

Lecture Notes on Mutual Fund

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- 1) Mr. Deora invested Rs. 25,000/- to purchase 2,500 units of ICICI MF - on 4th April 2007. He decided to sell the units on 14th Nov. 2007 at NAV of Rs. 16.40 /-. The exit load was 2.5 %. Find his profit (Calculations are up to 2 decimal points)

Solution:

No. of units = 2500 , purchase cost of all units = Rs. 25,000/-, NAVS for 1 unit = RS. 16.40 , Exit load =2.5%, Profit = ?

Selling price of 1 unit = NAVS - Exit Load = $16.40 - (2.5/100) \times 16.40 = 16.40 - 0.41 = 15.99$

∴ Sale value of all unit = No. of units x Selling price of 1 unit
= $2500 \times 15.99 = \text{Rs. } 39,975$

∴ Profit on all units = Sale value of all unit - Investment on all units

			=	Rs. 39,975	-	Rs. 25,000			
			=	Rs. 14,975.					

- 1) If NAV was Rs. 72/- at the end of the year, with 12.5 % increase during the year , find NAV at the beginning of the year.

Solution :

Let 'x' be the NAV at the beginning of the year.

∴ Absolute change in NAV = 12.5 % of x = $(12.5/100) \times x = 0.125 x$

∴ NAV at the end of the year = NAV at the beginning of the year + Absolute change in NAV

$$= x + 0.125 x$$

$$= 1.125 x.$$

$$\therefore 1.125 x = 72$$

$$\therefore x = 72 / 1.125 = 64$$

∴ NAV's initial value was Rs. 64 /- .

- 2) If a mutual fund had NAV of Rs. 28 /- at the beginning of the year and Rs. 38/- at the end of the year, find the absolute change and the percentage change in NAV during the year .

Solution :

NAV at the beginning = Rs. 28, NAV at the end = Rs. 38

∴ Absolute change in NAV
= $(38 - 28)$
= Rs. 10/-

% change in Nav = $(\text{Absolute change}/\text{NAV at the beginning}) \times 100$
= $(10 / 28) \times 100$
= 35.71 %

- 3) Rohit purchased some units in open end equity fund at Rs. 16/- . The fund distributed interim dividend of Rs. 5/- per unit , and the NAV of the fund at the end of the year was Rs. 25/- . Find the total percentage return. (Calculations are up to 2 decimal points)

Solution :

Total gain = change in NAV + Dividend
= $(25-16) + 5 = 9+5 = 14$

∴ Total % gain = $(\text{Total gain} / \text{NAV at the beginning}) \times 100 = (14/16) \times 100 = 87.5\%$

- 1) Ms . Kannan purchased 113.151 units of 'FT India Prima Plus on 9th April 2007 and redeemed all the units on 7th Aug 2007 when the NAV was Rs. 35.5573 . The entry load was 2.25 % and the exit load was 1 % . If she gained Rs. 483.11, find the NAV on 9th April 2007. (Calculations are up to 2 decimal points)

Soln.:- No. of units = 113.151, NAVS = 35.5573 . Entry load = 2.25%

∴ Exit load = 1% . Total gain = 483.11, let

$$NAV = NAVP$$

$$\begin{aligned} \text{PP of 1 unit} &= x + 2.25 \times x = 102.25x \\ &= 1.0225x \end{aligned}$$

$$\begin{aligned} \text{Redemption price of 1 unit} &= \frac{\text{NAVS} - \text{Exit load}}{100} \\ &= \frac{35.2017}{100} \end{aligned}$$

$$\begin{aligned} \text{Gain on 1 unit} - \text{PP of 1 unit} &= \text{Redemption price of 1 unit} \\ &= 35.2017 - 1.0225x \\ &= \frac{\text{Gain on 1 unit} \times \text{No. of units}}{\text{No. of units}} \end{aligned}$$

$$\begin{aligned} 483.11 &= \\ (35.2017 - 1.0225x) \times 113.15 & \\ 483.11 & \end{aligned}$$

$$= \frac{35.2017 - 1.0225x}{113.15}$$

$$35.2017 - 1.0225x$$

$$261.0225x = 35.2017 - 4.$$

$$1.0225x = 30.9327$$

$$\therefore x = \frac{30.9327}{1.0225}$$

$$= 30.25202$$

100

100
Total Gain

- 1) Mona invested Rs. 2000 in a mutual fund when the NAV was Rs. 13.16 and the entry load was 2.25%. She sold all the units after 6 months at an NAV of Rs. 16.22 with 1% exit load. Find her total gain, rate of return and annualized rate of return.

Soln: - Invest = Rs 2,000, NAVP = Rs 13.16, Entry load = 2.25%,

NAVS = Rs 16.22, Exit load = 1%, TG = ?,
ROR = ?, AROR = ?

$$\begin{aligned} \text{PP of 1 unit} &= \text{NAVP} + \text{Entry load} \\ &= 13.16 + 2.25 \times 13.16 = 102.25 \times 13.16 = 13.4561 \end{aligned}$$

$$\text{Redemption} = 16.22 - \frac{1}{100} \times 16.22 =$$

16.0578
price of 1 unit

$$\text{Gain on 1 unit} = \text{Redemption} - \text{PP of 1 unit}$$

$$= 16.0578 - 13.4561$$

$$= 2.6017$$

$$= \text{PP of 1 unit} \times \text{No. of units}$$

$$= 13.4561 \times \text{no. of units}$$

$$\text{No. of units} = \frac{2000}{13.4561} = 148.631476$$

$$= \text{gain on 1 unit} \times \text{no. of units}$$

$$= 2.6017 \times 148.631476$$

$$= 386.694$$

$$\text{ROR} = \frac{\text{TG}}{\text{Investment}} \times 100 =$$

$$= 19.33\%$$

$$\text{Annualized ROR} = \text{ROR} \times \frac{12 \text{ months}}{12} =$$

$$19.33 \times \frac{12}{12} = 19.33 \times 2$$

No. of months
of its 38.66%

$$\frac{100}{100}$$

unit Invest.

$$\frac{2000}{\text{TG}}$$

$$\frac{2000}{2000} \times 100$$

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- 1) On 29th March 2017 Mr. Raju invested Rs. 5000 in an NFO of Reliance Equity Opportunities Fund Growth Plan at an NAV of Rs. 10 with no entry load. He redeemed all units on 22nd Sept 2017 with 1% exit load and hence gained 1116.65. Find the NAV at which he redeemed his units. (all figures rounded off to 4 decimal places)

Soln: - Invest = Rs 5000, NAVP = Rs 10,
Exit load = 1%,

$$\text{TG} = \text{Rs } 1116.65, \text{ NAVS} = ?$$

Let ROR = NAVS,

$$\text{Invest} = \text{NAVP} \times \text{No. of units}$$

$$5000 = 10 \times \text{No. of units}$$

$$\therefore \text{No. of units} = \frac{5000}{10} = 500 \text{ units.}$$

$$\text{Redemption price of } = \text{NAVS} - \text{Exit load}$$

$$= 0.99n - \frac{1}{100} \times n =$$

$$\text{Gain on 1 unit} = \text{Redemption price} - \text{NAV}$$

$$\text{Gain on 1 unit} = 0.99n - 10$$

$$\text{No. of units} = \frac{\text{Gain on 1 unit} \times \text{Total Gain}}{\text{Gain on 1 unit}}$$

$$1116.65 = 500 (0.99n - 10) \times$$

$$\therefore (0.99n - 10) = \frac{1116.65}{500} = 2.2333$$

$$0.99n - 10 = 2.2333$$

$$\therefore 0.99n = 10 + 2.2333$$

$$0.99n = 12.2333$$

$$\therefore n = \frac{12.2333}{0.99} = 12.3569$$

1 unit

- 21) Ms. Suman Roy Purchased 118.413 units of "ICICI Prudential Services Industries Fund - Growth" on 17/05/17 and redeemed all units on 01/11/17 when the NAV was Rs. 20.65. The entry load and exit load were 2.25% and 1% respectively. Her total gain were RS. 420.36. Find the NAV at purchase correct up to 2 decimal places.

Soln: No. of units = 118.413, NAVS = Rs 20.65, Entry load = 2.25%, Exit load = 1%, TG = 420.36, NAVP = ?

Let Rs x = NAVP.

$$\text{PP of 1 unit} = \text{NAVP} + \text{Entry load} = x + \frac{2.25}{100} \times x = \frac{102.25x}{100} = 1.0225x$$

$$\text{Redemption Price per unit} = \text{NAVS} - \text{Exit load} = 20.65 - \frac{1}{100} \times 20.65$$

$$= 20.65 - 0.2065$$

$$= 20.4435$$

$$\text{Gain on 1 unit} = \text{Redemption Price per unit} - \text{PP of 1 unit}$$

$$\text{Gain on 1 unit} = 20.4435 - 1.0225x$$

$$\text{Now total gain} = \text{gain on 1 unit} \times \text{No. of units}$$

$$420.36 = (20.4435 - 1.0225x) \times 118.413$$

$$\therefore 20.4435 - 1.0225x = \frac{420.36}{118.413} = 3.5499$$

$$\therefore 1.0225x = 20.4435 - 3.5499$$

$$\therefore x = \frac{16.8936}{1.0225}$$

$$= 16.52185$$

22) On 26/08/13 Mr Mishra invested Rs. 10000 in DSP NK bond Fund -dividend plan which has neither entry load nor exit load. The NAV at purchase was 42.2895. On 15/12/13 he received a dividend @ Rs 1.50 per unit . On 15/01/14 he redeemed the units at a NAV of 42.8314. Find his total gain and the rate of return for the period.(number of units calculated correctly to 3 decimal places).

Soln: - NAVP = Rs 42.2895, Div on 1 unit = Rs 1.50, NAVS = 42.8314,
TG = ? ROR = ? , Invt = Rs 10,000

$$\text{No. of units} = \frac{\text{Invt.}}{\text{NAVP}} = \frac{\text{Rs } 10000}{\text{Rs } 42.2895} = 236.46$$

$$\begin{aligned} \text{Gain on 1 unit} &= \text{Div} + (\text{NAVS} - \text{NAVP}) \\ &= \text{Rs } 1.50 + (42.8314 - 42.2895) \\ &= \text{Rs } 1.50 + 0.5419 \\ &= \text{Rs } 2.0419 \end{aligned}$$

$$\begin{aligned} \text{TG} &= \text{Gain on 1 unit} \times \text{No. of units} \\ &= 2.0419 \times 236.46 \\ &= 482.827674 \end{aligned}$$

24) Invt = Rs 7000, NAVP = 35.5251, Entry load = 2.25%.
Div per unit = Rs 6, NAVS = 32.070, TG = ?, ROR = ?

Soln: - PP of 1 unit = NAVP + Entry load

$$= 35.5251 + \frac{2.25 \times 35.5251}{100}$$

$$\begin{aligned} \text{PP of 1 unit} &= 36.3244 \\ \frac{\text{Invt}}{7000} &= \frac{\text{PP of 1 unit} \times \text{No. of units}}{36.3244 \times \text{No. of units}} \end{aligned}$$

$$\therefore \text{No of unit} = \frac{7000}{36.3244} = 192.707932$$

$$\begin{aligned} \text{Gain on 1 unit} &= \text{Div} + (\text{NAVS} - \text{PP of 1 unit}) \\ &= 6 + (32.070 - 36.3244) \\ &= 1.7456 \end{aligned}$$

$$\begin{aligned} \text{TG} &= \text{Gain on 1 unit} \times \text{No. of units} \\ &= 1.7456 \times 192.707932 \\ &= 336.391 \end{aligned}$$

$$\begin{aligned} \text{ROR} &= \frac{\text{TG}}{\text{Invt.}} \times 100 \\ &= \frac{336.391}{7000} \times 100 \\ &= 4.81\% \end{aligned}$$

27) Mr. Mehmood invested Rs.20,000 in 'HDFC Prudence Fund' under the dividend

reinvestment option on 25/11/07 when the NAV was Rs. 35.741 and the entry load was 2.25%. The fund declared a dividend @ Rs. 5 per unit 22/02/2008 and the ex-dividend NAV was 28.503. Find the total number of units after the dividend is reinvested.

Soln. - Invt = Rs. 20,000, NAVP = Rs 35.741, Entry load = 2.25%.
 Div per unit = Rs 5, Ex-div. NAV = Rs 28.503, n = No of units purchased
 PP of 1 unit = NAVP + Entry load n_d = no. of units obtained via dividend.
 $30 n + n_d = ?$
 $= 35.741 + \frac{2.25}{100} \times 35.741$

$$= 35.741 + 0.0225 \times 35.741$$

$$= (1 + 0.0225) \times 35.741$$

$$= 1.0225 \times 35.741$$

$$= 36.5451725$$

Invt = PP of 1 unit \times No. of units (originally)
 20,000 = 36.5451725 \times n
 $\therefore n = \frac{20,000}{36.5451725} = 547.267905$

Div amt. = Div per unit \times No. of units (originally)
 = 5 \times 547.267905
 = 2736.33953

This Div. amt. is re-invested in the mutual fund at ex-div. NAV

Div amt. = Ex-div. NAV \times No. of units obtained via dividend.
 so 2736.33953 = 28.503 \times n_d
 $\therefore n_d = \frac{2736.33953}{28.503} = 96.0018079$

Total no. of units = $n + n_d$
 = 547.267905 + 96.0018079
 = 643.269713

28) Div per unit = Rs 10. (31st August 2007)

Ex-div NAV = Rs 69.98.
 Invt = Rs 10,000
 NAVP = Rs 78.04
 Entry load = 2.25%
 $n = ?$
 $n_d = ?$
 $n + n_d = ?$

PP of 1 unit = NAVP + Entry load
 = 78.04 + 0.0225 \times 78.04
 = 79.7959

Invt = PP of 1 unit \times No. of units
 10,000 = 79.7959 \times n
 $\therefore n = \frac{10000}{79.7959} = 125.219$

$$\begin{aligned} \text{Div amt} &= \frac{79.7959}{10} \times \text{No. of units} \\ &= 125.319 \\ &= \text{Rs } 1253.19 \end{aligned}$$

$$\begin{aligned} \text{Div amt} &= \text{Ex-div. NAV} \times \text{No. of units obtained via dividend amt} \\ 1253.19 &= 69.98 \times n_d \\ \therefore n_d &= \frac{1253.19}{69.98} = 17.9078 \end{aligned}$$

$$\begin{aligned} \text{Total No of units} &= n + n_d \\ &= 125.319 + 17.9078 \\ &= 143.2268 \end{aligned}$$

29) $\text{Invt} = \text{Rs } 10,000$, $\text{NAVP} = \text{Rs } 60.74$, $\text{Entry load} = 2.25\%$,
 $\text{Div @ } 35\%$ on NAV of $\text{Rs } 10$; $\text{Ex-div. NAV} = 52.04$, $n = ?$, $n_d = ?$
 $n + n_d = ?$.

Soln \therefore PP of 1 unit = $\text{NAVP} + \frac{\text{Entry load}}{100} \times \text{NAVP}$

$$= 60.74 + \frac{2.25}{100} \times 60.74$$

$$= 62.10665$$

$$\begin{aligned} \text{Invt} &= \text{PP of 1 unit} \times \text{No. of units} \\ 10,000 &= 62.10665 \times n \\ \therefore n &= \frac{10000}{62.10665} = 161.013354 \end{aligned}$$

$$\begin{aligned} \text{Div per unit} &= 35\% \text{ of NAV of Rs } 10 \\ &= \frac{35}{100} \times 10 \end{aligned}$$

$$\begin{aligned} \text{Div amt} &= \text{Div per unit} \times \text{No. of units} \\ &= 3.50 \times 161.013354 \\ &= 563.546739 \end{aligned}$$

$$\begin{aligned} \text{Div. amt} &= \text{Ex-div NAV} \times \text{No. of units acquired via Div. amt.} \end{aligned}$$

$$563.546739 = 52.04 \times n_d$$

$$\therefore n_d = \frac{563.546739}{52.04} = 10.8291072$$

$$\begin{aligned} \text{So now } n + n_d &= 161.013354 + 10.8291072 \\ &= 171.842461 \end{aligned}$$

30) $\text{Invt} = \text{Rs } 7000$, $\text{NAVP} = 27.021$, $\text{Entry load} = 2.25\%$, $n = ?$
 $\text{Div per unit} = \text{Rs } 4$, $\text{Ex-div. NAV} = 38.928$, $n_d = ?$

NAV (as on 8/03/08) = Rs 30.930, Value as on 8/03/08 = ?

TG = ?

Soln:- PP of 1 unit = NAVP + Entry load
 $= 27.021 + \frac{2.25}{100} \times 27.021$

$= 27.021 + 0.0225 \times 27.021$

$= (1 + 0.0225) \times 27.021$

$= 1.0225 \times 27.021$

$= 27.6289725$

Invest = PP of 1 unit \times No. of units

7000 = 27.6289725 \times n

$\therefore n = \frac{7000}{27.6289725} = 253.357232$

Div. amt = Div per unit \times No of units

= 4 \times 253.357232

= 1013.42893

Div. amt = Ex-div. NAV \times No. of units obtained via Div. amt.

1013.42893 = 38.928 \times n_d

$\therefore n_d = \frac{1013.42893}{38.928} = 26.0334189$

Value of units as on 8/03/08 = No. of units \times NAV as on 8/03/08

= (n + n_d) \times 30.930

= (253.357232 + 26.0334189) \times 30.930

= (279.390651) \times 30.930

= 8641.55284.

No. of units

TG

= n + n_p = 279.390651

= value of units as on 8/03/08 - Investment

31)

Date	Transaction	Amt Invested	NAV	No. of units
10th Sept 2007	Purchase	5000	17.3480	288.217662
10th Oct 2007	Purchase	5000	17.4521	286.498473
10th Nov 2007	Purchase	5000	17.5647	284.66185
10th Dec 2007	Purchase	5000	17.6679	282.999111
10th Jan 2008	Purchase	5000	17.7871	281.102597
Total		25000		1423.47968

Average Acquisition Cost = $\frac{\text{Total Investment}}{\text{Total No. of units}}$

AAC = $\frac{25000}{1423.47968}$

= 17.562597

32)

Date	Transaction	Amt. Invested	NAV	No. of Units
7/08/2007	Purchase	1000	18.5268	53.975862
7/09/2007	Purchase	1000	18.6389	53.6512348
7/10/2007	Purchase	1000	18.7575	53.3120085
7/11/2007	Purchase	1000	18.8682	52.9992262
7/12/2007	Purchase	1000	18.9945	52.6468188
		5000		266.58515

$$\text{Average Acquisition Cost} = \frac{\text{Total Investment}}{\text{Total No. of units}}$$

$$\text{AAC} = \frac{5000}{266.58515} = 18.7557334$$

$$\begin{aligned} \text{PP of 1 unit} &= \text{NAV} + \text{Entry load} = \text{NAV} + 2.25\% \times \text{NAV} \\ &= \text{NAV} + 0.0225 \times \text{NAV} = \text{NAV} (1 + 0.0225) \\ &= \text{NAV} (1.0225) \end{aligned}$$

33)

Date	Transaction	Amt. Invested	NAV	PP of 1 unit 1.0225*D	No. of Units C/E
10/7/2007	Purchase	1000	44.100	45.09225	22.17676
10/8/2007	Purchase	1000	43.761	44.74562	22.34855
10/9/2007	Purchase	1000	45.455	46.47774	21.51568
Total		3000			66.04099

$$\text{Average Acquisition Cost} = \frac{\text{Total Investment}}{\text{Total No. of units}}$$

$$= \frac{3000}{66.04099}$$

$$\text{A} \quad \text{B} \quad \text{C} \quad \text{D} \quad \text{E} = \frac{45.4263329}{\text{F}}$$

34)

Date	Transaction	Amt. Invested	NAV	PP of 1 unit 1.0225*D	No. of Units C/E
10/7/2007	Purchase	1000	44.400	45.39900	22.02692
10/8/2007	Purchase	1000	43.716	44.69961	22.37156
10/9/2007	Purchase	1000	45.268	46.28653	21.60456
Total		3000			66.00303

$$\text{Average Acquisition Cost} = \frac{\text{Total Investment}}{\text{Total no. of units}}$$

$$= \frac{3000}{66.00303}$$

$$= 45.4524588$$