Question #1 of 28

Tom Grenkin is a market timer with an information ratio of 0.75. He makes a prediction of the movement in the market each quarter. Jane Fortina is a stock selector who follows 50 companies and revises her assessment each quarter. She also has an information ratio of 0.75. Assuming both managers have unconstrained portfolios, which of the following statements regarding the two managers is *most accurate*?

A) As Grenkin makes fewer bets per year, he requires a higher information coefficient on each bet than Fortina to achieve the same information ratio.

B) As Fortina's strategy has a much larger breadth, she must have a larger information coefficient than Grenkin.

C) As both managers have the same information ratio, they must also have the same information coefficient.

Explanation

$(IR) = IC \times \sqrt{BR}$

As a stock selector, Fortina makes many more bets per period and has a much larger breadth. She therefore requires a lower information coefficient than Grenkin to achieve the same information ratio. Grenkin requires a higher coefficient.

Grenkin $0.75 = IC \times 4^{½}$	IC = 0.75/2	= 0.375
Fontina $0.75 = IC \times 200^{½}$	IC = 0.75/14.14	= 0.053

(Note: Calculations are not required)

(Study Session 17, Module 50.4, LOS 50.e)

Related Material

SchweserNotes - Book 5

Question #2 of 28

Helen Wilde is trying to estimate the active return of Optimal fund. A comparison of Optimal's holdings and that of the benchmark are shown below:

Asset Class (i)	Optimal Weight (w_{Pi})	BenchmarkWeight (w_{Bi})	OptimalReturn E(R_{Pi})	Benchmark ReturnE(R_{Bi})
Industrials	30%	40%	11%	12%
Financials	50%	30%	6%	5%
Utilities	20%	30%	14%	12%

The expected active return due to asset allocation for Optimal is *closest* to:

A) – 0.86%

B) – 1.40%

C) -0.44%

Explanation

Asset Class (i)	Portfolio Weight (w_{Pi})	BenchmarkWeight (w_{Bi})	Benchmark ReturnE(R_{Bi})	Active ReturnWeight (Δw_i)	(Δw_i) ($E(R_{Bi})$)
Industrials	30%	40%	12%	-10%	-1.20%
Financials	50%	30%	5%	20%	1.00%
Utilities	20%	30%	12%	-10%	-1.20%

(Study Session 17, Module 50.1, LOS 50.a)

Related Material

SchweserNotes - Book 5

Question #3 of 28

An active manager makes quarterly bets on the stocks in the Russell 2000 index and uses the index as the benchmark. The manager claims a modest IC of 0.02 using a stock screening model. Sam Fox, CFA makes the following two statements:

I. The bets on the 2000 stocks in the index is not independent as the screens by definition introduce dependency in the decision process.
II. The quarterly bets are likely to be independent.

How many of Fox's statements are correct:

A) Neither statement is correct.

B) Both statements are correct.

C) Only one statement is correct.

Explanation

Fox is correct that screens (e.g., minimum dividend yield) would pass stocks with similar attributes and hence would introduce dependency in the decision making process. Fox is incorrect that the decisions over time are independent. Those stocks that pass the screen in one quarter are probably more likely to pass the same screen in the next quarter and hence the decisions are not truly independent.

(Study Session 17, Module 50.4, LOS 50.f)

Related Material

SchweserNotes - Book 5

Question #4 of 28

Zeta fund has active return and active risk of 1.6% and 8% respectively. Benchmark portfolio has a Sharpe ratio of 0.35 and standard deviation of benchmark returns is 10.5%.

What is the level of active risk that an investor would need to take to maximize the Sharpe ratio of a portfolio consisting of Zeta fund and the benchmark portfolio?

A) 8%

B) 6%

C) 7%

Explanation

Information ratio (IR) = 1.6% /8% = 0.2

$$\text{Optimal level of active risk} = \sigma^*_A = \frac{IR}{SR_B}\sigma_B = \frac{0.2}{0.35}(10.5) = 6\%$$

Active risk of Zeta fund = 8%

Weight of Zeta fund = 6% / 8% = 0.75

Weight of benchmark = 0.25

(Study Session 17, Module 50.2, LOS 50.b)

Related Material

SchweserNotes - Book 5

Question #5 of 28

Which of the following statements regarding the information ratio of an unconstrained portfolio is *most likely* correct?

A) A market timer who uses independent information to make predictions about market movements on a monthly basis and has an information ratio of 0.20 must

B) A market timer who uses independent information to make predictions about market movements on a monthly basis and has an information ratio of 0.20 must

C) A market timer who uses independent information to make predictions about market movements on a monthly basis and has an information ratio of 0.20 must

Explanation

Unconstrained Information ratio (IR) = IC × $\sqrt{BR}$

Market timer:	0.20 = IC × $12^{½}$	IC = 0.20 / 3.464	IC = 0.058
Selector:	0.20 = IC × $40^{½}$	IC = 0.20 / 6.325	IC = 0.032

The market timer has a lower breadth. In order to achieve the same information ratio he must have a higher information coefficient. Note calculations not required.

(Study Session 17, Module 50.4, LOS 50.e)

Related Material

SchweserNotes - Book 5

Question #6 of 28

An active manager currently covers 40 stocks and makes a forecast for each of them every quarter. Next year he intends to cover the same stocks but only once every 6 months. Assuming the manager's skill, measured in terms of the correlation of each forecast with actual returns doesn't change, which of the following statements is *most* accurate?

A) The information ratio will fall by approximately 50%

B) The information ratio will fall by approximately 30%

C) The information coefficient will fall by approximately 50%

Explanation

Information ratio (IR) = IC × $\sqrt{BR}$

Hence a reduction in the breadth from 160 (40 × 4) to 80 (40 × 2) will cause an approximate 30% drop in the IR

With quarterly predictions	IR = IC × $160^{½}$	= 12.65 (IC)
With semi-annual forecasts	IR = IC × $80^{½}$	= 8.94 (IC)

8.94IC / 12.65IC = 0.701

Hence the Information Ratio will fall by approximately 30%. Note that full calculation is not required. Given that IR changes with the square root of breadth, a 50% drop in breadth must cause a less than 50% drop in IR. Note that it does not matter if the portfolio is constrained or unconstrained.

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #7 of 28

Helen Wilde is trying to estimate the active return of Optimal fund. A comparison of Optimal's holdings and that of the benchmark are shown below:

Asset Class (i)	Optimal Weight (w_{Pi})	BenchmarkWeight (w_{Bi})	OptimalReturn $E(R_{Pi})$	Benchmark ReturnE(R_{Bi})
Industrials	30%	40%	11%	12%
Financials	50%	30%	6%	5%
Utilities	20%	30%	14%	12%

The expected active return for Optimal is *closest* to:

A) -0.44%

B) – 0.80%

C) – 1.40%

Explanation

Portfolio return = $R_P = \sum(w_{Pi}) \times E(R_{Pi}) = 9.10\%$

Benchmark return = $R_B = \sum(w_{Bi}) \times E(R_{Bi}) = 9.90\%$

Active return = $R_P - R_B = 9.10\% - 9.90\% = -0.80\%$

(Study Session 17, Module 50.1, LOS 50.a)

Related Material

SchweserNotes - Book 5

Question #8 of 28

An active manager has an information coefficient of 0.07, transfer coefficient of 0.90, and makes 49 independent bets per year. Benchmark portfolio has a Sharpe ratio of 0.40 and standard deviation of benchmark returns is 12%. The optimal amount of active risk is *closest* to:

A) 6%

B) 8%

C) 12%

Explanation

$$IR = (TC)\,IC\sqrt{BR} = (0.90)\,(0.07)\sqrt{49} = 0.441$$

For a constrained portfolio, the optimal level of residual risk can be computed as:

$$\sigma^*_A = TC\frac{IR^*}{SB_B}\sigma_B = 0.90\,(0.441/0.40)\,(0.12) = 11.90\%$$

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #9 of 28

Alisa Darent is evaluating several active portfolio managers with the same style and benchmark portfolio.

Manager	Active return	Active risk
Alfred	3.00%	12.00%
Brad	2.20%	11.00%
Charles	2.00%	10.50%

Benchmark return is expected to be 11%. What will be the maximum expected return for Darent's portfolio assuming that she wants to limit her active risk to 11%?

A) 13.75%

B) 2.75%

C) 2.20%

Explanation

Darent will select the manager with the highest information ratio – or Alfred.

IR (Alfred) = 3/12 = 0.25

IR(Brad) = 2.2/11 = 0.20

IR(Charles) = 2.0/10.50 = 0.19

Expected active return = $E(R_A)$ = IR x σ_A =0.25 x 11 = 2.75%.

Expected return = $E(R_B)$ + $E(R_A)$ = 11% + 2.75% = 13.75%

(Study Session 17, Module 50.3, LOS 50.d)

Related Material

SchweserNotes - Book 5

Question #10 of 28

Pamela Grieve claims that her information coefficient is 0.20 on monthly bets on 10 stocks in the healthcare industry. Assuming unconstrained optimization, the reduction in her information ratio if her bets have a correlation coefficient of 0.45 as opposed to being truly independent is *closest* to:

A) 86%

B) 22%

C) 45%

Explanation

Grieve's breadth assuming independent bets = 10 × 12 = 120

Information ratio assuming independent bets = $IC\sqrt{BR}$ = 0.20 × $\sqrt{120}$ = 2.19

If the bets are correlated, BR =

$$\frac{N}{1+(N-1)r} = \frac{120}{1+(120-1)0.45} = 2.19$$

New information ratio assuming correlated bets $IC\sqrt{BR}$ = 0.20 × $\sqrt{2.20}$ = 0.30

% reduction = 1 − 0.30/2.19 = 86.4%

(Study Session 17, Module 50.4, LOS 50.f)

Related Material

SchweserNotes - Book 5

Question #11 of 28

Which of the following statements is *least accurate*?

A) The Sharpe ratio of a portfolio is unaffected by addition of cash or leverage in the portfolio.

B) A closet index fund has a low Sharpe ratio.

C) Investors can take active risk that is suitable for them by investing in a combination of actively managed portfolio and benchmark portfolio.

Explanation

A closet index fund will have Sharpe ratio close to the benchmark's Sharpe ratio. The Sharpe ratio is for a portfolio is indeed unaffected by addition of cash or leverage to the portfolio. However, information ratio does change as we add cash or leverage to the actively managed portfolio. Investors can combine benchmark portfolio and active portfolio to obtain optimal level of active risk for them.

(Study Session 17, Module 50.2, LOS 50.b)

Related Material

SchweserNotes - Book 5

Question #12 of 28

Charles Griffith makes quarterly bets between stocks of industrial and utility sectors. The historical correlation between the returns of the two sectors is -0.20.Further information is as below:

			Benchmark
Sector	**E (R)**	**σ**	**Weight**
Industrial	12.00%	13.0%	80%
Utility	5.2%	2.5%	20%

The annualized active risk of Griffith's strategy is *closest* to:

A) 27.44%

B) 13.72%

C) 10.90%

Explanation

Combined active risk = $\sigma_C = [\sigma_I^2 - 2\sigma_I\sigma_U r_{IU} + \sigma_U^2]^{1/2}$

$= [0.13^2 + 0.025^2 - 2\,(0.13)(0.025)(-0.20)]^{1/2} = 0.1372$ or 13.72%

Annualized active risk = $0.1372 \times (4)^{1/2} = 0.2744$ or 27.44%

(Study Session 17, Module 50.4, LOS 50.e)

Related Material

SchweserNotes - Book 5

Question #13 of 28

Susan Thomas is evaluating the holdings of Primus fund. Based on the information below, the estimated active return is *closest* to:

Security (i)	PortfolioWeight (w_{Pi})	BenchmarkWeight (w_{Bi})	ReturnE(R_i)
X	30%	40%	11.20%
y	15%	25%	4.25%
z	55%	35%	14.00%
Total	100%	100%	

A) 1.26% ✓

B) 0.44% ✗

C) 1.77% ✗

Explanation

Portfolio return = $R_P = \sum(w_{Pi}) \times E(_{Ri}) = 11.70\%$

Benchmark return = $R_B = \sum(w_{Bi}) \times E(R_i) = 10.44\%$

Active return = $R_P - R_B = 11.70\% - 10.44\% = 1.26$

(Study Session 17, Module 50.1, LOS 50.a)

Related Material

SchweserNotes - Book 5

Question #14 of 28

Zeta fund has active return and active risk of 1.6% and 8% respectively. Benchmark portfolio has a Sharpe ratio of 0.35 and standard deviation of benchmark returns is 10.5%.

The maximum possible Sharpe ratio of a portfolio consisting of Zeta fund and the benchmark portfolio is *closest* to:

A) 0.4

B) 0.55

C) 0.5

Explanation

$SR_P = [SR_B^2 + IR^2]^{1/2} = [0.352 + 0.20^2]^{1/2} = 0.4031$

(Study Session 17, Module 50.2, LOS 50.b)

Related Material

SchweserNotes - Book 5

Question #15 of 28

Zeta fund has active return and active risk of 1.6% and 8% respectively. Benchmark portfolio has a Sharpe ratio of 0.35 and standard deviation of benchmark returns is 10.5%.

What is the weight of benchmark portfolio in a portfolio consisting of Zeta fund and the benchmark portfolio assuming that the portfolio is constructed to have optimal active risk?

A) 0.1667

B) 0.2

C) 0.25

Explanation

Information Ratio = active return / active risk = 1.6% / 8% = 0.2

$$\text{Optimal level of active risk} = \sigma^*_A = \frac{IR}{SR_B}\sigma_B = \frac{0.2}{0.35}(10.5) = 6\%$$

Active risk of Zeta fund = 8%

Weight of Zeta fund = 6% / 8% = 0.75

Weight of benchmark = 0.25

(Study Session 17, Module 50.2, LOS 50.b)

Related Material

SchweserNotes - Book 5

Question #16 of 28

Which of the following is correct for a constrained active portfolio?

A) TC=1

B) TC<1

C) TC>1

Explanation

When we impose constraints on portfolios, the actual active weights (Δw_i) will differ from optimal active weights (Δw_i^*) and TC<1.

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #17 of 28

Charles Griffith makes quarterly bets between stocks of industrial and utility sectors. The historical correlation between the returns of the two sectors is -0.20 and Griffith's bets have been correct 55% of the time. Further information is as below:

Benchmark

Sector	E (R)	σ	Weight
Industrial	12.00%	13.0%	80%
Utility	5.2%	2.5%	20%

The expected annualized active return of Griffith's sector rotation strategy is *closest* to:

A) 5.48%

B) 13.72%

C) 10.64%

Explanation

IC = 2(0.55) – 1 = 0.10

Combined active risk = $\sigma_C = [\sigma_I^2 - 2\sigma_I\sigma_U r_{IU} + \sigma_U^2]^{1/2}$

$= [0.13^2 + 0.025^2 - 2\,(0.13)(0.025)(-0.20)]^{1/2} = 0.1372$ or 13.72%

Annualized active risk = $0.1372 \times (4)^{1/2} = 0.2744$ or 24.44%

Annualized active return = IC x $\sqrt{BR}$ x $\sigma_A = 0.10 \times (4)^{1/2} \times 0.2744 = 0.0548$ or 5.48%

Alternatively,

Active return from this strategy using a probability weighted average (given Griffith makes correct calls 55% of time) of combined risk is:

(0.55)(0.1372) + (0.45)(-0.1372) = 0.0137 or 1.37% per quarter.

Annual active return = 1.37% x 4 = 5.48%.

(Study Session 17, Module 50.4, LOS 50.e)

Related Material

SchweserNotes - Book 5

Question #18 of 28

An active manager has an information coefficient of 0.08, transfer coefficient of 0.50, and makes 100 independent bets per year. What is the expected active return for an active risk constraint of 5%?

A) 2.4% ✗

B) 1.8% ✗

C) 2.0% ✓

Explanation

$$E(R_A) = (TC)\,IC\sqrt{BR}\sigma_A = (0.50)\,(0.08)\,\sqrt{100}\,(0.05) = 0.02 \text{ or } 2\%$$

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #19 of 28

Charles Griffith makes quarterly bets between stocks of industrial and utility sectors. Griffith's strategy has an annualized active risk of 18%. Based on the information below, If Griffith wants to limit his active risk to 6%, what is the allocation to Utility sector when Griffith is bullish about Industrial stocks?

	Benchmark
Sector	**Weight**
Industrial	80%
Utility	20%

A) 14%

B) -13%

C) 5%

Explanation

If active risk is limited to 6%, the deviation from the benchmark weights of 80% and 20% is limited to 6%/18% or 33%. Hence when Griffith is bullish about industrials, the weight to that sector will be 80% + 33% or 113% and the weight to utility sector will be 20% - 33% or -13%.

(Study Session 17, Module 50.4, LOS 50.e)

Related Material

SchweserNotes - Book 5

Question #20 of 28

Jon Gamlin is comparing a market timing strategy with a stock selection strategy. He draws the following two conclusions for unconstrained active managers:

Conclusion 1

To achieve the same information ratio, a market timer making weekly forecasts on the movement of the market needs to have a higher skill level than a stock selector following 25 stocks and updating the forecast semi-annually

Conclusion 2

A specialist following only 4 stocks who revises his forecast 100 times per year will achieve the same information ratio as a stock selector with the same skill level who follows 50 stocks and updates his assessments semi-annually

Regarding Gamlin's conclusions:

A) Only conclusion 2 is correct. ✗

B) Neither conclusion is correct. ✓

C) Only conclusion 1 is correct. ✗

Explanation

In conclusion 1, the market timer has a breadth of 52 and the stock selector 50. In order to achieve the same information ratio, the stock selector would need to make up for the lower breadth with a higher information coefficient.

In conclusion 2, the specialist has a breadth of 400 and the selector 100. If they have the same skill level, the specialist with the larger breadth will have a higher information ratio

(Study Session 17, Module 50.4, LOS 50.e)

Related Material

SchweserNotes - Book 5

Question #21 of 28

Which of the following terms is the number of independent bets per year made by an active manager?

A) Breadth ✓

B) Information Coefficient ✗

C) Transfer Coefficient ✗

Explanation

Breadth is the number of independent bets (based on unique information) made per year by the active manager.

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #22 of 28

Which of the following statements is *least accurate*?

A) Unlike Sharpe ratio, information ratio is affected due to addition of cash or leverage.

B) The information ratio of a constrained active portfolio is unaffected by aggressiveness of the active weights.

C) Sharpe ratio of a portfolio consisting of a combination of benchmark and actively managed portfolio with positive active return will be higher than the Sharpe ratio of

Explanation

Information ratio of an *unconstrained* active portfolio is unaffected by aggressiveness of the active weights. Sharpe ratio is unaffected by addition of cash or leverage but information ratio would be. A portfolio consisting of a combination of benchmark and an actively managed portfolio is calculated as:

$SR_P^2 = SR_B^2 + IR^2$

If the active return is positive, IR>0 and $SR_P > SR_B$.

(Study Session 17, Module 50.2, LOS 50.b)

Related Material

SchweserNotes - Book 5

Question #23 of 28

Which of the following is correct for an unconstrained active portfolio?

A) TC=1

B) TC<1

C) TC>1

Explanation

TC=1 if the active portfolio has no constraints.

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #24 of 28

An active manager has an information coefficient of 0.05 and makes 36 independent bets per year. What is the manager's information ratio given a transfer coefficient of 0.75?

A) 1.35

B) 0.45

C) 0.23

Explanation

Information ratio =

$$\text{IR} = (\text{TC})\,\text{IC}\sqrt{\text{BR}} = (0.75)\,(0.05)\,\sqrt{36} = 0.225$$

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #25 of 28

Which of the following terms is the cross-sectional correlation between forecasted active returns and actual active weights adjusted for risk?

A) Information Coefficient

B) Breadth

C) Transfer Coefficient

Explanation

Transfer coefficient = TC = CORR (μ_i/σ_i, $\Delta w_i\sigma_i$)

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #26 of 28

An active manager expects his information coefficient to drop from 0.08 to 0.02 in the coming period due to extremely volatile and unpredictable markets. As a response he intends to increase his breadth by a factor of 4. Which of the following statements is *most accurately* describes the impact on the information ratio?

A) The information ratio will remain constant ✗

B) The information ratio will decrease ✓

C) The information ratio will increase ✗

Explanation

Information ratio (IR) = IC × $\sqrt{BR}$

If breadth is increased by a factor of 4, this would increase the information ratio by a factor of 2. As the information coefficient is decreasing by a factor of 4, the information ratio will decrease.

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5

Question #27 of 28

When choosing an active manager, an investor with a high level of risk aversion:

A) will choose the manager with the highest active return. ✗

B) will choose the manager with the highest information ratio. ✓

C) will choose a manager with the lowest active risk. ✗

Explanation

Value added is independent of the level of risk aversion. All investors will choose the manager with the highest information ratio. Those with higher levels of risk aversion will implement the strategy less aggressively (i.e., invest a larger proportion in the benchmark portfolio).

(Study Session 17, Module 50.3, LOS 50.d)

Related Material

SchweserNotes - Book 5

Question #28 of 28

Which of the following terms is the ex-ante risk weighted correlation between forecasted active returns and actual active returns?

A) Information Coefficient ✓

B) Transfer Coeffcient ✗

C) Breadth ✗

Explanation

Information coefficient is the ex-ante correlation between forecasted active returns and actual active returns. It captures the skill of the manager.

(Study Session 17, Module 50.3, LOS 50.c)

Related Material

SchweserNotes - Book 5