

Mutual Funds

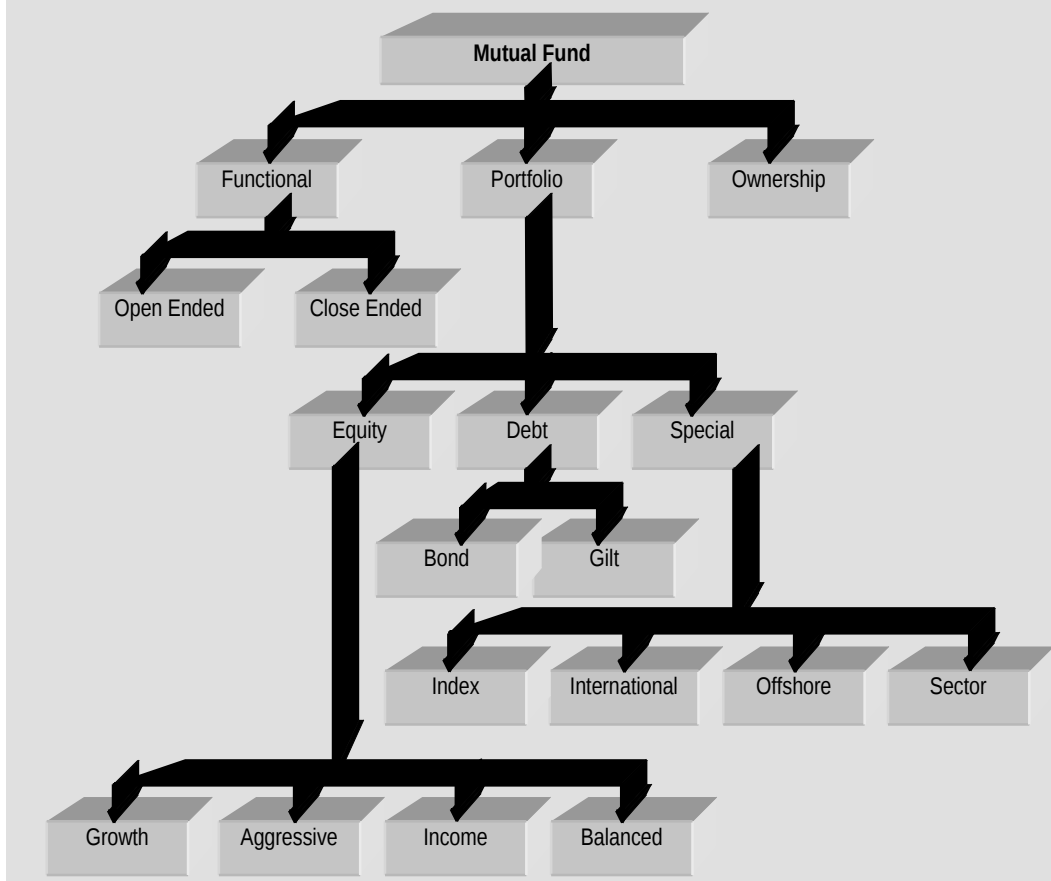
BASIC CONCEPTS

1. Introduction

Mutual Fund is a trust that pools the savings of a number of investors who share a common financial goal. Mutual Fund offers an opportunity to invest in a diversified professionally managed basket of securities at a relatively low cost.

2. Types of Mutual Funds

Mutual Funds can be classified on three bases like Functional, Portfolio and Ownership.



3. Advantages of Mutual Funds

- Professional Management,
- Diversification,
- Convenient Administration,
- Higher Returns,
- Low Cost Management,
- Liquidity,
- Transparency, and
- Highly Regulated.

4. Drawbacks of Mutual Funds

- No guarantee of returns,
- No guarantee of maximising of returns through diversification,
- Future cannot be predicted,
- Cost factor, and
- Unethical Practices

5. Evaluating Performance of Mutual Funds

As in Mutual Fund, an investor is a part of all its assets and liabilities, return is determined by inter-play of two elements Net Asset Value and Cost of Mutual Fund.

- (a) **Net Asset Value (NAV)** – It is the amount which a unit holder would receive if the mutual funds were wound up. There is a Valuation Rule for valuation of assets which depends on the nature of assets. The asset values obtained on the basis of this rule is further adjusted on account of additions (in form of dividend and interest accrued and other receivables) and deductions (in form of expenses accrued and other short-term and long-term liabilities).

Net Asset of the Scheme = Market Value of Investments + Receivables+ Other accrued income + Other Assets – Accrued Expenses – Other Payables – Other Liabilities

$$\text{NAV} = \frac{\text{Net Asset of Scheme}}{\text{Number of Units Outstanding}}$$

- (b) **Cost of Mutual Funds** – Broadly cost of Mutual Fund carries two components:

- (i) **Initial Expenses** – Attributing to establishing a scheme under a

scheme.

- (ii) **Ongoing Recurring Expenses** – Mainly consists of Cost of employing experts, Administrative Costs and Advertisement Cost.

6. Computation of Returns

Mainly investors derive three types of income from owning mutual fund units:

- Cash Dividends,
- Capital Gain Disbursements, and
- Changes in the Fund's NAV.

The formula for computing annual return is as follows:

$$= \frac{D_1 + CG_1 + (NAV_1 - NAV_0)}{NAV_0} \times 100$$

Where,

D_1 = Dividend

CG_1 = Realised Capital Gain

$NAV_1 - NAV_0$ = Unrealised Capital Gain

NAV_0 = Base NAV

7. Criteria for Evaluating the Performance

Following three ratios are used to evaluate the performance of mutual funds:

- (a) **Sharpe Ratio** – This ratio measures the return earned in excess of the risk-free rate (normally Treasury Instruments) on a portfolio to the portfolio's total risk as measured by the Standard Deviation in its return and over the measurement period. The formula to calculate the ratio is as follows:

$$S = \frac{\text{Return Portfolio} - \text{Return of Risk Free Investment}}{\text{Standard Deviation of Portfolio}}$$

- (b) **Treynor Ratio** – This ratio is similar to Sharpe Ratio however, with a difference that it uses Beta instead of Standard Deviation. The formula to calculate this ratio is as follows:

$$T = \frac{\text{Return of Portfolio} - \text{Return of Risk Free Investment}}{\text{Beta of Portfolio}}$$

- (c) **Jensen's Alpha** – This is basically the difference between a fund's actual return and those that could have been made on a benchmark portfolio with

the same risk i.e. beta. It measures the ability of active management to increase return above those that are purely a reward for bearing a market risk.

Alpha = Return of Portfolio - Expected Return

8. Factors Influencing the Selection of Mutual Funds

- Past Performance
- Timing
- Size of Fund
- Age of Fund
- Largest Holding
- Fund Manager
- Expense Ratio
- PE Ratio
- Portfolio Turnover.

9. Money Market Mutual Funds (MMMFs)

These types of funds were introduced in 1992 with the objective of enabling to gain from money market instruments since it is practically impossible for individuals to invest in instruments like Commercial Papers (CPs), Certificate of Deposits (CDs) and Treasury Bills (TBs) as they require huge investments.

10. Exchange Traded Funds (ETFs)

It is a hybrid product that combines the features of an index fund. These funds are listed on the stock exchanges and their prices are linked to the underlying index.

ETFs can be bought and sold like any other stock on an exchange and prices are normally expected to be closer to the NAV at the end of the day. There is no paper work involved for investing in an ETF. These can be bought like any other stock by just placing an order with a broker.

Question 1

Write short notes on the role of Mutual Funds in the Financial Market.

Answer

Role of Mutual Funds in the Financial Market

Mutual funds have opened new vistas to investors and imparted much needed liquidity to

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the system. In this process, they have challenged the hitherto dominant role of the commercial banks in the financial market and national economy.

In 1997, the share of mutual funds in house-hold financial assets was over 5% in USA, 8% in Germany, 3% in Japan, 3% in Italy and about 5% in India. In India, there has been a steady increase in the share of mutual funds in house-hold savings since 1988-89, i.e. after the entry of public sector mutual funds. The most significant growth during 1980-81 to 1992-93 was in respect of UTI.

According to Centre for Monitoring Indian Economy, "Mutual Funds" cornered 12% of the total market capitalisation, the share of the UTI being 9.4% of the total market capitalisation of Indian stock markets.

Question 2

Explain how to establish a Mutual Fund.

Answer

Establishment of a Mutual Fund: A mutual fund is required to be registered with the Securities and Exchange Board of India (SEBI) before it can collect funds from the public. All mutual funds are governed by the same set of regulations and are subject to monitoring and inspections by the SEBI. The Mutual Fund has to be established through the medium of a sponsor. A sponsor means any body corporate who, acting alone or in combination with another body corporate, establishes a mutual fund after completing the formalities prescribed in the SEBI's Mutual Fund Regulations.

The sponsor should have a sound track record and general reputation of fairness and integrity in all his business transactions.

The Mutual Fund has to be established as either a trustee company or a Trust, under the Indian Trust Act and the instrument of trust shall be in the form of a deed. The deed shall be executed by the sponsor in favour of the trustees named in the instrument of trust. The trust deed shall be duly registered under the provisions of the Indian Registration Act, 1908. The trust deed shall contain clauses specified in the Third Schedule of the Regulations.

An Asset Management Company, who holds an approval from SEBI, is to be appointed to manage the affairs of the Mutual Fund and it should operate the schemes of such fund. The Asset Management Company is set up as a limited liability company, with a minimum net worth of ₹ 10 crores.

The sponsor should contribute at least 40% to the networth of the Asset Management Company. The Trustee should hold the property of the Mutual Fund in trust for the benefit of the unit holders.

SEBI regulations require that at least two-thirds of the directors of the Trustee Company

or board of trustees must be independent, that is, they should not be associated with the sponsors. Also, 50 per cent of the directors of AMC must be independent.

Question 3

What are the advantages of investing in Mutual Funds?

Answer

The advantages of investing in a Mutual Fund are:

1. **Professional Management:** Investors avail the services of experienced and skilled professionals who are backed by a dedicated investment research team which analyses the performance and prospects of companies and selects suitable investments to achieve the objectives of the scheme.
2. **Diversification:** Mutual Funds invest in a number of companies across a broad cross-section of industries and sectors. Investors achieve this diversification through a Mutual Fund with far less money and risk than one can do on his own.
3. **Convenient Administration:** Investing in a Mutual Fund reduces paper work and helps investors to avoid many problems such as bad deliveries, delayed payments and unnecessary follow up with brokers and companies.
4. **Return Potential:** Over a medium to long term, Mutual Fund has the potential to provide a higher return as they invest in a diversified basket of selected securities.
5. **Low Costs:** Mutual Funds are a relatively less expensive way to invest compared to directly investing in the capital markets because the benefits of scale in brokerage, custodial and other fees translate into lower costs for investors.
6. **Liquidity:** In open ended schemes investors can get their money back promptly at net asset value related prices from the Mutual Fund itself. With close-ended schemes, investors can sell their units on a stock exchange at the prevailing market price or avail of the facility of direct repurchase at NAV related prices which some close ended and interval schemes offer periodically.
7. **Transparency:** Investors get regular information on the value of their investment in addition to disclosure on the specific investments made by scheme, the proportion invested in each class of assets and the fund manager's investment strategy and outlook.

Question 4

What are the drawbacks of investments in Mutual Funds?

Answer

- (a) There is no guarantee of return as some Mutual Funds may under perform and Mutual Fund Investment may depreciate in value which may even effect erosion / Depletion of principal amount

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- (b) Diversification may minimize risk but does not guarantee higher return.
- (c) Mutual funds performance is judged on the basis of past performance record of various companies. But this cannot take care of or guarantee future performance.
- (d) Mutual Fund cost is involved like entry load, exit load, fees paid to Asset Management Company etc.
- (e) There may be unethical Practices e.g. diversion of Mutual Fund amounts by Mutual Fund /s to their sister concerns for making gains for them.
- (f) MFs, systems do not maintain the kind of transparency, they should maintain
- (g) Many MF scheme are, at times, subject to lock in period, therefore, deny the market drawn benefits
- (h) At times, the investments are subject to different kind of hidden costs.
- (i) Redressal of grievances, if any, is not easy

Question 5

Explain briefly about net asset value (NAV) of a Mutual Fund Scheme.

Answer

Net Asset Value (NAV) is the total asset value (net of expenses) per unit of the fund calculated by the Asset Management Company (AMC) at the end of every business day. Net Asset Value on a particular date reflects the realizable value that the investor will get for each unit that he is holding if the scheme is liquidated on that date.

The performance of a particular scheme of a mutual fund is denoted by Net Asset Value (NAV). Net Asset Value may also be defined as the value at which new investors may apply to a mutual fund for joining a particular scheme.

It is the value of net assets of the fund. The investors' subscription is treated as the capital in the balance sheet of the fund, and the investments on their behalf are treated as assets. The NAV is calculated for every scheme of the MF individually. The value of portfolio is the aggregate value of different investments.

$$\text{The Net Asset Value (NAV)} = \frac{\text{Net Assets of the scheme}}{\text{Number of units outstanding}}$$

Net Assets of the scheme will normally be:

Market value of investments + Receivables + Accrued Income + Other Assets – Accrued Expenses – Payables – Other Liabilities

Since investments by a Mutual Fund are marked to market, the value of the investments for computing NAV will be at market value.

NAV of MF schemes are published on a daily basis in Newspapers and electronic media and play an important part in investors' decisions to enter or to exit. Analyst use the NAV to determine the yield on the schemes.

The Securities and Exchange Board of India (SEBI) has notified certain valuation norms calculating net asset value of Mutual fund schemes separately for traded and non-traded schemes.

Question 6

What are the investors' rights & obligations under the Mutual Fund Regulations? Explain different methods for evaluating the performance of Mutual Fund.

Answer

Investors' Rights and Obligations under the Mutual Fund Regulations

Important aspect of the mutual fund regulations and operations is the investors' protection and disclosure norms. It serves the very purpose of mutual fund guidelines. Due to these norms it is very necessary for the investor to remain vigilant. Investor should continuously evaluate the performance of mutual fund.

Following are the steps taken for improvement and compliance of standards of mutual fund:

1. All mutual funds should disclose full portfolio of their schemes in the annual report within one month of the close of each financial year. Mutual fund should either send it to each unit holder or publish it by way of an advertisement in one English daily and one in regional language.
2. The Asset Management Company must prepare a compliance manual and design internal audit systems including audit systems before the launch of any schemes. The trustees are also required to constitute an audit committee of the trustees which will review the internal audit systems and the recommendation of the internal and statutory audit reports and ensure their rectification.
3. The AMC shall constitute an in-house valuation committee consisting of senior executives including personnel from accounts, fund management and compliance departments. The committee would on a regular basis review the system practice of valuation of securities.
4. The trustees shall review all transactions of the mutual fund with the associates on a regular basis.

Investors' Rights

1. Unit holder has proportionate right in the beneficial ownership of the schemes assets as well as any dividend or income declared under the scheme.
2. Receive dividend warrant within 42 days.
3. AMC can be terminated by 75% of the unit holders.

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4. Right to inspect major documents i.e. material contracts, Memorandum of Association and Articles of Association (M.A. & A.A) of the AMC, Offer document etc.
5. 75% of the unit holders have the right to approve any changes in the close ended scheme.
6. Every unit holder have right to receive copy of the annual statement.

Legal Limitations to Investors' Rights

1. Unit holders cannot sue the trust but they can initiate proceedings against the trustees, if they feel that they are being cheated.
2. Except in certain circumstances AMC cannot assure a specified level of return to the investors. AMC cannot be sued to make good any shortfall in such schemes.

Investors' Obligations

1. An investor should carefully study the risk factors and other information provided in the offer document. Failure to study will not entitle him for any rights thereafter.
2. It is the responsibility of the investor to monitor his schemes by studying the reports and other financial statements of the funds.

Methods for Evaluating The Performance

1. Sharpe Ratio

The excess return earned over the risk free return on portfolio to the portfolio's total risk measured by the standard deviation. This formula uses the volatility of portfolio return.

$$S = \frac{\text{Return of portfolio} - \text{Return of risk free investment}}{\text{Standard Deviation of Portfolio}}$$

2. Treynor Ratio

This ratio is similar to the Sharpe Ratio except it uses Beta of portfolio instead of standard deviation.

$$T = \frac{\text{Return of portfolio} - \text{Return of risk free investment}}{\text{Beta of Portfolio}}$$

3. Jensen's Alpha

The comparison of actual return of the fund with the benchmark portfolio of the same risk. Normally, for the comparison of portfolios of mutual funds this ratio is applied and compared with market return. It shows the comparative risk and reward from the said portfolio. Alpha is the excess of actual return compared with expected return.

Question 7

Briefly explain what is an exchange traded fund.

Answer

Exchange Traded Funds (ETFs) were introduced in US in 1993 and came to India around 2002. ETF is a hybrid product that combines the features of an index mutual fund and stock and hence, is also called index shares. These funds are listed on the stock exchanges and their prices are linked to the underlying index. The authorized participants act as market makers for ETFs.

ETF can be bought and sold like any other stock on stock exchange. In other words, they can be bought or sold any time during the market hours at prices that are expected to be closer to the NAV at the end of the day. NAV of an ETF is the value of the underlying component of the benchmark index held by the ETF plus all accrued dividends less accrued management fees.

There is no paper work involved for investing in an ETF. These can be bought like any other stock by just placing an order with a broker.

Some other important features of ETF are as follows:

1. It gives an investor the benefit of investing in a commodity without physically purchasing the commodity like gold, silver, sugar etc.
2. It is launched by an asset management company or other entity.
3. The investor does not need to physically store the commodity or bear the costs of upkeep which is part of the administrative costs of the fund.

Question 8

Distinguish between Open-ended and Close-ended Schemes.

Answer

Open Ended Scheme do not have maturity period. These schemes are available for subscription and repurchase on a continuous basis. Investor can conveniently buy and sell unit. The price is calculated and declared on daily basis. The calculated price is termed as NAV. The buying price and selling price is calculated with certain adjustment to NAV. The key feature of the scheme is liquidity.

Close Ended Scheme has a stipulated maturity period normally 5 to 10 years. The Scheme is open for subscription only during the specified period at the time of launch of the scheme. Investor can invest at the time of initial issue and thereafter they can buy or sell from stock exchange where the scheme is listed. To provide an exit route some close-ended schemes give an option of selling back (repurchase) on the basis of NAV. The NAV is generally declared on weekly basis.

Question 9

- (i) Who can be appointed as Asset Management Company (AMC)?
- (ii) Write the conditions to be fulfilled by an AMC.

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(iii) *What are the obligations of AMC?*

Answer

(i) **Asset Management Company (AMC):** A company formed and registered under Companies Act 1956 and which has obtained the approval of SEBI to function as an asset management company may be appointed by the sponsorer of the mutual fund as AMC.

(ii) Conditions to be fulfilled by an AMC

- (1) Any director of the asset management company shall not hold the place of a director in another asset management company unless such person is independent director referred to in clause (d) of sub-regulation (1) of regulation 21 of the Regulations and the approval of the Board of asset management company of which such person is a director, has been obtained.
- (2) The asset management company shall forthwith inform SEBI of any material change in the information or particulars previously furnished which have a bearing on the approval granted by SEBI.
 - (a) No appointment of a director of an asset management company shall be made without the prior approval of the trustees.
 - (b) The asset management company undertakes to comply with SEBI (Mutual Funds) Regulations, 1996.
 - (c) No change in controlling interest of the asset management company shall be made unless prior approval of the trustees and SEBI is obtained.
 - (i) A written communication about the proposed change is sent to each unit holder and an advertisement is given in one English Daily newspaper having nation wide circulation and in a newspaper published in the language of the region where the head office of the mutual fund is situated.
 - (ii) The unit holders are given an option to exit at the prevailing Net Asset Value without any exit load.
 - (iii) The asset management company shall furnish such information and documents to the trustees as and when required by the trustees.

(iii) Obligations of the AMC

- (1) The AMC shall manage the affairs of the mutual funds and operate the schemes of such fund.
- (2) The AMC shall take all reasonable steps and exercise due diligence to ensure that the investment of the mutual funds pertaining to any scheme is not contrary to the provisions of SEBI Regulations and the trust deed of the mutual fund.

Question 10

Mr. A can earn a return of 16 per cent by investing in equity shares on his own. Now he is considering a recently announced equity based mutual fund scheme in which initial expenses are 5.5 per cent and annual recurring expenses are 1.5 per cent. How much should the mutual fund earn to provide Mr. A return of 16 per cent?

Answer

Personal earnings of Mr. A = R_1

Mutual Fund earnings = R_2

$$\begin{aligned} R_2 &= \frac{1}{1 - \text{Initial expenses (\%)}} R_1 + \text{Recurring expenses (\%)} \\ &= \frac{1}{1 - 0.055} \times 16\% + 1.5\% \\ &= 18.43\% \end{aligned}$$

Mutual Fund earnings = 18.43%

Question 11

Mr. X earns 10% on his investments in equity shares. He is considering a recently floated scheme of a Mutual Fund where the initial expenses are 6% and annual recurring expenses are expected to be 2%. How much the Mutual Fund scheme should earn to provide a return of 10% to Mr. X?

Answer

$$r_2 = \frac{1}{1 - \text{initial exp.}} \times r_1 + \text{recurring exp.}$$

The rate of return the mutual fund should earn;

$$\begin{aligned} &= \frac{1}{1 - 0.06} \times 0.1 + 0.02 \\ &= 0.1264 \text{ or } 12.64\% \end{aligned}$$

Question 12

A mutual fund that had a net asset value of ₹ 20 at the beginning of month - made income and capital gain distribution of Re. 0.0375 and Re. 0.03 per share respectively during the month, and then ended the month with a net asset value of ₹ 20.06. Calculate monthly return.

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Answer

Calculation of Monthly Return on the Mutual Funds

$$r = \frac{(NAV_t - NAV_{t-1}) + I_t + G_t}{NAV_{t-1}}$$

Where,

r = Return on the mutual fund

NAV_t = Net assets value at time period t

NAV_{t-1} = Net assets value at time period $t - 1$

I_t = Income at time period t

G_t = Capital gain distribution at time period t

$$\begin{aligned} r &= \frac{(\text{Rs. } 20.06 - \text{Rs. } 20.00) + (\text{Re. } 0.0375 + \text{Re. } 0.03)}{20} \\ &= \frac{0.06 + 0.0675}{20} \\ &= \frac{0.1275}{20} = 0.006375 \end{aligned}$$

Or, $r = 0.6375\%$ p.m.

Or $= 7.65\%$ p.a.

Question 13

A mutual fund that had a net asset value of ₹16 at the beginning of a month, made income and capital gain distribution of ₹0.04 and ₹0.03 respectively per unit during the month, and then ended the month with a net asset value of ₹16.08. Calculate monthly and annual rate of return.

Answer

Calculation of monthly return on the mutual funds:

$$r = \frac{(NAV_t - NAV_{t-1}) + I_t + G_t}{NAV_{t-1}}$$

$$\text{Or, } r = \frac{(\text{Rs. } 16.08 - \text{Rs. } 16.00) + (\text{Rs. } 0.04 + \text{Rs. } 0.03)}{16}$$

$$= \frac{0.08 + 0.07}{16} = 0.009375$$

or, $r = 0.9375\%$ or 11.25% p.a

Question 14

An investor purchased 300 units of a Mutual Fund at ₹ 12.25 per unit on 31st December, 2009. As on 31st December, 2010 he has received ₹ 1.25 as dividend and ₹ 1.00 as capital gains distribution per unit.

Required :

- (i) The return on the investment if the NAV as on 31st December, 2010 is ₹ 13.00.
- (ii) The return on the investment as on 31st December, 2010 if all dividends and capital gains distributions are reinvested into additional units of the fund at ₹ 12.50 per unit.

Answer

Return for the year (all changes on a per year basis)

	₹ /Unit
Change in price (₹ 13.00 – ₹ 12.25)	0.75
Dividend received	1.25
Capital gain distribution	<u>1.00</u>
Total Return	<u>3.00</u>

$$\text{Return on investment} = \frac{3.00}{12.25} \times 100 = 24.49\%$$

If all dividends and capital gain are reinvested into additional units at ₹ 12.50 per unit the position would be.

$$\text{Total amount reinvested} = ₹ 2.25 \times 300 = ₹ 675$$

$$\text{Additional units added} = \frac{₹ 675}{12.50} = 54 \text{ units}$$

$$\text{Value of 354 units as on 31-12-2010} = ₹ 4,602$$

$$\text{Price paid for 300 units on 31-12-2009} (300 \times ₹ 12.25) = ₹ 3,675$$

$$\text{Return} = \frac{₹ 4,602 - ₹ 3,675}{₹ 3,675} = \frac{₹ 927}{₹ 3,675} = 25.22\%$$

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Question 15

A has invested in three Mutual Fund Schemes as per details below:

	MF A	MF B	MF C
Date of investment	01.12.2009	01.01.2010	01.03.2010
Amount of investment	₹ 50,000	₹ 1,00,000	₹ 50,000
Net Asset Value (NAV) at entry date	₹ 10.50	₹ 10	₹ 10
Dividend received upto 31.03.2010	₹ 950	₹ 1,500	Nil
NAV as at 31.03.2010	₹ 10.40	₹ 10.10	₹ 9.80

Required:

What is the effective yield on per annum basis in respect of each of the three schemes to Mr. A upto 31.03.2010?

Answer

Scheme	Investment	Unit Nos.	Unit NAV 31.3.2010	Total NAV 31.3.2010
	₹		₹	₹
MF A	50,000	4761.905	10.40	49,523.812
MF B	1,00,000	10,000	10.10	1,01,000
MF C	50,000	5,000	9.80	49,000

Scheme	NAV (+) / (-)	Dividend Received	Total Yield	Number of days	Effective Yield (% P.A.)
	₹	₹	₹		
MF A	(-)476.188	950	473.812	121	2.858%
MF B	(+)1,000	1,500	2,500	90	10.139%
MF C	(-)1,000	Nil	(-)1,000	31	(-)24%

Question 16

Mr. Sinha has invested in three Mutual fund schemes as per details below:

	Scheme X	Scheme Y	Scheme Z
Date of Investment	01.12.2008	01.01.2009	01.03.2009
Amount of Investment	₹5,00,000	₹1,00,000	₹50,000
Net Asset Value at entry date	₹10.50	₹10.00	₹10.00
Dividend received upto 31.03.2009	₹9,500	₹1,500	Nil
NAV as at 31.3.2009	₹10.40	₹10.10	₹9.80

You are required to calculate the effective yield on per annum basis in respect of each of the three schemes to Mr. Sinha upto 31.03.2009.

Answer

Calculation of effective yield on per annum basis in respect of three mutual fund schemes to Mr. Sinha up to 31-03-2009:

PARTICULARS	MFY	MFZ	MFZ
(a) Investments	₹ 5,00,000	₹ 1,00,000	₹ 50,000
(b) No. of units	47,619.05	10,000	5,000
(c) Unit NAV ON 31-3-2009	₹ 10.40	₹ 10.10	₹ 9.80
(d) Total NAV on 31-3-2009 (b x c)	₹ 4,95,238.12	₹ 1,01,000	₹ 49,000
(e) Increase / Decrease of NAV (a-d)	(₹ 4,761.88)	₹ 1,000	(₹ 1,000)
(f) Dividend Received	₹ 9,500	₹ 1,500	Nil
(g) Total yield (e + f)	₹ 4,738.12	₹ 2,500	(₹ 1,000)
(h) Number of Days	121	90	31
(i) Effective yield p.a. (g/a x 365/h x 100)	2.859%	10.139%	(-) 23.55%

Question 17

Mr. X on 1.7.2007, during the initial offer of some Mutual Fund invested in 10,000 units having face value of ₹10 for each unit. On 31.3.2008, the dividend operated by the M.F. was 10% and Mr. X found that his annualized yield was 153.33%. On 31.12.2009, 20% dividend was given. On 31.3.2010, Mr. X redeemed all his balance of 11,296.11 units when his annualized yield was 73.52%. What are the NAVs as on 31.3.2008, 31.12.2009 and 31.3.2010?

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Answer

Yield for 9 months = $(153.33 \times 9/12)$ = 115%

Amount receivable as on 31.03.2008 = $1,00,000/- + (1,00,000 \times 115\%)$
= ₹2,15,000/-

Therefore, NAV as on 31.03.2008 = $(2,15,000 - 10,000)/10,000$ = ₹20.50

Therefore, units as on 31.03.2008 = 10487.80 i.e., $(2,15,000/20.50)$

Dividend as on 31.03.2009 = $10,487.80 \times 10 \times 0.2$ = ₹20,975.60

Let X be the NAV on 31.03.2009, then number of new units reinvested will be ₹20,975.60/X. Accordingly 11296.11 units shall consist of reinvested units and 10487.80 (as on 31.03.2008). Thus, by way of equation it can be shown as follows:

$$11296.11 = \frac{20975.60}{X} + 10487.80$$

Therefore, NAV as on 31.03.2009 = $20,975.60/(11,296.11 - 10,487.80)$
= ₹25.95

NAV as on 31.03.2010 = ₹ $1,00,000 (1 + 0.7352 \times 33/12)/11296.11$
= ₹26.75

Question 18

A Mutual Fund having 300 units has shown its NAV of ₹8.75 and ₹9.45 at the beginning and at the end of the year respectively. The Mutual Fund has given two options:

- (i) Pay ₹0.75 per unit as dividend and ₹0.60 per unit as a capital gain, or
- (ii) These distributions are to be reinvested at an average NAV of ₹8.65 per unit.

What difference it would make in terms of return available and which option is preferable?

Answer

(i) Returns for the year

(All changes on a Per -Unit Basis)

Change in Price: ₹9.45 – ₹8.75 = Re.0.70

Dividends received: ₹ 0.75

Capital gains distribution ₹ 0.60

Total reward ₹ 2.05

$$\text{Holding period reward: } \frac{₹ 2.05}{₹ 8.75} \times 100 = 23.43\%$$

- (ii) When all dividends and capital gains distributions are re-invested into additional units of the fund @ (₹ 8.65/unit)

Dividend + Capital Gains per unit

$$= ₹ 0.75 + ₹ 0.60 = ₹ 1.35$$

$$\text{Total received from 300 units} = ₹ 1.35 \times 300 = ₹ 405/-$$

Additional Units Acquired

$$= ₹ 405 / ₹ 8.65 = 46.82 \text{ Units.}$$

$$\text{Total No. of Units} = 300 \text{ units} + 46.82 \text{ units}$$

$$= 346.82 \text{ units.}$$

Value of 346.82 units held at the end of the year

$$= 346.82 \text{ units} \times ₹ 9.45 = ₹ 3277.45$$

Price Paid for 300 Units at the beginning of the year

$$= 300 \text{ units} \times ₹ 8.75 = ₹ 2,625.00$$

Holding Period Reward

$$₹ (3277.45 - 2625.00) = ₹ 652.45$$

$$\text{Holding Period Reward} = \frac{₹ 652.45}{₹ 2625.00} \times 100 = 24.85\%$$

Conclusion: Since the holding period reward is more in terms of percentage in option-two i.e., reinvestment of distributions at an average NAV of ₹8.65 per unit, this option is preferable.

Question 19

Sun Moon Mutual Fund (Approved Mutual Fund) sponsored open-ended equity oriented scheme "Chanakya Opportunity Fund". There were three plans viz. 'A' – Dividend Re-investment Plan, 'B' – Bonus Plan & 'C' – Growth Plan.

At the time of Initial Public Offer on 1.4.1999, Mr. Anand, Mr. Bacchan & Mrs. Charu, three investors invested ₹ 1,00,000 each & chosen 'B', 'C' & 'A' Plan respectively.

The History of the Fund is as follows:

9.19 Strategic Financial Management

Date	Dividend %	Bonus Ratio	Net Asset Value per Unit (F.V. ₹ 10)		
			Plan A	Plan B	Plan C
28.07.2003	20	5 : 4	30.70	31.40	33.42
31.03.2004	70		58.42	31.05	70.05
31.10.2007	40		42.18	25.02	56.15
15.03.2008	25	1 : 3	46.45	29.10	64.28
31.03.2008			42.18	20.05	60.12
24.03.2009	40	1 : 4	48.10	19.95	72.40
31.07.2009			53.75	22.98	82.07

On 31st July all three investors redeemed all the balance units.

Calculate annual rate of return to each of the investors.

Consider:

1. Long-term Capital Gain is exempt from Income tax.
2. Short-term Capital Gain is subject to 10% Income tax.
3. Security Transaction Tax 0.2 per cent only on sale/redemption of units.
4. Ignore Education Cess

Answer

Mrs. Charu Plan A Dividend Reinvestment

(Amount in ₹)

Date	Investment	Rate	Units	Balance
01.04.1999	1,00,000.00	10.00	10,000.00	10,000.00
28.07.2003	20,000.00	30.70	651.47	10,651.47
31.03.2004	74,560.29	58.42	1,276.28	11,927.75
30.10.2007	47,711.00	42.18	1,131.13	13,058.88
15.03.2008	32,647.20	46.45	702.85	13,761.73
24.03.2009	55,046.92	48.10	1,144.43	14,906.16

Redemption value 14,906.16 × 53.75 8,01,206.10

Less: Security Transaction Tax (STT) is 0.2% 1,602.41

Net amount received 7,99,603.69

Less: Short term capital gain tax @ 10% on

1,144.43 (53.64* – 48.10) = 6,340	<u>634</u>
Net of tax	7,98,969.69
Less: Investment	<u>1,00,000.00</u>
	<u>6,98,969.69</u>

*(53.75 – STT @ 0.2%)

Annual average return (%) $\frac{6,98,969.69}{1,00,000} \div \frac{12}{124} \times 100 = 67.64$

Mr. Anand Plan B – Bonus

			(Amount in ₹)
Date	Units	Balance	NAV per unit
01.04.1999	10,000	10,000	10
31.03.2004	12,500	22,500	31.05
31.03.2008	7,500	30,000	20.05
24.03.2009	7,500	37,500	19.95

Redemption value 37,500 × 22.98 8,61,750.00

Less: Security Transaction Tax (STT) is 0.2% 1,723.50

Net amount received 8,60,026.50

Less: Short term capital gain tax @ 10%

7,500 × (22.93† – 19.95) = 22,350 2,235.00

Net of tax 8,57,791.50

Less: Investment 1,00,000.00

Net gain 7,57,791.50

†(22.98 – STT @ 0.2%)

Annual average return (%) $\frac{7,57,791.50}{1,00,000} \div \frac{12}{124} \times 100 = 73.33$

Mr. Bacchan Plan C – Growth

	(Amount in ₹)
Redemption value 10,000 × 82.07	8,20,700.00
Less: Security Transaction Tax (S.T.T) is .2%	<u>1,641.40</u>
Net amount received	8,19,058.60
Less: Short term capital gain tax @ 10%	<u>0.00</u>

9.21 Strategic Financial Management

Net of tax	8,19,058.60
Less: Investment	<u>1,00,000.00</u>
Net gain	<u>7,19,058.60</u>

$$\text{Annual average return (\%)} = \frac{7,19,058}{1,00,000} \div \frac{12}{124} \times 100 = 69.59$$

Question 20

A mutual fund company introduces two schemes i.e. Dividend plan (Plan-D) and Bonus plan (Plan-B). The face value of the unit is ₹ 10. On 1-4-2005 Mr. K invested ₹ 2,00,000 each in Plan-D and Plan-B when the NAV was ₹ 38.20 and ₹ 35.60 respectively. Both the plans matured on 31-3-2010.

Particulars of dividend and bonus declared over the period are as follows:

Date	Dividend	Bonus	Net Asset Value(₹)	
	%	Ratio	Plan D	Plan B
30-09-2005	10		39.10	35.60
30-06-2006		1:5	41.15	36.25
31-3-2007	15		44.20	33.10
15-9-2008	13		45.05	37.25
30-10-2008		1:8	42.70	38.30
27-3-2009	16		44.80	39.10
11-4-2009		1:10	40.25	38.90
31-3-2010			40.40	39.70

What is the effective yield per annum in respect of the above two plans?

Answer

Plan – D

$$\text{Unit acquired} = \frac{2,00,000}{38.20} = 5235.60$$

Date	Units held	Dividend		Reinvestment	New	Total
		%	Amount		Units	Units
01.04.2005						5235.60
30.09.2005	5235.60	10	5235.60	39.10	133.90	5369.50
31.03.2007	5369.50	15	8054.25	44.20	182.22	5551.72

15.09.2008	5551.72	13	7217.24	45.05	160.20	5711.92
27.03.2009	5711.92	16	9139.07	44.80	204	5915.92
31.03.2010	Maturity Value ₹ 40.40 X 5915.92					₹ 2,39,003.17
	Less: Cost of Acquisition					<u>₹ 2,00,000.00</u>
	Total Gain					<u>₹ 39,003.17</u>

$$\backslash \text{ Effective Yield} = \frac{\text{₹ } 39,003.17}{\text{₹ } 2,00,000} \times \frac{1}{5} \times 100 = 3.90\%$$

Alternatively, it can be computed by using the IRR method as follows:

$$\text{NPV at 4\%} = -2,00,000 + 1,96,443 = -3,557$$

$$\text{NPV at 2\%} = -2,00,000 + 2,16,473 = 16,473$$

$$\text{IRR} = \text{LR} + \frac{\text{NPV at LR}}{\text{NPV at LR} - \text{NPV at HR}} (\text{HR} - \text{LR}) = 2\% + \frac{16473}{16473 - (-3557)} (4\% - 2\%) = 3.645\%$$

Plan – B

			No. of Units	NAV (₹)
1.4.05	Investment	₹2,00,000/35.60=	5617.98	35.60
30.6.06	Bonus	5617.98/5 =	<u>1123.60</u>	36.25
			6741.58	
30.10.08	"	6741.58/8 =	<u>842.70</u>	38.30
			7584.28	
11.4.09	"	7584.28/10 =	<u>758.43</u>	38.90
			8342.71	
31.3.10	Maturity Value	8342.71 x ₹ 39.70=		3,31,205.59
	Less: Investment			<u>2,00,000.00</u>
	Gain			<u>1,31,205.59</u>

$$\backslash \text{ Effective Yield} = \frac{1,31,205.59}{2,00,000} \times \frac{1}{5} \times 100 = 13.12\%$$

Alternatively, it can be computed by using the IRR method as follows:

$$\text{NPV at 13\%} = -2,00,000 + 1,79,765 = -20,235$$

$$\text{NPV at 8\%} = -2,00,000 + 2,25,413 = 25,413$$

9.23 Strategic Financial Management

$$\text{IRR} = \text{LR} + \frac{\text{NPV at LR}}{\text{NPV at LR} - \text{NPV at HR}} (\text{HR} - \text{LR}) = 8\% + \frac{25413}{25413 - (-20235)} (13\% - 8\%) = 10.78\%$$

Question 21

A mutual fund made an issue of 10,00,000 units of ₹10 each on January 01, 2008. No entry load was charged. It made the following investments:

	₹
50,000 Equity shares of ₹100 each @ ₹160	80,00,000
7% Government Securities	8,00,000
9% Debentures (Unlisted)	5,00,000
10% Debentures (Listed)	<u>5,00,000</u>
	<u>98,00,000</u>

During the year, dividends of ₹12,00,000 were received on equity shares. Interest on all types of debt securities was received as and when due. At the end of the year equity shares and 10% debentures are quoted at 175% and 90% respectively. Other investments are at par.

Find out the Net Asset Value (NAV) per unit given that operating expenses paid during the year amounted to ₹5,00,000. Also find out the NAV, if the Mutual fund had distributed a dividend of ₹0.80 per unit during the year to the unit holders.

Answer

In order to find out the NAV, the cash balance at the end of the year is calculated as follows-

	₹
Cash balance in the beginning	
(₹100 lakhs – ₹98 lakhs)	2,00,000
Dividend Received	12,00,000
Interest on 7% Govt. Securities	56,000
Interest on 9% Debentures	45,000
Interest on 10% Debentures	<u>50,000</u>
	15,51,000
(-) Operating expenses	<u>5,00,000</u>
Net cash balance at the end	<u>10,51,000</u>
Calculation of NAV	₹
Cash Balance	10,51,000
7% Govt. Securities (at par)	8,00,000

50,000 equity shares @ ₹ 175 each	87,50,000
9% Debentures (Unlisted) at cost	5,00,000
10% Debentures @90%	<u>4,50,000</u>
Total Assets	<u>1,15,51,000</u>
No. of Units	10,00,000
NAV per Unit	₹ 11.55

Calculation of NAV, if dividend of ₹ 0.80 is paid –

Net Assets (₹ 1,15,51,000 – ₹ 8,00,000)	₹ 1,07,51,000
No. of Units	10,00,000
NAV per unit	₹ 10.75

Question 22

Based on the following information, determine the NAV of a regular income scheme on per unit basis:

	₹ Crores
Listed shares at Cost (ex-dividend)	20
Cash in hand	1.23
Bonds and debentures at cost	4.3
Of these, bonds not listed and quoted	1
Other fixed interest securities at cost	4.5
Dividend accrued	0.8
Amount payable on shares	6.32
Expenditure accrued	0.75
Number of units (₹ 10 face value)	20 lacs
Current realizable value of fixed income securities of face value of ₹ 100	106.5
The listed shares were purchased when Index was	1,000
Present index is	2,300
Value of listed bonds and debentures at NAV date	8

There has been a diminution of 20% in unlisted bonds and debentures. Other fixed interest securities are at cost.

Answer

9.25 Strategic Financial Management

Particulars	Adjustment Value ₹ crores
Equity Shares	46.00
Cash in hand	1.23
Bonds and debentures not listed	0.80
Bonds and debentures listed	8.00
Dividends accrued	0.80
Fixed income securities	4.50
Sub total assets (A)	61.33
Less: Liabilities	
Amount payable on shares	6.32
Expenditure accrued	0.75
Sub total liabilities (B)	7.07
Net Assets Value (A) – (B)	54.26
No. of units	20,00,000
Net Assets Value per unit (₹ 54.26 crore / 20,00,000)	₹ 271.30

EXERCISES

Question 1

Consider the following information about the return on Classic Mutual Fund, the market return and the T-bill returns:

Year	Classic Mutual Fund	Market Index	T-bills
1995	17.1	10.8	5.4
1996	-14.6	-8.5	6.7
1997	1.7	3.5	6.5
1998	8.0	14.1	4.3
1999	11.5	18.7	4.1
2000	-5.8	-14.5	7.0
2001	-15.6	-26.0	7.9
2002	38.5	36.9	5.8
2003	33.2	23.6	5.0
2004	-7.0	-7.2	5.3
2005	2.9	7.4	6.2
2006	27.4	18.2	10.0

2007	23.0	31.5	11.4
2008	-0.6	-4.9	14.1
2009	21.4	20.4	10.7

The following additional information is available regarding the comparative performance of five mutual funds:

	Return (%)	Standard Deviation (%)	Beta	
Alpha	1.95	20.03	0.983	0.819
Beta	11.57	18.33	0.971	0.881
Gama	8.41	22.92	1.169	0.816
Rho	9.05	24.04	1.226	0.816
Theta	7.86	15.46	0.666	0.582

From the above information, calculate all the inputs required for determining the Sharpe's Ratio, Treynor's ratio and Jensen's ratio.

(Answer: Sharpe's measure index- Classic Mutual Fund= 0.125 and Market Index= 0.053, **Treynor's measure-** Classic Mutual Fund = 2.32 and Market Index- $T_m = 8.267 - 7.360/1.00 = 0.907$ and **Jensen's performance measure-** 1.248)

Question 2

Templan Mutual Fund had ₹ 10,00,00,000 as on Jan. 1, 2009. The fund had issued 1,00,00,000 units of ₹10 each. It made the following investments:

	₹
5,00,000 Equity Shares of ₹100 each @ ₹160/-	8,00,00,000
8% Central Government Securities	80,00,000
9% Debentures (unlisted)	50,00,000
10% Debentures (Listed)	<u>50,00,000</u>
Total	<u>9,80,00,000</u>

During the year, dividends of ₹120,00,000 were received on equity shares. Interest on all types of debt securities was received as and when due. At the end of the year, the equity shares and 10% debentures are quoted at ₹ 175 and ₹ 90 respectively. Find out the NPV per unit given that operating expenses incurred during the year amounted to ₹50,00,000. Also find out the NPV, if the mutual fund had distributed a dividend of ₹0.80 per unit during the year to the unit holders.

Assume that no load was charged.

(Answer: ₹10.759)