Part - 1

Q.32 | Pg
CW. 89 | Calculation of Expected NAV as on 30/09/2021

Particulars	MF "AJ"	MF "RP"
a] NAV on 31/08/2021	80	61
b] Equity component	76	60
c] Cash component	4	1
d] Sharpe Ratio	1.5	3
e] Standard Deviation	10	6
f] $R_p - R_f$ = (d x e)	15	18
g] Treynor Ratio	12	10
h] Beta = (f ÷ g)	1.25	1.8
i] Increase in Equity component = 2% x β_p	2.50%	3.6%
j] Equity component on 30/09/21 = b (1+i%)	77.9	62.16
k] Cash component net of expenses = (c - 0.5)	3.5	0.5
l] NAV on 30/09/21 (j+k)	81.4	62.66

Self practice : Q.20 HW.] pg. 55 ; Extra Q.1] HW. soln. pg. 159

Q.34 | Pg
CW.90 | (i) Ranking as per Sharpe Method → $\frac{R_p - R_f}{\sigma_p}$

Fund	Return (R_p)	S.D. (σ)	$R_p - R_f$	Sharpe Ratio	Rank
A	15	7	9	1.286	2
B	18	10	12	1.2	3
C	14	5	8	1.6	1
D	12	6	6	1.0	5
E	16	9	10	1.11	4

(ii) Ranking as per Treynor Method → $\frac{R_p - R_f}{\beta_p}$

Fund	Return (R_p)	S.D. (σ)	$R_p - R_f$	β_p	Treynor Ratio	Rank
A	15	7	9	1.25	7.2	2
B	18	10	12	0.75	16	1
C	14	5	8	1.40	5.71	5
D	12	6	6	0.98	6.12	4
E	16	9	10	1.50	6.67	3

Q.35	pg
CW.90	

Expense Ratio = $\frac{\text{Expense per unit}}{\text{Average NAV}}$

$= \frac{0.5}{(20+24)/2}$

$= 2.27\%$ (Lower the better)

Fama's measure of Net Selectivity :-

Jenson's Alpha = A(R_p) - Re as per SML

↓

A(R_p) - SML

Jensens Alpha is known as Return from Total Selectivity.

↓ ⊕ ↓

A(R_p) - CML ⊕ **CML - SML**

↓ ↓

Return due to net selectivity or superior stock selection skills

Return due to inadequate diversification or compensation for UR.

SML ⇨ $R_f + (R_m - R_f)\beta_p$

CML ⇨ $R_f + \left[\frac{R_m - R_f}{\sigma_m}\right]\sigma_p$

SML : Return jo Fund managerko kamana chahiye tha 'SR' k badle.
CML : Return jo Fund managerko kamana chahiye tha Total Risk i.e. 'SR' + 'UR' k badle.

Eg: $R_f = 6\%$, $R_m - R_f = 5\%$, $\beta = 2\%$, $\sigma_p = 20\%$, $\sigma_m = 9\%$.

Q.1] Calculate coefficient of determination for the fund manager.

Soln: $\beta = r \frac{\sigma_p}{\sigma_m}$

$2 = r \frac{20}{9} \Rightarrow r = \frac{18}{20} = 0.9$

$\therefore r^2 = 0.9^2 = 0.81$

Q.2] Calculate Jensen's Alpha if Return of fund manager i.e. $A(R_p) = 25\%$.

Soln: $R_{SML} = R_f + (R_m - R_f)\beta$

$= 6 + 5 \times 2$

$= 16$

$\therefore \alpha = A(R_p) - R_{SML} = 25 - 16 = 9\%$ (waaah !!!)

kama bola ruko .....

Q.3] Decompose Jensen's Alpha into -

a) Return from net selectivity

b) Return due to inadequate diversification.

Soln:- $R_{CML} = R_f + \left[\frac{R_m - R_f}{\sigma_m}\right]\sigma_p = 6 + \frac{5}{9} \times 20 = 17.11\%$

$A(R_p) = 25\%$.

a) Return from Net selectivity $= A(R_p) - R_{CML} = 25 - 17.11\%$

$= 7.89\%$.

b) Return due to inadequate diversification

$= R_{CML} - R_{SML} = 17.11 - 16 = 1.11\%$.

Part-2

Q.33	Pg
CW. 89	

Average monthly portfolio return (A_p)

$= \frac{-0.52 + 2.2 + 2.17 + 4.17 + 2.04 + 3 + 1.99 + 4 - 1.38 + 2.67 + 3.99 + 1.86}{12}$

$= 2.1825\%$.

Average monthly market return (Rm)

$$= \frac{0.82 + 0.04 + 2.8 + 1.72 + 0.27 + 0.39 + 1.95 + 0.64 + 1.53 + 2.7 + 2.52 + 2.09}{12}$$

$= 1.4558\%$.

Since, the portfolio is fully diversified, $r = 1$ with the market.

$\sigma_p = 1.6223$ & $\sigma_m = 0.9498$ (given)

$\therefore \beta_p = r \frac{\sigma_p}{\sigma_m} = 1 \times \frac{1.6223}{0.9498} = 1.708$

monthly $R_f = \frac{12}{12} = 1\%$.

Required return as per CML (R_{CML}) $= R_f + \frac{R_m - R_f}{\sigma_m} \times \sigma_p$

$= 1 + \frac{1.4558 - 1}{0.9498} \times 1.6223 = 1.7785\%$.

(i) Hence, monthly return attributable to sheer skill of the manager $= A_p - R_{CML} = 2.1825 - 1.7785 = 0.404\%$ p.m.

(ii) Monthly return attributable to higher risk assumed by manager -

→ Conceptually correct answer → $R_{CML} - R_{SML} = 0$ becoz portfolio is fully diversified.

→ What icai has done → $R_{CML} - R_m = 1.7785 - 1.4558$

$= 0.3227$

Self Note: Fully diversified portfolio → UR = 0, $r = 1$

SML → $R_f + (R_m - R_f)\beta$ .... $\beta = r \times \sigma_p / \sigma_m$

CML → $R_f + \frac{R_m - R_f}{\sigma_m} \times \sigma_p = R_f + (R_m - R_f) \times 1 \times \frac{\sigma_p}{\sigma_m}$ ← β

$\therefore$ CML → $R_f + (R_m - R_f)\beta$ = SML when $r = 1$

∴ Extra portion given in ICAI material :-
(not yet asked in exams, RTP, MTP....)

Tracking Error & Information Ratio (I.R.) :-

Eg: Consider a fund manager & benchmark performance for last few years.

Yrs	Return on fund manager's portfolio	Return on benchmark
1	18%	20%
2	10%	7%
3	20%	15%
4	15%	16%
5	-10%	-13%

Q.1) Calculate Tracking error & Information Ratio.

Q.2) If you consider a cut off of 0.25 for information ratio, conclude whether the fund manager will be chosen by you or not.

Active Return = A.R. = $R_p - R_m$ (Higher the better)

where, R_m = Return on Benchmark = R_B

S.D. of Active Return = Tracking error

surprisingly, ICAI has given this formula for T.E. ↴

Tracking Error = $\sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}}$ or $\sqrt{\frac{\Sigma(x-\bar{x})^2}{n}}$ (Lower the better)

Exam me dono soln krk aana

Information Ratio = $\frac{\text{Average Active Return}}{\text{Tracking Error}}$ (Higher the better)

This is similar to Sharpe Ratio but instead of R_m we have R_B.

Years	R_P	R_B	A.R. = $x = R_P - R_B$	$(x - \bar{x})^2$
1	18	20	-2	12.96
2	10	7	3	1.96
3	20	15	5	11.56
4	15	16	-1	6.76
5	-10	-13	3	1.96
			$\Sigma x = 8$	35.20

Average A.R. $= \bar{x} = \frac{\Sigma x}{n} = \frac{8}{5} = 1.6$

Tracking Error (σ_x) $= \sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}}$ or $\sqrt{\frac{\Sigma(x-\bar{x})^2}{n}}$

$= \sqrt{\frac{35.2}{4}}$ or $\sqrt{\frac{35.2}{5}}$

$= 2.97\%$ or 2.65%

Information Ratio $= \frac{\bar{x}}{\sigma_x}$ or $\frac{\bar{x}}{\sigma_x}$

$= \frac{1.6}{2.97}$ or $\frac{1.6}{2.65}$

$= 0.54$ or 0.60

Since I.R. of fund manager is greater than the cutoff of 0.25, the fund manager shall thus be chosen.

Part-3

Q.29	Pg
CW. 87	

Discussed verbally ..... CW. soln. pg. 156
Self practice : HW. Q. 197 pg. 55

Q.30	Pg
CW. 88	

Discussed verbally
CW. soln. pg. 157

Q.31	Pg
CW. 88	

Discussed verbally
CW. soln. pg. 159