avoid the frequency of margin call. Margin call refers to situation where investors are called upon to deposit additional collateral due to changes in prices that created shortfall below the minimal initial requirement.

Advantages of trading SSF are as follows:
i.   Increases the range of trading strategy
ii.   It lowers transaction cost
iii.   Provide financial risk management to for individuals who probably find KLCI futures too expensive and could not tailor to their specific needs
iv.   Provide leverage since only 10% to 25% of the value of the stock will be sufficient to acquire beneficial interest in the underlying instrument
v.   Enable investor to assume a short position when he expects the price of the share to drop.

The Risk Involved in Futures

The risks that are inherent in trading of derivatives include the following:
i.   Liquidity risk: investors of futures contracts are subject to margin call. If they are not able to fulfill the margin call requirement, their position could be closed out by compulsion, usually at unfavorable times and result in losses.

ii.   Basis risk: Basis is the price difference between the underlying share and the SSF. The value of the underlying share and the SSF are positively correlated with high correlation coefficient. Due to market imperfection, investors may suffer losses when the underlying share and the SSF do not show such correlation.

iii.   Rollover risk: This is the risk that affects investors who wish have a long term exposure in the underlying and do so by rolling over the SSF. Price disparity on the rollover date could upset such plan.

iv.   Event risk: Holders of SSF are not entitled to certain benefits such as cash dividends. When the underlying shares are transacted on ex-dividend basis, the price of the underlying share will drop accordingly. Similar price reduction will happen to SSF although there is no dividend payable under SSF.

Conclusion

The risk involved in futures and options trading could perhaps also be illustrated by the example of Nick Leeson, a 27 year old futures trader stationed in Singapore. Nick started his career in 1989 as a clerk working for Barings Bank. After a few years, it was reported that because of his hard work and good performance, he was given the chance to be transferred to Singapore. His job function was to buy and sell futures contracts in Tokyo and Osaka. Nick was to buy and sell Japanese stock index futures in a relatively safe arbitrage strategy--- simultaneous buying and selling the same contract in Tokyo and Osaka to take advantage of price differences.

In January, 1995, Nick had a strong feeling that the price of Japanese stock was going to climb, and started the wholesale buying of Japanese stock index futures. His purchase was followed by an earthquake that struck Kobe and the Japanese stock fell 13%. To cover his loss, Nick doubled his bet and about one month later, the loss amounted to about US1.2 billion. Barings Bank collapse as a consequence

This serves to illustrate that these tools, created to assist in risk management of investments, could do just the opposite if they are not used properly.

Self Assessment

Multiple Choice
Circle the letter of the correct choice for each of the following.

1. If you are a speculator and believe that the market will be bearish in the coming months and plan to use option market to make some profits, what should be your strategy?
   A.   Buy shares
   B.   Long call
   C.   Short put
   D.   Short call

2. When an option is out-of-money, what determines the value of the option?
   A.   Time value
   B.   Intrinsic value
   C.   Time value and intrinsic value
   D.   None of the above

3. Sime Darby has just made a Canadian Dollar bid on a major project located in Canada and the result will be known in 90 days. What is the most appropriate way for Sime Darby to protect itself against the currency risk?
   A.   Buy a Canadian Dollar futures contact
   B.   Sell a Canadian Dollar call option
   C.   Sell a Canadian Dollar futures contract
   D.   Buy a Canadian Dollar call option

4. You are bullish about Maybank shares and planning to use option market to take advantage from this situation and notice the following prices at spot and option markets.

   Market's share price is currently RM6.00

   30 day call / put

   6.00 call = RM0.30
   6.00 put = RM0.20

   If you long call option and the spot price at expiry date is RM6.50, what is your profit?

   A.   0.40
   B.   0.20
   C.   0.50
   D.   None of the above

5. What is long position in the 3-month KLIBOR futures contract means?
   A.   You get to borrow RM1 million in 3 months at the futures yield rate.
   B.   You get to lend RM1 million in 3 months at the futures yield rate.
   C.   You get to lend RM1 million in 6 months at the futures yield rate.
   D.   You get to borrow RM1 million in 6 months at the futures yield rate.

6. What is the main difference(s) between forward and futures contracts?
    A. Both futures contracts and forward contracts are bought and sold on an organised exchange.
    B. Both futures contracts and forward contracts are normally traded over-the-counter.
    C. Futures contracts are standardised forward contracts are individually tailored.
    D. Forward contracts are normally marked to market daily whereas futures contracts are valued only at maturity.

7. You are crude palm oil exported and need to acquire 250,000 metric tons for export in three months time. According to your assistant, contract size for CPO is 25 metric tons and three months future price quoted at RM1,200 per ton. If you want to hedge your cost risk, what should you do?
    A. Buy 1,000 contract at a locked contract value of RM1,200,000
    B. Buy 10,000 contract at a locked contract value of RM12,000,000
    C. Sell 1,000 contract at a locked contract value of RM1,200,000
    D. Sell 10,000 contract at a locked contract value of RM12,000,000

8. If you wish to hedge using a futures contract with a underlying asset different from that asset to be hedged, basically you are planning to do
    A. Perfect hedging
    B. Open trading
    C. Cross hedging
    D. None of the above

9. What is the rate that determines how much an investor can expect to earn on a structured investment for a certain amount of price movement in the base asset?
    A. Discount rate
    B. Participation rate
    C. Base rate
    D. Forward rate

10. Which of following risk in structured investment arises from the investor not able to sell his investment prior to maturity?
    A. Issuer's credit risk
    B. Foreign currency risk
    C. Option risk
    D. Liquidity risk

Answer : 1.D, 2.A, 3.D, 4.B, 5.B, 6.C, 7.B, 8.C, 9.B, 10.D

Chapter 9

Unit Trust

Chapter Objectives

On completion of this chapter you should have a basic knowledge on :

- The concepts of unit trusts

- Benefits of unit trusts

- Types of unit trusts available

- Risk classification

- Performance comparison

- Pricing and costs

- How to select unit trusts

- Advantages and limitations of dollar cost averaging

- Importance of time horizon

- Effect of dividend payment by unit trusts

- Advice on EPF withdrawal to invest in unit trust funds

- Computation exercises on rates of return from unit holders' view point

Introduction

Since the existence of the capital market, investors have been asking which share or bond to buy, and when to sell. Many investors lack time, knowledge, or commitment to manage their own portfolios. With unit trust schemes or funds, investors can leave all the problems to professional fund managers and let them decide which securities to buy, and when to sell them.

A unit trust or mutual fund is a ***professionally managed, collective investment scheme*** that pools unit-holders' money. The fund is then invested towards a specific goal as declared by the ***investment objective*** of the scheme. It is a type of financial services, provided by an organization that receives money from its investors known as the ***unit-holders*** and then invests those funds on their behalf in a ***diversified portfolio of securities***. When you buy a unit in a unit trust scheme, you become one of the owners of a portfolio of securities. Unit trusts schemes usually aim to provide ***above average*** return in the form of ***dividend income*** and ***capital growth*** at reasonable risk for medium to long-term investors. Therefore, unit trusts can be used as a longer-term investment vehicle most suited for investors who can tolerate volatile short-term fluctuations in prices, in pursuit of the long-term potential of capital growth involving riskier equity investment.

In Malaysia unit trusts are regulated by the ***Securities Commission Act 1993,*** through the ***Securities Commission (Unit Trust Scheme) Regulations 1996,*** and the ***Guideline On Unit Trust Funds issued in 1997***. In view of the fast changing environment, the Securities Commission is expected to introduce changes from time to time to meet the challenges. Apart from the government regulations, there is a self-regulatory body known as the ***Federation of Investment Managers Malaysia (FIMM).*** FIMM was formed in 1993 with the primary objectives as follows:

- To improve the regulatory, fiscal and legal environment for unit trust.
  To formulate sound and ethical business practices, to provide investor protection, and to promote the interest of the industry.
- To provide information, assistance and other services to its members.
- To promote public awareness of the benefits and risk of investing in unit trust.
  Registration of unit trust agents. All agents have to be registered with FIMM before they are allowed to carry out any sales.

A unit trust is a *tripartite relationship* between the *manager trustee*, and *unit-holders*, governed by a legally binding *trust deed* registered with the Securities Commission.

Trust Deed

The trust deed is a legally binding *agreement between the manager trustee*, and *unit-holders* The agreement usually spells out clearly how the unit trust scheme is to be administered. The contents usually include:

- Valuing and the pricing of units;
- Keeping of proper accounts and records;
- Collection and distribution of income;
- Rights of unit-holders;
- Duties and responsibilities of the manager;
- Duties and responsibilities of the trustee;
- Protection of unit-holders' interests.

The Manager

A manger is obliged under the Trust Deed, the Securities Commission (Unit Trust Scheme) Regulations 1996, and Guideline On Unit Trust Fund to administer the scheme/fund in the most efficient and proper manner. The manager has to ensure a high standard of integrity and fair dealing in managing the scheme to the exclusive interest of unit-holders and investors. The manager must exercise due care, skill and diligence as well as effectively manage the resources and comply with the procedures necessary to the best performance of the scheme.

The Trustee

A trustee is appointed by the board of directors of the manager (Management Company) with *approval* from the Securities Commission. The trustee acts as a custodian for all the assets of the scheme. The trustee, therefore must act to ensure that the manager follows strictly to the provisions of the trust deed, especially with regard to the following:

*   Creation and cancellation of units;
*   Exercise of investment of funds;
*   Collection and distribution of income;
*   Proper record keeping of administration;
*   Proper record keeping of investments;
*   Proper record keeping of unit-holders' transactions; and
*   Upholding unit-holders' interest.

Unit-holders

Unit-holders are investors who hold units (equivalent to shares of a company) in a unit trust scheme. Each unit will rank equally with all other units of the trust. The value of each unit is determined with reference to a formula, normally set out in the trust deed, which is usually determined by dividing the value of the total assets of the trust by the number of units currently in issue.

Unit-holders purchase units by completing an application form, which must be issued together with a prospectus.

The diagram shows the tripartite relationship between the Manager, Trustee, and Unit-holders.
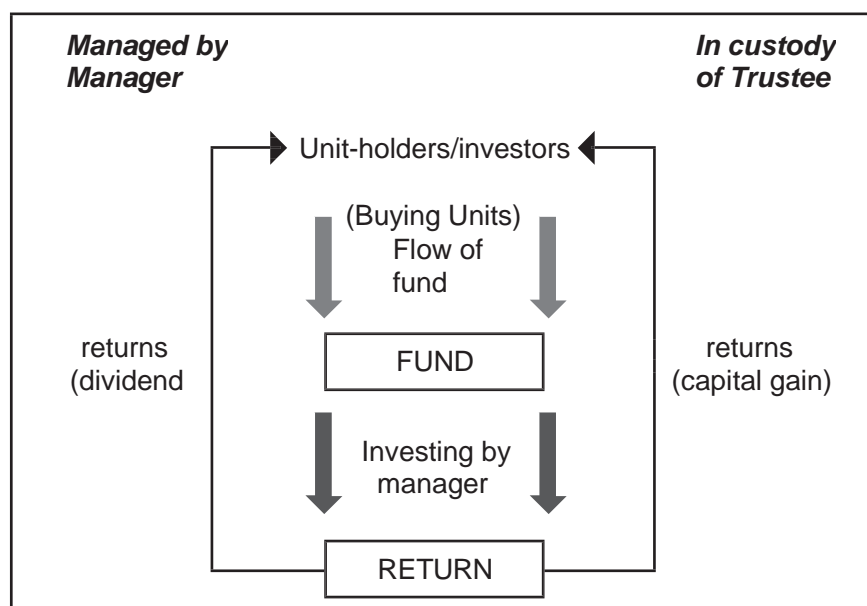
Benefits of Unit Trusts

Small investors usually have *neither tim nor the expertise* to research and analyze investments on their own. For these investors, unit trusts can be considered an ideal way to start investing.

To maintain a portfolio of investments, an individual needs to *keep abreast of market information and market sentiment* In today's sophisticated financial markets, this means keeping track of a wide range of information from numerous sources. For most individual investors, it is *very difficult if not impossible.* It is also *costly and time consuming.*

Through unit trust schemes, individual investor can also *have access to portfolios that might not be possible for an individual* due to limited capital for investing. Investing in unit trusts helps to transfer most of the stress of investing to those best equipped to handle i.e. the fund managers.

Types of Unit Trusts

There are many ways in which unit trust and other related products can be classified. Due to different investors' requirements and different regulatory regimes, each country has its own classification method and terminologies. Unit trusts are usually categorized according to their investment policies and objectives.

Some of the more popular types of unit trusts classification are: growth, aggressive growth, equity-income, balanced, growth-and-income, income, bond, money market, and index funds.

In Malaysia, we have the ***open-ended*** and the ***close-ended*** unit trust funds. These are then further classified into:

- Equity unit trust;
- Fixed income unit trust;
- Property unit trust (usually close-ended);
- Islamic unit trust;
- Balanced trusts fund.

Open-ended Funds

Most of the unit trust funds in Malaysia are open-ended. In an open-ended fund, the investors buy their units from the manager and sell the units back to the manager if they want to liquidate their investment. These unit trust schemes are the ***unlisted*** trust funds. When investors buy units in an open-ended fund, new units are issued.

Occasionally, the fund may temporarily be closed to new inventors in an attempt to keep fund growth in check. The fund managers guarantee the repurchase of all open-ended mutual funds sold to investors should they decide to sell them. The buying and selling of units in open-ended trust funds are carried out at prices based on the ***current market value of net asset value*** (NAV). NAV is calculated by taking the total market value of all the securities in the portfolio, and all other assets held by the fund, less any liabilities and dividing this amount by the number of units outstanding.

For example, individual cannot afford to buy bond direct, but they can buy units from bond funds which invest in bonds.

Close-ended Trust Fund

Close-ended unit trust funds operate with a fixed number of units and do not issue additional new units. These units are like those shares traded in the stock market, they are *being traded freely in the secondary market.* These close-ended funds, once listed, units are bought and sold through stocks brokers. The transaction is not the same as that of open-ended funds where the managers carry out the transactions. The *price of units will depend on the market forces* of demand and supply. Once the fund is listed, the manager's sole duty is to manage the fund in accordance with the trust deed, which normally has a time limit, after which time the assets of the fund must be sold and proceeds distributed to the unit-holder as at the date of closure. In most unit trust deeds, allowance is often given for continuance of the fund, subject to unit-holders approval.

Close-ended funds are common in **Real Estate Investment Trusts.** Examples of REITS traded in Bursa Malaysia are AHP, ALAQAR, AMFIRST, ARREIT, BSDREIT, HEKTAR, QCAPITA, STAREIT, TWRREIT and UOAREIT. In these trusts, all of their investments are in real property. The property market is highly illiquid as compared to other securities like shares and bonds. By listing in the secondary market, it gives liquidity to these property trusts. The units can be traded in the stock market freely. The unit-holders cannot sell back the units to the fund as that of open-ended fund as the fund will not be able to buy back the units due to its investment in illiquid assets (real Property).

Equity Funds

This is the most common type of unit trust funds. Under this trust, a major proportion of the funds' assets are held in the form of equities of listed companies. It is to be noted that about 5% or more of the funds need to be in liquid assets to meet selling needs of the unit-holders. This is a more popular type of trust fund in Malaysia as it provides investors with exposure to the Malaysian equity market. When prices in the equity market go up the unit's price will also go up accordingly. On the other hand, when prices of the share in the portfolio fall, the NAV of the fund will also fall.

There is a wide range of equity unit trusts available in the market, ranging from funds with higher risk higher return characteristics to funds with lower risk lower returns. Examples of higher risk higher return characteristics funds are Growth Fund, Aggressive Growth Fund, and Industry Fund. On the other hand, the lower risk equity funds are the Saving Fund and Regular Savings Fund. Equity trust funds are longer-term investments, with the anticipation that these funds would produce higher returns, but they are also more volatile.

Another type of unit trust is the 'index funds'. These funds are invested in a range of securities whose performance will closely match that of the Bursa Malaysia indexes (e.g. KLCI). It is possible to achieve this by buying the main component stocks of the underlying index. In this way, this type of fund will normally generate return which closely resembles the performance of the stock market index both in term of risk and return.

Equity unit trust may take the form of income fund. Such a fund emphasizes on generating periodic income as a priority or a combination of both income and growth. These funds will invest primarily in stocks that earn significant dividend income, as compared to stocks that pay little or no dividends, but which have high potential for capital growth.

Fixed-Income Funds

These unit trust funds focus on generating regular income. They are also commonly known as *bond funds* The fixed incomes are in the form of interest received. The investment activities of the funds will concentrate mainly in government and corporate bonds, government securities, negotiable certificates of deposits, bills, money market, and cash deposits. The emphasis is less on capital growth. However, it is possible for these funds to generate both capital gains and losses during periods of volatile interest rates. In general, the volatility and risk element of fixed-income funds is lower compared to that of equity funds. The capital is more secure, especially if the bonds are held to maturity. Since the exposure to risk is lower, usually the returns are lower for fixed income unit trust. However, this is not always true and there have been instances in the history of the Malaysian financial market where fixed interest unit trusts produced higher returns as compared to equity trust.

Very often, fixed-income unit trusts are held by investors as part of their overall investment portfolio. This is a useful diversification to insulate an investor's unit trust portfolio from the risk of negative returns in any one period. Normally, fixed interest investments have a high negative correlation with equities, which means that when equity markets are down, the returns from fixed interest investments go up. During bullish markets, it is not unusual to find prices of bond funds continue to rise.

Balanced Funds or Diversified Unit Trusts or Managed Funds

Balanced funds tend to hold a balanced portfolio of both stocks and fixed income securities for the purpose of generating a balanced return of both current income and long term capital gains. Another name for this type of fund is **managed fund**. This category falls between the fixed income fund, and the equity funds. Usually, a balanced fund keeps at least 25% to 50% of its portfolio in the form of bonds. Their bonds principally provide regular income, and stocks are selected mainly for their long-term growth potential.

The fund managers may shift the emphasis in their security holdings. For instance, when fund managers feel that the equity market is likely to decline, they would place more funds in bonds than equities. On the other hand, if a bullish market is anticipated, the fund manager would increase the holdings of equities. Clearly, the more the fund leans towards fixed-income securities, the more income-oriented it will be. However, most of the time, the balanced funds tend to confine their investing activities to high grade securities, including growth oriented blue-chip stocks, high quality income shares and high-yielding investment grade bonds. Therefore, they are usually considered to be a relatively safe form of investment, in which you can earn a competitive rate of returns without having to go through a lot of price volatility.

Property Trust Funds

Property Trust Funds provide small investors with opportunities to participate in the property market. This fund invests in real property, such as retail and commercial office properties which most of the small individual investors may not have access. Through these properties investment, return can be in the form of rental income and capital appreciation over a period of time. However, properties may be affected by the economy as that experienced by the stock market. Property market does experience the ups and downs cycle.

Due to the nature of property itself, it is a highly illiquid asset as compared to other types of investments. REITs are property trusts funds that are listed in the stock market. Examples were given earlier section on the write up under the close-end fund.

Islamic Unit Trust Funds

The main objectives of Islamic unit trusts are to invest in a portfolio of "halal" stocks which are in accordance with the principles of Syariah. In other words, this fund will not invest in stocks that are involved with non-halal business activities, such as conventional banking, insurance and financial services, gambling, and alcoholic goods.

The returns of Islamic unit trust funds will also avoid the incidence of 'riba' or interest through the process of cleaning or purification by the removal of such amounts representing the interest element. Such proceeds are usually donated to charities.

Risk Classification

Every investment has its own associated risks. Similarly, unit trust investments have their own risks. It is therefore important that every investor is aware of these risks before making an investment. In general, we may say that as a general rule, the higher the expected return, the higher will be the risks involved. For example a fixed-income trust fund usually has lower risk compared to an equity growth fund. Similarly, a growth fund usually has lower risk compared to an aggressive growth fund. However, at times you may see that fixed-income funds perform better and give a higher return than those higher risk funds like the growth funds and aggressive growth funds. This is true especially when the stock market is 'bearish' or not performing well.

Trust funds are usually meant for medium to long-term investment and it is hoped that the return will commensurate with the risk involved. We must also know that if the investment is a geared investment (investment with borrowed capital) this will also increase the risk. The higher the leverage, the greater is the risk involved. Generally borrow money to invest in unit trust is not a good idea.

Performance Comparison

When comparing the performance of an investment, we must ensure that the same methodology and terminology are applied to the expression of investment performance. In real life, it is difficult due to the many different ways in which investment performance is measured and recorded. Take for example the expression of return and the risk exposure. There are many different ways returns can be expressed which may even lead to confusion. The rate of return on investments may be expressed in terms of single period, annualized, semi-annualized, quarterly, monthly and so on. Therefore it is important to understand which form of expression is used when someone quotes an investment return. In order to effectively compare the performance of investments, it is important to standardize the performance measurement expression. The most common forms of expression used in unit trust comparisons are:

- Annualized Return
- Use of Investment Performance Table
- Use of Benchmarks
- Other Factors

Raw Return

This is the comparison between the original investment prices (cost) with the investment's selling price. As its name suggests, it is raw as the time of holding the investment is totally ignored. In other words, the time value of money has been ignored. For example an investment bought 20 years ago for RM1.00 per unit, and sold today at RM5.00 per unit, the return is expressed at 400%. Similarly, if another investor bought 10 years ago an investment at RM1.00 per unit, and sold it today also at RM5.00 per unit, the return on investment is also expressed at 400%. With this measurement, it makes performance comparison difficult because there is no time dimension added to the measure. Naturally 400% over a period of 10 years is much better than 400% over a 20 years period. This primitive method of measurement is not recommended.

Annualized Return

This method of measurement takes the time of holding investment into consideration. It expresses the return in per-cent per year. This is a more familiar term to a layman, as it is commonly used by banks for fixed deposit rates. If we were to express the return in this form of measure, then we are comparing like with like. Under this category, one also has to differentiate between the annualized rate based on simple interest and compounded interest basis.

Using the previous example, the annualized return based on simple interest approach is 20% per annum. It is obtained by dividing the total gain by the number of years to achieve it (i.e. 400% divided by 20 years = 20% p.a.). However, based on compounded rate of interest, the annualized rate of return is 8.38%. The way to obtain this is by solving the following formula:

$$PV = FV / [1 + r]$$

RM1 = RM5 / [1+ r] [20] and we have to solve for 'r' which is not an easy task for most people as it involves interpolation technique. An alternative is to use a financial calculator with inputs as follows:

20	N	1 ±	PV	5	FV

After the inputs, we shall compute for i% or I/YR depending on the model of calculator used to arrive at the answer of 8.38%.

To conclude, when comparing returns, one has to be very careful to ensure that the same variables are used.

Use of Investment Performance Table

This is a table summarizing the performance of the whole industry, as well as the performance of various benchmarks and also individual unit trust managers. This table has been used as a guide for selection of unit trust investment for many investors. In the investment performance tables, it usually discloses the following information:-

- performance over various time duration. e.g. one month ,one year, three years and five years
- ranking & quartiles
- funds under management
- use of other benchmarks

Investors therefore should look for unit trusts that have consistent performance over a range of time periods. For example, if a fund manager has produced consistently above average performances for the past three, six and twelve months, also for the past three, five and seven years, then their track record may indicate that they are likely to produce the same quality results in the future.

Use of Benchmarks

Benchmarks can be used as a measure in assessing investment performance. It is a useful way to compare the performance of a particular investment to a consistent standard. Very frequently, invertors use fixed deposit rates as a benchmark for measuring investments. When the fixed deposit interest is high, it is quite difficult to attract new investors into unit trust.

In the case of an equity based unit trust scheme, it is more appropriate to use the share market index as a benchmark. In Malaysia, one may use Bursa Malaysia Composite Index (KLCI) as a benchmark for measurement of performance. For measurement of small cap fund, one may consider the Bursa Malaysia Second Board composite index as the benchmark. However sometimes it is very difficult to select an appropriate benchmark for comparison.

Other Factors

When analyzing the performance of a unit trust, apart from the rate of return, we should also look into other factors. Some of these factors are consistency, risk, opportunity costs and whether profits made are distributed or retained in the funds.

Consistency

As mentioned earlier, we must see that the performance is consistent. The consistency should be over one month, two months, three months, six months, one year, three years and five years. By referring to a longer period of performance, one is able to form a more conclusive opinion on the ability of the fund manager.

Ranking of Unit Trust Schemes based on Risk

Investment risks are very difficult to assess, especially when the unit trust scheme has only been operating for a short period. Apart from that, other risks which need to be assessed and considered include the credibility of fund manager, fund management style and service risks. In the market, there is now a ranking of unit trust fund based on volatility or total risk as measured by standard deviation. In chapter 2, computation of standard deviation has been shown. Based on standard deviation for past 36 months, one of the independent credit rating agencies has come up with a ranking of unit trust funds. In the report, the fund with the lowest risk or volatility is ranked first follow by the rest accordingly.

Ranking of Unit Trust Schemes based on Risk and Return

Sharpe Ratio which relates the performance of portfolio based on risk and returns has been seen in one of the local financial magazines, "The Edge". For a more detail discussion of Sharpe Ratio, please refer to Chapter 2 and Chapter 11.

One of the unit trust fund mangers in Malaysia has also come with reporting its performance using the Treynor's Index. In this Treynor's Index, only the non–diversifiable risk is considered.

In view of the developments already seen, financial planners and distributors of unit trust scheme have to keep up with the pace of changes.

Opportunity Costs

There are always investment opportunity costs when funds are invested into unit trust schemes. If an investor withdrew money from his savings or fixed deposit account, he would have sacrificed the interest that could be earned. If the payment for the purchase is sourced from EPF, he would have also sacrificed the opportunity of receiving interest payable by EPF. For instance, the dividend declared was 5.8% in 2007.

Appropriation of Profits

Some of the funds pay dividends regularly whereas some accumulate the gains in the NAV of the units. In order to compare performance of two or more funds, one will have to ascertain the dividends paid, if any, and take them into consideration. Otherwise, the comparison will not be meaningful as it favours the funds that do not pay dividends.

Pricing of Unit Trust

The price of a unit trust depends on the total value of the asset held by the unit trust scheme less the total liabilities, or put it another way, it is the net asset value (NAV). For all quotations made, the net asset value of the unit trust scheme is calculated by taking the net asset value on the day prior to that on which a quotation is made. This is then divided by the total unit issued outstanding. There is also an initial management and distribution fee to be charged. This initial fee is then added to the net asset value per unit to give a unit's selling price.

The actual initial management fee charged must be disclosed in the prospectus of the respective unit trust schemes

The net asset value of a unit trust scheme consists of the following:

> The value of the equity investment portfolio which is based on the last transaction price of the stocks and share

> The cost of brokerage, stamp duty and other charges in respect of the above portfolio of investment

- The money market investments
- All un-invested cash and cash balances
- All accrued gross dividends and interest income after deduction of:
  - annual management fees
  - trustee fee and
    administration expenses including auditors' fees, tax adviser's fee, stationery cost and registration charges.

The selling price is based on forward pricing as the price is obtained on the last available valuation which is the previous trading day.

Example 1:

Supposing a unit trust scheme has the following detail:

Date of quotation   = 1/1/01

Net asset value of the trust scheme on 31/12/00   = 150,000,000

Unit issue outstanding on 31/12/00   = 100,000,000

Therefore the net asset value = $\dfrac{\text{RM150,000,000}}{\text{100,000,000}}$

                               = RM1.50

Cost and Charges

Sometimes, it is misleading if we only look at the investment performance tables when selecting a unit trust investment. These tables usually show gross return before expenses. It is vital that investors have full knowledge of costs and charges involved with an investment in a unit trust product. Similar to all financial services, unit trusts are delivered to the investor at a cost. These costs may be classified into categories as follows:-

-       Initial service charge
-       Ongoing management fee
-       Advisory fees

Initial Services Charge

This is the "up-front" charge levied by the manager on the investor to cover the costs of distributing or selling the unit trust. Usually investors will have knowledge of this cost. The average initial service charge on an open-ended unit trust in Malaysia is usually 5% of the NAV. In other words, if you invest RM100.00 into a unit trust, RM5.00 is paid to the manager, leaving only RM95.00 to be credited into your account. As a result of this high cost, unit trust is not meant for short-term investment, but for medium to longer-term so its initial cost is spread over a longer-term time frame.

In some countries, the initial service charge can be as high as up to 9% of the initial capital amount. On the other hand, in countries like United States and Australia, many products do not have an initial service charge. With the internet and electronic transaction mechanisms, more sophisticated investors now have greater choice in selecting their investment target and tools.

Illustration on how the sales charge is calculated:

The NAV per Unit of the Fund is the Selling Price. Assuming the Manager is charging a sales charge of 5.5% of the Selling Price for all transactions:

Investment amount	RM10,000
NAV per Unit	RM0.5000
Sales charge	5.5% of the Selling Price
Amount to be invested in a Fund	RM10,000/(1+0.055)
	= RM10,000/(1.055)
	= RM9,478.67/RM0.5000 = 18,957.34 Units
Sales charge to be paid by you	RM10,000 – RM9,479.67 = RM521.33

Ongoing Management Fee

This is the annual fee paid to the manager for managing the unit trust fund. The fees average around 1.5% per annum in Malaysia to cover the management expenses incurred in managing the fund. Such costs will include salaries, office rent, stationery and all other related administration costs. The management fee charged might vary between different categories of unit trusts. Theoretically, unit trust schemes that require active management will impose higher charges. On the other hand, schemes that involve passive management such managing bond funds will charge lower management fees. The management fees are deducted directly from the investor's unit trust account and have a direct impact on the investment return.

Advisory Fees

This is the fee charged for services rendered for financial planning. This is very common in markets such as the United Kingdom and Australia. In these countries, quite a lot of the sales and distribution of unit trusts is done through the 'independent financial advisor' channel. These are professional individuals or franchisees who specialize in advising investors on where to invest their funds in order to achieve their desired investment outcomes.

The fees charged are based on time or the size of the portfolio of fund. In some countries, the advisor has become more important and more visible than the fund manager behind the investment fund. In Malaysia, this trend is already setting its pace in our financial market.

Management Expense ratio

The management expense ratio (MER) – also referred to simply as the expense ratio – is the fee that must be paid by unit trust investors. The MER goes toward the total expenses used to run such funds. The fee is not transferred to the fund owner(s) but is allocated to the fund itself. The management expense ratio is expressed as a percentage, reflecting the percentage of assets fee related to a fund's investment portfolio.

Illustration on how the management expense ratio is calculated:

MER = Operational Expenses and Portfolio Management Costs
                    Total AUM or Portfolio Value

The MER total is then multiplied by 100 in order to convert it from a decimal figure to a percentage figure.

Eg. The XYZ Unit Trust managers a portfolios that is valued at RM12,000,000 and with RM175,000 in management costs and expenses. The MER would then be:

MER = RM175,000   x   100   =   1.46%
            RM12,000,000

Portfolio Turnover Ratio

The portfolio turnover ratio is the rate of which assets in a fund are bought and sold by portfolio managers. In another words, the portfolio turnover ratio refers to the percentage change of the assets in a fund over a one-year period.

Illustration on how the portfolio turnover ratio is calculated:

The formula for the portfolio turnover ratio is as follows:

Portfolio Turnover Ratio = Minimum of Securities Bought or Sold   x   100
                                        Average Net Assets

Where:

-      Minimum of securities bought or sold refers to the total dollar amount of new securities purchased or the total amount of securities sold (whichever is less) over a one-year period.
-      Average net assets refer to the monthly average ringgit amount of net assets in the fund.

Eg. A fund purchased and sold RM10 million and RM8 million of securities, respectively, over a one-year period. Over the one-year period, the fund held average net of RM50 million. The fund's portfolio turnover ratio over the past year is calculated as below:

PTR = RM8 million   =   16%
           RM50 million

The above portfolio turnover ratio suggests that 16% of the portfolio holdings changed over a one-year time period. A ratio of 100% or greater indicates that all the securities in the fund were either sold or replaced with other holdings over a one-year period.

The portfolio turnover ratio is important to consider before purchasing a unit trust or a similar financial instruments, as it affects the investment return of the fund. Generally speaking, a low turnover ratio is desirable over a high turnover ratio. The rationale is that there are transaction costs involved with making trades (buying and selling securities).

How to Select a Unit Trust Fund or Asset Allocation Model

The selection process starts with the assessment of an investor's risk profile, investment horizon, and investment needs which will set the tone of the investment program. Selecting the right investment means finding the most suitable unit trust fund to meet an investor's investment needs. Every investor has a different risk profile which has to be determined before selection on the types of funds. Typically, risk tolerance is inversely related to the age of a person. In other words, generally, younger people can afford higher risk than older people.

The investment needs and objectives would include accumulation of wealth for purchase of a car or a house. They could also be accumulation for retirement fund and for children's education needs. There are also investors who invest for a regular source of income. Thus the selection process of the unit trust depends very much on the intended use. For example, if the fund is used for accumulation of wealth for education purposes, it may not be appropriate to invest in an aggressive growth fund. On the other hand, if the investor intends to speculate for higher return, then the fixed-income fund may not be appropriate.

After having assessed what an investor is looking for then he is ready to look at what the funds have to offer.

To understand what each unit trust has to offer, an investor can make a detailed study of the prospectus of each unit trust fund. The factors an investor should pay attention to apart from rate of return are the investment objectives of the fund, load charges and annual expenses rates, summary portfolio analyses, services offered, historical statistics, and review of portfolio performance. It is only through a detailed study and analyses of each unit trust available that an investor can then select the unit trust that best meets his investment objectives.

Advantage and Limitations of Dollar-Cost Averaging

To invest in unit trust funds, one can choose to invest in one lump sum or prefer to invest on a regular basis. The concept of dollar cost averaging applies to a situation when an investor invests on a regular basis. The principle refers to the systematic and consistent investment of fixed amount of money irrespective of the price levels.

One of the major weaknesses of small investors is that they try to chase for the purchase of shares when the market is bullish and fail to buy when market is bearish. The consequence of these two patterns of buying behaviour is high costs of acquisition. In the long run, it is more difficult to make profits when the costs are high. With the principle of dollar cost averaging, investors can turn fluctuating prices to their advantage, especially during the falling prices when they can purchase new stocks and reduce the average rage cost of their entire investment portfolio.

An illustration of the concept is as follows:
We shall assume that an investor invest RM1000 per month for a period of 12 months.

Month	Unit Price (RM)	Number of units acquired
January	1.00	1,000.00
February	1.10	909.09
March	1.20	833.33
April	1.10	909.09
May	1.00	1,000.00
June	0.90	1,111.10
July	0.80	1,250.00
August	0.70	1,428.57
September	0.65	1,538.46
October	0.80	1,250.00
November	0.90	1,111.10
December	0.95	1,052.63
Total		**13,393.39**

The average cost of purchase per unit = RM12,000 / 13,393.39 units = RM0.8959 per unit

If the purchase were made by one lump sum of RM12,000 in January, the number of units that could be bought would be 12,000 units at RM1.00 per unit. In the example here, one can see that the practice of dollar cost of averaging has reduced the average cost per unit and has enabled the investor to acquire more units than if he were to buy by a one lump sum at the beginning of the year

Dollar Cost Averaging in Bond Funds

Investing regularly in bond fund using dollar cost averaging may not be beneficial to the investors if the client is able to make one lump sum investment in the first place. This is due to the fact that the NAV of bond funds does not fluctuate up and down like equity funds. In general, the prices of bonds should rise gradually from time to time. The longer it is, the higher shall be the NAV. A hypothetical example where investor made annual investment of RM12,000 each is shown below:

Year	Price in Ringgit	Amount Invested in Ringgit	Units Acquired
1	1.00	12000.00	12000.00
2	1.06	12000.00	11320.75
3	1.13	12000.00	10619.47
4	1.22	12000.00	9836.07
5	1.30	12000.00	9230.77
6	1.38	12000.00	8695.65
7	1.47	12000.00	8163.27
8	1.58	12000.00	7594.94
9	1.67	12000.00	7185.63
10	1.80	12000.00	6666.67
Total		**120000.00**	**91313.21**

Notice that if the investor were able to invest one lump sum of RM120,000, he would have acquired 120,000 units at the very beginning price of RM1.00. As the above table shows, the investor managed to acquire 91,313 units only.

Uncontrollable Factors that Affect Performance of Fund Manager

A major uncontrollable factor that affects the performance of fund manager is the buying and selling decisions of unit holders. It is not uncommon to find that unit holders are buying heavily into unit trust equity funds in a bull market. When funds are specified in the prospectus to be meant for investment in equities, the fund managers who received the funds from investors have no choice but to buy at the times when prices are high and rising. On the other hand, we can also find unit trust holders selling their units when prices are dropping in a bearish market. Fund managers are contracted to buy back the units from the unit holders. In order to make payments, they landed themselves as sellers in a market that they may prefer to buy.

The above phenomena help to explain why investors are not making profit despite a bull run when the NAV of the unit trust scheme is performing better than the market. These investors probably bought the units at highest NAV at the peak of the market and failed to pick any units during market corrections.

As individual investors, one must also have an investment strategy to meet his financial goal. Individual cannot rely on strategies of fund managers at times when markets are volatile. Individuals' strategies here do not mean that investors have to monitor changes in NAV to decide on the selling and buying prices. Rather, it should follow the pre-determined investment time horizon and a scheme based on dollar cost averaging and constant dollar plan approach.

Under dollar cost averaging, it is possible for investors to make profit even though the fund managers are not performing well. A simple example per Table 9-1 below will show the point.

Beginning of Year	NAV in RM	Amount Invested in RM	Units Acquired During the year	Accumulated Units
1	1.00	12,000	12,000	12,000
2	0.75	12,000	16,000	28,000
3	0.60	12,000	20,000	48,000
4	0.90	12,000	13,333.33	61,333.33
Total		48,000		

Assuming the NAV goes up to RM1.00 at the end of year 4, the value of total investment will be RM61,333.33 (RM1.00 x 61,333.33 units) which is higher than the total cost of investment at RM48,000. Using financial calculator, the compounded rate of return over the 4 year period works out to be 10.05% with the calculator inputs as follows:

Set Beg Key	4	N	12000 ±	PMT	61	333.33	FV

From the above illustration, one can see that the fund manager did poorly in generating return for the investor as there was zero growth for the entire 4 year duration. Despite the poor performance, the investor that followed a constant dollar plan strictly without any concern for poor prices managed with a return of more than 10% per annum.

Importance of Time Horizon

Investors who invest in a unit trust scheme with very high ranking in terms performance may also find themselves losing money when there is a mismatch on investment time horizon. An example in table 9-2 will show:

Beginning of Year	NAV in RM	Amount Invested in RM	Units Acquired During the year	Accumulated Units
1	1.00	12,000	12,000	12,000
2	1.50	12,000	8,000	20,000
3	1.75	12,000	6,857	26,857
4	1.20	12,000	10,000	36,857
Total		48,000		36,857

Assuming the NAV of the scheme increased to RM1.30 at the end of the year 4, the total value would be RM47,914, indicating that the investor still incurred a loss in this scheme. When the unit trust scheme increased from RM1.00 to RM1.50 at the end of year 1 (or the beginning of year 2), the yearly performance was 50% which could easily make the fund one of the top performers. If money is required at the end of year 4, the investor that liquidates the fund at the end of year 4 will incur a permanent loss!

Suggested Solution to the Previous Problem

In order to avoid the problem presented in the previous section, investor will have to switch their funds to more stable funds as it gets nearer to the time of utilization of fund. From 100% exposure in equity funds, the exposure can be reduced gradually as follows:

Year to Utilization	% in Equity Fund	% in Bond Fund	Total Exposure in %
9	90	10	100
8	80	20	100
7	70	30	100
6	60	40	100
5	50	50	100
4	40	60	100
3	30	70	100
2	20	80	100
1	10	90	100
0	0	100	100

Effect of Dividend Payment

It is quite common to find unit trust schemes paying dividends to unit holders on a regular time interval basis. The payment of dividend will reduce the NAV of the unit by exactly the gross amount of dividend. For example, if the NAV of a unit trust fund is RM0.90 before payment of dividend. Assuming 5 sen dividend was declared and subsequently paid, the NAV of the unit will be reduce by 5 sen on the date it traded at ex-dividend price basis.

It should be pointed out that the gross amount of dividend paid is subject to taxes. As a result what is received by the unit holders will be the net amount after tax. Assuming tax rate of 26%, the net amount received shall be:

5 sen x (1 – 0.26) = 3.7 sen.

Bear in mind that the NAV of the unit has been reduced by 5 sen, one can see that such payment of dividend is unfavorable to the investors. In the past when investors with tax bracket lower than 26% can claim the tax refund from the Inland Revenue. With the budget announcement in 2007 on unifying the dividend payment, no more refund of taxes shall be available in future.

In order to avoid such a loss, investor may choose one of the following measures:

a.   sell the units outright before the ex-dividend date
b.   switching the fund to another fund that is not subject to dividend payment
c.   A combination of the abovementioned measures

An early liquidation of investment funds for cash may spoil the entire financial plan of an individual. This is because if the sale proceeds is to be re-invested, there will still some form of entry or initial charges in most investment vehicles with higher returns. Investment vehicles without entry costs or charges are usually those with low returns. Some of the vehicles without entry charges and initial charges are FD, negotiable certificate of deposits and no load funds managed by unit trust companies.

The point to learn here is that financial planner should not choose unit trust funds that pay dividend if the financial goal is for growth.

Effect of Bonus Units

Unit trust fund managers also practice giving of bonus units on a pro-rata basis so that each and every unit holders end up owning more units. For illustration let us assume we have a unit trust fund with NAV of RM1.10. The Fund manager announced that it will give a bonus unit for every 10 units held on the first day of next month. After the entitlement date, the NAV of the unit trust will automatically be reduced to RM1.00. Unit holders will end up having more units. For instance, if John has 100,000 units before the ex-date, he will have 110,000 units when the exercise of bonus units is completed. The value of 100,000 units before the bonus issue was RM110,000 (RM1.10 x 100,000 units). After the bonus issue, the total value will also be RM110,000 (RM1.00 x 110,000 units).

On the face of it, there is no gain no loss as far as investors are concerned. In practice, stamp duties on mailing and stationeries are incurred. All these costs are undoubtedly borne by the investors. Hence, the investors are worst off despite the psychological comfort derived from owning more units.

One of the possible reasons for payment of dividend and handing out bonus units is to reduce the NAV and therefore the selling prices of the units to make it more marketable. Another reason is to capitalize on the some investors' misconception that lower price means lower risk of investment.

Advice on withdrawal from EPF to invest in Unit Trust

Investors ought to remember that there are two types of additional costs incurred when withdrawals are made from EPF to invest in unit trust scheme. They are:

a.   Dividends payable EPF has been sacrificed
b.   The initial charges of 5% or more that are imposed to reduce whatever amount is withdrawn. With effect from 2008, the initial charge has been reduced to 3%.

Many investors when computing their returns from investment tend to forget the opportunity costs sacrificed, particularly the dividend payable by EPF.

The advice to heed here includes the following:
a.   Investors are advised not to withdraw to invest in bond funds. If safety of the capital is the emphasis, no withdrawal should be made in the first place. By nature, the money parked in EPF is meant to be invested in fairly safe channels of investments. In fact about 40% of the funds in EPF have been invested in MGS.

b.   Investment should be of long term nature. This longer tenure of investment will reduce the one time initial charges. For example, if the total initial charge is 3%, adopting a 3-year tenure as investment time horizon will reduce it to 1% per annum. A short duration may be difficult for the fund to generate return to cover the initial costs and the opportunity cost.

c.   Avoid withdrawals and invest only in the bull markets. Make regular withdrawals on quarterly basis as permitted under the scheme. This is a way of exercising dollar costs averaging.

d.   Allow time for the funds to accumulate. In other words, investors have to be patient instead of keep tracking the NAV and the performance of the funds.

e.   Select reputable fund managers or those with proven track record.

EPF Invest Scheme

All EPF members above 18 years old can open and EPF scheme investment account. They are allowed to invest 30% of the savings amount in excess of their Basic Savings amount required in Account 1. Basic Savings amount is applicable to members up to 55 year old only before release control issued by EPF.

Basic Savings is a pre-determined amount set according to age in Account 1 to enable members achieve a minimum savings of RM240,000 when they reach age 55. The implementation of the Basic Savings is to ensure that members have sufficient savings at a minimum amount of RM1,000 per month when they retire in order to support their basic retirement needs for 20 years from age 55 to 75, in line with Malaysian's life expectancy.

The amount in excess of the Basic Savings can be invested in appointed Fund Management Institutions. The latest revision in the quantum has been implemented starting 1 January 2019.

View Required Basic Savings in Account 1

Age	Basic Savings (RM)	Age	Basic Savings (RM)
18	2,000	37	68,000
19	4,000	38	74,000
20	6,000	39	80,000
21	8,000	40	86,000
22	10,000	41	93,000
23	13,000	42	101,000
24	15,000	43	108,000
25	18,000	44	116,000
26	21,000	45	125,000
27	24,000	46	134,000
28	27,000	47	144,000
29	31,000	48	154,000
30	35,000	49	164,000
31	39,000	50	175,000
32	43,000	51	187,000
33	47,000	52	199,000
34	52,000	53	212,000
35	57,000	54	226,000
36	62,000	55	240,000

Sample of Eligibility Calculation

Member	Age	Savings in Account 1 (RM)	New Basic Savings Investment (RM)	Calculation for Investment (30%)	Eligibility
A	22	4,000	10,000		Member is not eligible, savings in Account 1 is less than the new Basic Savings
B	22	11,000	10,000	11,000 -10,000 X 30% = RM300	Member is not eligible, minimum eligibility amount is RM1,000
C	25	24,000	18,000	24,000 – 18,000 x 30% = RM1,800	Member is eligible, minimum eligibility amount is RM1,000 and maximum amount is RM1,800

Computations Relating to the Return of Investment

In the earlier section, the measurement of performance by fund manager was presented. However, based on the fact that the return of investors could differ from the growth rate of NAV, there is a need for us to provide some techniques on how the returns of investors are computed. The computation is not so straight forward because of the following 2 main factors:

i.   Timing of investment which can be on one lump basis, regular basis using dollar cost averaging and irregular investments pattern
ii.   Some fund exercise payments of dividends while some exercise unit splits

Some exercises are presented herewith:

9-1: An investor invested RM100,000 in an equity fund when the NAV was 50 sen for a period of 5 years. During the 5 year duration, there were two unit splits of 1 for 10 each. The current NAV is RM0.60. What is the compounded rate of return of this investment if the acquisition price of the units were 52.5 sen?

Suggested solution: This involves working out the number of units owned by the investor before multiplying them by the current NAV.

The number of unit shall be: RM100,000 ÷ 0.525 x 1.1 x 1.1 = 230,476.19 units
The current market value = 230,476.19 x 0.60 = RM138,285.71
The compounded rate of return using a financial calculator: 6.7%

> 9-2: An investor invested RM1,000 per month at the beginning of every month in a unit trust fund for 5 years. Dividend income of RM3,000 per year were received at the end of year 1, year 3 and year 5. His total investment excluding dividend received is worth RM80,000 now. What is the compounded rate of return?

Suggested solution:

We shall compute the IRR of the investment using financial calculator. Before this can be done, the cash flows relating to the investment have to be identified first as follows:

Beginning of Month	Cash Flow in RM
1 to 12 (12 months)	−1,000
13 (at the end of month 12)	2,000 (3,000 − 1,000)
14 to 36 (23 months)	−1,000
37 (at the end of month 36)	2,000 (3,000 − 1,000)
38 to 60 (23 months)	−1,000
61	3,000 + 800,000 = 83,000

The inputs and displays into financial calculator are as follows:

H/P: Input	Display
1000, ± , CFj	- 1000
1000, ± , CFj	- 1000
11, Shift, Nj	11
2000, CFj	2000
1000, ± , CFj	- 1000
23, Shift, Nj	23
2000, CFj	2000
1000, ± , CFj	- 1000
23, Shhift, Nj	23
83000, Cfj	83000
Shift IRR	1.352716
x 12	16.23

Note:
a.   The first input into HP10B/10BII cannot be duplicated using the Nj key.
b.   The monthly IRR of 1.352716 has to be multiplied by 12 to get the yearly IRR.

> 9-3: An investor started investment in unit trust with RM20,000. He invested another RM10,000 a year later and RM30,000 3 years later. The fund managers give extra units to the investor based on a ratio of 1 for 5 at the end of year 1. Net dividend of RM4,000 was paid to the

investor at the end of year 2. The investment scheme has been 5 years now and the number of units owned by the investor is 123,000 units. Current NAV is 62 sen. What is the compounded rate of return?

Suggested solution:

Again we have to work out the cash flows of the investment scheme before we can make the necessary computations.

Year	Cash flow
0	-20000
1	-10000
2	4000
3	-30000
4	0
5	62 sen x 123,000 = 76,260

The inputs into the financial calculator and the display are as follows:

HP Input	Display	Casio 200V
		Cash, D.Ed X
20000, ± CFj	-20000	X1 = -20000
10000,± Cfj	-10000	X2 = -10000
4000, CFj	4000	X3 = 4000
30000, ±, CFj	-30000	X4 = -30000
0, CFj	0	X5 = 0
76260, CFj	76260	X 6 = 76260
Shift, IRR	9.37	IRR, Solve

We need not multiply the IRR by 12 because the IRR computed is already in yearly mode. In addition, the number of units received in between is ignored because it has been reflected in the total unit at the end of the 5 years.

Self Assessment

1. Which of the following regulatory bodies regulates the unit trust industry in Malaysia?

    A.   Securities Commission
    B.   Bank Negara
    C.   Ministry of Trade and Industry
    D.   Federation of Malaysian Unit Trust Management Companies

2. Funds that normally contain a combination of common stocks and fixed income securities are known as _____.

    A.   Income funds
    B.   Growth funds
    C.   Balanced funds
    D.   Money market funds

3. Funds which attempt to provide current income, safety of principal and liquidity are knows as

    A.   Growth funds
    B.   Index funds
    C.   Balanced funds
    D.   Money market funds

4. Suppose XYZ unit trust fund owned only 4 shares as follows:

Share	Shares (units)	Price (RM)
A	2,500	11
B	2,100	14
C	2,700	23
D	1,900	15

    The unit trust fund originated by selling RM100,000 of units at RM10 per units. What is its current Net Asset Value (NAV)?

    A.   RM1.47
    B.   RM14.75
    C.   RM16.03
    D.   RM27.62

5. What is the offering price for a fund with a Net Asset Value (NAV) of RM25.25 and a load of 6%?

   A.   RM1.52
   B.   RM14.75
   C.   RM16.03
   D.   RN27.62

6. You are given the following information extracted from the prospectus of a unit trust fund.

   NAV beginning of period   RM150

   Distributions
   Net investment income   RM0.75
   Net realized gain   RM1.25
   NAV end of period   RM140

   The annual return for the unit trust fund is

   A.   5.33%
   B.   -5.33%
   C.   -6.67%
   D.   6.67%

7. A unit trust fund has a portfolio turnover ratio of 250%. The average holding period in month is
   (Average holding period = 12 months / portfolio turnover ratio)

   A.   069 months
   B.   8.4 months
   C.   8.28 months
   D.   4.8 months

8. Assuming you invest RM1,000 at the end of each quarter for the next 15 years in a guaranteed
   mutual fund. The annual rate of return that you expect to earn on your investment is 8.75%. The
   amount in the account at the end of 15 years is

   A.   RM28,790
   B.   RM121,749
   C.   RM60,000
   D.   RM115,637

9. Consider the following unit trust funds, assuming the Risk Free Rate is 8%

Unit trust	Return	Beta	σ of Return
A	16%	1.0	5%
B	22	1.5	10
C	11	0.6	2
D	18	1.1	6

Using the Treynor Measure, which unit trust fund performed the best?

A.   A
B.   B
C.   C
D.   D

10. Which unit trust fund type is most likely to own stocks paying the highest dividend yields?

A.   Capital appreciation fund
B.   Equity income fund
C.   Growth and income fund
D.   Growth fund

Answers: 1.A, 2.C, 3.D, 4.B, 5.D, 6.B, 7.D, 8.B, 9.B,10.B

Chapter 10

Real Estate

Chapter Objectives

On completion of this chapter you should have a basic knowledge on :

- Basic characteristics of real estate as an investment

- Purpose of acquiring real estate

- Return from real estate investment

- General Classification of Real Properties

- REITs

- Housing Developers (Control & Licensing) Act 1966

- End financing and its benefits

- Important Features of Real Property

- Determinants of real estate values and valuation of real estate

- Selection of housing loan package and savings in refinancing

- Real estate cycle

Introduction

The term real estate refers to properties such as agricultural property, industrial property, commercial property and residential property. Properties acquired are either for own use or for investment/ speculative purposes. If a property is acquired solely for own use, there will not be any rental income but will enable the owner to save on rental expense. If it is acquired for investment, usually there will be rental income. All properties, whether acquired for own use or for investment, have chances of enjoying capital appreciation. Buying and selection decisions on real estate greatly affect the return earned from investing in it. Investing in real estate means more then just "buying right". It also means choosing the right properties for your investment needs and managing them well. Here we begin by considering investors' objectives, analysis of important features and determinants of real estate value.

Investment Characteristics

In real estate investment, generally we have three options as follows:

*   The first option is investing with direct ownership. Direct ownership could be taken to mean buying a property and get the ownership registered in investor's own name.

*   The second option is in the form of indirect investment in the form of equity in companies listed in Bursa Malaysia. Investment in equity of a real estate companies refers to buying ordinary shares of real estate companies or the so called properties counters. It can also mean buying the bonds or loan stocks of real estate companies.

*   The third option is in the form of real property trust. Real property trust is a trust fund investing all its funds in real property. This is a form of close-end funds. However, it differs from option two because the main assets are in developed real estate with emphasis on rental income for distribution to the investors.

Investment characteristics in real estate depend on the options (as stated above) chosen by investors. Investment characteristics could be seen from several viewpoints. The main areas are as follows:

*   **Saleability.** Finding buyers can be a problem especially during bad times. Over the past decade, our government had to assist in organizing special sales promotion, offering waiver of stamp duty in assisting housing developers to clear their 'stocks' and removing the real property gains tax, apart from the discount in prices offered by developers.

    Properties to be auctioned by banks usually could not find takers during bad times. In fact, just to apply for the approval of auction could take one to three years, depending on whether the applications are contested by the owners. The time frame required for the approval of auction is the same, regardless of whether applications are made during good or bad times.

    The above difficulties are usually encountered in direct form of investments under option one. Other two options encounter much less difficulty when it comes to selling or liquidating the investments.

- **Liquidity.** By liquidity, we refer to the ability of the investment to be converted to cash at prevailing market values. In this respect, investment directly in the property under the first option is considered illiquid. Even after a property is sold, it will take some time for the sale proceeds to come in. The time frame is about three months for the sale proceeds of completed properties to be settled. This is evident by the fact that the completion period in most standard sale and purchase agreements is 3 months, with the option of extension by one month if necessary. In some cases, where consent of the state government is required, the final settlement could take more than a year. Indeed, most real estate acquired is classified as non-current assets in the balance sheet. On the other hand, investment under the second and the third option are relatively much more liquid.

- **Taxation.** In general, investors enjoy exemption of Capital Gains Tax in Malaysia. In the case of real estate, a real estate capital gains tax known as Real Property Gains Tax has been removed since 2007. However, rental income under the Income Tax Act 1967 remains taxable.

- **Profitability.** Return from investment in real estate comes in one or two forms, namely, rental and capital gain. This is applicable to those who invest directly into real estate. However, for investors who invest under option 2 and 3, their returns are in the form of capital gain and dividend from holding the shares that represent their investments.

  The chances of reaping substantial gain under option 1 are generally better than investment under the other two options. There are many success stories in the property market. Owners of vacant land or agricultural land acquired long before the area is developed into commercial area have become wealthy. On the other hand, the risks of substantial losses in option 1 are equally high. Under option 1, the amount of losses could sometime exceed the costs of purchase of the property. This happens because of borrowing. When a property loan is not settled, interests on loans, incidental expenses relating to the application for auction, costs of auction and auctioneer's fee would become additional expenses. These costs and expenses could become substantially high to make a person bankrupt, much to the surprise of some ignorant investors.

  The chances of success or failure depend very much on the selection of appropriate investments and other factors such as gearing, timing of purchase and the overall market situations. Profitability under option 2 and 3 are very much dependent on the selection of property counters or REITs that are growing in popularity. In general, the returns are lower under option 2 and 3. However, the risks associated with such forms of investments are also lower

  Before deciding on the form or option of investment, we must first of all consider the purpose or objective of property acquisition. As stated earlier, properties could be purchased for two main reasons. One is for own occupation and the other is for investment or speculation.

Purpose of acquiring real estate

Own occupation:
The purpose of acquiring the property has to be determined. For example, one has to understand whether the property is to be self-occupied as residence, for commercial purpose or agricultural use. If it is for own use, obviously the second and third options have to be eliminated. The usage of a property could sometimes be for more than one purpose. An example is a 2-storey shop

house where the ground floor is used for business purpose and the first floor is specifically built as residence. Ownership of properties can sometimes increase the credit standing of individuals or corporations. It is common to find questions in credit card application form asking whether the applicant owns the house he stays. Commercial banks in granting unsecured credit facilities also tend to consider companies that own their own business premises more favorably.

The need for own usage should not automatically be the overriding or sole factor in deciding on the acquisition of the property. One should identify and evaluate on the alternatives such as renting the property.

For corporations, acquisition of real estate will increase the asset size of the company and has the effect of reducing "return on asset" and "return on equity". Let us illustrate this point with an example. We shall assume that company X has the following summarized results last year:

Net profit   : RM5 million
Total asset   : RM250 million
Net worth   : RM50 million
Annual Rental expense: RM250,000

The Return on Asset = Net profit / total asset
                    = RM5 million / RM250 million = 2 %

The Return on equity = Net profit / Net worth
                    = RM5 million / RM50million = 10%

The property that the company considered to acquire was to cost RM15million and would have enabled company X to save rental expense of RM250,000 but would increase interest expense by RM500,000. The acquisition of the property would have had the following financial effects on the company

Net profit: RM5million – RM500,000 + RM250,000 = RM4.75million

Total asset: RM250 million + RM15 million = RM265million

Net worth: RM50 million – RM0.25million = RM49.75million

The return on asset = RM4.75million / RM265million = 1.8%

The return on equity = RM4.75 million / RM49.75million = 9.55%

Based on the above illustration, the acquisition of the property was not good for the company in the short run. However, a longer-term analysis by taking into consideration several factors such as trend of property value, rental expense, and space requirement, is required, before final decision is made. Shareholders should be aware of management who are in for short-term gain or performance at the sacrifice of the long-term interests of the shareholders.

For individuals, family needs should be incorporated into the various factors for consideration in selection of property. These family needs could refer to security, public transport for family members, the quality of school nearby (children are usually admitted into school nearby), distance of the proposed home from office for the working adults and even the majority of the ethnic group residing in the vicinity. In estate planning, real estate is popularly included as part of assets to be passed on to the next of kin.

For investment/speculation. It is difficult to draw a line between investment and speculation. In real life, it is difficult to get someone to admit that he is speculating rather than investing. One of the reasons is because bankers do not like to finance activities that support speculation. Property for investment or speculation is acquired for rental income and capital gain. If an investment proposal in real estate concerns swampy land without any immediate commercial value and hence rental income, the investment is generally considered to be very speculative. Other properties that do not generate periodic rental income include land without access road, or properties occupied by squatters. Even properties expected to generate rental income may fail to generate income during bad times when tenants could not be found. Therefore, buying properties for investment is considered more risky when compared with acquiring them for own use. Because of the relatively higher risk associated with buying properties for investment purposes, investors may therefore have to consider indirect investment to make use of professional services in this area. Hence, the second and third options seem to be more appropriate choices in this respect.

Acquisition of properties for investment purposes should be evaluated together with other investment opportunities. Usually, the risks and returns of all the investment alternatives are evaluated before final decisions are made. Investment appraisal tools such as NPV and IRR techniques could be used. This gives rise to a question on the computation of investment return from real estate.

Return from Direct Investment in Real Estate

We mentioned earlier that return comes in the form of rental plus capital gain. While rentals of completed properties are relatively easier to estimate based on the data collected from surrounding comparable properties, the amount of capital gain is much tougher. We shall provide the computational skill using 2 hypothetical examples here:

Example 1:
Assuming that a building built on a lease hold land is currently fully rented out at net rental income of RM25,000 per month. The tenancy agreement is valid for 2 years before renewal to a fresh agreement that permit increase in rental by 4 % for another time period of 3 years. An investor is considering purchasing the building for a period of 5 years. Based on required rate of return of at least 12%, how much is the maximum price to pay for the property assuming the building will not appreciate in value after 5 years because of the shortening of remaining lease?

Suggested solution:
The solution involves valuation of the future cash inflows of the investment. We shall assume that rental is payable at the beginning of each month. Therefore, apart from the first month rental, all future rentals are future cash inflows of investments. The cash inflows of the investment are as follows:

Time	Amount
Month 1 to 24	25,000
Month 25 to 60	26,000

Computation using financial calculator:

Input	Display
25000, CFj	25000
25000, CFj	25000
23, Shift Nj	23
26000, CFj	26000
36, Shift, Nj	36
12. I/YR	12
Shift, NPV	1159063

The NPV of the investment represents the maximum price RM1,159,063 to pay for the property in this case.

Example 2:
Assuming that the property mentioned in example 1 is offered for sale at RM2 million. Based on additional assumption that the property will appreciate in value by 4% per annum, what will be expected rate of return from this investment?

Suggested solution:
After 5 years, the property growing at 4% per annum will be valued at RM2 million x $(1.04)^5$ = RM2,433,306. With the additional information, the cash flows of this investment proposal is now as follows:

Time	Amount
Beginning of Month 1	−2,000,000 + 25,000 = −1,975,000
Beginning of month 2 to 24	25,000
Beginning of month 25 to 60	26,000
Month 61	2433306

Using financial calculator, we can work out the IRR which is the expected rate of return of this investment at 18.21%. Since the projected rate of return is higher than the required rate of return of 12% per annum, the proposal is acceptable.

Input	Display
1975000, ±, CFj	-1975000
25000, CFj	25000
23, Shift, Nj	23
26000, CFj	26000
36, Shift, Nj	36
2433306, Cfj	2433306
Shifr, IRR/YR	18.21

General Classification of Real Properties

Under the Land Laws in Malaysia, properties are to be used according to the purpose as stated in the title deeds. Changes would require conversion of land use. Properties may be classified in several ways as follows:

- Residential
- Commercial
- Industrial
- Agricultural
- Hotel
- Resorts and golf courses

- **Residential properties.** These include landed residence (single-storey, double-storey, semi-detached and detached houses), and non-landed properties (could be known under different names such as flat, apartment, condominium and town houses).

- **Commercial properties.** These include shophouses, office buildings, and commercial complexes.

- **Industrial Properties.** These include light industry factories, warehouses, and factories for heavy duties. Availability of workers is an important factor. Power supply, service roads, and other infra-structural facilities are also to be closely studied.

- **Agricultural Properties.** These include land cultivated with agricultural products such as rice, oil palm, rubber, vegetables, fruit trees, and other cash crops. Although agricultural land should be meant for agricultural use, there is a provision to allow construction of one unit of building on the land. Access road to the property is one of the most important factors. In general, agricultural properties are in location relatively undeveloped. The issue of accessibility is therefore more important when compared to buying properties in developed area

- **Hotel.** Some will classify this under commercial as well. It refers to all the hotels ranging from budget class to 5-star hotels.

- **Resorts and golf courses.** This serves a different market in providing holiday destinations/ recreation.

There are also other ways of classifying real estates for specific reasons. The following are examples of how commercial banks find it useful in evaluation of real estate as collateral.

- **Vacant land.** The land could be designated for certain use, but it is left unoccupied or unutilized for the time being. Care has to be taken to check if there are squatters. It is also advisable to fence up the area if it is possible. There is also a need to check if there is a need to fill up the land level before it is used. Cost of earth filling can be high. Perhaps, the most important issue to consider in the acquisition of vacant land is the accessibility to the piece of land under consideration. Vacant lands are usually undeveloped land and hence it is common to find road accessibility a common problem.

- **Completed properties and properties under construction.** Completed properties refer to those fully built in accordance with approved building plans and issued with certificates of fitness for occupation. Properties under construction refer to those still under construction and therefore expose buyers to an additional risk of non-completion. In this respect, buyer or investor has to check on the track record and financial standing of the developer before commitment to purchase. During bad times, many projects are abandoned. However, the purchasers who have obtained end-financing have the legal obligation to service interests on the end-finance facilities despite the fact the developers might have absconded.

- **Income generating or non-income generating property.** In general, properties that are unoccupied are not regarded as good collateral. Unoccupied properties would not bear any rental income. It could also mean that the location of the property is not ideal or ripe for commercial, residential or industrial use.

- **The tenure of ownership.** Properties with perpetual ownership are the most preferred forms of collateral as compared to properties that are classified leasehold. Leasehold properties with remaining lease periods that are too short are not ideal as collateral. This is because the properties are hard to sell in case there is a need to auction the properties. Even if the government could consider renewing the lease upon expiry, there are usually costs and conditions involved.

Real Estate Investment Trusts (REITs)

One of the major weaknesses of investing in real estate is the liquidity problem when investors wish to cash out. Another weakness is the need for maintenance of the property and looking out for tenants. In order to overcome these weaknesses, investors have a choice to invest in real estate investment trust or REIT which is commonly referred.

An investor who is investing in REIT is essentially buying into the public quoted shares of a company that is involved in real estate investment. The company is engaged mainly in developed properties. Unlike those companies classified under the property counters, REITs generally do not get involved in housing or real estate development. As such the risk of REITs is generally lower than the risk exposure of property counter. The main income of RIET is the rental income. REIT is suitable for investors under the following situations:

a.   those who want to have a share of gain from appreciation of real property,
b.   those who wants to have a constant and regular source of income
c.   those who have no time to manage real properties
d.   those who are worried about investing into properties which turn out to be poor choice in terms of location
e.   those who want to cash out their investment in real estate with ease

The number of REITs in the Bursa Malaysia is growing gradually. However, continued success in this sector requires fair play to ensure that the new investment alternative is not abused in order to gain the confidence of investors at large. At present, the number of failures in second board companies listed in Bursa Malaysia remains a warning for the small investors.

Housing Developers (control and licensing) Act 1966

As a financial practitioner, one should also have a basic understanding on the Act. House ownership is one of the common financial goals for most individuals. An understanding of some of

the important provisions of the Act is therefore necessary. For the same reason, some issues on financing purchase of properties are outlined in the subsequent section.

Some of the relevant issues and terminologies are as follows:

1.   Housing accommodation: Any building, intended for human habitation, or partly for human habitation and partly for business premises.

2.   Housing developer: Any person, body of persons, company, firm or society (by whatever name described), who or which engages in or carries on or undertakes or causes to be undertaken a housing development.

3.   Housing development: means to develop or construct or cause to be constructed in any manner more than four units of housing accommodation and includes the collection of monies or the carrying on of any building operations for the purpose of erecting housing accommodation in, on, over or under any land; or the sale of more than four units of housing lots by the land owner or his nominee with the view of constructing more than four units of housing accommodation by the said landowner or his nominee.

      The first three definitions given above are very important as they spell out and confine the coverage of the Act to properties to be developed rather than completed properties.

4.   Schedule G: This refers to the standard sale and purchase agreement that must be adopted by a housing developer when housing accommodation to be sold includes portion of land thereon (commonly known as landed property).

5.   Schedule H: This refers to the standard sale and purchase agreement that must be adopted by the developer on sale of housing accommodation in a subdivided building (such as flat, apartment, and condominium commonly referred to as non-landed property)

      Schedule G and H are the mandatory formats for sale and purchase of properties under the coverage of the Act. In other words, sale of properties not under the Act are not bound by the standard agreement.

6.   Housing Development Account: Means an account opened and maintained by a licensed housing developer pursuant to the Section 7A of the Act. This is to prevent improper usage of funds for development purpose and diversion of funds by the developer, all of which could affect the successful completion of the housing project.

7.   Handing over of vacant possession: The time frame for handing over completed building with water and electricity supply connection. The time frame is 24 months from the date of agreement for Schedule G and 36 months for Schedule H. Failure to hand over within the time frame would render the developer liable to pay interest to the purchaser at 10%p.a. on a day to day basis.

8.   Defect liability period: A period of 18 months, after the delivery of vacant possession, during which the developer is liable for the defects, shrinkage or other faults in the said building.

Developer's license: A licence shall be required in respect of each housing development and where a housing development is to be developed in phases, a licence shall be required for each phase of the development.

9.   Advertising and Sales permit: No advertisement or sale shall be made by any licensed developer without an advertisement and sale permit having first been obtained.

10.   Schedule of payment of purchase price: This is an approved payment schedule under the sale and purchase agreement. Under the provision, house purchasers or their financiers are to pay the developers progressively against Architect's certificate of work done according to the schedule.

11.   Interest on late payment: Interest at 10%p.a. to be calculated from day to day is payable by the purchasers, to commence 14 days after notice of payment. The payment of interest shall not prejudice the developer's rights to annul the sale of the property and terminate the sale and purchase agreement.

▪   Default by purchaser and determination of Agreement: Developers' rights to annul the sale and terminate the agreement are spelt out in this clause of the agreement. The developers could exercise the rights under the following situations:

    1.   Purchaser's failure to pay the progress payment, part of it and or the interest payable on late payment after the expiration of 14 days.

    2.   Purchaser commits an act of bankruptcy before full payment of the purchase price

    3.   Purchaser's failure to pay any sum payable under the agreement.

    4.   Breach of terms and conditions in the agreement.

In the event when developers exercise their rights to terminate the agreement, payments previously paid shall be dealt as follows:

    1.   Interest unpaid shall be paid to the developer.

    2.   10% of the purchase price shall be forfeited in the case of Schedule G and forfeiture could go up to 20% in the case of Schedule H if the stage of construction exceeds 50% of development.

    3.   Residue shall be refunded to the purchaser.

The Act is essentially meant for the development and sale of more than four units of housing accommodation. Therefore we should not be using the provisions in the Act in advising our clients in the purchase of other properties such as shophouse and industrial factory. In general, one should seek the advice of solicitors before committing themselves in any purchase of properties.

End Financing of Real Estate

Not all properties are acquired or purchased on cash term basis. In fact, individuals who waited until they have accumulated sufficient funds to purchase their choice residence will find it extremely difficult to own one. Commercial banks are keen in providing end financing favourably if the purpose is for own occupation or own use. Some knowledge of financings is necessary in dealing with property investment.

The *margin of financing* is defined as the ratio between the loan amount and the purchase price. If the purchase price of a property is RM500,000 and the loan amount is RM400,000, the margin of financing is 80%. It is to be noted that the related costs of acquisition such as the stamp duty, legal fees and incidental expenses are excluded in the computation. In Malaysia, the margins of financing of low cost and medium cost houses are very high. Some banks even go to the extent of providing 100 % financing for these types of properties. The margin of financing decreases with the increase in the level of risk associated with the ownership of properties. Land without immediate access road, and those with little prospect of development and usage in the foreseeable future may not be considered for financing at all.

In encouraging house ownership, the government has formed **Cagamas**, a body that purchases mortgage papers, mainly on residential properties, from financial institutions. This arrangement means that commercial banks could approve and disburse housing loans, and thereafter seek refinancing from Cagamas by selling the mortgage papers relating to the housing loans. The process implies that financial institutions get funding entirely from Cagamas. There is also a profit margin associated with the arrangement because the interest rates charged by Cagamas are lower than the rates charged by commercial banks on house purchasers. The selling of the mortgage papers has another implication. It also means selling the loan assets of the bank. This selling of assets lowers the asset base of the banks. However, since there is still a source of income from the interest margin between the rate charged on customer and the Cagamas rates, the effect is a higher "Return on Assets" and " Return on Equity" which professional bankers and managers would love to show their shareholders. This is one of the main reasons why commercial banks are actively advertising for housing loans at very competitive rates.

Financing the purchase of any investment gives rise to **financial risks** The level of risks associated with financing depends on the types of property financing. Loans could be considered for the purchase of a proposed development land. It can also be in the form of bridging loan or end financing. The risks associated with the end financing of completed properties are relatively lower. Higher risks exposures are those involving financing of proposed development land and bridging loans. Commercial banks were badly hit when numerous projects were abandoned during the recessions.

Benefits of End Financing

End financing refers to the approval of loans by financial institutions to enable purchasers to complete the purchase of a property. The numerous benefits involved are stated hereafter:

- **Assist in House Ownership**
  Without this facility, purchasers will have to pay cash for the transactions. Therefore, end financing plays a very important role in assisting house-ownership. However, end financing has other additional benefits of which not too many people are aware.

- **Assist in Property Valuation**
  To understand the point, one has to examine the fact that the amount of loan is usually higher than the initial cash outlay of the purchasers. Commercial banks have a bigger stake in the property. Therefore they have to evaluate to see if the property is worth the amount of purchase price. This practice in a way helps the purchasers in valuation of the property. They also check on the ability of developers in completing a new project before they commit to finance. Purchasers should therefore take the hint if end-financing facilities are not available in a new housing project.

- **Safeguard Ownership in Investment**
  Another way that the financiers help to safeguard the interests of purchasers is to ensure that the properties are registered in the names of the purchasers. This is done to the extent that the title deeds to the properties could be registered in the name of the purchasers before full payments are made. We shall use an illustration to demonstrate the validity of this statement. Assumptions are as follows:

  - Purchaser enters into an agreement to buy a house at a purchase price of RM250,000.
  - A loan of RM200,000 is obtained to finance the purchase
  - The house is still currently under construction with 40% completion at the time of signing the sale and purchase agreement
  - The loan is to be released progressively against the Architect's certificate of work done
  - Purchaser paid RM50,000 or 20% of the purchase price
  - Title deed to the house is in the hand of the developer and is free from encumbrances

  Before a commercial bank releases its loan, the property has to be charged or mortgaged to the bank. The problem is, title deed is registered in the name of the developer who will effect a transfer only upon full payment of sale proceeds. The purchaser is thus not able to charge the property since the property is still not in his name. To overcome the problem, solicitors have suggested that the title deed be transferred into the name of the purchaser, so that the charge or mortgage can be effected in favour of the bank. In consideration of the transfer of property before full payment, developer is protected by the bank's issuance of a written undertaking to pay the developer progressively against the certificate of work done, after completion of legal documentation (I.E.: after the transfer and charge have been presented for registration by the land office). Therefore property is transferred and charged before full payment.

- **Eliminate the Claim of Bridging Loan Financier**
  Without any end financing, the property will remain in the name and hands of the developer until the property is completed and the payment is fully made by the purchaser. It is also possible that the title deed is charged to a bridging loan financier. During the time while the property is under construction, the developer may encounter financial difficulty and be sued. The bridging financier could auction the property if the developer is not able to service loan repayment plus interest. When this happens, the purchaser could suffer financial losses. With end financing, the practice is to redeem the property from the bridging loan financier before the property is transferred and charged to the end financier. In this way, end financing reduces risk associated with non completion of the project.

- **Assist in Selection of Reliable Solicitor**
  Another problem associated with cash purchase of property is related to the honesty and integrity of the solicitors handling the cash transaction. In Malaysia, it has happened that solicitors absconded with purchasers' money meant for the purchase. Thus, cash purchasers are strongly advised to exercise care in their selection of solicitors. With end financing, commercial banks have a list of pre-selected solicitors to provide the necessary services.

Costs of acquisition: There are several costs and expenses arising from the purchase of the properties. They may consist of some or all of the following:

- Commission payable to real estate agents
- Stamp duty on transfer of property
- Legal fees payable to solicitors
- Stamp duty on "charge document" to enable end financier to complete documentation
- Insurance premium on a mortgage loan reducing term policy

In particular, purchasers have to be aware that costs of acquisition apart from the price of the property can amount to about 10% of the purchase price.

Important Features of Real Property

There are several features or factors one should examine in evaluating a property's investment potential. Among numerous factors, one should consider at least the following:

- physical property
- property rights
- time horizon, and
- location
- potential acquisition by the government or related bodies

Physical Property

When buying a real property it is important to ensure that you are actually getting what you want. Problems may arise if you fail to obtain a site survey, an accurate square-footage measurement of building or an inspection for building defects. Upon inspection of the real property, if the state of property does not meet expectation, you can always refuse to contract until the vendor has complied or renegotiation may be required. The purchaser can also seek the advice or services of a professional valuer to do the job. Upon completion of the valuation exercise, a valuation report will be made available to the interested party. The same report may also be given to the financier if the sale is concluded.

Property Rights

It is equally important to conduct a search of the title deed relating to the property you intend to acquire. This title deed is the evidence of ownership of the property. You may conduct a search of the title deed yourself, or seek the services of your solicitors or professional valuers. Important information that can be established from the search includes:

- Name of owner. Some purchasers could not even establish the actual owner in their purchase of the property. Some could be making payment of deposit to only one owner when there could be many owners.

- Tenure of the land. Its status whether it is freehold or leasehold, can be confirmed. If it is leasehold, it may not meet your objective of buying freehold property for purposes of estate planning. Even if you do not mind that the property is leasehold, you should establish the remaining lease of the property. Commercial banks are generally not prepared to finance the purchase of a property if the lease period remaining is too short.

- ▪   Land area. Property is sometimes priced based on price per square foot basis. It is therefore necessary to ascertain the actual size of the land to determine the purchase price. Land may also be purchased for certain construction requiring a minimum land area. If the land size is insufficient, the negotiation of purchase should stop immediately.

- ▪   Land use. Whether it is agriculture, commercial or industrial. Conversion of land use is necessary if it is to be used for purposes not specified in the title. Conversion of land use can be time consuming and expensive.

- ▪   Shape of the land. This could affect the actual land use. The ideal land shape should be rectangular or square. Triangular shape should be avoided. Some Chinese even believe that the width of the front land should be smaller than the back portion to bring good fortune.

- ▪   Caveat or encumbrances, if any. Common encumbrances are mortgage in favour of bank and private caveat lodged by individuals who have interest in the land. Registration of mortgage shows that the owner has loan outstanding with the bank. Private caveat is usually lodged if a purchaser has paid 10% deposit for the purchase of the property. The caveat has the effect of freezing all transaction of the property so that the owner could not sell the same property to another party.

- ▪   Notice of acquisition by government or government bodies such as JKR and Telekom, or Tenaga Nasional. Sometimes certain lands are earmarked for development in the near future. By conducting a search it would save the purchaser from possible financial losses and inconvenience.

An investor could also conduct a search on the land use at the local council. The town planner will also be able to show zoning of the property and the proposed development in the area under their jurisdiction. Any land acquisition by the government authority could also be detected. In fact, proposed road development and any other infra-structural facilities in the area are also outlined by the respective bodies before implementation.

Titles may be classified as follows:

- •   Freehold status
- •   Leasehold status
- •   Strata-title status
- •   Bumiputra Restricted Title
- •   Bumiputra Reserve Title
- •   Master Title

Freehold status – this type of title gives the holder the right forever/ perpetually.

Leasehold status – this type of title gives the holder the right up to the expiry date as stated in the title deed.

Strata titles – these are individual titles issued to individual unit owners sitting on a common piece of land with a master title. These strata titles may be freehold or leasehold depending on the status of the master title.

Bumiputra Restricted Titles – these are titles for units reserved for Bumiputra to comply with the 30% Bumiputra ownership in all housing developments.

Bumiputra Reserve Titles – these are titles issued on land in gazette areas for only bumiputra ownership. Under no circumstances can these titles be transferred to a non-bumiputra.

Master title – a master title is a title with sub-ownership. Under most circumstances in housing development, the master title is then superseded by subdivided title (individual sub-title) except where the properties are sold with strata titles. On the other hand, not all master titles can be divided into sub-individual title, unless approval is given by the relevant authority.

Time Horizon

Real property market, like any other market, has its ups and downs. While some markets such as the commodity and share markets experience active price fluctuations over a short period of time, the time taken for changes in prices of property is much longer. Therefore, for people looking for short-term gains, investing in real property is not really the right vehicle. Before entering into any commitment in the property market, an investor should decide what time period is relevant. A short-term investor might jump in due to a fall on mortgage interest rate, high financing available and buoyant market expectations. On the other hand, a long-term investor might look more closely at population growth potential and longer-term potential development.

Geographical Locatio

Location is generally regarded as the most important factor in selection of property. Different location may suit different needs of businesses and individuals. For example, choice of location also depends on the type of business purchasers are in and the availability of resources. Many multinationals from developed nations came to set up operations in Malaysia several years back because of the availability of cheap labour in Malaysia. The operation subsequently relocated to other countries when costs of labour moved up in Malaysia.

Generally, commercial properties located in busy commercial areas are properties that command the highest value. Evidently, prices of properties in big cities such as Tokyo, New York, London, Paris, Hong Kong, Beijing and Shanghai are commanding high premium. This is because properties in the city have greater demand as compared to those in the rural areas. Similarly, properties at convenient locations have greater demand as compared to those that are isolated. Convenient places mean areas which have easy access and have public facilities like proximity to commuter station, LRT (Light Rail Transit) station and so on.

Determinants of Real Estate Value

There are two major determinants of a real estate value. They are the economic forces of Demand and Supply. Within the economy, there are many factors affecting demand and supply. Being an open economy, Malaysia also encounters external forces that influence the two forces of demand and supply. Very simply, values of property prices will increase if demand exceeds supply. On the other hand, if supply exceeds demand, prices will drop. We shall therefore focus on factors that affect demand and supply as follows:

- **Changing Size of Population.** The size of population determines the demand for property. A city with rising population due to whatever factors implies increasing demand. Factors such as employment opportunities, tourism, migration are affect the size of population.

- **Interest rates.** Interest rates affect the cost of borrowings. Cheaper costs of borrowing encourage buying by purchasers, and therefore increase the demand. Lower costs of borrowing also tend to increase supply. Housing project development costs consist of

numerous expenses. One of the major items is the interest expense on the bridging loan. High interest cost discourages building of houses and therefore decreases the supply side.

Interest rates on fixed deposits influence demand and supply by presenting themselves as alternative investments, competing for funds of investors. If the interest rates are high, investors may prefer to keep the money in the bank instead of buying properties. Hence, high interest rates discourage buying decisions and lower the demand. The reverse is also true

- **Political stability.** A stable government is necessary for any investor to feel comfortable in investing their money in their country. Investors feeling insecure about the stability of a country would not allow their funds being tied up in long term investments in real estate. Those invested may consider liquidating their assets and moving their funds elsewhere. Thus an unstable political position could reduce demand for properties.

- **Real property gain tax.** Negotiation of a sale sometimes could not succeed because of the RPGT. Taxes cut down the required or expected profit of the sellers and influence their decision to perhaps defer the selling until a better offer comes along.

- **Bureaucratic processes.** To build a new housing scheme, a developer has to seek approval of local authorities. There are many departments involved. These would include the JKR, Tenaga, Telekom, Land Office, Planning Department, Building Department, Fire Brigade, Engineering, Water Supply, Environment, Landscaping, Drainage and Sewerage. After receiving the green lights from all these departments, only then the developer could apply to the Housing Ministry for a developer's licence together with a sale and advertising permit. Getting the approvals is time consuming. Supply, in this sense, is inelastic in the short run. The tedious process increases the cost and pricing of properties.

- **Government policy.** The government's policy of encouraging house ownership will help to increase the demand side. The setting up of Cagamas is an example of the government's effort in encouraging house ownership. Besides forming the Cagamas, the government has also directed commercial banks, giving them individual targets on the minimum number of low and medium cost housing accommodation they must finance.

- **Foreign investment policy.** Restriction or its removal will affect foreign demand of property. Continual changes in policy are also not encouraged.

- **Economic performance.** During good times of high economic growth, demand for property is usually strong. The reverse is also true during a glut.

- **Mortgage financing** is another key determinant of demand on real estate. The higher the margin of financing, the higher is the demand for the real estate as more people can have access to it

The factors as stated above are general factors affecting demand and supply which in turn affect prices. In practice, individual preferences and needs for specific property features also play a role in selection of property and price determination.

The Property Features

Examples of features that could affect prices are as follows:

- Location of the property is considered one of the most important factors. Properties in good locations are always in better demand. Even during recession, they are easier to sell and when market recovers, they are the first to respond in prices. In a broad sense, good locations in Malaysia could refer to the Klang Valley, Johore Bharu, and the Penang Island. These are the places that command better property prices. In fact, some banks specifically mention that they are keen in financing property development projects in these areas only. Within these relatively growth areas, good locations can further be identified or classified.

- The 'feng sui factors'. Examples are as follows:

    1. Whether the main doors of the houses are facing north, south, east and west. Properties facing south and east are generally preferred.
    2. Whether the house is above road level. Houses above road level are preferred.
    3. Whether the house is located at a road junction. In general, residential house located at road junction should be avoided.

- Restriction in land use. This spells out the suitability of the property in meeting the needs of the purchasers.

- The environment. This could refer to the air quality, water pollution, noise pollution and even friendly neighbourhood.

- Security. Certain areas are well known for "gangsterism", thefts and robberies.

- Public transport. Availability of public transport is sometimes considered in pricing decision.

- At times, the site and size of the property also affect properties prices. For example, property located at a high elevation with a good view tends to have greater demand compared to another at low laying area and has "no view" at all.

- Tenure of the property. Freehold or leasehold? Freehold land refers to ownership on a perpetual basis whereas leasehold property has a specified number of years of ownership. Upon expiry of the lease, ownership could be renewed at the discretion of the state government. Therefore, freehold land will command better prices in general. In east Malaysia, the equivalents of freehold lands are those with ownership tenure of 999 years.

Valuation of Real Property

Before we commence on the discussion of various valuation approaches, we shall outline the users and reasons for valuation exercises to be conducted. The various uses and the users are as follows:

- **Valuation for loan purposes.** Real estate is a common form of collateral acceptable to financial institutions in Malaysia. In lending to consumers, it is a common practice for financial institutions to compute the amount of loan based on a certain percentage of the

collateral value. To facilitate the lending and for purposes of getting a fair value, a valuation exercise is conducted on the proposed collateral. The valuation is usually conducted by professional valuers and for this purpose, banks usually have a list of approved valuers.

- **Valuation for property disposal.** Valuation report is also useful for a person interested in selling his properties but is not sure of the market prices. To avoid selling properties well below market prices, a person could seek the services of a professional valuer to advise on a fair market value.

- **Valuation for property acquisition and financing.** Purchasers who are keen in buying properties could also seek the services of valuers to advise on the fair market price so that they need not overpay for the acquisition of the properties. Very often, the same valuation report could subsequently be used by the financier in loan processing. In this regard, it seems advisable to get a valuer to value the property before buying the property, instead of waiting for a bank to appoint a valuer after the purchase commitment has been made. The costs or valuation fee is still the same whether it is conducted before or after the sale agreement is executed.

- **Valuation for compensation due to compulsory acquisition.** The government or its agency has the rights to acquire land belonging to the private sector. In consideration for such an acquisition, compensation has to be made. A valuation report is a useful guide whenever there is a dispute. The final price need not be the valuation given by the valuer. However, there is at least a basis of negotiation on the compensation sum. Such a valuation report could also be produced in court for decision if the negotiations failed.

- **For estate planning.** In wealth distribution on estate planning, a valuation based on the opinion of a professional valuer is also useful to ensure that the intended sum is actually distributed to the next of kin.

- **Valuation for listing and other corporate exercises.** Corporations also value or revalue their properties. Surplus arising from valuation could be incorporated into the net worth, giving a better indication of net assets per share. Bonus issues of ordinary shares are practised by some corporations based on the surplus in valuation in real properties owned by the company.

    Determination of sum assured. Valuation report also provides recommendation on the sum assured for fire insurance.

Main Approaches in Property Valuation

Valuation or estimating the current market value of a real property is done through a process known as a real estate appraisal. By the use of certain techniques, an appraiser (licensed property valuer) determines what he or she feels is the current market value of the subject property. However due to information and technical shortcomings, the estimate arrived at is not error free. The values stated are valid or applicable as at certain dates and thereafter changes could take place. Usually, an update in valuation is appropriate if the report is used for reference after some time from the date of valuation. For instance, some bank officers in conducting a credit review exercise on their borrowers do call up the valuers to get a verbal update of the properties' values. These verbal updates are further backed by official valuation every three to five years.

There are three approaches used by appraisers to estimate market value of properties. The three approaches are: -

- the cost approach
- the comparative sales approach, and
- the income approach

The Cost Approach
This approach is based on the total cost of development of the property. The development costs would include land cost, construction costs, bank interests, professional fees, stamp duties, costs of evicting squatters, and conversion premium. This approach works very well in the price estimates of newly completed properties. Very often, the developer's reward for entrepreneurship in the development is also recognized as part of the value of the property. The argument is, without the reward, who will be keen in developing the properties? This approach is in fact based on the concept of 'Cost Plus Approach' in new product pricing.

The Comparative Sales Approach
This approach uses the most recently transacted prices of a comparable properties y as a guide. We must bear in mind that every property is unique. Due to its uniqueness, adjustment to the recent transacted prices must be made accordingly.

If the property being valued is superior to those transacted, the estimated value must be adjusted upward according to how superior it is. Similarly, if the subject property is inferior as compared to the one transacted, then the value of the subject property should be adjusted downward. Hence, one can see that the process of valuation under this approach can be rather subjective. Personal preferences of valuers can affect valuation. In addition, there are also situations of desperate buyers or desperate sellers paying or buying at exceptional prices. To avoid RPGT, certain transactions are known to have been under declared in prices.

The Income Approach
In this approach, a property's value is viewed as the present value (value of money in today's terms) of all its future income. The most common income approach is called direct capitalization. This approach uses the formula below:

$$\text{Market Value (V)} = \frac{\text{annual net operating income}}{\text{Market capitalization rate}} \quad \frac{\text{NOI}}{\text{R}}$$

Where V   = market value

       NOI   = annual net operating income

       R   = market capitalization rate or the required rate of return

Annual net operating income (NOI) is the **gross potential rental revenue _minus_** vacancy and collection losses, operating expenses including insurance and taxes.

The **estimated market capitalization rate** is obtained by referring to recent market sales figures to determine the rate of return currently required by investors (using the above formula). The capitalization rate is the rate used to convert an income stream to present value.

For example, you have data for similar properties as follows:

Comparable property	NOI (RM) (1)	Sales price (RM) (2)	Market capitalization Rate (%) (1) / (2) = (3)
Cheras DSLH	15,000	282,500	0.053
Segambut DSLH	14,000	250,000	0.056
Kepong DSLH	14,500	260,000	0.056
Subject property	16,000	?	?

From the market information above, an appraiser will work through and analyse the similarities of the comparables and the subject property before he decides on an appropriate market capitalization rate (R).

If the appraiser has selected R = 0.055, the market value of the subject property = RM16,000 / 0.055 = RM290,909.

Expert Opinion
Valuation of real property is a complex and technical procedure. Reliable information about the features of the comparable properties, the selling prices and terms and conditions of transactions are required in order to give a more realistic estimate on the subject property. Having obtained such information, it also involves some subjective judgments by the expert in this field. One must therefore be aware that valuations cannot be scientifically accurate.

Selection of Housing Loan Package

Competition for housing loan has been very keen over the recent years. Each and every bank has developed some forms of end financing package to attract house purchasers. Packages include fixed rate loans and variable multi-tier rates loans. Banks have gone to the extent of paying legal fees and stamp duties for housing loans customers. How should one select a housing loan package?

This section suggests two yardsticks for decision making. One of the yardsticks is based on internal rate of return (IRR). Another yardstick is based on total interest payable. We shall see the pros and cons of the two yardsticks. The two yardsticks are evaluated based on an illustration as follows:

Two Loan Packages are available for a loan sum of RM100,000 with a tenure 10 years as follows:

a.   Package A: Single Interest rate of 6% p.a. interest on monthly rest or compounded monthly.

b.   Package B: First year: 4.5% p.a. Second year: 5.5% p.a. Third year: 6.25% p.a. 4th year and thereafter: 6.75% p.a. Interest on monthly rest or compounded monthly.

Total Interest Approach

Based on this approach, the housing loan package that charges lower interest expense shall be the preferred package. Total Interest on Package A may be determined by financial calculator by first computing the monthly instalment before using amortization key as follows:

HP 10B/10BII Input	Display	Casio FC200V Input	Display
12, Shift, PMT		120, n	120
10, shift , N	120	6 ÷ 12 = 0.5, I%	0.5
6, I/YR	6	100000, PV	100000
100000, PV	100000	Solve, pmt	– 1110.21
PMT	– 1110.21	Press AMRT	PM1=1 PM2=120
1, Input, 120		∑ PRN	100000 PRN
Shift, AMORT,=, =	33224.60	∑ INT	33224.60 INT

To work out the total interest payable, another way is to subtract loan sum of RM100,000 from the total instalment payable. In this case, the total monthly instalment will be 120 x RM1110.20 = RM133,224. Therefore, total interest payable = RM133,224 – RM100,000 = RM33,224.

The computation of total interest of Package B requires monthly instalment of each year be computed first as follows.

HP 10B/10BII Input	Display	Casio FC200V Input	Display
12, Shift, PMT			
10, Shift , N	120	120, n	120
4.5, I/YR	4.5	4.5, i%	0.375
100000, PV	100000	100000, PV	100000
PMT	– 1036.38	Solve, pmt	– 1036.38
9, Shift, N	108	9, Shift, n	108
PV	91897.63	Solve, PV	91897.63
5.5, I/YR	5.5	5.5, Shift, i%	0.458333
PMT	– 1080.72	Solve, PMT	– 1080.72
8, Shift, N	96	8, Shift, n	96
PV	83780.83	Solve, PV	83780.83
6.25, I/YR	6.25	6.25, SHIFT, i%	0.5208333
PMT	–1111.23	Solve, PMT	–1111.23
7, Shift, N	84	7, Shift, n	84
PV	75446.35	Solve, PV	75446.35
6.75, I/YR	6.75	6.75, SHIFT, i%	0.5625
PMT	– 1129.49	Solve, PMT	–1129.49

Total interest payable under Package B may now be computed as follows:

Year	Number of instalment	Monthly Instalment	Total Amount
1	12	1036.38	12436.56
2	12	1080.72	12968.64
3	12	1111.23	13335.6
4 to 10	84	1129.49	94877.16
Total	120		133617.96

Total interest payable under Package B is therefore RM133,617.96 which is higher than the total interest under Package A by RM393.36. Based on this total interest payable approach, Package A is a better offer. However, the total interest payable approach has its pitfall because it does not take into account the time value of money. In order to overcome this weakness, the IRR approach may be used. In practice, there are many other variables that come into play. These include hidden charges that may not be conspicuous to clients initially. Quality of service by the lenders is also a major important consideration. When interest cost differential is minimal, other factors are even more important.

IRR Approach

This approach examines housing loan from the lenders' view point. The loan amount is deemed to the value of initial investment or capital cash outlay. The monthly instalments are subsequent cash inflows. IRR may be defined as the discount rate that equates the present value of future cash flows with the present value of cash outlay. It is the projected return of granting a housing loan to house buyer. The higher the IRR, the more profitable is the loan from the viewpoint of lender.

From the viewpoint of borrower, the lower the IRR, the lower is the cost of financing.

In the case of Package A, the initial cash outlay is the loan sum of RM100,000. Subsequent cash inflows are RM1110.20 per month for 120 months. The IRR is actually the nominal rate offered under the loan package. In this case, it is 6% per annum.

For Package B, the computation of IRR is more complicated. The cash flows are as follows:

Months	Cash flows
0	− 100000
1st to 12th months	1036.38
13th to 24th months	1080.72
25th to 36th months	1111.23
37th month and thereafter	1129.49

Computation of IRR using financial calculator for verification purpose here is as follows:

Input (HP10B/10BII)	Display	Input (BAII Plus)	Display
100000, ±, CFj	− 100000	CF0,100000, ±, Enter↓	− 100000
1036.38, CFj	1036.38	C01,1036.38, Enter ↓	1036.38
12, Shift, Nj	12	F01,12, Enter ↓	12
1080.72, CFj	1080.72	C02,1080.72, Enter, ↓	1080.72
12, Shift, Nj	12	F02,12, Enter ↓	12
1111.23, CFj	1111.23	C03,1111.23, Enter ↓	1111.23
12, Shift, Nj	12	F03,12, Enter ↓	12
1129.49, CFj	1129.49	C04,1129.49, Enter ↓	1129.49
84, Shift, Nj	84	F04,84, Enter ↓	84
Shift, IRR	5.9854	IRR, CPT	0.49879
		x 12 =	5.9854

NB: The calculation of IRR using FC100 is relatively slow. After the input, it may take some time for answer to appear in the display.

Based on IRR approach, Package B with IRR of 5.9854% (compared with 6% under package A) is the package with cheaper cost of borrowing. This finding contradicts the findings in the total interest payable approach.

The final selection of a housing loan package, assuming all other factors are unchanged, should be based on IRR approach rather than the Total Interest Payable Approach. This is because IRR takes into consideration the time value of money.

Partial Prepayment of Real Estate Loan

In this section, the benefits and certain misconceptions on prepayment of real estate loans are highlighted. Some of the financial software forms conclusion on savings in interest expense without examining the opportunity cost of prepayment. In order to illustrate the point, let us use the following case example for illustration:

> Donny took up a loan of RM500,000 5 years ago. Interest rates were fixed at 6% per annum. Loan was originally repayable by 240 monthly instalments of RM3,564.33 each. With sufficient notice, partial prepayment is allowed by the lender without any penalty. How much interest could be saved if the monthly instalment amount remains unchanged after the partial prepayment of 50,000?

We will need to find out the interest savings. Before this can be done, we need to follow some steps:

Step 1: Determine the remaining total amount payable by multiplying the monthly instalment by the remaining number of monthly instalments.

Step 2: Determined the loan outstanding after 5 years. Based on the new outstanding after making RM50,000 prepayment, work out the remaining period required to fully repay the loan outstanding. Multiply the remaining number of instalment with the instalment amount to work out the total payable.

Step 3: The total amount payable in step 1 minus the total amount payable in step 2 shall be the savings in interest expense.

Actual computations

Step 1: After 5 years, remaining number of instalment shall be (240 – 60) 180. Total amount payable after 5 years shall be: RM3,564.33 x 180 months = RM641,581

Step 2: The outstanding after 5 years shall be as follows:

HP10B/10BII Input	Display	Casio FC200V Input	Display
12, Shift, P/YR	12		
20, Shift, N	240	20, n	240
6, I/YR	6	6, i%	0.5
500000, PV	500000	500000, PV	500000
PMT	3564.33	Solve, PMT	3564.33
15, Shift, N	180	15, n	180
PV	424498	Solve, PV	424498
−, 50000 = 374498 , PV	374498	−, 50000 = 374498 , PV	374498
N	148.30	Solve, n	148.30

Remaining number of instalment has been worked out as 148.30. The total amount repayable thereafter shall be: RM3,564.33 x 148.30 = RM528,590.

If the interest rate remains unchanged and in the absence of other charges, the amount should tally with the loan statement provided by the bank.

Step 3: The difference between the total payable in step 1 and step 2:

RM641,581 − RM528,590 − RM50,000 = RM62,990.

We may now say that the partial prepayment of RM50,000 resulted into interest savings of RM62,990. The statement on savings in interest expense is true provided the prepayment of RM50,000 cost the borrower nothing. In other words the money should come from non interest generating source such as current account or cash in hand. In practice, we know that this may not be true. The amount could come from savings, EPF withdrawal or sale of assets. Under the situation where there can be sacrifice on interest income or opportunity cost, the savings in interest expense may not be true.

For instance, if the RM50,000 is withdrawn from EPF, there is opportunity cost of sacrifice in the dividend income from EPF. If the dividend is 5%, the actual saving in interest expense should not be based on 6% under the loan. The savings can still be worked out but based on 1% savings only!

Fixed rates loans or loans with variable rates in financing

Another common question confronting house purchasers is whether to obtain a fixed rate loan or loan with variable interest rate. By fixed rate loan, it means that interest rate is fixed for the entire loan tenure regardless of changes in the money market. For variable interest rate loans, the interest rate is pegged to the Base Lending Rate. Whenever BLR changes, the actual interest rates change accordingly. Whether to opt for a fixed rate loan or loan with interest rates that vary according to BLR depends on the 3 main factors:

i. The prevailing interest rate,
ii. The trend of interest rate in the money market,
iii. Prepayment penalty

If the prevailing interest rate is low, the preference shall be for fixed rate loan. Since the rate is low, the chance of it going lower is perceived to be low. On the other hand, the chance that it will go up is higher.

The trend of interest rate in the money market plays a very important factor in making the choice. Given an uptrend in interest rate, it will be wise to lock up the fixed low rate to a void future increase in interest cost. Nonetheless, commercial banks rarely want to provide such kind of offer when rates are seen to be going up. When interest rates in the money market go up, the interest rates which they need to pay their depositors usually also go up. The fact that interest rates loan are fixed suggest that they will have to absorb the narrower profit margin. On the other hand, if interest rate is seen to be dropping, the choice is for variable rates financing. Commercial banks usually provide offer fixed rates financing when they fell that interest rates are declining. However, they can be wrong in their judgement.

Apart from commercial banks, there are other financial institutions that also provide fixed rate loans. Insurance companies in particular, require fixed rates of return from investments for purposes of matching their liabilities in traditional life policies. By offering fixed rate long term loans, the returns will provide a good match for their commitments to policy holders.

After a loan has been taken up, interest rate may continue to drop. Borrowers may therefore explore the possibility of moving to another bank for refinancing. Financial institutions usually require 3 months prior notice when borrowers exercise prepayment. In lieu of notice, interest charges up to 3 months are charged. In cases where commercial banks pay for their clients on legal fees and stamp duties relating to loan documentations, the prepayment penalty will be higher. For example, a penalty fee of RM7,500 or 2% of the original loan amount, whichever is higher will be imposed if the loan is repaid in less than 5 years after full disbursements even when there is prior notice of prepayments. Therefore, regardless whether it is an offer of fixed loan or loan with variable interest rate, the prepayment penalty need to be understood.

Real Estate Cycle

For anyone to invest in real property or to buy it for own occupation, he must have the financial means or economic resources to invest. The financial means and economic resources of an individual, or other entities, depend greatly on the country's economic performance. During good times, many people are over confident on their financial means and tend to commit heavily in the real estate sector. They also resort to heavy financing even though interest rates are high. However, when recession sets in, these people who are over committed are the ones who suffer as their investment are either voluntarily or forced sold at low prices. This group of people includes real estate developers and the individual purchasers. To avoid substantial capital loss or to make substantial capital gains, one of the ways is to understand the real estate cycle. The real estate cycle follows quite closely to that of a country's economic cycle.

A typical developed property usually goes through three phases:

- **Growth**
  In this phase, news of investors or speculators making money or fortunes from the properties are common. New players begin to become developers, hence increasing the supply. Properties change hands fast and at increasing prices. Rental of properties are rising, boosting confidence of owners to acquire more when they experience that the rental income exceeds the instalment repayment to financial institutions. Many investors who do not own any property express regret over missing the boat but have no hesitation to join in. Investors who made profit become greedy and started buying more properties, with the help of financial institutions providing the bulk of funds in acquisitions.

■ **Stagnation**
The sale of properties slows down as the supply becomes excessive since more projects and supply come into the market. Excessive supply leads to properties not being able to be sold or let out for rental income. Even when properties are rented out, the rental incomes somehow drop and are far from meeting the installment amount. When they cannot repay and continue to keep the properties, selling of properties at a loss by investors begins.

■ **Decline**
Reluctantly, many players are forced by their financiers to liquidate or face the foreclosure actions by financial institutions. Due to poor sales and cash collections, some developers are not able to deliver the properties in accordance with the time schedule surfaces. Some of the developers would abscond. All of a sudden, almost all people realize the over supply situation. Properties are sold at ridiculously low prices but takers are few. Non-performing loans in the real estate sector surge. It is a phase that is accompanied by economic recession. To buy cheap properties at low prices, this is the time although some would advocate moving in only when there are symptoms of economic recovery.

In Malaysia, we had our recession from mid 1980's to 1989. During this recession, our real estate market was in very bad situation. Many property development projects were abandoned due to a variety of reasons. Consequently many properties loans were classified as non-performing loans. Although the economy started to recover from 1989, the property market did not get the impact until late 1990 and early 1991. Since then, the property market had escalated and developed into a huge over supply situation by the time the currency crisis took place.

With the Asian Currency Crisis set in mid 1997, the Malaysia economy was severely crippled and so was the property market which was already in the over saturated situation. Since then, mark improvements in the economy and the real estate market have been seen. Many properties in prime locations, particularly in the Klang Valley, have again appreciated in values. New investment vehicles in real estate such as the REITs, heave been developed. Nevertheless, the property cycle does not seem to have stopped as evidenced by the emergence of sub-prime loans in the USA in 2007. At the point of writing, the impact of this development on the world economy has not yet been determined.

Self Assessment

Multiple Choice

Circle the letter of the correct choice for each of the following.

1. Which of the following can be considered as objectives of investing in real estate?

    I.   Regular income
    II.   Potential capital gains
    III.   Liquidity
    IV.   Natural hedge against inflation

    A.   I and II only
    B.   I and IV only
    C.   I, II and IV only
    D.   All of the above

2. Which of the following operates like a unit trust fund that pools the money of investors to invest in real estate or share in properly-related companies
    A.   Real estate syndicate
    B.   Real estate investment trust
    C.   Investment in second mortgages
    D.   Property participation certificate

3. Which of the following is an advantage of real estate investment trust compared to other forms of investment?
    A.   A hedge against inflation
    B.   Easy entry and exit
    C.   No management concerns
    D.   Financial leverage

4. Which of the following statements regarding investing in real estate is true?
    A.   Real estate is considered a higher volatile asset class compared to shares
    B.   Investor of REITs normally enjoys a high rate of dividend payout
    C.   Real estate investments are suitable to those investors with short-to-medium term time horizon
    D.   In Malaysia, income and gains arising from disposal of properties are exempted from tax.

5. Mr. Kong received monthly rental income of RM2,400.00 from one of his investment properties which he acquired at the cost of RM300,000. During the year, he incurred annual insurance cost of RM1,200.00 and annual expenses of RM2,000. He also pays maintenance fee of 6% of monthly rental. What is his net rental yield?
    A.   7.50%
    B.   7.96%
    C.   8.25%
    D.   9.10%

6. Your client acquired a property for RM500,000 with a loan from the bank of RM400,000. The monthly interest payable on the loan is RM2,100.00. The annual cost of maintenance including management fee is RM4,500.00. If he collects monthly rental of RM2,800.00, what will be his cash-on-cash rental yield?
   A.   3.90%
   B.   4.50%
   C.   5.30%
   D.   6.00%

7. What is the main concern of a real estate investor when the investment might take as long as a year to be sold?
   A.   Illiquidity
   B.   Lack of diversification
   C.   Lack of a tax shelter
   D.   Long depreciation period

8. Which of the following expenses is most likely to be disallowed for deductions against rental income?
   A.   Cost of repairs and maintenance of the property
   B.   Cost of first rental agreement
   C.   Cost of supervision and rental collection
   D.   Cost of obtaining tenant to replace the old tenant

9. A property is able to generate net income of RM36,000 per year. Based on a market capitalization rate of 10%, how much should be property be valued?
   A.   RM360,000
   B.   RM480,000
   C.   RM36,000
   D.   RM48,000

10. A bank offered a 10 years housing loan of RM250,000 with interest rate of 2% in the first year and 6% in the subsequent years. What is the total interest payable under the offer?
    A.   RM70,302
    B.   RM72,180
    C.   RM73,215
    D.   RM74,002

Answer: 1.C, 2.B, 3.B, 4.B, 5.B, 6.A, 7.A, 8.B, 9.A, 10.B

Chapter 11

Performance Measurement Standard

Chapter Objectives

On completion of this chapter you should have a basic knowledge on :

- General understanding of performance measurement

- Three approaches in performance measurement

- Concept of annualizing return

- AIMR performance presentation standards

- Sharpe measure

- Treynor measure

- Jensen's Alpha

- Information ratio

Introduction

Performance measurement involves the calculation of the return realized by a portfolio manager over some time interval which we call the evaluation period.

The starting point for evaluating the performance of a manager is measuring return. There are several important issues that must be addressed in developing a methodology for calculating a portfolio's return. Because of the availability of different methodologies that can lead to quite disparate results, it is quite difficult to compare the performance of managers. Consequently, there is a great deal of confusion concerning the meaning of the data provided by managers to their clients and their prospective clients. This has led to abuses by some managers in reporting performance results that are better than actual performance. To mitigate this problem, the Committee for Performance Standards of the Association for Investment Management and Research (AIMR) in USA has established standards for calculating performance results and how to present those results.

Alternative Return Measures

Let's begin with the basic concept. The dollar return realized on a portfolio for any evaluation period (i.e., a year, month, or week) is equal the sum of (1) the difference between the market value of the portfolio at the end of the evaluation period and the market value at the beginning of the evaluation period, and (2) any distributions made from the portfolio. It is important that any capital or income distribution from the portfolio to a client be included. Item (1) is essentially what we refer to as capital gain in Chapter 1 where we define investment whereas Item (2) refers to periodic income from investment.

The rate of return thus expresses the dollar return in terms of the amount of the market value at the beginning of the evaluation period. Alternatively, the dollar return can be viewed as the amount (expressed as a percentage of the initial portfolio value) that can be withdrawn at the end of the evaluation period while maintaining the initial market value of the portfolio intact.

In equation form, the portfolio's return can be expressed as follows:

(Equation 11.1)

$$R_p = \frac{MV - MV_0 + D}{MV_0}$$

where:
R_p = return of the portfolio
MV = portfolio market value at the end of the evaluation period
MV_0 = portfolio market value at the beginning of the evaluation period
D = cash distributions from the portfolio to the client during the evaluation period

To illustrate the calculation of a return, let us assume the following information for a manager of a portfolio. The portfolio's market values at the beginning and end of the evaluation were RM25 million and RM28 million, respectively, and during the evaluation period RM1 million cash distribution (dividend) was distributed to the client. Thus,

$$MV = 28,000,000$$
$$MV_0 = 25,000,000$$
$$D = 1,000,000$$

Then

$$R_p = \frac{28,000,000 - 25,000,000 + 1,000,000}{25,000,000}$$

$$= 0.16 = 16\%$$

There are three assumptions in measuring return as given by equation (11.1) as given in page 11-2. First, it assumes incomes received by the portfolio are reinvested in the portfolio. The second assumption is that, distributions from the portfolio, if any, occur at the end of the evaluation period. The third assumption is that, there is no withdrawal or injection of fund to the portfolio by the client

The return calculation for a portfolio using the above equation can be determined for an evaluation period of any length of time, such as one day, one month, or one year. From practical point of view, the return for a short unit of time such as a month is useful for monthly reporting. We call the return so calculated the sub-period return. For our purpose, any period of time shorter than one year is considered sub-period.

There are three methodologies that have been used in practice to calculate the average of the sub-period returns: (1) the arithmetic average rate of return, (2) the time weighted rate of return, and (3) the dollar weighted rate of return.

Arithmetic Average Rate of Return: This is an unweighted average of the sub-period returns. The general formula is

(11.2)

$$R_A = \frac{R_{p1} + R_{p2} + \ldots\ldots + RPN}{N}$$

Where
R_A = arithmetic average rate of return
R_{Pk} = portfolio return for sub-period k as measured by equation (11.1), k = 1,…,N
N = number of sub-periods in the evaluation period

For example, if the portfolio returns were -10%, 20%, and 5% in July, August, and September, respectively, the arithmetic average monthly return would have been 5% as follows:

$$N = 3 \quad R_{p1} = -0.10 \quad\quad R_{p2} = 0.20 \quad\quad R_{p3} = 0.05$$

$$R_A = \frac{-0.10 + 0.20 + 0.05}{3} = 0.05 = 5\%$$

Time Weighted Rate of Return: This measures the compounded rate of growth of the initial portfolio market value during the evaluation period, assuming that all cash distributions are reinvested in the portfolio. It is also commonly referred to as the *geometric rate of return* since it is computed by taking the geometric average of the portfolio sub-period returns computed from equation (11.1). The general formula is

(11.3)

$$R_T = [(1 + R_{p1}) (1 + R_{p2}) \ldots (1 + R_{PN})]^{1/N} -$$

where RT is the time-weighted rate of return and R_{Pk} and N are as defined earlier. For example, let us assume that the portfolio returns were -10%, 20%, and 5% in July, August, and September, as in the first example above, the time weighted rate of return would be

$$R_T = \{[1 + (-0.10)] (1 + 0.20) (1 + 0.05)\}^{1/3} -$$
$$= [(0.90) (1.20) (1.05)^{1/3} -$$
$$= 1.134^{1/3} - 1 = 0.0428 = 4.28\%$$

Note: To solve for $(1.134)^{1/3}$, one may use power index key Y as follows:
1.134, shift, y , 0.3333 = 1.0428

Dollar Weighted Rate of Return or Internal Rate of Return. This is computed by finding the discount rate that will equate the present value of the future cash flows from all the sub-periods plus the terminal market value of the portfolio with the initial market value of the portfolio. In other words, it is the rate that will create a situation where:

Initial cash outlay = Present value of future cash flows

It is to be noted that initial cash outlay is the outflow at time zero whereas future cash flows are future cash flows. Future cash flows thus need to be discounted to arrive at present value. Dollar weighted rate of return is commonly known as Internal Rate of Return (IRR) in the study of corporate finance.

The cash flow for each sub-period reflects the difference between the cash inflows due to investment income (i.e., coupon interest, dividend) and contribution made by the client to the portfolio (injection of fund), and the cash outflows reflecting distributions to the client (withdrawal of fund). Notice that it is not necessary to know the market value of the portfolio for each sub-period to determine the dollar weighted rate of return.

The dollar weighted rate of return is simply an internal rate of return calculation and hence it is also called the internal rate of return. The general formula for the dollar weighted rate of return is

(11.4)

$$C_0 = \frac{C_1}{(1+R_D)} + \frac{C_2}{(1+R_D)^2} + \cdots + \frac{C_N + V_N}{(1+R_D)^N}$$

where
R_D = dollar weighted rate of return
C_0 = initial market value of the portfolio
V_N = terminal market value of the portfolio
C_k = cash flow for the portfolio (cash inflows minus cash outflows) for sub-period k, k = 1, 2, …, N

For example, let us consider a portfolio with a market value of RM100,000 at the beginning of July, capital withdrawal of RM5,000 each at the end of months July, August, and September, no cash inflows from the client in any month, and a market value at the end of September of RM110,000.

Then C_0 = RM100,000, N = 3, $C_1 = C_2 = C_3$ = RM5,000, V_3 = RM110,000 and R_D is the interest rate that satisfies the following equation:

$$100,000 \quad = \quad \frac{5,000}{(1+R_D)} \qquad \frac{5,000}{(1+R_D)^2} \qquad \frac{5,000 + 110,000}{(1+R_D)^N}$$

The computation of RD which is also the IRR can be fairly simple if we use a financial calculator with following inputs:

Input: HP	Display	Input FC200V (Cash D.Editor X)
100000, ± CFj	-100000	-100000
5000, CFj	5000	5000
5000, CFj	5000	5000
5000 + 110000 = 115000, CFj	115000	115000
Shift IRR	8.08	Solve IRR 8.08

The dollar weighted rate of return in this example actually means the compounded rate of monthly return. There may be a need to change it to annual basis for reporting or comparison purposes. The process of annualizing the monthly return or any sub-period return to annual rate of return is covered in later section of this chapter.

The dollar weighted rate of return and the time weighted rate of return will produce similar results if no withdrawals or contributions occur over the evaluation period and all investment income is reinvested. The problem with the dollar weighted rate of return is that it is affected by factors that are beyond the control of the manager. Specifically, any contributions or withdrawals made by the client will affect the calculated return. This makes it difficult to compare the performance of two managers

The three approaches of reporting return is summarized in the table 11-1 as follows:

Table 11-1 Three Methods for Averaging Sub-period Returns

Method	Interpretation	Limitations
Arithmetic average (mean) rate of return	Average value of the withdrawals that can be made at the end of each sub-period while keeping the initial portfolio market value intact.	Overvalues total return when sub-period return vary greatly. Assume the maintenance of initial market value
Time-weighted (geometric) rate of return	The compounded rate of growth of the initial portfolio market value during the evaluation period.	Assumes all proceeds are reinvested
Dollar-weighted rate of return (internal rate of return)	The interest rate that will make the present value of the sum of the sub-period cash flows (plus the terminal market value) equal to the initial market value of the portfolio.	Is affected by client contributions and withdrawals beyond the control of the money manager.

Given the three options available for measurement, the question that is likely to be asked is which approach shall we use? In the circumstances where all 3 approaches have their own limitations, this is definitely an issue of concern. Financial planner should be quite well verse with the computations and limitations of these approaches.

Before we come to a conclusion, let us assume the NAV of a portfolio without distribution of income and units as follows:

Year	Starting NAV	Closing NAV	Return
1	0.50	0.30	- 40%
2	0.30	0.50	66.67%
3	0.50	0.32	-36%
4	0.32	0.52	62.50%
Total			54%

The arithmetic rate of return of the portfolio shall be 54% ÷ 4 = 13.5% per annum.
The arithmetic rate of return of 13.5% per annum appears to be good if we compared it with the average compounded rate of return of KLCI. However, one can see that the NAV of the portfolio actually increased by 4 sen only over a period of 4 years. Obviously, the reported outcome under arithmetic rate of return is deceptive and misleading!

The geometric rate of return shall be $[(0.6 \times 1.6667 \times 0.64 \times 1.625)^{(1/4)} - 1 = 1.0099 - 1 = 0.0099$ or 0.99% which appears to be more representative of the true performance.

The dollar weighted rate of return or IRR can calculated using financial calculator as follows:

Input	Display	FC200V Cash D.Editor X
0.50,±, CFj	- 0.50	-0.50
0, CFj	0	0
3, shift, Nj	3	0
0.52, CFj	0.52	0
Shift, IRR	0.99	0.52, then Solve IRR=0.99

The outcomes of geometric rate of return and IRR are consistent in this case.
In practice, the geometric rate of return is preferred in reporting past annual rates of return because its underlying assumption or limitation is more acceptable.

Annualizing Returns

Although rates of returns are usually reported as an average annual return, there are instances where interest rates are stated at less than one year. These non annual rates of returns are known as sup-period returns. For fund managers, it is common to report performance on monthly basis, quarterly basis and half-yearly basis other than yearly basis. Other common examples of stating interest rate on monthly basis is found in credit card statement. In order to make meaningful comparisons, the sub-period returns need to be converted to annual rate of interest. The process of converting non annual rate of return to annual rate of return is known as annualizing returns. The sub-period returns are annualized using the following formula (11.5)

> Annual return = $(1 + R_p)^N$ –
> Where, R_p is sub-period return and N is number periods in a year.

Example 1: Let us take the example of a credit card issuer that charge 1 % per month. To annualize this, we merely substitute the 1% as Rp and n = 12 into the equation to get

Annualized rate = $(1.01)^{12}$ - 1 = 1.1268 -1 = 0.1268 or 12.68%.

Note: to compute the value of $(1.01)^{12}$, use the power index key Y by keying in: 1.01, shift, Y , 12 = 1.1268.

Another way to annualize the monthly return is to multiply the 1% monthly interest rate by 12 months. This will give an annualize rate of 12% only. This way of annualizing interest has a fundamental error of ignoring the monthly compounding effect.

Example 2: A 10- year coupon bond pays coupon rate of 6% per annum but on a half yearly basis. What will be the annualize rate of return?

In this case, the half yearly rate or the subperiod return shall be 3% and n = 2.
The annualize rate = $(1.03)^2$ – 1 = 1.0609 – 1 = 0.0609 or 6.09%

AIMR Performance Presentation Standards

We have seen from previous presentations that there are subtle issues in calculating the return over the evaluation period. There are also industry concerns as to how manager should present results to clients and how managers should disclose performance data and records to prospects from whom they are seeking to obtain funds to manage. The Committee for Performance Presentation Standards (CPPS) of the Association for Investment Management and Research (AIMR) was charged with developing standard for disclosure. The standards adopted by AMIR went into effect in 1993 and "are a set of guiding ethical principles intended to promote full disclosure and fair representation by investment managers in reporting their investment results." A secondary objective of the standards is to ensure uniformity in the presentation of results so that it is easier for clients to compare the performance of managers.

AIMR Performance Calculations

The performance of portfolio must be reported using time weighted rate of return, as well as total return. The calculation of total return, where there are no cash flows for a period (i.e. a month) is generally straight forward. The formula for calculating total return is:

(11.6)

$$R_{TR} = \frac{MV_E - MV_B}{MV_B}$$

where
R_{TR} =   the total return
MV_E =   the market value of the portfolio at the end of the period, including all income accrued up to the end of the period;
MV_B =   the market value at the beginning of the period, including all income accrued up to the end of the previous period.

This formula represents growth (or decline) in the value of a portfolio, including both capital appreciation and income, as a proportion of the starting market value. This un-weighted rate of return represents a reasonable way of presenting the performance of a portfolio over a period with no cash flows out of, or into, the portfolio. This condition, however, is frequently violated in the normal management of a client's account. Cash flows do occur, often unpredictably.

If cash flows occur during the period, they must theoretically be used, in effect, to 'buy" additional units of the portfolio at the market price on the day they are received. Thus, the most accurate approach is to calculate an interim rate of return for the sub-period according to the above formula, and then link the sub-period returns to get the return for the month or quarter. This approach removes the effect of each cash flow. Methods that use this approach, or an approximation of it, are called time-weighted rate of return methods.

Time-Weighted Rate of Return

This section describes the preferred method of computing time-weighted rate of return. It is the daily valuation method (or valuation whenever cash flows occur).

Daily Valuation Method

The formula for valuing the portfolio whenever cash flow occurs is:

(11.7)

$$R_{DAILY} = (S \ \times S_2 \times \ldots \times S \ ) - 1$$

where S1, S2 through Sn are the sub-period indexes for sub-periods 1, 2 through n. Each sub-period indexes is calculated using the formula

$$S = \frac{MV_E}{MV_B}$$

Where MV_E = the market value of the portfolio at the end of subperiod I, before any cash flows in period I but including accrued income the for period, and

MV_{Bi} = the market value at the end of the previous sub-period (i.e. the Beginning of this sub-period), including any cash flows at the end of the previous sub-period and including accrued income.

The chief advantage of this method is that it calculates the true time-weighted rate of return, rather than an estimate. The major drawback is that it requires precise valuation of the portfolio on the date of each cash flow.

MEASURES OF RISK AND DISPERSION

In investment, there should be a trade-off between risk and return. A manager who earned 15 percent is not necessary better than a manager who earned 14 percent if the former took more risk than the latter. A number of methods can be used to measure the riskiness of alternative strategies.

Standard Deviation: Standard deviation of portfolio performance over time (SD) is a measure of volatility. It indicates how far data spread about the central tendency or mean. The formulas and

the approaches of computing standard deviations have been covered under chapter 2 and will not be repeated here.

In theory, a portfolio that is more volatile than an index or benchmark should receive a higher return in exchange for taking extra risk. When looking at investment strategy risk, one tends to use the past to project future. For example, it is reasonable to assume that a manager's strategy will continue to display the same volatility or risk level in the future as it has historically. Understanding some of the limitations of standard deviation as a measure of volatility can help an investor use this well accepted and important statistic.

In Malaysia, the ranking of portfolio performance has been made based on 36 months volatility. A popular local media "The Star" does provide report on volatility among various periodic rates of returns to track the performance of fund managers. The growing sophistication in the financial services industry is therefore inevitable. Financial planners should therefore be well verse in this area of risk measurement.

Beta. Beta is the average performance volatility relative to the market. It represents systematic risks that are non- diversifiable. Some clients with a long term perspective feel that high volatility is not necessarily bad in that it may well be rewarded by excess return over time. Most agree, however, that given two identical sets of returns, they prefer the one that was achieved in the more consistent manner. The overall market has a beta of 1. A portfolio with a Beta of more than 1 is considered more volatile than the market. During good times, it is therefore expected to outperform the market. On the other hand, a portfolio with a beta of less than 1 is deemed to be less risky than the market. In a bearish market, it is expected to be decline less in value. A more detailed write up of beta is given in chapter 12.

The Sharpe Ratio or Sharpe Measure

The Sharpe Ratio (SR_p) is a ratio defined as the excess return on a portfolio divided by the volatility of the portfolio. The excess return here is defined as the actual portfolio return (R_p) minus the risk free rate of return (R_f). The volatility in the denominator is represented by standard deviation of the portfolio. The formula is as follows:

(11.8)

$$SR_p \qquad \frac{(R_p - R_f)}{S_p}$$

where
R_f = the risk free rate of interest, and
S_p = the standard deviation of the portfolio

The ratio is a measure of reward relative to total volatility. It may be used to assist an investor to determine how much risk will maximize his or her utility. For illustration, let us assume that a portfolio generated a return of 13%. The risk free rate and the standard deviation are 4% and 3% respectively. The Sharpe Ratio in this case is computed as:

SR_p = (13% - 4%) ÷ 3% = 3.

Sharpe Ratio assumes that risk free rate is achievable without having to incur any risk. When risk is assumed, higher reward or return is expected. In other words, all investment should receive higher reward for taking on higher risk or volatility. In this case, the total excess return is 9% (13%

- 4%). The excess return per unit of risk is noted to be 3%. The higher the excess return per unit of risk, the better is the performance. As a result, the Sharpe Ratio, which uses total volatility as denominator, seems to be most useful when the portfolio being evaluated represents all of an investor's marketable assets. The Sharpe measure for the portfolio can be compared to the Sharpe measured for the benchmark for purpose of determining performance of fund manager.

Sharpe Ratio has been put into practice in the financial services industry. For instance, a popular weekly financial and business magazine, "The Edge", actually provides measurement or tracking of fund managers using the Sharpe ratio. This again shows the increasing awareness of relating risk with return in investment in our financial services industry.

Treynor Ratio or Treynor Measure

The Treynor ratio (TR_p) is a ratio defined as the excess return on a portfolio divided by the portfolio average beta. The definition of excess return is similar to what has been presented under Sharpe Ratio. Instead of using standard deviation that measures total risk, TR uses systematic risk, Beta, as denominator. Systematic risk is non diversifiable. The diversifiable portion of total risk has been disregarded in this measurement. The formula is as follows:

(11.9)

$$TR_p = \frac{(R_p - R_f)}{\beta_p}$$

For illustration, let us assume that the portfolio has total return of 13%, risk free rate and portfolio beta are 4% and 2% respectively. Treynor Ratio is computed as:

TR = (13% - 4%) ÷ 2% = 4.5

The ratio is a measure of reward relative to total systematic volatility, or relative risk. The riskiness of individual securities or a small group of securities may best be described by their co-movement with the market (β), As a result, the Treynor measure seem to be particularly useful when the investor's portfolio is one of many portfolios included in a large investment fund. Treynor's argument that whatever is diversifiable should not remain assumes that all fund managers are capable of achieving this expectation. The Treynor measure for the portfolio can be compared to the Treynor measure for the benchmark for purpose of determining performance of fund managers.

Jensen's Alpha

Another measurement of performance of fund manager is the Jensen's Alpha. In this case, the Alpha is defined as the difference between the actual portfolio performance and the required rate of return (RRR) of a portfolio as determined by the Capital Asset Pricing Model. The formula is:

(11.10)

> **JA = R_p – Expected return under CAPM**
> **Where R_p represents the actual return of the portfolio.**

At this stage, reader may recall the CAPM equation as

$RRR = R_f + \beta(R - R_f)$

A positive alpha indicates that the fund manager has outperformed the expectation. On the other hand, a negative alpha suggests under performance.

Illustration: A portfolio has a beta of 1.25 in a market that provided overall rate return of 20% and risk–free rate of 4%. What should be the Jensen's Alpha if the actual return of the portfolio was 22%?

Answer: The expected or required rate of return under the CAPM is:
4% + 1.25 x (20% - 4%) = 4% + 1.25 x 16% = 24%
Jensen's Alpha = Actual return – Expected return under CAPM
                        = 22% - 24% = - 2%.

In this case, a negative Alpha of 2% indicates underperformance.

Based on the same assumptions, any portfolio with similar beta that reported a return higher than 24% is deemed to have outperformed the requirement.

It is possible to compare portfolios with different risks as measured by standard deviation and beta. In fact, these tools are developed mainly for such purposes. Let us consider another portfolio with beta of 1.1 and actual return of 23%. In this case, the Jensen's Alpha is 23% - [4% + 1.1 x (20% - 4%)] = 23% - (4% + 17.6%) = 1.4%. A positive alpha indicates better performance compared with the overall market return of 20%. In addition, it is much better than the portfolio that has a negative alpha of 2%.

We have thus gone through 3 types of benchmark for the purpose of measuring portfolio performance.

Performance of Portfolio versus Benchmarks

As can be seen, the benchmarks that we have used actually allowed comparisons of portfolios be made based on risk and return. In addition to what we have presented, benchmarks can include a variety of alternatives such as market indexes, manager universe, and normal portfolios. Each type of benchmark has advantages and disadvantages. A brief explanation of each is provided.

Indexes: The most commonly employed benchmark for an investment strategy is a market index. Indexes are viewed as "an independent representation of the market" and are generally readily available. Examples of standardized market indexes include the KLCI, Emas Index. Although indexes are widely utilized and can offer significant insight regarding relative risk, there is significant potential for misrepresentation when an index does not accurately reflect the strategy or universe of securities employed. The underlying risk of portfolio should be considered apart from the rate of return. This issue has been taken care of by the various measures such as Treynor's Index and the Jensen's Alpha. We shall examine another way where fund managers are measured based on the consistency of performance in terms of risks and returns known as Information Ratio.

Information Ratio

Fund managers potentially add value by deviating from the index to which a fund is benchmarked. They may hold a different amount of securities, and they might be weighted differently from the index. These securities may also be traded at different times. Simply put, fund managers attempt to generate excess returns (alpha) through security selection and timing decisions.

This attempt to add value comes at a certain level of risk. The level of risk that a manager takes can be estimated via "tracking error". This refers to the volatility of the difference between a fund's performance and its benchmark. Volatility in this sense is measured as one standard deviation percentage variation from the return of that benchmark index. Typically, a fund with a higher tracking error represents more risk of the fund's returns being 'absolutely' (negatively or positively) different to the benchmark.

The information ratio is the excess return (alpha) of an active manager over an appropriate benchmark, divided by the standard deviation of excess returns (tracking error).

Information Ratio = Excess Return/Tracking Error

This ratio is called the information ratio because it focuses on the risk and return generated from the manager's ability to use their information to deviate from the index, as opposed to the portion of the risk and return caused by the mix of asset classes and styles in a portfolio.

Typically a higher information ratio is said to imply a higher degree of manager skill. Some investment professionals have asserted that an information ratio of 0.50 is "good", 0.75 is "very good", and 1.00 is "exceptional".

The information ratio is most useful for measuring the performance of an active manager against an appropriate benchmark and can be used as a guide to choosing an active manager within a universe of similar asset/style managers. It is becoming common in Malaysia to evaluate unit trust funds on information ratio.

Before deciding that an information ratio reflects "good" or "bad" performance, the following needs to be considered

- *The longer the observation period, the more reliable is the ratio.* If the information ratio is calculated over short observation periods, random events can strongly influence the results. The reliability of the ratio in determining skill, as opposed to luck, is increased with the number of observation periods considered in the calculation.

- *Benchmark mis-specification results in biased information ratios.* If the manager assumes less systematic risk than the benchmark (eg. holding a significant amount of cash) the information ratio will be biased upward. If the manager takes more systematic risk than the benchmark, the information ratio becomes unreliable, and can either overstate or understate manager skill.

- *Methodology matters.* The only way to make a valid comparison between the information ratios of two managers is to calculate the ratios on the data of the same underlying frequency of observations. To compare an information ratio of manager A, based on quarterly excess return/tracking error data, with manager B, based on monthly excess return/tracking error — would provide invalid results.

- *If a fund manager has changed materially, performance achieved before the change is irrelevant.* Changes such as basic investment philosophy, replacement of key decision makers, introduction of new strategies, changes in the typical mix and magnitude of bets taken, or a combination of such changes can render historical returns irrelevant. Beyond some point, excess returns generated prior to such changes will not be the result of current manager decision patterns, and therefore cannot be indicative of performance in the future.

Self Assessment

Multiple Choice

Circle the letter of the correct choice for each of the following.

1) Mr. Leong is 30 years of age and intends to retire when he has RM400,000. He believes that he can save RM10,000 at the end of each year. Being risk adverse, he places his funds in fixed deposits earning only 5.0% pa. His savings at this point is RM20,000. At what age will he be able to retire?

a. 53 years
b .51 years
c. 68 years
d. 70 years

2) Mr. A places his fixed deposit for one year with interest payable at maturity. Mr. B places his fixed deposit with another bank with interest payable quarterly. Assuming that the deposit amount is RM100,000, and using the same annual rate of 6%, what is the difference in future value after one
year?

a. RM130.43
b. RM132.54
c. RM134.22
d. RM136.36

3) If the nominal interest rate per year is 10% and the inflation rate is 4%, what is the real rate of interest?

a. 10%
b. 4%
c. 5.8%
d. None of the above

4) An investment at 12% nominal rate compounded monthly is equal to an annual rate of:

a. 12.68%
b. 12.36%
c. 12%
d, None of the above

5) The nominal rate of interest on the "High Return" Bank of Malaysia account is currently 8% pa and is guaranteed for 1 year. If the expected inflation during the next year is 3.5%, what is the real rate of return from investment in this account?

a. 4.3%
b. 4.5%
c. 5.3%
d. 8.0%

6) Portfolio A earned a return of 10.23% and had a standard deviation of returns of 6.22%. If the return on short-term government securities is 0.52% and long-term government loan notes is 4.56%, what is the Sharpe measure of the portfolio?

a. 0.91
b. 1.56
c. 0.56
d. 7.71

7)   An investment without any initial outlay promises to pay $100 one year from today, $200 two years from today, and $300 three years from today. If the required rate of return is 14 percent, compounded annually, the internal rate of return for this investment today is:

a. 15.2%
b. 24.9%
c. 23.6%
d. Closest to infinity

8)   What is the amount of interest for depositing RM5,000 in fixed deposit for one year based on a 3 months fixed deposit rate of 2.1% p.a?

a. RM106
b. RM225
c. RM333
d. RM450

9)   What is the amount of interest that you will receive if you deposit RM5,000 in 3-month fixed deposit that pays interest at 3.3% p.a.?

a. RM20.20
b. RM50.50
c. RM41.25
d. RM8.25

10)   Assuming 8% discount rate, what is the present value of an annuity that pays RM500 per year at the beginning of each of the next 5 years, commencing today?

a. RM2,258
b. RM2,156
c. RM2,025
d. RM2,753

Answers: 1.B, 2.D, 3.C, 4.A, 5.A, 6.B, 7.D, 8.A, 9.C, 10.B

Chapter 12

Basic Concepts of Portfolio Management

Chapter Objectives

On completion of this chapter you should have a basic knowledge on :

- Computation of portfolio risk and return

- Efficient Market Theory

- Traditional approach in portfolio planning and construction

- Modern Portfolio Theory

- Efficient Frontier and Dominance Principle

- Computation of Correlation Coefficient and Covariance

- Capital asset Pricing Model

- Active and passive portfolio management

- Asset allocation process in a portfolio management

Introduction

A financial planning report spells out the financial goals and defines the investment objectives of the client based on various factors and circumstances. There is a need to implement the plans in order to achieve the objectives. In implementing the financial plan, portfolio management plays a very vital role. A proper portfolio management will provide a greater chance of success in achieving the stated investment objectives. Otherwise, ability to achieve the goals may be left to pure chances.

Portfolio management is a process of selecting and managing a set of securities or assets to achieve predefined investment objectives as set out in the financial plan. The manner securities are selected will depend on the preference of the client and the style of the investment manager. As a result, there are many ways developed to meet the diverse preferences of clients and the styles of portfolios managers. This is basically to say, there are no fixed ways of performing portfolio management.

However, the process of professional portfolio management does follow a general pattern. It is a fundamental practice of portfolio managers to adopt a process consisting at least of the following four steps:

1. The development of the investment policy statement (IPS), which outlines the investment objectives and constraints of the client.

2. Formulation and implementation of the investment strategy based on the IPS. The formulation of investment strategies could take the form of active or passive mode.

3. Monitoring the portfolio to check performance.

4. Rebalancing the portfolio where there is a change of client's objectives or change in circumstances.

Portfolio management is concerned with the selection and management of a group of assets with the objective of maximizing return at lowest possible risk. Hence, it involves a trade off between return and risk. By nature, every investor dislikes taking unnecessary risk. He would need to be rewarded for taking higher risk.

Since managing portfolio requires us to strike a balance between risk and return, we shall see on computation of portfolio return and risk is done if the portfolio is already in existence as follows. (Later on, under modern portfolio approach, we will again examine how portfolio risk is computed when we bring in the covariance and correlation coefficient).

Computation of Portfolio Return and Risk

Since a portfolio comprises a group of assets and these assets are likely to have different rates of return, there is a need to know how the return of a portfolio is computed. Assuming we have a portfolio with RM100,000 in Equities, RM200,000 in REITS, RM300,000 in bond funds, the rates of returns are 11%, 8% and 5.5% respectively. The return of this portfolio may be computed in Table 12-1 as follows:

Table 12-1: Computation of Portfolio Return

Asset Class	Amount	Return (R)	Weighting (W)	R x W
Equity	100,000	11%	0.1667	1.8337
REIT	200,000	8%	0.3333	2.6664
Bond	300,000	5.5%	0.50	2.75
Total	600,000		1.00	7.25

The rate of return of the portfolio as computed per table 12-1 is therefore 7.25%. In general, the rate of return of a portfolio can be summarized in the formula below:

"Return of Portfolio = (W1 x R1) + (W2 x R2) + (W3 x R3) +…. (Wn x Rn)"

Where W1,W2,W3 and Wn stand for the weightings in % of assets, for asset 1 to n, in the portfolio. Whereas, R1,R2,R3 and Rn are returns for the respective assets, 1 to n, in the portflio.

In the above computation, W1 is obtained by dividing 100 by 600, W2 is obtained by dividing 200 by 600 and W3 is obtained by dividing 300 by 600.

The risk of a portfolio is measured by the standard deviation of the portfolio over a selected number of years. For illustration, we project that the expected returns of a portfolio over the next 5 years are 5%, 6%, 7%, 8% and 9%. The mean of the expected return is [5% + 6% + 7% + 8%+ 9%] / 5 = 7%.

Portfolio Risk based on the formula as given in the Chapter 2 is
$= ([(5 - 7)^2 + (6 - 7)^2 + (7 - 7)^2 + (8 - 7)^2 + (9 - 7)^2] / 5)^{0.5}$
$= ([4 + 1 + 0 + 1 + 4] / 5)^{0.5} = 1.4$

Another way to compute the return and risk as represented by mean and standard deviation is to use a financial calculator as has been demonstrated in Chapter 2 also.

For reference on formula and techniques using financial calculator, please refer to the example shown in page 2-8 and 2-9 of Chapter 2 under "Computation of Risk and Expected Return" if necessary.

Before moving into portfolio management style and approaches, let us examine a theory which has an impact on the styles and approaches. It is the Efficient Market Theory.

Efficient Market Theory

Market efficiency usually refers to information efficiency. Information affects prices of securities. For instance, at macro level, an announcement in reduction in interest rates usually has a positive effect on the prices of shares and bonds. At company level, announcement of bonus issue, dividend payments, rights issues, mergers and acquisitions may affect share prices. The information that affects share prices also includes the company results that are released to the public from time to time. If market is efficient, prices of assets should reflect fully and instantaneously all the information available to the investors. In other words, if new information is instantaneously available, it should be reflected in the prices of the assets instantaneously.

Announcements of listed companies in Bursa Malaysia have been classified into two major categories. They are current information and historical information. Current information refers to announcements made to the public less than two weeks ago. Hence, historical information refers to those announcements made more than two weeks ago. Information announced by listed corporations can be known to some people well before the announcement. For instance, the quarterly results and financial positions of corporations listed in Bursa Malaysia are required to be made known to the public within 60 days after the end of the quarter. Prior to such announcements, there could be some individuals who will have such knowledge. It is not unusual to find corporations that will make the announcement when the 60 days datelines are almost due. There are some corporations which made good efforts in releasing such results as soon as possible. For example, one of the banking corporations in fact released its quarterly results in about 2 weeks consistently after the closing of each quarter. The level of information efficiency of a market depends on the regulations, the management of the corporations and investors.

Investors who are keen in tracking the performance and development of the corporations in which they have interest may log in "www.bursamalaysia.com". From this website, there is a section on listed companies' announcement. The classifications of the announcement are by date, by company and by type.

A formal definition of efficient market is one where prices fully and instantaneously reflect all the information available to investors. There are three types of market efficiency:

1.   **Weak Form Efficiency**

        This refers to a market where investors cannot earn excess returns by using trading rules that are based on the historical prices and returns. In other words, past data are of no use in predicting future price changes. This is because whatever an investor knows is already known to all others. However, if there is new or current information which others are not aware, the investors who know about it first could take advantage before prices adjust accordingly. A market that belongs to weak form efficiency suggests that research work and tracking of performance of the corporations can be amply rewarded. It also suggests that investors who rely on historical data for investment decisions are unlikely to reap good profits. An example of historical information that are published daily by mass media is the Market P/E ratio.

        We know that the published P/E ratio is obtained by using the latest closing price of the share as numerator and the EPS of the corporation which can be quite out of date. For instance, a P/E ratio of 8 times on the 11th of January 2008 may be based on the closing price of the share on 11th January 2008 and the EPS of year 2006. This is because the EPS for 2007 is not yet available. Investment decisions made based on such historical information cannot be expected to be good and sound. Taking the case mentioned earlier, the eventual EPS for 2007 may be much worse or much better the published figures in the mass media.

2.   **Semi-Strong Form Efficiency**

        This refers to a market where investors cannot earn excess returns by using trading rules that are based on publicly available information about historical and current prices and returns. This hypothesis holds that large profits could not be earned using publicly available information such as past earnings, prices, dividends and bonus issues. This is quite the

same as the weak form of market efficiency. However, in this case, even with the availability and inclusion of current information it would not benefit the investors unless the investors are the very first few who get the information and act on it.

In this form of market efficiency, current information is further subdivided into private and public information. Investors who rely on the publicly known current information to make investment decisions will not provide good return. This is based on the argument that whatever information an investor knows is also known by other investors. Therefore prices reflect this fair value of securities. Nevertheless, there could some information not yet released to the public but are known to certain individuals. When such an event happens, the possibility of insider trading can exist. Insiders who have the privileged information and make use of it to acquire shares or dispose shares, before the public come to know about the information, is said to have committed insider trading. As you can see, insider trading can provide excess returns.

3. Strong Form Efficiency

This refers to a market where investors cannot earn excess returns using trading rules that are based on public or private information about historical and current prices and returns. This hypothesis holds that there is no information, whether public or private, that allows investors to earn excess profit consistently. It states that prices adjust immediately whenever there is new information. The underlying assumption of this efficient market is that insider trading does not exist. There is therefore no need to conduct research to look for under-valued shares. The presence of large number of professional fund managers who monitor the securities closely in the share market increases the chance that prices will reflect the values of securities.

Critics of Efficient Market Hypothesis (EMH)

For about ten years after publication of Fama's classic exposition in 1970, the Efficient Markets Hypothesis dominated the academic and business scene. A steady stream of studies and articles, both theoretical and empirical in approach, almost unanimously tended to back up the findings of EMH. As Jensen (1978) wrote: 'There is no other proposition in economics which has more solid empirical evidence supporting it than the EMH.'

However, as Shleifer (2000) put it, 'strong statements portend reversals' – and in the two decades following Jensen's statement, a growing volume of theoretical and empirical work either contradicted the EMH outright or sought at least to show that its case was 'not proven'.

Critics of EMH have produced a wide range of arguments, of which the following is a summary. The assumption that investors are rational and therefore value investments rationally – that is, by calculating the net present values of future cash flows, appropriately discounted for risk – is not supported by the evidence, which shows rather that investors are affected by:

- herd instinct

- a tendency to 'churn' their portfolios

- a tendency to under-react or over-react to news (Sheifer, 2000; Barber and Odean, 2000)

- asymmetrical judgements about the causes of previous profits and losses.

Furthermore, many alleged anomalies have been detected in patterns of historical share prices. The best known of these are the 'small firm' effect, the January effect and the mean reversion.

The 'small firm' effect. Banz (1981), in a major study of long-term returns on US shares, was the first to systematically document what had been known anecdotally for some years – namely, that shares in companies with small market capitalisations ('small caps') tended to deliver higher returns than those of larger companies. Banz's work was followed by a series of broadly corroborative studies in the US, the UK and elsewhere. Strangely enough, the last twenty years of the twentieth century saw a sharp reversal of this trend, so that over the century as a whole the 'small cap' effect was much less marked. Whatever the reason or reasons for this phenomenon, clearly there was a discernible pattern or trend that persisted for far too long to be readily explained as a temporary distortion within the general context of EMH.

The January effect. Following on from the 'small firm' effect, it was also observed that nearly all of the net outperformance by small cap stocks was achieved in successive Januarys. Again, this was a discernible trend that under EMH should have been arbitraged away. As one commentator rather acidly remarked, it was not as if the annual coming of January could be characterised as entirely fresh news!

Mean reversion. This is the name given to the tendency of markets, sectors or individual shares following a period of sustained under-or out-performance to revert to a long-term average by means of a corresponding period of out- or under-performance. This was picked up in detailed research by De Bondt and Thaler (1985), who showed that, if for each year since 1933 a portfolio of 'extreme winners' (defined as the best-performing US shares over the past three years) was constructed, it would have shown poor returns over the following five years, while a portfolio of 'extreme losers' would have done very well over the same period.

Conclusion

Theories in Investment Portfolio Planning and Construction

To plan for the client, it is important for the financial practitioner to understand the essential principles how portfolio managers plan and construct investment portfolios. In this section, the popular approaches to portfolio construction are discussed.

There are two fashionable approaches used by fund managers to construct investment portfolios for the client. These two approaches are the *traditional approach* and the *modern portfolio theory* (MPT) approach.

The Traditional Approach to Portfolio Construction

In the *traditional approach*, the portfolio manager puts emphasis on "balancing" the portfolio. This is done by putting in the portfolio a wide variety of shares and/or bonds through techniques called *securities analysis*. The usual approach is to construct a portfolio that contains securities of companies from a broad range of industries found in the Bursa Malaysia. An example is as follows:

Sector	Weightings %
Finance	18.6%
Plantation	14.3%
Construction	9.5%
Gaming	9.4%
Oil & Gas	7.2%
Power	6.9%
Motor	5.3%
Conglomerates	5%
Media	4.5%
Industrial	4.5%
Telecommunications	4%
Building materials	3.9%
Consumers	2.5%
Timber	1.7%
Transport	1.4%
Property	1.3%

The tendency of portfolio managers in the traditional approach is to pick well-known or blue chips companies and this is done for the following reasons:

1.   These companies are considered less risky because of their record of success over the years and are expected to maintain the trend in the future.

2.   The securities of large-cap companies are often more liquid and available in sizeable quantities. The availability of the securities in large quantities is especially important for managers of large portfolios who need to acquire securities in huge quantities to realize an efficient order volume.

3.   Because these companies are well known for their success to the client, it is much easier for the manager to convince the client to invest in them.

Modern Portfolio Theory (MPT)

The Markowitz Portfolio Theory is generally regarded as the first and the most basic form of Modern Portfolio Theory. As you can see, the Traditional Approach is not able to provide a measurement of risk on a quantitative basis. MPT approach uses several basic statistical measures to develop a portfolio plan. Such statistical measures include expected returns and standard deviations of returns, which have been covered in Chapter 2 and correlation in this chapter. The theory shows how one can calculate the best mix of assets and construct a desired portfolio. The recommendation of the theory is such that diversification alone is not enough. Instead, one should diversify wisely based on the impact each share could affect the portfolio, rather than choosing simply the best shares available in the market. In other words, if an investor wishes to buy 8 counters in the KLSE to form a portfolio, it should not choose the 8 best counters. Markowitz Portfolio Theory advocates that the 8 counters should be chosen based on their interaction with each other in such a way that the overall risk is minimized.

The basic assumptions of Markowitz Theory are as follows:

1.   Investors like return and dislike risk
2.   Investors act rationally in making decisions
3.   Investors aim to maximize return or expected utility

MPT preaches that diversification is achieved by combining securities in a portfolio with individual securities that have negative correlation between each other's rate of return, using correlation as a deciding factor in choosing security for a portfolio. The two important aspects of MPT are the efficient frontier and beta. We will see that the efficient frontier is more of a theoretical study rather than a practical tool.

Efficient Frontier and Dominance Principle

At any given time, an investor is faced with enormous choices of investment vehicles and securities. He may pick 10 or more from huge numbers of portfolios. We can actually see that even with just 10 securities or assets, hundreds of portfolios could be created by changing the proportion of the portfolio's value for each security or asset. If we create all possible portfolios and calculate the return and risk of each portfolio and plot each risk on the x-axis, and return on the y-axis, we would have a feasible set of all possible portfolios. The set of portfolios that are dominant over other portfolios is called efficient frontier. For further illustration of this concept, let us refer to the diagram 12.1.

In diagram 12.1 below, the shaded area consists of an infinite number of individual points, which represent all the feasible portfolios that can be constructed from a given number of securities. The risk and return of each portfolio can be determined by reading off the co-ordinates of any point on the x and y-axes. An efficient or dominant portfolio is a portfolio that provides the highest return for a similar level of risk or the least risk for the same level of return. Take for example comparing

portfolio C with K. we can notice that both C and K have the same level of risk L, but C has a higher return of M as compared to return of K, which is lower at point N. Therefore, portfolio C is said to be dominant over K and should be a better choice over K.

Diagram 12.1
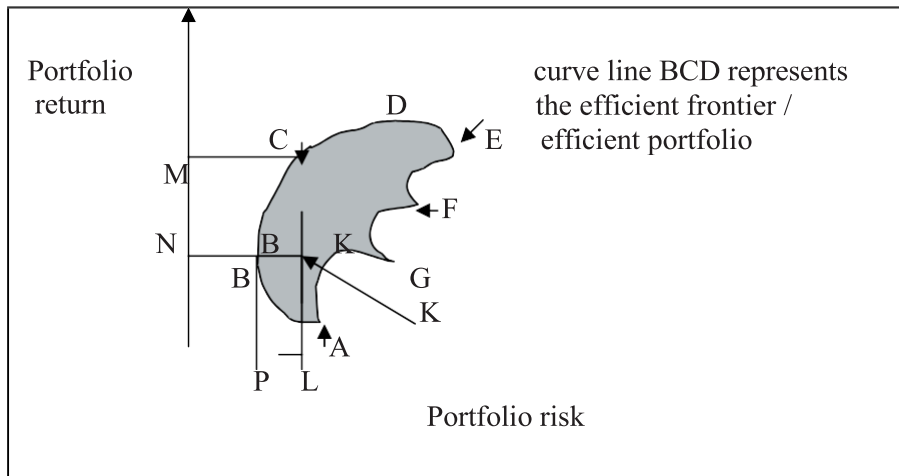
When we compare portfolio B with K, we notice that both have the return of N. However B has a lower risk of P as compared to K, which has higher risk of L. Again, B which falls on the efficient frontier is dominant over K and is a better choice.

The curve BCD consists all efficient portfolios called the efficient frontier. These portfolios provide the best trade off between risk and return. (All other points such as A, D,E, F and G cannot be regarded as part of efficient frontier because they bear higher risk with lower returns). All portfolios on the efficient frontier are preferable to all other portfolios in the feasible set. Any portfolios that fall to the left of the efficient frontier are not available for investment, as they fall outside the feasible set. On the other hand, portfolios that fall to the right of the efficient frontier are not desirable as their risk and return trade off are inferior to those on the efficient frontier.

Given an efficient frontier with several dominant or efficient portfolios, the final selection of portfolio is decided by the point of tangent between an investor's indifference curve with the efficient frontier.
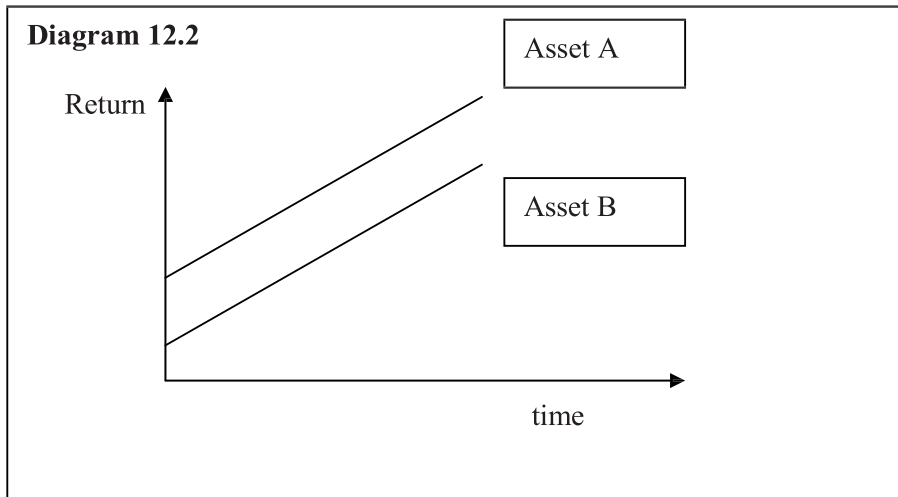
Correlation and Diversification

We mentioned earlier that Modern Portfolio Theory involves selection of securities that are negatively correlated. In this section, we shall see how such selection is done using a very simplified portfolio comprising only two assets. Let us first of all understand the concepts of correlation and covariance including their statistical before we see how a portfolio is constructed to give lower risk without sacrificing return, at least on paper.

Correlation

It is a statistical measure of the relationship between series of numbers representing data of any kind. If both series move in the same direction or pattern, they are known as positively correlated, and if they move in the opposite direction or pattern, they are called negatively correlated. In our context, we wish to know whether the historical returns of two or more assets are negatively or

positively correlated. Since historical rates of return of assets are also series of data, we can also measure the correlation between the historical returns of assets.

This relationship is measured with a number called correlation coefficient. It ranges from positive one (+ 1) to negative one (- 1). Where the correlation coefficient of two assets is +1, then the two series are said to have a perfect positive correlation. This is shown in the diagram 12.2 below.

Diagram 12.2

Asset A

Return

Asset B

time

Where the correlation coefficient is a negative one (-1), the two series is said to have a perfectly negative correlation. This is shown in diagram 12.3 below.

Diagram 12.3

Asset A

Return

Asset B

time
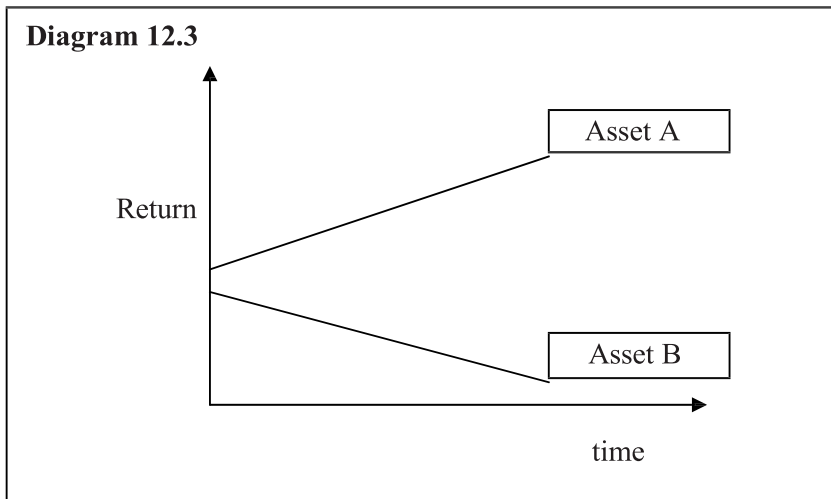
Diversification

In order to reduce risk, it is best to combine assets with rates of returns that have a negative or low correlation. This can reduce the overall variability of return or risk. When two assets with negative correlation are combined, the resulting risk will be lower than either of the two. However, we must remember that those having low positive correlation or even uncorrelated assets can also result in lower portfolio risk. The correlation coefficient for uncorrelated assets or investment is close to zero, and is the midpoint between the positive and perfect negative correlation.

In a portfolio, where two assets which are perfectly positive correlated are combined, the total risk cannot be reduced to a level below that of the least risky assets. Such an example is holding share in a motorcar industry and tire industry as a portfolio.

Measuring Correlation Coefficient

Knowing that combining assets which have negative correlation will reduce risk of a portfolio is of no use if one does not know how correlation coefficient can be computed. For illustration, we shall use a portfolio comprising only two assets, Asset A and Asset B. First of all, the standard deviation of a portfolio with two assets is measured by the formula as follows:

$$\sigma^2_p = W^2_a \sigma^2_a + W^2_b \sigma^2_b + 2W_a W_b \sigma_a \sigma_b R_{ab}$$

where
σ_p = portfolio standard deviation to be computed
W^2_a = weighting of asset a in the portfolio
σ^2_a = variance of asset a
W^2_b = weighting of asset b in the portfolio
σ^2_b = variance of asset b
R_{ab} = correlation coefficient = Covariance / $\sigma_a \sigma_b$

The formula as you can see can be quite complex although only two assets are involved. It actually introduces another concept known as co-variance which measures the co-movements of the returns of two assets. Let us assume Asset A has historical returns of 3%, 5%, 7%, 9% and 11% and Asset B has historical returns of 12%, 10%, 8%, 6%, and 4% over the past 5 years for illustration purpose. The computation of covariance is seen in the table 12-2 as below:

Year	I : Asset A	II: Asset B	I x II = III	Covariance
	$[R_A - E(R_A)]$	$[R_B - E(R_B)]$		Sum of III ÷ 5
1	(3 – 7) = –4	(12 – 8) = 4	(4) x 4 = – 16	
2	(5 – 7) = –2	(10 – 8) = 2	(2) x 2 = – 4	
3	(7 – 7) = 0	(8 – 8) = 0	0	
4	(9 – 7) = 2	(6 – 8) = – 2	2 x (2) = – 4	
5	(11 – 7) = 4	(4 – 8) = – 4	4 x (4) = –16	
			Sum = – 40	– 40 /5 = – 8

Co-Variance = Sum of [(deviation of return in asset A) x (deviation of return in asset B)] ÷ number of pairs of data taken.

Deviation in the return of Asset A is seen in column two of the table above. It is the yearly return of every year minus the average return. For instance, the deviation in year 1 is – 4, which is the outcome of 3% – 7%. Deviation in the return of Asset B is seen in the 3rd column. For its year 1, the deviation is 4% which is the outcome of 12% – 8% = 4%. The fourth column is actually the product of 2nd and 3rd column. Hence, in the first year, the product is = (4) x 4 = – 16. The process is repeated for the other years 2 to year 5. The sum of the products is then divided by the number of pairs or the number of years. Hence, we have a co-variance obtained by dividing the sum of – 40 by 5 = – 8.

From the value of co-variance, we are able to derive another concept known as correlation coefficient. Correlation co-efficient is defined as:

P_{ab} = Covariance /   b

We have computed the values of all the variables in the formula, namely, Covariance = – 8%

Standard deviation of Asset A and Asset B = 2.83
(NB: Refer to chapter two on computation if necessary)

Substituting these values into the equation, we will get correlation coefficient as:

(– 8)/ (2.83 x 2.83) = – 1

When the correlation coefficient is equal to negative 1, we can describe the two assets as perfectly negatively correlated. In other words, the returns of the two assets move in opposite direction by the same quantum or rate.

Computing the standard deviation of a portfolio comprising Asset A and Asset B
With all the variables computed so far, we are still short of the values of Wa and Wb which represents the weightings or the proportion of an asset to the total portfolio. We shall assume that 50% of the fund is invested in Asset A and Asset B and proceed to substitute the values of all the relevant variables into the formula.

$\sigma^2_p = W^2_a \sigma^2_a + W^2_b \sigma^2_b + 2 W_a W_b \sigma_a \sigma_b R_{ab}$
     = 0.25 x 8 + 0.25 x 8 + 2 x 0.5 x 0.5 x 2.83 x 2.83 x (– 1)
     = 2 + 2 + 2 x 0.25 x 8 x (– 1)
     = 4 – 4 = 0

We thus get a standard deviation of 0 for a portfolio with two assets that are negatively correlated. This is to be interpreted that the portfolio is theoretically risk free. Admittedly, the derivation of a portfolio standard deviation is long and tedious. We shall now see how financial calculator could help us in the computation. The computation using FC200V involve changing the mode to mode 2 and identify 'X$_d$,Y$_d$' key and 'data' key before inputs as follows:

Input	Display
On, Clear the memory, Press STAT and choose A+BX: EXE, then key in x and y value	
X: 3,5,7,9,11	3,5,7.9,11
Y: 12,10,8,6,4	12,10,8,6,4
Press AC	0
Shift STAT, Press 7 for Reg, Press 2 for B	B
Press EXE	−1 = correlation coefficient of a & b

By merely keying in the returns of the two assets over the years, we can get values so easily as shown in the table above. Such values are then substituted into the following equation to give us the standard deviation of the portfolio comprising Asset A and Asset B.

Those using HP model may also want to know how the inputs are made and they are presented in the table below. However, before the inputs, user has to identify the 'input' key and the 'swap' key.

Input	Display
3,INPUT, **12,Σ+**, 5,INPUT, **10,Σ+**, 7, INPUT, **8,Σ+**, 9,INPUT, **6Σ+**, 11, INPUT, **4,Σ+**	
SHIFT, 7,	7 = expected return of asset a
SHIFT, swap	8 = expected return of asset b
SHIFT, 9	2.83 = standard deviation of asset a
SHIFT, swap	2.83 = standard deviation of asset b
Shift, 4, shift, swap	– 1 = correlation coefficient

Risk and Return: Perfect Positive Correlation Coefficient +1

When these two assets are combined to form a portfolio, the portfolio's expected return and expected risk will vary according to the various proportions of each asset and the correlation of the two assets. There are two extreme correlations; perfect positive and perfect negative. Under the perfect negative correlations, the portfolio's expected risk is zero as can be seen above. We shall now assume that we have a portfolio that combines two assets, Asset A and Asset C. While the historical returns of Asset A remains unchanged at 3%, 5%, 7%, 9% and 11%, the historical returns of Asset C are assumed to be 4%,6%, 8%, 10% and 12%. The risk and return of the portfolio can then be computed using financial calculator as follows:

Input	Display
3,INPUT, **4,Σ+**, 5,INPUT, **6,Σ+**, 7, INPUT, **8,Σ+**, 9,INPUT, **10Σ+**, 11, INPUT, **12Σ+**	
SHIFT, 7,	7 = expected return of asset a
SHIFT, swap	8 = expected return of asset b
SHIFT, 9	2.83 = standard deviation of asset a
SHIFT, swap	2.83 = standard deviation of asset b
Shift, 4, shift, swap	1 = correlation coefficient

The values of the variables are again substituted into equation for computing the risk of the portfolio:

$\sigma^2_p = W^2_a\sigma^2_a + W^2_b\sigma^2_b + 2W_aW_b\sigma_a\sigma_bR_{ab}$
$\quad = 0.25 \times 8 + 0.25 \times 8 + 2 \times 0.5 \times 0.5 \times 2.83 \times 2.83 \times (1)$
$\quad = 2 + 2 + 2 \times 0.25 \times 8 \times (1)$
$\quad = 4 + 4 = 8$

Standard deviation of the remains unchanged at 2.83 (square root of 8).

While the risk of portfolio comprising Asset A and Asset B is zero, the risk of the portfolio comprising Asset A and Asset C remains at 2.83. The rate of return of the two portfolios actually remains unchanged as computed below:

Rate of return of Portfolio Comprising A and B

Year	Asset A	Asset B	Average
1	3	12	7.5
2	5	10	7.5
3	7	8	7.5
4	9	6	7.5
5	11	4	7.5
Total			37.5
Expected Return			37.5 ÷5 = 7.5

Rate of Return Comprising Asset A and Asset C

Year	Asset A	Asset B	Average
1	3	4	3.5
2	5	6	5.5
3	7	8	7.5
4	9	10	9.5
5	11	12	11.5
Total			37.5
Expected Return			37.5 ÷5 = 7.5

From the above illustration, we can see how the selection of Assets that are negatively correlated actually reduce the risk to nil without sacrificing the expected rate of return of the portfolio.

The Capital Asset Pricing Model (CAPM)

A model that is generally considered to be an extension and improvement over the Markowitz Theory is the **capital asset pricing model** or **CAPM**

In view of the computational difficulties of the MPT as can be seen, **William F. Sharpe** and J**ohn Lintner**, in the 1960s develop a new model that uses beta to link formally the notion of risk and return in a simpler manner. They hypothesize that the performance of stocks listed on the stock exchange would have a strong relation to the performance of an index measuring the performance of all the stocks. The model focuses on the stocks correlation with the market and not on its performance per se

The result is the *Capital Asset Pricing Model* (CAPM) a model that is designed to explain the behaviour of security prices and at the same time allow the portfolio manager to assess the influence of an intended security investments on their portfolio's risk and return.

The foremost underlying assumption of the CAPM is that all securities are efficiently priced on the basis of the CAPM itself. It assumes that all investors agree on the expected returns from each

available security, and also agree on the values of the beta. By using the CAPM, the investor will be able to determine the relationship between the level of return he should derive from an intended investment, and the amount of risk he takes to bring in that return.

There are two representations to the model, i.e. it can be looked at both as an *equation* or a *graph* Both the equation and the graphic representation of the CAPM are illustrated below:

■ **CAPM: The Equation**

As an equation, CAPM defines the *required rate of return* on an investment as follows:

$$R_p = R_f + [b_p \times (R - R_f)]$$

Where,

R_p The required rate of return
R_f The risk-free rate of return
b_p Beta coefficient of the portfolio
R The market rate of return

The above equation demonstrates that the required rate of return for a given investment will increase if the beta increases.

Example 12-1

Emily Lee is considering an investment portfolio with a beta of 2.5. The risk free rate Rf is 5% and the market rate rm is 10%. Using the CAPM formula, the required rate of return ri is as follows:

R_p $= R_f + [b_p \times (R - R_f)]$
        $= 5\% + [2.5 \times (10\% - 5\%)]$
        $= 5\% + 12.5\% = 17.50\%$

From the above calculation, Emily Lee would expect and require a return of 17.50% as compensation for the risk she has undertaken in investing in the portfolio with a beta of 2.5.

■ **CAPM: The Graph or The Security Market Line**

In its graph form, the CAPM is called the **Security Market Line (SML)**, which is basically plotted on the graph as a lineal straight line. From the SML graph, the investor can deduce the required rate of return at each level of non-diversifiable risk (beta) he is taking.

Illustration A

Table 12-3		
Beta	**Computation** $Rp = R_f + [b_T \times (R - R_f)]$	**Required Rate of Return**
0.0	5% + [0.0 x (10% − 5%)]	5%
0.5	5% + [0.5 x (10% − 5%)]	7.5%
1.0	5% + [1.0 x (10% − 5%)]	10%
1.5	5% + [1.5 x (10% − 5%)]	12.5%
2.0	5% + [2.0 x (10% − 5%)]	15%
2.5	5% + [2.5 x (10% − 5%)]	17.5%

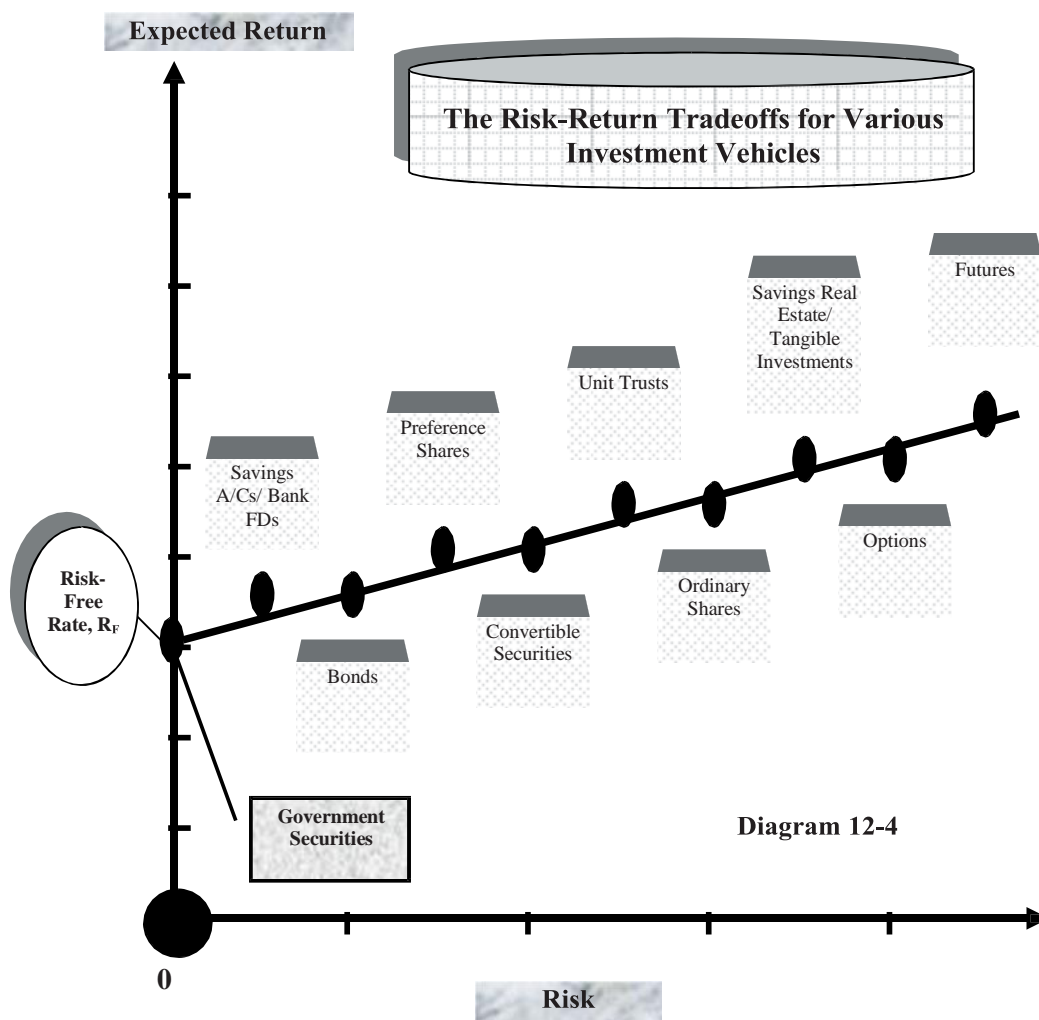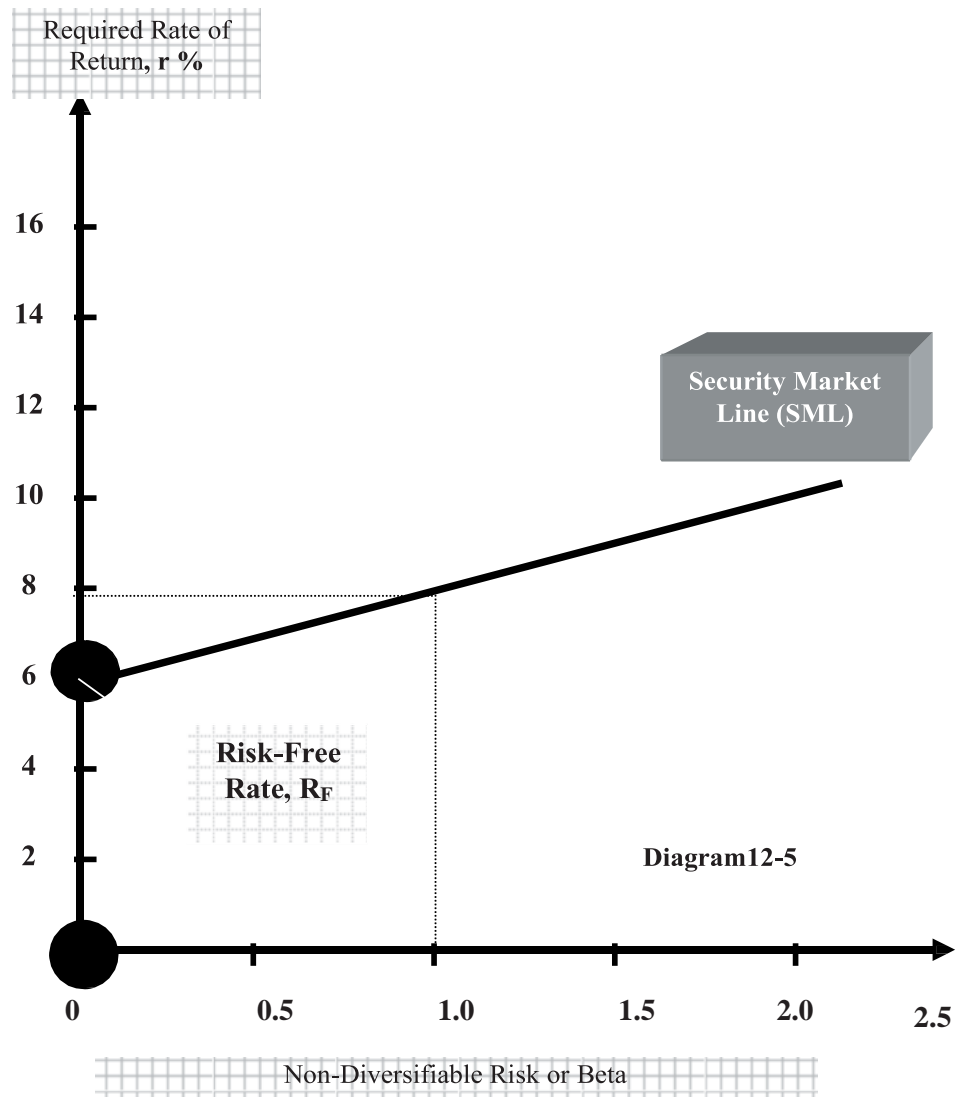**The Risk-Return Tradeoffs for Various Investment Vehicles**

Diagram 12-4

Diagram 12-5

More on Beta

This is a measure of non-diversifiable or relevant risk of a security. It reveals how a security responds to market forces. Beta can be positive (return changes in the same direction as the market) or negative (return changes in the opposite direction from the market). The beta for the overall market is considered to be equal to 1.0. Securities with betas greater them 1.0 are more volatile than the market, and those with beta below 1.0 are less risky than the market. A risk free asset has 0 (zero) beta. In general, the higher the beta, the riskier is the security. For example, if the market is expected to experience a 10% increase in its rate of return over the next period, we expect a stock with a beta of 1.10 to experience an increase in return of approximately 11% (1.1 x 10%) over the same period. As the beta of this particular stock is greater than 1.00, it is more volatile than the market as a whole. Similarly, if the market is expected to experience a 10% decrease, then a stock with a betas 1.1 should experience an 11% decrease in return.

Stocks with betas less than 1.00 are less responsive to changing return in the market. They are considered to be less risky. For instance, a stock with a beta of 0.5 will experience an increase or decrease in its return of about half that in the market as a whole. Thus, if the market went down by 8%, a stock with beta 0.5 would probably experience a fall of return by 4%. It is possible to have securities with negative beta in the market. These are securities for which the returns are negatively correlated with those on the market portfolio. These negative beta securities are being used efficiently to diversify the portfolio risk. Beta of security can be readily obtained from brokerage firms. A portfolio beta is merely the weighted average of the betas of the individual assets included in a portfolio. It can be calculated with a formula as below.

Beta of Portfolio = (W1 x B1) + (W2 x B2) + (W3 x B3) + ……..(Wn x Bn).

Where W1, W2, W3 and Wn represent the weightings of Asset 1, 2 3 and 4 in the portfolio and B1, B2, B3 and B4 represent the Beta of Asset1,2,3 and 4 respectively in the portfolio.

For example, a portfolio comprises 5 assets with Betas as below:

Asset	Proportion of total investment	Beta
1	0.1	1.65
2	0.3	1.00
3	0.2	1.30
4	0.2	1.10
5	0.2	1.25
	1.00	

Using the above formula, we can work out the portfolio beta:
P_b = (0.1x1.65) + (0.3x1.00) + (0.2x1.3) + (0.2x1.1) + (0.2x1.25)
    = 1.20

If the market returns increase by 10% the return for PQR is expected to be 12%. Similarly if the market returns fall by 10% then the return for PQR is expected to fall by 12%.

International diversification

Investing internationally helps greatly in diversification especially in countries with capital control and where choices of investments are limited. Studies show that well-structured international diversification does indeed reduce the risk (variability) of a portfolio and thus increase the return on portfolios of comparable risk. It shows that an investor can actually reduce the risk of a portfolio much more by diversifying internationally in the same industry than by diversifying across industries within a country. Therefore, the desired result of what diversification hope to achieve will be even much greater if an investor were to diversify across countries and across industries.

Apart from reducing risk of investment, international diversification opens up more investment opportunities and present prospect of better return. Certain countries are seen to be growing faster than Malaysia in terms of GDP and likewise their stock exchange could outperform the Bursa Malaysia. Investing internationally could therefore result in better return. Nevertheless, for individuals without the know-how and the time, such an investment exposure is better left to the

fund managers. Another reason can be attributed to the fact that the risks involved in investing internationally is even greater as have been mentioned in earlier chapter.

The Active and Passive Management

Managing different portfolio requires different degree of management. At the very beginning, the fund manager has to define the level of involvement. The decision is very much dependent on the nature of assets in terms of risk and return. We may categorize them into two extremes as purely active and purely passive portfolio management. We must understand what their beliefs are about the comparative advantage of transacting in such markets.

Passive Management

Passive management strategy does not aim to outperform the market. Rather, it seeks to do just as well as the market performs. The arguments in favour of this strategy are as follows:

- The market is very hard to beat
- Costs of research on under-priced shares are very high
- Transaction costs are lower
- Market prices closely reflect the underlying values

Investors may believe that, though under and overpriced securities certainly exist, it is not possible to differentiate between the eventual "winners" and "losers".

Passive management refers to an attempt to form a portfolio that is closely similar to the Kuala Lumpur Stock Exchange Composite Index or Emas Index. This way, the portfolio will generate return similar to the stock market return. It is not possible to hold all the shares in the market. Therefore, what could be done is to construct a proxy portfolio to represent the overall market. In this aspect, it is easier to construct a portfolio that resembles the KLSE composite Index as compared with the Emas Index that reflects the total market performance. It is very difficult in practice to create the same market portfolio as that of the stock market because of the high cost involved.

At the time when assembling such a portfolio, a very broad portfolio requires very small proportionate investment in many firms. With transaction costs, this precludes an investor from assembling such a portfolio unless the investor has an enormous level of wealth to commit on the market.

Generally these problems are solved through creation of mutual funds with hundreds of millions and sometimes billions of Ringgit. These managers attempt to develop a portfolio that is similar to a well known stock market index like that of Standard & Poor's 500 index in the United States.

Active Management

Active Management strategy is just the opposite of passive management. Practitioners believe that there are always under-priced shares in view of the ever changing and competitive business environment. Technological changes could create new business opportunities and could also put certain businesses out of existence. Therefore, there is a continuous need to review existing share holdings and research into new shares. Counters with unfavourable development should be dropped and new stars should be acquired before others come to know about them.

Active management makes sense when they have certain privileges which others do not have. This includes knowing certain vital information or economics news that others have yet to know. Another situation where active management could create profit is to take advantage of arbitrage. This happens when an underlying asset is traded in more than one market, and the prices are somewhat different. As long as the differences in prices are larger than the transaction costs, arbitrage will take place. This implies that investors will buy from the market where prices are lower and simultaneously sell at another market where prices are higher. As long as the difference is higher than the transaction costs, there would be gain.

The successful active investor over the long run is able to generate greater than average returns, essentially compensating the manager's skills and efforts at selecting securities and timing market entry. In fact there is a large number of actively managed portfolios in the marketplace, many with different strategies that are consistent with the principles of stocks/shares valuation covered in Chapter 5.

Active / Passive Combinations

Very often professional fund managers do allocate some of the funds they manage to a passive portfolio, with the rest being allocated to actively managed portfolio. In the absence of being able to analyze all available investment alternatives, it makes sense for the manager to specialize in analyzing a smaller subset of securities. The "active/passive combination" provides a reasonable approach to handling the trade-off between the need for diversification and the desire to develop accurate estimates of security risk and return.

Assets Allocation

Before any action can be taken in any investment activities, we must convert our needs into specific portfolio objectives. Having defined our objectives, we then can develop an asset allocation scheme. Asset allocation involves dividing one's portfolio into various asset classes such as government securities, stocks in the KLSE, bonds, foreign securities, short-term securities and other vehicles like gold and real properties. Assets allocating is very similar to diversification in its objectives. However, asset allocations focus on investment in various asset classes, whereas, diversification tends to focus more on investing in various vehicles within an asset class.

In fact studies have shown that as high as 90% or more of a portfolio's return comes from asset allocation, and less than 10% is attributed to the actual selecting of securities. Researchers have also discovered that asset allocation has a much greater impact on reducing total risk than does selecting the best investment vehicle in any single asset category. As such, asset allocation plays such an important role in portfolio management.

Approaches to Asset Allocation

There are three basic approaches. The first two approaches are based on proportions. They are fixed proportion and flexible proportion of each asset class maintained in the portfolio. The third approach is called tactical asset allocation. This is a more complex technique frequently used by sophisticated institutional portfolio managers.

Fixed Weightings (Proportion)

This approach allocates a fixed percentage of the portfolio to each of the asset classes. The asset classes employed usually are three to five classes. Usually the fixed percentage of the total portfolio

does not change over time. However, due to shifting market values or major market movement, the portfolio may have to be adjusted annually or after the major market movement to maintain the desired fixed percentage allocations.

An example of fixed weightings/ (proportion) is as below.

Category	Allocation
Common stock	25
Bonds	50
Foreign securities	20
Short term security	5
Total portfolio	100%

Under this method, the allocation will only change as a result of shifting market values or major market movement.

Flexible Weightings (proportion)

This approach involves periodic adjustment of the proportion for each asset class on the basis of either market analysis or technical analysis (market timing). This method is often called strategic asset allocation. An example of the initial allocation and the new allocation is shown below.

Category	Initial allocation	New allocation
Common stocks	25	50
Bonds	45	40
Foreign securities	20	5
Short-term securities	10	5
Total Portfolio	100%	100%

The change from the initial to the subsequent new allocation would be triggered by a shift in market or technical indicators. The new allocation above indicates that as a result of anticipated decline in inflation, it would be expected to result in increased domestic stock and bond prices and a decline in foreign and short term security returns. The proportions were therefore changed to capture greater returns in a changing market.

Tactical Asset Allocation

This approach involves the use of futures like stock index futures and bond futures to change a portfolio's asset allocation. When stocks are expected to be less attractive than bonds, one will sell stock index futures and buy bond futures. On the other hand, when bonds are expected to be less attractive than stocks, the strategy will buy in stock-index future and sell bond futures. Because this sophisticated technique relies on a large portfolio and the use of quantitative models, it is generally appropriate only for larger institutional investors.

Applying Asset Allocation

All asset allocation plans should consider the economic outlook and the investments, savings and spending patterns, tax position, returns expectation, risk tolerance and others. This plans is usually for the long run and must stress on capital preservation and must provide for periodic revision to maintain consistency with changing investment objectives. Therefore, each asset class in terms of current return, growth potential, safety, liquidity, transaction costs, and potential tax savings must all be evaluated as the investment objectives change. The following three choices of investment portfolio like conservative portfolio, moderate portfolio and aggressive portfolio, using the asset class allocation method:

Category	Conservative Portfolio	Moderate Portfolios	Aggressive Portfolios
Common stock	10	50	70
Bonds	50	20	0
Foreign securities	0	20	30
Short-term securities	40	10	0
Total Portfolio	100%	100%	100%

Self Assessment

1. Given the following data of a portfolio, calculate the expected return.

Asset	Expected Return	Standard Deviation	Weight
A	6.75%	12%	0.25
B	12.35%	16.75%	0.35
C	14.25%	18.35%	0.40

   A. 11.12%
   B. 11.71%
   C. 14.25%
   D. 15.70%

2. The probability and expected return of the two securities according to the various economic scenario are given as follows

Economic scenario	Probability	Expected Return Security A	Expected Return Security B
Slow growth	0.3	8%	5%
Normal growth	0.5	12%	10%
Strong growth	0.2	15%	18%

   What is the coefficient variation of each security and which security is riskier?

   A. $CV_A = 0.45$, $CV_B = 0.22$.   Security A is riskier than Security B
   B. $CV_A = 0.22$, $CV_B = 0.45$.   Security B is riskier than Security A
   C. $CV_A = 0.35$, $CV_B = 0.56$.   Security B is riskier than Security A
   D. $CV_A = 0.56$, $CV_B = 0.35$.   Security A is riskier than Security B

3. Calculate the risk on expected return of the following portfolio assuming the portfolio consists of the following securities and market values.

Security	Market Values	Standard Deviation
A	RM600,000	0.4
B	RM400,000	0.8

   The correlation coefficient of the two securities is equal to 0.6.

   A. 0.4822
   B. 0.5022
   C. 0.3568
   D. 0.3896

4. Why is systematic risk being rewarded with a premium in the marketplace?
   A. Because risk is peculiar to the share or industry.
   B. Because it represents a random occurrence which could not have been foreseen.
   C. Because it is associated with market movements which cannot be eliminated through diversification.
   D. Because it is associated with market movements which can easily be eliminated through diversification.

5. What is beta coefficient measuring?
   A. The relationship between the return of an individual share and the return on the market.
   B. The relationship between the risk of an individual share and the risk of the portfolio.
   C. The relationship between the return on a share and the return on the portfolio.
   D. The relationship between the portfolio risk and the market risk.

6. What is the beta of the market portfolio?
   A. -1
   B. 0.25
   C. 0.5
   D. 1

7. What is the required rate of return on an asset with a β-coefficient of 1.1 if the risk free rate of interest is 5% and the whole market return is 16%?
   A. 17.1%
   B. 17.6%
   C. 22.1%
   D. 22.6%

8. What contrast arbitrage pricing theory from capital asset pricing model?
   A. It requires normally distributed security returns.
   B. It uses risk premiums based on micro variables.
   C. It specifies the number and identities of specific factors that determine expected returns.
   D. It has fewer restrictive assumptions.

9. Which of the following problem is eliminated when a time-weighted return measure is used to evaluating the performance of a portfolio?
   A. Relative risk adjustment
   B. Bear market periods
   C. Dividends versus capital gains
   D. Deposits and withdrawals

10. You expect your share portfolio to return 12% next year. If returns on risk-free Malaysian Treasury Bills are say 5% and your portfolio carries a 0.06 standard deviation, what is the Sharpe ration for your portfolio?
   A. 1.08
   B. 1.17
   C. 1.28
   D. 1.45

Answer: 1.B, 2.B, 3.B, 4.C, 5.A, 6.D, 7.A, 8.D, 9.D, 10.B, 11.D, 12.A