MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

COURSE FILE

Department : Business Management

Academic Year : 2023-2024 Semester: III

Course Details

Name of the Course : MBA

Branch/Specialization : MBA

Class : II Year

Name of the Subject : Security Analysis & Portfolio Management

Subject Code :R21MBA20

Nature of the Subject : Regular

Faculty Details

Name of the Faculty : Dr. P. Siva Reddy

Designation : Associate Professor

Department : Business Management

Check List

- ☐ Syllabus Copy
- ☐ Time Table
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- ☐ Suggestions for study
- ☐ Course Objectives
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- ☐ Hand Outs / Lecture Notes

Dr. P. Siva Reddy	Dr. G. Naveen Kumar	Dr. S. Srinivasa Rao
Subject Expert	HOD	Principal

1. **Result objective:**

   1.1 Pass Percentage:

   1.2 Percentage above 60% of Marks:

2. **Course Plan**:

   2.1 Coverage of syllabus in 65 classes

   2.2 By giving two assignments to students.

3. **Method of Evaluation:**

3.1	Continuous Assessment Examinations	: Yes
3.2	Assignments / Seminars	: Yes
3.3	Mini Projects	: No
3.4	Subjective and Objective as per University Norms	: Yes
3.5	Others: (Please Specify)	:

4. List of Additional Topics / Topics-Beyond-Syllabus or any Innovation

TEACHING LEARNING PROCESS

1. **Methodologies /Teaching Aids:**

   a. Blackboard and white board

   b. Chalk, Duster and whiteboard marker

   c. Power Point presentation

   d. In the first five minutes of the class, asking the questions of the previous class to assess how thorough the students with the subject

   e. Interactive sessions.

   f. Giving some topics for seminar

2. **Guidelines for the Students to Study the Subject:**

   a. Understanding of the subject by using diagrams.

   b. Evaluation of every sub topic in each unit.

   c. Neat presentation through points of every unit helps score highest marks.

OBJECTIVES OF THE SUBJECT

On completion of this Subject / Course the Student shall be able to:

Aim of the Subject	Learning Outcome
To students are able to know the investment alternatives, process and portfolio management	The objective of this course is to provide the conceptual and Practical understanding of Stock markets Equity & Bond Valuation, Cash market and also Mutual funds.

Unit	Objectives	Outcomes
I	To create awareness among students about Investment environment in India.	Students came to know about Indian financial system, investment process and equity valuation.
II	To provide deeper knowledge on security analysis.	Students learned about various analysis strategies like fundamental and technical.
III	To educate and provide practical exposure on construction of portfolio.	Students came to learn about Markowitz and Sharpe Models of portfolio construction with problems.
IV	To know about bonds, their valuation and pricing theories of bonds.	Students were able to understand bonds and their application.
V	To provide basic inputs and knowledge on mutual funds and their performance.	Students were came to know about mutual funds, types, and different models of investment calculations.

COURSE SCHEDULE
(Expected)

Expected date of completion of the whole Subject / Course and remarks, if any:

Units	Topics	No. of Classes	Dates
I	Overview of Indian Financial System; Investment Alternatives; Investment Management Process. Equity Analysis & Valuation; models of equity valuation, PE Ratio, Balance Sheet model & Multiplier Approach.	12	25-09-2023 to 19-10-2023
II	Fundamental Analysis; Economic, Industry &Market Technical analysis and tools. Data sources for both fundamental and technical analysis.	12	30-10-2023 to 18-11-2023
III	Portfolio Models: Markowitz, Sharpe, Mean variance Approach; portfolio selection, Efficient Portfolios. Capital Asset Pricing Theory & Arbitrage Pricing Theory	12	20-11-2023 to 09-12-2023
IV	Bond Analysis; types of bonds, Interest rates & structure, Yield to Maturity, maturity period return. Bond duration, Active and Passive Bond Management, Bond Immunization, Bond Volatility – Bond Convexity.	12	11-12-2023 to 30-12-2023
V	Mutual Funds; Types; structure-NAV calculation. Performance evaluation of Mutual Funds- Sharpe Model, Treynor Model, Jensen Model, Fama decomposition.	12	

Remarks:

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Internal Examinations Schedule:

Exam	MID I		MID II	
Date	From	To	From	To

UNIT – I			
To create awareness among students about Investment environment in India.		**Outcome:** Students came to know about Indian financial system, investment process and equity valuation.	
S. NO.	**Subjects topics**	**No of Classes**	**Text book reference**
1	Indian Financial System	**2**	T1
2	Stocks trading in Indian Market	**1**	T1
3	Investment Alternatives	**1**	T1
4	Investment Process	**2**	T1
5	Balance sheet analysis	**2**	T1
6	Multiplier Approach	**2**	T1
7	Equity Models	**2**	T1
UNIT – II			
Objective: To provide deeper knowledge on security analysis.		**Outcome:** Students learned about various analysis strategies like fundamental and technical.	
S. No.	**Subject topics**	**Theory**	**Text book reference**
1	Fundamental Analysis	**2**	T1
2	Technical Analysis	**2**	T1
3	EMH Model	**2**	T1
4	Data sources	**2**	T1
5	Data analysis	**2**	T1
6	Decision Making	**1**	T1
UNIT – III			
Objective: To educate and provide practical exposure on construction of portfolio		**Outcome:** Students came to learn about Markowitz and Sharpe Models of portfolio construction with problems.	
S. No	**Subject topics**	**Theory**	**Text book reference**

1	Return & Risk	**1**	T1
2	Calculation of risk	**1**	T1
4	Calculation of return	**1**	T1
5	Markowitz model	**1**	T1
6	Sharpe model	**1**	T1
7	CAPM Model	**1**	T1
8	APT model	**1**	T1
9	calculations	**1**	T1
UNIT – IV			
Objective: To know about bonds, their valuation and pricing theories of bonds.		**Outcome:** Students were able to understand bonds and their application.	
S. No	**Subject topics**	**Theory**	**Text book reference**
1	Bonds & Types	**1**	T1
2	Interest rates	**1**	T1
3	YTM Model	**2**	T1
4	Interest types	**2**	T1
5	Yield calculation	**1**	T1
6	Bond management	**2**	T1
7	Bond management	**2**	T1
UNIT – V			
Objective: To provide basic inputs and knowledge on mutual funds and their performance.		**Outcome:** Students were came to know about mutual funds, types, and different models of investment calculations.	
S. No	**Subject topics**	**Theory**	**Text book reference**
1	Mutual funds	**1**	T2
2	Types of mutual funds	**1**	T2
3	NAV calculation	**1**	T2

4	Sharpe model	**1**	T2
5	Treynor Model	**1**	T2
6	Jensen model	**1**	T2
7	calculation	**1**	T2

Text books:

T1: Punithavathy Pandian, SAPM, Vikas Publication, Latest Edition.

T2: *Kevin, SAPM,, Sultan Chand & Sons,latest edition.*

Signature of the Faculty **Signature of the HOD**

Course :**MBA II Year I SEM**
Academic Year :**2023-24**
Name of the Subject : Security Analysis & Portfolio Management
Prescribed Textbook: ***Punithavathy Pandian, Vikas Publications, Latest Edition.***
Nature of the Subject: **Specialization- Finance- Paper**

Course Aim:

To students are able to know the investment alternatives, process and portfolio management

Learning Outcomes:

The objective of this course is to provide the conceptual and Practical understanding of Stock markets Equity & Bond Valuation, Cash market and also Mutual funds.

Unit-I: Investment Environment in India

Introduction: Overview of Indian Financial System - Securities Trading in Stock Markets - Investment Alternatives - The Investment Management Process.

Negotiable Securities & Non-negotiable Securities: Primary Market: Types of New Issues- Parties to New Issue & Secondary Market.

Unit-II: Security Analysis

Security Analysis: Economic Analysis, Industry Analysis & Company Analysis- Earnings of the Company, Financial Analysis, Growth in Earnings.

Technical Analysis: Dow Theory, Efficient Market Hypothesis, Random Walk Theory, Support and Resistance Levels, Odd Lot Trading Moving Averages.

Unit-III: Portfolio Analysis

Models and Theories: The Returns and Risks from Investing - Markowitz Portfolio Theory - Mean-Variance Approach.

Portfolio Selection: Efficient Portfolios - The Single Index Model - Capital Asset Pricing Model - Arbitrage Pricing Theory.

Unit-IV: Bond Analysis & Valuation & Management

Bond Analysis: Types of Bonds - Interest Rates - Term Structure of Interest Rates - Measuring Bond Yields - Yield to Maturity - Yield to Call - Holding Period Return.

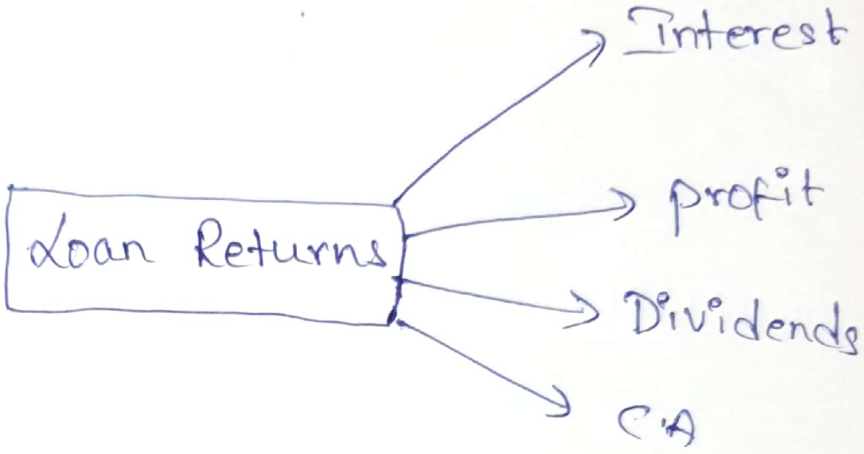
Bond Pricing Theorems: Bond Duration - Active and Passive Bond Management Strategies - Bond Immunization - Bond Volatility - Bond Convexity.

Unit-V: Mutual Funds

Mutual Funds: Types of Mutual Funds Schemes - Structure - NAV (Net Asset Value) - Risk and Return. Performance Evaluation Models: Sharpe Model - Treynor Model - Jensen Model - Fama's Decomposition. Exchanger Traded Funds: Types of ETFs and Trading Process.

1. Investment

Investment is the employment of funds on assets with the aim of earning returns or capital appreciation.



Investment has two attributes namely time & risk. present consumption is sacrified to get return in future is the common activity of individual.

Bullish → means market is increasing

Bearish → unconstant increase and decrease

→ Risk - probability of getting loss

expected outcome - actual outcome

CFA - Certified Financial Analyst

2. Objectives of investment :-

The core objective of any investment is getting higher returns by balancing or managing potential risk factors.

The objectives are as follows:-

(i) Return :-

Real Rate of Return $= \left(\frac{\text{Nominal} + 1}{\text{Inflation Rate} + 1}\right) - 1$

Returns are the motivational factors, investor always refer to higher return than lesser return.

(ii) Risk (or) managing risk :-

Risk can be defined as variability of returns or the probability of getting loss on investments. At a certain or specific rate of return investor refers low security than the security which carries higher risk.

(iii) Liquidity :-

Ability to convert into cash is called liquidity.

Liquidity means ability to convert into Cash or currency of any asset.

(iv) Hedging :- (against inflation)

Since inflation is there, people loose the purchasing power of currency. If they did not get higher returns on the funds which they are hold in. When the returns are higher than inflation rate, the real rate of return is positive to the investor.

(v) Safety or Security of investment :-

Investment environment is uncertain in nature. Some of the investment carries higher security than others. Usually fixed income securities carries zero risk or less risk, variable income securities carries higher risk characteristics.

3. Investment process :-

Investment process involves a series of activities starts from identifying the best investment alternatives to execution of the activities. Usually the process can be divided into 5 stages as follows:

(i) Investment policy
(ii) Investment analysis
(iii) Investment value
(iv) Portfolio Construction
(v) Portfolio evaluation.

Investment Process

Investment Policy
→ Investible funds
→ objectives
→ Knowledge

Analysis
→ Market
→ Industry
→ Comp

Valuation
→ Intrinsic value
→ Future value

Portfolio construction
→ Diversification
→ selection & allocation

Portfolio evaluation
→ Appraisal
→ Revision

It describes the proceedings and mgt of investment formulation for the systematic proceeding of analysing expectations and constraints. Under this, the investor consider about objectives, funds, knowledge/awareness.

Objectives:-

Investor expectations and objectives are different from one to another and from time to time period. They may be as follows:-

1. Expecting regular and continuous returns
2. Expecting capital appreciation
3. Expecting large/lumpsum amount
4. Periodical returns

Investable funds:-

Some of the investors make investments with own funds, some may go with borrowed funds/ combination of these two The investor who borrows and make investment carries higher risk.

Knowledge/awareness about investment environment:-

Here an investor should focus on the available alternatives for investment, risk factors and concern returns. Plenty or many number of alternatives

available in market where their characteristics are continuously changing.

2. Investment Analysis:-

After formulating the investment policy, investor must filter or scrutinize the best alternatives. For this we proceed in the following way:-

(i) Economic/market analysis:-

An economy consist of various sectors like primary, secondary, teritiary sectors. Analysing all these will be difficult. Hence, if the investor look at financial markets or stock markets, you can guess or experience what is happening in the market.

Markets are the mirrors of an economy.

(ii) Industry Analysis:-

There are many industries which contribute some output towards GDP, and each industry carries specific characteristics. Some industries are stable and growth (banking), Some industries are growth industries (IT), Some industries are cyclical like electronic goods or white goods, petrochemicals, agri related firms. Investor can choose one based on these requirements and expectations.

Investment Vs Speculation:-

Component	Investment	Speculation
1. Time	long term in nature	short term in nature
2. Holding period	more than one year	hold the investment from few days to few weeks
3. Risk factor	investment is less riskier than Speculation	Higher risk
4. Returns	moderate returns	high returns
5. Investment decision	By making this analysis i. Economic ii. Industry iii. Company	Based on information
6. Investable funds	Investment made with own funds	Speculation made with own + borrowed funds

Investment Alternatives:-

Market is filled with many number of investment alternatives, can be divided as

1. Fixed income Securities
2. Variable income securities.

1. Fixed income securities :-

(i) Preference share :- It is the combination of characteristics from debentures, some characteristics of equity shares.

(ii) Debenture :-

(iii) Bond

(iv) money market instrument

(v) Bank deposits

(vi) Securities issued by govt authorities. (gilt-edged securities) more secure in nature.

2. Variable income Securities :-

These instruments provide higher risk to the investors, there are no guaranteed returns and sometimes, the capital or investment also going to be losed. Those instruments are as follows :-

(i) shares

(ii) Mutual funds

(iii) Unique linked insurance policies etc

(i) Shares :- It is the part of capital, the total capital of the firm is equally divided into small denominations/ part and each part is called as share. The people who hold shares are considered as shareholders, theoritically the ~~bonus~~ owners of the firm.

Share is the ownership instrument which provides rights and obligations to the holder. Obligation is to participate in decision making and utilizing voting rights. The right is expecting dividend when the

company is having profits or additional funds

Bond:- Bonds are issued by public sector Undertakings with promised repayment of capital along with interest. Bonds are more secure than any other investment alternative.

Debentures:- It is a creditor instrument, private sector firm issue debentures to raise capital from public. Most of the cases debentures are unsecured in nature, the borrower promises to pay predetermined interest and capital repayment on maturity.

money market Instruments:- money market provides funds to the corporates or firms to meet working capital requirements. Usually these instruments carries maturity period from one day to one year. The actively traded instruments are as follows:-

(i) Call money market
(ii) commercial papers
(iii) certificate of deposits
(iv) treasury bills
(v) money market mutual funds

(i) **Call money market:-** where the funds are available from 1 day to 15 days, the most active participates are bankers and financial institutions to meet statutory reserves with RBI. If the money is lent for 1 day it is called call money. If it is more than 1 day till 15 days then called as noticed money.

(cont in next page * page 15)

Classification and functions of financial Market:-

Definition of financial market:- A place where the financial assets are created or transferred

Eg:- shares, debentures, bonds, mutual funds etc.

Classification:-

Based on time period:- capital & money market

Based on buying & selling:- primary & secondary

Capital Market:- It is the place where the assets or investment available for long term. Firms or companies raise capital through these markets for expansion or diversification of their functions. This market facilitates the medium & large scale industries for fulfilling financial obligations by issuing instruments like shares, debenture, bonds etc.

Money market is the place where resources are provided for short term for which the firms seek support for working capital needs proceeds with these instruments

1. Call money market
2. Commercial papers
3. Certificate of deposits
4. Treasury bills
5. Money Market Mutual funds.

Primary Market:- Is the place new issues comes into the picture to meet the financial requirements, Companies raise capital through issue of securities like shares and debentures.

Companies can raise capital in five different issues:-

i. IPO (Initial Public Offerings)
ii. Rights issue
iii. Bonus issue
iv. Private Placement
v. Bought Out Deal

(i) IPO:-

It is the most popular method of raising capital or funds directly from the public. Company raise capital by issuing of prospectus

(ii) Rights issue:-

It is the method of raising additional capital or additional funds from the existing shareholders by offering security on proportionate basis. from existing shareholders.

~~Letter of~~ for rights issue company release letter of offer

(iii) Bonus issue:-

Sometimes companies distribute profit to existing shareholders by issuing

additional shares in the place of dividend. Bonus shares issued in the ratio of existing shares to the shareholders. Companies materialise retained earnings by issue of bonus shares.

Functions of financial markets:-

1. Mobilisation of savings and their channelization into more productive uses
2. facilitates price discovery
3. Provide liquidity to financial assets
4. Reduces the cost of transactions. (cont to page-16)

(cont from page-12)

(ii) Commercial papers:- Issued by private sector firms in the form of unsecured promisory note, usually the maturity period lies between 3 months to 1 year. The face value of CP is 5 lakhs and multiples of 5 lakhs, all the investors are eligible to make investments.

(iii) Certificate of deposits:- Commercial banks issues CD's to the common public, to meet the financial obligations in short term. The maturity period lies blw 3 months to 1 year. Face value is 25-thousand and multiples of 25 thousand.

(iv) Treasury bills:- In short form it is called as T bills. These instruments issued by central govts of concern nation, when the govt spending is higher, the collections or revenues is lesser

at these times, govt issue these bills. There are 4 types of T-bills

(i) 14 days - 28 days
(ii) 91 days
(iii) 182-days
(iv) 364-days

} maturity period

(V) Money Market Mutual funds:- The mutual fund Companies and investment bankers make investment in only the above 4 securities are considered as money market mutual funds.

(cont from page-15)

Secondary market:-

It is the segment of capital market, where the outstanding securities are available for trading. Security market provides liquidity to the investors in long term, these markets operates in the medium of stock exchanges, which regulates the trading activities in the market.

In India, secondary markets are called as stock markets, we have NSE and BSE operates trading in national wide, there are some regional stock exchanges focused on local requirements of business parties or organizations.

Security listing process: (Secondary Markets)

There are certain steps followed by the firms for listing the securities, as follows:-

1. The promoters should decide on which stock exchange they want to list their shares
2. They should contact the exchange authorities with the proposal
3. The company should discuss about the eligibility criteria for listing.
4. The company should submit memorandum, articles and prospectus to the exchange.
5. The company finalise the three documents with association of exchange and finalise.
6. Securities must be offerred to the public and make allotment according to the considerations
7. Securities listed in the market submit required documents to the authorities.
8. Securities are available for trading in exchanges.

Minimum Public offer:-

A company which desires to list its securities in exchange should offer atleast 60% of issued capital for public subscription. Out of this 60% a maximum of 11% may reserve for investment agencies like insurance companies, mutual fund agencies, investment bankers etc. The public offer must be made through prospectus, and also provide

advertisements in national and local newspapers.

Depositories :-

These are the people or parties who stores shares in electronic form and provides security to the data which is in digital form. These parties also called as custodians

There are two depositories in India:-

1. NSDL – National Securities Depositories Ltd
2. CDSL – Central Depositories & securities Ltd.

~~Clearing House:-~~

Depositories work like Banking System :-

A depository deals and holds shares of the investors who holds the securities, a bank holds funds who have accounts with them. The similarities and differentiations are as follows:-

1. Bank hold cash, whereas depository holds securities in electronic form.
2. Bank facilitates transfer of funds from one account to another, whereas depository facilitates transfer of securities from one a/c to another.
3. Banks are meant for savings funds belongs to the public, whereas depository safeguards the securities of investors.
4. Bank provides saving a/c's to the public, whereas depositories provide D-materialised a/c to the investors.

Clearing house:-

for buying and selling of securities there must be support and involvement of many parties called as intermediaries. The parties or middlemen involved in this transaction are:-

1. Brokerage firms
2. Banks
3. Depositories

1. Brokerage firms:- Offers D-mat accounts to the investors, the buying and selling of securities must complete through this a/c only. The brokerage firm do the front line activity i.e., describing the requirements of investors like buying or selling of various securities.

2. ~~Banks~~ In the second step the middlemen validate the request, completed by back end team (technical team), they send/forward request to the sellers.

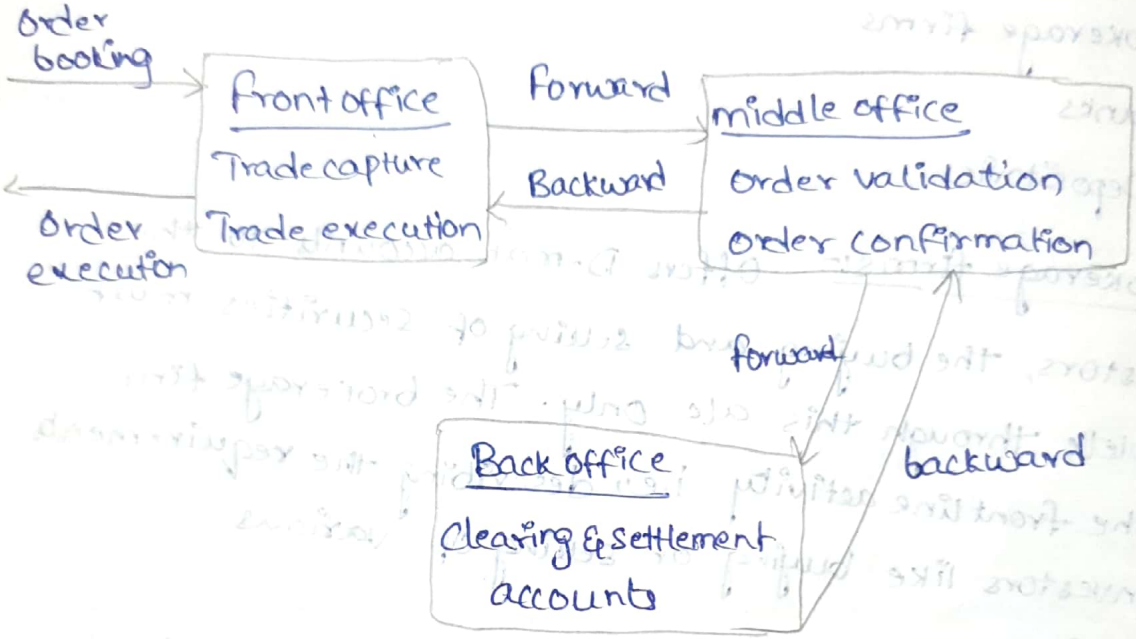
Once the characteristics are matched the transaction is going to be completed in the following way:-

i) The buyer receives the specified shares to the D-mat account, funds must be transferred to the seller simultaneously.

ii) Seller receive the funds from the buyer, transferred/delivered specified shares to the buyers D-mat a/c

(iii) Depositories support for delivering and receiving shares from one D-mat a/c to another D-mat a/c.

Clearing process / Trade life cycle



functions of stock exchanges / secondary markets in India:

1. markets are economic barrowometer, every change appears in economy or country reflects in the prices of shares. The rise or fall of share prices resulted as as boom or recession in the economy.

2. market provides and facilitates fair price to the securities, based on demand and supply of securities/shares.

3. most of the transactions are monitored and controlled by SEBI. Hence these transactions are safe in nature.

4. markets provides some contribution in economic growth, in the exchange various investors buy and sell securities. The process of disinvestment and reinvestment helps the investor to select most profitable alternatives, resulted in capital formation and economic growth.

5. market spreads equity culture, it encourages people to invest in ownership securities.

6. market provides speculation to the investors, they will guess the future of the market by considering information and news about economy and industry.

7. market provides liquidity to the financial assets, the investors can sell their holdings at any point of time.

8. market facilitates better allocation of capital to the best and profitable firms in long term.

9. market promotes the habit of savings and investments among the public.

Indices :- (Index)

Index consist of group of shares or stock, belongs to same category like equity shares. An index can be considered as a sample, which drags from total population. for example

1. In NSE there are approximately 1900 companies listed, 50 stocks taken from the total and constructed or created an index(sample) namely NIFTY-50

2. BSE consist of more than 5000 stocks, 30 stocks were selected among the total and constructed an Index namely BSE SENSEX. Sensitivity index of 30 stocks.

3. each stock market has its own index, considered as benchmark performance for any kind of share.

Risk & Portfolio Theory:-

Broadly risk can be divided as two types:- 1. Systematic risk which is uncontrollable
2. Unsystematic risk (controllable by the firm)

1. Systematic Risk:-

The risk caused by external factors, it impacts all the firms, industries and markets as a whole. The economic conditions of the nation, political changes, sociological changes impacts the entire market, is unavoidable in nature.

Types of Systematic risk:-

There are three types of Systematic risk namely

1. market risk.
2. Interest rate risk
3. Purchasing power risk.

1. Market risk can be defined as the proportion of total variability of returns caused by the alternative forces of bull and bear market

Bull market provides the securities and index moves from the lowest value to the peak levels or highest values over a period of time. In bear market the value of securities and index collapse to the lowest level from its peak level.

2. Interest rate risk is the variation in the single period returns caused by the fluctuations in market interest rate. Most commonly, investor prefers higher returns at less risk or zero risk. Bank deposits are much safe investments than shares, at higher interest rates, investor prefers to switch his investments from variable income sources (stock market of shares) to fixed income places or avenues.

The relationship b/w interest rates and stock market performance is inversely proportion

3. Purchasing Power risk / Inflationary risk:-

variations in the returns are also caused by the loss of purchasing power of currency. The reason is inflation which eradicates the purchasing power of currency.

At the time of higher inflation, public savings comes down, also the investments comes down.

2. Unsystematic Risk:-

It is unique and specific, and differentiated from industry to industry. Unsystematic risk will be raised bcoz of technological changes, managerial inefficiencies, changes in consumer preferences, labour problems, etc. availability of raw material etc

Broadly unsystematic risk is divided into two types:-

(i) business risk
(ii) financial risk.

(i) Business risk caused by the operating environment of the business which may be in the form of external or internal business risk.

External risk is caused by the operating conditions imposed on the firm, which includes

(a) risk factors due to political issues, changes in govt policies.
(b) nature of business and business life cycle.
(c) changes in social factors, demographic conditions etc.

Internal business risk is resulted with the operational efficiency of the firm. The major

factors like

(a) fluctuations in sales

(b) problems with innovations and R&D

(c) higher fixed cost

(d) Concentrated segment market / single product market

(e) inefficiency of personnel management.

(ii) Financial risk also called as financial leverage / trading on equity. Doing business with borrowed capital ~~funds~~ is called as financial risk. Higher borrowings leads to higher payment of interest resulted less profit distribution to the ~~the~~ share holders.

Portfolio theory and Concept of risk management:-

Understanding the nature of the risk is not sufficient unless the investor or analyst is capable of expressing in some quantitative terms. It helps the investors to compare the investments and stocks with one another. Measurements cannot be assured cent % accuracy bcoz risk is caused by many factors such as social, political, technological economic and managerial efficiencies. The statistical tool often used to measure the risk is SD.

Unit - II

EQUILIBRIUM IN CAPITAL MARKETS

Efficient market :-

The expectations of investors regarding the future cash flows are translated or reflected on the share prices. The accuracy and quickness in which the market translates into the prices are called as market efficiency, those markets are called efficient markets.

There are two types of market efficiencies:-

1. Operational efficiency
2. Informational efficiency.

1. **Operational efficiency :-** At stock exchanges operational efficiency is measured by factors like time taken to execute the order & the no. of bad deliveries market efficiency doesn't consider this factor for measuring its efficiency.

2. **Informational efficiency :-** It measures the sharpness and fitness of the market reaction to the new information. The information may be in the form of (a) economic policy & reports (b) company statement & analysis (c) govt statement related to industry policy (d) tax structures (e) statutory reserves.

→ markets takes long time to adjust to the available information for eg. if a company announces bonus issue it reflects on its shares prices probably in the positive way.

EMH

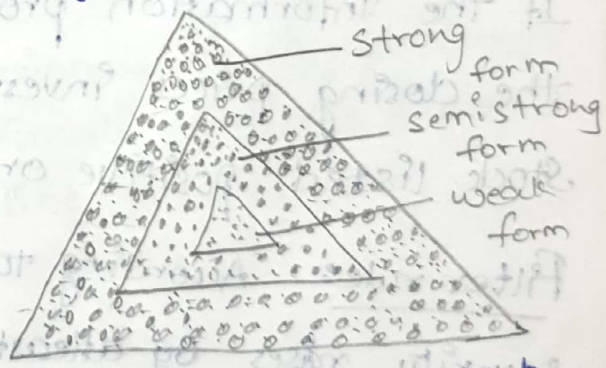
In 1900 a french mathematician namely Louis Bechelier proposed that the security price fluctuations work random.

In 1953, Kendall reported that stock price series is an unpredictable series of activities, they appeared randomly and each successive change is independent of the previous one.

In 1970, Fama stated that efficient markets fully reflect the available information. If the markets are efficient, securities prices reflects normal returns for the specific level of risk.

Fama suggested that efficient market hypothesis can be divided into 3 types namely:-

(i) Weak form
(ii) semi strong form
(iii) strong form.



levels of information & the markets

(i) Weak form of Efficient market Hypothesis (EMH)

(a) the type of information used in weak form is historical prices of stocks. (Historical information only)

(b) future prices cannot be predicted by analysing the prices from the past

(c) current prices reflect all information found in the past prices and traded volumes.

(d) information traders lead the market, their works their share prices to align with the expected or intrinsic value.

(e) Buy and whole strategy doesn't work here, short term traders may gain positive returns.

Empirical evidence/proofs to this form:-

Runs Test is used to find whether the series of price movements have occurred by a chance. A run is uninterrupted sequence of given stock price for a specific period.

If the information provided of a stock, based on the closing prices investor identifies, whether the stock listed positive or negative return.

Filter rule:- According to this strategy, if price of a security rises by atleast specific percentage (x%) investor buy the stock and hold it till price declines by atleast a specific percent (x%) from the subsequent higher level.

Short sellers use this strategy and generate profits in short term

* short selling/short sellers:- selling an asset without having or holding it is called as short selling.

ii, Semi strong form of EMH:-

It states that the securities prices adjust rapidly to all publicly available information. Such information is as follows:-

1. Corporate dividends
2. Bonus and rights issue
3. Mergers and acquisitions
4. Information from KRA (Key Resource Assessey)

Empirical evidence:-

A few insiders can generate profits or short run ~~trials~~ Price changes than the investors who adopt buy and hold strategy. Whenever, a new information arrives to the market, the supply and demand factors of the stock reacts to the information.

Empirical evidence:-

The professionals develop a simple regression technique to estimate returns from given stock. The regression line is

$$r = \alpha_1 + \beta_1 r_{mkt} + e$$

r = return of security.

α_1, β_1 = regression co-efficients

r_{mkt} = market return/index return

e = error/residual.

iii) Strong form of EMH:-

It states that all information is fully reflected on stock prices. The investors or portfolio managers who have access to the information reacts quickly than the ordinary investors. Information whether it is public or inside cannot be used consistently to generate higher returns in strong form.

Market inefficiency:-

Market discounts everything, i.e. it consider each kind of information and reflects on share prices is called market efficiency. If the market do not consider and donot react to the information that is called market inefficiency, those markets are inefficient markets.

Investors and portfolio managers prefer to make investments in efficient markets only.

CAPM Concept / Model (Capital Asset Pricing Model):-

As per this model the required rate of return of an asset is having a linear relationship with assets beta (β) value i.e. Systematic risk. In simple ter

Assumptions ~~Exemptions~~ of CAPM Model :-

1. An individual seller or buyer cannot effect the price of a stock, the markets are perfectly competitive in nature.
2. Investors make decisions based on expected return and the risk of given stocks.
3. Investors are assumed to have homogeneous expectations
4. The investor can lend or borrow any amount of funds at the riskless rate of interest also called as risk free rate of interest.
5. Financial assets are infinitely divisible, an investor can purchase any quantity of assets without any limitations
6. There are no transaction charges.
7. There is no personal income tax.
8. Short selling is available for all the securities.

CAPM : $R_p = R_f x_f + R_m (1 - x_f)$

R_f : Risk free rate of interest (usually consider the interest rate on T-bills)

x_f = proportionate of investment on risk free asset

R_m = market return / index return

for example, if the risk free rate of return is 12.5% and the market return is 20%, if an investor made equal proportionate of investment, what is the portfolio return

Sol:- $R_p = 12.5 \times 0.5 + 20 \times 0.5 = 16.25 \longrightarrow (1)$

If the investor made investment 100% funds in market, then the return is.

$$R_p = 12.5 \times 0 + 20 \times 1 = 20 \longrightarrow (2)$$

If the investor borrows 50% funds at risk free return and made total investment in market. Now the portfolio return is

$$R_p = 12.5 \times (-0.5) + 20(1-(-0.5))$$
$$= 23.75 \longrightarrow (3)$$

CML (Capital Market Line) Model:-

The risk and return relationship of an efficient portfolio (efficient market) is measured with capital market return.

The portfolio return can be calculated by

$$R_p = R_f + \left(\frac{R_m - R_f}{\sigma_m}\right)$$

SML (Security Market Line):-

The risk and return relationship of individual securities and inefficient portfolios can be measured with security market line.

$$R_{stock} = R_f + \beta (R_m - R_f)$$

R_{stock} = return of stock

* β is the indicator of systematic risk of an individual stock or any financial asset only.

Example:
It is assumed that the market return is 8% and Rf is 5%, the securities A, B, C, D carries β values of 0.8, 1, 1.2, 1.5. Now the expected return of each stock is:

	β
A	0.8
B	1
C	1.2
D	1.5

Sol: $R_A = 5 + 0.8(8-5) = 7.4\%$

$R_B = 5 + 1(8-5) = 8\%$

$R_C = 5 + 1.2(8-5) = 8.6\%$

$R_D = 5 + 1.5(8-5) = 9.5\%$

It can be assessed that when all the remaining factors constant, the return of a stock directly proportionate with its β value. Means if the stock carries highest β value (highest risk) it gives highest probabilistic returns.

Application of β:-

The benchmark return of industry is considered as return of index.

1. If β value is '1' means that if the market increases/ decreases by 1 point, the return of the stock also increases/ decreases by 1 point.
2. If β value is 0.5 means that if market increases/ decreases by 1 point, the return of stock also increases/ decreases by 0.5

3. If β value is 1.5 means if the market increases/decreases by 1 point, the return of the stock increases/declines by 1.5

Arbitrage Pricing Theory:- [APT]

Arbitration:- Arbitrage pricing theory is one of the tools used by the investors and portfolio managers to decide price for a given stock or portfolio. This theory explains the nature of equilibrium in the asset pricing in less complicated manner with few assumptions.

Arbitrage is a process of earning profit by taking advantage of differential pricing for the same asset. In the security market, investor prefers to purchase a stock at lower price, sell the same at higher price resulted in riskless profit.

* Buying and selling stocks simultaneously is called arbitration. When a given stock listed in more than one market, if the stock price varies from one market to another, it creates an opportunity to the investors

Assumptions of APT:-

1. The investors have homogeneous expectations.
2. The investors have awareness about risk factors in the market.
3. Perfect competition exist in the market.
4. There are no transaction charges.

Arbitrage Portfolio:-

According to APT, an investor tries to find out the possibility to increase returns from the portfolio without increasing the funds in the portfolio. If also means that the risk of the portfolio remains the same at lower returns as well as higher returns.

for example:- an investor selects a portfolio with three stocks namely A, B and C with the proportionate investment of X_A, X_B and X_C can be defined as follows:

$$X_A R_A + X_B R_B + X_C R_C > 0$$

X = proportion of investment

R = Rate of return of investment.

The investor can alter proportionate of investments based on the expected and actual returns of the stocks.

Bond Analysis:-

A bond can be defined as a debtor instrument for long term debt, usually issued by public sector firms and govt authorities. A typical bond may issue for atleast 10 years and maximum maturity date of 25 years.

The organization which raise capital through bonds, promises that they will repay the capital on maturity and payment of interest on instalment basis.

Characteristics of a bond:-

1. Bond is a debtor instrument which never been converts into any other instruments.
2. Bonds generally carries a fixed maturity period with floating interest rates, whenever the interest on T-bills changed the coupon rate changes or varies.

3. All the bonds repay the principle amounts on maturity, but the interest payment may be on periodical basis or lumpsum payment on maturity.

Types of bonds:-

Bonds can be divided into many types, but the popular bonds are:-

1. fixed rate of bonds carries fixed interest rate throughout the life.
2. floating rate bonds provides variable interest rates based on the norms and regulations.
3. Zero interest rate bonds (discounted bonds) do not carry any coupon rate but they were issued at discount on its face value and repurchase redeem at face value.
4. Inflation linked bonds:- These bonds provide variable returns to the investor, the coupon rate depends on the inflation rate. Here, the rate of interest is fixed by considering the actual inflation rate, the return will be decided as follows;

inflation rate + fixed rate of interest.

Eg:- If inflation, 5% + 1% interest rate

= 6% coupon rate.

5. Perpetual bonds (continuous bonds):- means that there is no fixed maturity period. Bonds which issue without mentioning maturity rate considered as perpetual bonds. The investors of these bonds can enjoy interest rate throughout the life of the bonds.

Bond return calculation:-

Bond returns can be calculated in two different ways:-

1. Holding period Return.
2. Yield to maturity (YTM)

1. Holding period Return:-

If an investor purchase a bond and sell it after a certain period he carries two different returns namely fixed coupon rate and price gain on bond purchase. Holding period return also called as one period return (or) single period return.

$$\text{Holding period return} = \frac{\text{coupon rate} + \text{price gain/loss}}{\text{purchase price}}$$

for example:- an investor purchases a bond at a price of 900/- with coupon payment of 100/- and sold the bond at 1000/-. Now the return on the bond is

Sol: Coupon rate = 100/-
Purchase price = 900/-
Resale = 1000/- gain = 100/-

$$\text{HPR} = \frac{100+100}{900} = \frac{200}{900} = 0.22\% = 22.22$$

If the same bond sold at 750/- with same characteristics. Now the HPR is

$$\text{HPR} = \frac{100-150}{900} = \frac{-50}{900} = -5.5\%.$$

* If the bond investment is only for one year or less than one year, then only holding period return is applicable.

2. Yield To Maturity (YTM):-

YTM is the single factor discount that makes the present value of future cash flows from a bond equal to the current price of the bond. Hence it can be described that the rate of return which can investor can expect to earn if the bond holds till maturity.

$$YTM = \frac{\text{Coupon rate} + (\text{Premium (or) discount} / \text{no. of years})}{\left(\frac{P_0 + P}{2}\right)}$$

P_0 = Current bond purchase price

P = Face value selling price at current year

Eg:- A four year bond with 7% coupon rate and maturity value of 1000/- is currently selling at 905/- Its YTM is.

Sol: Coupon rate = $1000 \times 7\% = 70$

$$YTM = \frac{70 + (95/4)}{\left(\frac{905 + 1000}{2}\right)} = 0.098$$

$= 9.8\%$

(contd on page → 59)

Unit-II

SECURITY ANALYSIS

Security analysis is broadly divided into two types namely

1. Fundamental analysis.
2. Technical analysis.

1. Fundamental Analysis is the study of economic factors, industrial environment and the factors related to industrial companies.

The intrinsic value of an equity share depends on multitude of factors. The earnings of the company, growth rate and risk exposure directly affect the share prices. By covering all these factors, fundamental analysis focussed on economic analysis, industry analysis and company analysis.

Economic Analysis:-

The level of economic activity has an impact on investment in many ways. If the economy grow rapidly, the industries also expected to show rapid growth. Economic analysis covers the following components, namely

1. GDP
2. Savings & investments
3. Inflation
4. Interest rates
5. Budget
6. Tax structure
7. Balance of payment
8. Monsoon & agriculture
9. Infrastructure facilities
10. Demographic factors.

Industry Analysis:-

An industry can be defined as a group of firms that have similar technological structure of production and produce similar products. In an economy many industries exist, the performance of each industry shows impact on the economy as a whole.

For better understanding, the industries classify as growth industries, cyclical industries and defensive industries.

Growth industries are those which list higher growth rate than growth rate of GDP. In India service sector industries like banking, IT and telecom is listing two digit growth, whereas the expected GDP rate is above 7.5%.

Cyclical industries. The growth rate and the profitability of these industries move along with the business cycle of the industry. During the boom period these industries enjoy higher growth and during the recession or depression, they suffer to survive in the market. For example, the white goods like AC's, refrigiratoas, Smart TVs and other kitchen range products commands a good market in the boom period and the demand for these decline during the depression.

Defensive industry: defines the movement of business cycle in a stable growth rate. This industry records continuous growth rate irrespective of economic environment and conditions. Industries like pharma, food and textile

comes under defensive industry. Apart from these three, the investor has to analyse the following factors

→ growth level of the industry
→ cost structure and profitability
→ nature of the product
→ nature of the competition
→ govt policies
→ research & development

Company Analysis:-

At most the above two conditions are same for all the firms. only few companies can perform better than other in the industry. company analysis gives a clear picture to the investor for further proceedings. The factors like

→ competitive edge.
→ level of earnings.
→ capital structure - combination of debt & equity
→ management strategies
→ operating efficieny &
→ financial performance

reflects the share value of the firm in market.

2. Technical Analysis:-

Technical analysis is the process of identifying trend projections and trend reversal at an earlier stage to formulate the buying and selling strategies. with the help several indicators, investors analyse the relationship between price-volume and demand-supply for the overall market and the individual stocks.

→ In the raising market number of buyers are higher than the sellers where as in falling market the number of sellers are higher than number of buyers.

→ Technical analysis proposed by Charles Dowin in 1984, the series of journals published in wall street. Technical tools like

1) Dow theory
2) Volume of trading.
3) Short selling
4) Odd lot trading, line charts, bar charts, moving averages and oscillators are generally used for identifying & calculating market trend.

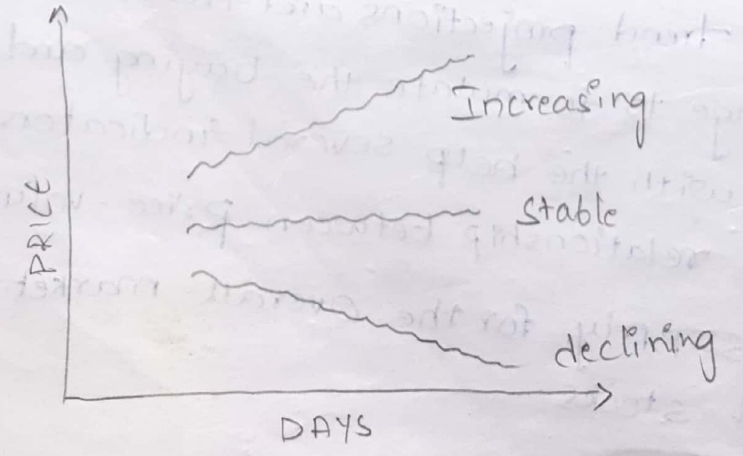
(i) Dow Theory:-

Charles Dow explain the moment of dow jones index (indices), he develop this theory base on certain assumption. The first assumption is

(a) No single individual (or) buyer can influence the market trends.

(b) market discounts everything.

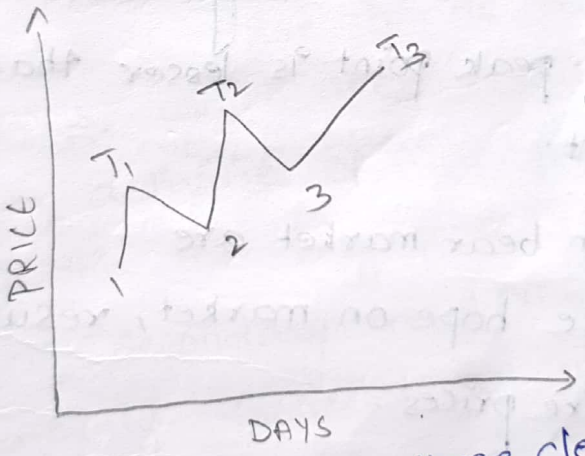
→ Based on trend projections to develop trend lines based on the prices of stocks & time period.



As per its explanation the market trend is divided into primary trend, intermediate trend, short term trend. Trend is the direction of moment of the values of individual stock as well as index value. The raise or fall in share prices cannot go in sameway forever. The share price moment may reverse and change its direction is called as trend reversal.

→ Primary trend:-

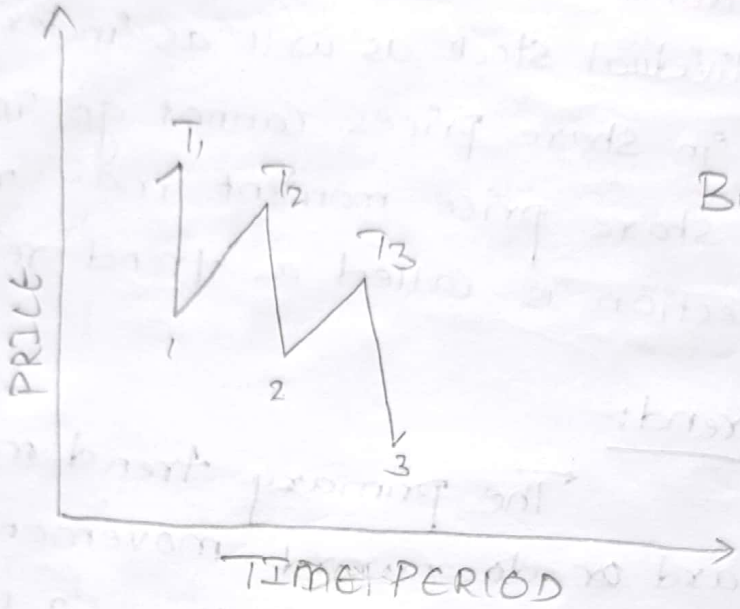
The primary trend may be the broad upward or downward movement for a period of 2 years or more than 2 years. When the market is increasing its value continuously it is called as bull market.



Bull Market

→ Bull market shows the three clear cut peak points. Each peak point is higher than its previous peak points. The bottoms also higher than its previous bottom. The three phases are named as correction revival, improvement in corporate profit, Speculation (guessing activity)

(13) The reverse trend may called as bear market are shown as follows:



The bear market shows three clear cut down points, each down point/declining point is lesser than previous down point. Even though there are upper points, each peak point is lesser than its previous peak point.

The three phases in bear market are

1) The investor lose hope on market, resulted in declining the share prices.

2) Companies are reported with lesser profits and lesser dividends leads to disinvestment.

3) The share prices decline drastically turns the investors pessimistic view about the market and they hold no securities.

→ Intermediate Trend in Technical Analysis:

It is the recovery or medium trend which runs for 3 weeks to 3 months. In this, corrections were happened in the market by supporting the primary trend. Where, the difference between the present bottom and the past bottom and the present peak point and the past peak must be increased or declined by 33% to 66%.

Corrections are nothing but filling the temporary gaps in the market due to various economic, industrial or corporate factors.

→ Short term Trend:-

These trends also called as minor trends, which are results of spontaneous or random activities of a company or of the market. In this the daily price fluctuations tends to correct the secondary trend movement. In this investors mainly focussed on current news and the speculative assumptions of the market.

Short term trends or minor trends establishes intermediary trend, these two together establish primary trend usually for two to three years.

(2) Volume of Trading :-

Indicators:

It speaks about the total number of trades and the total number of scripts traded on a given day. volume expands along with bull trend and narrows in the bear market. At the time of expansion the individual stock prices may goes up at the time of narrow or decline, the stock prices comes down.

Support leveles and Resistance levels:-

These two factors gain more importance in technical analysis. A support level exist at a price where considerable demand for the stock is expected, to prevent further decline in the price level. At this level, the demand for stock increases, resulted in price high

In the resistance level, the supply of stock would be greater than the demand and the further price declines from the peak level. Heavy selling of the stock resulted in price decline.

The Same concept is applicable widely in commodity and derivative market with the names of upper Circuit and lower Circuit.

Breadth of the market:-

The breadth of the market is the term used to study the advances and declines that have occurred in each day. Advances mean the number of shares whose price have increased from the previous days trading. Declines indicate the number of shares whose prices have fallen from the previous days trading. If the market is dominated by bulls, the stock prices and index values increases, if the market is dominated by bears, the stock prices and index values, comes down.

Short selling/short sales:-

It is the process of selling a commodity, currency or financial asset without holding it. When the future price levels are going to be declined than current market price, investors prefers to short selling. It is the most popular strategy in derivatives training.

Odd lot training:-

In derivatives, the contracts trade in lots, which the lot size is decided by market authorities. The lot size may be vary from one asset to another, price if the market is dominated by professional investors the market is dominated by professional investors

the market said to be technically strong. If the professional investors are not invested means market is technically weak, at the time, the seller can offer proportionate of the lot to the buyer.

Line charts & Bar charts:-

Charts are the valuable and easiest tools in the technical analysis. The graphic representation of data helps the investor to find out the trend of price without any difficulty. The charts give regular price movements over a period of time, establishes a trend line that may be increased, decreased or stable.

Moving Averages:-

The word moving averages means that the body of data moves ahead to include the recent observations. In market, investors consider the moving averages of index usually for 5 days.

Oscillators:-

Oscillators shows the share price movement across a specific given time to the another time period. These also consider the trend projections of market and signals trend reversal to the investors.

Other technical tools:-

1. ROC (Rate of change)
2. RSI (Relative strength Index)
3. Candles
4. Elliot wave Theory

1. Rate of Change (ROC):-

ROC is the indicator to measure the price variation of a given stock from current days price to the previous or any past price.

$$ROC = \frac{\text{Today price}}{\text{last day closing price}} \times 100$$

This tool is applicable for currency markets, equity markets and derivative markets.

The main advantage of this tool is the identification of heavy purchases or heavy sales of a given asset can be identified in the market.

2. Relative Strength Index (RSI):-

It was developed by wells wielder, it helps to identify the inherent technical strength or weakness of a particular stock or the index value, It can be calculated by ~~average~~

$$\frac{\text{average price gain per day}}{\text{average price loss per day}}.$$

Usually RSI calculated for 5 days, 7 days, 9 days & 14 days. which disclose the present conditions of the market, by considering all the factors impacts the market.

3. Candles:-

In derivative trading, the tool candle is most popular and widest for estimating the value of a given commodity over a period of time.

When it comes to derivatives trading. The minor price movement of a given stock resulted in major price variation of derivative contract based on the large size.

4. Elliot Wave Theory :-

It was proposed by elliot by explaining that the up's and downs of share prices moves within a given range only. As per this theory, the sharpest height of share prices definitely resulted by touching its lowest points in sooner / short span of time. He adviced the investors, do not invest in market at peak level or lowest level of the market value. The levels may be reversed within the given time period.

Difference between Technical & fundamental Analysis

(1) fundamental analyst analyse the stocks based on the specific goals of the investor. They ~~forecas~~ focus on the factors like financial strength of corporate, growth rate of sales, earning levels of the firm and profitability. Where as technical analyst mainly focus on historical prices of the stock, they study two basic factors in market. They are:- price of the stock and supply (or) volume of the stock.

(2) fundamental analyst estimate the intrinsic value of the shares and make investment decisions. Technical analyst mainly speculate the price movements in short term and decide investment strategies.

(3) Fundamental analyst prefers to buy and whole strategy for long term. Technical analyst prefers buy and sell strategy for short term.

(contd from page → 46) Unit-II

EVA :- (Economic Value Added)

EVA is the most updated concept in the area of accounting and finance. It highlighted the limitation of financial accounting such as opportunity cost of capital and depletion of natural resources or natural assets.

EVA is the after tax cash flow calculation by a business, by deducting the cost of capital (opportunity cost) which is utilized to generate the positive cash flows from the business. All these deductions generate the real additional value to the corporate or to the firm during a specific period of time.

EVA is nothing but the additional value added to the company resources in the present year when compares to the last balance sheet date.

EVA = Net profit − Operating cost of capital
(opportunity cost of capital)

Difference between Capital Structure & Financial Structure:-

If you look at the balance sheet of a firm the entire left hand side which includes non current liabilities and current liabilities together called as financial structure of the firm. Whereas Capital structure is the sum total of all long term source of capital which includes debentures, long term debt, preference share capital, equity share capital and retained earnings. Capital structure is the part of financial structure of any given firm.

Unit - IV

PORTFOLIO ANALYSIS AND SELECTION

Contents to be covered in this unit

Part-1

1. Diversification of funds
2. sharp index model
3. Portfolio beta generation through efficient frontier
4. markovitz risk return optimization
5. Sharp optimization model.

Part-2

6. Portfolio revision
   - → portfolio rebalancing
   - → portfolio upgrading
   - → investment timing
   - → investment plans like constant dollar plan(SIP), constant ratio plan, variable ratio plan.

11/09/2018

Diversification of funds:-

The main objective of diversification is reducing the risk in capital as well as return from the investment. A diversified portfolio is comparatively less risky than holding a single portfolio.

The several ways to diversify the portfolio is as follows:

1. Debt & Equity diversification:-

Debt instruments provide assured returns with limited capital appreciation, whereas common stock (shares/variable income securities) provide income and capital gain with the flavour of uncertainity. An investor should compliment both these instruments, and select

2. Industry diversification:-

Industries growth and their reaction to government policies differ from one to another. In India banking industry may provide regular returns with limited capital appreciation. At the same time IT stocks provide higher returns capital appreciation with potentially higher risk factors.

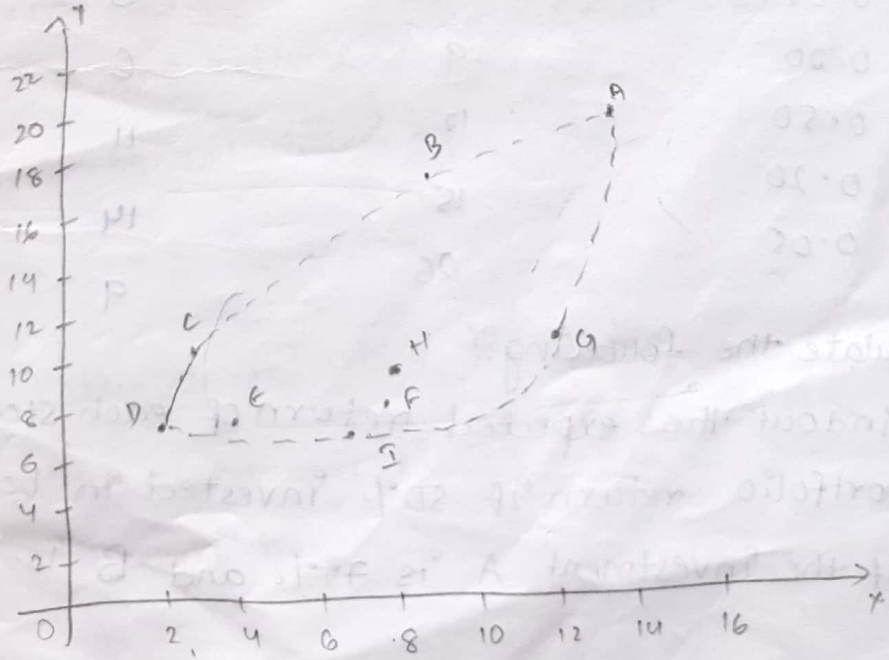
3. Company diversification:-

Equities or securities carries various risk potentials depending on many factors. Technical analysts suggest the investors to buy securities based on price movements. fundamental analyst suggest that selection of stock must be based on the financial sound and potential sales growth of the companies.

Portfolio Beta generation through efficient frontier:-

It is invented by Markowitz, also called as Markowitz efficient frontier. In this he explained the risk and return of all portfolios noted in risk return space on a given graph.

Portfolios	expected return of portfolio (E_{Rp})	Risk of the Portfolio (σ_p)
A	17	13
B	15	08
C	10	03
D	07	02
E	07	04
F	07	08
G	10	12
H	09	08
I	06	7.5



When the values are plotted on the gap some portfolio's stands at upper line where as the other portfolios stands downside of the line. Portfolio 'B' is more attractive than F and H because it offers higher return at the same level of risk likewise portfolio 'c' is more attractive than portfolio 'G' even both these offer same returns that is 10%, but the risk of 'c' is '3'. Comparatively much lesser than risk of G is 12%.

However the portfolio's which offer highest returns at a particular level of risk are called as deficient portfolio's by using this technique an investor can evaluate thousands of portfolio's (or) Stocks with one snap short and select efficient portfolio's only.

Markovitz risk return optimization:-

Probability of returns	Returns - A	Returns - B
0.05	-2	-3
0.20	9	6
0.50	12	11
0.20	15	14
0.05	26	9

Calculate the following:-

→ findout the expected return of each stock
→ portfolio return if 50% invested in both stocks
→ if the investment A is 75% and B is 25%.

what is the portfolio return.

⇒ expected return of 'A' :-

$$A = \frac{-2+9+12+15+26}{5} = \frac{60}{5} = 12\%$$

$$B = \frac{-3+6+11+14+9}{5} = \frac{37}{5}$$

Markovitz adequate and conceptual in analysing the risk and return of portfolio but the limitation of risk model is no. of co-variances have to be calculated per all the stocks were selected to the portfolio by covering all these limitations "sharpe" was introduced another model namely sharp optimization portfolio.

⇒ Sharp index model:-

It is also called as single index model. The basic assemption for this model is the individual stock crises tend to increase (or) decline the index values. Hence the stock prices are related to the market index, this relationship can be used to estimate the return on individual stock. The return on stock can be calculated by using:

$$R_I = \alpha_i + \beta_i R_m + e_i$$

R_i = expected return of the stock.

α_i = The alpha co-efficient (or) securities straight line.

β_i = slope of straight line (or) β co-efficient

R_m = market return (or) index return

e_i = error term

Stock prices are related to many of the factors, and reflected on market index, this relationship can be estimated by using optimization model.

Sharp Optimization portfolio:-

Sharp had provided a model for selection of any stock is directly relation to excess returns to β ratio

$$= \frac{R_i - R_f}{\beta}$$

R_i = return of the stock

R_f = risk free rate

β = systematic risk

Problem-1

The following table has given details regarding the expected return, beta values & unsystematic risk of of variance of individual stocks. The return on treasury bills is 5% and market variance is 10. Construct the optimal portfolio by calculating cut off points.

Security	expected return	β	σ_{ei}^2	$\frac{R_i - R_f}{\beta}$
A	15	1.0	30	$\frac{15-5}{1} - A = 10$
B	12	1.5	20	$\frac{12-5}{1.5} - B = 4.67$
C	11	2.0	40	$\frac{11-5}{2} - C = 3$
D	8	0.8	10	$\frac{8-5}{0.8} - D = 3.75$
E	9	1.0	20	$\frac{9-5}{0.8} - E = 4$
F	14	1.5	10	$\frac{14-5}{1.5} - F = 6$

Security	$\frac{R_i - R_f}{\beta}$	$\frac{(R_i - R_f)\beta}{\sigma_{ei}^2}$
A	10	
F	6	
B	4.67	
E	4	
D	3.75	
C	3	

$$C = \frac{\sigma_m^2 \sum_i \frac{(R_i - R_f)\beta}{\sigma_{ei}^2}}{1 + \sigma_m^2 \sum_i \frac{\beta^2}{\sigma_{ei}^2}}$$

Security	$\frac{R_i - R_f}{\beta}$	$\frac{(R_i - R_f)\beta}{\sigma_{ei}^2}$	$\frac{\sum_i (R_i - R_f)\beta}{\sigma_{ei}^2}$	$\frac{\beta^2}{\sigma_{ei}^2}$	$\frac{\sum_i \beta^2}{\sigma_{ei}^2}$	C
A	10	0.33	0.33	0.03	0.03	2.53 → Considered for investment
F	6	1.35	1.68	0.225	0.255	4.73 → highest cut off
B	4.67	0.525	2.205	0.1125	0.3675	4.716
E	4	0.2	2.405	0.05	0.4175	4.647
D	3.75	0.24	2.645	0.064	0.4815	4.548
C	3	0.3	2.945	0.1	0.5815	4.321

$$C_A = \frac{10 \times 0.33}{1 + 10 \times 0.03} = \frac{3.3}{1.3} = \frac{0.767}{2.53}$$

$$C_B = \frac{10 \times 2.205}{1 + 10 \times 0.3675} = \frac{22.05}{4.675} = 4.716$$

$$C_C = \frac{10 \times 2.945}{1 + 10 \times 0.5815} = \frac{29.45}{6.815} = 4.321$$

$$C_D = \frac{10 \times 2.645}{1 + 10 \times 0.4816} = \frac{26.45}{5.815} = 4.548$$

$$C_E = \frac{10 \times 2.405}{1 + 10 \times 0.4175} = \frac{24.05}{5.175} = 4.647$$

$$C_F = \frac{10 \times 1.68}{1 + 10 \times 0.255} = 4.73$$

$$X = \frac{Z_i}{\sum_i Z_i}$$

$$Z_i = \frac{B_i}{\sigma_{ei}^2}\left(\frac{R_i - R_f}{B_i} - C^*\right)$$

$$Z_A = \frac{1}{30}(10 - 4.73) = 0.17$$

$$Z_F = \frac{1.5}{10}(6 - 4.73) = 0.19$$

$$\Sigma X_A = \frac{0.17}{0.36} = 0.472 = 47.2\%$$

$$X_B = \frac{0.19}{0.36} = 0.528 = 52.8\%$$

Problem :-2 Risk less rate - 5% market variance - 10%

Securities	Return	B	σ_{ei}^2	$\frac{R_i - R_f}{B}$
A	19	1.0	20	$\frac{19-5}{1} = 14$
B	23	1.5	30	$\frac{23-5}{1.5} = 12$
C	11	0.5	10	$\frac{11-5}{0.5} = 12$
D	25	2.0	40	$\frac{25-5}{2.0} = 10$
E	130	1.0	20	$\frac{130-5}{1.0} = 8$
F	9	0.5	50	$\frac{9-5}{0.5} = 8$
G	14	1.5	30	$\frac{14-5}{0.5} = 6$

Security	$\frac{R_i - R_f}{\beta}$	$\frac{(R_i - R_f)\beta}{\sigma_{ei}^2}$	$\sum_i \frac{(R_i - R_f)\beta}{\sigma_{ei}^2}$	$\frac{\beta^2}{\sigma_{ei}^2}$	$\sum_i \frac{\beta^2}{\sigma_{ei}^2}$	C_i
A	14	0.7	0.7	0.05	0.05	4.66
B	12	0.9	1.6	0.075	0.125	7.11
C	12	0.3	1.9	0.025	0.15	7.6
D	10	0.5	2.9	0.1	0.25	8.28 → highest Cut off
E	8	0.4	3.3	0.05	0.3	8.25
F	8	0.04	3.34	0.005	0.305	8.24
G	6	0.45	3.79	0.075	0.38	7.89

Considered for investment

$C_A = \frac{10 \times 0.7}{1 + 10 \times 0.05} = \frac{7}{1.5} = 4.66$

$C_B = \frac{10 \times 1.6}{1 + 10 \times 0.125} = \frac{16}{2.25} = 7.11$

$C_C = \frac{10 \times 1.9}{1 + 10 \times 0.15} = \frac{19}{2.5} = 7.6$

$C_D = \frac{10 \times 2.9}{1 + 10 \times 0.25} = \frac{29}{3.5} = 8.28$

$C_E = \frac{10 \times 3.3}{1 + 10 \times 0.3} = \frac{33}{4} = 8.25$

$C_F = \frac{10 \times 3.34}{1 + 10 \times 0.305} = \frac{33.4}{4.05} = 8.24$

$C_G = \frac{10 \times 3.79}{1 + 10 \times 0.38} = \frac{37.9}{4.8} = 7.89$

$$X = \frac{Z_i}{\sum_i Z_i}$$

$$Z_i = \frac{\beta_i}{\sigma_{ei}^2}\left(\frac{R_i - R_f}{\beta_i} - C^*\right)$$

$$Z_A = \frac{1.0}{20}(14 - 8.28) = 0.286$$

$$Z_B = \frac{1.5}{30}(12 - 8.28) = 0.186$$

$$Z_C = \frac{0.5}{10}(12 - 8.28) = 0.186$$

$$Z_D = \frac{2.0}{40}(10 - 8.28) = 0.086$$

$$X_A = \frac{0.286}{0.744} = 0.38 = 38\%$$

$$X_B = \frac{0.186}{0.744} = 0.25 = 25\%$$

$$X_C = \frac{0.186}{0.744} = 0.25 = 25\%$$

$$X_D = \frac{0.086}{0.744} = 0.115 = 12\%$$

Portfolio Revision :-

Once the portfolio is designed or constructed, continuous monitoring should be there by the investors. Some of the portfolios may perform beyond the expectation, where as others may not be upto the mark. Portfolio revision must be made once the evaluation process is completed. Portfolio

evaluation consists of analysing the risk and return factors with anticipated values and real values.
The investor can continue in those portfolios which provided expected returns, but it should alter and modify those portfolios which are not performed well.

Techniques (or) alternatives of portfolio revision:-

1. Active management of funds
2. Passive management of funds.

Passive management is a process of holding a well diversified portfolio for a long term with buy and hold approach. It means the investor make an attempt to construct a portfolio that resembles or reflects the overall market returns. The simplest form of passive management is holding the index (or) index fund that is designed with the common stock such as BSE SENSEX (or) NSE NIFTY

Active Management:-

Active management is holding securities based on the forecast about the future. The portfolio managers who proceed with this strategy focus to the market components usually called as market timers. stocks which seems to be good take into their consideration, do their own analysis and construct portfolios based on their obligations.
Active management includes various formula plans namely

1. Rupee cost average ($ cost average)
2. Constant rupee plan
3. Constant ratio plan
4. Variable ratio plan

The amount to be spent by the investor can be decided by considering market factors, availability of funds and obligations of the investors.

Problem:-3 market variance – 12%, Risk free rate – 7%.

A portfolio manager has got the following information about various securities. He has to build an optimum portfolio which provides highly returns.

Securities	expected return	β	σ_i^2	$\frac{R_i - R_f}{\beta}$
1	22	1.0	35	$\frac{22-7}{1} = 15 \rightarrow (1)$
2	20	2.5	30	$\frac{20-7}{2.5} = 5.2 \rightarrow (5)$
3	14	1.5	25	$\frac{14-7}{1.5} = 4.66 \rightarrow (7)$
4	18	1.0	80	$\frac{18-7}{1} = 11 \rightarrow (3)$
5	16	0.8	20	$\frac{16-7}{0.8} = 11.25 \rightarrow (2)$
6	12	1.2	10	$\frac{12-7}{1.2} = 4.16 \rightarrow (8)$
7	19	1.6	25	$\frac{19-7}{1.6} = 7.5 \rightarrow (4)$
8	17	2.0	30	$\frac{17-7}{2} = 5 \rightarrow (6)$

Securities	expected return	β	σ_{ei}^2	$\frac{R_i - R_f}{\beta}$	$\frac{(R_i - R_f)\beta}{\sigma_{ei}^2}$	$\Sigma_i \frac{(R_i - R_f)\beta}{\sigma_{ei}^2}$	$\frac{\beta^2}{\sigma_{ei}^2}$	$\Sigma_i \frac{\beta^2}{\sigma_{ei}^2}$	C
1	22	1.0	35	15	0.42	0.42	0.028	0.028	3.77
5	16	0.8	20	11.25	0.36	0.78	0.032	0.06	5.44
4	18	1.0	80	11	0.1375	0.9175	0.0125	0.0725	5.88
7	19	1.6	25	7.5	0.768	1.6855	0.1024	0.1749	6.52 → cut off
2	20	2.5	30	5.2	1.08	2.7655	0.208	0.3829	5.93
8	17	2.0	30	5	0.66	3.4255	0.09	0.4729	5.71
3	14	1.5	25	4.66	0.42	3.8455	0.09	0.5629	5.57
6	12	1.2	10	4.16	0.6	4.4455	0.144	0.7069	5.33

$C_1 = \frac{12 \times 0.42}{1 + 12 \times 0.028} = 3.77$

$C_5 = \frac{12 \times 0.78}{1 + 12 \times 0.06} = 5.44$

$C_4 = \frac{12 \times 0.9175}{1 + 12 \times 0.0725} = 5.88$

$C_7 = \frac{12 \times 1.6855}{1 + 12 \times 0.1749} = 6.52$

$C_2 = \frac{12 \times 2.7655}{1 + 12 \times 0.3829} = 5.93$

$C_8 = \frac{12 \times 3.4255}{1 + 12 \times 0.4729} = 5.71$

$C_3 = \frac{12 \times 3.8455}{1 + 12 \times 0.6059} = 5.57$

$C_6 = \frac{12 \times 4.4455}{1 + 12 \times 0.7069} = 5.33$

$$X = \frac{Z_i}{\sum_i Z_i}$$

$$Z_i = \frac{\beta_i}{\sigma_{ei}^2}\left(\frac{R_i - R_f}{\beta_i} - C^*\right)$$

$$Z_1 = \frac{1.0}{35}(15 - 6.52) = 0.24$$

$$Z_5 = \frac{0.8}{20}(11.25 - 6.52) = 0.1892$$

$$Z_4 = \frac{1.0}{80}(11 - 6.52) = 0.056$$

$$Z_7 = \frac{1.6}{25}(7.5 - 6.52) = 0.06272$$

$$X_1 = \frac{0.24}{0.5472} = 0.4389 = 43.9\%$$

$$X_5 = \frac{0.1892}{0.5472} = 0.345 = 34.6\%$$

$$X_4 = \frac{0.056}{0.5472} = 0.102 = 10.2\%$$

$$X_7 = \frac{0.062}{0.5472} = 0.113 = 11.3\%$$

24/9/18

1. Rupee Cost average:-

Under this plan, an investor purchase various securities at various market levels, irrespective of market movements by securities regularly, finally the average cost of purchase definitely minimizes the value of each

share. The stocks must be selected based on its fundamental factors, and applicable buy and hold strategy.

2. Constant Rupee plan (SIP):-

Under this plan, an investor, make investment plan with fixed amount in continuous interval time periods, i.e., investor make investment with fixed amount, every month he invest same amount of money in portfolios.

This plan also enable that altering the investable funds from fixed income securities to variable income securities.

3. Constant Ratio Plan :-

This plan attempt to maintain a constant ratio of investment between aggressive stocks or aggressive portfolio and conservative or defensive portfolio. ~~Aggressive portfolio~~

4. Variable ratio plan:-

According to this plan at various levels of market price, the proportions of stocks and bonds change. Whenever the prices of stocks increases, sell those stocks and convert the same amount to invest in other securities or bonds. For this, the investor is required to estimate a long term trend in prices of the stocks.

26/09/18

Unit-V

MUTUAL FUNDS

Contents:

Definition of MF

Objectives

Organization and management of MF

Types of MF

pros and Cons of MF

Performance evaluation and measurement of MF

→ sharpe model

→ Jensen model

→ Treynor's model

Definition of Mutual funds:-

Mutual fund is an investment vehicle that pools together funds from investors to purchase stocks, bonds or other securities. An investor can participate in mutual funds by investing funds and purchasing of units.

27/09/18

Types of Mutual funds:-

Mutual funds are categorized as follows:-

Types based on structure (nature of trading)

1. Open ended funds
2. closed ended funds

Types based on asset class

1. Equity funds
2. Debt funds
3. Money market funds
4. Balanced / hybrid funds

Types based on growth aspects

1. Growth funds
2. Income funds
3. Liquid funds
4. Tax saving funds/schemes (ELSS - Equity linked saving schemes)
5. Capital protection fund
6. Fixed maturity funds
7. Pension funds

Types based on Speciality

1. Sector funds
2. Index funds
3. fund of funds
4. Emerging market funds
5. International funds
6. Real estate funds
7. Commodity focussed stock funds

8. Leveraged funds
9. Asset allocation funds
10. Gilt funds
11. Exchange Traded Funds (ETF)

Types based on risk.

1. Lower risk funds
2. Medium risk funds
3. High risk funds

Types based on load, fees, commission, tax

1. Entry load funds
2. Exit load funds.

28/9/18

Objectives of mutual funds:-

Investments in mutual fund provides better returns to the investors by minimising potential risk factors in market. Even though investment in mutual fund subject to market risk, professional management helps to face and minimise risk factors.

Benefits of mutual funds:- (Advantages)

The association of mutual funds in India (AMFI) serving as the regulatory body of mutual fund industry, the benefits or advantages specified by AMFI are as follows:

1. Professional management:-

Experienced fund managers supported by a research team, select appropriate securities for

investment.

2. Diversification :-

Mutual fund offers well-diversified funds into various range of securities over many industries.

3. Potential Returns :-

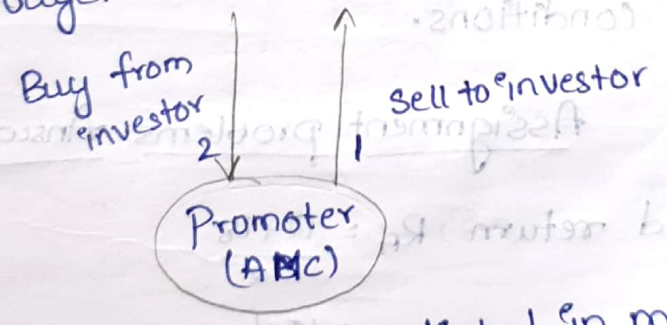
Medium and the long term funds provides higher returns than benchmark return or index return.

4. Low cost of maintenance :-

The only fees collected by promoters from the investors is either entry load or exit load.

5. Liquidity :-

The funds handled by portfolio manager, to every buyer the promoter is the seller, at the time of selling the units by the investor, the promoter becomes buyer.



Closed ended funds were listed in market, they trade like equity shares.

6. Transparency :-

Mutual fund provides information on each Scheme about the specific scheme based on the Scheme Objectives.

7. Flexibility :-

An investor can enter to purchase units at any point of time and also exit as per the requirements of investors (lock in period will be there for tax savings schemes where investor should wait till the expiry of the scheme)

8. Choice of Schemes :-

Mutual fund offers variety of schemes to meet the needs of investors

9. Well regulated :-

The funds are monitored by AMFI, all the promoters list with SEBI and follow the terms and conditions.

Assignment problems Answers

Sol:- expected return $R_A = \frac{12+18}{2}$

$= 15\%$

$R_B = \frac{14+12}{2}$

$= 13\%$

(i) expected portfolio return of A & B

$= (0.6 \times 15) + (0.4 \times 13)$

$= 14.2\%$

(ii) SD of A = $\sqrt{\frac{\Sigma_i (R-\bar{R})^2}{N}}$

$= \sqrt{\frac{(12-15)^2+(18-15)^2}{2}}$

$= \sqrt{\frac{(-3)^2+(3)^2}{2}}$

$= \sqrt{9} = 3$

SD of B: $\sqrt{\frac{(14-13)^2+(12-13)^2}{2}}$

$= \sqrt{\frac{(1)^2+(-1)^2}{2}}$

$= \sqrt{\frac{2}{2}} = \sqrt{1} = 1$

(iii) Covariance = $\frac{\Sigma_i (R_1-\bar{R}_1)(R_2-\bar{R}_2)}{N}$

$= \frac{(12-15)(14-13)+(18-15)(12-13)}{2}$

$= \frac{(-3)(1)+3(-1)}{2}$

$= \frac{-3-3}{2} = \frac{-6}{2} = -3$

r_{12} = $\frac{\text{Covariance of 1 \& 2}}{\sigma_1 \sigma_2}$

$= \frac{-3}{3 \times 1} = -1$

(iv) portfolio risk :-

$\sigma_p = \sqrt{x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + 2 x_1 x_2 (r_{12} \sigma_1 \sigma_2)}$

$= \sqrt{(0.6)^2 \times 9 + (0.4)^2 \times 1 + 2(0.6)(0.4)(-1 \times 3 \times 1)}$

$= \sqrt{3.24 + 0.16 + (-1.44)}$

$= \sqrt{1.96} = 1.4$

2 Soln (i) $R_X = 0.5 \times 11 + 0.5 \times 17$

$= 14\%$

$R_Y = 0.5 \times 20 + 0.5 \times 8$

$= 14\%$

(ii) $R_P = 0.5 \times 14 + 0.5 \times 14$

$= 7 + 7$

$= 14$

(iii) SD of $X = \sqrt{0.5((11-14)^2 + (17-14)^2)}$

$= \sqrt{9}$

$= 3$

SD of $Y = \sqrt{0.5((20-14)^2 + (8-14)^2)}$

$= \sqrt{36}$

$= 6$

(iv) Covariance $= \dfrac{\Sigma_1 (R_1 - \bar{R}_1)(R_2 - \bar{R}_2)}{N}$

$= \dfrac{(11-14)(20-14) + (17-14)(8-14)}{2}$

$= \dfrac{(-3)(6) + (3)(-6)}{2}$

$= \dfrac{-18-18}{2}$

$= -\dfrac{36}{2} = -18$

$r_{12} = \dfrac{\text{Covariance of } 1 \& 2}{\sigma_1 \sigma_2}$

$= \dfrac{-18}{3 \times 6}$

$= -1$

Portfolio risk

$$\sigma_p = \sqrt{(0.5)^2 \times 9 + (0.5)^2 \times 36 + 2 \times 0.5 \times 0.5 (-1 \times 3 \times 6)}$$

$$= \sqrt{0.25 \times 9 + 0.25 \times 36 + 0.5(-18)}$$

$$= \sqrt{2.25 + 9 - 9}$$

$$= \sqrt{2.25}$$

$$= 1.5$$

3 Soln:

(1) expected return of A $= 0.25 \times 10 + 0.50 \times 14 + 0.25 \times 16$

$= 2.5 + 7 + 4$

$= 13.5$

expected return of B $= 0.25 \times 9 + 0.50 \times 13 + 0.25 \times 18$

$= 2.25 + 6.5 + 4.5$

$= 13.25$

expected return of C $= 0.25 \times 14 + 0.50 \times 12 + 0.25 \times 10$

$= 3.5 + 6 + 2.5$

$= 12$

SD of stocks : $SD = \sqrt{\sum_i P[r - E(r)]^2}$

SD of A $= \sqrt{0.25(10 - 13.5)^2 + 0.5(14 - 13.5)^2 + 0.25(16 - 13.5)^2}$

$= \sqrt{3.0625 + 0.125 + 1.5625}$

$= \sqrt{4.75}$

$= 2.18$

SD of B $= \sqrt{0.25(9 - 13.25)^2 + 0.5(13 - 13.25)^2 + 0.25(18 - 13.25)^2}$

$= \sqrt{4.515625 + 0.03125 + 5.640625}$

$= \sqrt{10.1875}$

$= 3.19$

SD of C $= \sqrt{0.25(14-12)^2 + 0.5(12-12)^2 + 0.25(10-12)^2}$

$= \sqrt{1+0+1}$

$= \sqrt{2}$

$= 1.414$

Covariance of $X_{123} = \frac{\Sigma (R_1 - \bar{R_1})(R_2 - \bar{R_2})(R_3 - \bar{R_3})}{N}$

$= \frac{(10-13.5)(9-13.25)(14-12) + (14-13.5)(13-13.25)(12-12) + (16-13.5)(18-13.25)(10-12)}{3}$

$= \frac{(-3.5)(-4.25)(2) + (0.5)(-0.25)(0) + (2.5)(4.75)(-2)}{3}$

$= \frac{29.75 + 0 - 23.75}{3}$

$= \frac{6}{3}$

$= 2$

(ii) Portfolio return :- 1/3 in A, 1/3 in B, 1/3 in C

$R_p = \Sigma_i x_i R_i$

$= \frac{1}{3} \times 13.5 + \frac{1}{3} \times 13.25 + \frac{1}{3} \times 12$

$= 4.5 + 4.416 + 4$

$= 12.916.$

1/10/18

Cons of Mutual-funds (Limitations):-

1. Mutual funds are subject to market risk
2. The returns are not guaranteed.
3. Diversification of Portfolio doesn't impact (maximized or minimised) returns.
4. Selecting right financial securities is not easy.
5. Cost management not too proportionate to the performance of mutual funds.
6. Unethical practises may existed.
7. Hidden cost associated with funds and schemes.
8. Most of the time performance of the funds depends on the abilities of the fund manager.

3/10/18

Organization and management of Mutual funds:-

* Smooth functioning of mutual funds, AMFI (Association Of mf in India) was established by SEBI, all the AMC's becomes members in AMFI. The guidelines have been issued by SEBI and AMFI by keeping that protection of interest of the investors. The offer document (NFO - New fund Offer) should provide essential information to assist the investors to take correct decisions. The document provide

following information:-

1. Standard and Scheme specific risk factors.
2. Due deligence by the AMC
3. Details of the offer, pricing of units and the minimum application price for subscription.
4. Identification of AMC and background of fund managers
5. The portfolio turnover policy and its effect on investment.
6. The policy with respect to dividends and its distribution.
7. The information regarding inter scheme transfers.
8. Valuation of assets, accounting policies and impact on NAV.
9. The manner of determination about redemption of units.
10. Tax treatment of investments in mutual funds.

Performance Evaluation of Mutual funds

1. Sharpe Index model
2. Treynor's Index model
3. Jensen's Index model.

Returns from mutual funds are subject to the returns of market, but it doesn't mean that, if market provide returns, then only mutual fund also provide return and vice versa.

1. Sharpe performance Index :-

It measures the risk premium of the portfolio in relation to the total amount of risk in the portfolio. The risk premium is the difference between portfolios avg rate of return and the risk less rate of return. The SD of the portfolio indicates risk to the portfolio. The index assign the highest values to the assets, that have best risk adjusted average rate of return.

$$S_t = \frac{R_p - R_f}{\sigma_p}$$

R_p = portfolio return

R_f = risk free return

σ_p = portfolio risk.

The larger the S_t value indicates the better performance of the fund. Sharpe Index can be

used to rank the desirability of funds or portfolios.

* It do not utilize to assess or evaluate the risk factors of individual assets.

2. Treynor's performance Index :-

It reveals the relationship between a given market return and the funds return with help of a characteristic line. The funds performance is measured in relation to the market performance.

The ideal funds return rises at a faster rate than the general market performance, when the market is moving upward. At the same time its rate of return declines slowly than the market return in declining market.

$$T_n = \frac{R_p - R_f}{\beta_p}$$

β_p = Systematic risk of the portfolio.

The highest value indicates best performance of the fund.

3. Jensen's performance Index :-

The absolute risk adjusted return measure was developed by Jensen, the performance of portfolio or mutual funds depend on many factors. The return of the portfolio varies in the same proportion of β to the

difference between market return and the risk less rate of return.

$$R_p = \alpha_p + R_f + \beta(R_m - R_f)$$

where, α = interception of the portfolio.

The following information is provided regarding the performance of mutual funds namely A, B, C

fund	R_p	σ_p	β_p
A	25.38	4	0.23
B	28.11	9.01	0.56
C	25.01	3.55	0.59

The risk free rate of interest is 9%, rank the funds based on sharpe index and treynor's index model.

Sol:-

funds	sharpe index	Treynor's index
A	4.095 - II	71.217 - I
B	1.788 - III	28.767 - II
C	4.509 - I	27.135 - III.